

**SCHWIND**

eye-tech-solutions





# SCHWIND Diagnostic Devices – Experience a new Level of Convenience



## SCHWIND Diagnostic Devices – High-precision, multifunctional, user-friendly

SCHWIND Diagnostic Devices provide an extensive array of measuring methods for refractive and therapeutic corneal surgery. They offer you a multitude of possibilities for individual diagnoses – whether corneal and ocular wavefront data or corneal pachymetry. Furthermore, significant information which can be used for refractive procedures, such as the insertion of intraocular lenses or other phakic lenses, is also available.

SCHWIND CAM software does not miss out a single important detail for the customized treatment planning, which you can conduct on the SCHWIND diagnostic systems or directly on the SCHWIND AMARIS laser systems. SCHWIND diagnostic systems combine extreme precision with a high level of user-friendliness.

	CORNEAL WAVEFRONT ANALYZER	SCHWIND PERAMIS	SCHWIND SIRIUS	COMBI WAVEFRONT ANALYZER (SCHWIND PERAMIS & SIRIUS)
	Topographer	Topographer + Aberrometer	Topographer + Scheimpflug Camera	Topographer + Aberrometer + Scheimpflug Camera
				
<b>Topography</b>	●	●	●	●
– Anterior corneal surface analysis				
– Corneal Wavefront				
– Keratoconus-Screening				
<b>Aberrometry</b>		●		●
– Objective Refraction				
– Ocular Wavefront				
– Internal Wavefront (Ocular - Corneal)				
<b>Scheimpflug</b>			●	●
– Analysis of the entire cornea				
– Pachymetry map				
– Keratoconus-Screening (anterior and posterior)				
<b>Pupillometry</b>	●	●	●	●
<b>Link to Static Cyclotorsion Control (SCC)</b>	●	●	●	●
<b>Data export to AMARIS laser systems</b>	●	●	●	●
<b>IOL Calculation Function</b>			●	●
<b>CL Fitting Tool</b>	●	●	●	●
<b>Print function via WLAN</b>	●	●	●	●

The Corneal Wavefront Analyzer offers you all the possibilities of an innovative topography device. This includes the analysis of corneal wavefront data and thus a particularly precise diagnosis of the symptomatic aberrations of the cornea.

#### Extreme precision

The Corneal Wavefront Analyzer fulfils the very high requirements of precision with resolution of one micrometre. The smallest of irregularities is identified. The topography device is a perfect module for the preparation of a broad range of refractive treatments with the SCHWIND AMARIS laser systems.

The measuring process does not require any medical pupil dilation – the eye can be measured in its natural shape. The Corneal Wavefront Analyzer also analyses several images from a series of measurement by comparing them and assists the planning of treatment by its selection of the best image quality. As the system is equipped with two measuring cones, you

will also attain highly reliable results with deep-set as well as small eyes.

#### Pupillometry

Pupil diameter can be measured under both scotopic and photopic lighting conditions with the aid of the integrated pupillometry function.



CORNEAL WAVEFRONT ANALYZER

#### Corneal Wavefront

The corneal wavefront analysis by SCHWIND has redefined the measurement of corneal topography. Thanks to the ray tracing method it documents the type and size of all optical errors existing on the anterior corneal surface and allows a high-precision diagnosis for the suitable choice of treatment. It also provides all the key topographical information needed to enhance power calculation and selection of contact lenses.

A significantly high percentage of aberrations in the human eye appear in the corneal region. Only a slight percentage is found in the lens and vitreous body. The aberrations are mathematically described by means of Zernike polynomials and can be converted into individual, customised ablation profiles using the SCHWIND CAM planning software.

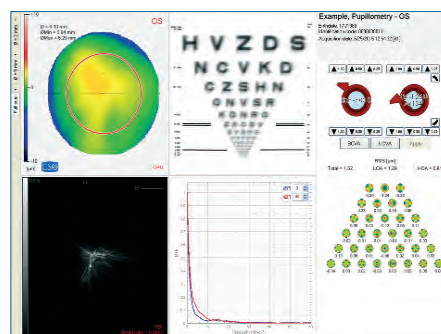


SCHWIND PERAMIS

SCHWIND PERAMIS is a multifunctional combination of a state-of-the-art topography device and aberrometer. The optical characteristics of the cornea and entire eye are analysed in a single measuring procedure.

