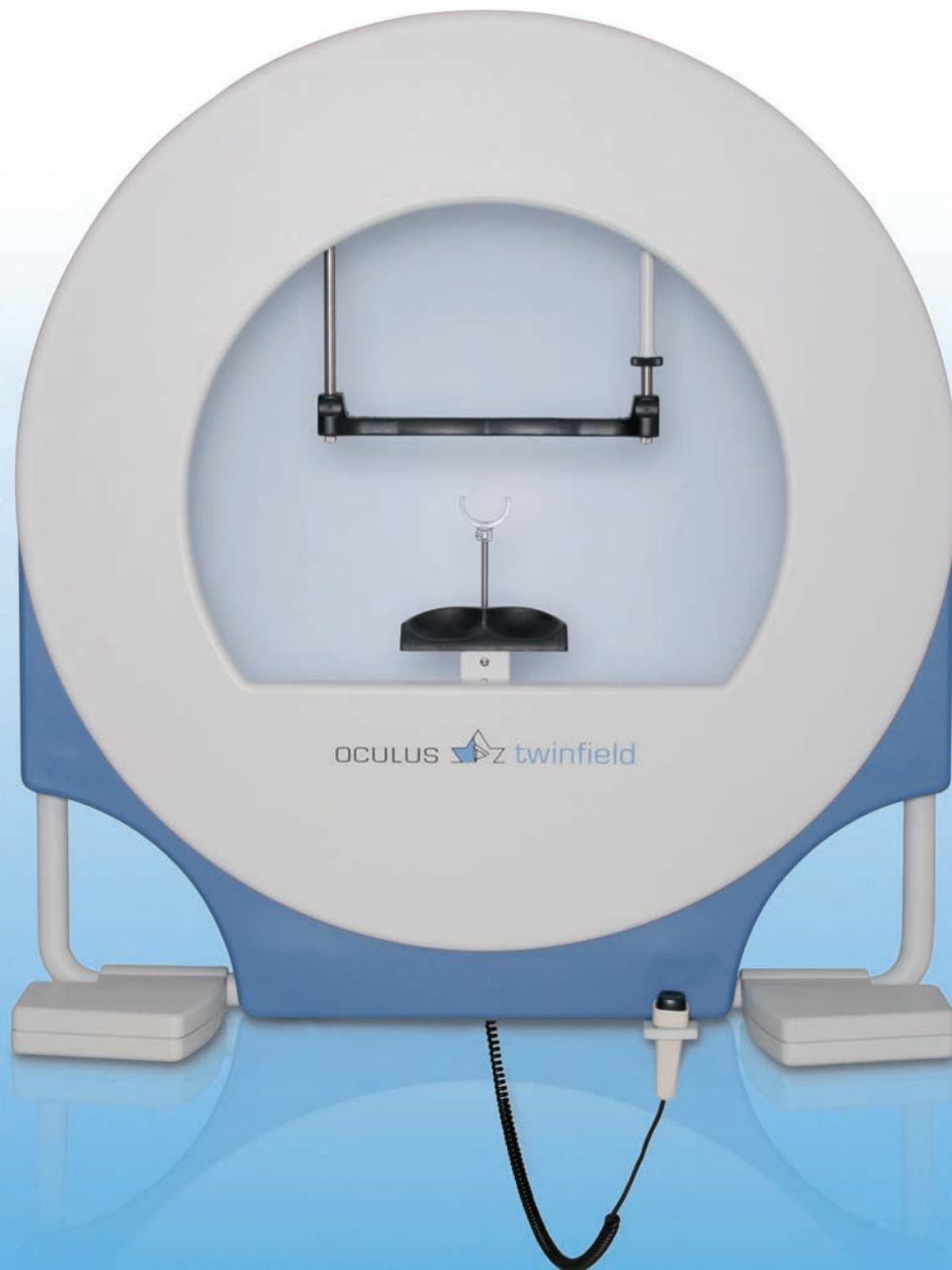


OCULUS Twinfield® 2

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."

