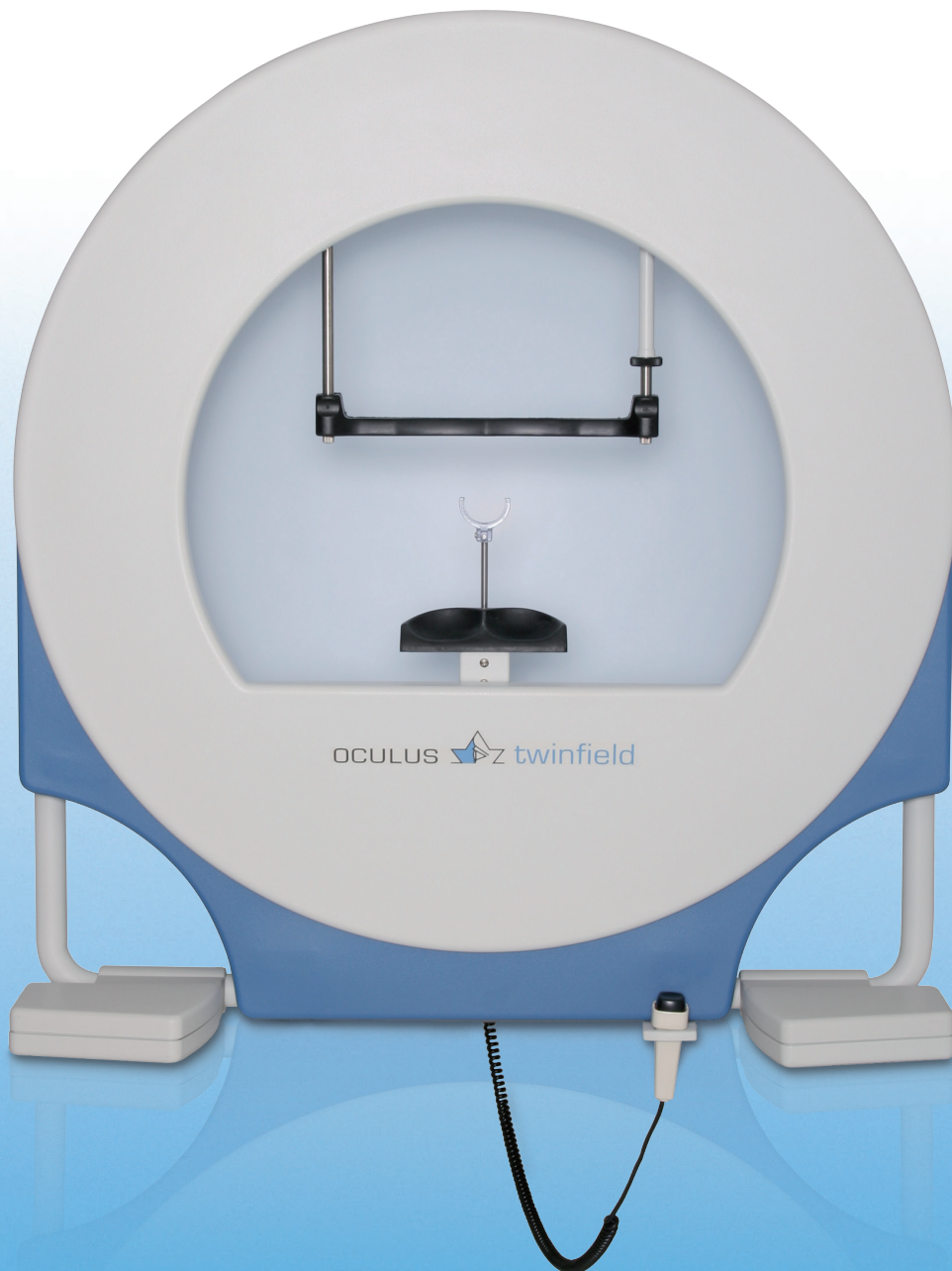


OCULUS Twinfield® 2

Perimeter







*Ophthalmologist*

**Definitely my all-round favourite!**

For glaucoma care, macular examinations and neurological cases as well as for formulation of expert opinions, the OCULUS Twinfield® 2 offers me optimal examination methods and meets all my specific needs. The great versatility of Twinfield® 2 coupled with its robustness and reliability has provided a valuable addition to my practice.



