

Cardiac Rhythm Management // Product Catalog

BIOTRONIK

Product Catalog

Cardiac Rhythm Management



General Information



BIOTR

excellence f

EXCELLENCE

Company Profile



Saving lives. Providing security.

BIOTRONIK is a leading European company in the field of biomedical technology. We focus on devices for vascular intervention and electrotherapy of the heart. Our products help physicians save lives and improve their patients' quality of life.

Our motto: "excellence for life"

Company founder Prof. Dr. Max Schaldach developed the first German pacemaker over 50 years ago. Since then, BIOTRONIK has had a reputation for focusing on high-quality patient care and developing innovative solutions. We believe that only those who surpass the average can achieve excellence. Close collaboration with expert physicians and researchers characterize this corporate mindset. This approach considerably accelerates the development of an idea into a widely available, high-quality, lifesaving product.

Company Profile

Business focus

BIOTRONIK has concentrated in two distinct business areas – electrotherapy and vascular intervention – which has enabled the company to provide customers with a wide range of products.

Electrotherapy

Electrotherapy offers diagnostic tools and options for treating arrhythmias. The purpose of first-generation pacemakers was to save patients' lives. However, modern implants fulfill a broad range of functions. Improving a patient's quality of life and monitoring the heart using diagnostic features are becoming increasingly important.

In the field of electrotherapy, BIOTRONIK offers the following devices:

- Pacemakers
- Defibrillators
- Leads and catheters
- External devices for processing implant data
- Measurement and ablation devices for electrophysiology
- Wireless remote patient monitoring
- Electronic health record

Vascular Intervention

Vascular intervention provides solutions for stenosis and occlusion of arterial vessels. Every year, about a million coronary stents are being implanted worldwide. Stents are also useful in treating stenosis in peripheral arteries. An innovative silicon-carbide coating guarantees excellent hemocompatibility for BIOTRONIK products and reduces the risk of restenosis in the damaged area.

In the field of vascular intervention, BIOTRONIK offers the following devices:

- Guide wires
- Balloon catheters
- Stents
- Diagnostic catheters
- Accessory products

Company Profile

BIOTRONIK has a European heart and a strong international pulse. Our company headquarters are in Berlin, a city that has always been special among European capitals. Separated from the rest of Germany for decades, it was a challenge to build up an extensive and vital network from this location. These very circumstances have strengthened the bond within all BIOTRONIK branches even more, and they certainly produced a unique, creative and inspiring working environment.

Headquarters

BIOTRONIK SE & Co. KG

Corporate Headquarters: Berlin, Germany

Cardiac rhythm management, general management, human resources, global marketing, finance, R&D, production, quality assurance, regulatory affairs, international sales

BIOTRONIK SE & Co. KG
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12359 Berlin · Germany
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Fax +49 (0) 30 6852804
sales@biotronik.com
www.biotronik.com

BIOTRONIK AG

VI Headquarters: Bülach, Switzerland

Products for minimally invasive coronary and peripheral intervention, R&D, production, quality control, regulatory affairs, marketing, sales, business management

BIOTRONIK AG
Ackerstrasse 6
8180 Bülach · Switzerland
Tel +41 (0) 44 8645111
Fax +41 (0) 44 8645005
info.vi@biotronik.com
www.biotronik.com

Our History



1960s – Exploring opportunities

BIOTRONIK was founded in 1963, as physicist Max Schaldach and electrical engineer Otto Franke developed the first German implantable pacemaker. In the early years, BIOTRONIK's primary focus was on solving basic problems.

These included short battery service time, the uncertainty of the remaining battery power, and developing a reliable method for connecting the lead to both the pacemaker and the heart. Research and development (R&D) produced a series of innovations that are considered milestones in pacemaker technology today.

1970s – Expanding the playing field

The appointment of Dr. Schaldach as professor for biomedical engineering at Erlangen's Friedrich-Alexander University boosted the company's R&D work. In 1976, the company opened headquarters in Berlin-Neukölln, Sieversufer 8, and eventually moved next door to Woermannkehre 1 in 1987.

Upon acquiring Stimulation Technology, Inc., BIOTRONIK set up production facilities in Lake Oswego, Oregon, in the United States. At this time, the company also began developing and producing advanced hybrid circuitry and modules for the biomedical industry. This was the harbinger to breakthrough technology in the pacemaker industry. These pioneering achievements make BIOTRONIK stand out in medical technology history.

BIOTRONIK also met the demands of clients and patrons who required pacemakers and diagnostic devices for electrophysiological studies, thus enlarging the range of its customer base.

Our History

1980s – New horizons

The development of physiological stimulation marked the beginning of a new phase in pacemaker therapy. Dual-chamber pacing technology responded more accurately to a patient's actual needs. These DDD pacemakers were especially sensitive to spontaneous heart contractions and triggered a stimulus only when necessary. However, this new generation of products were prone to accidental interactions between atrium and ventricle.

Having prior experience with dual-chamber pacemakers during the 1960s, BIOTRONIK was prepared and quickly focused on addressing the challenges of DDD technology, subsequently becoming a European market leader with the Diplos 03 pacemaker. Thanks to other technological and commercial successes in the 1980s, BIOTRONIK was able to expand into Europe, South America and Asia.

1990s – Widening the product range

In 1993, BIOTRONIK expanded its product range with implantable defibrillators. BIOTRONIK's philosophy of challenging R&D to designing products that would work as naturally as possible, enabled the company to develop a key achievement: Closed Loop Stimulation. This technology integrated the pacemaker into the body's natural regulatory system, which allows it to react to the patient's changing physical and related mental activity.

Another innovation of the 1990s, fractal coating of implantable leads, was also based on a principle of nature. The coating optimizes the lead's electrically active surface, which significantly improves its electrical sensing and pacing properties. BIOTRONIK is still the forerunner in this field, and the only manufacturer of fractal-coated leads.

In 1995, BIOTRONIK added vascular intervention devices such as balloon catheters and stents for the treatment of coronary and peripheral vessels to its product range.

In the 1990s, the company also added diagnostic and therapeutic catheters as well as radio-frequency generators for ablation, further developing the work started in the 1970s. BIOTRONIK now offers a complete portfolio of products for heart electrotherapy.

Our History

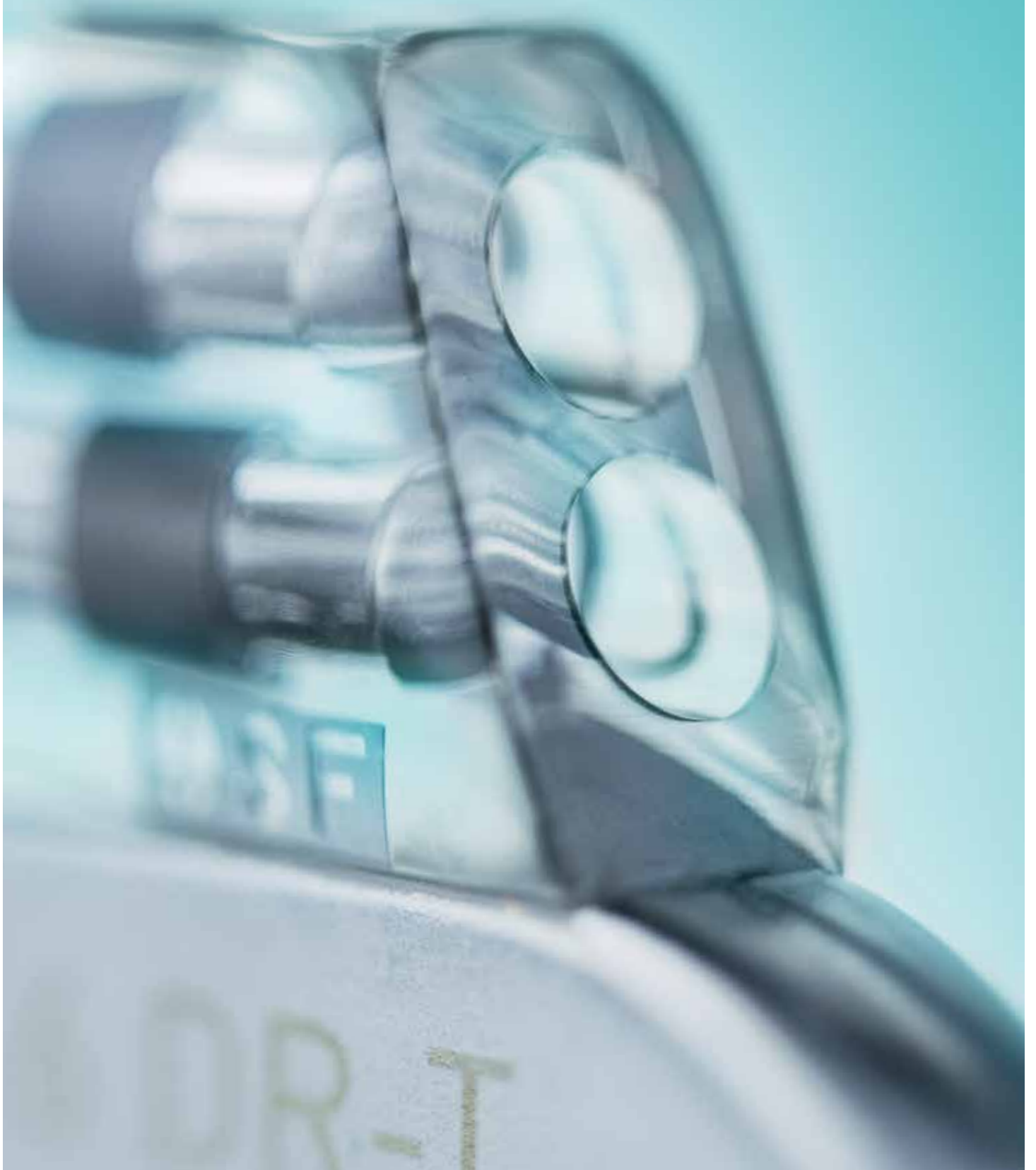
Accepting the challenges of the new millenium

BIOTRONIK's Home Monitoring® service provides physicians with current data from their patients implants, regardless of the patients' location. This innovative technology combines optimal therapy with the most efficient care, thus increasing and protecting the patient's security.

The ability to follow up on patients at home after surgical recovery has given physicians the ability to monitor patients in their homes, where they have less stress and are more likely to recover. Innovative technologies have also improved treatment success in the area of vascular intervention.

Improved patient safety and quality of life are among of BIOTRONIK's major concerns, and the company intends to continue its focus in this direction in the years to come.

Bradycardia Therapy



Arrhythmia Monitoring



BioMonitor 2-AF

Insertable Cardiac Monitor

ProMRI®



Product Highlights

■ Reliable Remote Detection of Atrial Fibrillation (AF)

Accurate detection of AF episodes and confirmation by automatic ECG transmission via BIOTRONIK Home Monitoring® within 24 hours for need-based intervention and optimized AF management

■ Functional Shape

Reliable detection with high-quality signals due to an 88 mm vector; patient convenience is ensured thanks to the slim body and the flexible antenna

■ Fast and Easy Insertion

Minimally invasive, thus saving time on subcutaneous insertion

■ 4 Years of Longevity

Excellent longevity for long-term monitoring of asymptomatic and paroxysmal arrhythmias, with daily transmission via BIOTRONIK Home Monitoring®

■ More Than 60 Minutes of Recording Capacity

Extra-long recording time with intelligent memory management for at least three arrhythmia episodes per trigger, for clinical evaluation and reliable diagnosis

■ BIOTRONIK Home Monitoring®

Customizable information for successful remote arrhythmia monitoring and ECG transmission for all triggers with tachogram and Lorenz plot within 24 hours

■ ProMRI®

Safe access to full-body MRI scans using 1.5 T and 3.0 T MRI scanners, without the need to reprogram the device

Ordering Information

Model	Order number
BioMonitor 2-AF	398493
Remote Assistant	405475

Technical Data

Sensing parameters	
ECG quality	8 bit – 128 Hz bandwidth
R-wave sensing	Detection based on 1-vector ECG signal
Detection settings	
Atrial fibrillation [AF]	
■ AF detection	OFF; ON
■ AF sensitivity	Low; Medium; High; Individual
■ RR variability limit	6.25 ... [6.25] ... 18.75 %
■ Onset/resolution window	8/16; 16/24; 24/32
■ Onset intervals	5 ... [2] ... 23
■ Resolution intervals	1 ... [2] ... 7
■ Confirmation time	1 ... [1] ... 6; 10 ... [10] ... 30 min
■ Bigeminy rejection	OFF; Standard; Aggressive
High ventricular rate [HVR]	
■ HVR detection	OFF; ON
■ HVR limit	110 ... [10] ... 200 bpm
■ HVR counter	8 ... [4] ... 24; 32 cycles
Bradycardia	
■ Brady zone limit	OFF; 30 ... [5] ... 80 bpm
■ Brady duration	5 ... [5] ... 30 s
Sudden rate drop [SRD]	
■ SRD rate decrease	OFF; 20 ... [10] ... 70 %
■ SRD sensitivity	Low; Medium; High; Individual
■ Baseline intervals	48; 64; 128; 256
■ Rate-drop intervals	8; 16; 32
Asystole	
■ Asystole duration	OFF; 2 ... [1] ... 10 s
Patient trigger	OFF; ON
Sensing settings	
SensingConsult	Standard; Variable amplitude; PVC detection; T-wave suppression; Individual
Sensing high pass filter	10; 18; 24 Hz
Target sensing threshold	25; 35; 40; 50 %
Noise window	100 ... [10] ... 200 ms
Recordings & real-time	Full morphology; Sensing signal
Resting rate period	
Start resting period	00:00 ... [01:00] ... 23:00 hh:mm
Resting period duration	0.5 ... [0.5] ... 12.0 h
Storage parameters	
Total storage capacity	60 min
Automatically triggered ECGs	55 x 40 s [30 seconds before, 10 seconds after the triggering event]
Max. 4 patient-triggered ECGs	7.5 minutes each [7 minutes before, 30 seconds after the triggering event]
Memory management	Intelligent memory management [oldest, most recent, longest episode]
Housing	
Dimensions	88.4 mm x 15.2 mm x 6.2 mm
Weight	10.1 g
Volume	5 cm ³
X-ray identification	AO
Lead	1-vector detection; max. 88 mm
Battery	
Battery type	LiS 2460
System	LiMnO ₂
Service time	4 years
Status	Display 0 – 100 %
MR conditional	
ProMRI®	Please refer to the technical manual "ProMRI® MR conditional device systems" for detailed information
Without scan exclusion zone	1.5 T and 3.0 T
Fast Insert Tool	
FIT 1	179 mm x 15 mm x 3 mm
FIT 2	128.2 mm x 17 mm x 1.5 mm
Remote Assistant	
Dimensions	96 mm x 58 mm x 20 mm
Weight	85 g
Power supply	Internal; 3 V DC
Battery type	2 x LR1, alkaline-manganese battery; Inaccessible to the user; Not replaceable
Ambient conditions	
Degree of protection	IP 32
Operating mode	Continuous operation
Temperature	-5 °C to +40 °C
Relative humidity	30 % to 95 % [non-condensing]
Atmospheric pressure	700 hPa to 1060 hPa
Transmitter	
Type	Coil
Bit rate	512/s
Modulation	FSK
Transmission frequency	17 kHz
Receiver	
Type	MICS
Modulation	FSK
MICS frequency	402–405 MHz
Bandwidth	Max. 300 kHz

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	Std.; 00:00 ... [00:30] ... 23:30 hh:mm
Periodic subcutaneous ECG for Home Monitoring-supported follow-up	OFF; Selection; 1; 7; 30; 60; 90; 120; 180 days
Transmitted data	
Clinical and technical data	Battery status, programmable parameters, diagnostic data, subcutaneous ECG
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Event messages	
Atrial fibrillation [AF]	OFF; ON
High ventricular rate [HVR]	OFF; ON
Bradycardia	OFF; ON
Sudden rate drop [SRD]	OFF; ON
Asystole	OFF; ON
Patient trigger	OFF; ON

BioMonitor 2-S

Insertable Cardiac Monitor

ProMRI®



Product Highlights

■ Functional Shape

Reliable detection with high-quality signals due to an 88 mm vector; patient convenience is ensured thanks to the slim body and the flexible antenna

■ Fast and Easy Insertion

Minimally invasive, thus saving time on subcutaneous insertion

■ 4 Years of Longevity

Excellent longevity for long-term monitoring of asymptomatic and paroxysmal arrhythmias, with daily transmission via BIOTRONIK Home Monitoring®

■ More Than 60 Minutes of Recording Capacity

Extra-long recording time with intelligent memory management for at least three arrhythmia episodes per trigger, for clinical evaluation and reliable diagnosis

■ BIOTRONIK Home Monitoring®

Customizable information for successful remote arrhythmia monitoring and ECG transmission for all triggers with tachogram and Lorenz plot within 24 hours

■ ProMRI®

Safe access to full-body MRI scans using 1.5 T and 3.0 T MRI scanners, without the need to reprogram the device

Ordering Information

Model	Order number
BioMonitor 2-S	398494
Remote Assistant	405475

Technical Data

Sensing parameters	
ECG quality	8 bit – 128 Hz bandwidth
R-wave sensing	Detection based on 1-vector ECG signal
Detection settings	
High ventricular rate (HVR)	
■ HVR detection	OFF; ON
■ HVR limit	110 ... [10] ... 200 bpm
■ HVR counter	8 ... [4] ... 24; 32 cycles
Bradycardia	
■ Brady zone limit	OFF; 30 ... [5] ... 80 bpm
■ Brady duration	5 ... [5] ... 30 s
Sudden rate drop (SRD)	
■ SRD rate decrease	OFF; 20 ... [10] ... 70 %
■ SRD sensitivity	Low; Medium; High; Individual
■ Baseline intervals	48; 64; 128; 256
■ Rate-drop intervals	8; 16; 32
Asystole	
■ Asystole duration	OFF; 2 ... [1] ... 10 s
Patient trigger	OFF; ON
Sensing settings	
SensingConsult	Standard; Variable amplitude; PVC detection; T-wave suppression; Individual
Sensing high pass filter	10; 18; 24 Hz
Target sensing threshold	25; 35; 40; 50 %
Noise window	100 ... [10] ... 200 ms
Recordings & real-time	Full morphology; Sensing signal
Resting rate period	
Start resting period	00:00 ... [01:00] ... 23:00 hh:mm
Resting period duration	0.5 ... [0.5] ... 12.0 h
Storage parameters	
Total storage capacity	60 min
Automatically triggered ECGs	55 x 40 s (30 seconds before, 10 seconds after the triggering event)
Max. 4 patient-triggered ECGs	7.5 minutes each (7 minutes before, 30 seconds after the triggering event)
Memory management	Intelligent memory management (oldest, most recent, longest episode)
Housing	
Dimensions	88.4 mm x 15.2 mm x 6.2 mm
Weight	10.1 g
Volume	5 cm ³
X-ray identification	A0
Lead	1-vector detection; max. 88 mm
Battery	
Battery type	LiS 2460
System	LiMnO ₂
Service time	4 years
Status	Display 0 – 100 %
MR conditional	
ProMRI®	Please refer to the technical manual "ProMRI® MR conditional device systems" for detailed information
Without scan exclusion zone	1.5 T and 3.0 T
Fast Insert Tool	
FIT 1	179 mm x 15 mm x 3 mm
FIT 2	128.2 mm x 17 mm x 1.5 mm
Remote Assistant	
Dimensions	96 mm x 58 mm x 20 mm
Weight	85 g
Power supply	Internal; 3 V DC
Battery type	2 x LR1, alkaline-manganese battery; Inaccessible to the user; Not replaceable
Ambient conditions	
Degree of protection	IP 32
Operating mode	Continuous operation
Temperature	-5 °C to +40 °C
Relative humidity	30 % to 95 % [non-condensing]
Atmospheric pressure	700 hPa to 1060 hPa
Transmitter	
Type	Coil
Bit rate	512/s
Modulation	FSK
Transmission frequency	17 kHz
Receiver	
Type	MICS
Modulation	FSK
MICS frequency	402-405 MHz
Bandwidth	Max. 300 kHz

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	Std.; 00:00 ... [00:30] ... 23:30 hh:mm
Periodic subcutaneous ECG for Home Monitoring-supported follow-up	OFF; Selection; 1; 7; 30; 60; 90; 120; 180 days
Transmitted data	
Clinical and technical data	Battery status, programmable parameters, diagnostic data, subcutaneous ECG
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Event messages	
High ventricular rate (HVR)	OFF; ON
Bradycardia	OFF; ON
Sudden rate drop (SRD)	OFF; ON
Asystole	OFF; ON
Patient trigger	OFF; ON

Eluna 8 SR-T

Single-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 SR-T	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394934

Technical Data

Closed Loop Stimulation	
CLS mode	VVI-CLS
Max. CLS rate	80 ... (10) ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... (10) ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WVIR/AAIR
Mode	VVI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VT; AAT; V00; V00R; OFF
Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... (01:00) ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Eluna 8 SR-T

MR Conditional single-chamber IPG

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 SR-T ProMRI	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394971

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VI; AAI; A00R; VVI; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Eluna 8 SR

Single-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 SR	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394939

Technical Data

Closed Loop Stimulation	
CLS mode	VI-CLS
Max. CLS rate	80 ... (10) ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... (10) ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; WT; AAT; V00; V00R; OFF
Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω, 50% pacing	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Eluna 8 SR

MR Conditional single-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 SR ProMRI	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394972

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VVI; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Epyra 8 SR-T

Single-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 8 SR-T	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394935

Technical Data

Closed Loop Stimulation	
CLS mode	VVI-CLS
Max. CLS rate	80 ... (10) ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... (10) ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WVIR/AAIR
Mode	VVI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VT; AAT; V00; V00R; OFF
Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... (01:00) ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 8 SR-T

MR Conditional single-chamber IPG

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 8 SR-T ProMRI	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394975

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WVIR/AAIR
Mode	VVI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VVI; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 6 SR-T

Single-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 6 SR-T	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394937

Technical Data

Pacing parameters	
NBG code	WVIR/AAIR
Mode	WVIR; AAIR; A00; VI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ [open-circuit voltage 3.1 V]
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring; ON, SafeSync; OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 6 SR-T

MR Conditional single-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 6 SR-T ProMRI	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394980

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	WIR/AAIR
Mode	WIR; AAIR; A00; VI; AA; A00R; VVT; AAT; V00; V00R; OFF
Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... (01:00) ... 23:00 hh:mm
High rate	ON
Periodic IEGM for HM follow-up	OFF; Selection: 30; 60; 90; 120; 180 days

Etrinsa 8 SR-T

Single-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 8 SR-T	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394936

Technical Data

Closed Loop Stimulation	
CLS mode	VVI-CLS
Max. CLS rate	80 ... (10) ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... (10) ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WVIR/AAIR
Mode	VVI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VT; AAT; V00; V00R; OFF
Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... (01:00) ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 8 SR-T

MR Conditional single-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

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■ Heart Failure Monitor

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■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 8 SR-T ProMRI	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394978

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WVIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VI; AAI; A00R; VVI; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 6 SR-T

Single-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 SR-T	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394938

Technical Data

Pacing parameters	
NBG code	WVIR/AAIR
Mode	WVIR; AAIR; A00; VI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ [open-circuit voltage 3.1 V]
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring; ON, SafeSync; OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 6 SR-T

MR Conditional single-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 SR-T ProMRI	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394983

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	WIR/AAIR
Mode	WIR; AAIR; A00; VI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... (01:00) ... 23:00 hh:mm
High rate	ON
Periodic IEGM for HM follow-up	OFF; Selection: 30; 60; 90; 120; 180 days

Etrinsa 6 SR

Single-chamber IPG



Product Highlights

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 SR	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394940

Technical Data

Pacing parameters	
NBG code	VVIR/AAIR
Mode	VVIR; AAIR; A00; VI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ [open-circuit voltage 3.1 V]
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEMG recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Etrinsa 6 SR

MR Conditional single-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 SR ProMRI	IS-1 (1x)	11 cm ³ /24 g	53 mm × 39 mm × 6.5 mm	394984

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	WIR/AAIR
Mode	WIR; AAIR; A00; VI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	> 15 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at 2.5 V/0.4 ms, 60 bpm, 500 0; 50% pacing, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Evia SR-T

MR Conditional single-chamber, rate-response pacemaker with Closed Loop Stimulation and BIOTRONIK Home Monitoring® ProMRI®



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

- **BIOTRONIK Home Monitoring®**

Unique automatic wireless remote monitoring and early detection of clinical and device-related events

Ordering Information

Model	Weight	Volume	Order number
Evia SR-T uncoated	24 g	11 cm ³	371 998
Evia SR-T coated	24 g	11 cm ³	372 034

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	V00; A00; OFF
Closed Loop Stimulation	
CLS mode	VVI-CLS
Maximum CLS rate	80...[5]... 120 ...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	WVIR/AAIR
Modes	VVIR ; VVI; VVT[R]; VOO[R]; AA[I]R; AAT[R]; AOO[R]; OFF
Basic rate	30...[1]... 40 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ³⁾	90...[10]... 130 ...[10]...200 bpm
IEGM recording ⁴⁾	20 recordings, max. 10 seconds each, 2 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO (10 cycles with 90 bpm asynchronous, then basic rate synchronous); asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁵⁾	QMR® (open circuit voltage: 3.0 V), Li-MnO ₂ (open circuit voltage: 3.1 V)
Nominal operating time	> 15 years (at 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring ON)
Housing	
Dimensions/weight	53×39×6.5 mm/24 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF ; ON
Time of data transmission	AUTO; 00:00...[00:30]...23:30 hh:mm
Periodic IEGM	OFF; 30; 60; 90; 120; 180 days
High rate ⁶⁾	OFF; ON
Transmitted data	
Clinical data	threshold, sensing amplitude, pacing statistic, arrhythmia statistic, Heart Failure Monitor® diagnostics
Technical data	battery status, lead integrity measurements, programmed parameters
IEGM-Online® HD	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing
Event types	
Implant	battery status, programmer-triggered message received
Leads	pacing impedance ⁷⁾ , lead check, sensing amplitude ⁷⁾ , pacing threshold ⁸⁾ , Capture Control status ⁸⁾
Arrhythmias	number of high rate arrhythmias ⁹⁾
Heart Failure Monitor®	mean heart rate ⁹⁾
Message types	
Message types	trend message based on Intelligent Message Bundling, event message triggered daily after clinical or technical events, test message triggered manually via programmer

- 1) EN 50061 triangle pulse.
- 2) If Capture Control is ON, the pulse amplitude is automatically selected.
- 3) Only available for triggered modes.
- 4) Storage of IEGMs by using intelligent memory management.
- 5) Nominal data of the manufacturer.
- 6) According to programmer Holter triggers.
- 7) Programmable upper and lower limit.
- 8) Only in VVI mode.
- 9) Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Evia SR

MR Conditional single-chamber, rate-response pacemaker with Closed Loop Stimulation

ProMRI®



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Evia SR uncoated	25 g	10 cm ³	371 997
Evia SR coated	25 g	10 cm ³	372 003

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	VOO; AOO; OFF
Closed Loop Stimulation	
CLS mode	VVI-CLS
Maximum CLS rate	80...[5]... 120 ...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	VVIR/AAIR
Modes	VVIR ; VVI; VVT[R]; VOO[R]; AA[R]; AAT[R]; AOO[R]; OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ³⁾	90...[10]... 130 ...[10]...200 bpm
IEMG recording ⁴⁾	20 recordings, max. 10 seconds each, 2 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁵⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	> 15 years (at: 2.5 V, 0.4 ms, 60 bpm, 5000, 50% pacing)
Housing	
Dimensions/weight	53×39×6.5 mm/25 g
Volume	10 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

1) EN 50061 triangle pulse.

2) If Capture Control is ON, the pulse amplitude is automatically selected.

3) Only available for triggered modes.

4) Storage of IEMGs by using intelligent memory management.

5) Nominal data of the manufacturer.

All data at 37°C, 5000.

Default settings are printed in bold.

Entovis SR-T

MR Conditional single-chamber, rate-response pacemaker with Closed Loop Stimulation and BIOTRONIK Home Monitoring® ProMRI®



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

- **BIOTRONIK Home Monitoring®**

Unique automatic wireless remote monitoring and early detection of clinical and device-related events

Ordering Information

Model	Weight	Volume	Order number
Entovis SR-T uncoated	24 g	11 cm ³	371 994
Entovis SR-T coated	24 g	11 cm ³	372 030

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	V00, A00, OFF
Closed Loop Stimulation	
CLS mode	VVI-CLS
Maximum CLS rate	80...[5]... 120 ...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	WVIR/AAIR
Modes	VVIR ; VVI; VVT[R]; VOO[R]; AA[I]R; AAT[R]; AOO[R]; OFF
Basic rate	30...[1]... 40 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ³⁾	90...[10]... 130 ...[10]...200 bpm
IEGM recording ⁴⁾	20 recordings, max. 10 seconds each, 2 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO (10 cycles with 90 bpm asynchronous, then basic rate synchronous); asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁵⁾	QMR® (open circuit voltage: 3.0 V), Li-MnO ₂ (open circuit voltage: 3.1 V)
Nominal operating time	> 15 years (at 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring ON)
Housing	
Dimensions/weight	53×39×6.5 mm/24 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF ; ON
Time of data transmission	AUTO; 00:00...[00:30]...23:30 hh:mm
Periodic IEGM	OFF; 30; 60; 90; 120; 180 days
High rate ⁶⁾	OFF; ON
Transmitted data	
Clinical data	threshold, sensing amplitude, pacing statistic, arrhythmia statistic, Heart Failure Monitor® diagnostics
Technical data	battery status, lead integrity measurements, programmed parameters
IEGM-Online® HD	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing
Event types	
Implant	battery status, programmer-triggered message received
Leads	pacing impedance ⁷⁾ , lead check, sensing amplitude ⁷⁾ , pacing threshold ⁸⁾ , Capture Control status ⁸⁾
Arrhythmias	number of high rate arrhythmias ⁹⁾
Heart Failure Monitor®	mean heart rate ⁹⁾
Message types	
Message types	trend message based on Intelligent Message Bundling, event message triggered daily after clinical or technical events, test message triggered manually via programmer

- 1) EN 50061 triangle pulse.
- 2) If Capture Control is ON, the pulse amplitude is automatically selected.
- 3) Only available for triggered modes.
- 4) Storage of IEGMs by using intelligent memory management.
- 5) Nominal data of the manufacturer.
- 6) According to programmer Holter triggers.
- 7) Programmable upper and lower limit.
- 8) Only in VVI mode.
- 9) Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Entovis SR

MR Conditional single-chamber, rate-response pacemaker with Closed Loop Stimulation

ProMRI®



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Entovis SR uncoated	25 g	10 cm ³	371993
Entovis SR coated	25 g	10 cm ³	372029

Technical data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	VOO, AOO, OFF
Closed Loop Stimulation	
CLS mode	VVI-CLS
Maximum CLS rate	80...[5]... 120 ...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	VVIR/AAIR
Modes	VVIR ; VVI; VVT[R]; VOO[R]; AA[R]; AAT[R]; AOO[R]; OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ³⁾	90...[10]... 130 ...[10]...200 bpm
IEMG recording ⁴⁾	20 recordings, max. 10 seconds each, 2 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁵⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	> 15 years (at: 2.5 V, 0.4 ms, 60 bpm, 5000, 50% pacing)
Housing	
Dimensions/weight	53×39×6.5 mm/25 g
Volume	10 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) EN 50061 triangle pulse.
- 2) If Capture Control is ON, the pulse amplitude is automatically selected.
- 3) Only available for triggered modes.
- 4) Storage of IEMGs by using intelligent memory management.
- 5) Nominal data of the manufacturer.

All data at 37°C, 5000.
Default settings are printed in bold.

Estella SR-T

MR Conditional single-chamber, rate-response pacemaker with BIOTRONIK Home Monitoring®

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

- **BIOTRONIK Home Monitoring®**

Unique automatic wireless remote monitoring and early detection of clinical and device-related events

Ordering Information

Model	Weight	Volume	Order number
Estella SR-T uncoated	24 g	11 cm ³	377387
Estella SR-T coated	26 g	11 cm ³	377386

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads ¹⁾
MRI modes	V00; A00; OFF
Pacemaker parameters	
NBG code	WVIR/AAIR
Modes	WVIR ; VVI; VVT(R); VOO(R); AA(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ²⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ³⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF ; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ⁴⁾	90...[10]... 130 ...[10]...200 bpm
IEGM recording ⁵⁾	12 recordings, max. 10 seconds each, 1 trigger
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF ; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁶⁾	QMR® (open circuit voltage: 3.0 V), Li-MnO ₂ (open circuit voltage: 3.1 V)
Nominal operating time	> 15 years (at 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring ON)
Housing	
Dimensions/weight	53 × 39 × 6.5 mm/24 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF ; ON
Time of data transmission	AUTO; 00:00...[00:30]...23:30 hh:mm
Periodic IEGM	OFF ; 30; 60; 90; 120; 180 days
High rate ⁷⁾	OFF ; ON
Transmitted data	
Clinical data	threshold, sensing amplitude, pacing statistic, arrhythmia statistic, Heart Failure Monitor® diagnostics
Technical data	battery status, lead integrity measurements, programmed parameters
IEGM-Online® HD	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing
Event types	
Implant	battery status, programmer-triggered message received
Leads	pacing impedance ⁸⁾ , lead check, sensing amplitude ⁸⁾ , pacing threshold ⁹⁾ , Capture Control status ⁹⁾
Arrhythmias	number of high rate arrhythmias ¹⁰⁾
Heart Failure Monitor®	mean heart rate ¹⁰⁾
Message types	
Message types	trend message based on Intelligent Message Bundling, event message triggered daily after clinical or technical events, test message triggered manually via programmer

- 1) For combinations of MR Conditional leads, please see the ProMRI manual.
- 2) EN 50061 triangle pulse.
- 3) If Capture Control is ON, the pulse amplitude is automatically selected.
- 4) Only available for triggered modes.
- 5) Storage of IEGMs by using intelligent memory management.
- 6) Nominal data of the manufacturer.
- 7) According to programmer Holter triggers.
- 8) Programmable upper and lower limit.
- 9) Only in VVI mode.
- 10) Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Estella SR

MR Conditional single-chamber, rate-response pacemaker **ProMRI®**



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Estella SR uncoated	25 g	10 cm ³	377385
Estella SR coated	25 g	10 cm ³	377384

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads ¹⁾
MRI modes	VOO; AOO; OFF
Pacemaker parameters	
NBG code	VVIR/AAIR
Modes	VVIR ; VVI; VVT(R); VOO(R); AA(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ²⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ³⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0; 1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ⁴⁾	90...[10]... 130 ...[10]...200 bpm
IEGM recording ⁵⁾	12 recordings, max. 10 seconds each, 1 trigger
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO (10 cycles with 90 bpm asynchronous, then basic rate synchronous); asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁶⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	> 15 years (at 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing)
Housing	
Dimensions/weight	53 × 39 × 6.5 mm/25 g
Volume	10 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) For combinations of MR Conditional leads, please see the ProMRI manual.
- 2) EN 50061 triangle pulse.
- 3) If Capture Control is ON, the pulse amplitude is automatically selected.
- 4) Only available for triggered modes.
- 5) Storage of IEGMs by using intelligent memory management.
- 6) Nominal data of the manufacturer.

All data at 37°C, 500 Ω.
Default settings are printed in bold.

Ecuro SR

MR Conditional single-chamber, rate-response pacemaker **ProMRI®**



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Ecuro SR uncoated	25 g	10 cm ³	377 369
Ecuro SR coated	25 g	10 cm ³	377 368

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads ¹⁾
MRI modes	VOO; AOO; OFF
Pacemaker parameters	
NBG code	VVIR/AAIR
Modes	VVIR ; VVI; VVT(R); VOO(R); AA(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ²⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ³⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0; 1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ⁴⁾	90...[10]... 130 ...[10]...200 bpm
IEGM recording ⁵⁾	12 recordings, max. 10 seconds each, 1 trigger
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO (10 cycles with 90 bpm asynchronous, then basic rate synchronous); asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁶⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	> 15 years (at 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing)
Housing	
Dimensions/weight	53 × 39 × 6.5 mm/25 g
Volume	10 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) For combinations of MR Conditional leads, please see the ProMRI manual.
- 2) EN 50061 triangle pulse.
- 3) If Capture Control is ON, the pulse amplitude is automatically selected.
- 4) Only available for triggered modes.
- 5) Storage of IEGMs by using intelligent memory management.
- 6) Nominal data of the manufacturer.

All data at 37°C, 500 Ω.
Default settings are printed in bold.

Effecta SR

Single-chamber, rate-response pacemaker



Product Highlights

▪ Ventricular Capture Control

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

▪ AutoSensing®

Ensures optimal pacing behavior by automatically optimizing sensing settings.

▪ Auto-initialization

Automatic activation of pacemaker functions after lead connection

▪ Quick follow-up with automaticity of all tests

Ordering Information

Model	Weight	Volume	Order number
Effecta SR uncoated	25 g	10 cm ³	371 202
Effecta SR coated	25 g	10 cm ³	371 203

Technical Data

Pacemaker parameters	
NBG code	VVIR/AAIR
Modes	VVIR ; VVI; VVT(R); VOO(R); AA(I)(R); AA(T)(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.7; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ³⁾	90...[10]... 130 ...[10]...200 bpm
IEGM recording ⁴⁾	4 recordings, max. 10 seconds each, 1 trigger
■ Recording prior to event	0; 25; 50; 75 ; 100%
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF; ON]
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁵⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	> 15 years (at: 2.5 V, 0.4 ms, 60 bpm, 5000, 50% pacing)
Housing	
Dimensions/weight	53 × 39 × 6.5 mm/25 g
Volume	10 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

1) EN 50061 triangle pulse.

2) If Capture Control is ON, the pulse amplitude is automatically selected.

3) Only available for triggered modes.

4) Storage of IEGMs by using intelligent memory management.

5) Nominal data of the manufacturer.

All data at 37 °C, 5000.

Default settings are printed in bold.

Effecta S

Single-chamber pacemaker



Product Highlights

- **Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Auto-initialization**

Automatic activation of pacemaker functions after lead connection

- **Quick follow-up with automaticity of all tests**

Ordering Information

Model	Weight	Volume	Order number
Effecta S uncoated	25 g	10 cm ³	375431
Effecta S coated	25 g	10 cm ³	375430

Technical Data

Pacemaker parameters	
NBG code	VVI/AAI
Modes	VVI ; VVT; VOO; AAI; AAT; AOO; OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.7; 1.0; 1.25; 1.5 ms
Ventricular Capture Control	OFF ; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check	ON
■ Lead configuration	unipolar ; bipolar (both automatically configured)
Refractory period	200...[25]... 250 ...[25]...500 ms
Upper rate limit ³⁾	90...[10]... 130 ...[10]...200 bpm
IEGM recording ⁴⁾	4 recordings, max. 10 seconds each, 1 trigger
■ Recording prior to event	0; 25; 50; 75 ; 100%
Magnet response	AUTO (10 cycles with 90 bpm asynchronous, then basic rate synchronous); asynchronous; synchronous
Replacement indication	programmed rate minus 11%
Battery ⁵⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	> 15 years (at: 2.5 V, 0.4 ms, 60 bpm, 5000, 50% pacing)
Housing	
Dimensions/weight	53×39×6.5 mm/25 g
Volume	10 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) EN 50061 triangle pulse.
- 2) If Capture Control is ON, the pulse amplitude is automatically selected.
- 3) Only available for triggered modes.
- 4) Storage of IEGMs by using intelligent memory management.
- 5) Nominal data of the manufacturer.

All data at 37°C, 5000.
Default settings are printed in bold.

Edora 8 SR-T

MR conditional single-chamber pacemaker

ProMRI®



Product Highlights

- **Small size**

Improves the patients' comfort through a reduced device volume.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Event-triggered wireless IEGM transmissions within 24 hours**

Enable prompt evaluations for fast and better informed therapy decisions.

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Edora 8 SR-T	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407157

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VVI; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 0; pacing; 50 %. Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON

Edora 8 SR

MR conditional single-chamber pacemaker

ProMRI®



Product Highlights

- **Small size**
Improves the patients' comfort through a reduced device volume.
- **ProMRI®**
Allows patients to undergo MR scanning under specific conditions.
- **MRI AutoDetect**
Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.
- **Closed Loop Stimulation (CLS)**
Unique physiological rate response modulation during episodes of physical and emotional stress.
- **Capture Control**
Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.
- **SafeSync RF telemetry**
RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Edora 8 SR	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407164

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 140 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 0; pacing: 50 % SafeSync; OFF	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Evity 8 SR-T

MR conditional single-chamber pacemaker

ProMRI®



Product Highlights

- **Small size**

Improves the patients' comfort through a reduced device volume.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Event-triggered wireless IEGM transmissions within 24 hours**

Enable prompt evaluations for fast and better informed therapy decisions.

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- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Evity 8 SR-T	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407158

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VVI; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 0; pacing; 50 %. Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON

Evity 6 SR-T

MR conditional single-chamber pacemaker

ProMRI®



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Evity 6 SR-T	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407161

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	WIR/AAIR
Mode	WIR; AAIR; A00; VI; AA; A00R; VVT; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON [if Hysteresis was selected]
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEMG recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date [for AUTO]	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON

Enitra 8 SR-T

MR conditional single-chamber pacemaker

ProMRI®



Product Highlights

- **Small size**

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Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 8 SR-T	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407159

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VI-CLS; WVIR; AAIR; A00; VVI; AAI; A00R; VVI; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 0; pacing; 50 %. Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON

Enitra 6 SR-T

MR conditional single-chamber pacemaker

ProMRI®



Product Highlights

■ Small size

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■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 6 SR-T	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407162

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	WIR/AAIR
Mode	WIR; AAIR; A00; VI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100 ... (10) ... 200 bpm
■ Hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEMG recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... (01:00) ... 23:00 hh:mm
High rate	ON

Enitra 6 SR

MR conditional single-chamber pacemaker

ProMRI®



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 6 SR	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407165

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	WIR/AAIR
Mode	WIR; AAIR; A00; VI; AA; A00R; VVT; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100 ... (10) ... 200 bpm
■ Hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 % SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Enticos 8 SR-T

Single-chamber pacemaker



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Event-triggered wireless IEGM transmissions within 24 hours

Enable prompt evaluations for fast and better informed therapy decisions.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 8 SR-T	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407160

Technical Data

Closed Loop Stimulation	
CLS mode	VVI-CLS
Max. CLS rate	80 ... (10) ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... (10) ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	WIR/AAIR
Mode	VVI-CLS; WIR; AAIR; A00; VVI; AAI; A00R; WT; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... (5) ... 100 ... (10) ... 200 bpm
■ Night rate	OFF; 30 ... (5) ... 100 ... (10) ... 200 bpm
■ Hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... (0.2) ... 6.0 ... (0.5) ... 7.5 V
Pulse width	0.1 ... (0.1) ... 0.5 ... (0.25) ... 1.5 ms
Sensitivity	AUTO; 0.5 ... (0.5) ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... (0.6) ... 4.8 V
■ Safety margin	0.3 ... (0.1) ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... (00:10) ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... (10) ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
Refractory period/Blanking	
■ Refract. period	200 ... (25) ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	14 years, 9 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 Ω, pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold, Sensing amplitude, Pacing statistics, Arrhythmia statistics, Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance, Lead check, Sensing amplitude, Threshold, Capture control status
Arrhythmias	Number of high rate episodes
Heart Failure Monitor	Mean heart rate
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... (01:00) ... 23:00 hh:mm
High rate	ON
Event based IEGM	OFF; ON

Enticos 4 SR

Single-chamber pacemaker



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ AutoSensing

Ensures optimal pacing behavior by automatically optimizing sensing settings.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

■ Quick follow-up with automaticity of all tests

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 4 SR	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407167

Technical Data

Pacing parameters	
NBG code	VVIR/AAIR
Mode	VVIR; AAIR; A00; VI; AAI; A00R; VVT; AAT; V00; V00R; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
■ Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	16 years, 10 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	4 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Enticos 4 S

Single-chamber pacemaker



Product Highlights

- **Small size**

Improves the patients' comfort through a reduced device volume.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **AutoSensing**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

- **Quick follow-up with automaticity of all tests**

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 4 S	IS-1 (1x)	10 cm ³ /20.8 g	48 mm × 40 mm × 6.5 mm	407168

Technical Data

Pacing parameters	
NBG code	VVI/AAI
Mode	A00; VVI; AAI; VVT; AAT; V00; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Timing intervals	
■ Refract. period	200 ... [25] ... 500 ms
Leads	
Automatic lead check	ON; OFF
Lead configuration	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	16 years, 10 months ¹⁾
Replacement indication	Programmed rate minus 11%
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo

1) at 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %

Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	4 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Eluna 8 DR-T

Dual-chamber IPG



Product Highlights

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **EasyAV®**

Facilitates programming of optimal AV timing.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Vp Suppression®**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 DR-T	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394929

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [AV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [AV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original; preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [AV]	ON; OFF
Lead configuration [AV]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Eluna 8 DR-T

MR Conditional dual-chamber IPG

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **EasyAV®**

Facilitates programming of optimal AV timing.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Vp Suppression®**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 DR-T ProMRI	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394969

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDi; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADi; DVi; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON [only in the modes DDDR-ADIR and DDD-ADi]
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Q; 50% pacing, Home Monitoring: ON, SafeSync: OFF

2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	
	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Eluna 8 DR

Dual-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ EasyAV®

Facilitates programming of optimal AV timing.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 DR	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394927

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [AV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [AV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original; preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpuls
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [AV]	ON; OFF
Lead configuration [AV]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	12.1 years ¹⁾
Battery ²⁾	Li-MnO2 (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Eluna 8 DR

MR Conditional dual-chamber IPG

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **EasyAV®**

Facilitates programming of optimal AV timing.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Vp Suppression®**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 DR ProMRI	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394970

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DD; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	12.1 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Q; 50% pacing, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEMG recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Epyra 8 DR-T

Dual-chamber IPG



Product Highlights

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **EasyAV®**

Facilitates programming of optimal AV timing.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Vp Suppression®**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 8 DR-T	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394930

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [AV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [AV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [AV]	ON; OFF
Lead configuration [AV]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 8 DR-T

MR Conditional dual-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ EasyAV®

Facilitates programming of optimal AV timing.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 8 DR-T ProMRI	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394974

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DD; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Q; 50% pacing, Home Monitoring: ON, SafeSync: OFF

2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 6 DR-T

Dual-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 6 DR-T	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394932

Technical Data

Pacing parameters	
NBG code	DDDR
Mode	DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AAI; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DDIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpuls
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	■ Atrium ■ Ventricle
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF

2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 6 DR-T

MR Conditional dual-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 6 DR-T ProMRI	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394979

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	DDDR
Mode	DDDR; WVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON [only in the modes DDDR-ADIR and DDD-ADI]
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Q; 50% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 8 DR-T

Dual-chamber IPG



Product Highlights

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Vp Suppression®**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 8 DR-T	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394931

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original; preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period (atrium)	AUTO
Refract. period (ventricle)	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO2 (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 0; 50% pacing, Home Monitoring: ON, SafeSync: OFF

2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 8 DR-T

MR Conditional dual-chamber IPG

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Vp Suppression®**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 8 DR-T ProMRI	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394977

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DD; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON [only in the modes DDDR-ADIR and DDD-ADI]
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Q; 50% pacing, Home Monitoring: ON, SafeSync: OFF

2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	
	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 6 DR-T

Dual-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 DR-T	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394933

Technical Data

Pacing parameters	
NBG code	DDDR
Mode	DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AAI; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpuls
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	■ Atrium ■ Ventricle
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV/2.5 V/0.4 ms, 60 bpm, 500 Ω; 50% pacing, Home Monitoring: ON, SafeSync: OFF

2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 6 DR-T

MR Conditional dual-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 DR-T ProMRI	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394981

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	DDDR
Mode	DDDR; WVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON [only in the modes DDDR-ADIR and DDD-ADI]
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	11.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Q; 50% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 6 DR

Dual-chamber IPG



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 DR	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394928

Technical Data

Pacing parameters	
NBG code	DDDR
Mode	DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AAI; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DDIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	■ Atrium ■ Ventricle
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	12.1 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Ω, 50% pacing, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Etrinsa 6 DR

MR Conditional dual-chamber IPG

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Vp Suppression®

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 6 DR ProMRI	IS-1 (2x)	12 cm ³ /25 g	53 mm × 44.5 mm × 6.5 mm	394982

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	DDDR
Mode	DDDR; VVIR; AAIR; DDIR; A00; DDD; VVI; AAI; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON [only in the modes DDDR-ADIR and DDD-ADI]
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
2:1 Lock-in protection	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Refract. period [atrium]	AUTO
Refract. period [ventricle]	200 ... [25] ... 500 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	12.1 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD(R)]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF
1) at AV:2.5 V/0.4 ms, 60 bpm, 500 Q; 50% pacing, SafeSync: OFF	
2) Data of the battery manufacturer	
Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Evia DR-T

MR Conditional dual-chamber, rate-response pacemaker with Closed Loop Stimulation and BIOTRONIK Home Monitoring® ProMRI®



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Vp Suppression®**

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

- **Atrial & Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **EasyAV®**

Facilitates programming of optimal AV timing

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

- **BIOTRONIK Home Monitoring®**

Unique automatic wireless remote monitoring and early detection of clinical and device-related events

Ordering Information

Model	Weight	Volume	Order number
Evia DR-T uncoated	25g	12 cm ³	371 996
Evia DR-T coated	25g	12 cm ³	372 032

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	DOO; VOO; AOO; OFF
Closed Loop Stimulation	
CLS modes	DDD-CLS; VVI-CLS
Maximum CLS rate	80...[5]... 120 ...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	DDDR
Modes	DDDR ; DDD; DDD(R)-ADJ(R); DDI(R); DVI(R); DDT; DOO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	■ Atrium AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV ■ Ventricle AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾ [A/V]	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.5...[0.1]... 1.0 ...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]... 1.0 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Ventricular Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar [both automatically configured]
Refractory period	■ Atrium ³⁾ AUTO ■ Ventricle 200...[25]... 250 ...[25]...500 ms
PVARP	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms [max: 600 ms] automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-field protection ⁴⁾	■ after Vs 100 ...[10]...220 ms ■ after Vp 100...[10]... 150 ...[10]...220 ms
AV delay	15...[5]... 180 ...[5]...350 ms [up to 450 ms with AV hysteresis]
Dynamic AV delay	OFF ; low ; medium; high; fixed; individual [programmable in 5 rate ranges]
Sense compensation	OFF ; -10...[-5]... -45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRS ⁵⁾ ; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
■ AV scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
Vp Suppression	available in the modes DDDR-ADIR and DDD-ADI
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles without Vs
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ X-out-of-8 criterion [Onset criterion]	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion [Resolution criterion]	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF ; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection ⁶⁾	OFF ; ON
Atrial overdrive ⁷⁾	OFF ; ON
NIPS ⁸⁾	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF ; 240 bpm ■ Ventricle 90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2:1; WKB
IEM recording ⁹⁾	20 recordings, max. 10 seconds each, 4 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250...[10]... 350 ...[10]...500 ms]

Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]...4...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD(R) ⁷⁾]
Battery ⁸⁾	QMR ⁹⁾ [open circuit voltage: 3.0 V], Li-MnO ₂ [open circuit voltage: 3.1 V]
Nominal operating time	11.8 years [at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring ON]

Housing	
Dimensions/weight	53 × 44.5 × 6.5 mm/25 g
Volume	12 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF ; ON
Time of data transmission	AUTO ; 00:00...[00:30]...23:30 hh:mm
Periodic IEGM	OFF ; 30; 60; 90; 120; 180 days
High atrial rate ⁹⁾	OFF ; mode switching; AT
Ongoing atrial episode	6h; 12h; 18h
High ventricular rate ⁹⁾	OFF ; ON

Transmitted data	
Clinical data	atrial/ventricular thresholds, atrial/ventricular sensing amplitudes, pacing statistics, atrial/ventricular arrhythmia statistics, Heart Failure Monitor [®] diagnostics
Technical data	battery status, lead integrity measurements, programmed parameters

IEGM-Online® HD	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing

Event types	
Implant	battery status, programmer-triggered message received
Leads	pacing impedance [A/V] ¹⁰⁾ , lead check [A/V], sensing amplitude [A/V] ¹⁰⁾ , pacing threshold [A/V], Capture Control status [A/V]
Bradycardia	ventricular pacing percentage
Arrhythmias	number/duration of atrial arrhythmia ¹¹⁾ , number/duration of mode switching ¹¹⁾ , long ongoing atrial arrhythmia detected, number/duration of ventricular arrhythmia ¹¹⁾
Heart Failure Monitor [®]	mean heart rate ¹¹⁾ , atrial burden ¹¹⁾ , mean VES/h ¹¹⁾

Message types	
Message types	trend message based on Intelligent Message Bundling, event message triggered daily after clinical or technical events, test message triggered manually via programmer

- 1) EN 50061 triangle pulse.
- 2) If Capture Control is ON, the pulse amplitude is automatically selected.
- 3) 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- 4) Post-ventricular atrial blanking.
- 5) Dependent on software version.
- 6) Storage of IEGMs by using intelligent memory management.
- 7) See manual for other modes.
- 8) Nominal data of the manufacturer.
- 9) According to programmer Holter triggers.
- 10) Programmable upper and lower limit.
- 11) Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Evia DR

MR Conditional dual-chamber, rate-response pacemaker with Closed Loop Stimulation

ProMRI®



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Vp Suppression®**

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

- **Atrial & Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **EasyAV®**

Facilitates programming of optimal AV timing.