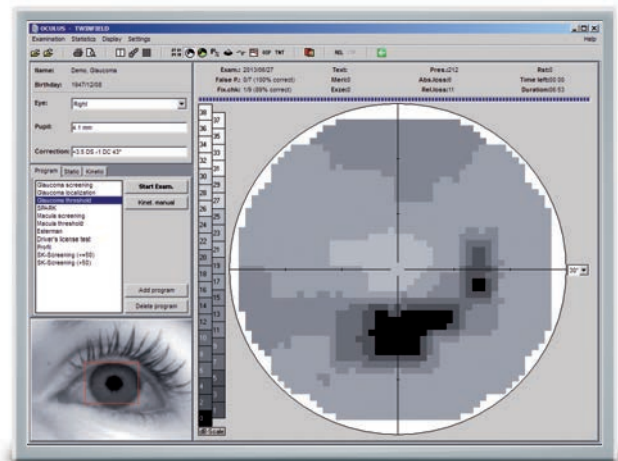


OCULUS Twinfield® 2

Up to the Challenge

Static Automated Perimetry

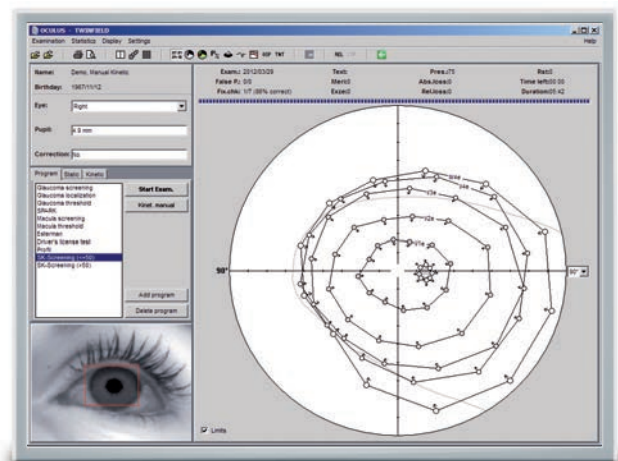
- Pre-defined programs allow for time-saving, easy-to-perform examinations during daily clinical practice.
- A comprehensive set of orthogonal, physiological and freely customizable test grids in combination with suitable testing strategies offer a high degree of flexibility for your examinations.
-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



