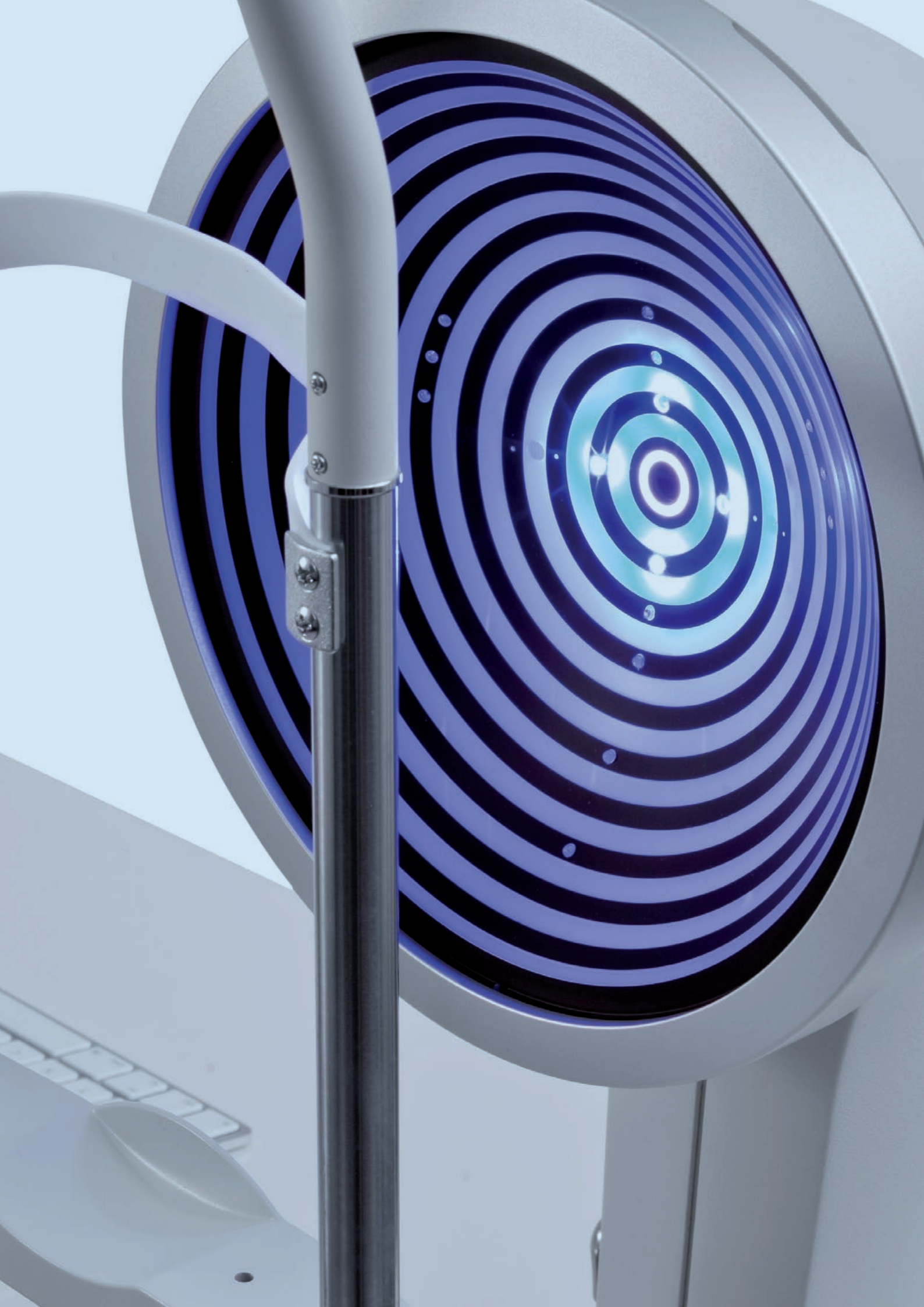


# OCULUS | Keratograph 5M

Topographer



We focus on progress



# OCULUS Keratograph 5M

More than just a topographer!

The new Keratograph 5M technology is a revolution in corneal topography and Dry Eye analysis. The high-resolution color camera and the integrated magnification changer offer a new perspective to the tear film assessment procedure.



## Measurements with Placido disc illumination

The white annular illumination is used to precisely measure thousands of points on the surface of the cornea. The infrared annular illumination is available during the tear film analysis to prevent light reflection and glare.



## Measurements with light emitting diodes

The Keratograph 5M features the ideal illumination for each application: white diodes for the assessment of tear film particles movement, blue diodes for fluorescein imaging, infrared diodes for meibography.

In addition to these unique features, the Keratograph 5M precisely measures corneal topography. The built-in real Keratometer and the automatic measurement activation guarantee perfect reproducibility of the Ks. The data from the non-contact measurement is automatically analyzed and shown in comprehensive presentation formats.