- **Follow-Up Center with FastFollowUp®**

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Evia DR uncoated	26 g	11 cm ³	371 995
Evia DR coated	26 g	11 cm ³	372 031

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	DOO; VOO; AOO; OFF
Closed Loop Stimulation	
CLS modes	DDD-CLS; VVI-CLS
Maximum CLS rate	80...[5]...120...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	DDDR
Modes	DDDR ; DDD; DDD(R)-ADl(R); DDl(R); DVl(R); DDT; DOO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAl(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]...60...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	■ Atrium AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV ■ Ventricle AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/V] ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON : ATM [monitoring only]
■ Minimum amplitude	0.5...[0.1]...1.0...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]...1.0...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Ventricular Capture Control	OFF ; ON : ATM [monitoring only]
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]...0.5...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar [both automatically configured]
Refractory period	■ Atrium ³⁾ AUTO ■ Ventricle 200...[25]...250...[25]...500 ms
PVARP	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms [max: 600 ms] automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-field protection ⁴⁾	■ After Vs 100 ...[10]...220 ms ■ After Vp 100...[10]...150...[10]...220 ms
AV delay	15...[5]...180...[5]...350 ms [up to 450 ms with AV hysteresis]
Dynamic AV delay	OFF ; low ; medium ; high ; fixed ; individual [programmable in 5 rate ranges]
Sense compensation	OFF ; -10...[-5]...-45...[-5]...-120 ms
AV hysteresis	OFF ; IRS ^{plus} ; negative ; low ; medium ; high
■ AV repetitive hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
■ AV scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
Vp Suppression	available in the modes DDDR-ADIR and DDD-ADl
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles without Vs
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100...[10]...160...[10]...250 bpm
■ X-out-of-8 criterion [Onset criterion]	3...[1]...5...[1]...8
■ Z-out-of-8 criterion [Resolution criterion]	3...[1]...5...[1]...8
■ Change of basic rate	OFF ; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection ⁵⁾	OFF ; ON
Atrial overdrive ⁶⁾	OFF ; ON
NIPS ⁷⁾	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF ; 240 bpm ■ Ventricle 90...[10]...130...[10]...200 bpm
Tachycardia behavior	2; 1; WKB
IEGM recording ⁸⁾	20 recordings, max. 10 seconds each, 4 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250...[10]...350...[10]...500 ms]

Sensor	accelerometer
■ Maximum activity rate	80...[5]...120...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low ; medium ; high; very high
■ Rate increase	1...[1]...4...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD(R) ⁷⁾]
Battery ⁸⁾	LiJ [open circuit voltage: 2.8 V]
Nominal operating time	12.1 years [at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing]

Housing	
Dimensions/weight	53×43×6.5 mm/26 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- EN 50061 triangle pulse.
- If Capture Control is ON, the pulse amplitude is automatically selected.
- 300...[25]...775 ms for AAl(R), AAT(R), DDT modes.
- Post-ventricular atrial blanking.
- Dependent on software version.
- Storage of IEGMs by using intelligent memory management.
- See manual for other modes.
- Nominal data of the manufacturer.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Entovis DR-T

MR Conditional dual-chamber, rate-response pacemaker with Closed Loop Stimulation and BIOTRONIK Home Monitoring® ProMRI®



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Vp Suppression®

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

■ Atrial & Ventricular Capture Control

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

■ AutoSensing®

Ensures optimal pacing behavior by automatically optimizing sensing settings.

■ Follow-Up Center with FastFollowUp®

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

■ BIOTRONIK Home Monitoring®

Unique automatic wireless remote monitoring and early detection of clinical and device-related events

Ordering Information

Model	Weight	Volume	Order number
Entovis DR-T uncoated	25g	12 cm ³	371 992
Entovis DR-T coated	25g	12 cm ³	372 028

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	DOO; VOO; AOO; OFF
Closed Loop Stimulation	
CLS modes	DDD-CLS; VVI-CLS
Maximum CLS rate	80...[5]...120...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	DDDR
Modes	DDDR ; DDD; DDD(R)-AD(R); DD(R); DV(R); DDT; DOO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]...60...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ¹⁾	■ Atrium AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV ■ Ventricle AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude ²⁾ [A/V]	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.5...[0.1]...1.0...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]...1.0...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Ventricular Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]...0.5...[0.1]...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar [both automatically configured]
Refractory period	■ Atrium ³⁾ AUTO ■ Ventricle 200...[25]... 250 ...[25]...500 ms
PVARP	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms [max: 600 ms] automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-field protection ⁴⁾	■ After Vs 100 ...[10]...220 ms ■ After Vp 100...[10]... 150 ...[10]...220 ms
AV delay	15...[5]... 180 ...[5]...350 ms [up to 450 ms with AV hysteresis]
Dynamic AV delay	OFF ; low ; medium; high; fixed; individual [programmable in 5 rate ranges]
Sense compensation	OFF ; -10...[-5]... -45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRSplus; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
■ AV scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
Vp Suppression	available in the modes DDDR-ADIR and DDD-ADI
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles without Vs
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ X-out-of-8 criterion [Onset criterion]	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion [Resolution criterion]	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF ; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection ⁵⁾	OFF ; ON
Atrial override ⁶⁾	OFF ; ON
NIPS ⁵⁾	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF ; 240 bpm ■ Ventricle 90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2:1; WKB
IEGM recording ⁹⁾	20 recordings, max. 10 seconds each, 4 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250...[10]... 350 ...[10]...500 ms]

Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]...4...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD(R) ¹⁾]
Battery ⁸⁾	QMR ⁹⁾ [open circuit voltage: 3.0 V], Li-MnO ₂ [open circuit voltage: 3.1 V]
Nominal operating time	11.8 years [at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring ON]

Housing	
Dimensions/weight	53 × 44.5 × 6.5 mm/25 g
Volume	12 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF ; ON
Time of data transmission	AUTO ; 00:00...[00:30]...23:30 hh:mm
Periodic IEGM	OFF ; 30; 60; 90; 120; 180 days
High atrial rate ⁹⁾	OFF ; mode switching; AT
Ongoing atrial episode	6 h; 12 h; 18 h
High ventricular rate ⁹⁾	OFF ; ON

Transmitted data	
Clinical data	atrial/ventricular thresholds, atrial/ventricular sensing amplitudes, pacing statistics, atrial/ventricular arrhythmia statistics, Heart Failure Monitor [®] diagnostics
Technical data	battery status, lead integrity measurements, programmed parameters

IEGM-Online® HD	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing

Event types	
Implant	battery status, programmer-triggered message received
Leads	pacing impedance [A,V] ¹⁰⁾ , lead check [A,V], sensing amplitude [A,V] ¹⁰⁾ , pacing threshold [A,V], Capture Control status [A,V]
Bradycardia	ventricular pacing percentage
Arrhythmias	number/duration of atrial arrhythmia ¹¹⁾ , number/duration of mode switching ¹¹⁾ , long ongoing atrial arrhythmia detected, number/duration of ventricular arrhythmia ¹¹⁾
Heart Failure Monitor [®]	mean heart rate ¹¹⁾ , atrial burden ¹¹⁾ , mean VES/h ¹¹⁾

Message types	
Message types	trend message based on Intelligent Message Bundling, event message triggered daily after clinical or technical events, test message triggered manually via programmer

- 1) EN 50061 triangle pulse.
- 2) If Capture Control is ON, the pulse amplitude is automatically selected.
- 3) 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- 4) Post-ventricular atrial blanking.
- 5) Dependent on software version.
- 6) Storage of IEGMs by using intelligent memory management.
- 7) See manual for other modes.
- 8) Nominal data of the manufacturer.
- 9) According to programmer Holter triggers.
- 10) Programmable upper and lower limit.
- 11) Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Entovis DR

MR Conditional dual-chamber, rate-response pacemaker with Closed Loop Stimulation

ProMRI®



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Vp Suppression®

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

■ Atrial & Ventricular Capture Control

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

■ AutoSensing®

Ensures optimal pacing behavior by automatically optimizing sensing settings.

■ Follow-Up Center with FastFollowUp®

Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Entovis DR uncoated	26 g	11 cm ³	371991
Entovis DR coated	26 g	11 cm ³	372027

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads
MRI modes	DOO; VOO; AOO; OFF
Closed Loop Stimulation	
CLS modes	DDD-CLS; VVI-CLS
Maximum CLS rate	80...[5]... 120 ...[5]...160 bpm
Expert options	
■ CLS response	very low; low; medium ; high; very high
■ Resting rate control	OFF; +10; +20 ; +30; +40; +50 bpm
■ Vp required	yes; no
Pacemaker parameters	
NBG code	DDDR
Modes	DDDR ; DDD; DDD(R)-ADl(R); DDl(R); DVl(R); DDT; DOO(R); VDDl(R); VDI(R); VVI(R); VVT(R); VOO(R); AAl(R); AATl(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ⁷⁾	■ Atrium AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV ■ Ventricle AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/V] ²⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON : ATM [monitoring only]
■ Minimum amplitude	0.5...[0.1]... 1.0 ...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]... 1.0 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Ventricular Capture Control	OFF ; ON : ATM [monitoring only]
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar [both automatically configured]
Refractory period	■ Atrium ³⁾ AUTO ■ Ventricle 200...[25]... 250 ...[25]...500 ms
PVARP	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms [max: 600 ms] automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-field protection ⁴⁾	■ After Vs 100 ...[10]...220 ms ■ After Vp 100...[10]... 150 ...[10]...220 ms
AV delay	15...[5]... 180 ...[5]...350 ms [up to 450 ms with AV hysteresis]
Dynamic AV delay	OFF ; low ; medium; high; fixed; individual [programmable in 5 rate ranges]
Sense compensation	OFF ; -10...[-5]... -45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRSplus; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
■ AV scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
Vp Suppression	available in the modes DDDR-ADIR and DDD-ADl
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles without Vs
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ X-out-of-8 criterion [Onset criterion]	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion [Resolution criterion]	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF ; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection ⁵⁾	OFF ; ON
Atrial overdrive ⁶⁾	OFF ; ON
NIPS ⁵⁾	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF ; 240 bpm ■ Ventricle 90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2:1; WKB
IEMG recording ⁶⁾	20 recordings, max. 10 seconds each, 4 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250...[10]... 350 ...[10]...500 ms]

Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...160 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low ; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD(R) ⁷⁾]
Battery ⁸⁾	LiJ [open circuit voltage: 2.8 V]
Nominal operating time	12.1 years [at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Q, 50% pacing]

Housing	
Dimensions/weight	53×43×6.5 mm/26 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- EN 50061 triangle pulse.
- If Capture Control is ON, the pulse amplitude is automatically selected.
- 300...[25]...775 ms for AAl(R), AATl(R), DDT modes.
- Post-ventricular atrial blanking.
- Dependent on software version.
- Storage of IEGMs by using intelligent memory management.
- See manual for other modes.
- Nominal data of the manufacturer.

All data at 37 °C, 500 Q.
Default settings are printed in bold.

Estella DR-T

MR Conditional dual-chamber, rate-response pacemaker with Vp Suppression® and BIOTRONIK Home Monitoring® **ProMRI®**



Product Highlights

- **ProMRI®**
Allows patients to undergo MR scanning under specific conditions.
- **Vp Suppression®**
Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.
- **Atrial & Ventricular Capture Control**
Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.
- **AutoSensing®**
Ensures optimal pacing behavior by automatically optimizing sensing settings.
- **Follow-Up Center with FastFollowUp®**
Streamlined in-office follow-up by presenting all essential follow-up information in one screen.
- **BIOTRONIK Home Monitoring®**
Unique automatic wireless remote monitoring and early detection of clinical and device-related events

Ordering Information

Model	Weight	Volume	Order number
Estella DR-T uncoated	25 g	12 cm ³	377383
Estella DR-T coated	25 g	12 cm ³	377382

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads ¹⁾
MRI modes	DOO, VOO, AOO, OFF
Pacemaker parameters	
NBG code	DDDR
Modes	DDDR : DDD; DDD(R)-AD(R); DDI(R); DVI(R); DDT; DOO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30... 60 ... 11 ... 88 ... 2 ... 122 ... 3 ... 140 ... 5 ...200 bpm
■ Night rate	OFF ; 30... 11 ... 88 ... 2 ... 122 ... 3 ... 140 ... 5 ...200 bpm
■ Rate hysteresis	OFF ; -5... (-5) ...90 bpm
■ Repetitive hysteresis	OFF ; 1... (1) ...15 cycles
■ Scan hysteresis	OFF ; 1... (1) ...15 cycles
Sensitivity ²⁾	■ Atrium AUTO ; 0.1... (0.1) ... 1.5 ... (0.5) ...7.5 mV
	■ Ventricle AUTO ; 0.5... (0.5) ...7.5 mV
Pulse amplitude ³⁾ [A/V]	0.2... (0.1) ... 3.0 ... (0.1) ... 6.0 ... (0.5) ...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON ; ATM (monitoring only)
■ Minimum amplitude	0.5... (0.1) ... 1.0 ... (0.1) ...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5... (0.1) ... 1.0 ... (0.1) ...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Ventricular Capture Control	OFF ; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3... (0.1) ... 0.5 ... (0.1) ...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar (both automatically configured)
Refractory period	■ Atrium ⁴⁾ AUTO
	■ Ventricle 200... (25) ... 250 ... (25) ...500 ms
PVARP	AUTO ; 175... (5) ... 250 ... (5) ...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30 ... (5) ...70 ms
Far-field protection ⁵⁾	■ After V _s 100 ... (10) ...220 ms
	■ After V _p 100... (10) ... 150 ... (10) ...220 ms
AV delay	15... (5) ... 180 ... (5) ...350 ms (up to 450 ms with AV hysteresis)
Dynamic AV delay	OFF ; low ; medium; high; fixed; individual (programmable in 5 rate ranges)
Sense compensation	OFF ; -10... (-5) ... -45 ... (-5) ...-120 ms
AV hysteresis	OFF ; IRS ⁶⁾ ; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1... (1) ... 5 ... (1) ...10 cycles
■ AV scan hysteresis	OFF ; 1... (1) ... 5 ... (1) ...10 cycles
Vp Suppression	available in the modes DDDR-ADIR and DDD-ADI
■ Pacing suppression	1... (1) ... 6 ... (1) ...8 consecutive V _s
■ Pacing support	1; 2; 3; 4 out of 8 cycles without V _s
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100... (10) ... 160 ... (10) ...250 bpm
■ X-out-of-8 criterion (Onset criterion)	3... (1) ... 5 ... (1) ...8
■ Z-out-of-8 criterion (Resolution criterion)	3... (1) ... 5 ... (1) ...8
■ Change of basic rate	OFF ; +5; +10 ... (5) ...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection	OFF ; ON
Atrial overdrive	OFF ; ON
NIPS	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF ; 240 bpm
	■ Ventricle 90... (10) ... 130 ... (10) ...200 bpm
Tachycardia behavior	2:1; WKB
IEGM recording ⁸⁾	12 recordings, max. 10 seconds each, 3 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250... (10) ... 350 ... (10) ...500 ms]
Sensor	accelerometer
■ Maximum activity rate	80... (5) ... 120 ... (5) ...180 bpm
■ Sensor gain	1... 4 ... 23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1... (1) ... 4 ... (1) ...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview

Magnet response	AUTO (10 cycles with 90 bpm asynchronous, then basic rate synchronous); asynchronous; synchronous
Replacement indication	programmed rate minus 11% (in DDD(R) ⁷⁾)
Battery ⁸⁾	QMR® (open circuit voltage: 3.0 V), Li-MnO ₂ (open circuit voltage: 3.1 V)
Nominal operating time	11.8 years (at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing, Home Monitoring ON)

Housing	
Dimensions/weight	53 × 44.5 × 6.5 mm/25 g
Volume	12 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF ; ON
Time of data transmission	AUTO ; 00:00... (00:30) ...23:30 hh:mm
Periodic IEGM	OFF ; 30; 60; 90; 120; 180 days
High atrial rate ⁹⁾	OFF ; mode switching; AT
Ongoing atrial episode	6 h; 12 h; 18 h
High ventricular rate ⁹⁾	OFF ; ON

Transmitted data	
Clinical data	atrial/ventricular thresholds, atrial/ventricular sensing amplitudes, pacing statistics, atrial/ventricular arrhythmia statistics, Heart Failure Monitor® diagnostics
Technical data	battery status, lead integrity measurements, programmed parameters

IEGM-Online® HD	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing

Event types	
Implant	battery status, programmer-triggered message received
Leads	pacing impedance [A,V] ¹⁰⁾ , lead check [A,V], sensing amplitude [A,V] ¹⁰⁾ , pacing threshold [A,V], Capture Control status [A,V]
Bradycardia	ventricular pacing percentage
Arrhythmias	number/duration of atrial arrhythmia ¹¹⁾ , number/duration of mode switching ¹¹⁾ , long ongoing atrial arrhythmia detected, number/duration of ventricular arrhythmia ¹¹⁾
Heart Failure Monitor®	mean heart rate ¹¹⁾ , atrial burden ¹¹⁾ , mean VES/h ¹¹⁾

Message types	
Message types	trend message based on Intelligent Message Bundling, event message triggered daily after clinical or technical events, test message triggered manually via programmer

- 1) For combinations of MR Conditional leads, please see the ProMRI manual.
- 2) EN 50061 triangle pulse.
- 3) If Capture Control is ON, the pulse amplitude is automatically selected.
- 4) 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- 5) Post-ventricular atrial blanking.
- 6) Storage of IEGMs by using intelligent memory management.
- 7) See manual for other modes.
- 8) Nominal data of the manufacturer.
- 9) According to programmer Holter triggers.
- 10) Programmable upper and lower limit.
- 11) Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Estella DR

MR Conditional dual-chamber, rate-response pacemaker with Vp Suppression®

ProMRI®



Product Highlights

- **ProMRI®**
Allows patients to undergo MR scanning under specific conditions.
- **Vp Suppression®**
Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.
- **Atrial & Ventricular Capture Control**
Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.
- **AutoSensing®**
Ensures optimal pacing behavior by automatically optimizing sensing settings.
- **Follow-Up Center with FastFollowUp®**
Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Estella DR uncoated	26 g	11 cm ³	377381
Estella DR coated	26 g	11 cm ³	377380

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads ¹⁾
MRI modes	DOO; VOO; AOO; OFF
Pacemaker parameters	
NBG code	DDDR
Modes	DDDR; DDD; DDD(R)-ADI(R); DDI(R); DVI(R); DDT; DOO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ²⁾	■ Atrium AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV
	■ Ventricle AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/V] ³⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON : ATM (monitoring only)
■ Minimum amplitude	0.5...[0.1]... 1.0 ...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]... 1.0 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Ventricular Capture Control	OFF ; ON : ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar (both automatically configured)
Refractory period	■ Atrium ⁴⁾ AUTO
	■ Ventricle 200...[25]... 250 ...[25]...500 ms
PVARP	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-field protection ⁵⁾	■ After Vs 100 ...[10]...220 ms
	■ After Vp 100...[10]... 150 ...[10]...220 ms
AV delay	15...[5]... 180 ...[5]...350 ms (up to 450 ms with AV hysteresis)
Dynamic AV delay	OFF ; low ; medium; high; fixed; individual (programmable in 5 rate ranges)
Sense compensation	OFF ; -10...[-5]...- 45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRS ⁶⁾ ; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
■ AV scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
V _p Suppression	available in the modes DDDR-ADIR and DDD-ADI
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles without Vs
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ X-out-of-8 criterion (Onset criterion)	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion (Resolution criterion)	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF ; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection	OFF ; ON
Atrial overdrive	OFF ; ON
NIPS	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF ; 240 bpm
	■ Ventricle 90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2:1; WKB
IEGM recording ⁷⁾	12 recordings, max. 10 seconds each, 3 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250...[10]... 350 ...[10]...500 ms]

Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low ; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD(R) ⁷⁾]
Battery ⁸⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	12.1 years (at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing)

Housing	
Dimensions/weight	53×43×6.5 mm/26 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) For combinations of MR Conditional leads, please see the ProMRI manual.
- 2) EN 50061 triangle pulse.
- 3) If Capture Control is ON, the pulse amplitude is automatically selected.
- 4) 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- 5) Post-ventricular atrial blanking.
- 6) Storage of IEGMs by using intelligent memory management.
- 7) See manual for other modes.
- 8) Nominal data of the manufacturer.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Ecuro DR

MR Conditional dual-chamber, rate-response pacemaker with Vp Suppression®

ProMRI®



Product Highlights

- **ProMRI®**
Allows patients to undergo MR scanning under specific conditions.
- **Vp Suppression®**
Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.
- **Atrial & Ventricular Capture Control**
Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.
- **AutoSensing®**
Ensures optimal pacing behavior by automatically optimizing sensing settings.
- **Follow-Up Center with FastFollowUp®**
Streamlined in-office follow-up by presenting all essential follow-up information in one screen.

Ordering Information

Model	Weight	Volume	Order number
Ecuro DR uncoated	26 g	11 cm ³	377365
Ecuro DR coated	26 g	11 cm ³	377364

Technical Data

MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads ¹⁾
MRI modes	DOO; VOO; AOO; OFF
Pacemaker parameters	
NBG code	DDDR
Modes	DDDR ; DDD; DDD(R)-ADIR; DDI(R); DVI(R); DDT; DOO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ²⁾	■ Atrium AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV
	■ Ventricle AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/V] ³⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF; ON : ATM (monitoring only)
■ Minimum amplitude	0.5...[0.1]... 1.0 ...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]... 1.0 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Ventricular Capture Control	OFF; ON : ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar (both automatically configured)
Refractory period	■ Atrium ⁴⁾ AUTO
	■ Ventricle 200...[25]... 250 ...[25]...500 ms
PVARP	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-field protection ⁵⁾	■ After Vs 100 ...[10]...220 ms
	■ After Vp 100...[10]... 150 ...[10]...220 ms
AV delay	15...[5]... 180 ...[5]...350 ms (up to 450 ms with AV hysteresis)
Dynamic AV delay	OFF; low ; medium; high; fixed; individual (programmable in 5 rate ranges)
Sense compensation	OFF; -10...[-5]...- 45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRS ⁶⁾ ; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
■ AV scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
V _p Suppression	available in the modes DDDR-ADIR and DDD-ADI
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles without Vs
Mode switching with X/Z-out-of-8-criterion	OFF; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ X-out-of-8 criterion (Onset criterion)	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion (Resolution criterion)	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection	OFF; ON
Atrial overdrive	OFF ; ON
NIPS	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF; 240 bpm
	■ Ventricle 90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2:1; WKB
IEGM recording ⁸⁾	12 recordings, max. 10 seconds each, 3 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF; ON [VA criterion: 250...[10]... 350 ...[10]...500 ms]

Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF; ON]
■ Sensor threshold	very low; low ; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD(R) ⁷⁾]
Battery ⁸⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	12.1 years (at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing)

Housing	
Dimensions/weight	53×43×6.5 mm/26 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) For combinations of MR Conditional leads, please see the ProMRI manual.
- 2) EN 50061 triangle pulse.
- 3) If Capture Control is ON, the pulse amplitude is automatically selected.
- 4) 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- 5) Post-ventricular atrial blanking.
- 6) Storage of IEGMs by using intelligent memory management.
- 7) See manual for other modes.
- 8) Nominal data of the manufacturer.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Philos II SLR

Single-lead, dual-chamber, rate-response pacemaker (VDDR)



Product Highlights

- **Active Capture Control**

Increases patient safety and extends device longevity by automatically adapting ventricular pacing output to changing pacing thresholds.

- **Expanded IEGM memory to allow 15 recordings**
- **State-of-the-art atrial arrhythmia management**
- **Timesaving diagnostic and follow-up options**

Ordering Information

Model	Weight	Volume	Order number
Philos II SLR uncoated	26 g	12 cm ³	341822
Philos II SLR coated	26 g	12 cm ³	341816

Technical Data

Pacemaker parameters	
NBG code	VDDR
Modes	VDD; VDDR; VDI(R); VDIR; VOOIR; VDT(R); WTR; OFF
Basic rate ¹⁾	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...180 bpm
▀ Night rate	OFF ; 30...[1]...60...[1]...88...[2]...122...[3]...140...[5]...180 bpm
▀ Rate hysteresis	OFF ; -5; - 10 ...[5]...-80 bpm
▀ Repetitive hysteresis	OFF ; 1...[1]...10 cycles
▀ Scan hysteresis	OFF ; 1...[1]...10 cycles
Sensitivity ²⁾	▀ Atrium 0.1; 0.2 ...[0.1]...1.5...[0.5]...7.5 mV
	▀ Ventricle 0.5...[0.5]... 2.5 ...[0.5]...7.5 mV
Pulse amplitude	▀ Ventricle 0.1...[0.1]... 3.6 ...[0.1]...4.8...[0.2]...8.4 V
Pulse width	▀ Ventricle 0.1; 0.2; 0.3 ; 0.4 ; 0.5; 0.75; 1.0; 1.5 ms
Active Capture Control (ACC)	OFF ; ON ; ATM
▀ Minimum amplitude	0.1...[0.1]...4.8...[0.2]...6.4 V
▀ Maximum amplitude	2.4; 3.6 ; 4.8; 6.4 V
▀ Safety margin	0.3...[0.1]...1.2 V
▀ Search time	interval [0.1; 0.3; 1; 3; 6; 12 ; 24 h] or time of day (1 st and 2 nd)
Leads	IS-1 connector
▀ Lead configuration	▀ Atrium bipolar
	▀ Ventricle unipolar ; bipolar (automatic)
▀ Automatic lead check	OFF ; ON
Auto-initialization	OFF ; ON ; lead detection
Refractory period	▀ Atrium ³⁾ 200...[25]... 425 ...[25]...775 ms
	▀ Ventricle 170; 195; 220; 250 ...[50]...400 ms
ARP extension	0 ...[50]...350 ms
Blanking	▀ Atrium (after Vp) 32; 40; 48; 56 ; 72 ms
Far-field blanking ⁴⁾ [after Vs, Vp]	56 ⁵⁾ ; 100; 125; 150; 175; 200 ms
AV delay	15; 50; 75; 100; 120...[10]...200; 225; 250; 300 ms; dynamic
Dynamic AV delay	OFF ; low ; medium; high; fixed; individually programmable in 5 rate ranges
AV safety interval	100 ms
AV hysteresis	OFF ; IRS ⁶⁾ ; low; medium; high; negative
▀ AV repetitive hysteresis	OFF ; 1...[1]...6 cycles
▀ AV scan hysteresis	OFF ; 1...[1]...6 cycles
Atrial tachycardia response	OFF ; mode switching ; mode conversion
Mode switching with X/Z-out-of-criterion	OFF ; ON
▀ X-out-of-8 criterion	3...[1]... 5 ...[1]...8
▀ Z-out-of-8 criterion	3...[1]... 5 ...[1]...8
▀ Mode switching basic rate	OFF ; +5; + 10 ...[5]...+30 bpm
▀ Intervention rate	110...[10]... 160 ...[10]...250 bpm
▀ 2:1 lock-in protection	OFF ; ON
Upper rate limit	100; 110; 120; 130 ; 140; 160; 185 bpm
Tachycardia mode	2:1; WKB
IEGM recording	12 recordings; max. 10 seconds each; 5 triggers
Min. PVARP	OFF ; 235 ms
PMT protection	OFF ; ON [VA criterion 250...[10]... 380 ...[10]...500 ms]
VES Lock-in protection	OFF ; ON [termination after 4; 6; 12 cycles]
Sensor	accelerometer
▀ Sensor gain	1... 4 ...40 in 32 increments [auto gain: OFF ; ON]
▀ Sensor threshold	very low; low; medium ; high; very high
▀ Rate increase	1; 2; 4; 8 bpm/cycle
▀ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
▀ Max. activity rate	80...[5]... 120 ...[5]...180 bpm
Rate fading [rate smoothing]	OFF ; ON
▀ RF rate increase	1; 2; 4; 8 bpm/cycle
▀ RF rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Magnet effect	AUTO [10 cycles with 90 bpm asynchronous; then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in VDD ⁸⁾]
Battery ⁷⁾	1.3 Ah; Li/I
Nominal operating time ⁹⁾	10 years [at 3.6 V; 0.4 ms; 60 bpm; 100% pacing; VDD]

Housing	
Dimensions/weight	53 × 43 × 6 mm/26 g
Volume	12 cm ³
X-ray identification	ET
Overview of functions ⁹⁾	
Automatic functions	Active Capture Control (ACC)
	Auto-initialization
	Lead check
	Guided follow-up
	Ventricular threshold test
	Remaining service life calculation
Arrhythmia management	Mode switching with 2:1 lock-in protection
	PMT management
	IEGM recording
	AT classification
Rate management	Rate fading [rate smoothing]
	Rate hysteresis
	AV hysteresis (including negative AV hysteresis)
	Night rate
Diagnostic data	Memory for follow-up data in pacemaker
	High-resolution impedance trend [33 h and long-term]
	Ventricular threshold trend
	Ventricular pacing amplitude histogram
	P/R-wave trend [33 h and long-term]

- 1) 30–34 bpm only temporarily programmable.
- 2) Atrium 15 ms sin²; ventricle 40 ms sin².
- 3) Total Atrial Refractory Period [TARP].
- 4) Post-ventricular atrial blanking.
- 5) Value depends on set atrial blanking.
- 6) See manual for other modes.
- 7) Nominal data of the battery manufacturer.
- 8) Calculated with the formula $T = 2740 \times C_{\text{Batt}} / (I_{\text{Batt}} + I_{\text{Leak}})$.
- 9) Availability depends on the programming software used.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Effecta DR

Dual-chamber, rate-response pacemaker



Product Highlights

- **IRS^{plus} with 400 ms AV hysteresis**

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

- **Atrial & Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Auto-initialization**

Automatic activation of pacemaker functions after lead connection

- **Quick follow-up with automaticity of all tests**

Ordering Information

Model	Weight	Volume	Order number
Effecta DR uncoated	26 g	11 cm ³	371199
Effecta DR coated	26 g	11 cm ³	371201

Technical Data

Pacemaker parameters	
NBG code	DDDR
Modes	DDDR ; DDD; DDI(R); DVI(R); DDT; DDO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AA(R); AAT(R); AOO(R); OFF
Basic rate	30...(1)... 60 ...(1)...88...(2)...122...(3)...140...(5)...200 bpm
■ Night rate	OFF ; 30...(1)...88...(2)...122...(3)...140...(5)...200 bpm
■ Rate hysteresis	OFF ; -5...(5)...90 bpm
■ Repetitive hysteresis	OFF ; 1...(1)...15 cycles
■ Scan hysteresis	OFF ; 1...(1)...15 cycles
Sensitivity ¹⁾	<ul style="list-style-type: none"> ■ Atrium AUTO; 0.1...(0.1)...1.5...(0.5)...7.5 mV ■ Ventricle AUTO; 0.5...(0.5)...7.5 mV
Pulse amplitude [A/V] ²⁾	0.2...(0.1)...3.0...(0.1)...6.0...(0.5)...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.5...(0.1)... 1.0 ...(0.1)...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...(0.1)... 1.0 ...(0.1)...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...(00:10)...23:50 hh:mm)
Ventricular Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...(0.1)... 0.5 ...(0.1)...1.2 V
■ Search time	interval (0.1; 0.3; 1; 3; 6; 12; 24 h); time of day 02:00 (00:00...(00:10)...23:50 hh:mm)
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar [both automatically configured]
Refractory period	<ul style="list-style-type: none"> ■ Atrium³⁾ AUTO ■ Ventricle 200...(25)...250...(25)...500 ms
PVARP	175...(5)... 250 ...(5)...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30 ...(5)...70 ms
Far-field protection ⁴⁾	<ul style="list-style-type: none"> ■ After Vs 100...(10)...220 ms ■ After Vp 100...(10)...150...(10)...220 ms
AV delay	15...(5)... 180 ...(5)...350 ms (up to 450 ms with AV hysteresis)
Dynamic AV delay	OFF ; low ; medium; high; fixed; individual (programmable in 6 rate ranges)
Sense compensation	OFF ; -10...(5)...- 45 ...(5)...-120 ms
AV hysteresis	OFF ; IRS ⁵⁾ ; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1...(1)...5...(1)...10 cycles
■ AV scan hysteresis	OFF ; 1...(1)...5...(1)...10 cycles
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100...(10)... 160 ...(10)...250 bpm
■ X-out-of-8 criterion [Onset criterion]	3...(1)...5...(1)...8
■ Z-out-of-8 criterion [Resolution criterion]	3...(1)...5...(1)...8
■ Change of basic rate	OFF ; +5; +10 ...(5)...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection	OFF ; ON
NIPS	burst stimulation; programmed stimulation
Upper rate limit	<ul style="list-style-type: none"> ■ Atrium OFF; 240 bpm ■ Ventricle 90...(10)...130...(10)...200 bpm
Tachycardia behavior	2:1; WKB
IEGM recording ⁶⁾	4 recordings, max. 10 seconds each, 3 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250...(10)... 350 ...(10)...500 ms]
Sensor	accelerometer
■ Maximum activity rate	80...(5)... 120 ...(5)...180 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...(1)... 4 ...(1)...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD(R) ⁴⁾]
Battery ⁷⁾	LiJ (open circuit voltage: 2.8 V)
Nominal operating time	12.1 years [at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing]

Housing	
Dimensions/weight	53 × 43 × 6.5 mm/26 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) EN 50061 triangle pulse.
- 2) If Capture Control is ON, the pulse amplitude is automatically selected.
- 3) 300...(25)...**350**...(25)...775 ms for AA(R), AAT(R), DDT modes.
- 4) Post-ventricular atrial blanking.
- 5) Storage of IEGMs by using intelligent memory management.
- 6) See manual for other modes.
- 7) Nominal data of the manufacturer.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Effecta D

Dual-chamber pacemaker



Product Highlights

- **IRS^{plus} with 400 ms AV hysteresis**

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

- **Atrial & Ventricular Capture Control**

Increases patient safety and extends device longevity by automatically adapting pacing output to changing pacing thresholds. Provides backup ventricular pacing when needed.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Auto-initialization**

Automatic activation of pacemaker functions after lead connection

- **Quick follow-up with automaticity of all tests**

Ordering Information

Model	Weight	Volume	Order number
Effecta D uncoated	26 g	11 cm ³	375429
Effecta D coated	26 g	11 cm ³	375428

Technical Data

Pacemaker parameters	
NBG code	DDD
Modes	DDD ; DD(R) ¹⁾ ; DVI; DDT; DOO; VDD; VDI; W(R); WT; VOO(R); AAI; AAT; AOO; OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive hysteresis	OFF ; 1...[1]...15 cycles
■ Scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity ²⁾	■ Atrium AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV
	■ Ventricle AUTO ; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/V] ³⁾	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/V]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Atrial Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.5...[0.1]... 1.0 ...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]... 1.0 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Ventricular Capture Control	OFF ; ON ; ATM [monitoring only]
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.3...[0.1]... 0.5 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Auto-initialization	ON
Leads	IS-1-connector
■ Automatic lead check [A/V]	ON
■ Lead configuration [A/V]	unipolar ; bipolar [both automatically configured]
Refractory period	■ Atrium ⁴⁾ AUTO
	■ Ventricle 200...[25]... 250 ...[25]...500 ms
PVARP	175...[5]... 250 ...[5]...600 ms
PVARP after PVC	PVARP + 150 ms [max: 600 ms] automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-field protection ⁵⁾	■ After Vs 100 ...[10]...220 ms
	■ After Vp 100...[10]... 150 ...[10]...220 ms
AV delay	15...[5]... 180 ...[5]...350 ms [up to 450 ms with AV hysteresis]
Dynamic AV delay	OFF ; low ; medium; high; fixed; individual [programmable in 6 rate ranges]
Sense compensation	OFF ; -10...[-5]...- 45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRS ⁶⁾ ; negative; low; medium; high
■ AV repetitive hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
■ AV scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
Mode switching with X/Z-out-of-8-criterion	OFF ; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ X-out-of-8 criterion [Onset criterion]	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion [Resolution criterion]	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF ; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
2:1 lock-in protection	OFF ; ON
NIPS	burst stimulation; programmed stimulation
Upper rate limit	■ Atrium OFF ; 240 bpm
	■ Ventricle 90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2:1; WKB
IEGM recording ⁷⁾	4 recordings, max. 10 seconds each, 3 triggers
■ Recording prior to event	0; 25; 50; 75 ; 100%
PMT protection	OFF ; ON [VA criterion: 250...[10]... 350 ...[10]...500 ms]
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments [auto gain: OFF ; ON]
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
Sensor optimization	original, preview
Magnet response	AUTO [10 cycles with 90 bpm asynchronous, then basic rate synchronous]; asynchronous; synchronous
Replacement indication	programmed rate minus 11% [in DDD ⁷⁾]
Battery ⁸⁾	LiJ [open circuit voltage: 2.8 V]
Nominal operating time	12.1 years [at A/V: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 50% pacing]

Housing	
Dimensions/weight	53 × 43 × 6.5 mm/26 g
Volume	11 cm ³
Electrically conductive housing surfaces	
■ Uncoated	33 cm ²
■ Coated	7 cm ²
X-ray identification	SF

- 1) Only available for mode switching.
- 2) EN 50061 triangle pulse.
- 3) If Capture Control is ON, the pulse amplitude is automatically selected.
- 4) 300...[25]...**350**...[25]...775 ms for AAI, AAT, DDT modes.
- 5) Post-ventricular atrial blanking.
- 6) Storage of IEGMs by using intelligent memory management.
- 7) See manual for other modes.
- 8) Nominal data of the manufacturer.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Edora 8 DR-T

MR conditional dual-chamber pacemaker

ProMRI®



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Event-triggered wireless IEGM transmissions within 24 hours

Enable prompt evaluations for fast and better informed therapy decisions.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA & RV)

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Vp Suppression

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ EasyAV

Facilitates programming of optimal AV timing.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Edora 8 DR-T	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407145

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +5 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VVT; AAT; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive; OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period (atrium)	AUTO
■ Refract. period (ventricle)	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
1) at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Edora 8 DR

MR conditional dual-chamber pacemaker

ProMRI®



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA & RV)

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Vp Suppression

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ EasyAV

Facilitates programming of optimal AV timing.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Edora 8 DR	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407152

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRsPlus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period (atrium)	AUTO
■ Refract. period (ventricle)	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 % SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Evity 8 DR-T

MR conditional dual-chamber pacemaker

ProMRI®



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Event-triggered wireless IEGM transmissions within 24 hours

Enable prompt evaluations for fast and better informed therapy decisions.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA & RV)

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Vp Suppression

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ EasyAV

Facilitates programming of optimal AV timing.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Evity 8 DR-T	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407146

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +5 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VVT; AAT; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive; OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period (atrium)	AUTO
■ Refract. period (ventricle)	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
1) at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	
	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Evity 6 DR-T

MR conditional dual-chamber pacemaker

ProMRI®



Product Highlights

- **Small size**

Improves the patients' comfort through a reduced device volume.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Capture Control (RA & RV)**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **Vp Suppression**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Evity 6 DR-T	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407149

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	DDDR
Mode	DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period [atrium]	AUTO
■ Refract. period [ventricle]	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK Logo

¹⁾ at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF

Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON

Enitra 8 DR-T

MR conditional dual-chamber pacemaker

ProMRI®



Product Highlights

- **Small size**

Improves the patients' comfort through a reduced device volume.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Event-triggered wireless IEGM transmissions within 24 hours**

Enable prompt evaluations for fast and better informed therapy decisions.

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA & RV)**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **Vp Suppression**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 8 DR-T	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407147

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +5 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DD; A00R; VDD; VVT; AAT; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive; OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period (atrium)	AUTO
■ Refract. period (ventricle)	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
1) at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	
	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing (percent)
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Enitra 6 DR-T

MR conditional dual-chamber pacemaker

ProMRI®



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control (RA & RV)

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Vp Suppression

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 6 DR-T	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407150

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	DDDR
Mode	DDDR; WVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period [atrium]	AUTO
■ Refract. period [ventricle]	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK Logo

1) at AV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF

Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing [percent]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON

Enitra 6 DR

MR conditional dual-chamber pacemaker

ProMRI®



Product Highlights

- **Small size**

Improves the patients' comfort through a reduced device volume.

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Capture Control (RA & RV)**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **Vp Suppression**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 6 DR	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407153

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Pacing parameters	
NBG code	DDDR
Mode	DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period (atrium)	AUTO
■ Refract. period (ventricle)	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK Logo

1) at AV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 % SafeSync; OFF

Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	12 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Enticos 8 DR-T

Dual-chamber pacemaker



Product Highlights

- **Small size**

Improves the patients' comfort through a reduced device volume.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Event-triggered wireless IEGM transmissions within 24 hours**

Enable prompt evaluations for fast and better informed therapy decisions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA & RV)**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **Vp Suppression**

Follows the natural rhythm and promotes the underlying intrinsic rhythm with on-demand ventricular pacing.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 8 DR-T	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407148

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDR
Mode	DDD-CLS; VI-CLS; DDDR; VVIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [AV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [AV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Refractory period/Blanking	
■ Refract. period [atrium]	AUTO
■ Refract. period [ventricle]	200 ... [25] ... 500 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Service time	11 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
1) at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %, Home Monitoring: OFF, SafeSync: OFF	

Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/V], Sensing amplitude [A/V], Pacing statistics, Arrhythmia statistics [A/V], Heart Failure Monitor diagnostics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received
Leads	Pacing impedance [A/V], Lead check [A/V], Sensing amplitude [A/V], Threshold [A/V], Capture control status [A/V]
Bradycardia	Ven. pacing (percent)
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias
Heart Failure Monitor	Mean heart rate; Atrial burden; Mean PVC/h
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Enticos 4 DR

Dual-chamber pacemaker



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ Capture Control (RA & RV)

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ IRS^{plus} with 400 ms AV hysteresis

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

■ AutoSensing

Ensures optimal pacing behavior by automatically optimizing sensing settings.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

■ Quick follow-up with automaticity of all tests

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 4 DR	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407155

Technical Data

Pacing parameters	
NBG code	DDDR
Mode	DDDR; VVIR; AAIR; DDIR; A00; DDD; VVI; AAI; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DVI; D00; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpuls
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	12 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω; pacing: 50 %	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	4 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Enticos 4 D

Dual-chamber pacemaker



Product Highlights

■ Small size

Improves the patients' comfort through a reduced device volume.

■ Capture Control (RA & RV)

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ IRS^{plus} with 400 ms AV hysteresis

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

■ AutoSensing

Ensures optimal pacing behavior by automatically optimizing sensing settings.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

■ Quick follow-up with automaticity of all tests

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 4 D	IS-1 (2x)	11 cm ³ /23.2 g	48 mm × 44 mm × 6.5 mm	407156

Technical Data

Pacing parameters	
NBG code	DDD
Mode	VVIR; A00; DDD; VI; AAI; DDI; VDD; VVT; AAT; VDI; V00; V00R; DVI; D00; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
Pulse amplitude [A/V]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/V]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity atrium	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity ventricle	AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.3 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/V]	ON; OFF
Lead configuration [A/V]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Service time	12 years, 4 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD)
Electrically conductive surface	30 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at A/V: 2.5 V/0.4 ms, 60 bpm, 500 Ω, pacing: 50 %	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	4 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

Solia S

Bipolar MR Conditional pacing lead with active fixation **ProMRI®**



Product Highlights

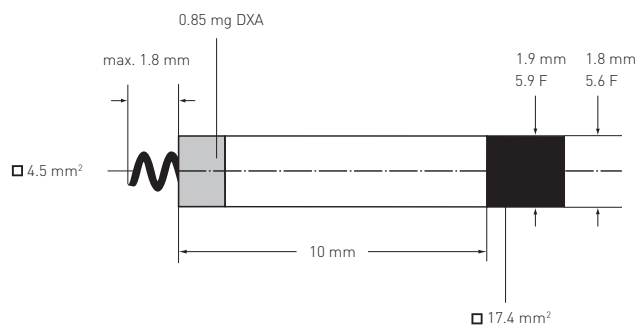
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Ultrathin 5.6 F lead body with polyurethane coating compatible with 6 F lead introducer
- Advanced tine mechanism for atraumatic fixation
- Color coding at proximal connector indicating different lengths
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Same handling characteristics as conventional state-of-the-art pacing leads

Ordering Information

Model	Connectors	Fixation	Length	Order number
Solia S 45	IS-1	Retractable, electrically active screw	45 cm	377176
Solia S 53	IS-1	Retractable, electrically active screw	53 cm	377177
Solia S 60	IS-1	Retractable, electrically active screw	60 cm	377179

Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Bipolar	
Type of fixation	Active	
Overall length	45, 53, 60 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.85 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.4 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	1.9 mm [5.9 F]	
Distance to the lead tip	10 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	Silicone, polyurethane
Resistance	0.65 Ω/cm	2.45 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	1.8 mm [5.6 F]	
Recommended introducer	6 F	



Safio S

Bipolar MR conditional pacing lead with active fixation **ProMRI®**



Product Highlights

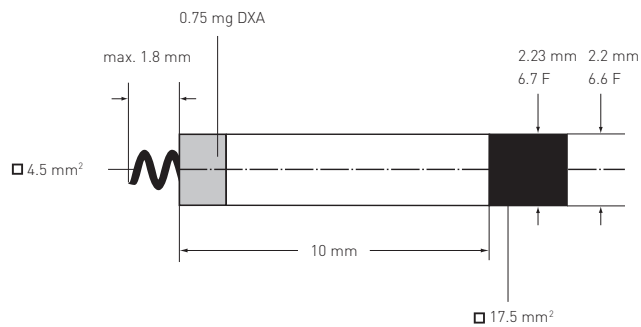
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Same handling characteristics as conventional state-of-the-art pacing leads
- Thin 6.6 F silicone lead body compatible with 7 F lead introducer

Ordering Information

Model	Connectors	Fixation	Length	Order number
Safio S 45	IS-1	Retractable, electrically active screw	45 cm	370944
Safio S 53	IS-1	Retractable, electrically active screw	53 cm	370945
Safio S 60	IS-1	Retractable, electrically active screw	60 cm	370946

Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Bipolar	
Type of fixation	Active	
Overall length	45, 53, 60 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.75 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	2.23 mm [6.7 F]	
Distance to the lead tip	10 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	
Resistance	0.65 Ω/cm	2.04 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	2.2 mm [6.6 F]	
Recommended introducer	7 F	



Siello S

Bipolar pacing lead with active fixation



Product Highlights

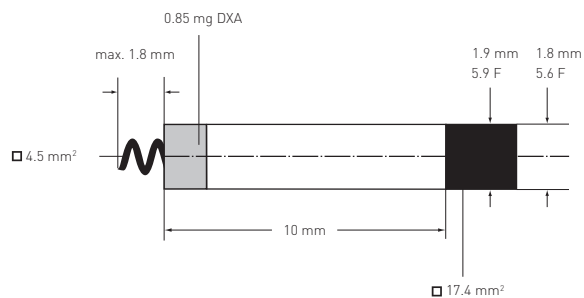
- Ultrathin 5.6 F lead body with polyurethane coating compatible with 6 F lead introducer
- Color coding at proximal connector indicating different lengths
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering Information

Model	Connectors	Fixation	Length	Order number
Siello S 45	IS-1	Retractable, electrically active screw	45 cm	362700
Siello S 53	IS-1	Retractable, electrically active screw	53 cm	362701
Siello S 60	IS-1	Retractable, electrically active screw	60 cm	362702

Technical Data

Technical data		
Polarity	Bipolar	
Type of fixation	Active	
Overall length	45, 53, 60 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.85 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.4 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	1.9 mm [5.9 F]	
Distance to the lead tip	10 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	Silicone, polyurethane
Resistance	0.65 Ω/cm	2.45 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	1.8 mm [5.6 F]	
Recommended introducer	6 F	



Setrox S

Bipolar pacing lead with active fixation



Product Highlights

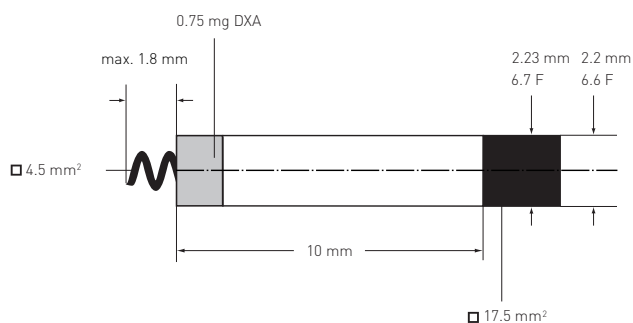
- Advanced tine mechanism for atraumatic fixation
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Thin 6.6 F silicone lead body with Introtek® surface coating compatible with 7 F lead introducer
- Proven outer insulation thickness for uncompromised safety
- Tip design reduces myocardial stress

Ordering Information

Model	Connectors	Fixation	Length	Order number
Setrox S 45	IS-1	Retractable, electrically active screw	45 cm	350973
Setrox S 53	IS-1	Retractable, electrically active screw	53 cm	350974
Setrox S 60	IS-1	Retractable, electrically active screw	60 cm	350975

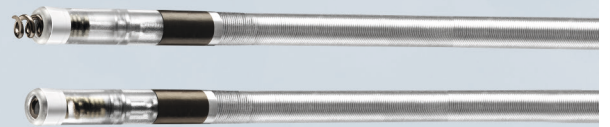
Technical Data

Technical data		
Polarity	Bipolar	
Type of fixation	Active	
Overall length	45, 53, 60 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.75 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	2.23 mm [6.7 F]	
Distance to the lead tip	10 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	
Resistance	0.65 Ω/cm	2.04 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	2.2 mm [6.6 F]	
Recommended introducer	7 F	



Selox SR

Bipolar pacing lead with active fixation



Product Highlights

- Durable 7.2F silicone lead body compatible with 8F lead introducer
- Easy-to-handle screw mechanism for maximum fixation stability
- Small pacing surface for optimal pacing characteristics
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering Information

Model	Fixation	Length	Order number
Selox SR 45	retractable screw	45 cm	343081
Selox SR 53	retractable screw	53 cm	343083
Selox SR 60	retractable screw	60 cm	343082