# OCULUS Twinfield® 2

Uncompromising versatility

## > Static Automated Perimetry

For precise measurement of the central visual field

## > Kinetic Perimetry

Automated and manual examinations made easy while conforming to the Goldmann standard

## > Tradition is on your Side

Benefits from more than 50 years of experience gathered by the manufacturer of the world's first static perimeter and technology "Made in Germany"

## > Adaptability

A wide range of test programs and special, flexibly customisable examinations using the OCULUS Twinfield® 2

## The right tool for all

The main aim of perimetry is to yield highly informative examination results. Increased patient comfort achieved by the ergonomic design of the Twinfield® 2, reduced test duration and straightforward operating and analysing tools for the examiner all help to meet this end.

### Patient's opinion:

"I was pleasantly surprised at how fast I finished the visual field test on the new Twinfield®. My mother, who is confined to a wheelchair, also completed the test with no difficulty."

### Examiner's opinion:

"The user interface has a very clear layout and the individual Twinfield® programmes can be run intuitively. Thanks to the remote surveillance module, I can even leave the examination room for short periods of time."

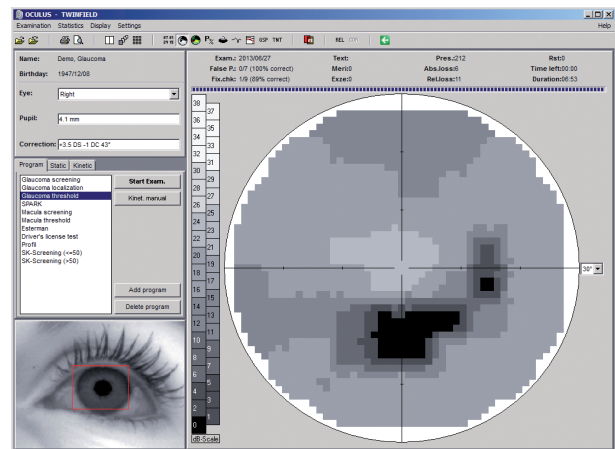


# Reliable Measuring Methods

Up to the challenge

## Static automated perimetry

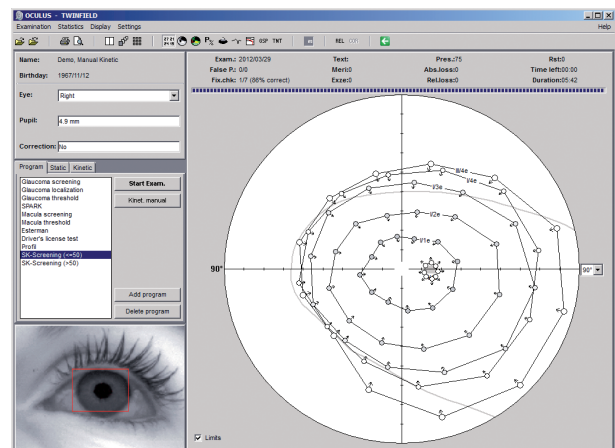
- Pre-defined programs allow for time-saving, easy-to-perform examinations during daily clinical practice.
- A comprehensive set of orthogonal, physiological and freely customizable test grids in combination with suitable testing strategies offer a high degree of flexibility for your examinations.
- Re-examinations of clinically significant areas performed independent of the test pattern in use increase reliability of findings.