The unrivalled performance of the aberrometer is based on a high-resolution pyramid wavefront sensor. SCHWIND PERAMIS evaluates the ocular wavefront aberrations with an unprecedented 45,000 measuring points – without any overlap and with clear assignment of each point. Together with real-time measurement, this ensures a new level of detail resolution and precision. The topography device identifies even the smallest corneal irregularities at a very high resolution of one micrometre. The result: extremely precise diagnosis of corneal and ocular aberrations.

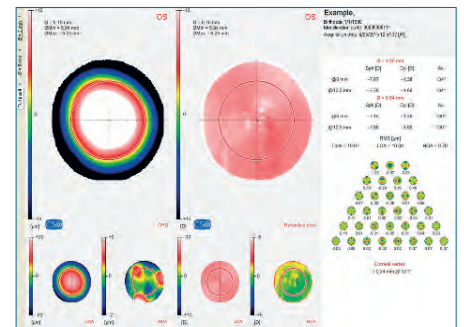
Time-saving and convenient: SCHWIND PERAMIS records 33 images per second and automatically selects the image with the best measurement. Furthermore, the topography and aberrometry are measured in a single procedure, so the patient does not need to change the chin rest.



Overview of optical conditions in the eye

### Sophisticated software

The SCHWIND PERAMIS software offers you a whole range of analysis options, including corneal morphology and analysis of ocular and corneal aberrations as well as their direct comparison – whether in tabular form, as a bar graph or as a wavefront map. You can quickly and easily navigate the menus and obtain selected detail images or a complete overview for the analysis of individual patient data.



Ocular wavefront with refraction

### Keratometry function

Yet another advantage: The high-resolution topography device with placido ring projection provides you with extremely accurate corneal curvature values.

SCHWIND SIRIUS offers the perfect combined solution for refractive and therapeutic corneal surgery. The highly precise, multi-functional diagnostic device combines a rotating Scheimpflug camera and a topography device with a placido disc.

The "2 in 1" system provides you with a quick, three dimensional analysis of the entire cornea and the anterior segment in only one step. The SCHWIND SIRIUS captures the anterior segment in less than one second. With the high resolution of one micrometre the diagnostic system detects the smallest of irregularities on the anterior corneal surface and therefore offers an extremely precise diagnosis of the aberrations. This non-contact measurement allows you to analyse the total corneal wavefront, the topography of the anterior and posterior corneal surface (including the tangential and axial curvature) as well as the anterior chamber. In addition, SCHWIND SIRIUS calculates the keratometry readings and can be used for power calculation of intraocular lenses and contact lens fitting.

**Corneal Wavefront**

Corneal wavefront analysis uses the ray tracing method to document the type and size of all existing optical aberrations in

the cornea. These can be viewed separately for the anterior and posterior surface or together for the entire surface of the cornea.

**Keratoconus Screening**

SCHWIND SIRIUS aids you with its extensive keratoconus screening. The diagnostic system offers detailed descriptions of the morphology as well as the classification and follow-up of the keratoconus.

**Corneal Pachymetry**

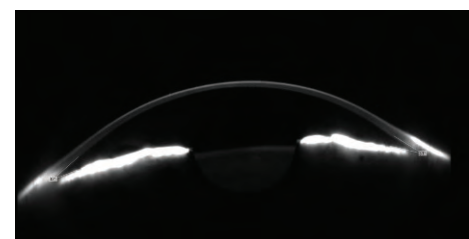
Thanks to the innovative Scheimpflug technology provided by SCHWIND SIRIUS, you have the option to generate an eye's corneal pachymetry map. Accurate information concerning the corneal thickness is essential for performing laser-controlled ablation.