Technical Data

Technical data	
Connector	IS-1
Polarity	bipolar
Fixation	screw
Tip-to-ring distance	10 mm
Overall length	45; 53; 60 cm
Recommended introducer	8 F
Fixation helix	
Type	retractable; electrically active
Retractable length	max. 1.9 mm
Material	70% platinum; 30% iridium
Surface	fractal
Area	2.0 mm ²
Ring electrode	
Material	iridium
Surface	fractal
Area	38.0 mm ²
Diameter	2.6 mm (7.8 F)
Conductor	
Insulation	silicone
Coil material	MP35N
Resistance	<ul style="list-style-type: none"> ■ Distal 53 and 60 cm 0.2 Ω/cm ■ Proximal 53 and 60 cm 1.2 Ω/cm ■ Distal 45 cm 0.5 Ω/cm ■ Proximal 45 cm 1.2 Ω/cm
Diameter	2.4 mm (7.2 F)
Steroid reservoir	
Steroid type	dexamethasone acetate (DXA)
Steroid quantity	1 mg
Steroid bonding agent	silicone rubber

Selox ST

Bipolar pacing lead with passive fixation



Product Highlights

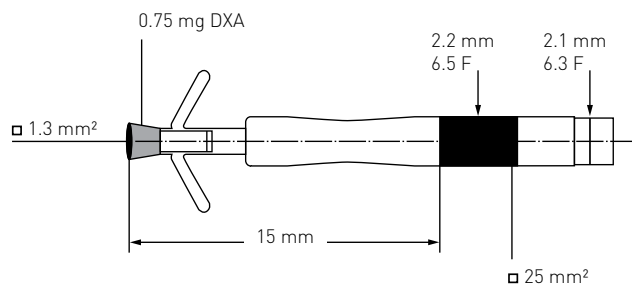
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Thin 6.3 F silicone lead body compatible with 7 F lead introducer
- Small pacing surface for optimal pacing characteristics

Ordering Information

Model	Connectors	Fixation	Length	Order number
Selox ST 53	IS-1	3 silicone tines	53 cm	346366
Selox ST 60	IS-1	3 silicone tines	60 cm	346367

Technical Data

Technical data		
Polarity	Bipolar	
Type of fixation	Passive	
Overall length	53,60 cm	
Tip electrode		
Surface area	1.3 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	3 silicone tines	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.75 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	25 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	2.2 mm [6.5 F]	
Distance to the lead tip	15 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	
Resistance	1.1 Ω/cm	1.0 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	2.1 mm [6.3 F]	
Recommended introducer	7 F	



Solia T

Bipolar MR Conditional pacing lead with passive fixation **ProMRI®**



Product Highlights

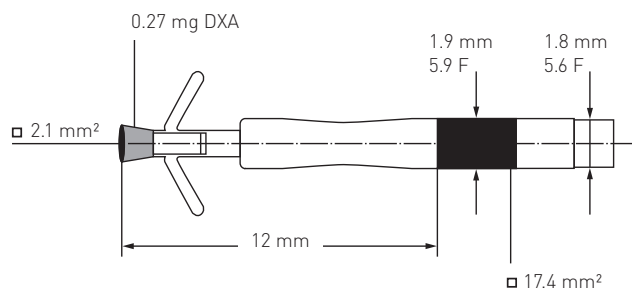
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Ultrathin 5.6 F lead body with polyurethane coating compatible with 6 F lead introducer
- Advanced tine mechanism for atraumatic fixation
- Color coding at proximal connector indicating different lengths
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Same handling characteristics as conventional state-of-the-art pacing leads

Ordering Information

Model	Connectors	Fixation	Length	Order number
Solia T 53	IS-1	4 silicone tines	53 cm	377180
Solia T 60	IS-1	4 silicone tines	60 cm	377181

Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Bipolar	
Type of fixation	Passive	
Overall length	53, 60 cm	
Tip electrode		
Surface area	2.1 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	4 silicone tines	
Steroid type	Dexamethasone acetate (DXA)	
Steroid quantity	0.27 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.4 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	1.9 mm [5.9 F]	
Distance to the lead tip	12 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	Silicone, polyurethane
Resistance	0.65 Ω/cm	2.45 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	1.8 mm [5.6 F]	
Recommended introducer	6 F	



Solia JT

Bipolar MR Conditional pacing lead
with passive fixation

ProMRI®



Product Highlights

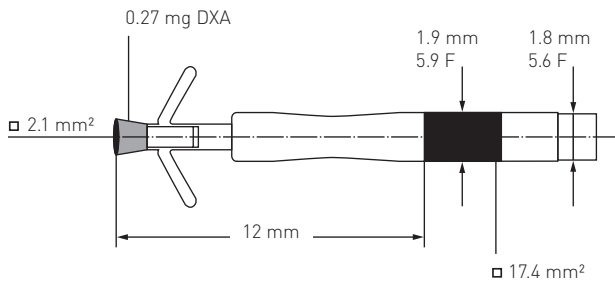
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Ultrathin 5.6 F lead body with polyurethane coating compatible with 6 F lead introducer
- Advanced tine mechanism for atraumatic fixation
- Color coding at proximal connector indicating different lengths
- Fractal coating and steroid elution for low thresholds and optimal sensing
- J-shape for atrial implantation

Ordering Information

Model	Connectors	Fixation	Length	Order number
Solia JT 45	IS-1	4 silicone tines J-shape	45 cm	399626
Solia JT 53	IS-1	4 silicone tines J-shape	53 cm	395134

Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Bipolar	
Type of fixation	Passive	
Overall length	45, 53 cm	
Tip electrode		
Surface area	2.1 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	4 silicone tines	
Steroid type	Dexamethasone acetate (DXA)	
Steroid quantity	0.27 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.4 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	1.9 mm [5.9 F]	
Distance to the lead tip	12 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	Silicone, polyurethane
Resistance	0.65 Ω/cm	2.45 Ω/cm
Construction	Coil	
Coil material	Nickel-cobalt alloy	
Diameter	1.8 mm [5.6 F]	
Recommended introducer	6 F	



Siello T

Bipolar pacing lead with passive fixation



Product Highlights

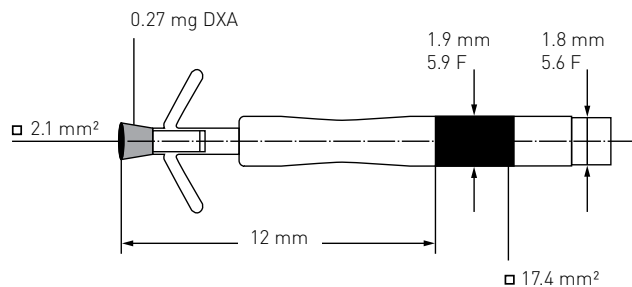
- Ultrathin 5.6 F lead body with polyurethane coating compatible with 6 F lead introducer
- Advanced tine mechanism for atraumatic fixation
- Color coding at proximal connector indicating different lengths
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering Information

Model	Connectors	Fixation	Length	Order number
Siello T 53	IS-1	4 silicone tines	53 cm	362705
Siello T 60	IS-1	4 silicone tines	60 cm	362706

Technical Data

Technical data		
Polarity	Bipolar	
Type of fixation	Passive	
Overall length	53,60 cm	
Tip electrode		
Surface area	2.1 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	4 silicone tines	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.27 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.4 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	1.9 mm [5.9 F]	
Distance to the lead tip	12 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	Silicone, polyurethane
Resistance	0.65 Ω/cm	2.45 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	1.8 mm [5.6 F]	
Recommended introducer	6 F	



Siello JT

Bipolar pacing lead with passive fixation



Product Highlights

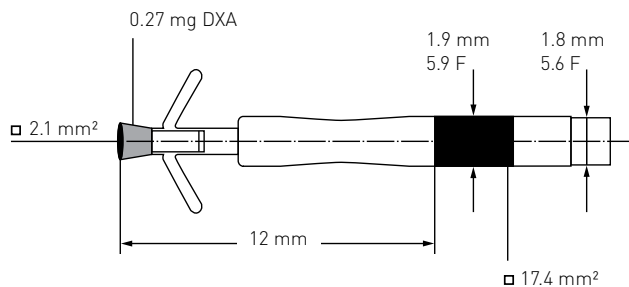
- Ultrathin 5.6 F lead body with polyurethane coating compatible with 6 F lead introducer
- Advanced tine mechanism for atraumatic fixation
- Color coding at proximal connector indicating different lengths
- Fractal coating and steroid elution for low thresholds and optimal sensing
- J-shape for atrial implantation

Ordering Information

Model	Connectors	Fixation	Length	Order number
Siello JT 45	IS-1	4 silicone tines J-shape	45 cm	362703
Siello JT 53	IS-1	4 silicone tines J-shape	53 cm	362704

Technical Data

Technical data		
Polarity	Bipolar	
Type of fixation	Passive	
Overall length	45,53 cm	
Tip electrode		
Surface area	2.1 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	4 silicone tines	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.27 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	17.4 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	1.9 mm [5.9 F]	
Distance to the lead tip	12 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	Silicone, polyurethane
Resistance	0.65 Ω/cm	2.45 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	1.8 mm [5.6 F]	
Recommended introducer	6 F	



Selox JT

Bipolar pacing lead with passive fixation



Product Highlights

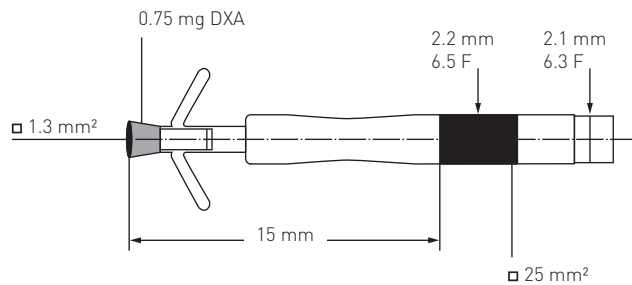
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Thin 6.3 F silicone lead body compatible with 7 F lead introducer
- Small pacing surface for optimal pacing characteristics

Ordering Information

Model	Connectors	Fixation	Length	Order number
Selox JT 45	IS-1	J-shape 3 silicone tines	45 cm	346369
Selox JT 53	IS-1	J-shape 3 silicone tines	53 cm	346368

Technical Data

Technical data	
Polarity	Bipolar
Type of fixation	Passive
Overall length	45,53 cm
Tip electrode	
Surface area	1.3 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	3 silicone tines
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	0.75 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	25 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Diameter	2.2 mm [6.5 F]
Distance to the lead tip	15 mm
Conductor	
	Distal Proximal
Insulation	Silicone
Resistance	1.1 Ω/cm 0.45 Ω/cm
Construction	Coil
Coil material	MP35N
Diameter	2.1 mm [6.3 F]
Recommended introducer	7 F



Selox ST

Bipolar pacing lead with passive fixation



Product Highlights

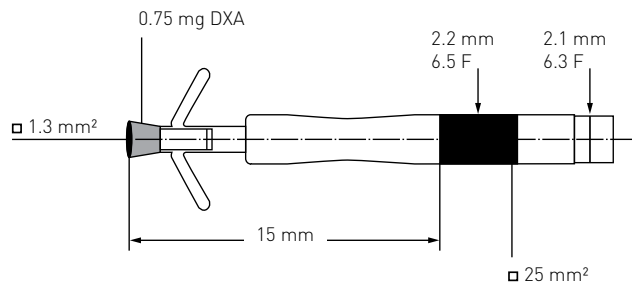
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Thin 6.3 F silicone lead body compatible with 7 F lead introducer
- Small pacing surface for optimal pacing characteristics

Ordering Information

Model	Connectors	Fixation	Length	Order number
Selox ST 53	IS-1	3 silicone tines	53 cm	346366
Selox ST 60	IS-1	3 silicone tines	60 cm	346367

Technical Data

Technical data		
Polarity	Bipolar	
Type of fixation	Passive	
Overall length	53,60 cm	
Tip electrode		
Surface area	1.3 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	3 silicone tines	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.75 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	25 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	2.2 mm [6.5 F]	
Distance to the lead tip	15 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	
Resistance	1.1 Ω/cm	1.0 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	2.1 mm [6.3 F]	
Recommended introducer	7 F	



Selox JT

Bipolar pacing lead with passive fixation



Product Highlights

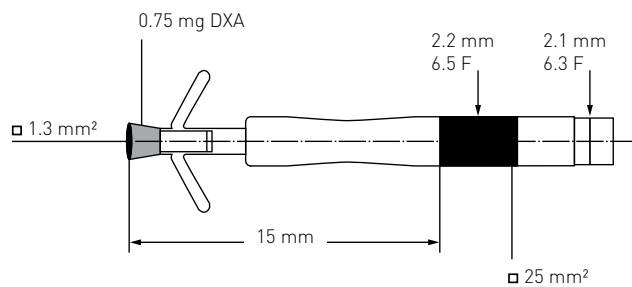
- Fractal coating and steroid elution for low thresholds and optimal sensing
- Thin 6.3 F silicone lead body compatible with 7 F lead introducer
- Small pacing surface for optimal pacing characteristics

Ordering Information

Model	Connectors	Fixation	Length	Order number
Selox JT 45	IS-1	J-shape 3 silicone tines	45 cm	346369
Selox JT 53	IS-1	J-shape 3 silicone tines	53 cm	346368

Technical Data

Technical data		
Polarity	Bipolar	
Type of fixation	Passive	
Overall length	45,53 cm	
Tip electrode		
Surface area	1.3 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	3 silicone tines	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.75 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	25 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Diameter	2.2 mm [6.5 F]	
Distance to the lead tip	15 mm	
Conductor		
	Distal	Proximal
Insulation	Silicone	
Resistance	1.1 Ω/cm	0.45 Ω/cm
Construction	Coil	
Coil material	MP35N	
Diameter	2.1 mm [6.3 F]	
Recommended introducer	7 F	



Solox BP

Bipolar VDD pacing lead with passive fixation



Product Highlights

- Durable 8.1 F silicone lead body compatible with 9 F lead introducer
- 13 cm or 15 cm atrioventricular distances allows adaptation to individual patient requirements
- Fractal coating of all electrically active surface areas for low thresholds

Ordering Information

Model	Fixation	Length	Order number
Solox 65/13-BP	3 tines	65 cm	124 540
Solox 65/15-BP	3 tines	65 cm	124 542
Solox 58/13-BP	3 tines	58 cm	333 900
Solox 58/15-BP	3 tines	58 cm	333 902

Technical Data

Technical data		
Connector		IS-1
Polarity	■ Atrial	bipolar
	■ Ventricular	bipolar
Fixation		passive fixation with 3 tines
Atrioventricular distance		13; 15 cm
Diameter		2.7 mm (8.1 F)
Recommended introducer		9 F
Overall length		58; 65 cm
Tip electrode		
Area		3.5 mm ²
Material		90% platinum; 10% iridium
Structure		fractal
Tip-to-ring distance		31 mm
Atrial ring electrodes		
Area		25.4 mm ²
Material		80% platinum; 20% iridium
Structure		fractal
Pole distance		10 mm
Ventricular ring electrode		
Area		25.4 mm ²
Material		80% platinum; 20% iridium
Structure		fractal
Conductor		
Insulation		silicone
Coil material		MP35N

Tachyarrhythmia Therapy



Iperia 7 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Complete atrial diagnostics

Allows together with the Linx^{smart} S DX lead a complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393033

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART = OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R), VI-CLS, OFF VDI if permanent: VDDR(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; VVIR; VI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Iperia 7 VR-T DX

MR conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Complete atrial diagnostics**

Allows together with the Linx^{smart} ProMRI S DX lead a complete recording of all atrial events.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 VR-T DX ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393032

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART = OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R), VI-CLS, OFF VDI if permanent: VDDR(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; VVIR; VI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Iperia 7 VR-T

Single-chamber ICD



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393035
Iperia 7 VR-T	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393031

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent; WI(R), WI-CLS, OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	WI-CLS; WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Ω, RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Iperia 7 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 VR-T ProMRI	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393034
Iperia 7 VR-T ProMRI	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393030

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent; WI(R), WI-CLS, OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; WVI; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring; ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Iperia 5 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

- **Complete atrial diagnostics**

Allows together with the Linx^{smart} S DX lead a complete recording of all atrial events.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393049

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDOR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDOR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed; 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Iperia 5 VR-T DX

MR conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ Complete atrial diagnostics

Allows together with the Linx^{smart} ProMRI S DX lead a complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 VR-T DX ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393048

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDOR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDOR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Iperia 5 VR-T

Single-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393052
Iperia 5 VR-T	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393053

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent; VI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

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Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Iperia 5 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 VR-T ProMRI	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393050
Iperia 5 VR-T ProMRI	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393051

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent; VI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; VI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program [1-3, individually programmable]; First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Itrevia 7 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Complete atrial diagnostics

Allows together with the Linx^{smart} S DX lead a complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393037

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART = OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R), VI-CLS, OFF VDI if permanent: VDDR(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; VVIR; VI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Itrevia 7 VR-T DX

MR conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Complete atrial diagnostics

Allows together with the Linux^{smart} ProMRI S DX lead a complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 VR-T DX ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393036

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART = OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R), VVI-CLS, OFF VDI if permanent: VDDR(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VVI-CLS; VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Itrevia 7 VR-T

Single-chamber ICD



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393040
Itrevia 7 VR-T	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393041

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent; WI(R), WI-CLS, OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; WVI; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Itrevia 7 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 VR-T ProMRI	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393038
Itrevia 7 VR-T ProMRI	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393039

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent; WI(R), WI-CLS, OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	WI-CLS; WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring; ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
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Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Itrevia 5 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Complete atrial diagnostics

Allows together with the Linx^{smart} S DX lead a complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393055

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF VDI if permanent: VDDR(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDOR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDOR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed; 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Itrevia 5 VR-T DX

MR conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ Complete atrial diagnostics

Allows complete recording of all atrial events in combination with the respective DX lead.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 VR-T DX ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393054

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDOR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDOR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Itrevia 5 VR-T

Single-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393058
Itrevia 5 VR-T	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393059

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent; VI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Itrevia 5 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 VR-T ProMRI	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	393056
Itrevia 5 VR-T ProMRI	DF4 (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	393057

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent; VI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program [1-3, individually programmable]; First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Inventra 7 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Complete atrial diagnostics

Allows together with the Linux^{smart} S DX lead a complete recording of all atrial events.

■ 45 J shock energy

Improves patient safety for successful defibrillation.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 VR-T DX	DF-1 (2x), IS-1 (2x)	36 cm ³ /87 g	65 mm x 55 mm x 12.5 mm	399437

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 4*45 J; 6*45 J For the VF zone: 4*45 J; 6*45 J
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SV; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	VI if permanent: VVI(R), VI-CLS, OFF VDI if permanent: VDDR(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; VVIR; VI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.1 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATPI), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 5 min; 30 min; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Inventra 7 VR-T DX

MR conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Complete atrial diagnostics

Allows together with the Linx^{smart} ProMRI S DX lead a complete recording of all atrial events.

■ 45 J shock energy

Improves patient safety for successful defibrillation.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 VR-T DX ProMRI	DF-1 (2x), IS-1 (2x)	36 cm ³ /87 g	65 mm x 55 mm x 12.5 mm	399436

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SV; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	VI if permanent: VVI(R), VI-CLS, OFF VDI if permanent: VDDR(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; VVIR; VI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.1 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Inventra 7 VR-T

Single-chamber ICD



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 VR-T	DF-1 (2x), IS-1 (1x)	36 cm ³ /87 g	65 mm x 55 mm x 12.5 mm	399443
Inventra 7 VR-T	DF4 (1x)	34 cm ³ /85 g	65 mm x 54 mm x 12.5 mm	399441

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 4*45 J; 6*45 J For the VF zone: 4*45 J; 6*45 J
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	WI if permanent; WI(R), WI-CLS, OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	WI-CLS; WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 D; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Inventra 7 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **MorphMatch**

Improves detection of rapidly conducted SVTs.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 VR-T ProMRI	DF-1 (2x), IS-1 (1x)	36 cm ³ /87 g	65 mm x 55 mm x 12.5 mm	399442
Inventra 7 VR-T ProMRI	DF4 (1x)	34 cm ³ /85 g	65 mm x 54 mm x 12.5 mm	399440

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	WI if permanent; WI(R), WI-CLS, OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	WI-CLS; WIR; WI; V00; OFF
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q, RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Idova 7 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ 45 J shock energy

Improves patient safety for successful defibrillation.

■ Complete atrial diagnostics

Offers together with the Linux^{smart} S DX lead a complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device size.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 VR-T DX	DF-1 (2x) IS-1 (2x)	36 cm ³ /86 g	65 mm x 55 mm x 12.5 mm	383600

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	VVI if permanent: VVI(R), OFF; VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; stim. RV: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing, SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Idova 7 VR-T DX

MR Conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ 45 J shock energy

Improves patient safety for successful defibrillation.

■ Complete atrial diagnostics

Offers together with the Linx^{smart} ProMRI S DX lead a complete recording of all atrial events.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device size.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 VR-T DX	DF-1 (2x) IS-1 (2x)	36 cm ³ /86 g	65 mm x 55 mm x 12.5 mm	383601

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	VVI if permanent: VVI(R); OFF; VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V [RV]
Post-shock pulse width	1.5 ms [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Hotter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.1 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; stim. RV: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV]; Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long ongoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Idova 7 VR-T

Single-chamber ICD



Product Highlights

■ 45 J shock energy

Improves patient safety for successful defibrillation.

■ Small size

Increases the patients' comfort through a reduced device size.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ SelectSense Advanced

Adaptation of sensing parameters to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 VR-T	DF-1 (2x) IS-1 (1x)	36 cm ³ /86 g	65 mm x 55 mm x 12.5 mm	383590
Idova 7 VR-T	DF4 (1x)	34 cm ³ /86 g	65 mm x 52 mm x 12.5 mm	383591

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	WI if permanent: WI(R); OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; VI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 D, stim. RV: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (VI); Device settings and statistics

Idova 7 VR-T

MR Conditional single-chamber ICD

ProMRI®



Product Highlights

- **45 J shock energy**
Improves patient safety for successful defibrillation.
- **ProMRI®**
Allows patients to undergo MR scanning under specific conditions.
- **Small size**
Increases the patients' comfort through a reduced device size.
- **Ventricular Capture Control**
Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **SelectSense Advanced**
Adaptation of sensing parameters to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.
- **DF4 connector**
Simplifies and shortens the implantation procedure and reduces material in the device pocket.
- **BIOTRONIK Home Monitoring®**
Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 VR-T	DF-1 (2x) IS-1 (1x)	36 cm ³ /86 g	65 mm x 55 mm x 12.5 mm	383592
Idova 7 VR-T	DF4 (1x)	34 cm ³ /86 g	65 mm x 52 mm x 12.5 mm	383593

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Post-shock mode	WI if permanent: WI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VV; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed; 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; stim. RV: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Ilesto 7 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} S DX lead the complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

■ Extended longevity

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	383595

Ilesto 7 VR-T DX

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R), OFF; VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.5 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment

Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics
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Ilesto 7 VR-T DX

MR Conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} ProMRI S DX lead the complete recording of all atrial events.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

■ Extended longevity

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390094

Ilesto 7 VR-T DX

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V [RV]
Post-shock pulse width	1.5 ms [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed

Diagnostic functions	
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.5 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON [daily transmission], diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATPI], Retrograde Conduction
Program sets	
Programs	Standard program; Individual program 1-13, individually programmable; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV]; Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long (ongoing), SVT]; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 7 VR-T

Single-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	383579
Ilesto 7 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	383581

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: WVIIR; OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WVIR; VI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11.5 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (VI); Device settings and statistics

Ilesto 7 VR-T

MR Conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	390082
Ilesto 7 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	390088

Ilesto 7 VR-T

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VI; VOO; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed; 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11.5 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)

Program sets

Programs Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Ilesto 5 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} S DX lead the complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	383596

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Ilesto 5 VR-T DX

MR Conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} ProMRI S DX lead the complete recording of all atrial events.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390122

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V [RV]
Post-shock pulse width	1.5 ms [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]

Diagnostic functions	
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON [daily transmission], diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Retrograde Conduction
Program sets	
Programs	Standard program; Individual program 1-3, individually programmable; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV]; Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long [ongoing], SVT]; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 5 VR-T

Single-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **SelectSense Advanced**

Adaptation of sensing parameters to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	383582
Ilesto 5 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	383584

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WI RI; OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Ilesto 5 VR-T

MR Conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **SelectSense Advanced**

Adaptation of sensing parameters to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	390118
Ilesto 5 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	390120

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed; 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Iforia 7 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} S DX lead the complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

■ Extended longevity

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390093

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R), OFF; VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.5 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction

Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received

Leads	Sensing amplitude (RV, RA); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
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Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT; Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
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Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
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Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
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Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
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Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment

Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics
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Iforia 7 VR-T DX

MR Conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} ProMRI S DX lead the complete recording of all atrial events.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

■ Extended longevity

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390095

Iforia 7 VR-T DX

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V [RV]
Post-shock pulse width	1.5 ms [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms [fixed]
AV scan/repetitive (positive)	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON

Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	10.5 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON [daily transmission]; diagnostics: ON	

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV]; Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long ongoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 7 VR-T

Single-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	390081
Iforia 7 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	390087

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: WIIIRI; OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; VI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11.5 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (VI); Device settings and statistics

Iforia 7 VR-T

MR Conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	390083
Iforia 7 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	390089

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV?Can-SVC; RV?Can; RV?SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min [Far-field, RV]
Length of prehistory	Fixed; 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	11.5 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 ?; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON [daily transmission]; diagnostics: ON

Tests

Different tests for Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)

Program sets

Programs Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate [24 h, at rest]; Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Iforia 5 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} S DX lead the complete recording of all atrial events.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	383597

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT; Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Iforia 5 VR-T DX

MR Conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ Complete atrial diagnostics

Offers together with the Linx^{smart} ProMRI S DX lead the complete recording of all atrial events.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Ventricular Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 VR-T DX	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390123

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V [RV]
Post-shock pulse width	1.5 ms [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VVI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms [fixed]
AV scan/repetitive (positive)	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Mode switching	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON [daily transmission]; diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV]; Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long ongoing], SVT); Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 5 VR-T

Single-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **SelectSense Advanced**

Adaptation of sensing parameters to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	383583
Iforia 5 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	383585

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WI RI, OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Iforia 5 VR-T

MR Conditional single-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Ventricular Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes.

- **SelectSense Advanced**

Adaptation of sensing parameters to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	390119
Iforia 5 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	390121

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WI(R), OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed; 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Iforia 3 VR-T

Single-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Automatic threshold monitoring**

Permits remote evaluation of ventricular pacing thresholds.

- **SelectSense Advanced**

Adaptation of sensing parameters to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 3 VR-T	DF-1 (2x) IS-1 (1x)	33 cm ³ /80 g	65 mm x 55 mm x 11 mm	383586
Iforia 3 VR-T	DF4 (1x)	31 cm ³ /80 g	65 mm x 52 mm x 11 mm	383588

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WI(R); OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock pulse width	1.5 ms (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; WI; V00; OFF
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	RV; OFF; ATM
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; -Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	2 x 24 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾
¹⁾ RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV); Pacing impedance (RV); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
Arrhythmias	Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean ven. heart rate (24 h, at rest); Patient activity
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Cycle length/time of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/ 1-5 individually programmable dates
Transmitted data	Periodic IEGM; rate histogram (V); device settings and statistics

Ilivia 7 VR-T DX

MR conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

- **Complete atrial diagnostics**

Allows complete recording of all atrial events in combination with the respective DX lead.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **MorphMatch**

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilivia 7 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404624

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART = OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF; OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R), VVI-CLS, OFF VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VVI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VVI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; OFF; V00
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSpplus
■ AV hysteresis mode (IRSpplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching (Mode)	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON

Pacing parameters	
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [A]	Std.; OFF
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing; 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission), diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Ilivia 7 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ MorphMatch

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilivia 7 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404625
Ilivia 7 VR-T	DF4 (LLHH) (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	404626

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % [fixed]
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Normal \rightarrow alternating; Reversed \rightarrow alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2; Biphasic \rightarrow alternating; Biphasic 2 \rightarrow alternating
Shock path [in VT1, VT2, VF]	RV \rightarrow SVC+Can; RV \rightarrow Can; RV \rightarrow SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: WI[R], WI-CLS, OFF
Post-shock pulse amplitude	7.5 V [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; VVIR; VI; OFF; V00
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Rate fading	OFF; ON
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date [for AUTO]	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	2 x 56 min [Far-field, RV]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q, RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program [1-3, individually programmable]; First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 7 VR-T DX

MR conditional single-chamber ICD with complete atrial diagnostics

ProMRI®



Product Highlights

- **Complete atrial diagnostics**

Allows complete recording of all atrial events in combination with the respective DX lead.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **MorphMatch**

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 7 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404633

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART = OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF; OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R), VVI-CLS, OFF VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VVI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VVI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; OFF; V00
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSpplus
■ AV hysteresis mode (IRSpplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching (Mode)	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON

Pacing parameters	
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [A]	Std.; OFF
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing; 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission), diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 7 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ MorphMatch

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 7 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404634
Intica 7 VR-T	DF4 (LLHH) (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	404635

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... (5) ... 100 ... (10) ... 160 bpm
VT1	OFF; 270 ... (10) ... 600 ms
VT2	OFF; 270 ... (10) ... 500 ms
VF	OFF; 240 ... (10) ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... (2) ... 100; For VT2: 10 ... (2) ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... (2) ... 50; For VT2: 10 ... (2) ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... (4) ... 32 %
Stability	OFF; ± 8 ... (4) ... ± 48 ms and ± 8 ... (4) ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... (1) ... 3; 5; 10 ... (10) ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... (1) ... 10
ATP type	Burst; Ramp
Number S1	1 ... (1) ... 15
R-S1 interval	70 ... (5) ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % [fixed]
Number S1	1 ... (1) ... 15
R-S1 interval	70 ... (5) ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Normal \rightarrow alternating; Reversed \rightarrow alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2; Biphasic \rightarrow alternating; Biphasic 2 \rightarrow alternating
Shock path [in VT1, VT2, VF]	RV \rightarrow SVC+Can; RV \rightarrow Can; RV \rightarrow SVC
Energy of 1st shock	OFF; 2 ... (2) ... 20 ... (5) ... 40 J
Energy of 2nd shock	OFF; 4 ... (2) ... 20 ... (5) ... 40 J
Post-shock mode	VI if permanent: WI[R], WI-CLS, OFF
Post-shock pulse amplitude	7.5 V [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VI-CLS
Max. CLS rate	80 ... (10) ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... (10) ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VI-CLS; WI[R]; VI; OFF; V00
Pulse amplitude [RV]	0.5 ... (0.25) ... 4.0 ... (0.5) ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... (0.25) ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... (5) ... 100 ... (10) ... 160 bpm
■ Rate hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... (5) ... 100 bpm
Rate fading	OFF; ON
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date [for AUTO]	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... (30) ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	2 x 56 min [Far-field, RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 5 VR-T DX

MR conditional single-chamber ICD
with complete atrial diagnostics

ProMRI®



Product Highlights

■ Complete atrial diagnostics

Allows complete recording of all atrial events in combination with the respective DX lead.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ MorphMatch

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 5 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm x 55 mm x 11 mm	404688

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VDI(R), OFF VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	WIR; WI; VDDR; VDIR; VDD; VDI; OFF; V00
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching (Mode)	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 5 VR-T

MR conditional single-chamber ICD

ProMRI®



Product Highlights

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **ProMRI®1)**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **MorphMatch**

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 5 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404689
Intica 5 VR-T	DF4 (LLHH) (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	404690

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Normal \rightarrow alternating; Reversed \rightarrow alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2; Biphasic \rightarrow alternating; Biphasic 2 \rightarrow alternating
Shock path [in VT1, VT2, VF]	RV \rightarrow SVC+Can; RV \rightarrow Can; RV \rightarrow SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: WI[R], OFF
Post-shock pulse amplitude	7.5 V [RV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VI; OFF; V00
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Rate fading	OFF; ON
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date [for AUTO]	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	2 x 56 min [Far-field, RV]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program [1-3, individually programmable]; First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 7 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Complete atrial diagnostics

Allows complete recording of all atrial events in combination with the respective DX lead.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ MorphMatch

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 7 VR-T DX	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404642

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R), VVI-CLS, OFF VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	VVI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	VVI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; OFF; V00
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sensing	15; 40 ... [5] ... 350 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Mode switching (Mode)	VDI, VDIR if permanent: VDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing [A]	Std.; OFF
Sensor	Accelerometer

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEM Holter	3 x 56 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	9.2 years ¹⁾
1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEM for therapy episodes	OFF; ON
IEM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 7 VR-T

Single-chamber ICD



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **MorphMatch**

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 7 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404643
Inlexa 7 VR-T	DF4 (LLHH) (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	404644

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Normal \rightarrow alternating; Reversed \rightarrow alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2; Biphasic \rightarrow alternating; Biphasic 2 \rightarrow alternating
Shock path [in VT1, VT2, VF]	RV \rightarrow SVC+Can; RV \rightarrow Can; RV \rightarrow SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI if permanent: WIR; WI-CLS; OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	WI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	WI-CLS; WIR; WI; OFF; V00
Pulse amplitude [RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Rate fading	OFF; ON
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	2 x 56 min (Far-field, RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Ω ; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 3 VR-T

Single-chamber ICD



Product Highlights

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **MorphMatch**

Improves SVT discrimination to prevent unnecessary therapies and provides insight into discrimination decision.

- **Automatic threshold monitoring**

Permits remote evaluation of ventricular pacing thresholds.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 3 VR-T	DF-1 (2x), IS-1 (1x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404703
Inlexa 3 VR-T	DF4 (LLHH) (1x)	31 cm ³ /81 g	65 mm × 54 mm × 11 mm	404704

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; MorphMatch; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal \rightarrow alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV \rightarrow SVC+Can; RV \rightarrow Can; RV \rightarrow SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF
Post-shock pulse amplitude	7.5 V (RV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	VVIR; VV; OFF; V00
Pulse amplitude (RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (RV)	OFF; ATM
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensor	Accelerometer
Diagnostic functions	
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	2 x 56 min (Far-field, RV)
Length of prehistory	Fixed; 30 s; 5 s (when onset was fulfilled or at induced episodes)
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	10.1 years ¹⁾

1) RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests

Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Rapid ventricular pacing
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Program sets

Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
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BIOTRONIK Home Monitoring®

Transmitted data	Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Lumax 740 VR-T DX

MR Conditional single-chamber ICD with complete atrial diagnostics and extended longevity

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Complete atrial diagnostics**

Allows together with the Linos^{smart} S DX lead the complete recording of any atrial events.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Extended longevity**

Avoids risks associated with device replacement procedures because of superior device longevity through the use of energy-efficient technologies.

- **Ventricular Capture Control**

Automatic adjustment of pacing amplitudes for improved patient safety and extended device longevity.

- **ATP One Shot**

Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

- **SelectSense Advanced**

Adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **BIOTRONIK Home Monitoring®**

Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 740 VR-T DX	37 cm ³	13 mm	IS-1 (2×) DF-1 (2×)	381 463

Technical Data

MR Conditional	
ProMRI®	MR Conditional (for combination of MR Conditional leads, please see the ProMRI manual)
Therapy and monitoring zones	
Bradycardiac	30...[5]...100...[10]...160 bpm
■ AT/AF	100...[10]...250 bpm
■ VT1	OFF...270...[10]...600 ms
■ VT2	OFF...270...[10]...500 ms
■ VF	OFF...240...[10]...400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	interval counter, onset, stability, SMART Detection®, persistent VT
Detection counter VT1 and VT2	10...[2]...60 for VT1; 10...[2]...40 for VT2
Redetection counter VT1 and VT2	10...[2]...30
Detection/redetection counter VF (X/Y)	6/8, 8/12, 10/14, 12/16, 16/20, 18/24, 20/26, 22/30, 24/30
Onset	OFF, 4...[4]...32%
Stability	if SMART = ON ± 8...[4]...± 48%, if SMART = OFF ± 8...[4]...± 48 ms
Sustained VT	OFF, 1 min, 2 min, 3 min, 5 min, 10 min, 20 min, 30 min
SMART detection and redetection	OFF, ON
Tachycardia therapy in VT1/VT2	
ATP types	Burst, Ramp
■ Attempts	OFF, 1...[1]...10
■ Number S1	1...[1]...10
■ Add S1	OFF, ON
■ R-S1 interval	70...[5]...95%
■ S1 decrement	5...[5]...40 ms
■ Scan decrement	OFF, 5...[5]...40 ms
ATP optimization	OFF, ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy in VF	
ATP type (ATP One Shot)	OFF, Burst, Ramp
■ Stability criterion	12%
■ ATP attempts	1 (fixed)
■ R-S1 interval	70...[5]...95%
■ Number S1	1...[1]...10
Cardioversion/defibrillation therapy	
Number of shocks	for VT zones: OFF, 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF, ON
Polarity (in VT1, VT2, VF)	normal, reversed, alternating
Waveform for shock (in VT1, VT2, VF)	biphasic, biphasic 2
Shock path	RV → SVC + Can, RV → Can, RV → SVC
Energy	1st shock: OFF (VT1/VT2), 2...[2]...20...[5]...40 J; 2nd shock: OFF (VT1, VT2) 4...[2]...20...[5]...40 J
Post Shock mode	VDI if permanent VDD(R), VDI(R); WI if permanent WVI(R), OFF
Post Shock pulse amplitude	7.5 V (RV)
Post Shock pulse width	1.5 ms (RV)
Post Shock duration	OFF, 10 s, 30 s, 1 min, 2 min, 5 min, 10 min
Pacing parameters	
Mode	Bradycardia/CRT
Mode	VI,VDD, VDI, VDDR, VVIR, VDIR, OFF, VOO ¹
Pulse amplitude (RV)	0.5...[0.25]...4.0...[0.5]...6.0, 7.5 V
Pulse width (RV)	0.4; 0.5...[0.25]...1.5 ms
RV Capture Control	OFF, ATM, ON
Basic rate	30...[5]...100...[10]...160 bpm
■ Rate hysteresis	OFF, -5...[5]...-25...[-20]...-65 bpm
■ Scan and Repetitive	OFF; ON (= 10 cycles)
■ Night rate	OFF, 30...[5]...100 bpm
AV dynamics	low, medium, high, fixed, individual
AV delay after sense	15, 40...[5]...350 ms
AV hysteresis mode	positive, negative, IRS ^{PM} , OFF
AV hysteresis (IRS ^{PM})	400 ms
AV scan/repetitive (IRS ^{PM})	ON (= 5 cycles)
AV scan/repetitive (positive)	OFF; ON (= 5 cycles)
Upper rate (UTR)	90...[10]...160 bpm
Mode Switch	after mode VDD(R); VDI(R)
■ Intervention rate	OFF, 120...[10]...200 bpm
■ Change basic rate during Mode Switch	OFF, +5...[5]...+30 bpm
■ Post Mode Switch rate	OFF, +5...[5]...+50 bpm
■ Post Mode Switch duration	1...[1]...30 min
PVARP ²	AUTO, 175...[25]...600 ms
PMT ³ detection/termination	OFF, ON
Sensing RV	Std. – Standard, TWS – Enhanced T-wave suppression, VFS – Enhanced VF sensitivity, (Individually programmable sensing parameters)
Sensing A	Standard, OFF, Individual
Sensor	Accelerometer
Lead connections	
Pacing/sensing	IS-1 bipolar (2x)
Shock	DF-1 (2x)

Diagnostic functions	
IEGM for AT/AF	OFF, ON, Advanced ON
IEGM for SVT	OFF, ON
Periodic recordings	OFF, 30 days, 60 days, 90 days, 120 days, 180 days
IEGM Holter	3 x 24 min (Far-Field, A and RV)
Length of prehistory	fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Event recording	ON, OFF
■ Trigger	Atr. detection, Atr. termination, SVT detection, Ven. detection, Ven. termination, Periodic IEGM
Thoracic impedance (TI)	OFF, ON
Physical parameters	
Dimensions	66 mm x 55 mm x 13 mm
Volume/weight	37.2 cm ³ /9.2 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	10.3 years ¹
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction test
Program sets	
Programs	individual program (1–3, individually programmable), standard program, first interrogated program, SAFE program, MRI program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics, Heart Failure Monitor diagnostics, detection and therapy counters, rhythm control, statistics, lead integrity measurements, battery and system status, ICD program parameters
Message types	
Trend message	triggered automatically once every 24 hours
Event message	triggered automatically after certain cardiac events
Test message	triggered manually via programmer
Findings	
Device	device status, battery status, programmer-triggered message received, device in MRI mode
Leads	sensing amplitude (RA, RV), ⁴ pacing impedance (RV), ⁵ shock impedance (painless, at last shock), RV pacing threshold, ⁶ Capture Control disabled (RV)
Arrhythmias	atrial arrhythmia detected (monitor, long [ongoing], SVT), ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF), ineffective max. energy shock
Heart Failure Monitor	mean ven. heart rate (24 h, at rest), ⁴ atrial burden, ⁴ mean PVC/h, ⁴ mean ventricular heart rate during atrial burden
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with acceleration of atrial rhythm, ⁴ episode details received, ven. therapy episode with long duration, ⁴ ven. monitoring episode with long duration ⁴
Data transmission	remote follow-up trigger occurred, first message received, no message received for (days)
Programmer settings	
Home Monitoring	OFF, ON
Time of transmission	Std., 00:00...[01:00]...23:00 (hh:mm)
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Ongoing atrial episodes	OFF, 6 h, 12 h, 18 h
Periodic IEGM for remote follow-up	
Cycle duration/date of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/ 1–5 individual programmable dates
Transmitted data	Periodic IEGM, rate histogram (A,V) device settings and statistics
Technical data	
Transmitter frequency	403 MHz
Transmitting power	< 25 µW

- RV 2.5 V/0.4 ms, 60 bpm, 700 Q; RV 15% pacing; 4 max. energy charges per year; Home Monitoring ON (daily transmission), diagnostics ON.
- OFF cannot be programmed if SMART is active.
- Mode for electrocautery and MRI.
- PVARP = Post-Ventricular Atrial Refractory Period.
- PMT = Pacemaker-Mediated Tachycardia.
- Programmable upper or lower limit.
- Programmable upper and lower limit.

Lumax 740 VR-T

MR Conditional single-chamber ICD with Ventricular Capture Control and extended longevity

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Extended longevity**

Avoids risks associated with device replacement procedures because of superior device longevity through the use of energy-efficient technologies.

- **Ventricular Capture Control**

Automatic adjustment of pacing amplitudes for improved patient safety and extended device longevity.

- **ATP One Shot**

Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

- **SelectSense Advanced**

Adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **BIOTRONIK Home Monitoring®**

Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 740 VR-T	37 cm ³	13 mm	IS-1 (1 x) DF-1 (2 x)	381 459

Technical Data

MR Conditional	
ProMRI®	MR Conditional (for combination of MR Conditional leads, please see the ProMRI manual)
Therapy and monitoring zones	
Bradycardiac	30...[5]...100...[10]...160 bpm
■ VT1	OFF...270...[10]...600 ms
■ VT2	OFF...270...[10]...500 ms
■ VF	OFF...240...[10]...400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	interval counter, onset, stability, persistent VT
Detection counter VT1 and VT2	10...[2]...60 for VT1; 10...[2]...40 for VT2
Redetection counter VT1 and VT2	10...[2]...30
Detection/redetection counter VF (X/Y)	6/8, 8/12, 10/14, 12/16, 16/20, 18/24, 20/26, 22/30, 24/30
Onset	OFF, 4...[4]...32%
Stability	OFF, ± 8...[4]...± 48 ms
Sustained VT	OFF, 1 min, 2 min, 3 min, 5 min, 10 min, 20 min, 30 min
Tachycardia therapy in VT1/VT2	
ATP types	Burst, Ramp
■ Attempts	OFF, 1...[1]...10
■ Number S1	1...[1]...10
■ Add S1	OFF, ON
■ R-S1 interval	70...[5]...95%
■ S1 decrement	5...[5]...40 ms
■ Scan decrement	OFF, 5...[5]...40 ms
ATP optimization	OFF, ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy in VF	
ATP type (ATP One Shot)	OFF, Burst, Ramp
■ Stability criterion	12%
■ ATP attempts	1 (fixed)
■ R-S1 interval	70...[5]...95%
■ Number S1	1...[1]...10
Cardioversion/defibrillation therapy	
Number of shocks	for VT zones: OFF, 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF, ON
Polarity (in VT1, VT2, VF)	normal, reversed, alternating
Waveform for shock (in VT1, VT2, VF)	biphasic, biphasic 2
Shock path	RV → SVC + Can, RV → Can, RV → SVC
Energy	1st shock: OFF (VT1/VT2), 2...[2]...20...[5]...40 J; 2nd shock: OFF (VT1, VT2) 4...[2]...20...[5]...40 J
Post Shock mode	WI if permanent WI(R), OFF
Post Shock pulse amplitude	7.5 V
Post Shock pulse width	1.5 ms
Post Shock duration	OFF, 10 s, 30 s, 1 min, 2 min, 5 min, 10 min
Pacing parameters	
Bradycardia/CRT	
Mode	VI, VVIR, OFF, VOO ²
Pulse amplitude	0.5...[0.25]...4.0...[0.5]...6.0, 7.5 V
Pulse width	0.4; 0.5...[0.25]...1.5 ms
Capture Control	OFF, ATM, ON
Basic rate	30...[5]...100...[10]...160 bpm
■ Rate hysteresis	OFF, -5...[-5]...-25...[-20]...-65 bpm
■ Scan and Repetitive	OFF, ON (= 10 cycles)
■ Night rate	OFF, 30...[5]...100 bpm
Sensing RV	Std. – Standard, TWS – Enhanced T-wave suppression, VFS – Enhanced VF sensitivity, (Individually programmable sensing parameters)
Sensor	Accelerometer
Lead connections	
Pacing/sensing	IS-1 bipolar (1 x)
Shock	DF-1 (2 x)
Diagnostic functions	
Periodic recordings	OFF, 30 days, 60 days, 90 days, 120 days, 180 days
IEGM Holter	2 x 24 min (Far-Field, RV)
Thoracic impedance (TI)	OFF, ON
Physical parameters	
Dimensions	66 mm x 55 mm x 13 mm
Volume/weight	37.2 cm ³ /92 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	11.2 years ¹

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP)

Program sets	
Programs	individual program [1–3, individually programmable], standard program, first interrogated program, SAFE program, MRI program

BIOTRONIK Home Monitoring®

Transmitted data	detection and therapy counters, rhythm control, statistics, lead integrity measurements, battery and system status, ICD program parameters
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Message types	
Trend message	triggered automatically once every 24 hours
Event message	triggered automatically after certain cardiac events
Test message	triggered manually via programmer

Findings	
Device	device status, battery status, programmer-triggered message received, device in MRI mode
Leads	sensing amplitude, ² pacing impedance, ⁴ shock impedance (painless, at last shock), RV pacing threshold, ³ Capture Control disabled
Arrhythmias	ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF), ineffective max. energy shock
Heart Failure Monitor	mean ven. heart rate (24 h, at rest), ² mean PVC/h ³
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, episode details received, ven. therapy episode with long duration, ² ven. monitoring episode with long duration ²
Data transmission	remote follow-up trigger occurred, first message received, no message received for (days)

Programmer settings	
Home Monitoring	OFF, ON
Time of transmission	Std., 00:00...[01:00]...23:00 [hh:mm]
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Ongoing atrial episodes	OFF, 6 h, 12 h, 18 h

Periodic IEGM for remote follow-up	
Cycle duration/date of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/ 1–5 individual programmable dates
Transmitted data	Periodic IEGM, rate histogram (V) device settings and statistics

Technical data	
Transmitter frequency	403 MHz
Transmitting power	< 25 µW

1 RV 2.5 V/0.4 ms, 60 bpm, 700 Ω; RV 15% pacing; 4 max. energy charges per year; Home Monitoring ON (daily transmission), diagnostics ON.

2 Mode for electrocautery and MRI.

3 Programmable upper or lower limit.

4 Programmable upper and lower limit.

Lumax 540 VR-T DX

Single-chamber ICD with complete atrial diagnostics



Product Highlights

■ Complete atrial diagnostics

Allows together with the Linnox^{smart} S DX lead the complete recording of any atrial events.

■ Reliable Sensing & Detection

SelectSense[®] – Enables adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

SMART Detection[®] – Reduces inadequate therapies via a clinically proven SVT discrimination algorithm.

■ Appropriate Therapy

ATP One Shot[®] – Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

ATP Optimization – Enables faster delivery of effective ATP therapy via automatic optimization of the ATP sequence.

DFT Manager – Ensures effective defibrillation through expanded shock therapy management and 40 J maximum shock energy.

■ Advanced Patient Management

BIOTRONIK Home Monitoring[®] – Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

IEGM-Online HD[®] – Facilitates remote assessment of therapy appropriateness and early detection of potential causes for inappropriate therapies.

Automatic Threshold Monitoring – Permits remote evaluation of ventricular pacing thresholds.

9.4 years longevity – Avoids risks associated with device replacement procedures by extending device longevity through the use of energy-efficient technologies.