> Grayscale representation of findings

Kinetic perimetry

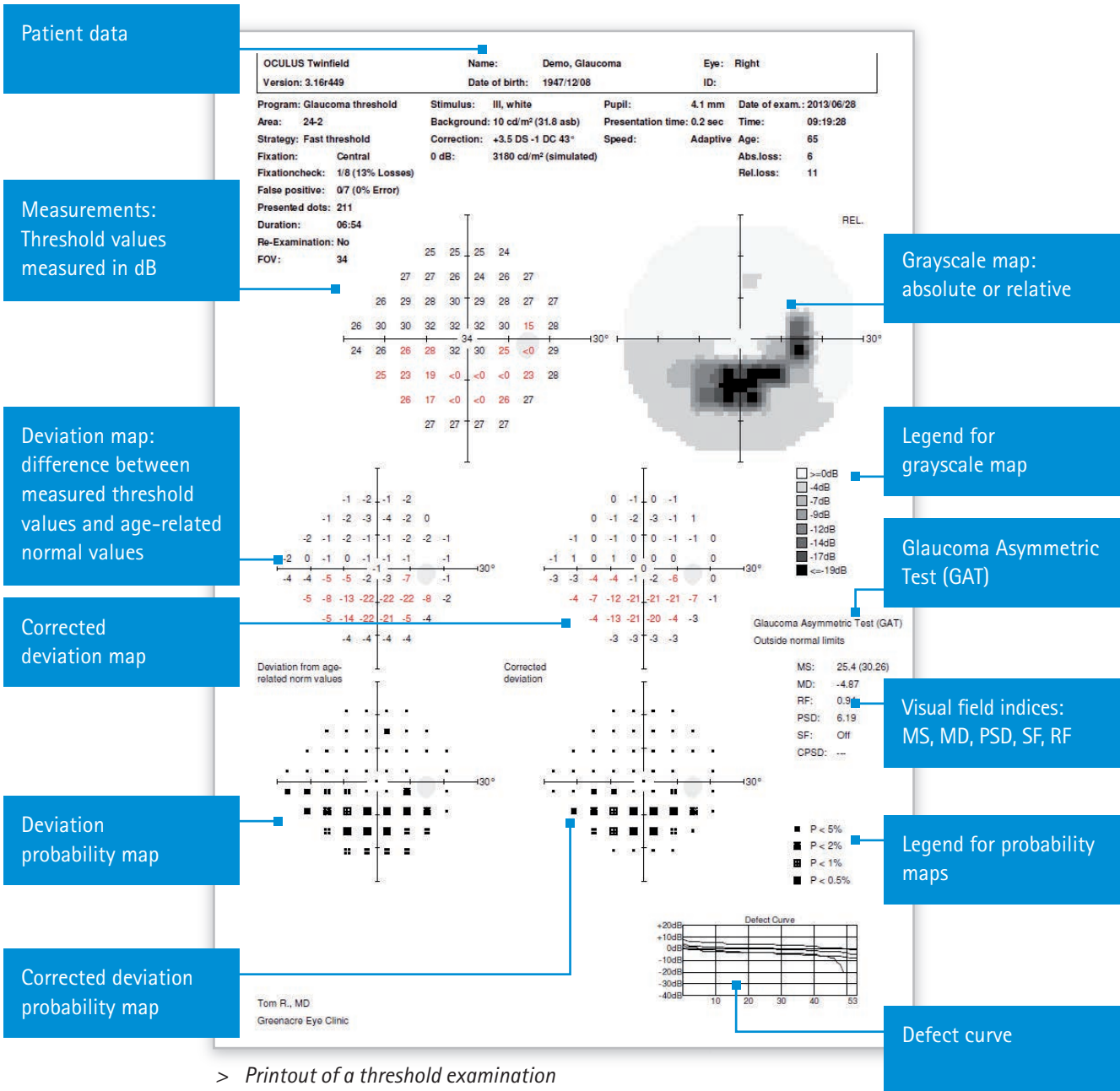
- Strict fulfilment of the Goldmann standard along with free manual positioning and movement of the stimulus allows for truly manual kinetic examinations such as are required for formulating legal expert opinions.
- For semi-automated kinetic tests the starting position and direction of the stimulus 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

Everything at a Glance



> Printout of a threshold examination

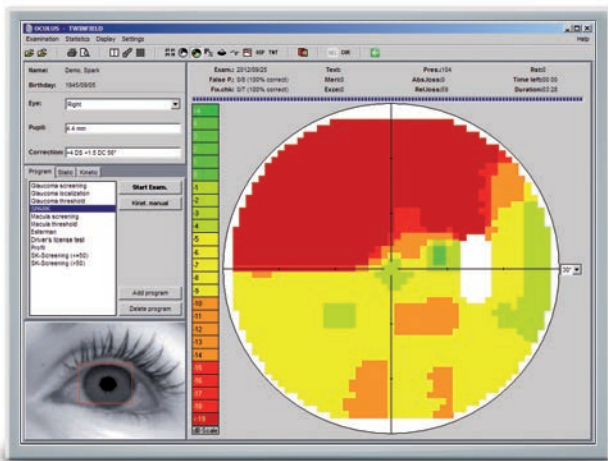
Fighting Glaucoma

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 New SPARK Threshold Strategy



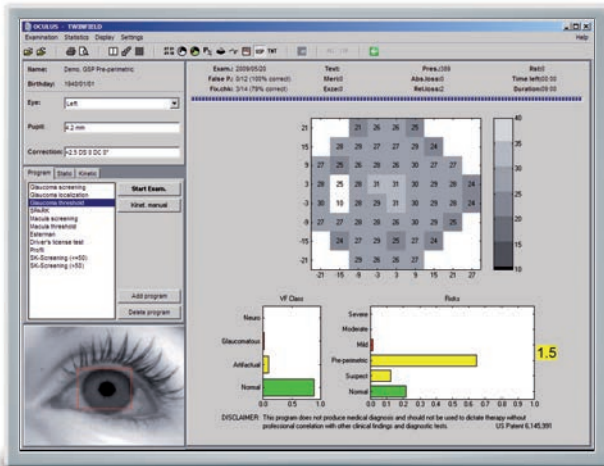
> *SPARK uses correlations between areas in a glaucomatous visual field to speed up threshold examinations*