Grayscale representation of findings

## Kinetic perimetry

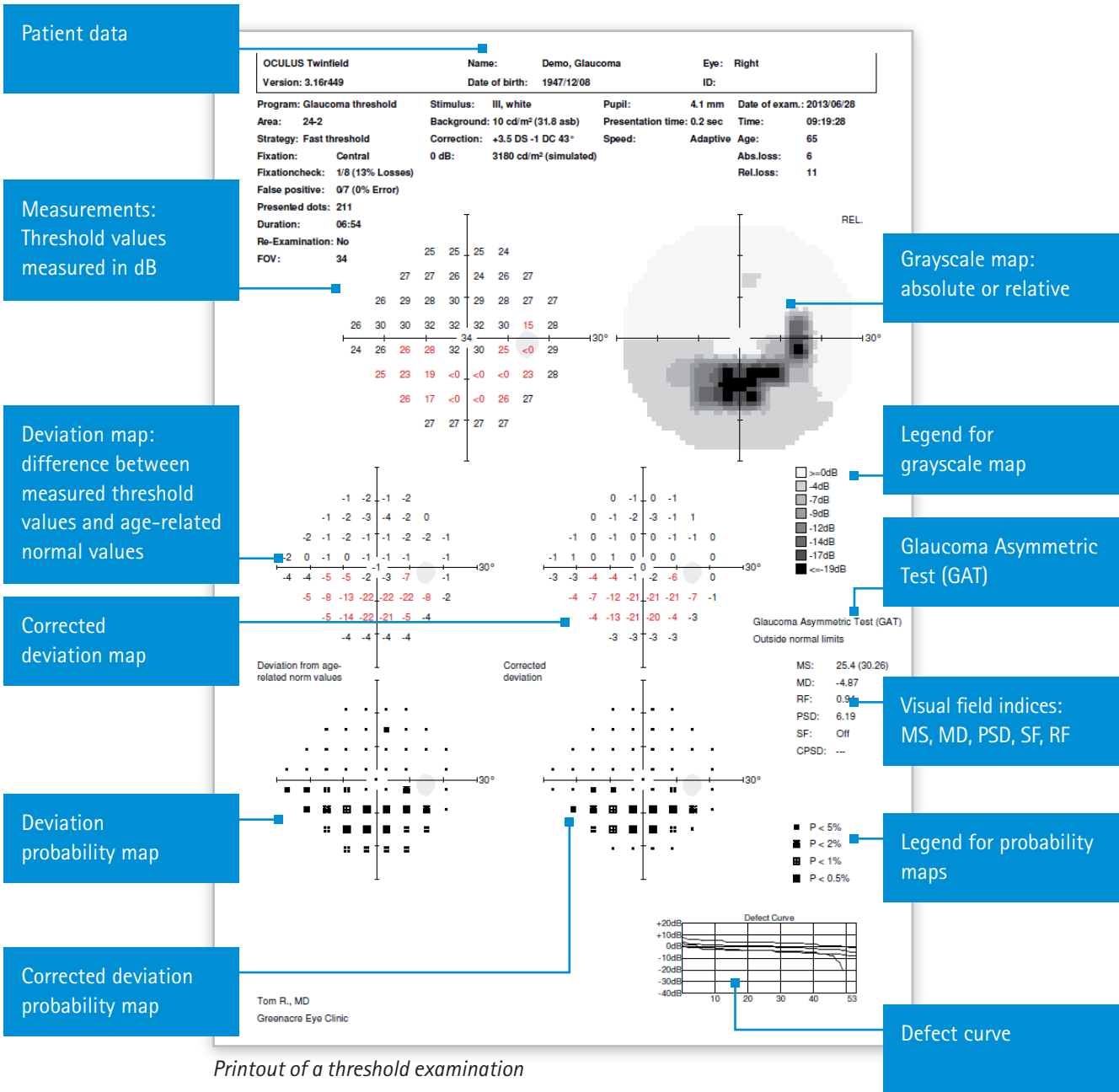
- Strict fulfilment of the Goldmann standard along with free manual positioning and movement of the stimulus allows for truly manual kinetic examinations such as are required for formulating legal expert opinions.
- For semi-automated kinetic tests the starting position and direction of the stimulus are set manually. Movement of the stimulus at a constant speed is computer-controlled and thus examiner-independent. This increases reproducibility of findings.
- Fully automated kinetic tests make it possible to perform rapid tests of the periphery which can be combined with static tests for fast screening of the entire visual field.