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 540 VR-T DX	37 cm ³	13 mm	IS-1 (2×) DF-1 (2×)	368 852

Technical Data

Arrhythmia detection		
Rhythm classes	bradycardic, physiologic, VT-1, VT-2, VF	
Ventricular sensitivity	automatic sensitivity adjustment	
Atrial sensitivity	automatic sensitivity adjustment	
VT detection and redetection		
Criteria	number of intervals, onset, stability, SMART, persistent VT	
VT interval	OFF, 270...[10]...600 ms for VT-1; OFF, 270...[10]...500 ms for VT-2	
Number of VT intervals for detection and redetection	detection: 10...[2]...60 for VT-1; 10...[2]...40 for VT-2 redetection: 10...[2]...30	
Onset	OFF ¹⁾ , 4...[4]...32%; with SMART: 20%	
Stability	OFF ¹⁾ , ± 8...[4]...± 48 ms; with SMART: ± 12%	
Sustained VT	OFF, 0.5, 1.0, 2.0, 3.0, 5...[5]...30 min	
SMART detection, redetection	OFF, ON	
VF detection and redetection		
VF interval	OFF, 200...[10]...400 ms	
Criterion	X out of Y	
Detection counter of VF intervals	6...[1]...30 out of 8...[1]...31	
Termination detection		
Number of intervals for termination	12 out of 16 intervals slower than VT-1	
Forced termination	OFF, 1...[1]...15 min	
Tachycardia therapy		
ATP type	burst, ramp, burst + PES ²⁾	
Attempts	OFF, 1...[1]...10	
Number S1	1...[1]...10	
Add. S1	OFF, ON	
R-S1 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%	
S1 decrement	5...[5]...40 ms	
S1-S2 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%	
Scan decrement	OFF, 5...[5]...40 ms	
Min. ATP interval	200...[5]...300 ms	
ATP optimization	OFF, ON	
ATP One Shot [®]		
ATP type	OFF, burst, ramp, burst + PES ²⁾	
Stability criterion	12%	
ATP attempts	1	
Number S1	1...[1]...10	
Cardioversion/defibrillation therapy		
Number of shocks	for VT zones: OFF, 1...[1]...8; for VF zone: 6...[1]...8	
Waveform	biphasic, biphasic 2	
Polarity (per zone)	normal, reversed, alternating	
Shock path	RV → SVC + Can, RV → Can, RV → SVC	
Energy	1 st shock: 1...[1]...16...[2]...40 J; 2 nd shock: 2...[1]...16...[2]...40 J; 3 rd to n th shock: 40 J	
Confirmation (per zone)	OFF, ON	
Post-shock duration	OFF, 10...[10]...50 s; 1...[1]...10 min	
Pacing parameters		
Bradycardia		
Post Shock		
Mode	VDD, VDI, VI, VDDR, VDIR, VDIR, OFF	VDI if VDD(R), VDI(R); VVI if VVI(R), OFF
Pulse amplitude (ventricle)	0.2...[0.1]...6.2, 7.5 V	7.5 V
Pulse width (ventricle)	0.4; 0.5; 0.7; 1.0; 1.2; 1.5 ms	1.5 ms
Basic rate	30...[5]...100...[10]...160 bpm	30...[5]...100...[10]...160 bpm
■ Rate hysteresis	OFF, -5...[-5]...-90 bpm	OFF, -5...[-5]...-65 bpm
■ Repetitive/scan hysteresis	OFF, 1...[1]...15 cycles	
AV delay	fixed, low, medium, high, individual fixed 15, 40...[5]...350 ms	fixed: 50...[10]...350 ms
AV hysteresis mode	positive, negative, IRS ^{plus} , OFF	
■ AV hysteresis	10...[10]...150 ms	
■ AV repetitive hysteresis (positive)	OFF, 1...[1]...10 cycles	
■ AV repetitive hysteresis (negative)	OFF, 1...[1]...15...[5]...100...[10]...180 cycles	
■ AV scan hysteresis	OFF, 1...[1]...10 cycles	
Upper tracking rate	90...[10]...160 bpm	
Mode Switching	VDD(R); VDI, VDIR	
■ Change basic rate during MS	OFF, +5...[5]...+30 bpm	
■ Post mode switch rate	OFF, +5...[5]...+50 bpm	
■ Post mode switch duration	1...[1]...30 min	
PVARP ³⁾	AUTO, 175...[25]...600 ms	
PVARP after VES	PVARP +225 ms (max. 600 ms)	
PMT protection	OFF, ON	
Sensor	accelerometer, various programmable parameters	

IRS ^{plus}	
IRS ^{plus}	OFF, ON
AV hysteresis	automatic
AV repetitive	OFF, 1...[1]...10 cycles
AV scan	OFF, 1...[1]...10 cycles
AV max	400 ms

Lead connections	
Pacing/sensing	IS-1 bipolar (2x)
Shock	DF-1 (2x)

Diagnostic functions	
Automatic Threshold Monitoring (ATM)	RV: OFF, ON
AT/AF Rate	100...[10]...250 bpm
IEGM Holter	3x32 min
Channels	atrium, right ventricle, far-field
Length of pre-history	fixed: 30 s; 5 s [with fulfilled onset or for induced episodes]
IEGM at SVT	OFF, ON
IEGM at AT/AF	OFF, ON
Ongoing atrial episode	OFF, 0.5, 6, 12, 18 h

Housing	
Dimensions	66x55x13 mm
Volume/weight	37.2 cm ³ /92 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	9.4 years ⁴⁾

Home Monitoring

Home Monitoring	
Transmitted data	Heart Failure Monitor [®] diagnostics, detection and therapy counters, atrial and ventricular rhythm control statistics, lead integrity measurements, battery and system status, ICD program parameters

Report types	
Trend report	triggered automatically once every 24 hours
Event report	triggered automatically after certain cardiac events
Test report	triggered manually via programmer

Event types	
Device	device status, battery status, programmer-triggered message received
Leads	sensing amplitude (RA, RV) ⁵⁾ , pacing impedance (RV) ⁶⁾ , shock impedance (painless, at last shock) ⁶⁾ , RV pacing threshold ⁷⁾
Bradycardia	ventricular paces ⁵⁾
Arrhythmias	atrial arrhythmia detected (long, monitor, SVT), ventricular arrhythmia detected (VT 1, VT2, VF), ineffective max. energy shock
Heart Failure Monitor [®]	mean heart rate [24 h, at rest] ⁵⁾ , atrial burden ⁵⁾ , mean VES/h ⁵⁾
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with acceleration of atrial rhythm ⁵⁾ , ven. episode with fulfilled ATP time-out criterion, ven. therapy episode duration ⁵⁾ , ven. monitoring episode duration ⁵⁾ , periodic IEGM received

Programmer settings	
Home Monitoring	OFF, ON
Time of data transmission	00:00-23:59

IEGM-Online HD [®]	
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Periodic IEGM	OFF, 1, 2, 3, 4, 6 months ⁸⁾
Ongoing atrial episodes	OFF, 0.5, 6, 12, 18 h

Technical data	
Transmitter frequency	403 MHz
Transmitting power	<25 µW

- 1) OFF cannot be programmed if SMART is active.
- 2) PES: Programmed extra stimulus.
- 3) PVARP: Post ventricular atrial refractory period.
- 4) RV 2.5 V/0.4 ms; 60 bpm; 700 Ω; RV 15% pacing; 4 max. energy shocks/year; Home Monitoring ON; diagnostics ON.
- 5) Programmable upper or lower limit.
- 6) Programmable upper and lower limit.
- 7) Programmable safety margin.
- 8) If periodic IEGM is enabled the system generates an additional IEGM message one week after activation.

Lumax 540 VR-T

Single-chamber ICD with Automatic Threshold Monitoring



Product Highlights

■ Reliable Sensing & Detection

SelectSense® – Enables adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

■ Appropriate Therapy

ATP One Shot® – Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

ATP Optimization – Enables faster delivery of effective ATP therapy via automatic optimization of the ATP sequence.

DFT Manager – Ensures effective defibrillation through expanded shock therapy management and 40J maximum shock energy.

■ Advanced Patient Management

BIOTRONIK Home Monitoring® – Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

IEGM-Online HD® – Facilitates remote assessment of therapy appropriateness and early detection of potential causes for inappropriate therapies.

Automatic Threshold Monitoring – Permits remote evaluation of ventricular pacing thresholds.

9.8 years longevity – Avoids risks associated with device replacement procedures by extending device longevity through the use of energy-efficient technologies.

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 540 VR-T	37 cm ³	13 mm	IS-1 DF-1 (2x)	360 348

Technical Data

Arrhythmia detection	
Rhythm classes	bradycardic, physiologic, VT-1, VT-2, VF
Ventricular sensitivity	automatic sensitivity adjustment

VT detection and redetection	
Criteria	number of intervals, onset, stability, persistent VT
VT interval	OFF, 270...[10]...400 ms for VT-1; OFF, 270...[10]...500 ms for VT-2
Number of VT intervals for detection and redetection	detection: 10...[2]...60 for VT-1; 10...[2]...40 for VT-2 redetection: 10...[2]...30
Onset	OFF, 4...[4]...32%
Stability	OFF, ± 8...[4]...± 48 ms
Sustained VT	OFF, 0.5, 1.0, 2.0, 3.0, 5...[5]...30 min

VF detection and redetection	
VF interval	OFF, 200...[10]...400 ms
Criterion	X out of Y
Detection counter of VF intervals	6...[1]...30 out of 8...[1]...31

Termination detection	
Number of intervals for termination	12 out of 16 intervals slower than VT-1
Forced termination	OFF, 1...[1]...15 min

Tachycardia therapy	
ATP type	burst, ramp, burst + PES ¹⁾
Attempts	OFF, 1...[1]...10
Number S1	1...[1]...10
Add. S1	OFF, ON
R-S1 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%
S1 decrement	5...[5]...40 ms
S1-S2 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%
Scan decrement	OFF, 5...[5]...40 ms
Min. ATP interval	200...[5]...300 ms
ATP optimization	OFF, ON

ATP One Shot®	
ATP type	OFF, burst, ramp, burst + PES ¹⁾
Stability criterion	12%
ATP attempts	1
Number S1	1...[1]...10

Cardioversion/defibrillation therapy	
Number of shocks	for VT zones: OFF, 1...[1]...8; for VF zone: 6...[1]...8
Waveform	biphasic, biphasic 2
Polarity [per zone]	normal, reversed, alternating
Shock path	RV → SVC + Can, RV → Can, RV → SVC
Energy	1 st shock: 1...[1]...16...[2]...40 J; 2 nd shock: 2...[1]...16...[2]...40 J; 3 rd to n th shock: 40 J
Confirmation [per zone]	OFF, ON
Post-shock duration	OFF, 10...[10]...50 s; 1...[1]...10 min

Pacing parameters	Bradycardia	Post Shock
Mode	WVIR, VVI, OFF	VVI
Pulse amplitude	0.2...[0.1]...6.2, 7.5 V	7.5 V
Pulse width	0.4, 0.5, 0.7, 1.0, 1.2, 1.5 ms	1.5 ms
Basic rate	30...[5]...100...[10]...160 bpm	30...[5]...100...[10]...160 bpm
■ Rate hysteresis	OFF, -5...[-5]...-90 bpm	OFF, -5...[-5]...-65 bpm
■ Repetitive/scan hysteresis	OFF, 1...[1]...15 cycles	

Sensor parameters	
Max. sensor rate	90...[5]...160 bpm
Rate increase	0.5, 1...[1]...6 bpm/cycle
Rate decrease	0.25...[0.25]...1.25 bpm/cycle
Sensor gain	1...40
Auto gain	OFF, ON
Sensor threshold	very low, low, medium, high, very high

Lead connections	
Pacing/sensing	IS-1 bipolar [1 x]
Shock	DF-1 [2 x]

Diagnostic functions	
Automatic Threshold Monitoring (ATM)	RV: OFF, ON
IEGM Holter	2 x 32 min
Channels	ventricle, far-field
Length of pre-history	fixed: 30 s; 5 s (with fulfilled onset or for induced episodes)
IEGM at SVT	OFF, ON

Housing	
Dimensions	66 x 55 x 13 mm
Volume/weight	37.2 cm ³ /92 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	9.8 years ²⁾

Home Monitoring

Transmitted data	
Transmitted data	Heart Failure Monitor® diagnostics, detection and therapy counters, rhythm control statistics, lead integrity measurements, battery and system status, ICD program parameters

Report types	
Trend report	triggered automatically once every 24 hours
Event report	triggered automatically after certain cardiac events
Test report	triggered manually via programmer

Event types	
Device	device status, battery status, programmer triggered message received
Lead	RV sensing amplitude ³⁾ , RV pacing impedance ⁴⁾ , shock impedance (painless, at last shock) ⁴⁾ , RV pacing threshold ⁵⁾
Bradycardia	ventricular paces ³⁾
Arrhythmias	SVT detected, ventricular arrhythmia detected [VT1, VT2, VF], ineffective max. energy shock
Heart Failure Monitor®	mean heart rate [24 h, at rest] ³⁾
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with fulfilled ATP time-out criterion, ven. therapy episode duration ³⁾ , ven. monitoring episode duration ³⁾ , periodic IEGM received

Programmer settings	
Home Monitoring	OFF, ON
Time of data transmission	00:00-23:59

IEGM-Online HD®	
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Periodic IEGM	OFF, 1, 2, 3, 4, 6 months ³⁾

Technical data	
Transmitter frequency	403 MHz
Transmitting power	< 25 µW

- 1) PES: Programmed extra stimulus.
- 2) RV 2.5 V/0.4 ms; 60 bpm; 700 Ω; RV 15% pacing; 4 max. energy shocks/year; Home Monitoring ON; diagnostics ON.
- 3) Programmable upper or lower limit.
- 4) Programmable upper and lower limit.
- 5) Programmable safety margin.
- 6) If periodic IEGM is enabled the system generates an additional IEGM message one week after activation

Iperia 7 DR-T

Dual-chamber ICD



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392410
Iperia 7 DR-T	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392424

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control[A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 U; RV pacing: 15 %; RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
BIOTRONIK Home Monitoring®	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 7 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 DR-T ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392409
Iperia 7 DR-T ProMRI	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392423

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (A, RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (A, RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control(A, RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾
¹⁾ RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 U; RV pacing: 15 %, RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
BIOTRONIK Home Monitoring®	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Iperia 5 DR-T

Dual-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392415
Iperia 5 DR-T	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392420

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; VDD; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode [IRSplus]	400 ms (fixed)
■ AV hysteresis mode [Positive]	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA pacing: 50 %, 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

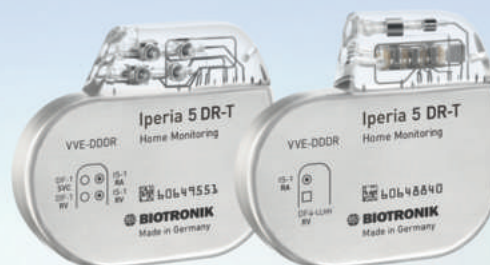
BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 5 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 DR-T ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392418
Iperia 5 DR-T ProMRI	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392419

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART = OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SV; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

¹⁾ RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA pacing: 50 %, 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Itrevia 7 DR-T

Dual-chamber ICD



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392412
Itrevia 7 DR-T	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392426

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control[A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 U; RV pacing: 15 %; RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
BIOTRONIK Home Monitoring®	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 7 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 DR-T ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392411
Itrevia 7 DR-T ProMRI	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392425

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDI; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LA)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 U; RV pacing: 15 %, RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 5 DR-T

Dual-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392417
Itrevia 5 DR-T	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392422

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; VDD; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA pacing: 50 %, 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

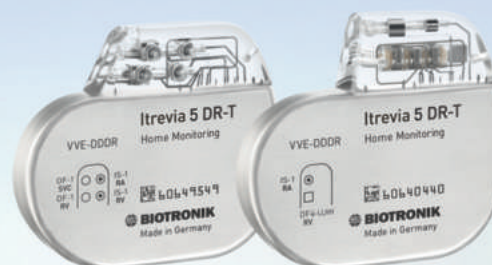
BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 5 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 DR-T ProMRI	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	392416
Itrevia 5 DR-T ProMRI	DF4 (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	392421

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SV; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

¹⁾ RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA pacing: 50 %, 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Inventra 7 DR-T

Dual-chamber ICD



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 DR-T	DF-1 (2x), IS-1 (2x)	36 cm ³ /87 g	65 mm x 55 mm x 12.5 mm	399431
Inventra 7 DR-T	DF4 (1x), IS-1 (1x)	35 cm ³ /87 g	65 mm x 56 mm x 12.5 mm	399429

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 4*45 J; 6*45 J For the VF zone: 4*45 J; 6*45 J
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control[A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.3 years ¹⁾
¹⁾ RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing: 15 %; RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 5 min; 30 min; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Inventra 7 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 DR-T ProMRI	DF-1 (2x), IS-1 (2x)	36 cm ³ /87 g	65 mm x 55 mm x 12.5 mm	399430
Inventra 7 DR-T ProMRI	DF4 (1x), IS-1 (1x)	35 cm ³ /87 g	65 mm x 56 mm x 12.5 mm	399428

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 4*45 J; 6*45 J For the VF zone: 4*45 J; 6*45 J
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.3 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 U; RV pacing: 15 %, RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 5 min; 30 min; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Idova 7 DR-T

Dual-chamber ICD



Product Highlights

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device size.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 DR-T	DF-1 (2x) IS-1 (2x)	36 cm ³ /86 g	65 mm x 55 mm x 12.5 mm	383574
Idova 7 DR-T	DF4 (1x) IS-1 (1x)	35 cm ³ /87 g	65 mm x 56 mm x 12.5 mm	383575

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI if permanent: VVIR; OFF; DDI if permanent: DDD(R); DDI(R); AAI(R); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms (fixed)
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.4 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; stim. RV: 15 %, RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long ongoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Idova 7 DR-T

MR Conditional dual-chamber ICD

ProMRI®



Product Highlights

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device size.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 DR-T	DF-1 (2x) IS-1 (2x)	36 cm ³ /86 g	65 mm x 55 mm x 12.5 mm	383576
Idova 7 DR-T	DF4 (1x) IS-1 (1x)	35 cm ³ /87 g	65 mm x 56 mm x 12.5 mm	383577

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R); DDI(R); AAI(R); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Hotter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.4 years ¹⁾
1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; stim. RV: 15 %, RA: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long longoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 7 DR-T

Dual-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	383563
Ilesto 7 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	383565

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R); DDI(R); AAI(R); VVI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms (fixed)
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VVI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.7 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long ongoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 7 DR-T

MR Conditional dual-chamber ICD

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

■ Extended longevity

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390068
Ilesto 7 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	390074

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Hotter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.7 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long longoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 5 DR-T

Dual-chamber ICD



Product Highlights

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	383566
Ilesto 5 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	383568

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R); DDI(R); AAI(R); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA); Pacing impedance (RV, RA); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long longoing), SVT; Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 5 DR-T

MR Conditional dual-chamber ICD

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390114
Ilesto 5 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	390116

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVIR; OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAI; D00; DDD; DDI; VI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Hotter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON [daily transmission]; diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long longoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 7 DR-T

Dual-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390067
Iforia 7 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	390073

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI if permanent: VVI(R), OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms (fixed)
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed

Thoracic impedance (TI)	OFF; ON
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Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.7 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction

Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received

Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
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Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT; Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
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Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
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Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
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Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
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Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment

Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics
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Iforia 7 DR-T

MR Conditional dual-chamber ICD

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

■ Extended longevity

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390069
Iforia 7 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	390075

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Hotter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	9.7 years ¹⁾
1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; RA: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long ongoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 5 DR-T

Dual-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	383567
Iforia 5 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	383569

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R); DDI(R); AAI(R); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long longoing), SVT; Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 5 DR-T

MR Conditional dual-chamber ICD

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	390115
Iforia 5 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	390117

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
■ Attempts	1 [fixed]
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVIR; OFF; DDI if permanent: DDDR; DDI(R); AAI(R); VDI if permanent: VDDR; VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	A: OFF; ATM // RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive [IRSplus]	400 ms [fixed]
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Hotter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

¹⁾ RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON [daily transmission]; diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA]; Pacing impedance [RV, RA]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long longoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 3 DR-T

Dual-chamber ICD



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Automatic threshold monitoring**

Permits remote evaluation of ventricular pacing thresholds.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 3 DR-T	DF-1 (2x) IS-1 (2x)	33 cm ³ /81 g	65 mm x 55 mm x 11 mm	383570
Iforia 3 DR-T	DF4 (1x) IS-1 (1x)	32 cm ³ /82 g	65 mm x 56 mm x 11 mm	383572

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R); DDI(R); AAI(R); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock pulse width	1.5 ms (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	RV; OFF; ATM
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
AV scan/repetitive (IRSplus)	400 ms (fixed)
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM Holter	3 x 24 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing: 15 %, RA: 50 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction

Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received

Leads	Sensing amplitude (RV, RA); Pacing impedance (RV, RA); Daily shock impedance; Latest available impedance of a delivered shock; RV pacing threshold
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Arrhythmias	Atrial arrhythmia detected (monitor, long (ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
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Heart Failure Monitor	Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
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Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
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Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
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Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Cycle length/time of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/ 1-5 individually programmable dates

Transmitted data	Periodic IEGM; rate histogram (A, V); device settings and statistics
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Ilivia 7 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilivia 7 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404622
Ilivia 7 DR-T	DF4 (LLHH) (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	404623

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 60 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA pacing: 50 %, 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 7 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 7 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404631
Intica 7 DR-T	DF4 (LLHH) (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	404632

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 60 min [Far-field, A and RV]
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾
¹⁾ RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %, RA pacing: 50 %, 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
BIOTRONIK Home Monitoring®	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics
Please refer to the technical manual of the device for further technical information.	

Intica 5 DR-T

MR conditional dual-chamber ICD

ProMRI®



Product Highlights

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 5 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404686
Intica 5 DR-T	DF4 (LLHH) (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	404687

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	WI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDDR; DDD; DDIR; DDI; VDIR; VDI; VDDR; VDIR; VDD; VDI; AAIR; AA; OFF; V00; D00
Pulse amplitude (A, RV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (A, RV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (A, RV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing (A)	Std.; OFF
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾
<small>1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing: 15 %, RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON</small>	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATPI), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 7 DR-T

Dual-chamber ICD



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 7 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404640
Inlexa 7 DR-T	DF4 (LLHH) (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	404641

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF
Sensor	Accelerometer
Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 60 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

1) RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 O; RV pacing: 15 %, RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 3 DR-T

Dual-chamber ICD



Product Highlights

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Automatic threshold monitoring**

Permits remote evaluation of ventricular pacing thresholds.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 3 DR-T	DF-1 (2x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 55 mm × 11 mm	404701
Inlexa 3 DR-T	DF4 (LLHH) (1x), IS-1 (1x)	32 cm ³ /82 g	65 mm × 56 mm × 11 mm	404702

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Pacing parameters	
Mode	DDDR; DDD; DDIR; DDI; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV]	OFF; ATM
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative; IRSplus
■ AV hysteresis mode (IRSplus)	400 ms (fixed)
■ AV hysteresis mode (Positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (A)	Std.; OFF
Sensor	Accelerometer

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (Far-field, A and RV)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	8.5 years ¹⁾

¹⁾ RA, RV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing: 15 %; RA pacing: 50 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATPI), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Lumax 740 DR-T

MR Conditional dual-chamber ICD with Ventricular Capture Control and extended longevity

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Extended longevity**

Avoids risks associated with device replacement procedures because of superior device longevity through the use of energy-efficient technologies.

- **Ventricular Capture Control**

Automatic adjustment of pacing amplitudes for improved patient safety and extended device longevity.

- **ATP One Shot**

Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

- **SelectSense Advanced**

Adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **Intrinsic Rhythm Support IRS^{plus}**

Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **BIOTRONIK Home Monitoring®**

Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 740 DR-T	37 cm ³	13 mm	IS-1 (2×) DF-1 (2×)	381 461

Technical Data

MR Conditional	
ProMRI®	MR Conditional (for combination of MR Conditional leads, please see the ProMRI manual)
Therapy and monitoring zones	
Bradycardiac	30...[5]...100...[10]...160 bpm
■ AT/AF	100...[10]...250 bpm
■ VT1	OFF...270...[10]...600 ms
■ VT2	OFF...270...[10]...500 ms
■ VF	OFF...240...[10]...400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	interval counter, onset, stability, SMART Detection®, persistent VT
Detection counter VT1 and VT2	10...[2]...60 for VT1; 10...[2]...40 for VT2
Redetection counter VT1 and VT2	10...[2]...30
Detection/redetection counter VF (X/Y)	6/8, 8/12, 10/14, 12/16, 16/20, 18/24, 20/26, 22/30, 24/30
Onset	OFF, 4...[4]...32%
Stability	if SMART = ON ± 8...[4]...± 48%, if SMART = OFF ± 8...[4]...± 48 ms
Sustained VT	OFF, 1 min, 2 min, 3 min, 5 min, 10 min, 20 min, 30 min
SMART detection and redetection	OFF, ON
Tachycardia therapy in VT1/VT2	
ATP types	Burst, Ramp
■ Attempts	OFF, 1...[1]...10
■ Number S1	1...[1]...10
■ Add S1	OFF, ON
■ R-S1 interval	70...[5]...95%
■ S1 decrement	5...[5]...40 ms
■ Scan decrement	OFF, 5...[5]...40 ms
ATP optimization	OFF, ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy in VF	
ATP type (ATP One Shot)	OFF, Burst, Ramp
■ Stability criterion	12%
■ ATP attempts	1 (fixed)
■ R-S1 interval	70...[5]...95%
■ Number S1	1...[1]...10
Cardioversion/defibrillation therapy	
Number of shocks	for VT zones: OFF, 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF, ON
Polarity (in VT1, VT2, VF)	normal, reversed, alternating
Waveform for shock (in VT1, VT2, VF)	biphasic, biphasic 2
Shock path	RV → SVC + Can, RV → Can, RV → SVC
Energy	1st shock: OFF [VT1/VT2], 2...[2]...20...[5]...40 J; 2nd shock: OFF [VT1, VT2] 4...[2]...20...[5]...40 J
Atrial therapy (NIPS ³)	programmed stimulation, Burst
Post Shock mode	DDI if permanent DDD(R), DDI(R), AAI(R); VDI if permanent VDD(R), VDI(R), VVI if permanent VVI(R), OFF
Post Shock pulse amplitude	7.5 V [RA, RV]
Post Shock pulse width	1.5 ms [RA, RV]
Post Shock duration	OFF, 10 s, 30 s, 1 min, 2 min, 5 min, 10 min
Post Shock AV delay	fixed [50...[10]...350 ms]
Pacing parameters	
Bradycardia/CRT	
Mode	DDD, DDI, VDD, VDI, AAI, VVI, DDDR, DDIR, VDDR, VDIR, AAIR, VVIR, VOO, DDO, OFF
Pulse amplitude [A/RV]	0.5...[0.25]...4.0...[0.5]...6.0, 7.5 V
Pulse width [A, RV]	0.4; 0.5...[0.25]...1.5 ms
RV Capture Control	OFF, ATM, ON
Basic rate	30...[5]...100...[10]...160 bpm
■ Rate hysteresis	OFF, -5...[-5]...-25...[-20]...-65 bpm
■ Scan and Repetitive	OFF; ON (= 10 cycles)
■ Night rate	OFF, 30...[5]...100 bpm
AV dynamics	low, medium, high, fixed, individual
AV delay after sense and pace	15, 40...[5]...350 ms
Sense compensation	OFF, -5...[-5]...-120 ms
AV hysteresis mode	positive, negative, IRS ⁵ , OFF
AV hysteresis [IRS ⁵]	400 ms
AV scan/repetitive [IRS ⁵]	ON (= 5 cycles)
AV scan/repetitive [positive]	OFF; ON (= 5 cycles)
Upper rate (UTR)	90...[10]...160 bpm
Upper rate atrium	OFF, 175, 200, 240 bpm
Mode Switch	DDI, DDIR at permanent DDD(R); VDI, VDIR at permanent VDD(R)
■ Intervention rate	OFF, 120...[10]...200 bpm
■ Change basic rate during Mode Switch	OFF, +5...[5]...+30 bpm
■ Post Mode Switch rate	OFF, +5...[5]...+50 bpm
■ Post Mode Switch duration	1...[1]...30 min
PVARP ⁶	AUTO, 175...[25]...600 ms
PMT* detection/termination	OFF, ON

Pacing parameters	
Sensing RV	Std. – Standard, TWS – Enhanced T-wave suppression, VFS – Enhanced VF sensitivity, (Individually programmable sensing parameters)
Sensing A	Standard, OFF, Individual
Sensor	Accelerometer
Lead connections	
Pacing/sensing	IS-1 bipolar (1 ×)
Shock	DF-1 (2 ×)
Diagnostic functions	
IEGM for AT/AF	OFF, ON, Advanced ON
IEGM for SVT	OFF, ON
Periodic recordings	OFF, 30 days, 60 days, 90 days, 120 days, 180 days
IEGM Holter	3 × 24 min (Far-Field, A and RV)
Length of prehistory	fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Event recording	ON, OFF
■ Trigger	Atr. detection, Atr. termination, SVT detection, Ven. detection, Ven. termination, Periodic IEGM
Thoracic impedance (TI)	OFF, ON
Physical parameters	
Dimensions	66 mm x 55 mm x 13 mm
Volume/weight	37.2 cm ³ /92 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	9.6 years ¹
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde conduction test
Program sets	
Programs	individual program (1–3, individually programmable), standard program, first interrogated program, SAFE program, MRI program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics, Heart Failure Monitor diagnostics, detection and therapy counters, rhythm control, statistics, lead integrity measurements, battery and system status, ICD program parameters
Message types	
Trend message	triggered automatically once every 24 hours
Event message	triggered automatically after certain cardiac events
Test message	triggered manually via programmer
Findings	
Device	device status, battery status, programmer-triggered message received, device in MRI mode
Leads	sensing amplitude [RA, RV], ⁸ pacing impedance [RA, RV], ⁸ shock impedance (painless, at last shock), RV pacing threshold, ⁷ Capture Control disabled (RV)
Arrhythmias	atrial arrhythmia detected (monitor, long (ongoing), SVT), ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF), ineffective max. energy shock
Heart Failure Monitor	mean ven. heart rate [24 h, at rest], ⁷ atrial burden, ⁷ mean PVC/h, ⁷ mean ventricular heart rate during atrial burden
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with acceleration of atrial rhythm, ⁷ episode details received, ven. therapy episode with long duration, ⁷ ven. monitoring episode with long duration ⁷
Data transmission	remote follow-up trigger occurred, first message received, no message received for (days)
Programmer settings	
Home Monitoring	OFF, ON
Time of transmission	Std., 00:00...[01:00]...23:00 (hh:mm)
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Ongoing atrial episodes	OFF, 6 h, 12 h, 18 h
Periodic IEGM for remote follow-up	
Cycle duration/date of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/1–5 individual programmable dates
Transmitted data	Periodic IEGM, rate histogram [A,V] device settings and statistics
Technical data	
Transmitter frequency	403 MHz
Transmitting power	< 25 µW

- 1 RA/RV 2.5 V/0.4 ms, 60 bpm, 7000; RA 50%, RV 15% pacing; 4 max. energy charges per year; Home Monitoring ON (daily transmission), diagnostics ON.
- 2 OFF cannot be programmed if SMART is active.
- 3 NIPS = Noninvasive Programmed Stimulation.
- 4 Mode for electrocautery and MRI.
- 5 PVARP = Post-Ventricular Atrial Refractory Period.
- 6 PMT = Pacemaker-Mediated Tachycardia.
- 7 Programmable upper or lower limit.
- 8 Programmable upper and lower limit.

Lumax 540 DR-T

Dual-chamber ICD with Automatic Threshold Monitoring



Product Highlights

■ Reliable Sensing & Detection

SelectSense® – Enables adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

SMART Detection® – Reduces inadequate therapies via a clinically proven SVT discrimination algorithm.

■ Appropriate Therapy

ATP One Shot® – Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

ATP Optimization – Enables faster delivery of effective ATP therapy via automatic optimization of the ATP sequence.

DFT Manager – Ensures effective defibrillation through expanded shock therapy management and 40J maximum shock energy.

Intrinsic Rhythm Support IRS^{plus} – Avoids unnecessary ventricular pacing to minimize associated risks such as AF and HF hospitalization.

■ Advanced Patient Management

BIOTRONIK Home Monitoring® – Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

Heart Failure Monitor® – Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of crucial clinical parameters.

IEGM-Online HD® – Facilitates remote assessment of therapy appropriateness and early detection of potential causes for inappropriate therapies.

Automatic Threshold Monitoring – Permits remote evaluation of ventricular pacing thresholds.

8.8 years longevity – Avoids risks associated with device replacement procedures by extending device longevity through the use of energy-efficient technologies.

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 540 DR-T	37 cm ³	13 mm	IS-1 (2×) DF-1 (2×)	360 346

Technical Data

Arrhythmia detection		
Rhythm classes	bradycardic, physiologic, VT-1, VT-2, VF	
Ventricular sensitivity	automatic sensitivity adjustment	
Atrial sensitivity	automatic sensitivity adjustment	
VT detection and redetection		
Criteria	number of intervals, onset, stability, SMART, persistent VT	
VT interval	OFF, 270...[10]...600 ms for VT-1; OFF, 270...[10]...500 ms for VT-2	
Number of VT intervals for detection and redetection	detection: 10...[2]...60 for VT-1; 10...[2]...40 for VT-2 redetection: 10...[2]...30	
Onset	OFF ¹⁾ , 4...[4]...32%; with SMART: 20%	
Stability	OFF ¹⁾ , ± 8...[4]...± 48 ms; with SMART: ± 12%	
Sustained VT	OFF, 0.5, 1.0, 2.0, 3.0, 5...[5]...30 min	
SMART detection, redetection	OFF, ON	
VF detection and redetection		
VF interval	OFF, 200...[10]...400 ms	
Criterion	X out of Y	
Detection counter of VF intervals	6...[1]...30 out of 8...[1]...31	
Termination detection		
Number of intervals for termination	12 out of 16 intervals slower than VT-1	
Forced termination	OFF, 1...[1]...15 min	
Tachycardia therapy		
ATP type	burst, ramp, burst + PES ²⁾	
Attempts	OFF, 1...[1]...10	
Number S1	1...[1]...10	
Add. S1	OFF, ON	
R-S1 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%	
S1 decrement	5...[5]...40 ms	
S1-S2 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%	
Scan decrement	OFF, 5...[5]...40 ms	
Min. ATP interval	200...[5]...300 ms	
ATP optimization	OFF, ON	
ATP One Shot®		
ATP type	OFF, burst, ramp, burst + PES ²⁾	
Stability criterion	12%	
ATP attempts	1	
Number S1	1...[1]...10	
Cardioversion/defibrillation therapy		
Number of shocks	for VT zones: OFF, 1...[1]...8; for VF zone: 6...[1]...8	
Waveform	biphasic, biphasic 2	
Polarity (per zone)	normal, reversed, alternating	
Shock path	RV → SVC + Can, RV → Can, RV → SVC	
Energy	1 st shock: 1...[1]...16...[2]...40 J; 2 nd shock: 2...[1]...16...[2]...40 J; 3 rd to n th shock: 40 J	
Confirmation (per zone)	OFF, ON	
Post-shock duration	OFF, 10...[10]...50 s; 1...[1]...10 min	
Pacing parameters		
Mode	Bradycardia	Post Shock
	DDD, DDI, VDD, VDI, AAI, VVI, DDDR, DDIR, VDDR, VDIR, AAIR, VVIR, OFF	DDI if DDD(R), DDI(R), AAI(R); VDI if VDD(R), VDI(R); VVI if VVI(R), OFF
Pulse amplitude [atrium/ventricle]	0.2...[0.1]...6.2, 7.5 V	7.5 V
Pulse width [atrium/ventricle]	0.4; 0.5; 0.7; 1.0; 1.2; 5 ms	1.5 ms
Basic rate	30...[5]...100...[10]...160 bpm	30...[5]...100...[10]...160 bpm
■ Rate hysteresis	OFF, -5...[-5]...-90 bpm	OFF, -5...[-5]...-65 bpm
■ Repetitive/scan hysteresis	OFF, 1...[1]...15 cycles	
AV delay	fixed, low, medium, high, individual fixed 15, 40...[5]...350 ms	fixed: 50...[10]...350 ms
AV hysteresis mode	positive, negative, IRS ³⁾ , OFF	
■ AV hysteresis	10...[10]...150 ms	
■ AV repetitive hysteresis (positive)	OFF, 1...[1]...10 cycles	
■ AV repetitive hysteresis (negative)	OFF, 1...[1]...15...[5]...100...[10]...180 cycles	
■ AV scan hysteresis	OFF, 1...[1]...10 cycles	
Upper tracking rate	90...[10]...160 bpm	
Mode Switching	DDD(R); DDI; DDIR; VDD(R); VDI; VDIR	
■ Change basic rate during MS	OFF, +5...[5]...+30 bpm	
■ Post mode switch rate	OFF, +5...[5]...+50 bpm	
■ Post mode switch duration	1...[1]...30 min	
PVARP ³⁾	AUTO, 175...[25]...600 ms	
PVARP after VES	PVARP +225 ms (max. 600 ms)	
PMT protection	OFF, ON	
Sensor	accelerometer, various programmable parameters	

IRS ^{plus}	
IRS ^{plus}	OFF, ON
AV hysteresis	automatic
AV repetitive	OFF, 1...[1]...10 cycles
AV scan	OFF, 1...[1]...10 cycles
AV max	400 ms

Lead connections	
Pacing/sensing	IS-1 bipolar (2x)
Shock	DF-1 (2x)

Diagnostic functions	
Automatic Threshold Monitoring (ATM)	RV: OFF, ON
AT/AF rate	100...[10]...250 bpm
IEGM Holter	3x32 min
Channels	atrium, right ventricle, far-field
Length of pre-history	fixed: 30 s; 5 s (with fulfilled onset or for induced episodes)
IEGM at SVT	OFF, ON
IEGM at AT/AF	OFF, ON
Ongoing atrial episode	OFF, 0.5, 6, 12, 18 h

Housing	
Dimensions	66 x 55 x 13 mm
Volume/weight	37.2 cm ³ /92 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	8.8 years ⁴⁾

Home Monitoring

Home Monitoring	
Transmitted data	Heart Failure Monitor [®] diagnostics, detection and therapy counters, rhythm control statistics, lead integrity measurements, battery and system status, ICD program parameters

Report types	
Trend report	triggered automatically once every 24 hours
Event report	triggered automatically after certain cardiac events
Test report	triggered manually via programmer

Event types	
Device	device status, battery status, programmer-triggered message received
Leads	sensing amplitude (RA, RV) ⁵⁾ , pacing impedance (RA, RV) ⁶⁾ , shock impedance (painless, at last shock) ⁶⁾ , RV pacing threshold ⁷⁾
Bradycardia	ventricular paces ⁵⁾
Arrhythmias	atrial arrhythmia detected (long, monitor, SVT), ventricular arrhythmia detected (VT1, VT2, VF), ineffective max. energy shock
Heart Failure Monitor [®]	mean heart rate (24 h, at rest) ⁸⁾ , atrial burden ⁸⁾ , mean VES/h ⁸⁾
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with acceleration of atrial rhythm ⁸⁾ , ven. episode with fulfilled ATP time-out criterion, ven. therapy episode duration ⁸⁾ , ven. monitoring episode duration ⁸⁾ , periodic IEGM received

Programmer settings	
Home Monitoring	OFF, ON
Time of data transmission	00:00-23:59

IEGM-Online HD [®]	
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Periodic IEGM	OFF, 1, 2, 3, 4, 6 months ⁸⁾
Ongoing atrial episodes	OFF, 0.5, 6, 12, 18 h

Technical data	
Transmitter frequency	403 MHz
Transmitting power	< 25 µW

- 1) OFF cannot be programmed if SMART is active.
- 2) PES: Programmed extra stimulus.
- 3) PVARP: Post ventricular atrial refractory period.
- 4) RA/RV 2.5 V/0.4 ms; 60 bpm; 700 Ω; RA 50%, RV 15% pacing; 4 max. energy shocks/year; Home Monitoring ON; diagnostics ON.
- 5) Programmable upper or lower limit.
- 6) Programmable upper and lower limit.
- 7) Programmable safety margin.
- 8) If periodic IEGM is enabled the system generates an additional IEGM message one week after activation.

Protego S

Tripolar ICD lead with active fixation



Product Highlights

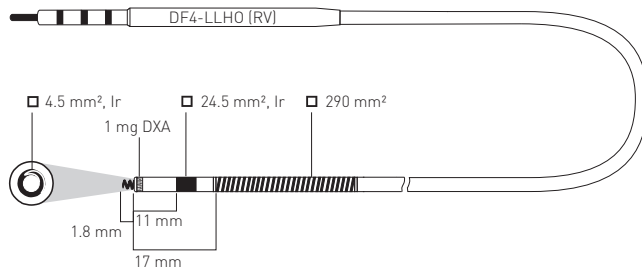
- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering Information

Model	Connectors	Fixation	Length	Order number
Protego S 60	DF4 (1x)	Retractable screw	61 cm	379970
Protego S 65	DF4 (1x)	Retractable screw	65 cm	379969
Protego S 75	DF4 (1x)	Retractable screw	75 cm	379968

Technical Data

Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	61; 65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate (DXA)
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Diameter	2.6 mm [7.8 F]
Surface area	290 mm ²
Material	Platinum/iridium
Distance to the lead tip	17 mm
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Silglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Protego ProMRI S

Tripolar MR Conditional ICD lead
with active fixation

ProMRI®



Product Highlights

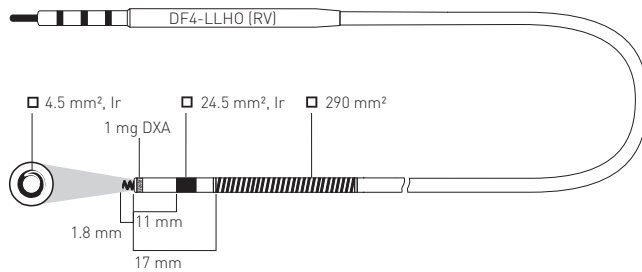
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering Information

Model	Connectors	Fixation	Length	Order number
Protego ProMRI S 65	DF4 (1x)	Retractable screw	65 cm	394099
Protego ProMRI S 75	DF4 (1x)	Retractable screw	75 cm	394100

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Diameter	2.6 mm [7.8 F]
Surface area	290 mm ²
Material	Platinum/iridium
Distance to the lead tip	17 mm
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Sitglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Protego DF-1 S

Tripolar ICD lead with active fixation



Product Highlights

- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

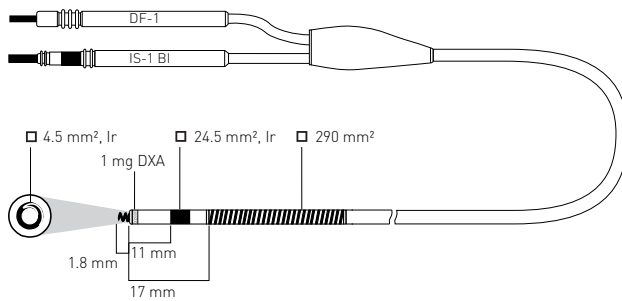
Ordering Information

Model	Connectors	Fixation	Length	Order number
Protego DF-1 S 60	DF-1 (1x); IS-1 (1x)	Retractable screw	61 cm	414018
Protego DF-1 S 65	DF-1 (1x); IS-1 (1x)	Retractable screw	65 cm	414028
Protego DF-1 S 75	DF-1 (1x); IS-1 (1x)	Retractable screw	75 cm	414030

Protego DF-1 S

Technical Data

Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	61; 65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate (DXA)
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Diameter	2.6 mm [7.8 F]
Surface area	290 mm ²
Material	Platinum/iridium
Distance to the lead tip	17 mm
Conductor	
Construction	Cable, coil
Insulation	Silicone
Surface structure	Silglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Protego DF-1 ProMRI S

Tripolar MR conditional ICD lead with active fixation

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

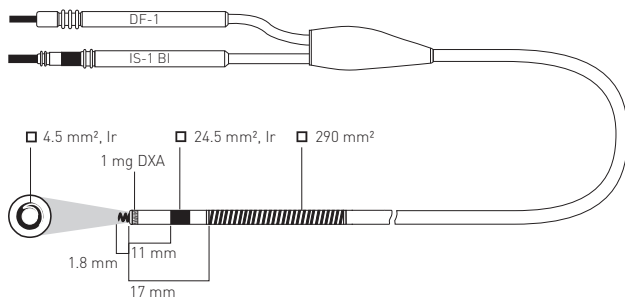
Ordering Information

Model	Connectors	Fixation	Length	Order number
Protego DF-1 ProMRI S 65	DF-1 (1x); IS-1 (1x)	Retractable screw	65 cm	414062
Protego DF-1 ProMRI S 75	DF-1 (1x); IS-1 (1x)	Retractable screw	75 cm	414063

Protego DF-1 ProMRI S

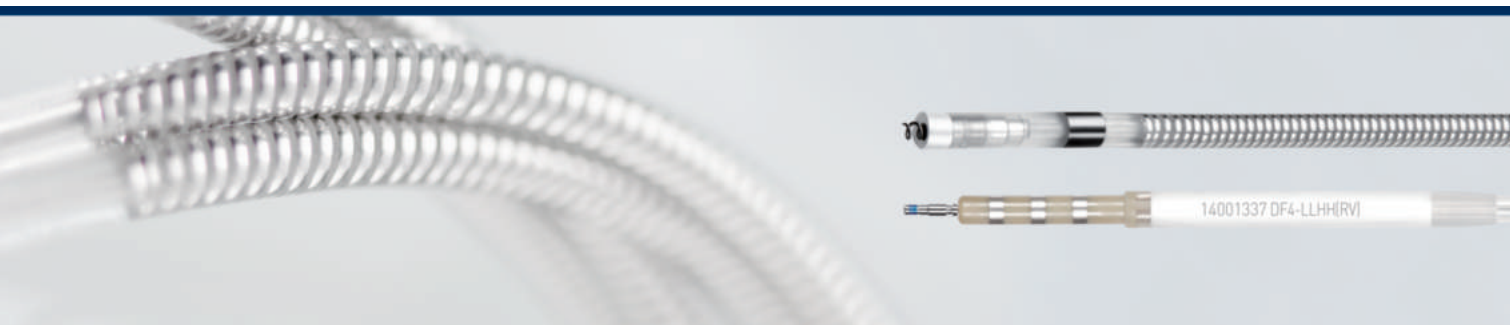
Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Diameter	2.6 mm [7.8 F]
Surface area	290 mm ²
Material	Platinum/iridium
Distance to the lead tip	17 mm
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Sitglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Protego SD

Quadripolar ICD lead with active fixation



Product Highlights

- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

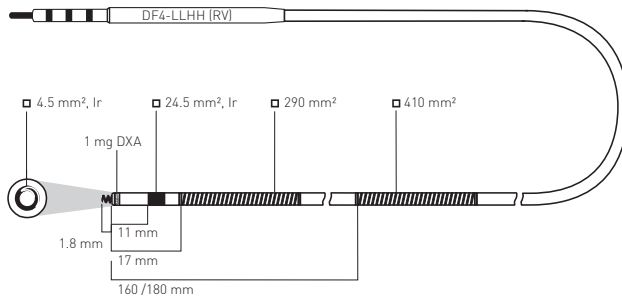
Ordering information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Protego SD 60/16	DF4 (1x)	Retractable screw	61 cm	16 cm	399408
Protego SD 65/16	DF4 (1x)	Retractable screw	65 cm	16 cm	399409
Protego SD 65/18	DF4 (1x)	Retractable screw	65 cm	18 cm	399410
Protego SD 75/18	DF4 (1x)	Retractable screw	75 cm	18 cm	399411

Protego SD

Technical data

Technical data		
Polarity	Quadripolar	
Application	Right ventricle; Superior vena cava	
Type of fixation	Active	
Overall length	61; 65; 75 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate (DXA)	
Steroid quantity	1 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek® shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; wire coil	
Insulation	Silicone	
Surface structure	Silglide® surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Protego ProMRI SD

Quadripolar MR Conditional ICD lead
with active fixation

ProMRI®



Product Highlights

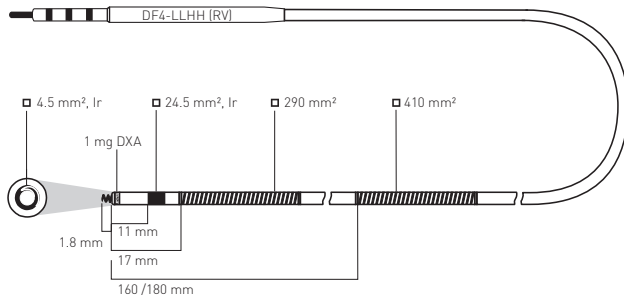
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering Information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Protego ProMRI SD 65/16	DF4 (1x)	Retractable screw	65 cm	16 cm	399414
Protego ProMRI SD 65/18	DF4 (1x)	Retractable screw	65 cm	18 cm	399415
Protego ProMRI SD 75/18	DF4 (1x)	Retractable screw	75 cm	18 cm	399416

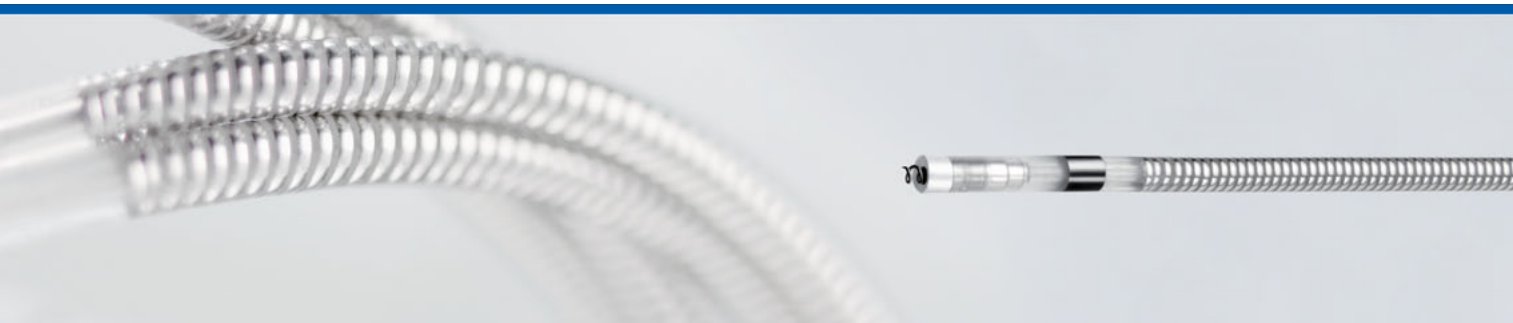
Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Application	Right ventricle ; Superior vena cava	
Type of fixation	Active	
Overall length	65; 75 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	1 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek® shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; coil	
Insulation	Silicone	
Surface structure	Sitglide® surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Protego DF-1 SD

Quadripolar ICD lead with active fixation



Product Highlights

- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

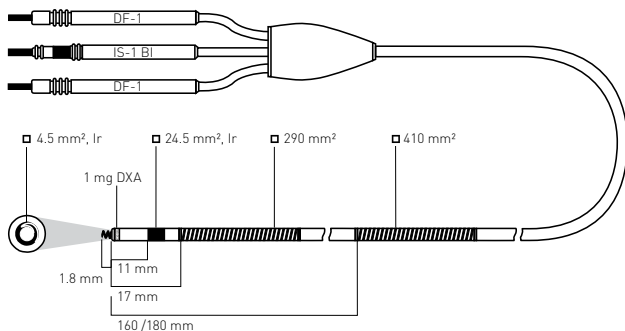
Ordering Information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Protego DF-1 SD 60/16	DF-1 (2x); IS-1 (1x)	Retractable screw	61 cm	16 cm	414014
Protego DF-1 SD 65/16	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	16 cm	414015
Protego DF-1 SD 65/18	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	18 cm	414016
Protego DF-1 SD 75/18	DF-1 (2x); IS-1 (1x)	Retractable screw	75 cm	18 cm	414017

Protego DF-1 SD

Technical Data

Technical data		
Polarity	Quadripolar	
Application	Right ventricle; Superior vena cava	
Type of fixation	Active	
Overall length	61; 65; 75 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate (DXA)	
Steroid quantity	1 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek® shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; coil	
Insulation	Silicone	
Surface structure	Silglide® surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Protego DF-1 ProMRI SD

Quadripolar MR conditional ICD lead with active fixation **ProMRI®**



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

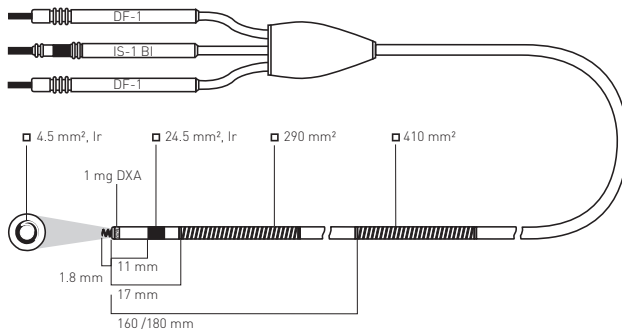
Ordering Information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Protego DF-1 ProMRI SD 65/16	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	16 cm	414058
Protego DF-1 ProMRI SD 65/18	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	18 cm	414059
Protego DF-1 ProMRI SD 75/18	DF-1 (2x); IS-1 (1x)	Retractable screw	75 cm	18 cm	414060

Protego DF-1 ProMRI SD

Technical Data

MR conditional		
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Application	Right ventricle; Superior vena cava	
Type of fixation	Active	
Overall length	65; 75 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	1 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek® shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; coil	
Insulation	Silicone	
Surface structure	Sitglide® surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Protego DF-1 S DX

Pentapolar ICD lead with active fixation



Product Highlights

- Floating atrial dipole to detect atrial signals together with a BIOTRONIK single-chamber DX ICD
- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

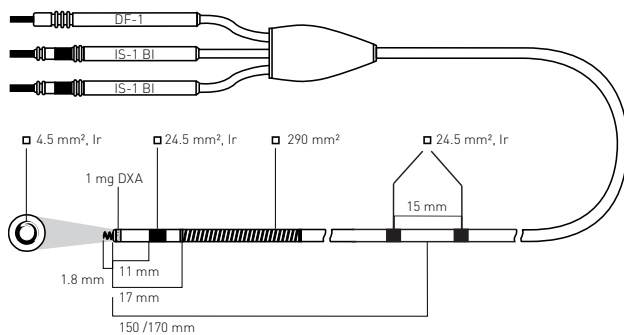
Ordering Information

Model	Connectors	Fixation	Length	Distance dipole to tip	Order number
Protego DF-1 S DX 65/15	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	15 cm	414031
Protego DF-1 S DX 65/17	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	17 cm	414032

Protego DF-1 S DX

Technical Data

Technical data	
Polarity	Pentapolar
Application	Right ventricle; Right atrium
Type of fixation	Active
Overall length	65 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate (DXA)
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Surface area	290 mm ²
Distance to the lead tip	17 mm
Diameter	2.6 mm [7.8 F]
Material	Platinum/iridium
Floating atrial dipole	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	150/170 mm
Atrial dipole distance	15 mm
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Sitglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Protego DF-1 ProMRI S DX