**Pupillometry**

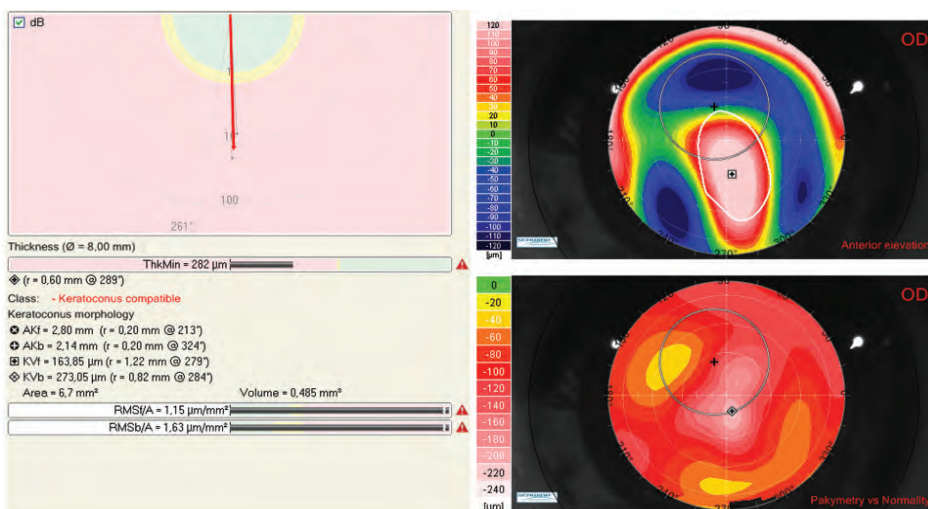
The integrated pupillometry captures the pupil diameter either dynamically or statically according to the defined lighting conditions.



SCHWIND SIRIUS



Scheimpflug Imaging



Keratoconus Screening



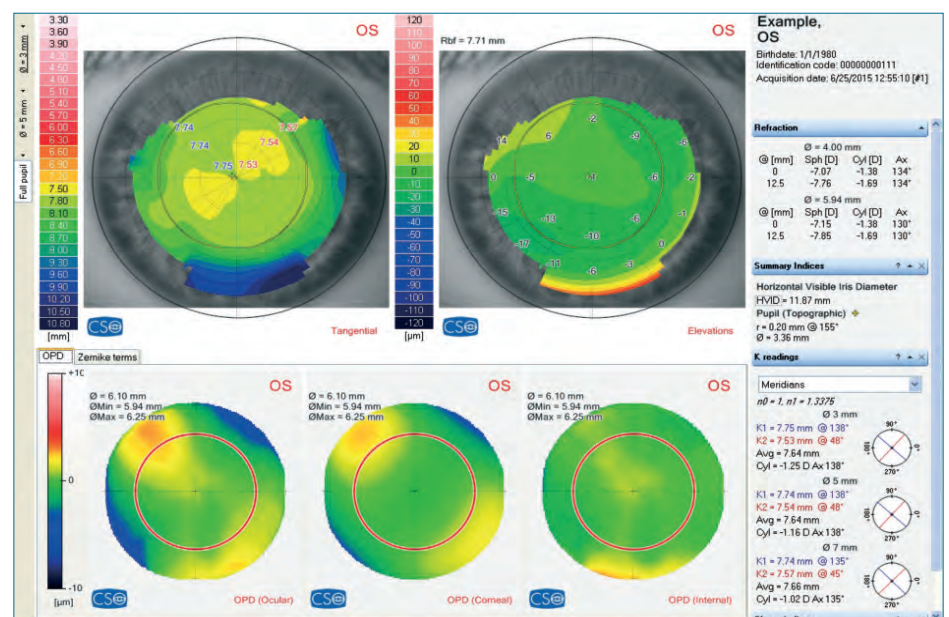
SCHWIND PERAMIS & SIRIUS =  
COMBI WAVEFRONT ANALYZER

The COMBI WAVEFRONT ANALYZER from SCHWIND integrates a whole range of unique functions and thus contributes to optimal surgical and diagnostic decision-making.

The system combines the functions offered by the SCHWIND PERAMIS and SCHWIND SIRIUS. The outstanding detail resolution provides the basis for extensive, particularly precise diagnostics with the COMBI WAVEFRONT ANALYZER. More than 5,632 analysis points and a resolution of 1  $\mu\text{m}$  provide the basis for the corneal wavefront. The aberrometer in the SCHWIND PERAMIS utilises the unique pyramid wavefront sensor to evaluate the ocular wavefront aberrations with up to 45,000 measuring points.