Isopter representation of a kinetic examination

# Result Printout

All information at a glance



Printout of a threshold examination

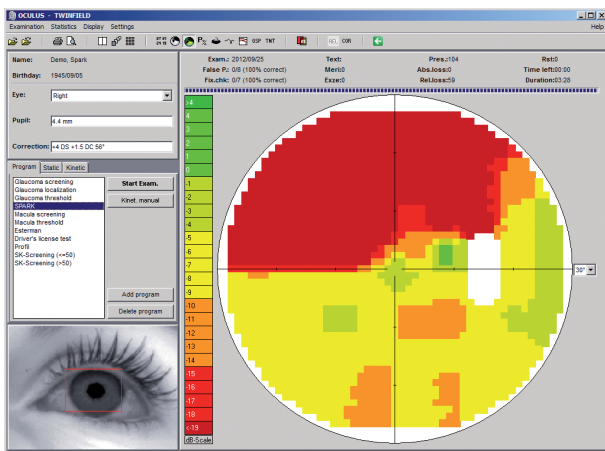
# Fighting Glaucoma

## Measurement – Assessment – Progression

### The first step: screening for glaucoma

Using perimetry for glaucoma screening customarily involves performing supra-threshold examinations of the central visual field. In addition, the Twinfield® 2 perimeter provides a pre-defined combination of a static and a kinetic test designed to obtain an overview of the entire visual field in a minimum of time. The device software makes it easy to create customised screening programmes using different test patterns which can be adapted to special requirements.

### Increased precision: the SPARK threshold strategy



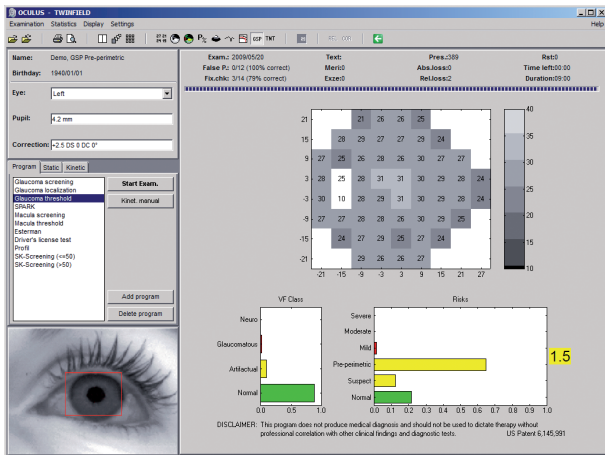
*SPARK uses correlations between areas in a glaucomatous visual field to speed up threshold examinations*

The SPARK<sup>1)</sup> strategy is based on statistical relationships between threshold values found for different locations in the glaucomatous visual field. These relationships have been derived from more than 90 000 perimetric examinations, providing high statistical significance and allowing for fast and very precise threshold measurements in the central visual field. The four-phase structure of SPARK makes it a versatile tool for clinical practice:

- **SPARK Precision** is the full-fledged version of SPARK. Comprehensive visual field examinations of glaucoma patients can be performed in just 3 minutes per eye. Averaging the results over all four phases ensures a high degree of reliability and reproducibility for improved progression analysis.
- **SPARK Quick** is the perfect strategy for follow-up and screening examinations. The procedure only takes 90 seconds per eye.
- **SPARK Training** is ideal for patient training. This 40-second measurement can also be used for screening.

The SPARK strategy is an optional addition to the OCULUS Twinfield® 2. It is fine-tuned for use in clinical examinations of glaucoma patients. Modified versions of the above procedures, called SPARK-N, are available for suspected cases of neurological pathology.

<sup>1)</sup> M. González de la Rosa, J Glaucoma 2013



GSP results display

## Beyond field indices: Glaucoma Staging Program (GSP)

This novel evaluation module performs a thorough assessment of individual visual field findings using modern algorithms of pattern recognition. Besides its unique contribution to early glaucoma diagnosis, GSP<sup>1)</sup> can substantiate the clinical evaluation of test results.

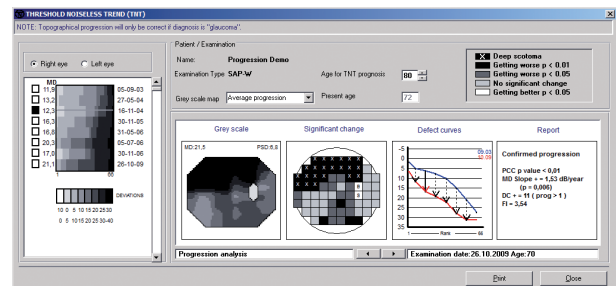
GSP classification is optimized to reproduce expert opinions on glaucoma. The GSP database includes correlations with the entire clinical picture (including structural changes). This information enables GSP to evaluate the degree of risk for the presence of different glaucoma stages on the basis of visual field findings.