Pentapolar MR conditional ICD lead with active fixation **ProMRI®**



Product Highlights

- Floating atrial dipole to detect atrial signals together with a BIOTRONIK single-chamber DX ICD
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide® surface coating compatible with 8 F lead introducer
- Protek® shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

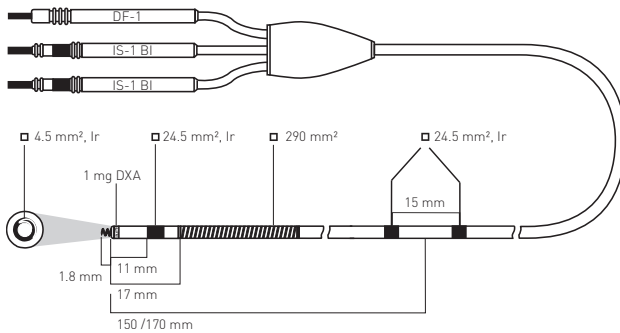
Ordering Information

Model	Connectors	Fixation	Length	Distance dipole to tip	Order number
Protego DF-1 ProMRI S DX 65/15	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	15 cm	414064
Protego DF-1 ProMRI S DX 65/17	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	17 cm	414065

Protego DF-1 ProMRI S DX

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Pentapolar
Application	Right ventricle; Right atrium
Type of fixation	Active
Overall length	65 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Surface area	290 mm ²
Distance to the lead tip	17 mm
Diameter	2.6 mm [7.8 F]
Material	Platinum/iridium
Floating atrial dipole	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	150/170 mm
Atrial dipole distance	15 mm
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Silglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Linox^{smart} S

Tripolar ICD lead with active fixation



Product Highlights

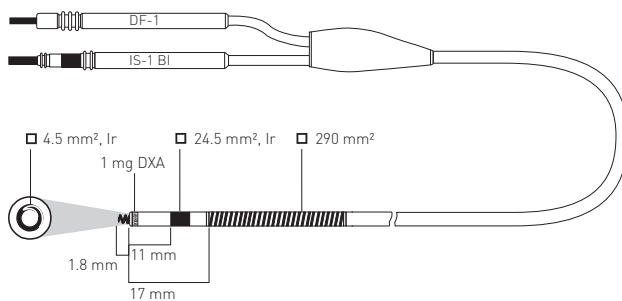
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Order number
Linox ^{smart} S 60	DF-1 (1x); IS-1 (1x)	Retractable screw	61 cm	375012
Linox ^{smart} S 65	DF-1 (1x); IS-1 (1x)	Retractable screw	65 cm	369818
Linox ^{smart} S 75	DF-1 (1x); IS-1 (1x)	Retractable screw	75 cm	369819

Technical data

Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	61; 65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate (DXA)
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Diameter	2.6 mm [7.8 F]
Surface area	290 mm ²
Material	Platinum/iridium
Distance to the lead tip	17 mm
Conductor	
Construction	Cable, wire coil
Insulation	Silicone
Surface structure	Sitiglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Linnox^{smart} ProMRI S

Tripolar MR Conditional ICD lead with active fixation

ProMRI[®]



Product Highlights

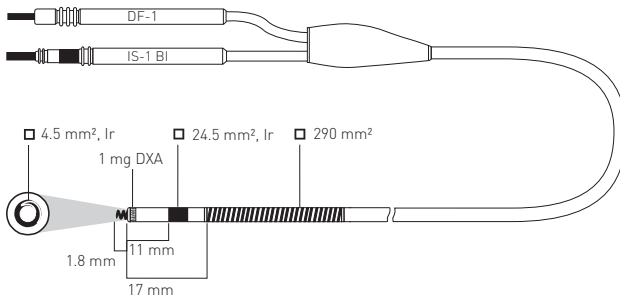
- BIOTRONIK ProMRI[®] allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Order number
Linnox ^{smart} ProMRI S 65	DF-1 (1x); IS-1 (1x)	Retractable screw	65 cm	377166
Linnox ^{smart} ProMRI S 75	DF-1 (1x); IS-1 (1x)	Retractable screw	75 cm	377167

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
Length	50 mm
Diameter	2.6 mm [7.8 F]
Surface area	290 mm ²
Material	Platinum/iridium
Distance to the lead tip	17 mm
Conductor	
Construction	Cable; wire coil
Insulation	Silicone
Surface structure	Sitgilde® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Linox^{smart} SD

Quadripolar ICD lead with active fixation



Product Highlights

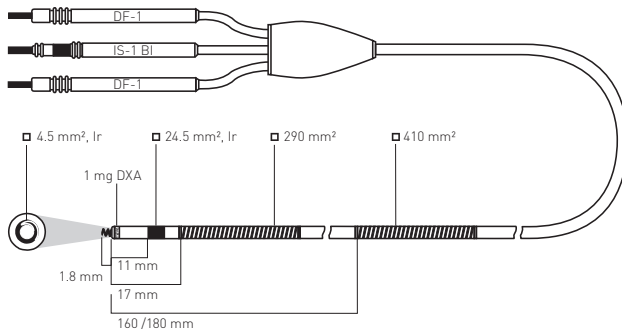
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Linox ^{smart} SD 60/16	DF-1 (2x); IS-1 (1x)	Retractable screw	61 cm	16 cm	359065
Linox ^{smart} SD 65/16	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	16 cm	359066
Linox ^{smart} SD 65/18	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	18 cm	359067
Linox ^{smart} SD 75/18	DF-1 (2x); IS-1 (1x)	Retractable screw	75 cm	18 cm	359068

Technical data

Technical data		
Polarity	Quadripolar	
Application	Right ventricle; Superior vena cava	
Type of fixation	Active	
Overall length	61; 65; 75cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate (DXA)	
Steroid quantity	1 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek [®] shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; wire coil	
Insulation	Silicone	
Surface structure	Silglide [®] surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Linnox^{smart} ProMRI SD

Quadripolar MR Conditional ICD lead
with active fixation

ProMRI[®]



Product Highlights

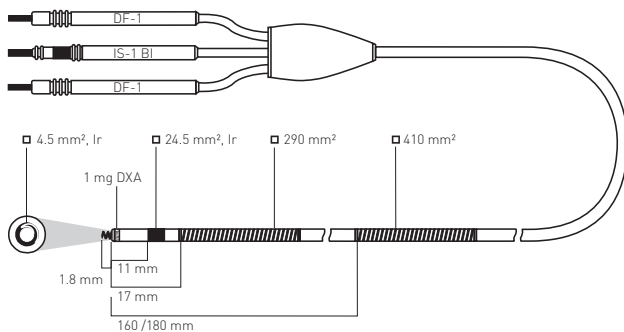
- BIOTRONIK ProMRI[®] allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Linnox ^{smart} ProMRI SD 65/16	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	16 cm	377169
Linnox ^{smart} ProMRI SD 65/18	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	18 cm	377170
Linnox ^{smart} ProMRI SD 75/18	DF-1 (2x); IS-1 (1x)	Retractable screw	75 cm	18 cm	377171

Technical data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Application	Right ventricle; Superior vena cava	
Type of fixation	Active	
Overall length	65; 75 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	1 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek® shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; wire coil	
Insulation	Silicone	
Surface structure	Sitglide® surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Linnox^{smart} S DX

Pentapolar ICD lead with active fixation



Product Highlights

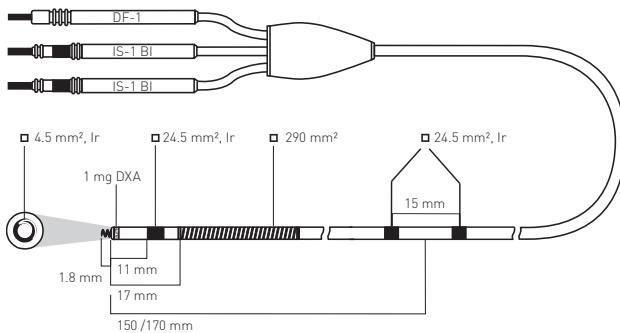
- Floating atrial dipole to detect atrial signals together with a BIOTRONIK single-chamber DX ICD
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Distance dipole to tip	Order number
Linnox ^{smart} S DX 65/15	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	15 cm	365500
Linnox ^{smart} S DX 65/17	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	17 cm	365501

Technical data

Technical data	
Polarity	Pentapolar
Application	Right ventricle; Right atrium
Type of fixation	Active
Overall length	65 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate (DXA)
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
	Ventricle
Length	50 mm
Surface area	290 mm ²
Distance to the lead tip	17 mm
Diameter	2.6 mm [7.8 F]
Material	Platinum/iridium
Floating atrial dipole	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	150/170 mm
Atrial dipole distance	15 mm
Conductor	
Construction	Cable; wire coil
Insulation	Silicone
Surface structure	Sitglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Linox^{smart} ProMRI S DX

Pentapolar MR Conditional ICD lead
with active fixation

ProMRI[®]



Product Highlights

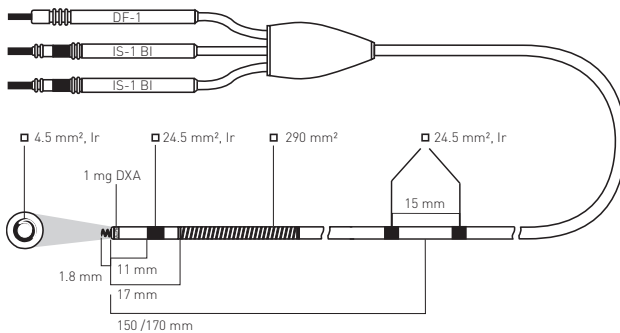
- Floating atrial dipole to detect atrial signals together with a BIOTRONIK single-chamber DX ICD
- BIOTRONIK ProMRI[®] allows patients to undergo MR scanning under specific conditions
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Distance dipole to tip	Order number
Linox ^{smart} ProMRI S DX 65/15	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	15 cm	377211
Linox ^{smart} ProMRI S DX 65/17	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	17 cm	377212

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Pentapolar
Application	Right ventricle; Right atrium
Type of fixation	Active
Overall length	65 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	1 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek® shock coil	
	Ventricle
Length	50 mm
Surface area	290 mm ²
Distance to the lead tip	17 mm
Diameter	2.6 mm [7.8 F]
Material	Platinum/iridium
Floating atrial dipole	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	150/170 mm
Atrial dipole distance	15 mm
Conductor	
Construction	Cable; wire coil
Insulation	Silicone
Surface structure	Sitiglide® surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Linox^{smart} T

Tripolar ICD lead with passive fixation



Product Highlights

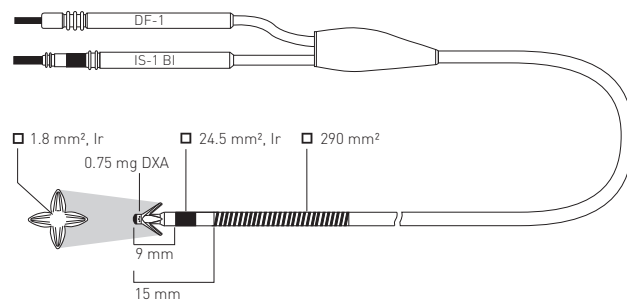
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Tine design with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 9 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Order number
Linox ^{smart} T 65	DF-1 (1x); IS-1 (1x)	4 silicone tines	65 cm	369820

Technical data

Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Passive
Overall length	65 cm
Tip electrode	
Surface area	1.8 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	4 silicone tines
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	0.75 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	9 mm
Protek [®] shock coil	
Length	50 mm
Diameter	2.6 mm [7.8 F]
Surface area	290 mm ²
Material	Platinum/iridium
Distance to the lead tip	15 mm
Conductor	
Construction	Cable; wire coil
Insulation	Silicone
Surface structure	Sitglide [®] surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Linox^{smart} TD

Quadripolar ICD lead with passive fixation



Product Highlights

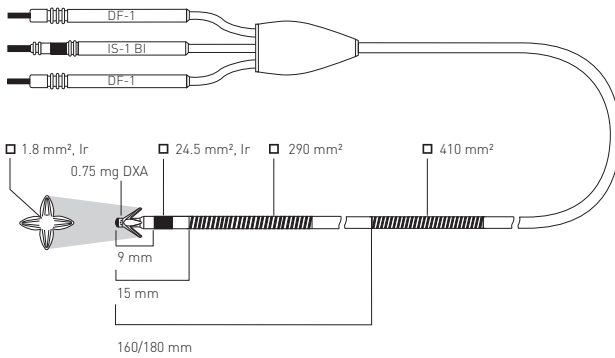
- Thin 7.8 F silicone lead body with Silglide[®] surface coating compatible with 8 F lead introducer
- Protek[®] shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Tine design with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 9 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Linox ^{smart} TD 65/16	DF-1 (2x); IS-1 (1x)	4 silicone tines	65 cm	16 cm	359073
Linox ^{smart} TD 65/18	DF-1 (2x); IS-1 (1x)	4 silicone tines	65 cm	18 cm	359074
Linox ^{smart} TD 75/18	DF-1 (2x); IS-1 (1x)	4 silicone tines	75 cm	18 cm	359075

Technical data

Technical data		
Polarity	Quadripolar	
Application	Right ventricle; Superior vena cava	
Type of fixation	Passive	
Overall length	65; 75 cm	
Tip electrode		
Surface area	1.8 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	4 silicone tines	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.75 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	9 mm	
Protek® shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	15 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; wire coil	
Insulation	Silicone	
Surface structure	Sitglide® surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Plexa ProMRI S

Tripolar MR conditional ICD lead
with active fixation

ProMRI®



Product Highlights

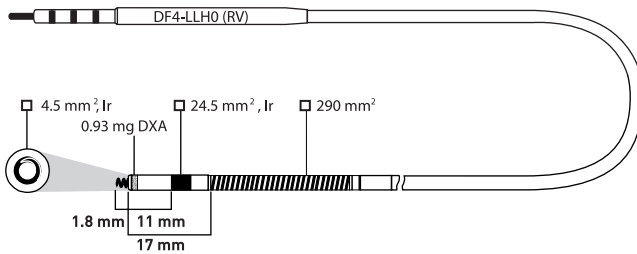
- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Stress reduction on the lead body in the intra-cardiac region due to the new Helix Design of the wires
- Thin 7.8 F silicone lead body with Silglide surface coating compatible with 8 F lead introducer
- Protek shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

Ordering Information

Model	Connectors	Fixation	Length	Order number
Plexa ProMRI S 65	DF4 (1x)	Retractable screw	65 cm	402266
Plexa ProMRI S 75	DF4 (1x)	Retractable screw	75 cm	402267

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	0.93 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek shock coil	
Length	50 mm
Surface area	290 mm ²
Distance to the lead tip	17 mm
Diameter	2.6 mm [7.8 F]
Material	Platinum/iridium
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Silglide surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Plexa ProMRI DF-1 S

Tripolar MR conditional ICD lead
with active fixation

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Stress reduction on the lead body in the intra-cardiac region due to the new Helix Design of the wires
- Thin 7.8 F silicone lead body with Silglide surface coating compatible with 8 F lead introducer
- Protek shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

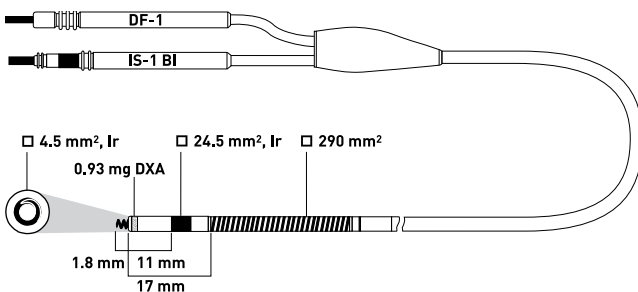
Ordering Information

Model	Connectors	Fixation	Length	Order number
Plexa ProMRI DF-1 S 65	DF-1 (1x); IS-1 (1x)	Retractable screw	65 cm	413997
Plexa ProMRI DF-1 S 75	DF-1 (1x); IS-1 (1x)	Retractable screw	75 cm	413998

Plexa ProMRI DF-1 S

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Tripolar
Application	Right ventricle
Type of fixation	Active
Overall length	65; 75 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	0.93 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek shock coil	
Length	50 mm
Surface area	290 mm ²
Distance to the lead tip	17 mm
Diameter	2.6 mm [7.8 F]
Material	Platinum/iridium
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Silglide surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Plexa ProMRI SD

Quadripolar MR conditional ICD lead with active fixation

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Stress reduction on the lead body in the intra-cardiac region due to the new Helix Design of the wires
- Thin 7.8 F silicone lead body with Silglide surface coating compatible with 8 F lead introducer
- Protek shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

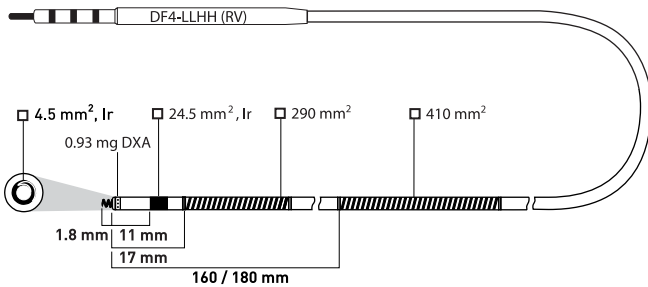
Ordering Information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Plexa ProMRI SD 65/16	DF4 (1x)	Retractable screw	65 cm	16 cm	402262
Plexa ProMRI SD 65/18	DF4 (1x)	Retractable screw	65 cm	18 cm	402263
Plexa ProMRI SD 75/18	DF4 (1x)	Retractable screw	75 cm	18 cm	402264

Plexa ProMRI SD

Technical Data

MR conditional		
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Application	Right ventricle; superior vena cava	
Type of fixation	Active	
Overall length	65; 75 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.93 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; coil	
Insulation	Silicone	
Surface structure	Sitgide surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Plexa ProMRI DF-1 SD

Quadripolar MR conditional ICD lead
with active fixation

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Stress reduction on the lead body in the intra-cardiac region due to the new Helix Design of the wires
- Thin 7.8 F silicone lead body with Silglide surface coating compatible with 8 F lead introducer
- Protek shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

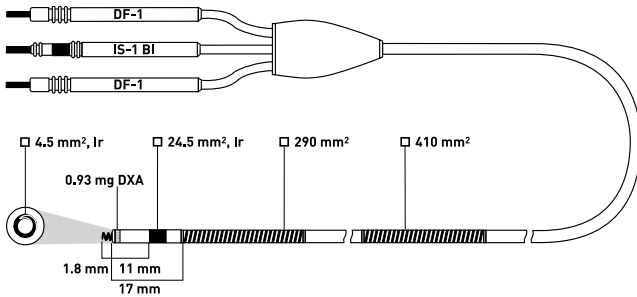
Ordering Information

Model	Connectors	Fixation	Length	Distance prox. shock coil to tip	Order number
Plexa ProMRI DF-1 SD 65/16	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	16 cm	414000
Plexa ProMRI DF-1 SD 65/18	DF-1 (2x); IS-1 (1x)	Retractable screw	65 cm	18 cm	414001
Plexa ProMRI DF-1 SD 75/18	DF-1 (2x); IS-1 (1x)	Retractable screw	75 cm	18 cm	414002

Plexa ProMRI DF-1 SD

Technical Data

MR conditional		
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Application	Right ventricle; superior vena cava	
Type of fixation	Active	
Overall length	65; 75 cm	
Tip electrode		
Surface area	4.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Retractable, electrically active screw	
Retractable length	1.8 mm	
Maximum number of rotations for extension	20	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.93 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	24.5 mm ²	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	11 mm	
Protek shock coil		
	Ventricle	Vena cava
Length	50 mm	70 mm
Surface area	290 mm ²	410 mm ²
Distance to the lead tip	17 mm	160; 180 mm
Diameter	2.6 mm [7.8 F]	2.6 mm [7.8 F]
Material	Platinum/iridium	Platinum/iridium
Conductor		
Construction	Cable; coil	
Insulation	Silicone	
Surface structure	Sitglide surface coating	
Diameter	2.6 mm [7.8 F]	
Recommended introducer	8 F	



Plexa ProMRI DF-1 S DX

Pentapolar MR conditional ICD lead
with active fixation

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Stress reduction on the lead body in the intra-cardiac region due to the new Helix Design of the wires
- A floating atrial dipole allows complete atrial diagnostics in combination with a compatible BIOTRONIK device
- Thin 7.8 F silicone lead body with Silglide surface coating compatible with 8 F lead introducer
- Protek shock-coil design for reduced tissue ingrowth and efficient energy delivery
- Screw mechanism with maximum flexibility for atraumatic fixation
- Bipolar sensing and pacing with 11 mm tip-to-ring distance
- Fractal coating and steroid elution for low thresholds and optimal sensing

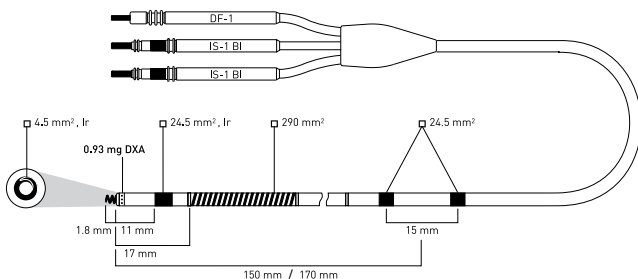
Ordering Information

Model	Connectors	Fixation	Length	Distance dipole to tip	Order number
Plexa ProMRI DF-1 S DX 65/15	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	15 cm	414005
Plexa ProMRI DF-1 S DX 65/17	DF-1 (1x); IS-1 (2x)	Retractable screw	65 cm	17 cm	414006

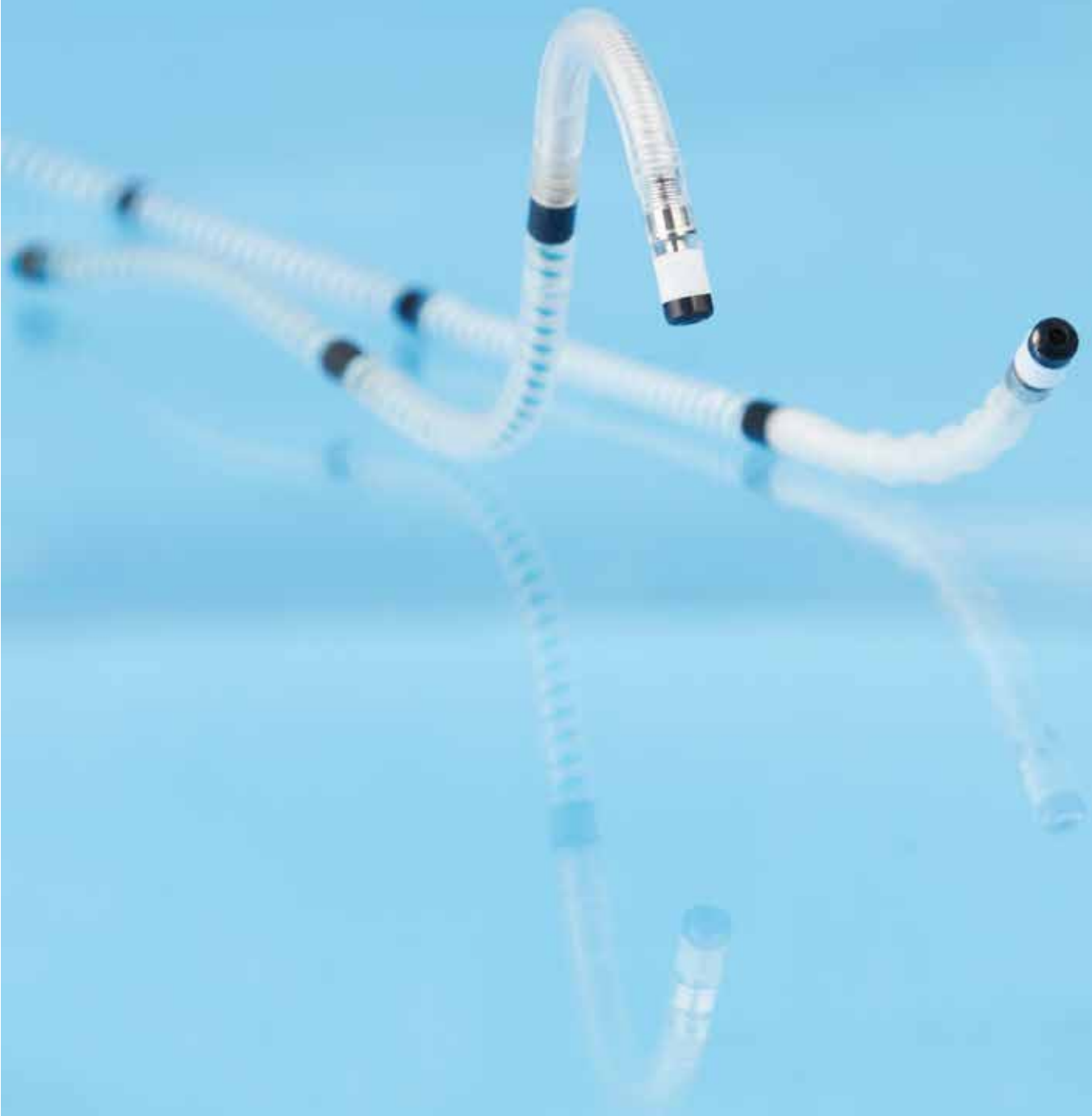
Plexa ProMRI DF-1 S DX

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Pentapolar
Application	Right ventricle; right atrium
Type of fixation	Active
Overall length	65 cm
Tip electrode	
Surface area	4.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Retractable, electrically active screw
Retractable length	1.8 mm
Maximum number of rotations for extension	20
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	0.93 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	11 mm
Protek shock coil	
Length	50 mm
Surface area	290 mm ²
Distance to the lead tip	17 mm
Diameter	2.6 mm [7.8 F]
Material	Platinum/iridium
Floating atrial dipole	
Surface area	24.5 mm ²
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	150; 170 mm
Atrial dipole distance	15 mm
Conductor	
Construction	Cable; coil
Insulation	Silicone
Surface structure	Sitglide surface coating
Diameter	2.6 mm [7.8 F]
Recommended introducer	8 F



Cardiac Resynchronization Therapy



Eluna 8 HF-T

CRT-P



Product Highlights

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA, RV & LV)**

Automatic adjustment of pacing amplitudes for effective CRT therapy.

- **EasyAV®**

Facilitates programming of optimal AV timing.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 HF-T	IS-1 (3x)	14 cm ³ /27 g	53 mm × 49 mm × 6.5 mm	394917

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; VVIR; AAIR; DDIR; A00; DDD; VVI; AA1; DDI; A00R; VDD; VVI; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	<ul style="list-style-type: none"> ■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Ventricular pacing	BiV; RV
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	RV; BiV; LV
Triggering	OFF; RVs; RVs+PVC
LV T-wave protection	OFF; ON
Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
VV delay after Vs	0 ms
Refract. period [A]	AUTO
Refract. period [RV]	200 ... [25] ... 500 ms
Refract. period [LV]	200 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	8.8 years ¹⁾
Battery ²⁾	Li-MnO2 (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at A/RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; 100% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each

BIOTRONIK Home Monitoring®

Transmitted data	
Event based IEGM	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Heart Failure Monitor	AF; HVF; Lead failure CRT pacing [%]; BiV pacing [%]; Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); PP variability [ms]; Patient activity [%]; Atrial burden [%]; Atrial arrhythmia episodes (per day); Mean PVC/h
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BiV pacing; Mean ven. heart rate (24 h, at rest)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Eluna 8 HF-T

MR Conditional CRT-P

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ EasyAV®

Facilitates programming of optimal AV timing.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Eluna 8 HF-T ProMRI	IS-1 (3x)	14 cm ³ /27 g	53 mm × 49 mm × 6.5 mm	394968

Eluna 8 HF-T

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Ventricular pacing	BIV; RV
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpuls
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	RV; BIV; LV
Triggering	OFF; RVs; RVs+PVC
LV T-wave protection	OFF; ON
Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
VV delay after Vs	0 ms
Refract. period [A]	AUTO
Refract. period [RV]	200 ... [25] ... 500 ms
Refract. period [LV]	200 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted

Timing intervals	
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	8.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD[R]]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at A/RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; 100% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	
Heart Failure Monitor	AF; HVF; Lead failure CRT pacing (%); BIV pacing (%); Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); PP variability (ms); Patient activity (%); Atrial burden (%); Atrial arrhythmia episodes (per day); Mean PVC/h
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate (24 h, at rest)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 8 HF-T

CRT-P



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ EasyAV®

Facilitates programming of optimal AV timing.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 8 HF-T	IS-1 (3x)	14 cm ³ /27 g	53 mm × 49 mm × 6.5 mm	394918

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VVI; AA1; DDI; A00R; VDD; VVI; AAT; VDI; V00; VDDR; VD0R; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Ventricular pacing	BiV; RV
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	RV; BiV; LV
Triggering	OFF; RVs; RVs+PVC
LV T-wave protection	OFF; ON
Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
VV delay after Vs	0 ms
Refract. period [A]	AUTO
Refract. period [RV]	200 ... [25] ... 500 ms
Refract. period [LV]	200 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	8.8 years ¹⁾
Battery ²⁾	Li-MnO2 (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at A/RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; 100% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each

BIOTRONIK Home Monitoring®

Transmitted data	
Event based IEGM	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Heart Failure Monitor	AF; HVF; Lead failure CRT pacing [%]; BiV pacing [%]; Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); PP variability (ms), Patient activity [%], Atrial burden [%], Atrial arrhythmia episodes (per day); Mean PVC/h
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BiV pacing; Mean ven. heart rate (24 h, at rest)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Epyra 8 HF-T

MR Conditional CRT-P

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ EasyAV®

Facilitates programming of optimal AV timing.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Epyra 8 HF-T ProMRI	IS-1 (3x)	14 cm ³ /27 g	53 mm × 49 mm × 6.5 mm	394973

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Ventricular pacing	BIV; RV
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpuls
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	RV; BIV; LV
Triggering	OFF; RVs; RVs+PVC
LV T-wave protection	OFF; ON
Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
VV delay after Vs	0 ms
Refract. period [A]	AUTO
Refract. period [RV]	200 ... [25] ... 500 ms
Refract. period [LV]	200 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted

Timing intervals	
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	8.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD[R]]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at A/RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; 100% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	
Heart Failure Monitor	AF; HVF; Lead failure
	CRT pacing (%); BIV pacing (%); Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); PP variability (ms); Patient activity (%); Atrial burden (%); Atrial arrhythmia episodes (per day); Mean PVC/h
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate (24 h, at rest)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON
Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 8 HF-T

CRT-P



Product Highlights

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ TrendView

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

■ Auto-initialization

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 8 HF-T	IS-1 (3x)	14 cm ³ /27 g	53 mm × 49 mm × 6.5 mm	394919

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAI; DDIR; A00; DDD; VVI; AAI; DDI; A00R; VDD; VVI; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/repetitive	OFF; ON
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval [h]	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval [h]	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp Suppression	OFF; ON [only in the modes DDDR-ADIR and DDD-ADI]
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Ven. pacing	BIV; RV
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization	OFF; ON
Atrial overdrive pacing	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis [positive]	70; 110; 150; 200 ms
AV hysteresis [negative]	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Ven. pacing	RV; BIV; LV
Triggering	OFF; RVs; RVs+PVC
LV T-wave protection	OFF; ON
Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
Initially paced chamber	RV; LV
W delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
VV delay after Vs	0 ms
Refractory period [A]	AUTO
Refractory period [RV]	200 ... [25] ... 500 ms
Refractory period [LV]	200 ms
AUTO PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms

Timing intervals	
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Auto-initialization	ON
Physical parameters	
Longevity	8.8 years ¹⁾
Battery ²⁾	Li-MnO2 [open-circuit voltage 3.1 V]
Replacement indication	Programmed rate minus 11% [in DDD[R]]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at A/RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; 100% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event-based IEGM	AF; HVF; Lead failure
Heart Failure Monitor	CRT pacing [%]; BIV pacing [%]; Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; PP variability [ms], Patient activity [%], Atrial burden [%]; Atrial arrhythmia episodes [per day]; Mean PVC/h
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate [24 h, at rest]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event-based IEGM	OFF; ON
Periodic IEGM	OFF; Selection; 30; 60; 90; 120; 180 days

Etrinsa 8 HF-T

MR Conditional CRT-P

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA, RV & LV)**

Automatic adjustment of pacing amplitudes for effective CRT therapy.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including event-triggered IEGMs, for early detection of clinical and device-related events.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **TrendView**

Displays the electrical trends of the channels over the last 240 days, allowing the user to check the system's stability over time.

- **Auto-initialization**

Activates essential pacemaker functions and follow-up data within 10 minutes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Etrinsa 8 HF-T ProMRI	IS-1 (3x)	14 cm ³ /27 g	53 mm × 49 mm × 6.5 mm	394976

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 180 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DD; A00R; VDD; VVT; AAT; V00; VDDR; VDIR; V00R; DDD-AD; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100; 190 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-AD)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Ventricular pacing	BIV; RV
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
Atrial overdrive	OFF; ON
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
Dynamic AV delay	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSpuls
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	OFF; ON
Upper rate response	
■ Atrium	OFF; 175; 200; 240 bpm
■ Ventricle	90 ... [10] ... 200 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	RV; BIV; LV
Triggering	OFF; RVs; RVs+PVC
LV T-wave protection	OFF; ON
Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
VV delay after Vs	0 ms
Refract. period [A]	AUTO
Refract. period [RV]	200 ... [25] ... 500 ms
Refract. period [LV]	200 ms
Auto PVARP	OFF; ON
PVARP	175 ... [25] ... 600 ms
PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted

Timing intervals	
Ven. blanking after Ap	30 ... [5] ... 70 ms
Far-field protection after Vs	100 ... [10] ... 220 ms
Far-field protection after Vp	100 ... [10] ... 220 ms
PMT protection	OFF; ON
VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Auto-initialization	ON

Physical parameters	
Longevity	8.8 years ¹⁾
Battery ²⁾	Li-MnO ₂ (open-circuit voltage 3.1 V)
Replacement indication	Programmed rate minus 11% [in DDD[R]]
Electrically conductive surface	33 cm ²
X-ray identification	BIO SF

1) at A/RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; 100% pacing, Home Monitoring: ON, SafeSync: OFF
2) Data of the battery manufacturer

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each

BIOTRONIK Home Monitoring®

Transmitted data	
	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	
	AF; HVF; Lead failure
Heart Failure Monitor	
	CRT pacing (%); BIV pacing (%); Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); PP variability (ms); Patient activity (%); Atrial burden (%); Atrial arrhythmia episodes (per day); Mean PVC/h

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate (24 h, at rest)

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Periodic IEGM for HM follow-up	OFF; Selection; 30; 60; 90; 120; 180 days
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Evia HF-T

MR Conditional triple-chamber pacemaker with Closed Loop Stimulation and BIOTRONIK Home Monitoring[®] ProMRI[®]



Product Highlights

- **ProMRI[®]**
Allows patients to undergo MR scanning under specific conditions.
- **Closed Loop Stimulation (CLS)**
Unique physiological rate response modulation during episodes of physical and emotional stress.
- **Capture Control (RA, RV & LV)**
Automatic adjustment of pacing amplitudes for effective CRT therapy.
- **MultiSelect LV pacing options**
6 MultiSelect LV pacing polarities to select the optimal pacing vector.
- **AutoSensing[®]**
Ensures optimal pacing behavior by automatically optimizing sensing settings.
- **Heart Failure Monitor**
Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.
- **BIOTRONIK Home Monitoring[®]**
Unique automatic wireless remote monitoring and early detection of clinical and device-related events.

Ordering Information

Model	Volume	Weight	Thickness	Connectors	Order number
Evia HF-T uncoated	14 cm ³	26 g	6.5 mm	IS-1 (3x)	381 534
Evia HF-T coated	14 cm ³	26 g	6.5 mm	IS-1 (3x)	381 535

Technical Data

Closed Loop Stimulation	
CLS modes ¹	DDD-CLS; VI-CLS
Maximum CLS rate	80...[5]...120...[5]...180 bpm
Expert options	
■ CLS response	very low; low; medium; high; very high
■ Resting rate control	OFF; +10; +20; +30; +40; +50 bpm
■ Vp required	yes; no ²
MR Conditional	
ProMRI®	MR Conditional in combination with BIOTRONIK MR Conditional leads ³
MRI modes	DOO; DOO-Biv; VOO; VOO-Biv; AOO; OFF
Pacing parameters	
NBG code	DDDRV
Modes	DDDR; DDD; DDD(R)-AD(R); DD(R); DV(R); DDT; DOO(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]...60...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF; -5...[-5]...-90 bpm
■ Repetitive/scan hysteresis	OFF; 1...[1]...15 cycles
Sensitivity ■ A	AUTO; 0.1...[0.1]...1.5...[0.5]...7.5 mV
■ RV	AUTO; 0.5...[0.5]...7.5 mV
■ LV	AUTO; OFF; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/RV/LV] ⁴	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/RV/LV]	0.1; 0.2; 0.3; 0.4; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Pacing algorithms	
Atrial Capture Control	OFF; ON; ATM (= threshold monitoring only)
■ Minimum amplitude	0.5...[0.1]...1.0...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]...1.0...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Ventricular Capture Control (RV/LV)	OFF; ON; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0; 3.6; 4.2; 4.8 V
■ Safety margin	1.0; 1.2 V ⁵
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 (00:00...[00:10]...23:50 hh:mm)
Vp Suppression ⁶	OFF; ON (available in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles w/o Vs
Mode Switch with X/Z-out-of-8-criterion	OFF; ON
■ Intervention rate	100...[10]...160...[10]...250 bpm
■ Ventricular Pacing	RV; BIV
■ X-out-of-8 criterion (onset criterion)	3...[1]...5...[1]...8
■ Z-out-of-8 criterion (resolution criterion)	3...[1]...5...[1]...8
■ Change of basic rate	OFF; +5; +10...[5]...+30 bpm
■ Rate stabilization	OFF; ON
Atrial overdrive	OFF; ON
Atrial Noninvasive Programmed Stimulation (NIPS)	Burst stimulation; programmed stimulation
Conventional rate adaptation	
Sensor	accelerometer
■ Maximum activity rate	80...[5]...120...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]...4...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF; ON
Sensor optimization	original, preview
Timing intervals	
AV delay	15...[5]...180...[5]...350 ms
Dynamic AV delay	OFF; low ; medium; high; fixed; individually (programmable in 6 rate ranges)
Sense compensation	OFF; -10...[-5]...-45...[-5]...-120 ms
AV hysteresis	OFF; IRS ^{7,8,9} ; negative; low; medium; high
■ AV repetitive/scan hysteresis	OFF; 1...[1]...5...[1]...10 cycles
Upper rate limit ■ Atrium	OFF; 240 ms
■ Ventricle	90...[10]...130...[10]...200 bpm
Tachycardia behavior	2:1; WKB
Ventricular Pacing	BIV; RV; LV
Triggering	RVs; RVs + PVC; OFF
LV T-Wave Protection	OFF; ON
Maximum trigger rate	AUTO; 90; 100; 110; 120; 130; 140; 150; 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0...[5]...80; 90; 100 ms
VV delay after sensing	0 ms
Refractory period ■ A ⁷	AUTO
■ RV	200...[25]...250...[25]...500 ms
■ LV	200 ms

Post-Ventricular Atrial Refractory Period (PVARP)	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-Field protection ■ After RVs	100 ...[10]...220 ms
■ After RVp	100...[10]... 150 ...[10]...220 ms
Pacemaker-Mediated Tachycardia (PMT) protection	OFF; ON (VA criterion: 250...[10]...350...[10]...500 ms)
Leads	
Connection	IS-1-connector (3 x)
Auto Lead Check [A/RV/LV]	ON
Lead configuration [A/RV/LV]	unipolar ; bipolar (both automatically configured)
Auto-Initialization	ON
Longevity	
Nominal operating time	8.8 years (at A/RV/LV: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 100% pacing, Home Monitoring ON)
Battery ⁸	QMR ⁹ (open circuit voltage: 3.0 V), Li-MnO ₂ (open circuit voltage: 3.1 V)
Replacement indication	programmed rate minus 11% (in DDD[?] ¹⁰)
Additional parameters	
IEGM recording	20 recordings, max. 10 seconds each, 4 triggers
Magnet response	AUTO (10 cycles with 90 bpm asynchronous; then basic rate synchronous); asynchronous; synchronous
Housing	
Dimensions/weight	53 mm x 49 mm x 6.5 mm/26 g
Volume	14 cm ³
Electrically conductive housing surfaces	33 cm ² [uncoated]; 7 cm ² [coated]
X-ray identification	SF
Ordering information	
■ Evia HF-T uncoated	381 534
■ Evia HF-T coated	381 535

BIOTRONIK Home Monitoring®

Programmer settings	
Home Monitoring	OFF, ON
Time of data transmission	AUTO, 00:00...[01:00]...23:00 hh:mm
Periodic IEGM	OFF; selection (up to 5 periodic follow-up dates); 30, 60, 90, 120, 180 days
High atrial rate	OFF, Mode Switching, AT
Ongoing atrial episode	6 h, 12 h, 18 h
High ventricular rate	OFF, ON
Transmitted data	
Clinical and technical data	Heart Failure Monitor diagnostics, A & V thresholds, A & V sensing amplitudes, pacing statistics, CRT statistics, A & V arrhythmia statistics, battery status, lead integrity measurements, programmed parameters
Heart Failure Monitor	CRT pacing (%), BIV pacing (%), mean atr. heart rate, mean ven. heart rate (24 h, at rest), PP variability (ms), patient activity (%), atr. burden (%), atr. arrhythmia episodes (per day), mean PVC/h
Report types	
Trend report	triggered automatically once every 24 hours
Event report	triggered daily after clinical or technical events
Test report	triggered manually via programmer
Event types	
Device	MRI mode active, battery status, programmer-triggered message received, backup mode active
Leads	pacing impedance, ¹⁰ lead check, sensing amplitude, ¹¹ pacing threshold, ¹¹ Capture Control status
Arrhythmias	number/duration of atr. arrhythmia, ¹¹ number/duration of Mode Switching, ¹¹ long ongoing atr. arrhythmia detected, number of ven. arrhythmia, ¹¹ atr. burden ¹¹
Heart Failure Monitor	CRT and BIV pacing, ¹⁰ mean ven. heart rate (24 h, at rest), ¹¹ mean PVC/h ¹¹
Remote follow-up	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing

- 1 By default with BIV pacing.
- 2 With BIV pacing, Vp required is programmed to "yes."
- 3 For combinations of MR Conditional leads, please see the ProMRI manual (order number: 371 712).
- 4 If Capture Control is ON, the pulse amplitude is automatically selected.
- 5 With RV pacing only, the safety margin is: 0.3...[0.1]...0.5...[0.1]...1.2 V.
- 6 Only available with RV pacing.
- 7 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- 8 Nominal data of the manufacturer.
- 9 See manual for other modes.
- 10 Programmable upper and lower limit.
- 11 Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Evia HF

MR Conditional triple-chamber pacemaker
with Closed Loop Stimulation

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA, RV & LV)**

Automatic adjustment of pacing amplitudes for effective CRT therapy.

- **MultiSelect LV pacing options**

6 MultiSelect LV pacing polarities to select the optimal pacing vector.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

Ordering Information

Model	Volume	Weight	Thickness	Connectors	Order number
Evia HF uncoated	14 cm ³	26 g	6.5 mm	IS-1 (3x)	381532
Evia HF coated	14 cm ³	26 g	6.5 mm	IS-1 (3x)	381533

Technical Data

Closed Loop Stimulation	
CLS modes ¹	DDD-CLS; VI-CLS
Maximum CLS rate	80...[5]...120...[5]...180 bpm
Expert options	
■ CLS response	very low; low; medium; high; very high
■ Resting rate control	OFF; +10; +20; +30; +40; +50 bpm
■ Vp required	yes; no ²
MR Conditional	
ProMRI [®]	MR Conditional in combination with BIOTRONIK MR Conditional leads ³
MR modes	D00; D00-Biv; V00; V00-Biv; A00; OFF
Pacing parameters	
NBG code	DDDRV
Modes	DDDR ; DDD; DDD(R)-AD(R); DD(R); DVI(R); DDT; DDD(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]... 60 ...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive/scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity	■ A AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV
■ RV	AUTO ; 0.5...[0.5]...7.5 mV
■ LV	AUTO ; OFF; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/RV/LV] ⁴	0.2...[0.1]... 3.0 ...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/RV/LV]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Pacing algorithms	
Atrial Capture Control	OFF; ON ; ATM (= threshold monitoring only)
■ Minimum amplitude	0.5...[0.1]... 1.0 ...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]... 1.0 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Ventricular Capture Control (RV/LV)	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	1.0 ; 1.2 V ⁵
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Vp Suppression ⁶	OFF ; ON (available in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles w/o Vs
Mode Switch with X/Z-out-of-8-criterion	OFF; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ Ventricular Pacing	RV; BIV
■ X-out-of-8 criterion (onset criterion)	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion (resolution criterion)	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
Atrial overdrive	OFF ; ON
Atrial Noninvasive Programmed Stimulation (NIPS)	Burst stimulation; programmed stimulation
Conventional rate adaptation	
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1... 4 ...23 in 27 increments (auto gain; OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original; preview

Timing intervals	
AV delay	15...[5]...180...[5]...350 ms
Dynamic AV delay	OFF; low ; medium; high; fixed; individually (programmable in 4 rate ranges)
Sense compensation	OFF; -10...[-5]... -45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRS ^{plus} ; negative; low; medium; high
■ AV repetitive/scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
Upper rate limit	■ Atrium OFF; 240 ms
■ Ventricle	90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2;1; WKB
Ventricular Pacing	BIV ; RV; LV
Triggering	RVs ; RVs + PVC; OFF
LV T-Wave Protection	OFF; ON
Maximum trigger rate	AUTO ; 90; 100; 110; 120; 130; 140; 150; 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0 ...[5]...80; 90; 100 ms
VV delay after sensing	0 ms
Refractory period	■ A ⁷ AUTO
■ RV	200...[25]... 250 ...[25]...500 ms
■ LV	200 ms
Post-Ventricular Atrial Refractory Period (PVARP)	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-Field protection	■ After RVs 100 ...[10]...220 ms
■ After RVp	100...[10]... 150 ...[10]...220 ms
Pacemaker-Mediated Tachycardia (PMT) protection	OFF; ON (VA criterion: 250...[10]... 350 ...[10]...500 ms)

Leads	
Connection	IS-1-connector (3 x)
Auto Lead Check [A/RV/LV]	ON
Lead configuration [A/RV/LV]	unipolar ; bipolar (both automatically configured)
Auto-Initialization	ON

Longevity	
Nominal operating time	9.0 years (at A/RV/LV: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 100% pacing)
Battery ⁸	QMR [®] (open circuit voltage: 3.0 V), Li-MnO ₂ (open circuit voltage: 3.1 V)
Replacement indication	programmed rate minus 11% (in DDD[R] ⁹)

Additional parameters	
IEGM recording	20 recordings, max. 10 seconds each, 4 triggers
Magnet response	AUTO [10 cycles with 90 bpm asynchronous; then basic rate synchronous]; asynchronous; synchronous

Housing	
Dimensions/weight	53 mm × 49 mm × 6.5 mm/26 g
Volume	14 cm ³
Electrically conductive housing surfaces	33 cm ² (uncoated); 7 cm ² (coated)
X-ray identification	SF

- By default with BIV pacing.
- With BIV pacing, Vp required is programmed to "yes."
- For combinations of MR Conditional leads, please see the ProMRI manual (order number: 371712).
- If Capture Control is ON, the pulse amplitude is automatically selected.
- With RV pacing only, the safety margin is: 0.3...[0.1]...**0.5**...[0.1]...1.2 V.
- Only available with RV pacing.
- 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- Nominal data of the manufacturer.
- See manual for other modes.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Entovis HF-T

MR Conditional triple-chamber pacemaker with Closed Loop Stimulation and BIOTRONIK Home Monitoring® ProMRI®



Product Highlights

- **ProMRI®**
Allows patients to undergo MR scanning under specific conditions.
- **Closed Loop Stimulation (CLS)**
Unique physiological rate response modulation during episodes of physical and emotional stress.
- **Capture Control (RA, RV & LV)**
Automatic adjustment of pacing amplitudes for effective CRT therapy.
- **MultiSelect LV pacing options**
6 MultiSelect LV pacing polarities to select the optimal pacing vector.
- **AutoSensing®**
Ensures optimal pacing behavior by automatically optimizing sensing settings.
- **Heart Failure Monitor**
Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.
- **BIOTRONIK Home Monitoring®**
Unique automatic wireless remote monitoring and early detection of clinical and device-related events.