SCHWIND PERAMIS can also be used to compare a patient's corneal and ocular wavefront data. The direct comparison provides information about whether a visual defect is located on the surface of the cornea or within the eye itself, thus allowing you to identify and evaluate internal aberrations. In addition, the COMBI WAVEFRONT ANALYZER with SCHWIND SIRIUS provides detailed information on the entire anterior segment of the eye thanks to the Scheimpflug camera.

The same software is used to control both diagnostic systems and evaluate the data, allowing you to view all the data in a common database and compare them directly. The result: a perfect diagnosis tailored specifically to the patient's personal requirements, and easy, efficient, convenient handling for you.



Ocular Wavefront – Corneal Wavefront = Internal Wavefront

**SCHWIND PERAMIS****At a glance**

Device Type	Topographer combined with aberrometer
<b>TOPOGRAPHER</b>	
Camera	One digital USB3.0 camera
Measuring Technology	Placido disk
Analysed Area	ø 10 mm
Placido Rings	22
Measuring Points	5,632
Measurement Range	1 to 100 D
Resolution	± 0.01 D, 1 µm
Analysis Diameter	3, 5 and 7 mm
Pupillometry	Static and dynamic Scotopic (0.04 Lux), mesopic (4 Lux), photopic (40 Lux)
Measuring Time	< 1 second
Data Export to SCHWIND AMARIS Laser Systems	Corneal Wavefront
<b>ABERROMETER</b>	
Camera	Two digital USB3.0 cameras
Measuring Technology	Pyramid wavefront sensor
Analysed Area	ø 9 mm pupil
Measuring Points	45,000 points at 10 mm pupil diameter
Measurement Range	-20 D to +15 D sph ±10 D cyl
Measuring Time	Approx. 3 seconds (for combined aberrometry & topography measurement)
Data Export to SCHWIND AMARIS Laser Systems	Ocular Wavefront
Static Cyclotorsion Control (SCC)	Optional
Operating Distance	79 mm
Weight	Approx. 6.2 kg
Voltage/Power Consumption	230/120 VAC, max 2.4 A
Dimensions (Height x Width x Depth)	51 x 31 x 28 cm
Compliance	CE Conformity in accordance with Medical Device Directive (MDD) 93/42/EEC

**SCHWIND SIRIUS**

At a glance

Device type	Topographer combined with Scheimpflug camera
Camera	Two digital FireWire cameras
Measuring Technology	Placido disk + Scheimpflug camera
Analysed Area	∅ 12 mm
Placido Rings	22
Measuring Points	21,632 (Corneal anterior surface) 16,000 (Corneal posterior surface)
Curvature Measurement Range	1 to 100 D
Resolution	± 0,01 D, 1 µm
Analysis Diameter	3, 5 and 7 mm
Pupillometry	Static and dynamic Scotopic (0.04 Lux), mesopic (4 Lux), photopic (40 Lux)
Measuring Time	< 1 second
Data Export to SCHWIND AMARIS Laser Systems	Corneal Wavefront
Static Cyclotorsion Control (SCC)	Optional
Operating Distance	75 mm
Weight	Approx. 14.2 kg
Voltage/Power Consumption	230/120 VAC, max 2.4 A
Dimensions (Height x Width x Depth)	51 x 25 x 32 cm
Compliance	CE Conformity in accordance with Medical Device Directive (MDD) 93/42/EEC

**CORNEAL WAVEFRONT ANALYZER**

At a glance

Device Type	Topographer
Camera	High resolution camera
Measuring Technology	Small cone, far cone for deep-set eyes
Analysed Area	∅ 11 mm
Placido Rings	28
Measuring Points	7,168
Curvature Measurement Range	1 to 120 D
Resolution	± 0,01 D, 1 µm
Analysis Diameter	3, 5 and 7 mm
Pupillometry	Static: scotopic, photopic
Data Export to SCHWIND AMARIS Laser Systems	Corneal Wavefront
Static Cyclotorsion Control (SCC)	Optional
Weight	Approx. 8.6 kg
Voltage/Power Consumption	230/120 VAC, max 2.4 A
Dimensions (Height x Width x Depth)	41 x 16 x 30 cm
Compliance	CE Conformity in accordance with Medical Device Directive (MDD) 93/42/EEC

All technical specifications are subject to change without notice.

Optimum functionality, reliability and compliance with all legal regulations can only be assured through the use of products supplied by SCHWIND – whether as single items or as a combined system.