Intuitive green-yellow-red colour coding helps in fast and reliable interpretation of the findings. The striking novelty of GSP consists in its capability to identify both glaucoma suspect patients and patients with possible pre-perimetric glaucoma using nothing but measured threshold values.

## Efficient progression analysis: Threshold Noiseless Trend (TNT)

The TNT<sup>2)</sup> software module objectively evaluates changes over time in visual field results. Combined with the fast SPARK strategy, it increases considerably the sensitivity for detecting progression in early glaucoma.

- TNT displays a concise report on progression analysis with a summary of the most relevant parameters (MD slope, p-values, etc.).
- TNT can distinguish between cases of diffuse or focal progression based on the value of the "Focality Index" (FI).
- TNT uses multiple statistical criteria for establishing progression.
- TNT presents age-related predictions on the visual field.



TNT main display

<sup>1)</sup> D. Wroblewski et al, Graefes Arch Clin Exp Ophthalmol 2009

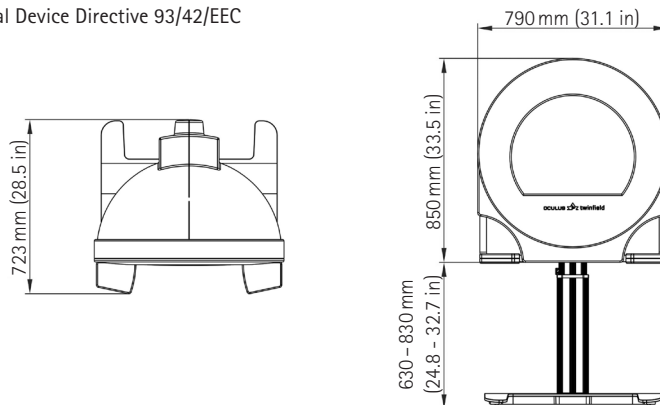
<sup>2)</sup> M. González de la Rosa and M. González-Hernandez, Br. J. Ophthalmol. 2011; V.T Diaz-Aleman et al., Br. J. Ophthalmol. 2009

# Technical Data

## OCULUS Twinfield® 2

Static perimetry	
Programs	Pre-defined glaucoma, macula, neurological and screening tests; Static-kinetic screening; User-defined tests
Test strategies	Threshold strategies: OCULUS Fast Threshold, Full Threshold (4-2), CLIP Optional: SPARK strategy Age-adapted supra-threshold screening (2-zone, 3-zone, quantify defect, OCULUS Class strategy)
Test patterns	Rectangular patterns (30-2, 30-2bs, 24-2, 24-2bs, 10-2), Physiological patterns (Area 1-8), Esterman, user-defined patterns
Stimulus sizes / stimulus colour	Goldmann I, III, V / white, blue, red
Stimulus duration	200 ms / user defined
Examination speed	Adaptive / slow / normal / fast / user-defined
Stimulus luminance range / step	0 – 318 cd/m <sup>2</sup> (0 – 1000 asb) / 1 dB
Background luminance / background colour	10 cd/m <sup>2</sup> (31.4 asb) / white, yellow
Perimeter bowl radius / max. eccentricity	300 mm (11.8 in) / 90° (full field)
Fixation control	Through central threshold, Heijl-Krakau (using the blind spot), live video image
Reports	Glaucoma Staging Program (GSP) Threshold Noiseless Trend (TNT) progression report
Kinetic perimetry	
Strategies	Automatic: isopters measured along meridians with freely selectable density Manual: stimulus freely movable with the computer mouse Semi-automatic: including scotoma boundary mapping
Stimulus speed	2°/s (Goldmann-Standard), user-defined
Technical specifications	
Patient positioning	Motorized chinrest, in depth and in height adjustable forehead rest, ergonomic arm support
Dimensions (W x D x H)	790 x 723 x 850 mm (31.1 x 28.5 x 33.5 in)
Weight	40.0 kg (88.1 lbs) – without table
Voltage, frequency / max. power consumption	90 – 264 V AC, 50/60 Hz / 65 W – without table
Recommended computer specifications	Intel® Core™ i5, 1 TB GB HDD, 8 GB RAM, Windows® 7 Pro 64 bit
Interface / networking	USB / DICOM

CE in accordance with Medical Device Directive 93/42/EEC



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OCULUS is certified by TÜV according to DIN EN ISO 13485 MDSAP