Ordering Information

Model	Volume	Weight	Thickness	Connectors	Order number
Entovis HF-T uncoated	14 cm ³	26 g	6.5 mm	IS-1 (3x)	381 530
Entovis HF-T coated	14 cm ³	26 g	6.5 mm	IS-1 (3x)	381 531

Technical Data

Closed Loop Stimulation	
CLS modes ¹	DDD-CLS; VVI-CLS
Maximum CLS rate	80...[5]...120...[5]...180 bpm
Expert options	
■ CLS response	very low; low; medium; high; very high
■ Resting rate control	OFF; +10; +20; +30; +40; +50 bpm
■ Vp required	yes; no ²
MR Conditional	
ProMRI [®]	MR Conditional in combination with BIOTRONIK MR Conditional leads ³
MRI modes	DOO; DOO-BIV; VOO; VOO-BIV; AOO; OFF
Pacing parameters	
NBG code	DDDRV
Modes	DDDR; DDD; DDD(R)-ADI (R); DDI(R); DVI(R); DDT; DOO(R); VDD(R); VDI(R); WVI(R); WT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]...60...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF; -5...[-5]...-90 bpm
■ Repetitive/scan hysteresis	OFF; 1...[1]...15 cycles
Sensitivity ■ A	AUTO; 0.1...[0.1]...1.5...[0.5]...7.5 mV
■ RV	AUTO; 0.5...[0.5]...7.5 mV
■ LV	AUTO; OFF; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/RV/LV] ⁴	0.2...[0.1]...3.0...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/RV/LV]	0.1; 0.2; 0.3; 0.4; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Pacing algorithms	
Atrial Capture Control	OFF; ON; ATM (= threshold monitoring only)
■ Minimum amplitude	0.5...[0.1]...1.0...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]...1.0...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Ventricular Capture Control [RV/LV]	OFF; ON; ATM [monitoring only]
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0; 3.6; 4.2; 4.8 V
■ Safety margin	1.0; 1.2 V ⁵
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm]
Vp Suppression ⁶	OFF; ON [available in the modes DDDR-ADIR and DDD-ADI]
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles w/o Vs
Mode Switch with X/Z-out-of-8-criterion	OFF; ON
■ Intervention rate	100...[10]...160...[10]...250 bpm
■ Ventricular Pacing	RV; BIV
■ X-out-of-8 criterion [onset criterion]	3...[1]...5...[1]...8
■ Z-out-of-8 criterion [resolution criterion]	3...[1]...5...[1]...8
■ Change of basic rate	OFF; +5; +10...[5]...+30 bpm
■ Rate stabilization	OFF; ON
Atrial overdrive	OFF; ON
Atrial Noninvasive Programmed Stimulation (NIPS)	Burst stimulation; programmed stimulation
Conventional rate adaptation	
Sensor	accelerometer
■ Maximum activity rate	80...[5]...120...[5]...180 bpm
■ Sensor gain	1...4...23 in 27 increments (auto gain: OFF; ON)
■ Sensor threshold	very low; low; medium; high; very high
■ Rate increase	1...[1]...4...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
■ Rate fading [rate smoothing]	OFF; ON
Sensor optimization	original, preview
Timing intervals	
AV delay	15...[5]...180...[5]...350 ms
Dynamic AV delay	OFF; low; medium; high; fixed; individually [programmable in 6 rate ranges]
Sense compensation	OFF; -10...[-5]...-45...[-5]...-120 ms
AV hysteresis	OFF; IRS ^{7,8,9} ; negative; low; medium; high
■ AV repetitive/scan hysteresis	OFF; 1...[1]...5...[1]...10 cycles
Upper rate limit ■ Atrium	OFF; 240 ms
■ Ventricle	90...[10]...130...[10]...200 bpm
Tachycardia behavior	2:1; WKB
Ventricular Pacing	BIV; RV; LV
Triggering	RVs; RVs + PVC; OFF
LV T-Wave Protection	OFF; ON
Maximum trigger rate	AUTO; 90; 100; 110; 120; 130; 140; 150; 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0...[5]...80; 90; 100 ms
VV delay after sensing	0 ms
Refractory period ■ A ⁷	AUTO
■ RV	200...[25]...250...[25]...500 ms
■ LV	200 ms

Post-Ventricular Atrial Refractory Period [PVARP]	AUTO; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30...[5]...70 ms
Far-Field protection ■ After RVs	100...[10]...220 ms
■ After RVp	100...[10]...150...[10]...220 ms
Pacemaker-Mediated Tachycardia (PMT) protection	OFF; ON [VA criterion: 250...[10]...350...[10]...500 ms]

Leads	
Connection	IS-1-connector (3 x)
Auto Lead Check [A/RV/LV]	ON
Lead configuration [A/RV/LV]	unipolar; bipolar [both automatically configured]
Auto-Initialization	ON
Longevity	
Nominal operating time	8.8 years [at A/RV/LV: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 100% pacing, Home Monitoring ON]
Battery ⁸	QMR [®] [open circuit voltage: 3.0 V], Li-MnO ₂ [open circuit voltage: 3.1 V]
Replacement indication	programmed rate minus 11% [in DDD[R] ⁹]
Additional parameters	
IEGM recording	20 recordings, max. 10 seconds each, 4 triggers
Magnet response	AUTO [10 cycles with 90 bpm asynchronous; then basic rate synchronous]; asynchronous; synchronous
Housing	
Dimensions/weight	53 mm x 49 mm x 6.5 mm/26 g
Volume	14 cm ³
Electrically conductive housing surfaces	33 cm ² [uncoated]; 7 cm ² [coated]
X-ray identification	SF
Ordering information	
■ Entovis HF-T uncoated	381 530
■ Entovis HF-T coated	381 531

BIOTRONIK Home Monitoring[®]

Programmer settings	
Home Monitoring	OFF, ON
Time of data transmission	AUTO, 00:00...[01:00]...23:00 hh:mm
Periodic IEGM	OFF; selection [up to 5 periodic follow-up dates]; 30, 60, 90, 120, 180 days
High atrial rate	OFF, Mode Switching, AT
Ongoing atrial episode	6 h, 12 h, 18 h
High ventricular rate	OFF, ON
Transmitted data	
Clinical and technical data	Heart Failure Monitor diagnostics, A & V thresholds, A & V sensing amplitudes, pacing statistics, CRT statistics, A & V arrhythmia statistics, battery status, lead integrity measurements, programmed parameters
Heart Failure Monitor	CRT pacing [%], BIV pacing [%], mean atr. heart rate, mean ven. heart rate [24 h, at rest], PP variability [ms], patient activity [%], atr. burden [%], atr. arrhythmia episodes [per day], mean PVC/h
Report types	
Trend report	triggered automatically once every 24 hours
Event report	triggered daily after clinical or technical events
Test report	triggered manually via programmer
Event types	
Device	MRI mode active, battery status, programmer-triggered message received, backup mode active
Leads	pacing impedance, ¹⁰ lead check, sensing amplitude, ¹¹ pacing threshold, ¹¹ Capture Control status
Arrhythmias	number/duration of atr. arrhythmia, ¹¹ number/duration of Mode Switching, ¹¹ long ongoing atr. arrhythmia detected, number of ven. arrhythmia, ¹¹ atr. burden ¹¹
Heart Failure Monitor	CRT and BIV pacing, ¹⁰ mean ven. heart rate [24 h, at rest], ¹¹ mean PVC/h ¹¹
Remote follow-up	
Periodic IEGM	sequence of 10 sec native settings, 10 sec encouraged sensing and 10 sec encouraged pacing

- By default with BIV pacing.
- With BIV pacing, Vp required is programmed to "yes."
- For combinations of MR Conditional leads, please see the ProMRI manual [order number: 371 712].
- If Capture Control is ON, the pulse amplitude is automatically selected.
- With RV pacing only, the safety margin is: 0.3...[0.1]...0.5...[0.1]...1.2 V.
- Only available with RV pacing.
- 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- Nominal data of the manufacturer.
- See manual for other modes.
- Programmable upper and lower limit.
- Programmable limit.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Entovis HF

MR Conditional triple-chamber pacemaker
with Closed Loop Stimulation

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA, RV & LV)**

Automatic adjustment of pacing amplitudes for effective CRT therapy.

- **MultiSelect LV pacing options**

6 MultiSelect LV pacing polarities to select the optimal pacing vector.

- **AutoSensing®**

Ensures optimal pacing behavior by automatically optimizing sensing settings.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

Ordering Information

Model	Volume	Weight	Thickness	Connectors	Order number
Entovis HF uncoated	14 cm ³	26 g	6.5 mm	IS-1 (3 x)	381528
Entovis HF coated	14 cm ³	26 g	6.5 mm	IS-1 (3 x)	381529

Technical Data

Closed Loop Stimulation	
CLS modes ¹	DDD-CLS; VI-CLS
Maximum CLS rate	80...[5]...120...[5]...180 bpm
Expert options	
■ CLS response	very low; low; medium; high; very high
■ Resting rate control	OFF; +10; +20; +30; +40; +50 bpm
■ Vp required	yes; no ²
MR Conditional	
ProMRI [®]	MR Conditional in combination with BIOTRONIK MR Conditional leads ³
MR modes	D00; D00-Biv; V00; V00-Biv; A00; OFF
Pacing parameters	
NBG code	DDDRV
Modes	DDDR ; DDD; DDD(R)-AD(R); DD(R); DVI(R); DDT; DDD(R); VDD(R); VDI(R); VVI(R); VVT(R); VOO(R); AAI(R); AAT(R); AOO(R); OFF
Basic rate	30...[1]...60...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Night rate	OFF ; 30...[1]...88...[2]...122...[3]...140...[5]...200 bpm
■ Rate hysteresis	OFF ; -5...[-5]...-90 bpm
■ Repetitive/scan hysteresis	OFF ; 1...[1]...15 cycles
Sensitivity	■ A AUTO ; 0.1...[0.1]...1.5...[0.5]...7.5 mV
■ RV	AUTO ; 0.5...[0.5]...7.5 mV
■ LV	AUTO ; OFF; 0.5...[0.5]...7.5 mV
Pulse amplitude [A/RV/LV] ⁴	0.2...[0.1]... 3.0 ...[0.1]...6.0...[0.5]...7.5 V
Pulse width [A/RV/LV]	0.1; 0.2; 0.3; 0.4 ; 0.5; 0.75; 1.0; 1.25; 1.5 ms
Pacing algorithms	
Atrial Capture Control	OFF; ON ; ATM (= threshold monitoring only)
■ Minimum amplitude	0.5...[0.1]... 1.0 ...[0.1]...4.8 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	0.5...[0.1]... 1.0 ...[0.1]...1.2 V
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm)
Ventricular Capture Control (RV/LV)	OFF; ON ; ATM (monitoring only)
■ Minimum amplitude	0.7 V
■ Start amplitude	2.4; 3.0 ; 3.6; 4.2; 4.8 V
■ Safety margin	1.0 ; 1.2 V ⁵
■ Search time	interval [0.1; 0.3; 1; 3; 6; 12; 24 h]; time of day 02:00 [00:00...[00:10]...23:50 hh:mm)
Vp Suppression ⁶	OFF ; ON (available in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1...[1]...6...[1]...8 consecutive Vs
■ Pacing support	1; 2; 3; 4 out of 8 cycles w/o Vs
Mode Switch with X/Z-out-of-8-criterion	OFF; ON
■ Intervention rate	100...[10]... 160 ...[10]...250 bpm
■ Ventricular Pacing	RV; BIV
■ X-out-of-8 criterion (onset criterion)	3...[1]... 5 ...[1]...8
■ Z-out-of-8 criterion (resolution criterion)	3...[1]... 5 ...[1]...8
■ Change of basic rate	OFF; +5; +10 ...[5]...+30 bpm
■ Rate stabilization	OFF ; ON
Atrial overdrive	OFF ; ON
Atrial Noninvasive Programmed Stimulation (NIPS)	Burst stimulation; programmed stimulation
Conventional rate adaptation	
Sensor	accelerometer
■ Maximum activity rate	80...[5]... 120 ...[5]...180 bpm
■ Sensor gain	1... 4 ...23 in 27 increments (auto gain; OFF; ON)
■ Sensor threshold	very low; low; medium ; high; very high
■ Rate increase	1...[1]... 4 ...[1]...10 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5 ; 1.0 bpm/cycle
■ Rate fading (rate smoothing)	OFF ; ON
Sensor optimization	original; preview

Timing intervals	
AV delay	15...[5]...180...[5]...350 ms
Dynamic AV delay	OFF; low ; medium; high; fixed; individually (programmable in 4 rate ranges)
Sense compensation	OFF; -10...[-5]... -45 ...[-5]...-120 ms
AV hysteresis	OFF ; IRS ^{plus} ; negative; low; medium; high
■ AV repetitive/scan hysteresis	OFF ; 1...[1]...5...[1]...10 cycles
Upper rate limit	■ Atrium OFF; 240 ms
■ Ventricle	90...[10]... 130 ...[10]...200 bpm
Tachycardia behavior	2;1; WKB
Ventricular Pacing	BIV ; RV; LV
Triggering	RVs ; RVs + PVC; OFF
LV T-Wave Protection	OFF; ON
Maximum trigger rate	AUTO ; 90; 100; 110; 120; 130; 140; 150; 160 bpm
Initially paced chamber	RV; LV
VV delay after Vp	0 ...[5]...80; 90; 100 ms
VV delay after sensing	0 ms
Refractory period	■ A ⁷ AUTO
■ RV	200...[25]... 250 ...[25]...500 ms
■ LV	200 ms
Post-Ventricular Atrial Refractory Period (PVARP)	AUTO ; 175...[5]...250...[5]...600 ms
PVARP after PVC	PVARP + 150 ms (max: 600 ms) automatically adjusted
Ventricular blanking after Ap	30 ...[5]...70 ms
Far-Field protection	■ After RVs 100 ...[10]...220 ms
■ After RVp	100...[10]... 150 ...[10]...220 ms
Pacemaker-Mediated Tachycardia (PMT) protection	OFF; ON (VA criterion: 250...[10]... 350 ...[10]...500 ms)

Leads	
Connection	IS-1-connector (3 x)
Auto Lead Check [A/RV/LV]	ON
Lead configuration [A/RV/LV]	unipolar ; bipolar (both automatically configured)
Auto-Initialization	ON

Longevity	
Nominal operating time	9.0 years (at A/RV/LV: 2.5 V, 0.4 ms, 60 bpm, 500 Ω, 100% pacing)
Battery ⁸	QMR [®] (open circuit voltage: 3.0 V), Li-MnO ₂ (open circuit voltage: 3.1 V)
Replacement indication	programmed rate minus 11% (in DDD[R] ⁹)

Additional parameters	
IEGM recording	20 recordings, max. 10 seconds each, 4 triggers
Magnet response	AUTO [10 cycles with 90 bpm asynchronous; then basic rate synchronous]; asynchronous; synchronous

Housing	
Dimensions/weight	53 mm x 49 mm x 6.5 mm/26 g
Volume	14 cm ³
Electrically conductive housing surfaces	33 cm ² (uncoated); 7 cm ² (coated)
X-ray identification	SF

- By default with BIV pacing.
- With BIV pacing, Vp required is programmed to "yes."
- For combinations of MR Conditional leads, please see the ProMRI manual (order number: 371712).
- If Capture Control is ON, the pulse amplitude is automatically selected.
- With RV pacing only, the safety margin is: 0.3...[0.1]...**0.5**...[0.1]...1.2 V.
- Only available with RV pacing.
- 300...[25]...775 ms for AAI(R), AAT(R), DDT modes.
- Nominal data of the manufacturer.
- See manual for other modes.

All data at 37 °C, 500 Ω.
Default settings are printed in bold.

Edora 8 HF-T QP

MR conditional CRT-P

ProMRI®



Product Highlights

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **LV VectorOpt**

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Event-triggered wireless IEGM transmissions within 24 hours**

Enable prompt evaluations for fast and better informed therapy decisions.

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA, RV & LV)**

Automatic adjustment of pacing amplitudes for effective CRT therapy.

- **EasyAV**

Facilitates programming of optimal AV timing.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Edora 8 HF-T QP	IS-1 (2x), IS-4 (1x)	15 cm ³ /31.2 g	53 mm × 53 mm × 6.5 mm	407137

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; VDI; V00; DDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ WV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ WV delay after Vs	0 ms

Timing intervals	
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	13 vectors
Auto-initialization	ON

Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo

1) at A: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF
at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	
Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate [24 h, at rest]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Edora 8 HF-T

MR conditional CRT-P

ProMRI®



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Event-triggered wireless IEGM transmissions within 24 hours

Enable prompt evaluations for fast and better informed therapy decisions.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ EasyAV

Facilitates programming of optimal AV timing.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Edora 8 HF-T	IS-1 (3x)	14 cm ³ /26.9 g	53 mm × 52 mm × 6.5 mm	407138

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ WV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ WV delay after Vs	0 ms
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms

Timing intervals	
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 msl, automatically adjusted)
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	6 vectors
Auto-initialization	ON
Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo
1) at A: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate (24 h, at rest)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Evity 8 HF-T QP

MR conditional CRT-P

ProMRI®



Product Highlights

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **LV VectorOpt**

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Event-triggered wireless IEGM transmissions within 24 hours**

Enable prompt evaluations for fast and better informed therapy decisions.

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA, RV & LV)**

Automatic adjustment of pacing amplitudes for effective CRT therapy.

- **EasyAV**

Facilitates programming of optimal AV timing.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Evity 8 HF-T QP	IS-1 (2x), IS-4 (1x)	15 cm ³ /31.2 g	53 mm × 53 mm × 6.5 mm	407139

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; VDI; V00; DDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ WV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ WV delay after Vs	0 ms

Timing intervals	
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	13 vectors
Auto-initialization	ON

Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo

1) at A: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF
at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous], asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Trend message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate [24 h, at rest]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Evity 8 HF-T

MR conditional CRT-P

ProMRI®



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Event-triggered wireless IEGM transmissions within 24 hours

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■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ EasyAV

Facilitates programming of optimal AV timing.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Evity 8 HF-T	IS-1 (3x)	14 cm ³ /26.9 g	53 mm × 52 mm × 6.5 mm	407140

Evity 8 HF-T

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ WV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ WV delay after Vs	0 ms
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms

Timing intervals	
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 msl, automatically adjusted)
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	6 vectors
Auto-initialization	ON
Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo
¹⁾ at A: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate [24 h, at rest]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Enitra 8 HF-T QP

MR conditional CRT-P

ProMRI®



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

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Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 8 HF-T QP	IS-1 (2x), IS-4 (1x)	15 cm ³ /31.2 g	53 mm × 53 mm × 6.5 mm	407141

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; VDI; V00; DDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ WV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ WV delay after Vs	0 ms

Timing intervals	
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	13 vectors
Auto-initialization	ON

Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo

1) at A: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF
at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	
Event based IEGM	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Trend message	Triggered manually via programmer

Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate [24 h, at rest]

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Enitra 8 HF-T

MR conditional CRT-P

ProMRI®



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Event-triggered wireless IEGM transmissions within 24 hours

Enable prompt evaluations for fast and better informed therapy decisions.

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enitra 8 HF-T	IS-1 (3x)	14 cm ³ /26.9 g	53 mm × 52 mm × 6.5 mm	407142

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AAi; DDI; A00R; VDD; VVT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDI; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive: OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ WV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ WV delay after Vs	0 ms
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms

Timing intervals	
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 msl, automatically adjusted)
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms
Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	6 vectors
Auto-initialization	ON
Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% (in DDD[R])
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo
1) at A: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF	
Additional parameters	
Magnet response	AUTO (10 cycles at 90 bpm asynchronous; then basic rate synchronous); asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate [24 h, at rest]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Enticos 8 HF-T QP

CRT-P



Product Highlights

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **LV VectorOpt**

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Event-triggered wireless IEGM transmissions within 24 hours**

Enable prompt evaluations for fast and better informed therapy decisions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Capture Control (RA, RV & LV)**

Automatic adjustment of pacing amplitudes for effective CRT therapy.

- **EasyAV**

Facilitates programming of optimal AV timing.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 8 HF-T QP	IS-1 (2x), IS-4 (1x)	15 cm ³ /31.2 g	53 mm × 53 mm × 6.5 mm	407143

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	<ul style="list-style-type: none"> Interval Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive; OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ VV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ VV delay after Vs	0 ms
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted

Timing intervals	
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	13 vectors
Auto-initialization	ON

Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% [in DDD[R]]
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo

1) at A: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF
at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active
Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate (24 h, at rest)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Enticos 8 HF-T

CRT-P



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Event-triggered wireless IEGM transmissions within 24 hours

Enable prompt evaluations for fast and better informed therapy decisions.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Capture Control (RA, RV & LV)

Automatic adjustment of pacing amplitudes for effective CRT therapy.

■ EasyAV

Facilitates programming of optimal AV timing.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Enticos 8 HF-T	IS-1 (3x)	14 cm ³ /26.9 g	53 mm × 52 mm × 6.5 mm	407144

Technical Data

Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
NBG code	DDDRV
Mode	DDD-CLS; VI-CLS; DDDR; WIR; AAIR; DDIR; A00; DDD; VI; AA; DDI; A00R; VDD; VT; AAT; VDI; V00; VDDR; VDIR; V00R; DDD-ADI; DVI; D00; DDDR-ADIR; DVIR; D00R; DDT; OFF
Basic rate/Night rate	
■ Basic rate	30 ... [5] ... 100 ... [10] ... 200 bpm
■ Night rate	OFF; 30 ... [5] ... 100 ... [10] ... 200 bpm
■ Hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Repetitive/Scan cycles	OFF; ON (if Hysteresis was selected)
■ Atrial overdrive	OFF; ON
Pulse amplitude [A/RV/LV]	0.2 ... [0.2] ... 6.0 ... [0.5] ... 7.5 V
Pulse width [A/RV/LV]	0.1 ... [0.1] ... 0.5 ... [0.25] ... 1.5 ms
Sensitivity A	AUTO; 0.1 ... [0.1] ... 1.5 ... [0.5] ... 7.5 mV
Sensitivity RV	AUTO; 0.5 ... [0.5] ... 7.5 mV
Sensitivity LV	OFF; AUTO; 0.5 ... [0.5] ... 7.5 mV
Pacing algorithm	
Atrial capture control	OFF; ON; ATM
■ Min. amplitude	0.5 ... [0.1] ... 4.8 V
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	0.5 ... [0.1] ... 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Ventricular capture control [RV, LV]	OFF; ON; ATM
■ Threshold test start	2.4 ... [0.6] ... 4.8 V
■ Safety margin	1.0; 1.2 V
■ Search type	■ Interval ■ Time of day
■ Interval	0.1; 0.3; 1; 3; 6; 12; 24 h
■ Time of day	00:00 ... [00:10] ... 23:50
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Mode switching with X/Z-out-of-8 criterion	OFF; ON
■ Intervention rate	100 ... [10] ... 250 bpm
■ Onset criterion	3 ... [1] ... 8 out of 8
■ Resolution criterion	3 ... [1] ... 8 out of 8
■ Change of basic rate	OFF; +5 ... [5] ... +30 bpm
■ Rate stabilization during mode switching	OFF; ON
■ 2:1 Lock-in protection	OFF; ON (if RV is selected for ven. pacing)
Atr. NIPS	Burst pacing; Programmed stimulation
Conventional rate adaptation	
Sensor	Accelerometer
■ Max. activity rate	80 ... [10] ... 180 bpm
■ Sensor gain	AUTO; Very low; Low; Medium; High; Very high
■ Sensor threshold	Very low; Low; Medium; High; Very high
■ Rate fading	OFF; ON
■ Rate increase	1; 2; 4; 8 bpm/cycle
■ Rate decrease	0.1; 0.2; 0.5; 1.0 bpm/cycle
Sensor optimization	Original, preview
Timing intervals	
AV delay	20 ... [5] ... 350 ms at 60 to 120 bpm; 20 ... [5] ... 300 ms at 140 bpm
AV dynamics	Low; Medium; High; Fixed
Sense compensation	OFF; -10 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Negative; Positive; IRSplus
AV hysteresis (positive)	70; 110; 150; 200 ms
AV hysteresis (negative)	10 ... [10] ... 150 ms
AV repetitive/scan cycles	If AV hysteresis mode = Positive; OFF; ON
Upper rate response	
■ Ventricle	90 ... [10] ... 200 bpm
■ Atrium	OFF; 175; 200; 240 bpm
Tachycardia behavior	2:1; WKB
Ventricular pacing	BIV; RV; LV
■ Triggering	OFF; RVs; RVs+PVC
■ LV T-wave protection	OFF; ON
■ Maximum trigger rate	AUTO; 90 ... [10] ... 160 bpm
■ Initially paced chamber	RV; LV
■ VV delay after Vp	0 ... [5] ... 80 ... [10] ... 100 ms
■ VV delay after Vs	0 ms
Refractory period/Blanking	
■ Refract. period [A]	AUTO
■ Refract. period [RV]	200 ... [25] ... 500 ms
■ Refract. period [LV]	200 ms
■ Auto PVARP	OFF; ON
■ PVARP	175 ... [25] ... 600 ms
■ PVARP after PVC	PVARP + 150 ms (max. 600 ms), automatically adjusted

Timing intervals	
■ Ven. blanking after Ap	30 ... [5] ... 70 ms
■ Far-field protection after Vs	100 ... [10] ... 220 ms
■ Far-field protection after Vp	100 ... [10] ... 220 ms
■ PMT protection	OFF; ON
■ VA criterion	250 ... [25] ... 500 ms

Leads	
Automatic lead check [A/RV/LV]	ON; OFF
Lead configuration [A/RV/LV]	Unipolar; bipolar
Pacing polarity [LV]	6 vectors
Auto-initialization	ON

Physical parameters	
Service time	9 years, 8 months ¹⁾
Replacement indication	Programmed rate minus 11% [in DDD[R]]
Electrically conductive surface	33 cm ²
X-ray identification	BIOTRONIK logo

1) 1) at A: 2.5 V/0.4 ms, 60 bpm, 500 0; pacing: 10 %, Home Monitoring: OFF, SafeSync: OFF
at RV/LV: 2.5 V/0.4 ms, 60 bpm, 500 0; pacing: 100%, Home Monitoring: OFF, SafeSync: OFF

Additional parameters	
Magnet response	AUTO [10 cycles at 90 bpm asynchronous; then basic rate synchronous]; asynchronous, synchronous
IEGM recording	20 recordings, max. 10 seconds each
Recording prior to event	0; 25; 50; 75; 100%

BIOTRONIK Home Monitoring®

Transmitted data	Threshold [A/RV/LV], Sensing amplitude [A/RV/LV], Pacing statistics, Arrhythmia statistics [A/RV/LV], Heart Failure Monitor diagnostics, CRT statistics, Battery status, Lead measurement values, Program parameters
Event based IEGM	AF; HVF; Lead failure

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Battery status; Programmer-triggered message received; Backup mode active

Leads	Pacing impedance [A/RV/LV], Lead check [A/RV/LV], Sensing amplitude [A/RV/LV], Threshold [A/RV/LV], Capture control status [A/RV/LV]
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Arrhythmias	Number/duration of atrial arrhythmias; Number/duration of mode switching; Long ongoing atrial episode detected; Number/duration of ven. arrhythmias; Atrial burden
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Heart Failure Monitor	Mean PVC/h; CRT and BIV pacing; Mean ven. heart rate (24 h, at rest)
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Programmer settings	
Home Monitoring	OFF; ON
Time of transmission	AUTO; 00:00 ... [01:00] ... 23:00 hh:mm
High atrial rate	OFF; ModeSw; AT
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
High ventricular rate	OFF; ON
Event based IEGM	OFF; ON

Iperia 7 HF-T QP

CRT-D



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

■ Excellent longevity

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 HF-T QP	DF4 (1x), IS4 (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	401658

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms [fixed]
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % [fixed]
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDD-CLS; DDD(R); VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI-CLS; VVI(R)]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil; LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [LV]	Std.; OFF; Individual
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 O, RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 7 HF-T QP

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- **Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 HF-T QP ProMRI	DF4 (1x), IS4 (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	401657

Iperia 7 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDD-CLS; DDD(R); VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI-CLS; VVI(R)]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil, LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually by programmer

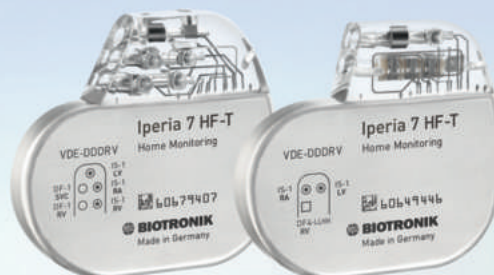
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center

Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics
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Iperia 7 HF-T

CRT-D



Product Highlights

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

■ Excellent longevity

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393008
Iperia 7 HF-T	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393010

Iperia 7 HF-T

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VVI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVIR))	90 ... [10] ... 160 bpm
VW delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed

Thoracic impedance (TI)	OFF; ON
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Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

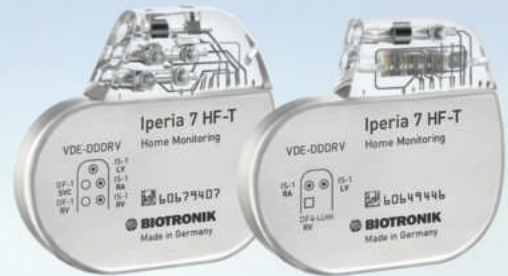
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment

Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 7 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- **Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 7 HF-T ProMRI	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393007
Iperia 7 HF-T ProMRI	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393009

Iperia 7 HF-T

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA1; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVIR))	90 ... [10] ... 160 bpm
VW delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾
1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
BIOTRONIK Home Monitoring®	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 5 HF-T QP

CRT-D



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 HF-T QP	DF4 (1x), IS4 (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	402658

Iperia 5 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD[R]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI[R]; VDI[R]; VVIR]	90 ... [10] ... 160 bpm
WV delay after Vp	0 ... [5] ... 100 ms

Pacing parameters	
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil; LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV pacing: 100 %; RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 5 HF-T QP

MR conditional CRT-D

ProMRI®



Product Highlights

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 HF-T QP ProMRI	DF4 (1x), IS4 (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	402656

Iperia 5 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; Biv
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; Biv
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI; VDIR; DDI; DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; Biv
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; Biv; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDIR]; VDDIR]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDIR]; VDIR]; WIR]	90 ... [10] ... 160 bpm

Pacing parameters	
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil; LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV pacing: 100 %; RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

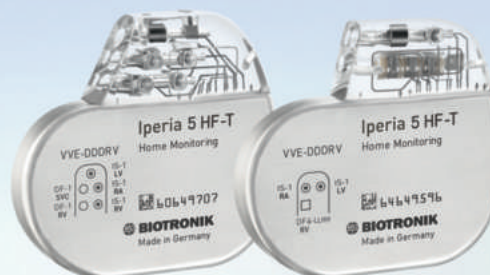
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 5 HF-T

CRT-D



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393028
Iperia 5 HF-T	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393026

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD[R]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI[R]; VDI[R]; VVIR]	90 ... [10] ... 160 bpm

Pacing parameters	
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

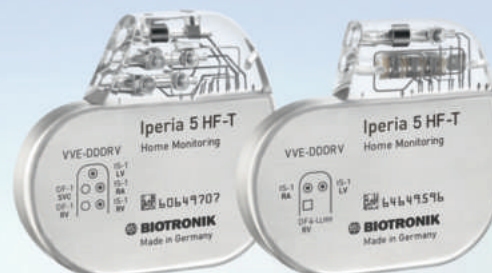
BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iperia 5 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Iperia 5 HF-T ProMRI	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393027
Iperia 5 HF-T ProMRI	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393025

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD[R]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI[R]; VDI[R]; VVIR]	90 ... [10] ... 160 bpm
WV delay after Vp	0 ... [5] ... 100 ms

Pacing parameters	
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; (UNIP: LV tip → can; BIPL: LV tip → LV ring)
Sensing (LV)	Std.; OFF; Individual
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 7 HF-T QP

CRT-D



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

■ Excellent longevity

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 HF-T QP	DF4 (1x), IS4 (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	401662

Itrevia 7 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA1; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude (A, RV, LV)	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width (A, RV, LV)	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control (A, RV, LV)	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil; LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when sensing was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 O, RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Itrevia 7 HF-T QP

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Quadrupolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- **Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 HF-T QP ProMRI	DF4 (1x), IS4 (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	401661

Itrevia 7 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVIR))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil, LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

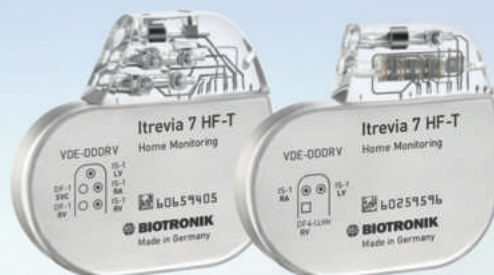
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually by programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 7 HF-T

CRT-D



Product Highlights

- Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- Small size**

Increases the patients' comfort through a reduced device thickness.

- Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393014
Itrevia 7 HF-T	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393016

Itrevia 7 HF-T

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADIR)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VVI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVIR))	90 ... [10] ... 160 bpm
VW delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed

Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

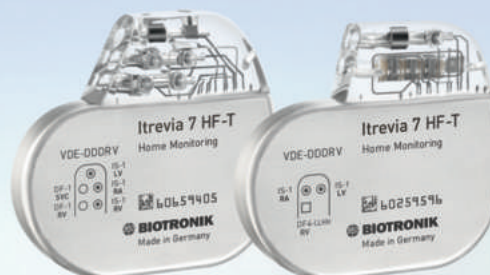
BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 7 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- **Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 7 HF-T ProMRI	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393013
Itrevia 7 HF-T ProMRI	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393015

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA1; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVIR))	90 ... [10] ... 160 bpm
VW delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BiPL; [UNIP: LV tip → can; BiPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾
1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
BIOTRONIK Home Monitoring®	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 5 HF-T QP

CRT-D



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 HF-T QP	DF4 (1x), IS4 (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	402659

Itrevia 5 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; Biv
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; Biv
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; Biv
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; Biv; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD[R]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI[R]; VDI[R]; VVIR]	90 ... [10] ... 160 bpm

Pacing parameters	
Vv delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil; LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std.; Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q, RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 5 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF; OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON; ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; Biv
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV \rightarrow Can+SVC; RV \rightarrow Can; RV \rightarrow SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; Biv
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI; VDIR; DDI; DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; Biv
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; Biv; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDIR]; VDDIR]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDIR]; VDIR]; WIR]	90 ... [10] ... 160 bpm

Pacing parameters	
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip \rightarrow LV2 ring, LV1 tip \rightarrow LV4 ring, LV1 tip \rightarrow RV coil, LV1 tip \rightarrow ICD; LV2 ring \rightarrow LV1 tip, LV2 ring \rightarrow LV4 ring, LV2 ring \rightarrow RV coil; LV3 ring \rightarrow LV2 ring, LV3 ring \rightarrow LV4 ring, LV3 ring \rightarrow RV coil; LV4 ring \rightarrow LV2 ring, LV4 ring \rightarrow RV coil
Sensing polarity	LV1 tip \rightarrow LV2 ring, LV1 tip \rightarrow ICD; LV2 ring \rightarrow LV3 ring, LV2 ring \rightarrow ICD; LV3 ring \rightarrow LV4 ring, LV3 ring \rightarrow ICD; LV4 ring \rightarrow ICD
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [LV]	Std.; OFF; Individual
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %; RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

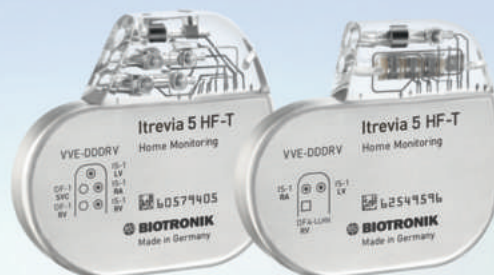
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 5 HF-T

CRT-D



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393066
Itrevia 5 HF-T	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393064

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD[R]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI[R]; VDI[R]; VVIR]	90 ... [10] ... 160 bpm

Pacing parameters	
Vv delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

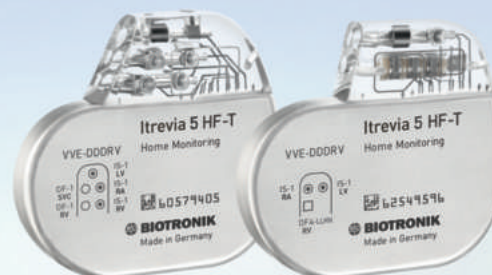
BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Itrevia 5 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Itrevia 5 HF-T ProMRI	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	393065
Itrevia 5 HF-T ProMRI	DF4 (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	393063

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD[R]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI[R]; VDI[R]; VVIR]	90 ... [10] ... 160 bpm
WV delay after Vp	0 ... [5] ... 100 ms

Pacing parameters	
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing [A]	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Inventra 7 HF-T QP

CRT-D



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ 45 J shock energy

Improves patient safety for successful defibrillation.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ Automatic atrial therapy

Delivers atrial therapies to automatically treat AT/AF episodes.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

■ Excellent longevity

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 HF-T QP	DF4 (1x), IS4 (1x), IS-1 (1x)	38 cm ³ /92 g	65 mm × 58.5 mm × 12.5 mm	393012

Inventra 7 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 4*45 J; 6*45 J For the VF zone: 4*45 J; 6*45 J
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAi; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVIR))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil; LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.3 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω, RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 5 min; 30 min; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center

Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics
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Inventra 7 HF-T QP

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- **Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 HF-T QP ProMRI	DF4 (1x), IS4 (1x), IS-1 (1x)	38 cm ³ /92 g	65 mm × 58.5 mm × 12.5 mm	393011

Inventra 7 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can+SVc; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON

Pacing parameters	
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV1 tip → LV2 ring, LV1 tip → LV4 ring, LV1 tip → RV coil, LV1 tip → ICD; LV2 ring → LV1 tip, LV2 ring → LV4 ring, LV2 ring → RV coil; LV3 ring → LV2 ring, LV3 ring → LV4 ring, LV3 ring → RV coil; LV4 ring → LV2 ring, LV4 ring → RV coil
Sensing polarity	LV1 tip → LV2 ring, LV1 tip → ICD; LV2 ring → LV3 ring, LV2 ring → ICD; LV3 ring → LV4 ring, LV3 ring → ICD; LV4 ring → ICD
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.3 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω, RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

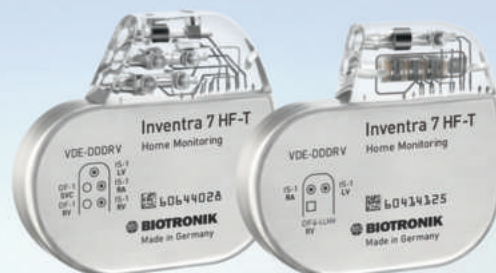
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Inventra 7 HF-T

CRT-D



Product Highlights

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- **Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 HF-T	DF-1 (2x), IS-1 (3x)	37 cm ³ /88 g	65 mm × 58.5 mm × 12.5 mm	399423
Inventra 7 HF-T	DF4 (1x), IS-1 (2x)	36 cm ³ /88 g	65 mm × 56 mm × 12.5 mm	399422

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 4*45 J; 6*45 J For the VF zone: 4*45 J; 6*45 J
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VW delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can)
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed

Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.3 years ¹⁾
1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing: 100 %; RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

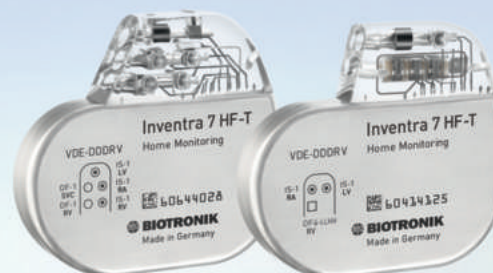
BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 5 min; 30 min; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Inventra 7 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **Automatic atrial therapy**

Delivers atrial therapies to automatically treat AT/AF episodes.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

- **Excellent longevity**

Excellent device lifetime due to an advanced battery design and energy-efficient technologies.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inventra 7 HF-T ProMRI	DF-1 (2x), IS-1 (3x)	37 cm ³ /88 g	65 mm × 58.5 mm × 12.5 mm	393019
Inventra 7 HF-T ProMRI	DF4 (1x), IS-1 (2x)	36 cm ³ /88 g	65 mm × 56 mm × 12.5 mm	393020

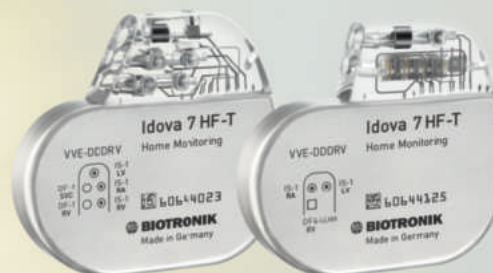
Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Number S1	1 ... [1] ... 10
■ P-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; VOO
Backup stimulation	OFF; 70; 90 bpm
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 10
Add S1	OFF; ON
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Scan decrement	OFF; 5 ... [5] ... 40 ms
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 10
R-S1 interval	70 ... [5] ... 95 %
S1 decrement	5 ... [5] ... 40 ms
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 4*45 J; 6*45 J For the VF zone: 4*45 J; 6*45 J
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → Can-SVC; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VVI-CLS
Max. sensor rate	80 ... [10] ... 160 bpm
Expert options	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes; No
Pacing parameters	
Mode	DDD-CLS; VVI-CLS; DDDR-ADIR; DDDR; DDIR; VVIR; AAIR; D00; DDD-ADI; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms

Pacing parameters	
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Vp suppression	OFF; ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VVI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDD(R); VDD(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI-CLS; VVIR))	90 ... [10] ... 160 bpm
VW delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity	LV tip → LV ring; LV tip → RV coil; LV ring → LV tip; LV ring → RV coil; UNIP (UNIP: LV tip → can); BIPL: LV tip → LV ring
Sensing polarity	UNIP; BIPL; [UNIP: LV tip → can; BIPL: LV tip → LV ring]
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.3 years ¹⁾
<small>1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON</small>	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program
BIOTRONIK Home Monitoring®	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/402-405 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 5 min; 30 min; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Idova 7 HF-T

CRT-D



Product Highlights

- **45 J shock energy**

Improves patient safety for successful defibrillation.

- **Small size**

Increases the patients' comfort through a reduced device size.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 HF-T	DF-1 (2x) IS-1 (3x)	37 cm ³ /88 g	65 mm x 58.5 mm x 12.5 mm	383558
Idova 7 HF-T	DF4 (1x) IS-1 (2x)	36 cm ³ /87 g	65 mm x 56 mm x 12.5 mm	383559

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BIV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normat; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VI if permanent: WII(R); OFF; DDI if permanent: DDD(R); DDI(R); AAI(R); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V [RV, RA], permanent [LV]
Post-shock pulse width	1.5 ms [RV, RA], permanent [LV]
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BIV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAI; D00; DDD; DDI; VI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BIV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BIV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDD(R); VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); WII(R)]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP [UNIP: LV tip → can]
Sensing polarity, LV	UNIP; BIPL [UNIP: LV tip → can; BIPL: LV tip → LV ring]

Pacing parameters	
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.2 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; stim. RV, LV: 100 %; RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT [EPE/ATP], Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

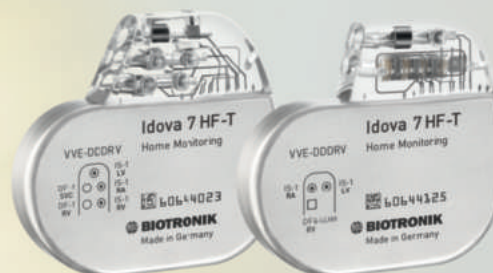
BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude [RV, RA, LV]; Pacing impedance [RV, RA, LV]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected [monitor, long ongoing], SVT; Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing [%]; BIV pacing [%]; Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Idova 7 HF-T

MR Conditional CRT-D

ProMRI®



Product Highlights

- **45 J shock energy**
Improves patient safety for successful defibrillation.
- **ProMRI®**
Allows patients to undergo MR scanning under specific conditions.
- **Small size**
Increases the patients' comfort through a reduced device size.
- **Capture Control**
Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**
Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.
- **DF4 connector**
Simplifies and shortens the implantation procedure and reduces material in the device pocket.
- **BIOTRONIK Home Monitoring®**
Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with Remote Scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Idova 7 HF-T	DF-1 (2x) IS-1 (3x)	37 cm ³ /88 g	65 mm x 58.5 mm x 12.5 mm	383560
Idova 7 HF-T	DF4 (1x) IS-1 (2x)	36 cm ³ /87 g	65 mm x 56 mm x 12.5 mm	383561

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 45 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 45 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VVI if permanent: VVI(R), OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VVI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VVI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI(R)]	90 ... [10] ... 160 bpm
WV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV

Pacing parameters	
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP [UNIP; LV tip → can]
Sensing polarity, LV	UNIP; BIPL [UNIP; LV tip → can; BIPL; LV tip → LV ring]
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.2 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; stim. RV, LV: 100 %, RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude [RV, RA, LV]; Pacing impedance [RV, RA, LV]; Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT), Ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF]; Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing [%]; BiV pacing [%]; Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 7 HF-T

CRT-D



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	383547
Ilesto 7 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	383549

Ilesto 7 HF-T

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BIV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation [in VT1, VT2, VF]	OFF; ON
Polarity [in VT1, VT2, VF]	Normal; Reversed; Alternating
Waveform [in VT1, VT2, VF]	Biphasic; Biphasic 2
Shock path [in VT1, VT2, VF]	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VI if permanent: VVIR; OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BIV
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAI; D00; DDD; DDI; VI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BIV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BIV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD(R)	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVIR]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV

Pacing parameters	
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP; LV tip → can)
Sensing polarity, LV	UNIP; BIPL (UNIP; LV tip → can; BIPL; LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance [TI]	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV: 100 %; RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON [daily transmission]; diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

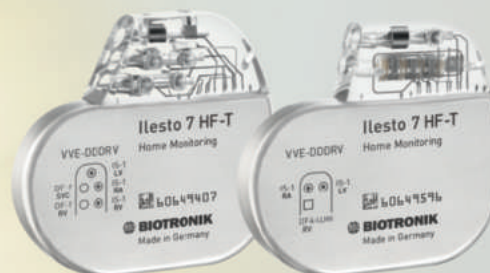
BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing [%]; BIV pacing [%]; Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Ilesto 7 HF-T

MR Conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 7 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	390055
Ilesto 7 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	390061

Ilesto 7 HF-T

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VI if permanent: VI(R); OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VAI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VI(R)]	90 ... [10] ... 160 bpm

Pacing parameters	
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP: LV tip → can)
Sensing polarity, LV	UNIP; BIPL (UNIP: LV tip → can; BIPL: LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾
1) RA, RV, LV: 2.5 W/0.4 ms, 60 bpm, 500 0; RV pacing, LV: 100 %, RA: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT; Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing (%); BiV pacing (%); Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Ilesto 5 HF-T

CRT-D



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	383550
Ilesto 5 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	383552

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R), OFF; DDI if permanent: DDD(R), DDI(R), AA(R); VVI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDD(R); VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI(R)]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms

Pacing parameters	
Initially paced chamber	RV; LV
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP; LV tip → can)
Sensing polarity, LV	UNIP; BIPL (UNIP; LV tip → can; BIPL; LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV: 100 %; RA: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction

Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received

Leads	
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold

Arrhythmias	
Arrhythmias	Atrial arrhythmia detected (monitor, long (ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing

Heart Failure Monitor	
Heart Failure Monitor	CRT pacing [%]; BiV pacing [%]; Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden

Episodes	
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration

Data transmission	
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

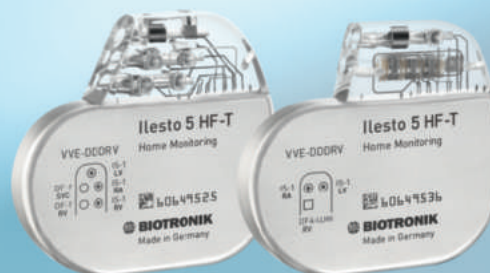
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment

Transmitted data	
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Ilesto 5 HF-T

MR Conditional CRT-D

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ SafeSync RF telemetry

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilesto 5 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	390110
Ilesto 5 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	390112

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R); OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive [positive]	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI(R)]	90 ... [10] ... 160 bpm
WV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV

Pacing parameters	
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP; LV tip → can)
Sensing polarity, LV	UNIP; BiPL (UNIP; LV tip → can; BiPL; LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾
¹⁾ RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV: 100 %, RA: 15 %; 4 max. energy shocks/year; Home Monitoring: ON [daily transmission]; diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long [ongoing], SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing [%]; BiV pacing [%]; Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 7 HF-T

CRT-D



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

- **Extended longevity**

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	390054
Iforia 7 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	390060

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BIV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Post-shock mode	VI if permanent: VVIR; OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BIV
Pacing parameters	
Mode	DDDR; DDIR; VVIR; AAI; D00; DDD; DDI; VI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive [positive]	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BIV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BIV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDD(R); VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVIR]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV

Pacing parameters	
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP; LV tip → can)
Sensing polarity, LV	UNIP; BIPL (UNIP; LV tip → can; BIPL; LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV: 100 %; RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON [daily transmission]; diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction
Program sets	
Programs	Standard program; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing [%]; BIV pacing [%]; Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 7 HF-T

MR Conditional CRT-D

ProMRI®



Product Highlights

■ ProMRI®

Allows patients to undergo MR scanning under specific conditions.

■ Small size

Increases the patients' comfort through a reduced device thickness.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

■ Heart Failure Monitor

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

■ BIOTRONIK Home Monitoring®

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

■ Extended longevity

Enables longer device lifetimes due to a new battery and energy efficient technologies.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 7 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	390056
Iforia 7 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	390062

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Atrial therapy [NIPS]	Programmed stimulation; Burst pacing
Post-shock mode	VI if permanent: VVI(R), OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VDI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV; OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDI(R); VDDI(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI(R)]	90 ... [10] ... 160 bpm
WV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV

Pacing parameters	
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP; LV tip → can)
Sensing polarity, LV	UNIP; BIPL (UNIP; LV tip → can; BIPL; LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON
Diagnostic functions	
IEGM For AT/AF	OFF; ON; Advanced ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]; 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.5 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV: 100 %, RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde Conduction

Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long (ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing burden
Heart Failure Monitor	CRT pacing [%]; BiV pacing [%]; Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden

Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment

Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics
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Iforia 5 HF-T

CRT-D



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	383551
Iforia 5 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	383553

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BIV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R); OFF; DDI if permanent: DDD(R); DDI(R); AA(I); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BIV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BIV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BIV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDD(R); VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI(R)]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP: LV tip → can)
Sensing polarity, LV	UNIP; BIPL (UNIP: LV tip → can; BIPL: LV tip → LV ring)

Pacing parameters	
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Hotter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV: 100 %, RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction
Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

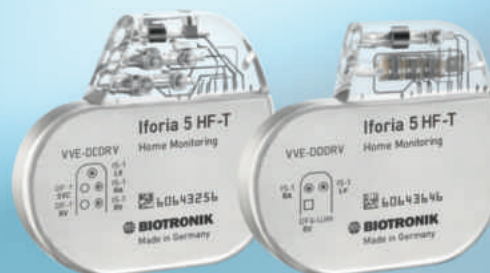
BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing (%); BIV pacing (%); Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 5 HF-T

MR Conditional CRT-D

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the amplitudes (in RA capture monitoring only).

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups with remote scheduling, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 5 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	390111
Iforia 5 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	390113

Technical data

MR Conditional	
ProMRI®	For combination of MR Conditional leads, please see the "ProMRI® MR conditional device systems" manual
Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI if permanent: VVI(R); OFF; DDI if permanent: DDD(R); DDI(R); AA(I); VDI if permanent: VDD(R); VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AAI; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	A: OFF; ATM // LV, RV: OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive [positive]	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing (after Mode switching)	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDDR]; VDD(R)	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI(R)]	90 ... [10] ... 160 bpm
WV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV

Pacing parameters	
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP; LV tip → can)
Sensing polarity, LV	UNIP; BiPL (UNIP; LV tip → can; BiPL; LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer
MRI program	OFF; ON

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q; RV pacing, LV: 100 %, RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON [daily transmission]; diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde Conduction

Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters

Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Findings	
Device	Device status; Battery status; Programmer-triggered message received; Device in MRI mode
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, RA, LV pacing threshold

Arrhythmias	
Arrhythmias	Atrial arrhythmia detected (monitor, long (ongoing), SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing

Heart Failure Monitor	
Heart Failure Monitor	CRT pacing [%]; BiV pacing [%]; Mean atrial heart rate; Mean ven. heart rate [24 h, at rest]; Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden

Episodes	
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration

Data transmission	
Data transmission	HM follow-up trigger occurred; First message received; No message received for (days)

Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote scheduling	Enable; disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; alignment with a specific day of the week; only working days or no day alignment

Transmitted data	
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Iforia 3 HF-T

CRT-D



Product Highlights

- **Small size**

Increases the patients' comfort through a reduced device thickness.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Automatic threshold monitoring**

Permits remote evaluation of ventricular pacing thresholds.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

- **BIOTRONIK Home Monitoring®**

Enables wireless patient monitoring, including Home Monitoring-supported follow-ups, for early detection of clinical and device-related events.