The SPARK¹⁾ strategy is based on statistical relationships between threshold values corresponding to different locations in the glaucomatous visual field which have been derived from more than 90,000 perimetric examinations. This large body of data was processed to develop a new method for taking fast and very precise measurements of threshold values in the central visual field. The ingenious modular design of the four-phase procedure allows for flexible use of the SPARK strategy in clinical practice:

- **SPARK Precision** is the full-fledged version of SPARK. Complete visual field examinations of glaucoma patients can be performed in just 3 minutes per eye. The final threshold values obtained by averaging out the results of all four phases ensure outstanding reproducibility for improved progression analysis.
- **SPARK Quick** is the strategy suitable for performing follow-up and screening examinations. This procedure only takes 90 seconds per eye.
- **SPARK Training** is ideal for patient training. This 40-second measurement can also be used for screening purposes.

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.

¹⁾ 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 providing a unique tool for early glaucoma diagnosis, GSP¹⁾ can be used to substantiate clinical evaluations of test results.

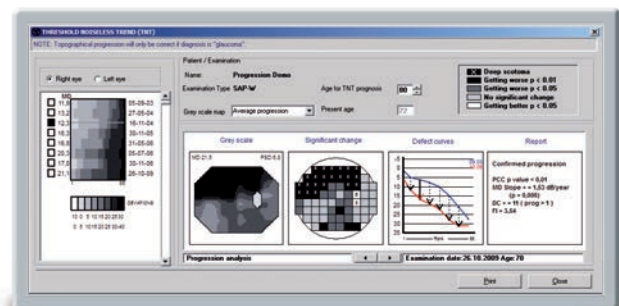
GSP classification is optimized to reproduce expert opinions on glaucoma. The GSP database includes correlations with the entire clinical picture (including structural changes); this information enables GSP to evaluate the likelihood of presence of glaucoma in various stages on the basis of measured threshold values alone.

Intuitive green-yellow-red colour coding facilitates fast and reliable interpretation of findings. The striking novelty of GSP lies in its ability to indicate the presence of distinctive patterns of glaucoma suspect patients and patients with pre-perimetric glaucoma in otherwise unsuspecting findings of the visual field.

Efficient Progression Analysis: Threshold Noiseless Trend (TNT)

The Threshold Noiseless Trend (TNT)²⁾ software module provides objective evaluation of changes in visual field results over time. In combination with the fast SPARK strategy, the sensitivity of progression detection in cases of early glaucoma is enhanced considerably.

- TNT displays concise reports 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 in terms of the "Focality Index" (FI).
- TNT uses multiple statistical criteria for establishing progression.
- TNT presents age-related predictions on the visual field of the patient.



> TNT main display

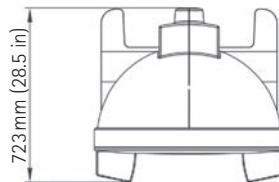
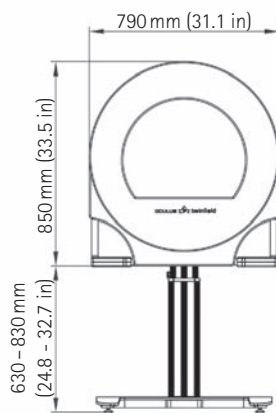
¹⁾ D. Wroblewski et al, Graefes Arch Clin Exp Ophthalmol 2009

²⁾ 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
Strategies	Threshold strategies: OCULUS Fast Threshold, Full Threshold, 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), Quick Screening, Esterman, customized 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 / steps	0 – 318 cd/m ² (0 – 1000 asb) / 0.1 log units
Background luminance and color	10 cd/m ² (31.4 asb), white/yellow
Bowl radius	r = 30cm (11.8 in)
Maximum eccentricity	90° (full field)
Fixation control	Video camera image, through central threshold, Heijl-Krakau (using the blind spot)
Patient positioning	Motorised double chinrest, height- and depth-adjustable headrest, ergonomic armrest
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), user-defined
Technical specifications	
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	90 - 264 V AC / 50 - 60 Hz
Minimal computer requirements	Operating system: Windows® XP or higher
Interface	USB



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