Ordering information

Model	Connectors	Volume/weight	Dimensions	Order number
Iforia 3 HF-T	DF-1 (2x) IS-1 (3x)	34 cm ³ /83 g	65 mm x 58.5 mm x 11 mm	383554
Iforia 3 HF-T	DF4 (1x) IS-1 (2x)	33 cm ³ /82 g	65 mm x 56 mm x 11 mm	383556

Technical data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	240 ... 600 ms
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; Onset; Stability; SMART detection; Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 60 For VT2: 10 ... [2] ... 40
Redetection counter VT1 and VT2	10 ... [2] ... 30
Detection counter/Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	OFF; 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms If SMART = ON: ± 8 ... [4] ... ± 48 %
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection and SMART redetection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
ATP type	Burst; Ramp
■ Attempts	OFF; 1 ... [1] ... 10
■ Number S1	1 ... [1] ... 10
■ Add S1	OFF; ON
■ R-S1 interval	70 ... [5] ... 95 %
■ S1 decrement	5 ... [5] ... 40 ms
■ Scan decrement	OFF; 5 ... [5] ... 40 ms
■ Ventricular pacing	RV; LV; BIV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type [ATP One Shot]	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
■ Attempts	1 (fixed)
■ R-S1 interval	70 ... [5] ... 95 %
■ Number S1	1 ... [1] ... 10
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV→Can+SVC; RV→Can; RV→SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI if permanent: VVI(R), OFF; DDI if permanent: DDD(R), DDI(R), AAI(R); VVI if permanent: VDD(R), VDI(R)
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock pulse width	1.5 ms (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock AV delay	50 ... [10] ... 350 ms
Post-shock ven. pacing	RV; BIV
Pacing parameters	
Mode	DDDR; DDIR; WIR; AAIR; D00; DDD; DDI; VVI; AA; V00; VDDR; VDIR; VDD; VDI; OFF
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	LV, RV: OFF; ATM
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after sense and pace	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
AV scan/repetitive (positive)	OFF; ON
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching	VDI, VDIR if permanent: VDDR; DDI, DDIR if permanent: DDDR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing [after Mode switching]	RV; BIV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BIV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate [DDD(R); VDD(R)]	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate [DDI(R); VDI(R); VVI(R)]	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV

Pacing parameters	
Pacing polarity, LV	LV tip → LV ring; LV tip → RV ring; LV ring → LV tip; LV ring → RV ring; UNIP (UNIP; LV tip → can)
Sensing polarity, LV	UNIP; BIPL (UNIP; LV tip → can; BIPL; LV tip → LV ring)
Sensing, RV	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually program- mable sensing parameters
Sensing, LV	Std.; OFF; Individual
Sensing, A	Std.; OFF; Individual
Sensor	Accelerometer

Diagnostic functions	
IEGM For AT/AF	OFF; ON
IEGM For SVT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min [3 channels according to IEGM configuration]
Length of prehistory	Fixed: 30 s; 5 s [when onset was fulfilled or at induced episodes]

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω, RV pacing, LV: 100 %, RA: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATPI), Retrograde Conduction

Program sets	
Programs	Standard program; Individual program [1-3, individually programmable]; First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmission	
Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Findings	
Device	Device status; Battery status; Programmer-triggered message received
Leads	Sensing amplitude (RV, RA, LV); Pacing impedance (RV, RA, LV); Daily shock impedance; Latest available impedance of a delivered shock; RV, LV pacing threshold
Arrhythmias	Atrial arrhythmia detected (monitor, long [ongoing], SVT); Ventricular arrhythmia detected (VT1 monitoring, VT1, VT2, VF); Ineffective max. energy shock; RV pacing
Heart Failure Monitor	CRT pacing [%]; BIV pacing [%]; Mean atrial heart rate; Mean ven. heart rate (24 h, at rest); Atrial burden; Mean PVC/h; Mean ventricular heart rate during atrial burden
Episodes	Ven. episode with two or more started shocks; Ven. episode with acceleration of ventricular rhythm; Ven. episode with acceleration of atrial rhythm; Ven. therapy episode with long duration; Ven. monitoring episode with long duration
Data transmission	HM follow-up trigger occurred; First message received; No message received for [days]
Programmer settings	
Home Monitoring	OFF; ON
Time of transmission/frequency	Std.; 00:00 ... [01:00] ... 23:00 hh:mm/403 MHz
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Cycle length/time of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/ 1-5 individually programmable dates
Transmitted data	Periodic IEGM; rate histogram [A, V]; device settings and statistics

Ilivia 7 HF-T QP

MR conditional CRT-D

ProMRI®



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ MultiPole Pacing (MPP)

Enables sequential or simultaneous stimulation from different pacing vectors in the left ventricle for more options in CRT management.

■ DX Option

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilivia 7 HF-T QP	DF-1 (2x), IS-1 (2x), IS4 (LLLL) (1x)	36 cm ³ /86 g	65 mm × 60.5 mm × 11 mm	404620
Ilivia 7 HF-T QP	DF4 (LLHH) (1x), IS4 (LLLL) (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	404621

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if Biv: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)

Pacing parameters	
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDIR); VDD(R)	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	12 vectors
Sensing polarity (LV)	7 vectors
Sensing (RV)	Std.; Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Hotter	3 x 60 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.6 years (without MPP) ¹⁾ 6.8 years (with MPP) ²⁾

- 1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON
 2) RA, RV, 1st LV, 2nd LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV, 1st LV, 2nd LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment

Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Ilivia 7 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ DX Option

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Ilivia 7 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	404601
Ilivia 7 HF-T	DF4 (LLHH) (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	404602

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if BIV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; WIR; VI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)

Pacing parameters	
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDIR); VDD(R)	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	5 vectors
Sensing polarity (LV)	2 vectors
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Hotter	3 x 60 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.6 years ¹⁾
¹⁾ RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 7 HF-T QP

MR conditional CRT-D

ProMRI®



Product Highlights

■ Quadripolar LV pacing

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ MultiPole Pacing (MPP)

Enables sequential or simultaneous stimulation from different pacing vectors in the left ventricle for more options in CRT management.

■ DX Option

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

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Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 7 HF-T QP	DF-1 (2x), IS-1 (2x), IS4 (LLLL) (1x)	36 cm ³ /86 g	65 mm × 60.5 mm × 11 mm	404629
Intica 7 HF-T QP	DF4 (LLHH) (1x), IS4 (LLLL) (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	404630

Intica 7 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if BIV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)

Pacing parameters	
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDIR); VDD(R)	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	12 vectors
Sensing polarity (LV)	7 vectors
Sensing (RV)	Std.; Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Hotter	3 x 60 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.6 years (without MPP) ¹⁾ 6.8 years (with MPP) ²⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON
2) RA, RV, 1st LV, 2nd LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV, 1st LV, 2nd LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment

Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 7 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ DX Option

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 7 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	404627
Intica 7 HF-T	DF4 (LLHH) (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	404628

Intica 7 HF-T

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... (5) ... 100 ... (10) ... 160 bpm
AT/AF	100 ... (10) ... 250 bpm
VT1	OFF; 270 ... (10) ... 600 ms
VT2	OFF; 270 ... (10) ... 500 ms
VF	OFF; 240 ... (10) ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if BIV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... (2) ... 100; For VT2: 10 ... (2) ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... (2) ... 50; For VT2: 10 ... (2) ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... (4) ... 32 % If SMART = ON: 4 ... (4) ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... (4) ... ± 48 ms and ± 8 ... (4) ... ± 48 % If SMART = ON: ± 8 ... (4) ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... (1) ... 3; 5; 10 ... (10) ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... (5) ... 40 Hz
■ Duration	2 ... (1) ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... (1) ... 10
ATP type	Burst; Ramp
Number S1	1 ... (1) ... 15
R-S1 interval	70 ... (5) ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... (1) ... 15
R-S1 interval	70 ... (5) ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... (2) ... 20 ... (5) ... 40 J
Energy of 2nd shock	OFF; 4 ... (2) ... 20 ... (5) ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... (10) ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... (10) ... +50 bpm
■ Vp required	Yes
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; WIR; VI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude (A, RV, LV)	0.5 ... (0.25) ... 4.0 ... (0.5) ... 6.0; 7.5 V
Pulse width (A, RV, LV)	0.4; 0.5 ... (0.25) ... 1.5 ms
Capture control (A, RV, LV)	OFF; ATM; ON
Basic rate	30 ... (5) ... 100 ... (10) ... 160 bpm
■ Rate hysteresis	OFF; -5 ... (-5) ... -25 ... (-20) ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... (5) ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... (5) ... 350 ms
Sense compensation	OFF; -5 ... (-5) ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)

Pacing parameters	
Rate fading	OFF; ON
Upper rate (UTR)	90 ... (10) ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... (10) ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... (5) ... +30 bpm
■ Post mode switching rate	OFF; +5 ... (5) ... +50 bpm
■ Post mode switching duration	1 ... (1) ... 30 min
■ Onset criterion/Resolution criterion	3 ... (1) ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... (25) ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDIR); VDD(R)	UTR + 20; 90 ... (10) ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VI-CLS; VVI(R))	90 ... (10) ... 160 bpm
VV delay after Vp	0 ... (5) ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	5 vectors
Sensing polarity (LV)	2 vectors
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... (30) ... 120; 180 days (if Home Monitoring: OFF)
IEGM Hotter	3 x 60 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram (A, V); Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 5 HF-T QP

MR conditional CRT-D

ProMRI®



Product Highlights

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **LV VectorOpt**

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

- **DX Option**

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **ProMRI®¹⁾**

Allows patients to undergo MR scanning under specific conditions.

- **MRI AutoDetect**

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

- **Capture Control**

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

¹⁾ For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 5 HF-T QP	DF-1 (2x), IS-1 (2x), IS4 (LLLL) (1x)	36 cm ³ /86 g	65 mm × 60.5 mm × 11 mm	406932
Intica 5 HF-T QP	DF4 (LLHH) (1x), IS4 (LLLL) (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	404685

Intica 5 HF-T QP

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR-ADIR, DDD-ADI, DDDR, DDD, DDIR, DDI, VDIR, VI, VDDR, VDIR, VDD, VDI, AAIR, AA; OFF; V00, D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON

Pacing parameters	
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDDI(R); VDDI(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	12 vectors
Sensing polarity (LV)	7 vectors
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For AT/AF	OFF; ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

¹⁾ RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q, RV, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year;
Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Intica 5 HF-T

MR conditional CRT-D

ProMRI®



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ DX Option

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ ProMRI®¹⁾

Allows patients to undergo MR scanning under specific conditions.

■ MRI AutoDetect

Simplifies workflows through automatic detection of MRI environment and minimizes patients' time in MRI mode.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

1) For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Intica 5 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	404683
Intica 5 HF-T	DF4 (LLHH) (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	404684

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR-ADIR, DDD-ADI, DDDR, DDD, DDIR, DDI, VDIR, VI, VDDR, VDIR, VDD, VDI, AAIR, AA; OFF; V00, D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)
■ Pacing suppression	1 ... [1] ... 8 consecutive Vs
■ Pacing support	1 ... [1] ... 4 out of 8 cycles
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON

Pacing parameters	
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDDI(R); VDDI(R))	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	5 vectors
Sensing polarity (LV)	2 vectors
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (IA)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer
MRI program	OFF; ON; AUTO
Expiration date (for AUTO)	Adjustable to today's date + 14 days
Diagnostic functions	
Recording episodes For AT/AF	OFF; ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF; ON
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q, RV pacing, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 7 HF-T QP

CRT-D



Product Highlights

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **LV VectorOpt**

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

- **MultiPole Pacing (MPP)**

Enables sequential or simultaneous stimulation from different pacing vectors in the left ventricle for more options in CRT management.

- **DX Option**

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

- **Closed Loop Stimulation (CLS)**

Unique physiological rate response modulation during episodes of physical and emotional stress.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 7 HF-T QP	DF-1 (2x), IS-1 (2x), IS4 (LLLL) (1x)	36 cm ³ /86 g	65 mm × 60.5 mm × 11 mm	404638
Inlexa 7 HF-T QP	DF4 (LLHH) (1x), IS4 (LLLL) (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	404639

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if BIV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)

Pacing parameters	
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDIR); VDD(R)	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	12 vectors
Sensing polarity (LV)	7 vectors
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 60 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.6 years (without MPP) ¹⁾ 6.8 years (with MPP) ²⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

2) RA, RV, 1st LV, 2nd LV: 2.5 V/0.4 ms, 60 bpm, 500 0; RV, 1st LV, 2nd LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 7 HF-T

CRT-D



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ DX Option

Allows use of fewer intracardiac leads for patients not requiring atrial pacing in combination with a DX lead.

■ Closed Loop Stimulation (CLS)

Unique physiological rate response modulation during episodes of physical and emotional stress.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Capture Control

Improves patient safety and extends device longevity by automatically adjusting the pacing amplitudes.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 7 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	404636
Inlexa 7 HF-T	DF4 (LLHH) (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	404637

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Arrhythmia detection and redetection	
AT/AF detection criteria	Interval; Stability
VT detection criteria	Interval; Onset; Stability; MorphMatch (if BIV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring; ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (AT/AF zone)	
AT therapy	OFF; Burst; Ramp
■ Backup mode	OFF; VVI
AF therapy	OFF; HF burst
■ Rate	10 ... [5] ... 40 Hz
■ Duration	2 ... [1] ... 10 s
■ Backup mode	OFF; V00
Backup stimulation	OFF; 70; 90 bpm
Atrial therapy (NIPS)	Programmed stimulation; Burst pacing
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Early ATP delivery	OFF; ON
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating; Reversed → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2; Biphasic → alternating; Biphasic 2 → alternating
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VVI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Closed Loop Stimulation	
CLS mode	DDD-CLS; VI-CLS
Max. CLS rate	80 ... [10] ... 160 bpm
Extended CLS settings	
■ CLS response	Very low; Low; Medium; High; Very high
■ CLS resting rate control	OFF; +10 ... [10] ... +50 bpm
■ Vp required	Yes
Pacing parameters	
Mode	DDDR-ADIR; DDD-ADI; DDD-CLS; DDDR; DDD; DDIR; DDI; VI-CLS; VVIR; VI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM; ON
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Vp suppression	OFF or ON (only in the modes DDDR-ADIR and DDD-ADI)

Pacing parameters	
Rate fading	OFF; ON
Upper rate (UTR)	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
■ Rate stabilization during mode switching	OFF; ON
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
Maximum trigger rate (DDD-CLS; DDIR); VDD(R)	UTR + 20; 90 ... [10] ... 160 bpm
Maximum trigger rate (DDI(R); VDI(R); VI-CLS; VVI(R))	90 ... [10] ... 160 bpm
VV delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity (LV)	5 vectors
Sensing polarity (LV)	2 vectors
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF
DX sensing	OFF; ON
Sensor	Accelerometer

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON; Advanced ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 60 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Thoracic impedance (TI)	OFF; ON

Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1730 mAh
Longevity	7.6 years ¹⁾

1) RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω; RV pacing, LV pacing: 100 %; RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Atrial NIPS, Rapid ventricular pacing

Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
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Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer

Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h

Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 3 HF-T QP

CRT-D



Product Highlights

- **Quadripolar LV pacing**

Enables multiple left-ventricular pacing and sensing configurations for CRT management.

- **LV VectorOpt**

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

- **BIOTRONIK Home Monitoring®**

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

- **Automatic threshold monitoring**

Permits remote evaluation of ventricular pacing thresholds.

- **DF4 connector**

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 3 HF-T QP	DF-1 (2x), IS-1 (2x), IS4 (LLLL) (1x)	36 cm ³ /86 g	65 mm × 60.5 mm × 11 mm	416037
Inlexa 3 HF-T QP	DF4 (LLHH) (1x), IS4 (LLLL) (1x), IS-1 (1x)	36 cm ³ /87 g	65 mm × 58.5 mm × 11 mm	416038

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; $\pm 8 ... [4] ... \pm 48$ ms and $\pm 8 ... [4] ... \pm 48$ % If SMART = ON: $\pm 8 ... [4] ... \pm 48$ %
MorphMatch	OFF; Monitoring: ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDD; DDIR; DDI; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching (Mode)	VDI, VDIR; DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
W delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity [LV]	12 vectors
Sensing polarity [LV]	7 vectors
Sensing (RV)	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing (LV)	Std.; OFF; Individual
Sensing (A)	Std.; OFF
Sensor	Accelerometer

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Physical parameters	
Telemetry	RF (SafeSync), programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾

¹⁾ RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Ω, RV, LV pacing: 100 %, RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON

Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Inlexa 3 HF-T

CRT-D



Product Highlights

■ LV VectorOpt

User-friendly interface for LV lead testing, simplifying the selection of the optimal pacing vector.

■ BIOTRONIK Home Monitoring®

Effective remote monitoring of heart failure and system integrity based on automatic and wireless daily transmissions. Enables earlier intervention and Home Monitoring-supported follow-ups that are approved by the U.S. FDA and CE Notified Body.

■ Automatic threshold monitoring

Permits remote evaluation of ventricular pacing thresholds.

■ DF4 connector

Simplifies and shortens the implantation procedure and reduces material in the device pocket.

Ordering Information

Model	Connectors	Volume/weight	Dimensions	Order number
Inlexa 3 HF-T	DF-1 (2x), IS-1 (3x)	34 cm ³ /83 g	65 mm × 58.5 mm × 11 mm	404699
Inlexa 3 HF-T	DF4 (LLHH) (1x), IS-1 (2x)	33 cm ³ /82 g	65 mm × 56 mm × 11 mm	404700

Technical Data

Therapy and monitoring zones	
Bradycardia	30 ... [5] ... 100 ... [10] ... 160 bpm
AT/AF	100 ... [10] ... 250 bpm
VT1	OFF; 270 ... [10] ... 600 ms
VT2	OFF; 270 ... [10] ... 500 ms
VF	OFF; 240 ... [10] ... 400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	Interval; SMART detection; Onset; Stability; MorphMatch (if BiV: OFF, if SMART: OFF); Sustained VT
Detection counter VT1 and VT2	For VT1: 10 ... [2] ... 100; For VT2: 10 ... [2] ... 80
Redetection counter VT1 and VT2	For VT1: 10 ... [2] ... 50; For VT2: 10 ... [2] ... 40
Detection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30; 30 out of 40
Redetection counter VF	6 out of 8; 8 out of 12; 10 out of 14; 12 out of 16; 16 out of 20; 18 out of 24; 20 out of 26; 22 out of 30; 24 out of 30
Onset	If SMART = OFF: OFF; 4 ... [4] ... 32 % If SMART = ON: 4 ... [4] ... 32 %
Stability	If SMART = OFF: OFF; ± 8 ... [4] ... ± 48 ms and ± 8 ... [4] ... ± 48 % If SMART = ON: ± 8 ... [4] ... ± 48 %
MorphMatch	OFF; Monitoring: ON
MorphMatch threshold	Std.; Low; High
Sustained VT	OFF; 1 ... [1] ... 3; 5; 10 ... [10] ... 30 min
SMART detection	OFF; ON
Tachycardia therapy (VT1/VT2 zone)	
Attempts	OFF; 1 ... [1] ... 10
ATP type	Burst; Ramp
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Ventricular pacing	RV; LV; BiV
ATP optimization	OFF; ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy (VF zone)	
ATP type (ATP One Shot)	OFF; Burst; Ramp
Stability criterion	12 % (fixed)
Number S1	1 ... [1] ... 15
R-S1 interval	70 ... [5] ... 85; 88; 90; 95 %
Cardioversion/defibrillation therapy	
Number of shocks	For VT zones: OFF; 1; 2; 6 or 8 For the VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF; ON
Polarity (in VT1, VT2, VF)	Normal; Reversed; Normal → alternating
Waveform (in VT1, VT2, VF)	Biphasic; Biphasic 2
Shock path (in VT1, VT2, VF)	RV → SVC+Can; RV → Can; RV → SVC
Energy of 1st shock	OFF; 2 ... [2] ... 20 ... [5] ... 40 J
Energy of 2nd shock	OFF; 4 ... [2] ... 20 ... [5] ... 40 J
Post-shock mode	VI; DDI; VDI
Post-shock pulse amplitude	7.5 V (RV, RA), permanent (LV)
Post-shock duration	OFF; 10 s; 30 s; 1 min; 2 min; 5 min; 10 min
Post-shock ven. pacing	RV; BiV
Pacing parameters	
Mode	DDDR; DDD; DDIR; DDI; VVIR; VVI; VDDR; VDIR; VDD; VDI; AAIR; AAI; OFF; V00; D00
Pulse amplitude [A, RV, LV]	0.5 ... [0.25] ... 4.0 ... [0.5] ... 6.0; 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5 ... [0.25] ... 1.5 ms
Capture control [A, RV, LV]	OFF; ATM
Basic rate	30 ... [5] ... 100 ... [10] ... 160 bpm
■ Rate hysteresis	OFF; -5 ... [-5] ... -25 ... [-20] ... -65 bpm
■ Scan/Repetitive	OFF; ON
■ Night rate	OFF; 30 ... [5] ... 100 bpm
AV dynamics	Low; Medium; High; Fixed; Individual
AV delay after pacing and sensing	15; 40 ... [5] ... 350 ms
Sense compensation	OFF; -5 ... [-5] ... -120 ms
AV hysteresis mode	OFF; Positive; Negative
Upper rate [UTR]	90 ... [10] ... 160 bpm
Atrial upper rate	OFF; 175; 200; 240 bpm
Mode switching [Mode]	VDI, VDIR, DDI, DDIR
■ Intervention rate	OFF; 120 ... [10] ... 200 bpm
■ Ventricular pacing	RV; BiV
■ Change of basic rate during MS	OFF; +5 ... [5] ... +30 bpm
■ Post mode switching rate	OFF; +5 ... [5] ... +50 bpm
■ Post mode switching duration	1 ... [1] ... 30 min
■ Onset criterion/Resolution criterion	3 ... [1] ... 8 out of 8
PVARP	AUTO; 175 ... [25] ... 600 ms
PMT detection/termination	OFF; ON
Ventricular pacing	RV; BiV; LV
LV T-wave protection	OFF; ON
Triggering	OFF; RVs; RVs+PVC
W delay after Vp	0 ... [5] ... 100 ms
Initially paced chamber	RV; LV
Pacing polarity [LV]	5 vectors
Sensing polarity [LV]	2 vectors
Sensing [RV]	Std. - Standard; TWS - Enhanced T-wave suppression; VFS - Enhanced VF sensitivity; Individually programmable sensing parameters
Sensing [LV]	Std.; OFF; Individual
Sensing [A]	Std.; OFF
Sensor	Accelerometer

Diagnostic functions	
Recording episodes For AT/AF	OFF; ON
Recording episodes For SVT	OFF; ON
Recording episodes For nsT	OFF; ON
Periodic recording	OFF; 30 ... [30] ... 120; 180 days (if Home Monitoring: OFF)
IEGM Holter	3 x 56 min (3 channels according to IEGM configuration)
Length of prehistory	Fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes); 1 min for AT/AF episode if Advanced ON was programmed
Physical parameters	
Telemetry	RF [SafeSync], programming head
Material	Titanium
Battery	3.2 V; 1520 mAh
Longevity	6.6 years ¹⁾
¹⁾ RA, RV, LV: 2.5 V/0.4 ms, 60 bpm, 500 Q, RV pacing, LV pacing: 100 %; RA pacing: 15 %; 4 max. energy shocks/year; Home Monitoring: ON (daily transmission); diagnostics: ON	
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Retrograde conduction, Rapid ventricular pacing
Program sets	
Programs	Standard program; ProgramConsult; Individual program (1-3, individually programmable); First interrogated program; Safe program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics; Heart Failure Monitor diagnostics; Detection and therapy counters; Statistics; Lead measurement values; Battery and system status; ICD program parameters
Message types	
Trend message	Triggered automatically once every 24 hours
Event message	Triggered automatically after certain cardiac events
Test message	Triggered manually via programmer
Programmer settings	
Home Monitoring	OFF; ON
IEGM for therapy episodes	OFF; ON
IEGM for monitoring episodes	OFF; ON
Ongoing atrial episode	OFF; 6 h; 12 h; 18 h
Home Monitoring-supported follow-up	
Remote Scheduling	Enable; Disable
HM follow-up intervals/alignment	Individually programmable first date and repetition intervals varying from 20-366 days; Alignment with a specific day of the week; Only working days or no day alignment
Intermediate HM follow-up	Can be requested at any time via the Home Monitoring Service Center
Transmitted data	Periodic IEGM; Rate histogram [A, V]; Device settings and statistics

Please refer to the technical manual of the device for further technical information.

Lumax 740 HF-T

MR Conditional three-chamber ICD
with Ventricular Capture Control and extended longevity

ProMRI®



Product Highlights

- **ProMRI®**

Allows patients to undergo MR scanning under specific conditions.

- **SafeSync RF telemetry**

RF telemetry for wandless, time-saving and reliable data transmission at implantation and follow-up.

- **Extended longevity**

Avoids risks associated with device replacement procedures because of superior device longevity through the use of energy-efficient technologies.

- **Ventricular Capture Control**

Automatic adjustment of pacing amplitudes for improved patient safety and extended device longevity.

- **Extended MultiSelect LV pacing options**

Allows electric repositioning of the left ventricular lead by five different LV pacing configurations.

- **ATP One Shot**

Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

- **SelectSense Advanced**

Adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

- **Heart Failure Monitor**

Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of clinical parameters.

- **BIOTRONIK Home Monitoring®**

Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 740 HF-T	39 cm ³	13 mm	IS-1 (3×) DF-1 (2×)	381462

Technical Data

MR Conditional	
ProMRI®	MR Conditional (for combination of MR Conditional leads, please see the ProMRI manual)
Therapy and monitoring zones	
Bradycardiac	30...[5]...100...[10]...160 bpm
■ AT/AF	100...[10]...250 bpm
■ VT1	OFF, 270...[10]...600 ms
■ VT2	OFF, 270...[10]...500 ms
■ VF	OFF, 240...[10]...400 ms
Ventricular arrhythmia detection and redetection	
VT detection criteria	interval counter, onset, stability, SMART Detection®, persistent VT
Detection counter VT1 and VT2	10...[2]...60 for VT1; 10...[2]...40 for VT2
Redetection counter VT1 and VT2	10...[2]...30
Detection/redetection counter VF (X/Y)	6/8, 8/12, 10/14, 12/16, 16/20, 18/24, 20/26, 22/30, 24/30
Onset	OFF, 4...[4]...32%
Stability	if SMART = ON ± 8...[4]...± 48%, if SMART = OFF ± 8...[4]...± 48 ms
Sustained VT	OFF, 1 min, 2 min, 3 min, 5 min, 10 min, 20 min, 30 min
SMART detection and redetection	OFF, ON
Tachycardia therapy in VT1/VT2	
ATP types	Burst, Ramp
■ Attempts	OFF, 1...[1]...10
■ Number S1	1...[1]...10
■ Add S1	OFF, ON
■ R-S1 interval	70...[5]...95%
■ S1 decrement	5...[5]...40 ms
■ Scan decrement	OFF, 5...[5]...40 ms
■ Ventricular Pacing	RV, LV, BIV
ATP optimization	OFF, ON
Minimum ATP interval	200 ms (fixed)
Tachycardia therapy in VF	
ATP type (ATP One Shot)	OFF, Burst, Ramp
■ Stability criterion	12%
■ ATP attempts	1 (fixed)
■ R-S1 interval	70...[5]...95%
■ Number S1	1...[1]...10
Cardioversion/defibrillation therapy	
Number of shocks	for VT zones: OFF, 1, 2, 6 or 8; for VF zone: 6 or 8
Confirmation (in VT1, VT2, VF)	OFF, ON
Polarity (in VT1, VT2, VF)	normal, reversed, alternating
Waveform for shock in VT1, VT2, VF	biphasic, biphasic 2
Shock path	RV → SVC + Can, RV → Can, RV → SVC
Energy	1st shock: OFF [VT1/VT2], 2...[2]...20...[5]...40 J; 2nd shock: OFF [VT1, VT2] 4...[2]...20...[5]...40 J
Atrial therapy (NIPS ¹)	programmed stimulation, Burst
Post Shock mode	DDI if permanent DDD(R), DDI(R), AA(I/R); VDI if permanent VDD(R), VDI(R), VVI if permanent WVI(R), OFF
Post Shock pulse amplitude	7.5 V [RA, RV], permanent [LV]
Post Shock pulse width	1.5 ms [RA, RV], permanent [LV]
Post Shock duration	OFF, 10 s, 30 s, 1 min, 2 min, 5 min, 10 min
Post Shock AV delay	fixed [50...[10]...350 ms]
Post Shock ven. pacing	RV; BIV
Pacing parameters	
Mode	Bradycardia/CRT
Pulse amplitude [A/RV/LV]	0.5...[0.25]...4.0...[0.5]...6.0, 7.5 V
Pulse width [A, RV, LV]	0.4; 0.5...[0.25]...1.5 ms
RV and LV Capture Control	OFF, ATM, ON
Basic rate	30...[5]...100...[10]...160 bpm
■ Rate hysteresis	OFF, -5...[-5]...-25...[-20]...-65 bpm
■ Scan and Repetitive	OFF; ON (= 10 cycles)
■ Night rate	OFF, 30...[5]...100 bpm
AV dynamics	low, medium, high, fixed, individual
AV delay after sense and pace	15, 40...[5]...350 ms
Sense compensation	OFF, -5...[-5]...-120 ms
AV hysteresis mode	positive, negative, OFF
AV scan/repetitive [positive]	OFF; ON (= 5 cycles)
Upper rate (UTR)	90...[10]...160 bpm
Upper rate atrium	OFF, 175, 200, 240 bpm
Mode Switch	DDI, DDIR at permanent DDD(R); VDI, VDIR at permanent VDD(R)
■ Intervention rate	OFF, 120...[10]...200 bpm
■ Ventricular pacing after Mode Switch	RV; BIV
■ Change basic rate during Mode Switch	OFF, +5...[5]...+30 bpm
■ Post Mode Switch rate	OFF, +5...[5]...+50 bpm
■ Post Mode Switch duration	1...[1]...30 min
PVARP ²	AUTO, 175...[25]...600 ms
PMT ³ detection/termination	OFF, ON
Ventricular Pacing	RV, LV, BIV
LV T-Wave Protection	ON; OFF
Triggering	OFF, RVs, RVs + RVES

Maximum trigger rate [DDD(R), VDD(R)]	UTR + 20, 90...[10]...160 bpm
Maximum trigger rate [DDI(R), VDI(R), WVI(R)]	90...[10]...160 bpm
VV delay after Vp	0...[5]...100 ms
Initially paced chamber	RV, LV
LV polarity pace	LV tip → LV, LV tip → RV ring, LV ring → LV tip, LV ring → RV ring, LV tip → can
LV polarity sense	UNIP (LV tip → can), BIPL (LV tip → LV ring)
Sensing RV	Std. – Standard, TWS – Enhanced T-wave suppression, VFS – Enhanced VF sensitivity. (Individually programmable sensing parameters)
Sensing LV	Standard, OFF, Individual
Sensing A	Standard, OFF, Individual
Sensor	Accelerometer
Lead connections	
Pacing/sensing	IS-1 bipolar (3x)
Shock	DF-1 (2x)
Diagnostic functions	
IEGM for AT/AF	OFF, ON
IEGM for SVT	OFF, ON
Periodic recordings	OFF, 30 days, 60 days, 90 days, 120 days, 180 days
IEGM configuration	RA, RV, LV; RA, RV, FF; FF, RV, LV
IEGM Holter	3 x 24 min (3 channels according to IEGM configuration)
Length of prehistory	fixed: 30 s; 5 s (when onset was fulfilled or at induced episodes)
Thoracic impedance (TI)	OFF, ON
Physical parameters	
Dimensions	66 mm x 59 mm x 13 mm
Volume/weight	39.8 cm ³ /94 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	7.8 years ¹
Tests	
Different tests for	Impedance, Sensing, Pacing threshold, DFT (EPE/ATP), Atrial NIPS, Retrograde conduction test
Program sets	
Programs	individual program (1–3, individually programmable), standard program, first interrogated program, SAFE program, MRI program

BIOTRONIK Home Monitoring®

Transmitted data	AF diagnostics, Heart Failure Monitor diagnostics, detection and therapy counters, rhythm control, statistics, lead integrity measurements, battery and system status, ICD program parameters
Message types	
Trend message	triggered automatically once every 24 hours
Event message	triggered automatically after certain cardiac events
Test message	triggered manually via programmer
Findings	
Device	device status, battery status, programmer-triggered message received, device in MRI mode
Leads	sensing amplitude [RA, RV, LV], ⁷ pacing impedance [RA, RV, LV], ⁸ shock impedance (painless, at last shock), RV/LV pacing threshold, ⁷ Capture Control disabled [RV, LV]
Arrhythmias	atrial arrhythmia detected [monitor; long [ongoing], SVT], ventricular arrhythmia detected [VT1 monitoring, VT1, VT2, VF], ineffective max. energy shock
Heart Failure Monitor	CRT pacing [%], BIV pacing [%], mean ven. heart rate [24 h, at rest], ⁷ atrial burden, ⁷ mean PVC/h, ⁷ mean ventricular heart rate during atrial burden
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with acceleration of atrial rhythm, ⁷ episode details received, ven. therapy episode with long duration, ⁷ ven. monitoring episode with long duration ⁷
Data transmission	remote follow-up trigger occurred, first message received, no message received for [days]
Programmer settings	
Home Monitoring	OFF, ON
Time of transmission	Std., 00:00...[01:00]...23:00 [hh:mm]
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Ongoing atrial episodes	OFF, 6 h, 12 h, 18 h
Periodic IEGM for remote follow-up	
Cycle duration/date of transmission	OFF, 30 days, 60 days, 90 days, 120 days, 180 days/ 1–5 individual programmable dates
Transmitted data	Periodic IEGM, rate histogram (A,V) device settings and statistics
Technical data	
Transmitter frequency	403 MHz
Transmitting power	< 25 µW

- 1 RA, RV, LV 2.5 V/0.4 ms, 60 bpm, 700 Ω, RA 15%, RV/LV 100% pacing; 4 max. energy shocks/year. Home Monitoring ON (daily transmission); diagnostics ON.
- 2 OFF cannot be programmed if SMART is active.
- 3 NIPS = Noninvasive Programmed Stimulation.
- 4 Mode for electrocautery and MRI.
- 5 PVARP = Post-Ventricular Atrial Refractory Period.
- 6 PMT = Pacemaker-Mediated Tachycardia.
- 7 Programmable upper or lower limit.
- 8 Programmable upper and lower limit.

Lumax 540 HF-T

Three-chamber ICD with Automatic Threshold Monitoring



Product Highlights

Reliable Sensing & Detection

SelectSense® – Enables adaptation of sensing characteristics to patients' individual needs via a sophisticated automatic sensitivity control (ASC) algorithm and several preset options.

SMART Detection® – Reduces inadequate therapies via a clinically proven SVT discrimination algorithm.

Appropriate Therapy

ATP One Shot® – Allows painless termination of fast and stable VTs with antitachycardia pacing (ATP) before charging.

DFT Manager – Ensures effective defibrillation through expanded shock therapy management and 40J maximum shock energy.

Effective Resynchronization

MultiSelect LV pacing options – Allows electric repositioning of the left ventricular lead by four different LV pacing configurations.

Negative AV Hysteresis & RVsense Triggering – Secure continuous delivery of resynchronization therapy despite dynamic shifts in native AV conduction.

Advanced Patient Management

BIOTRONIK Home Monitoring® – Enables unique automatic wireless remote monitoring and early detection of clinical and device-related events by color-coded event notifications (Traffic Light System).

Heart Failure Monitor® – Enables early detection of changes in patients' heart failure conditions by the continuous monitoring of crucial clinical parameters.

IEGM-Online HD® & AF Monitoring Zone – Facilitates remote assessment of therapy appropriateness and early detection of potential causes for worsening of patients' HF status.

Automatic Threshold Monitoring – Permits remote evaluation of ventricular pacing thresholds.

6.25 years longevity – Avoids risks associated with device replacement procedures because of superior device longevity through the use of energy-efficient technologies.

Ordering Information

Model	Volume	Thickness	Connectors	Order number
Lumax 540 HF-T	39 cm ³	13 mm	IS-1 (3×) DF-1 (2×)	360347

Technical Data

Arrhythmia detection			
Rhythm classes	bradycardic, physiologic, VT-1, VT-2, VF		
Sensitivity (RA/RV/LV)	automatic sensitivity adjustment		
VT detection and redetection			
Criteria	number of intervals, onset, stability, SMART, persistent VT		
VT interval	OFF, 270...[10]...600 ms for VT-1; OFF, 270...[10]...500 ms for VT-2		
Number of VT intervals for detection and redetection	detection: 10...[2]...60 for VT-1; 10...[2]...40 for VT-2 redetection: 10...[2]...30		
Onset	OFF ¹⁾ , 4...[4]...32%; with SMART: 20%		
Stability	OFF ¹⁾ , ±8...[4]...±48 ms; with SMART: ±12%		
Sustained VT	OFF, 0.5, 1.0, 2.0, 3.0, 5...[5]...30 min		
SMART detection, redetection	OFF, ON		
VF detection and redetection			
VF interval	OFF, 200...[10]...400 ms		
Criterion	X out of Y		
Detection counter of VF intervals	6...[1]...30 out of 8...[1]...31		
Termination detection			
Number of intervals for termination	12 out of 16 intervals slower than VT-1		
Forced termination	OFF, 1...[1]...15 min		
Tachycardia therapy			
ATP type	burst, ramp, burst + PES ²⁾		
Attempts	OFF, 1...[1]...10		
Number S1	1...[1]...10		
Add. S1	OFF, ON		
R-S1 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%		
S1 decrement	5...[5]...40 ms		
S1-S2 interval	absolute: 200...[10]...500 ms; adaptive: 70...[5]...95%		
Scan decrement	OFF, 5...[5]...40 ms		
Min. ATP interval	200...[5]...300 ms		
ATP optimization	OFF, ON		
ATP One Shot®			
ATP type	OFF, burst, ramp, burst + PES ³⁾		
Stability criterion	12%		
ATP attempts	1		
Number S1	1...[1]...10		
Cardioversion/defibrillation therapy			
Number of shocks	for VT zones: OFF, 1...[1]...8; for VF zone: 6...[1]...8		
Waveform	biphasic, biphasic 2		
Polarity (per zone)	normal, reversed, alternating		
Shock path	RV → SVC + Can, RV → Can, RV → SVC		
Energy	1 st shock: 1...[1]...16...[2]...40 J; 2 nd shock: 2...[1]...16...[2]...40 J; 3 rd to n th shock: 40 J		
Confirmation (per zone)	OFF, ON		
Post-shock duration	OFF, 10...[10]...50 s; 1...[1]...10 min		
Pacing parameters			
	Bradycardia	Post Shock	Tachycardia (ATP)
Mode	DDD, DDI, VDD, VDI, AAI, VVI, DDDR, DDIR, VDDR, VDIR, AAIR, VVIR, OFF	DDI if DDD(R), DDI(R), AAI(R); VDI if VDD(R), VDI(R); VVI if VV(R), OFF	VOO
Pulse amplitude (atrium, RV, LV)	0.2...[0.1]...6.2, 7.5 V	7.5 V	7.5 V
Pulse width (atrium, RV, LV)	0.4, 0.5, 0.7, 1.0, 1.2, 1.5 ms	1.5 ms	1.5 ms
Ventricular pacing	RV, LV, BIV	RV, BIV	RV, LV, BIV
LV T-Wave Protection	OFF, ON	OFF, ON	
Triggering	OFF, RVs, RVs + RVES	OFF, RVs, RVs + RVES	
Max. trigger rate	AUTO, 90...[10]...160 bpm		
Basic rate	30...[5]...100...[10]...160 bpm	30...[5]...100...[10]...160 bpm	
■ Rate hysteresis	OFF, -5...[-5]...-90 bpm	OFF, -5...[-5]...-65 bpm	
■ Repetitive/scan hysteresis	OFF, 1...[1]...15 cycles		
AV delay	fixed, low, medium, high, individual fixed 15, 40...[5]...350 ms	fixed: 50...[10]...350 ms	
WV delay after Vp	0...[5]...100 ms		
Initially paced chamber	RV, LV		
LV polarity pace	LV-Tip → LV-Ring, LV-Tip → RV-Ring, LV-Ring → LV-Tip, LV-Ring → RV-Ring		
LV polarity sense	unipolar, bipolar		
AV hysteresis mode	positive, negative, OFF		
■ AV hysteresis	10...[10]...150 ms		
■ AV repetitive hysteresis (positive)	OFF, 1...[1]...10 cycles		
■ AV repetitive hysteresis (negative)	OFF, 1...[1]...15...[5]...100...[10]...180 cycles		
■ AV scan hysteresis	OFF, 1...[1]...10 cycles		
Upper tracking rate	90...[10]...160 bpm		

Mode Switching	DDD(R): DDI, DDIR; VDD(R): VDI, VDIR
■ Change basic rate during MS	OFF, +5...[5]...+30 bpm
■ Post mode switch rate	OFF, +5...[5]...+50 bpm
■ Post mode switch duration	1...[1]...30 min
PVARP ³⁾	AUTO, 175...[25]...600 ms
PVARP after VES	PVARP + 225 ms (max. 600 ms)
PMT protection	OFF, ON
Sensor	accelerometer, various programmable parameters
Lead connections	
Pacing/sensing	IS-1 bipolar (3x)
Shock	DF-1 (2x)
Diagnostic functions	
Automatic Threshold Monitoring (ATM)	RV: OFF, ON; LV: OFF, ON
AT/AF Rate	100...[10]...250 bpm
IEGM Holter	3x32 min
LV sensing	OFF, Standard
Channels	atrium, right ventricle, left ventricle (if LV sensing is enabled)
Length of pre-history	fixed: 30 s; 5 s (with fulfilled onset or for induced episodes)
IEGM at SVT	OFF, ON
IEGM at AT/AF	OFF, ON
Ongoing atrial episode	OFF, 0.5, 6, 12, 18 h
Housing	
Dimensions	66x59x13 mm
Volume/weight	39.8 cm ³ /94 g
Material	titanium
Energy source	3.2 V, 1720 mAh
Longevity	6.25 years ⁴⁾

Home Monitoring

Home Monitoring	
Transmitted data	Heart Failure Monitor [®] diagnostics, detection and therapy counters, rhythm control statistics, lead integrity measurements, battery and system status, ICD program parameters
Report types	
Trend report	triggered automatically once every 24 hours
Event report	triggered automatically after certain cardiac events
Test report	triggered manually via programmer
Event types	
Device	device status, battery status, programmer-triggered message received
Leads	sensing amplitude (RA, RV, LV) ⁵⁾ , pacing impedance (RA, RV, LV) ⁶⁾ , shock impedance (painless, at last shock), RV/LV pacing threshold ⁷⁾
Arrhythmias	atrial arrhythmia detected (ongoing, monitor, SVT), ventricular arrhythmia detected (VT-1, VT-2, VF), ineffective max. energy shock
Heart Failure Monitor [®]	percentage of CRT pacing, mean heart rate (24 h, at rest) ³⁾ , atrial burden ⁵⁾ , mean VES/h ³⁾
Episodes	ven. episode with two or more started shocks, ven. episode with acceleration of ventricular rhythm, ven. episode with acceleration of atrial rhythm ³⁾ , ven. episode with fulfilled ATP time-out criterion, ven. therapy episode duration ³⁾ , ven. monitoring episode duration ³⁾ , periodic IEGM received
Programmer settings	
Home Monitoring	OFF, ON
Time of data transmission	00:00-23:59
IEGM-Online HD[®]	
IEGM for therapy episodes	OFF, ON
IEGM for monitoring episodes	OFF, ON
Periodic IEGM	OFF, 1, 2, 3, 4, 6 months ⁸⁾
Ongoing atrial episodes	OFF, 0.5, 6, 12, 18 h
Technical data	
Transmitter frequency	403 MHz
Transmitting power	<25 µW

- 1) OFF cannot be programmed if SMART is active.
- 2) PES: Programmed extra stimulus.
- 3) PVARP: Post ventricular atrial refractory period
- 4) RA/RV 2.5V/0.4ms; LV 4.8 V/0.4ms; 60 bpm; 700 Ω; RA 15%; RV/LV 100% pacing; 4 max. energy shocks/year; Home Monitoring ON; diagnostics ON.
- 5) Programmable upper or lower limit.
- 6) Programmable upper and lower limit.
- 7) Programmable safety margin.
- 8) If periodic IEGM is enabled the system generates an additional IEGM message one week after activation.

Corox OTW-S BP

Bipolar left-ventricular lead for CRT



Product Highlights

- 5.4 F silicone lead body with polyurethane coating compatible with 7 F lead introducer
- "Thread" fixation designed for medium to small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

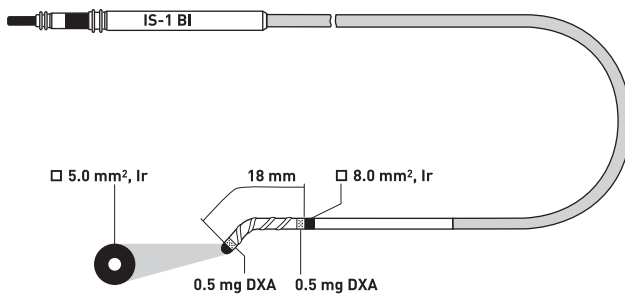
Ordering Information

Model	Connectors	Fixation	Length	Order number
Corox OTW-S 75-BP	IS-1	Silicone thread	77 cm	355148
Corox OTW-S 85-BP	IS-1	Silicone thread	87 cm	355149

Corox OTW-S BP

Technical Data

Technical data	
Polarity	Bipolar
Overall length	77, 87 cm
Tip electrode	
Surface area	5 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Silicone thread between tip and ring electrode
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	2 x 0.5 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	8 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	18 mm
Conductor	
Construction	Co-radial coil [2 x 2 filaments]
Coil material	MP35N; DFT
Coil insulation	ETFE
Insulation	Silicone
Thickness of insulation	0.3 mm
Proximal surface coating	Polyurethane
Diameter	1.8 mm [5.4 F]
Resistance	0.08 Ω/cm
Connector material	Stainless steel
Stylets (can be ordered separately)	
S 75-K OTW (green; medium)	346978
S 75-G OTW (violet; soft)	346977
S 85-K OTW (green; medium)	346980
S 85-G OTW (violet; soft)	346979
Applicable introducer	
CS introducer	7 F
Recommended CS lead delivery system	Selectra
Compatibility with Selectra	
Corox OTW-S 75 BP	Outer catheter length
	45 cm
	55 cm
Corox OTW-S 85 BP	45 cm
	55 cm
Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Corox ProMRI OTW-S BP

Bipolar left-ventricular MR Conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- 5.4 F silicone lead body with polyurethane coating compatible with 7 F lead introducer
- "Thread" fixation designed for medium to small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

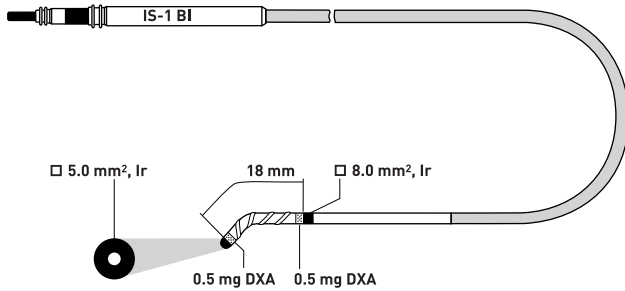
Ordering Information

Model	Connectors	Fixation	Length	Order number
Corox ProMRI OTW-S 75-BP	IS-1	Silicone thread	77 cm	381489
Corox ProMRI OTW-S 85-BP	IS-1	Silicone thread	87 cm	381490

Corox ProMRI OTW-S BP

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Bipolar
Overall length	77, 87 cm
Tip electrode	
Surface area	5 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Silicone thread between tip and ring electrode
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	2 x 0.5 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	8 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	18 mm
Conductor	
Construction	Co-radial coil (2 x 2 filaments)
Coil material	MP35N; DFT
Coil insulation	ETFE
Insulation	Silicone
Thickness of insulation	0.3 mm
Proximal surface coating	Polyurethane
Diameter	1.8 mm [5.4 F]
Resistance	0.08 Ω/cm
Connector material	Stainless steel
Stylets (can be ordered separately)	
S 75-K OTW (green; medium)	346978
S 75-G OTW (violet; soft)	346977
S 85-K OTW (green; medium)	346980
S 85-G OTW (violet; soft)	346979
Applicable introducer	
CS introducer	7 F
Recommended CS lead delivery system	Selectra
Compatibility with Selectra	
	Outer catheter length
Corox ProMRI OTW-S 75 BP	45 cm
	55 cm
Corox ProMRI OTW-S 85 BP	45 cm
	55 cm
Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Corox ProMRI OTW BP

Bipolar left-ventricular MR Conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- 5.4 F silicone lead body with polyurethane coating compatible with 7 F lead introducer
- Helix fixation designed for long veins and medium to large vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

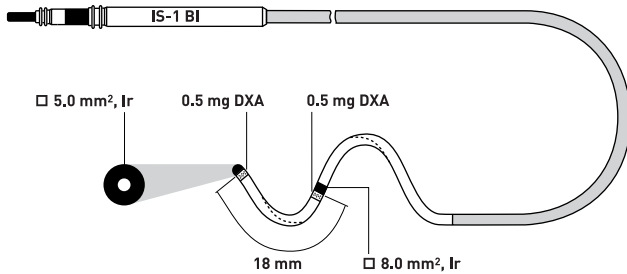
Ordering Information

Model	Connectors	Fixation	Length	Order number
Corox ProMRI OTW 75-BP	IS-1	Helix at distal end	77 cm	381487
Corox ProMRI OTW 85-BP	IS-1	Helix at distal end	87 cm	381488

Corox ProMRI OTW BP

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Bipolar
Overall length	77, 87 cm
Tip electrode	
Surface area	5 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	Helix at distal end
Helix length (straightened)	5 - 7 cm
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	0.5 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	8 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	18 mm
Conductor	
Construction	Co-radial coil (2 x 2 filaments)
Coil material	MP35N; DFT
Coil insulation	ETFE
Insulation	Silicone
Thickness of insulation	0.3 mm
Proximal surface coating	Polyurethane
Diameter	1.8 mm [5.4 F]
Resistance	0.08 Ω/cm
Connector material	Stainless steel
Stylets (can be ordered separately)	
S 75-K OTW (green; medium)	346978
S 75-G OTW (violet; soft)	346977
S 85-K OTW (green; medium)	346980
S 85-G OTW (violet; soft)	346979
Applicable introducer	
CS introducer	7 F
Recommended CS lead delivery system	Selectra
Compatibility with Selectra	
	Outer catheter length
Corox ProMRI OTW 75-BP	45 cm
	55 cm
Corox ProMRI OTW 85-BP	45 cm
	55 cm
Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Corox OTW-L BP

Left-ventricular lead for CRT



Product Highlights

- 5.4 F silicone lead body with polyurethane coating compatible with 7 F lead introducer
- S-curve fixation designed for medium to large vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

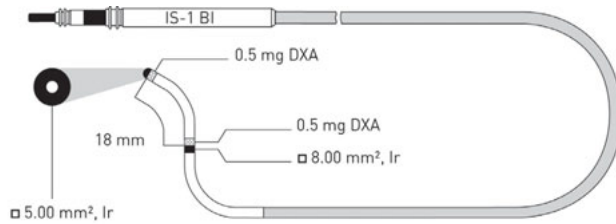
Ordering Information

Model	Connectors	Fixation	Length	Order number
Corox OTW-L 75-BP	IS-1	S-curve	77 cm	368345
Corox OTW-L 85-BP	IS-1	S-curve	87 cm	368346

Corox OTW-L BP

Technical Data

Technical data	
Polarity	Bipolar
Overall length	77, 87 cm
Tip electrode	
Surface area	5 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	S-shaped curve
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	2 x 0.5 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	8 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	18 mm
Conductor	
Construction	Co-radial coil [2 x 2 filaments]
Coil material	MP35N; DFT
Coil insulation	ETFE
Insulation	Silicone
Thickness of insulation	0.3 mm
Proximal surface coating	Polyurethane
Diameter	1.8 mm [5.4 F]
Resistance	0.08 Ω/cm
Connector material	Stainless steel
Stylets (can be ordered separately)	
S 75-K OTW (green; medium)	346978
S 75-G OTW (violet; soft)	346977
S 85-K OTW (green; medium)	346980
S 85-G OTW (violet; soft)	346979
Applicable introducer	
CS introducer	7 F
Recommended CS lead delivery system	Selectra
Compatibility with Selectra	
Corox OTW-L 75 BP	Outer catheter length
	45 cm
	55 cm
Corox OTW-L 85 BP	45 cm
	55 cm
Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Corox ProMRI OTW-L BP

Left-ventricular MR Conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- 5.4 F silicone lead body with polyurethane coating compatible with 7 F lead introducer
- S-curve fixation designed for medium to large vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

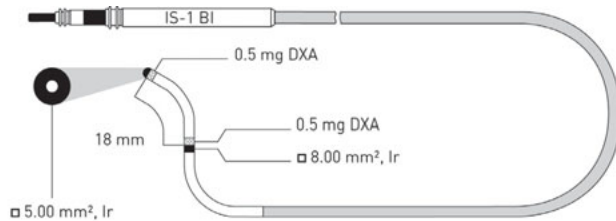
Ordering Information

Model	Connectors	Fixation	Length	Order number
Corox ProMRI OTW-L 75-BP	IS-1	S-curve	77 cm	381492
Corox ProMRI OTW-L 85-BP	IS-1	S-curve	87 cm	381491

Corox ProMRI OTW-L BP

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Bipolar
Overall length	77, 87 cm
Tip electrode	
Surface area	5 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	S-shaped curve
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	2 x 0.5 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	8 mm ²
Diameter	1.95 mm [5.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	18 mm
Conductor	
Construction	Co-radial coil (2 x 2 filaments)
Coil material	MP35N; DFT
Coil insulation	ETFE
Insulation	Silicone
Thickness of insulation	0.3 mm
Proximal surface coating	Polyurethane
Diameter	1.8 mm [5.4 F]
Resistance	0.08 Ω/cm
Connector material	Stainless steel
Stylets (can be ordered separately)	
S 75-K OTW (green; medium)	346978
S 75-G OTW (violet; soft)	346977
S 85-K OTW (green; medium)	346980
S 85-G OTW (violet; soft)	346979
Applicable introducer	
CS introducer	7 F
Recommended CS lead delivery system	Selectra
Compatibility with Selectra	
	Outer catheter length
Corox ProMRI OTW-L 75 BP	45 cm
	55 cm
Corox ProMRI OTW-L 85 BP	45 cm
	55 cm
Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Sentus OTW BP S

Bipolar left-ventricular lead for CRT



Product Highlights

- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- "Thread" fixation designed for small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus OTW BP S-75	IS-1	Silicone thread	77 cm	400722
Sentus OTW BP S-85	IS-1	Silicone thread	87 cm	400723
Sentus OTW BP S-95	IS-1	Silicone thread	97 cm	400724

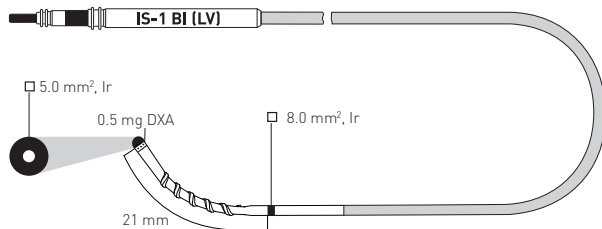
Sentus OTW BP S

Technical Data

Technical data		
Polarity	Bipolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Silicone thread between tip and ring electrode	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	21 mm	
Conductor		
Construction	Co-radial coil [2 x 2 filaments]	
Coil material	MP35N	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus OTW BP S-75	45 cm	
	55 cm	
Sentus OTW BP S-85	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus OTW BP S-95	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾

¹⁾ Product availability is subject to regulatory approval in the country.

Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Sentus ProMRI OTW BP S

Bipolar left-ventricular MR Conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- "Thread" fixation designed for small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

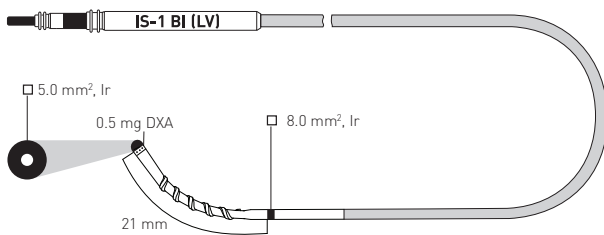
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus ProMRI OTW BP S-75	IS-1	Silicone thread	77 cm	401176
Sentus ProMRI OTW BP S-85	IS-1	Silicone thread	87 cm	401177
Sentus ProMRI OTW BP S-95	IS-1	Silicone thread	97 cm	401178

Sentus ProMRI OTW BP S

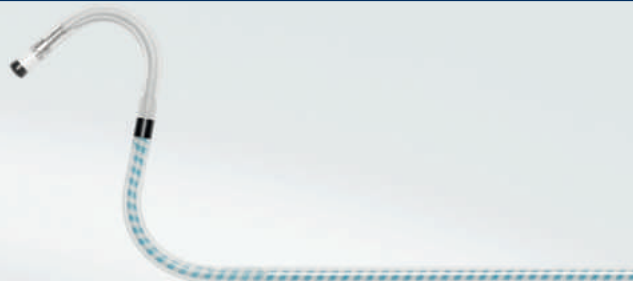
Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Bipolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Silicone thread between tip and ring electrode	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	21 mm	
Conductor		
Construction	Co-radial coil (2 x 2 filaments)	
Coil material	MP35N	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus ProMRI OTW BP S-75	45 cm	
	55 cm	
Sentus ProMRI OTW BP S-85	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus ProMRI OTW BP S-95	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾
1) Product availability is subject to regulatory approval in the country.		
Applicable guide wire		
Guide wire	0.014" [0.36 mm]	
Recommended guide wire	VisionWire or Streamer	



Sentus OTW BP L

Bipolar left-ventricular lead for CRT



Product Highlights

- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- S-curve fixation designed for medium to small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

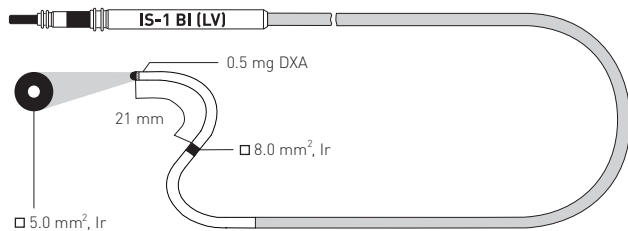
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus OTW BP L-75	IS-1	S-curve	77 cm	372330
Sentus OTW BP L-85	IS-1	S-curve	87 cm	372331
Sentus OTW BP L-95	IS-1	S-curve	97 cm	372332

Sentus OTW BP L

Technical Data

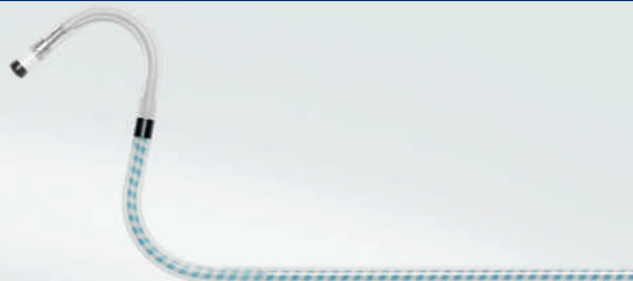
Technical data		
Polarity	Bipolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	S-shaped curve	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance to the lead tip	21 mm	
Conductor		
Construction	Co-radial coil [2 x 2 filaments]	
Coil material	MP35N	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus OTW BP L-75	45 cm	
	55 cm	
Sentus OTW BP L-85	45 cm	65 cm
	55 cm	
Sentus OTW BP L-95	45 cm	65 cm
	55 cm	75 cm
Applicable guide wire		
Guide wire	0.014" [0.36 mm]	
Recommended guide wire	VisionWire or Streamer	



Sentus ProMRI OTW BP L

Bipolar left-ventricular MR Conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- S-curve fixation designed for medium to small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

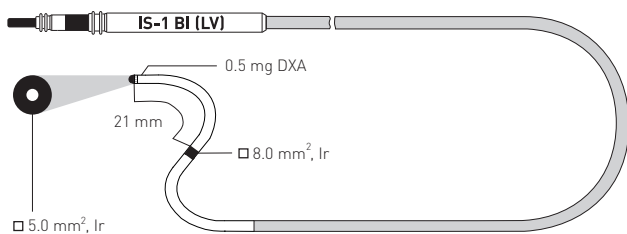
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus ProMRI OTW BP L-75	IS-1	S-curve	77 cm	398676
Sentus ProMRI OTW BP L-85	IS-1	S-curve	87 cm	398677
Sentus ProMRI OTW BP L-95	IS-1	S-curve	97 cm	398678

Sentus ProMRI OTW BP L

Technical Data

MR Conditional	
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Bipolar
Overall length	77, 87, 97 cm
Tip electrode	
Surface area	5 mm ²
Diameter	1.6 mm (4.8 F)
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	S-shaped curve
Steroid type	Dexamethasone acetate (DXA)
Steroid quantity	0.5 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	8 mm ²
Diameter	1.6 mm (4.8 F)
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance to the lead tip	21 mm
Conductor	
Construction	Co-radial coil (2 x 2 filaments)
Coil material	MP35N
Coil insulation	ETFE
Insulation	Silicone
Thickness of insulation	0.185 mm
Proximal surface coating	Polyurethane
Diameter	1.6 mm (4.8 F)
Stylets (can be ordered separately)	
S 75-K OTW (green; medium)	346978
S 75-G OTW (violet; soft)	346977
S 85-K OTW (green; medium)	346980
S 85-G OTW (violet; soft)	346979
S 95-K OTW (green; medium)	375094
S 95-G OTW (violet; soft)	375093
Applicable introducer	
CS introducer	Min. 5 F
Recommended CS lead delivery system	Selectra
Compatibility with Selectra	
Outer catheter length	Inner catheter length
Sentus ProMRI OTW BP L-75	45 cm
	55 cm
Sentus ProMRI OTW BP L-85	45 cm
	65 cm
Sentus ProMRI OTW BP L-95	45 cm
	65 cm
	75 cm
Applicable guide wire	
Guide wire	0.014" (0.36 mm)
Recommended guide wire	VisionWire or Streamer



Sentus OTW QP L

Quadripolar left-ventricular lead for CRT



Product Highlights

- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- S-curve fixation designed for medium to small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

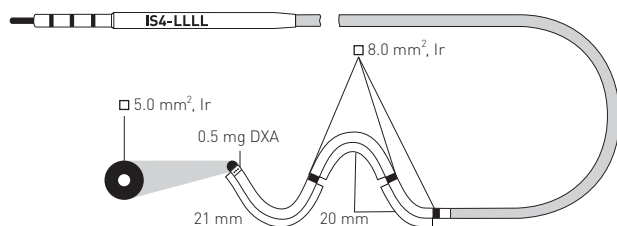
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus OTW QP L-75	IS4	S-curve	77 cm	386835
Sentus OTW QP L-85	IS4	S-curve	87 cm	386836
Sentus OTW QP L-95	IS4	S-curve	97 cm	386837

Sentus OTW QP L

Technical Data

Technical data		
Polarity	Quadripolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	S-shaped curve	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance between LV 1 and LV 2	21 mm	
Distance between LV 2 and LV 3	20 mm	
Distance between LV 3 and LV 4	20 mm	
Conductor		
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)	
Coil material	MP35N	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus OTW QP L-75	45 cm	
	55 cm	
Sentus OTW QP L-85	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus OTW QP L-95	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾
¹⁾ Product availability is subject to regulatory approval in the country.		
Applicable guide wire		
Guide wire	0.014" [0.36 mm]	
Recommended guide wire	VisionWire or Streamer	



Sentus ProMRI OTW QP L

Quadripolar left-ventricular MR Conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- S-curve fixation designed for medium to small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus ProMRI OTW QP L-75	IS4	S-curve	77 cm	401182
Sentus ProMRI OTW QP L-85	IS4	S-curve	87 cm	402183
Sentus ProMRI OTW QP L-95	IS4	S-curve	97 cm	403184

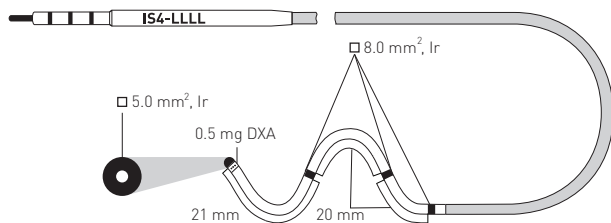
Sentus ProMRI OTW QP L

Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	S-shaped curve	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance between LV 1 and LV 2	21 mm	
Distance between LV 2 and LV 3	20 mm	
Distance between LV 3 and LV 4	20 mm	
Conductor		
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)	
Coil material	MP35N	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus ProMRI OTW QP L-75	45 cm	
	55 cm	
Sentus ProMRI OTW QP L-85	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus ProMRI OTW QP L-95	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾

1) Product availability is subject to regulatory approval in the country.

Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Sentus OTW QP L-XX/49

Quadripolar left-ventricular lead for CRT



Product Highlights

- Quadripolar lead body enables sequential or simultaneous stimulation from different pacing vectors in the left ventricle for more options in CRT management together with a compatible BIOTRONIK device
- Shortened pole spacing for short to medium target vein anatomies
- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- S-curve fixation designed for medium to small vessels
- TwinFlex Technology with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- Fractal coating and steroid elution for low thresholds

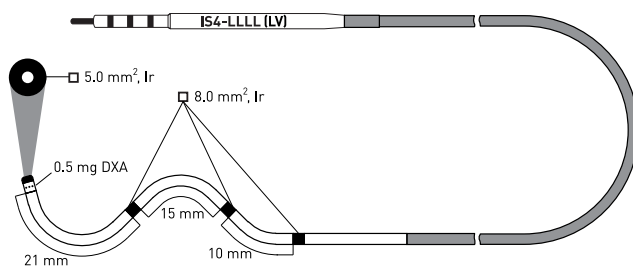
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus OTW QP L-75/49	IS4	S curve	77 cm	408715
Sentus OTW QP L-85/49	IS4	S curve	87 cm	408716
Sentus OTW QP L-95/49	IS4	S curve	97 cm	408717

Sentus OTW QP L-XX/49

Technical Data

Technical data		
Polarity	Quadripolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	S-shaped curve	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance between LV 1 and LV 2	21 mm	
Distance between LV 2 and LV 3	15 mm	
Distance between LV 3 and LV 4	10 mm	
Conductor		
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)	
Coil material	MP35N; DFT	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus OTW QP L-75/49	45 cm	
	55 cm	
Sentus OTW QP L-85/49	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus OTW QP L-95/49	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾
1) Product availability is subject to regulatory approval in the country.		
Applicable guide wire		
Guide wire	0.014" [0.36 mm]	
Recommended guide wire	VisionWire or Streamer	



Sentus ProMRI OTW QP L-XX/49

Quadripolar left-ventricular MR conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Quadripolar lead body enables sequential or simultaneous stimulation from different pacing vectors in the left ventricle for more options in CRT management together with a compatible BIOTRONIK device
- Shortened pole spacing for short to medium target vein anatomies
- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- S-curve fixation designed for medium to small vessels
- TwinFlex Technology with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- Fractal coating and steroid elution for low thresholds

Ordering Information

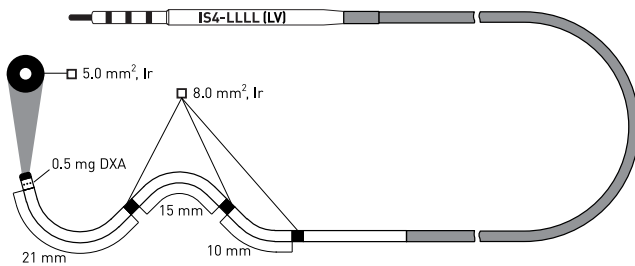
Model	Connectors	Fixation	Length	Order number
Sentus ProMRI OTW QP L-75/49	IS4	S curve	77 cm	408718
Sentus ProMRI OTW QP L-85/49	IS4	S curve	87 cm	408719
Sentus ProMRI OTW QP L-95/49	IS4	S curve	97 cm	408720

Sentus ProMRI OTW QP L-XX/49

Technical Data

MR conditional	
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual
Technical data	
Polarity	Quadripolar
Overall length	77, 87, 97 cm
Tip electrode	
Surface area	5 mm ²
Diameter	1.6 mm [4.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Fixation	S-shaped curve
Steroid type	Dexamethasone acetate [DXA]
Steroid quantity	0.5 mg
Steroid bonding agent	Silicone rubber
Ring electrode	
Surface area	8 mm ²
Diameter	1.6 mm [4.8 F]
Material	Platinum/iridium
Surface structure	Iridium, fractal
Distance between LV 1 and LV 2	21 mm
Distance between LV 2 and LV 3	15 mm
Distance between LV 3 and LV 4	10 mm
Conductor	
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)
Coil material	MP35N; DFT
Coil insulation	ETFE
Insulation	Silicone
Thickness of insulation	0.185 mm
Proximal surface coating	Polyurethane
Diameter	1.6 mm [4.8 F]
Stylets (can be ordered separately)	
S 75-K OTW (green; medium)	346978
S 75-G OTW (violet; soft)	346977
S 85-K OTW (green; medium)	346980
S 85-G OTW (violet; soft)	346979
S 95-K OTW (green; medium)	375094
S 95-G OTW (violet; soft)	375093
Applicable introducer	
CS introducer	Min. 5 F
Recommended CS lead delivery system	Selectra
Compatibility with Selectra	
Outer catheter length	Inner catheter length
Sentus ProMRI OTW QP L-75/49	45 cm
	55 cm
Sentus ProMRI OTW QP L-85/49	45 cm / 65 cm ¹⁾
	55 cm
Sentus ProMRI OTW QP L-95/49	45 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm / 69 cm / 75 cm ¹⁾
Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer

1) Product availability is subject to regulatory approval in the country.



Sentus OTW QP S

Quadripolar left-ventricular lead for CRT



Product Highlights

- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- "Thread" fixation designed for small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

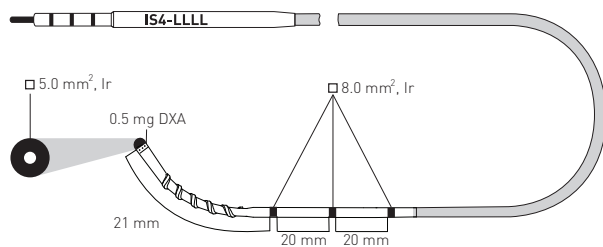
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus OTW QP S-75	IS4	Silicone thread	77 cm	400719
Sentus OTW QP S-85	IS4	Silicone thread	87 cm	400720
Sentus OTW QP S-95	IS4	Silicone thread	97 cm	400721

Sentus OTW QP S

Technical Data

Technical data		
Polarity	Quadripolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Silicone thread between tip and ring electrode	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance between LV 1 and LV 2	21 mm	
Distance between LV 2 and LV 3	20 mm	
Distance between LV 3 and LV 4	20 mm	
Conductor		
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)	
Coil material	MP35N	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus OTW QP S-75	45 cm	
	55 cm	
Sentus OTW QP S-85	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus OTW QP S-95	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾
1) Product availability is subject to regulatory approval in the country.		
Applicable guide wire		
Guide wire	0.014" [0.36 mm]	
Recommended guide wire	VisionWire or Streamer	



Sentus ProMRI OTW QP S

Quadripolar left-ventricular MR Conditional lead for CRT

ProMRI®



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- "Thread" fixation designed for small vessels
- TwinFlex Technology® with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus ProMRI OTW QP S-75	IS4	Silicone thread	77 cm	401179
Sentus ProMRI OTW QP S-85	IS4	Silicone thread	87 cm	402180
Sentus ProMRI OTW QP S-95	IS4	Silicone thread	97 cm	403181

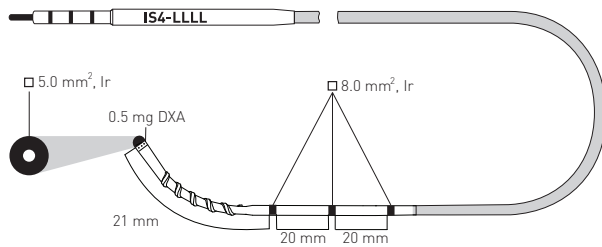
Sentus ProMRI OTW QP S

Technical Data

MR Conditional		
ProMRI®	For combination of MR Conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Silicone thread between tip and ring electrode	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance between LV 1 and LV 2	21 mm	
Distance between LV 2 and LV 3	20 mm	
Distance between LV 3 and LV 4	20 mm	
Conductor		
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)	
Coil material	MP35N	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus ProMRI OTW QP S-75	45 cm	
	55 cm	
Sentus ProMRI OTW QP S-85	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus ProMRI OTW QP S-95	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾

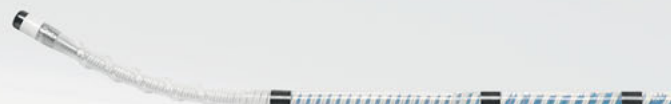
1) Product availability is subject to regulatory approval in the country.

Applicable guide wire	
Guide wire	0.014" [0.36 mm]
Recommended guide wire	VisionWire or Streamer



Sentus OTW QP S-XX/49

Quadripolar left-ventricular lead for CRT



Product Highlights

- Quadripolar lead body enables sequential or simultaneous stimulation from different pacing vectors in the left ventricle for more options in CRT management together with a compatible BIOTRONIK device
- Shortened pole spacing for short to medium target vein anatomies
- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- "Thread" fixation designed for small vessels
- TwinFlex Technology with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

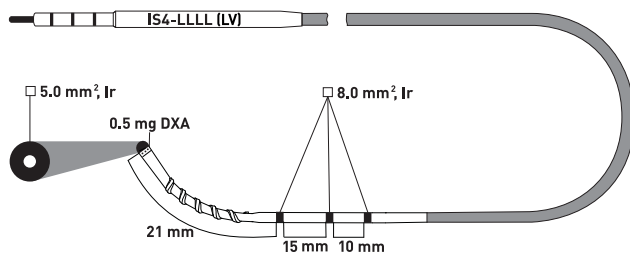
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus OTW QP S-75/49	IS4	Silicone thread	77 cm	406078
Sentus OTW QP S-85/49	IS4	Silicone thread	87 cm	406079
Sentus OTW QP S-95/49	IS4	Silicone thread	97 cm	406080

Sentus OTW QP S-XX/49

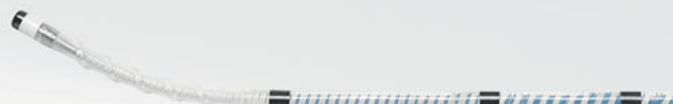
Technical Data

Technical data		
Polarity	Quadripolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm (4.8 F)	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Silicone thread between tip and distal ring electrode	
Steroid type	Dexamethasone acetate (DXA)	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm (4.8 F)	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance between LV 1 and LV 2	21 mm	
Distance between LV 2 and LV 3	15 mm	
Distance between LV 3 and LV 4	10 mm	
Conductor		
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)	
Coil material	MP35N; DFT	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm (4.8 F)	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus OTW QP S-75/49	45 cm	
	55 cm	
Sentus OTW QP S-85/49	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus OTW QP S-95/49	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾
¹⁾ Product availability is subject to regulatory approval in the country.		
Applicable guide wire		
Guide wire	0.014" (0.36 mm)	
Recommended guide wire	VisionWire or Streamer	



Sentus ProMRI OTW QP S-XX/49

Quadripolar left-ventricular MR conditional lead for CRT **ProMRI®**



Product Highlights

- BIOTRONIK ProMRI® allows patients to undergo MR scanning under specific conditions
- Quadripolar lead body enables sequential or simultaneous stimulation from different pacing vectors in the left ventricle for more options in CRT management together with a compatible BIOTRONIK device
- Shortened pole spacing for short to medium target vein anatomies
- Quadripolar LV lead for optimal biventricular pacing due to multiple programming options
- Thin 4.8 F silicone lead body with polyurethane coating compatible with 5 F lead introducer
- "Thread" fixation designed for small vessels
- TwinFlex Technology with co-radial design for maximum flexibility
- True OTW & stylet functionality for handling versatility during implantation
- MultiSelect LV Pacing Options for electronic repositioning
- Fractal coating and steroid elution for low thresholds

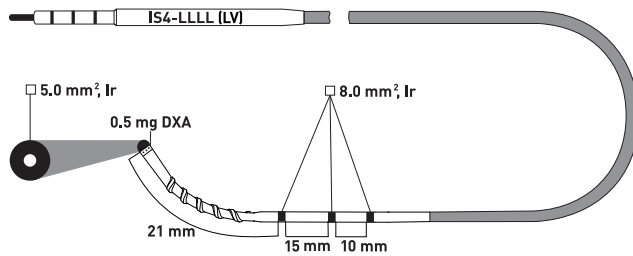
Ordering Information

Model	Connectors	Fixation	Length	Order number
Sentus ProMRI OTW QP S-75/49	IS4	Silicone thread	77 cm	406081
Sentus ProMRI OTW QP S-85/49	IS4	Silicone thread	87 cm	406082
Sentus ProMRI OTW QP S-95/49	IS4	Silicone thread	97 cm	406083

Sentus ProMRI OTW QP S-XX/49

Technical Data

MR conditional		
ProMRI®	For combination of MR conditional devices, please see the "ProMRI® MR conditional device systems" manual	
Technical data		
Polarity	Quadripolar	
Overall length	77, 87, 97 cm	
Tip electrode		
Surface area	5 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Fixation	Silicone thread between tip and distal ring electrode	
Steroid type	Dexamethasone acetate [DXA]	
Steroid quantity	0.5 mg	
Steroid bonding agent	Silicone rubber	
Ring electrode		
Surface area	8 mm ²	
Diameter	1.6 mm [4.8 F]	
Material	Platinum/iridium	
Surface structure	Iridium, fractal	
Distance between LV 1 and LV 2	21 mm	
Distance between LV 2 and LV 3	15 mm	
Distance between LV 3 and LV 4	10 mm	
Conductor		
Construction	Co-radial coil (2 x 1 x 1 x 1 filaments)	
Coil material	MP35N; DFT	
Coil insulation	ETFE	
Insulation	Silicone	
Thickness of insulation	0.185 mm	
Proximal surface coating	Polyurethane	
Diameter	1.6 mm [4.8 F]	
Stylets (can be ordered separately)		
S 75-K OTW (green; medium)	346978	
S 75-G OTW (violet; soft)	346977	
S 85-K OTW (green; medium)	346980	
S 85-G OTW (violet; soft)	346979	
S 95-K OTW (green; medium)	375094	
S 95-G OTW (violet; soft)	375093	
Applicable introducer		
CS introducer	Min. 5 F	
Recommended CS lead delivery system	Selectra	
Compatibility with Selectra		
	Outer catheter length	Inner catheter length
Sentus ProMRI OTW QP S-75/49	45 cm	
	55 cm	
Sentus ProMRI OTW QP S-85/49	45 cm	59 cm / 65 cm ¹⁾
	55 cm	
Sentus ProMRI OTW QP S-95/49	45 cm	59 cm / 65 cm / 69 cm / 75 cm ¹⁾
	55 cm	69 cm / 75 cm ¹⁾
1) Product availability is subject to regulatory approval in the country.		
Applicable guide wire		
Guide wire	0.014" [0.36 mm]	
Recommended guide wire	VisionWire or Streamer	



Selectra

Telescopic coronary sinus lead delivery system



Product Highlights

- Ergonomic handle design with integrated slittable serial valve
- Balanced sheath design for optimal torque transmission
- Hydrophilic inner coating for smooth lead introduction and safe system removal

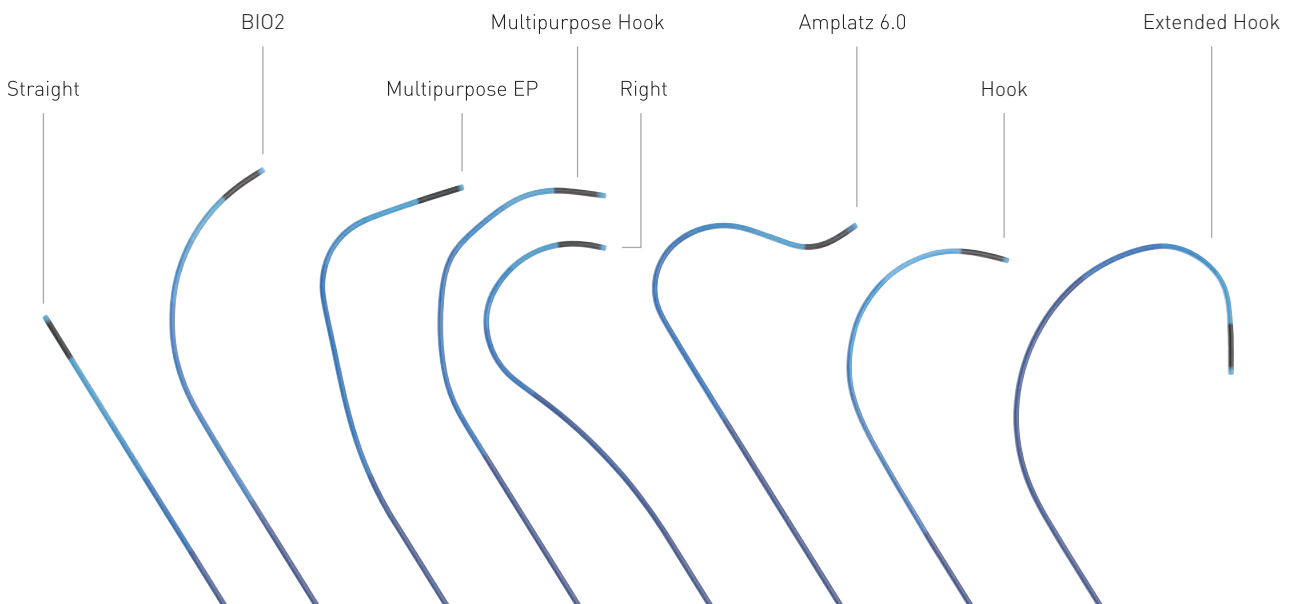
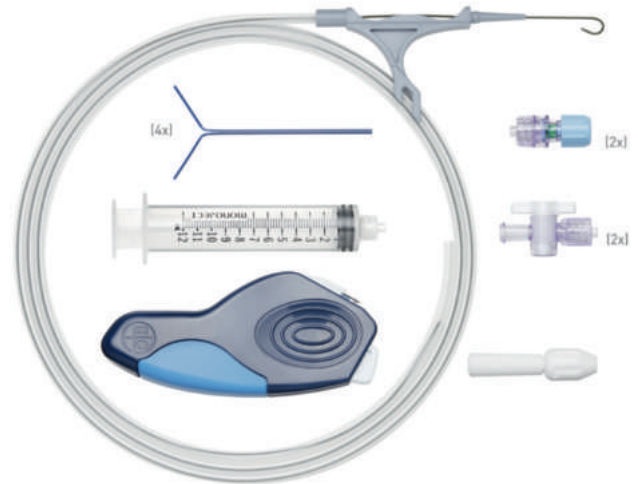
Ordering Information

Product	Length	Order number	Length	Order number
Selectra "Straight"	45 cm	375 537	55 cm	375 521
Selectra "BI02"	45 cm	375 523	55 cm	375 524
Selectra "Multipurpose EP (MPEP)"	45 cm	375 531	55 cm	375 532
Selectra "Multipurpose Hook (MPH)"	45 cm	375 533	55 cm	375 534
Selectra "Right"	45 cm	375 535	55 cm	375 536
Selectra "Amplatz 6.0"	45 cm	375 519	55 cm	375 520
Selectra "Hook"	45 cm	375 529	55 cm	375 530
Selectra "Extended Hook"	45 cm	375 527	55 cm	375 528
Selectra "IC-50"	65 cm	375 545	75 cm	375 546
Selectra "IC-90"	65 cm	375 547	75 cm	375 548
Selectra "Accessory Kit"				375 518
Selectra Slitter Tool				383 119

Selectra

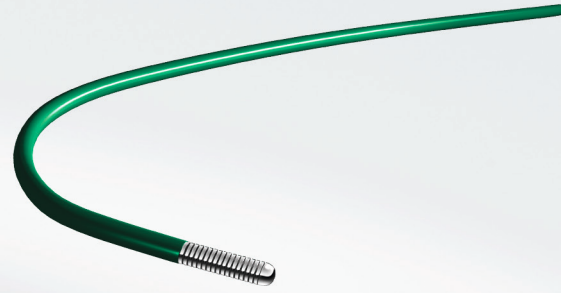
Technical Data

Selectra outer catheter	
Working length	45 cm; 55 cm
Inner diameter	2.44 mm [7.3 F]
Outer diameter	2.91 mm [8.7 F]
Material	PEBAX
Inner coating	Hydrophilic coating
Package contents:	
	<ul style="list-style-type: none"> 1 outer guiding catheter 1 dilator for guiding catheter
Dilator	
Working length	53.5 cm; 63 cm
Selectra inner catheter	
Working length	65 cm; 75 cm
Inner diameter	1.83 mm [5.4 F]
Outer diameter	2.31 mm [6.9 F]
Material	PEBAX
Inner coating	Hydrophilic coating
Tip angle	50°; 90°
Guide wire compatibility	0.014"–0.035"
Lead compatibility	<5 F
Proximal connection	Female luer-lock
Package contents:	
	<ul style="list-style-type: none"> 1 inner catheter
Selectra "Accessory Kit"	
Package contents:	
	<ul style="list-style-type: none"> 12 cm³ syringe with luer-lock 4 transvalvular insertion tools, inner diameter 0.42 mm 1 Seldinger guide wire 150 cm 1 torquer 1 Selectra slitler tool 2 bi-directional check-valves 2 sealing caps 2 1-way stop-cocks
Selectra Slitler Tool	
Package contents:	
	<ul style="list-style-type: none"> 1 Selectra Slitler Tool



VisionWire

Insulated guide wire for electrical LV lead implantation



Product Highlights

- Flexible design for easy maneuvering
- PTFE insulation for intra-operative measuring
- 0.014" OTW leads compatible
- Shaft design for extra support
- Radiopaque electrode coil

Ordering Information

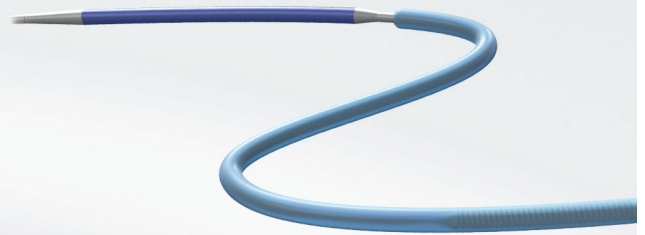
Product	Fixation	Length	Order number
VisionWire	straight, floppy	175 cm	352023

Technical Data

Technical data	
Length	175 cm
Insulation length	169.5 cm
Insulation material	PTFE
Diameter	0.014" (0.36 mm)
Core material	stainless steel
Coil material	platinum tungsten alloy
Electrically active surface	17 mm ²
Electrode coil length	15 mm
Tip configuration	straight
Tip flexibility	floppy
Shaft flexibility	extra support

Streamer

Polymer guide wire for LV lead implantation



Product Highlights

- Flexible design with superb torque control
- Polymer sleeve provides best possible lubricity
- 0.014" OTW leads compatible
- Core design for optimal LV lead support
- Available as "Extra Support" and "Extreme Support" flexibilities for high implantation versatility

Ordering Information

Product	Fixation	Length	Order number
Streamer ES	straight, high flexible	195 cm	363724
Streamer ES-J	J-shaped, high flexible	195 cm	363725
Streamer XT	straight, high flexible	195 cm	363726
Streamer XT-J	J-shaped, high flexible	195 cm	363727

Streamer

Technical Data

Technical data	
Length	195 cm
Diameter	0.014" (0.36 mm)
Core material	AFT* stainless steel
Coil material	platinum tungsten alloy
Length of distal coil	30 mm
Polymer sleeve	polyurethane, hydrophilic coated
Length of polymer sleeve	300 mm
Proximal coating	PTFE
Tip configuration	straight; J-shaped
Tip flexibility	high flexible (HF)
Shaft flexibility	extra support (ES); extreme support (XT)

* The proprietary AFT processing method of the stainless steel core wire prevents major plastic deformation and significantly improves the torque response.

External Devices



Renamic

Implantation and follow-up system



Product Highlights

- BIOTRONIK SafeSync® for wandless telemetry between the programmer and the implanted device
- Two integrated compartments for easy storage of the power cord, the ECG cable and the programming head
- Integrated data management system to store follow-up and implantation data on the programmer
- Streamlined user interface for easy software navigation
- USB, Wi-Fi™, GSM and Bluetooth® interfaces for data import, export or external printing
- Internal printer for real-time printouts
- Retractable touchscreen display for safe transportation with a handle or a carrying strip

Ordering Information

Model	Dimensions (l × w × h)	Weight	Order number
Renamic	476 × 345 × 125 mm	10 500 g	371 960

Technical Data

Housing		
Dimensions (l x w x h) ¹⁾		47.6 x 34.5 x 12.5 cm
Weight ²⁾		10.5 kg
Display screen		retractable, adjustable tilt
Screen		touchscreen
Input/output	<ul style="list-style-type: none"> ■ 3 USB ports ■ 2 cable connectors 	external printer; memory stick; external hard disk; VGA adapter; mouse ECG cable, programming head
Printer		
Internal printing	<ul style="list-style-type: none"> ■ Printer type ■ Paper size, number of sheets 	thermal printer for real-time printing 11.2 x 12.5 cm, 210
External printing		via Bluetooth [®] ³⁾ or USB
Device interrogation		
Programming head	<ul style="list-style-type: none"> ■ Dimensions (l x w x h) ■ Cable length 	14.5 x 9.7 x 4.2 cm 2.97 m
Wandless RF telemetry ⁴⁾		BIOTRONIK SafeSync [®]
PC functionality		
Operating system		Windows XP embedded
Internal hard disk		min. 40 GB
Ordering information		
Renamic including standard accessories		371 960
Accessories	<ul style="list-style-type: none"> ■ Programming head ■ Power cord ■ Stylus ■ ECG cable [PK-222] ■ ECG electrode clip ■ Printer paper⁶⁾ ■ USB Bluetooth[®] stick ■ VGA adapter ■ Shoulder strap ■ Protective cover ■ Serial adapter [RS-232] 	371 588 country-specific ⁵⁾ 371 586 country-specific ⁵⁾ 340 293 348 728 367 929 377 292 371 962 376 999 376 437

1) Including two compartments for power cord, ECG cable and programming head.

2) Including power cord, ECG cable, stylus and programming head.

3) Additional USB port for Bluetooth[®] stick.

4) For implantable devices supporting wandless telemetry.

5) See manual for order number.

6) Two blocks of printer paper in starter kit.

Reliaty

Pacing system analyzer



Product Highlights

- Streamlined user interface for intuitive handling
- Triple-chamber functionality for optimized CRT programming
- Direct activation of safe pacing program for immediate patient care
- Definition of preferred test settings for quick and easy reference
- Two battery compartments for mobile power supply of more than 12 hours
- Universal electric power cord for continuous stationary supply worldwide
- USB interface for test data export or external printing via Bluetooth®

Ordering Information

Model	Dimensions (L×w×h)	Weight	Order number
Reliaty	220×180×60 mm	1200 g*	365 530

* Including batteries in two compartments

Technical Data

Pacemaker function	
Pacing modes	activating/deactivating lead channels or selecting predefined pacing modes
Pacing rate	30...[1]... 90 ...[1]...100...[2]...180 ppm
Pulse amplitude	0.1...(0.1)... 5 ...(0.1)...10 V
Pulse width	0.1...(0.1)... 0.5 ...(0.1)...2.0 ms
Sensitivity	<ul style="list-style-type: none"> ■ Atrium 0.2...(0.1)...0.5...(0.1)...20 mV ■ Ventricle 0.5...(0.1)...2.5...(0.1)...20 mV
Refractory period	<ul style="list-style-type: none"> ■ Atrium 425 ms ■ Ventricle 250 ms
AV delay	0...(5)... 120 ...(5)...300 ms
VV delay	-100...(5)... 5 ...(5)...100 ms
Fast pacing (burst rate)	80...(10)...1 000 ppm
Intracardiac measurements	
Signal amplitude	<ul style="list-style-type: none"> ■ Atrium 0.2...(0.1)...30 mV ■ Ventricle 0.5...(0.1)...30 mV
Lead impedance	audible signal if < 100 Ω or > 3 000 Ω
Input/output	
USB port (2.0 standard)	memory stick; Bluetooth® adapter
VGA port	external screens
Power cord outlet	barrel connector (5 mm/2.1 mm)
Redel connector	2 connectors for compatible BIOTRONIK cables
Power supply	
Battery	<ul style="list-style-type: none"> ■ Type Mignon AA ■ Number of batteries 2 × 4 batteries in two separate compartments ■ Service time¹⁾ > 12 h²⁾
Power cord	100 V – 240 V, 50/60 Hz

1) With recommended battery Duracell® MN1500 AA LR6 in two compartments and pacing at 70 ppm, 5 V, 0.5 ms, 500 Ω.

2) 2 hours prior to end of service: alert with visual signal, 30 minutes prior to end of service: audible signal every 20 seconds.

Default settings are printed in bold.

Reocor S/D

External pacemaker



Product Highlights

- High pacing output of up to 17V for effective stimulation
- High pacing rate of up to 250 ppm, especially for pediatric care
- Burst rate for managing atrial tachyarrhythmias
- Long battery service time of 500 hours (Reocor D)/600 hours (Reocor S) permanent pacing
- Backup power supply of 30 seconds for battery replacement during operation
- Continuous status monitoring with alerts for low battery power, out-of-range lead impedances and high pacing rates

Ordering Information

Model	Dimensions (L×w×h)	Weight	Order number
Reocor S	160×80×35 mm	245 g	365 528
Reocor D	160×80×35 mm	260 g	365 529

Technical Data

Parameters	Reocor S	Reocor D
Pacing modes	S00; SSI; SST	DDD; D00; VDD; VVI; V00; VVT
Pacing rate	30–250 ppm	30–250 ppm
Fast pacing (burst rate)	60–1000 ppm	60–1000 ppm
AV delay		15–400 ms
Pulse amplitude/pulse width	0.1–17 V/1 ms	0.1–17 V/1 ms
Polarity	unipolar; bipolar	unipolar; bipolar
Sensitivity	1–20 mV	0.2–10 mV (atrium), 1–20 mV (ventricle)
Refractory period	30–150 ppm: 225 ms 151–200 ppm: 200 ms 201–250 ppm: 175 ms	30–150 ppm: 225 ms (ventricle) 151–200 ppm: 200 ms (ventricle) 201–250 ppm: 175 ms (ventricle)
Total atrial refractory period		30–120 ppm: AV delay + 175 ms (min. 400 ms) 121–250 ppm: AV delay + 175 ms (min. 240 ms)
Battery		
Type	alkaline manganese cells, 9 V	alkaline manganese cells, 9 V
Service time	■ after replacement ¹⁾ 600 h ■ after battery warning 36 h ■ during replacement 30 sec	300 h 36 h 30 sec
Continuous status monitoring		
Lead impedance	audible signal if < 100 Ω or > 3 000 Ω	audible signal if < 100 Ω or > 3 000 Ω
Battery status	red LED indicates ERI	red LED indicates ERI
High rate	one-time audible signal if > 180 ppm	one-time audible signal if > 180 ppm
Housing		
Dimensions	160 × 80 × 35 mm	160 × 80 × 35 mm
Weight ²⁾	approx. 245 g	approx. 260 g
Connector	temporary catheters and heartwires with 2 mm connectors directly; all other and implanted leads via BIOTRONIK cables	

1) With recommended battery Duracell® Plus, 6LR61 and pacing at 70 ppm, 5 V, 500 Ω.

2) Including battery.

Home Monitoring



CardioMessenger[®] Smart

Transmitter for the BIOTRONIK Home Monitoring[®] system



Product Highlights

- **Full mobility**

Perfectly suited for use at home and on the road, with a battery lifetime of up to 48 h without recharging

- **Modern design**

Handy and light

- **Immediately ready for use**

Easy plug-and-play setup of the device in less than one minute, without additional manual configuration required by the patient

- **LCD display**

Display of the device status, the battery charging status and the call-back function

- **Device-to-CardioMessenger[®] connectivity**

RF-2 telemetry in the MICS band ensures maximum safety and efficiency during automatic data transmission

- **Quad-band mobile communications technology**

Allows for global connectivity in case of proper network availability

Ordering Information

Model	Order number
CardioMessenger [®] Smart 2G CE	401826

CardioMessenger® Smart

Technical Data

Technical equipment	
CardioMessenger® Smart	CardioMessenger® Smart (device)
	CardioMessenger® Smart power supply brick with cable and plug
	Technical manual
	Quick Reference Guide
Wireless network data	
Recommended distance implanted device - CardioMessenger® Smart	0.15 m - 2 m
MICS (implanted device - CardioMessenger® Smart)	402-405 MHz
■ Power of transmission	25 µW
GSM GPRS (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	2 W (850/900 MHz), 1 W (1800/1900 MHz)
Electrical data	
Battery type	Lithium ions
Input voltage of the wall plug power supply	100-240 V AC, 50-60 Hz
Output voltage of the wall plug power supply	5 V DC, 3 A
Operating conditions	
Safety class	IP 22
Temperature of the wall plug power supply	0°C to +40°C
Temperature of the device	-5°C to +40°C
Relative humidity	30% to 75%
Atmospheric pressure	700 hPa to 1060 hPa
Storage conditions	
Temperature	-20°C to +60°C
Relative humidity	30% to 75%
Atmospheric pressure	700 hPa to 1060 hPa
Weight	
CardioMessenger® Smart	127 g
Dimensions	
CardioMessenger® Smart (L x W x H)	Approx. 130 mm x 65 mm x 17 mm

CardioMessenger® Smart

Transmitter for the BIOTRONIK Home Monitoring® system



Product Highlights

■ Full mobility

Perfectly suited for use at home and on the road, with a battery lifetime of up to 48 h without recharging

■ Modern design

Handy and light

■ Immediately ready for use

Easy plug-and-play setup of the device in less than one minute, without additional manual configuration required by the patient

■ LCD display

Display of the device status, the battery charging status and the call-back function

■ Device-to-CardioMessenger® connectivity

RF-2 telemetry in the MICS band ensures maximum safety and efficiency during automatic data transmission

■ Quad-band mobile communications technology

Allows for global connectivity in case of proper network availability

Ordering Information

Model	Order number
CardioMessenger® Smart 2G CN (China)	401827

CardioMessenger® Smart

Technical Data

Technical equipment	
CardioMessenger® Smart	CardioMessenger® Smart (device)
	CardioMessenger® Smart power supply brick with cable and plug
	Technical manual
	Quick Reference Guide
Wireless network data	
Recommended distance implanted device - CardioMessenger® Smart	0.15 m - 2 m
MICS (implanted device - CardioMessenger® Smart)	402-405 MHz
■ Power of transmission	25 µW
GSM GPRS (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	2 W (850/900 MHz), 1 W (1800/1900 MHz)
Electrical data	
Battery type	Lithium ions
Input voltage of the wall plug power supply	100-240 V AC, 50-60 Hz
Output voltage of the wall plug power supply	5 V DC, 3 A
Operating conditions	
Safety class	IP 22
Temperature of the wall plug power supply	0°C to +40°C
Temperature of the device	-5°C to +40°C
Relative humidity	30% to 75%
Atmospheric pressure	700 hPa to 1060 hPa
Storage conditions	
Temperature	-20°C to +60°C
Relative humidity	30% to 75%
Atmospheric pressure	700 hPa to 1060 hPa
Weight	
CardioMessenger® Smart	127 g
Dimensions	
CardioMessenger® Smart (L x W x H)	Approx. 130 mm x 65 mm x 17 mm

CardioMessenger® Smart

Transmitter for the BIOTRONIK Home Monitoring® system



Product Highlights

- **Full mobility**

Perfectly suited for use at home and on the road, with a battery lifetime of up to 48 h without recharging

- **Modern design**

Handy and light

- **Immediately ready for use**

Easy plug-and-play setup of the device in less than one minute, without additional manual configuration required by the patient

- **LCD display**

Display of the device status, the battery charging status and the call-back function

- **Device-to-CardioMessenger® connectivity**

RF-2 telemetry in the MICS band ensures maximum safety and efficiency during automatic data transmission

- **Quad-band mobile communications technology**

Allows for global connectivity in case of proper network availability

Ordering Information

Model	Order number
CardioMessenger® Smart 3G US (USA)	401831

CardioMessenger® Smart

Technical Data

Technical equipment	
CardioMessenger® Smart	CardioMessenger® Smart (device)
	CardioMessenger® Smart power supply brick with cable and plug
	Technical manual
	Quick Reference Guide
Wireless network data	
Recommended distance implanted device - CardioMessenger® Smart	0.15 m - 2 m
MICS (implanted device - CardioMessenger® Smart)	402-405 MHz
■ Power of transmission	25 µW
GSM GPRS (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	2 W (850/900 MHz), 1 W (1800/1900 MHz)
GSM EDGE (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	0.5 W (850/900 MHz), 0.4 W (1800/1900 MHz)
UMTS WCDMA (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1700/1900/2100 MHz
■ Power of transmission	0.25 W
Electrical data	
Battery type	Lithium ions
Input voltage of the wall plug power supply	100-240 V AC, 50-60 Hz
Output voltage of the wall plug power supply	5 V DC, 3 A
Operating conditions	
Safety class	IP 22
Temperature of the wall plug power supply	0°C to +40°C
Temperature of the device	-5°C to +40°C
Relative humidity	30% to 75%
Atmospheric pressure	700 hPa to 1060 hPa
Storage conditions	
Temperature	-20°C to +60°C
Relative humidity	30% to 75%
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Ordering Information

Model	Order number
CardioMessenger® Smart 3G JP (Japan)	401830

CardioMessenger® Smart

Technical Data

Technical equipment	
CardioMessenger® Smart	CardioMessenger® Smart (device)
	CardioMessenger® Smart power supply brick with cable and plug
	Technical manual
	Quick Reference Guide
Wireless network data	
Recommended distance implanted device - CardioMessenger® Smart	0.15 m - 2 m
MICS (implanted device - CardioMessenger® Smart)	402-405 MHz
■ Power of transmission	25 µW
GSM GPRS (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	2 W (850/900 MHz), 1 W (1800/1900 MHz)
GSM EDGE (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	0.5 W (850/900 MHz), 0.4 W (1800/1900 MHz)
UMTS WCDMA (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1700/1900/2100 MHz
■ Power of transmission	0.25 W
Electrical data	
Battery type	Lithium ions
Input voltage of the wall plug power supply	100-240 V AC, 50-60 Hz
Output voltage of the wall plug power supply	5 V DC, 3 A
Operating conditions	
Safety class	IP 22
Temperature of the wall plug power supply	0°C to +40°C
Temperature of the device	-5°C to +40°C
Relative humidity	30% to 75%
Atmospheric pressure	700 hPa to 1060 hPa
Storage conditions	
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Allows for global connectivity in case of proper network availability

Ordering Information

Model	Order number
CardioMessenger® Smart 3G CA (Canada)	401829

CardioMessenger® Smart

Technical Data

Technical equipment	
CardioMessenger® Smart	CardioMessenger® Smart (device)
	CardioMessenger® Smart power supply brick with cable and plug
	Technical manual
	Quick Reference Guide
Wireless network data	
Recommended distance implanted device - CardioMessenger® Smart	0.15 m - 2 m
MICS (implanted device - CardioMessenger® Smart)	402-405 MHz
■ Power of transmission	25 µW
GSM GPRS (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	2 W (850/900 MHz), 1 W (1800/1900 MHz)
GSM EDGE (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	0.5 W (850/900 MHz), 0.4 W (1800/1900 MHz)
UMTS WCDMA (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1700/1900/2100 MHz
■ Power of transmission	0.25 W
Electrical data	
Battery type	Lithium ions
Input voltage of the wall plug power supply	100-240 V AC, 50-60 Hz
Output voltage of the wall plug power supply	5 V DC, 3 A
Operating conditions	
Safety class	IP 22
Temperature of the wall plug power supply	0°C to +40°C
Temperature of the device	-5°C to +40°C
Relative humidity	30% to 75%
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Ordering Information

Model	Order number
CardioMessenger® Smart 3G AU (Australia)	401828

CardioMessenger® Smart

Technical Data

Technical equipment	
CardioMessenger® Smart	CardioMessenger® Smart (device)
	CardioMessenger® Smart power supply brick with cable and plug
	Technical manual
	Quick Reference Guide
Wireless network data	
Recommended distance implanted device - CardioMessenger® Smart	0.15 m - 2 m
MICS (implanted device - CardioMessenger® Smart)	402-405 MHz
■ Power of transmission	25 µW
GSM GPRS (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
■ Power of transmission	2 W (850/900 MHz), 1 W (1800/1900 MHz)
GSM EDGE (CardioMessenger® Smart - BIOTRONIK Home Monitoring Service Center)	850/900/1800/1900 MHz
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Electrical data	
Battery type	Lithium ions
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Temperature	-20°C to +60°C
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Weight	
CardioMessenger® Smart	127 g
Dimensions	
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BIOTRONIK Product Catalog

Cardiac Rhythm Management

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revision and improvement.

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