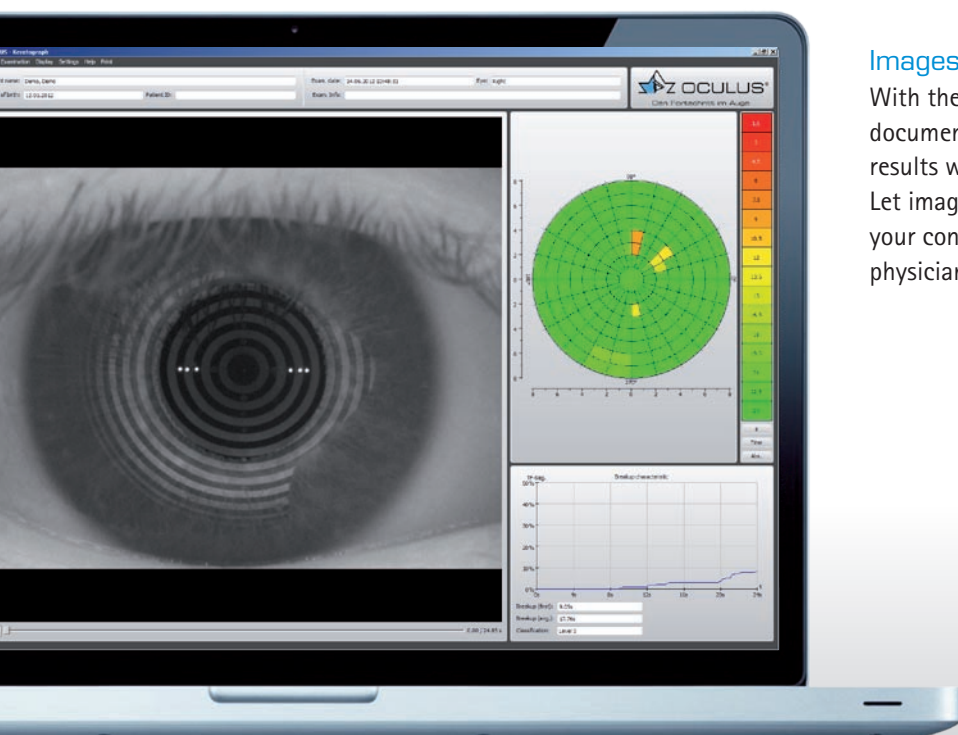
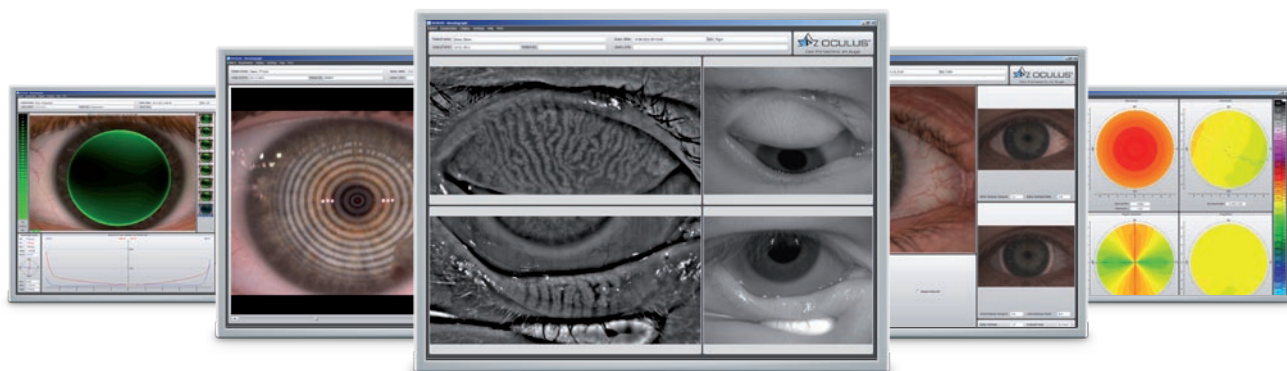
# Clear presentation

For more transparency of your services

Actively integrate the Keratograph 5M into your practice as a patient consultation tool. With many visual maps and easy to understand diagrams, the Keratograph 5M enhances the communication with your patients. Use your Keratograph 5M as a marketing tool and gain your patients' confidence.

## Build trust

With the Keratograph 5M, you are able to show images that your patients have never seen before. Build trust by providing professional consultation during examinations and follow-ups.



## Images speak louder than words

With the TF-Scan software, you can analyze and document the tear film break up time and share the results with your patients.

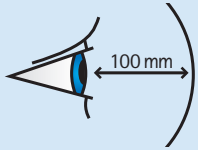
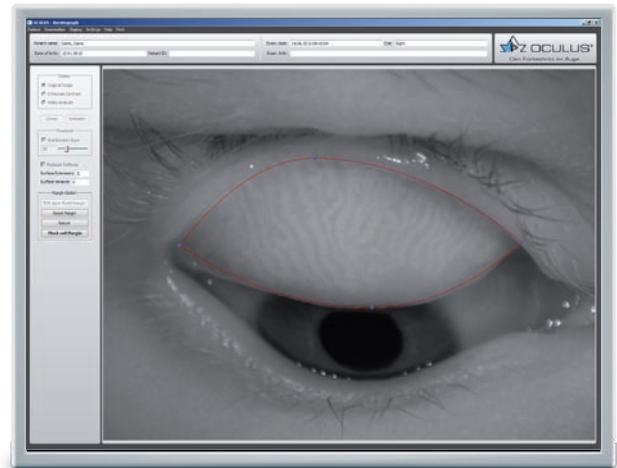
Let images and videos speak for themselves during your consultation — this creates a strong physician/patient relationship.

# Meibo-Scan

## Meibography of the upper and lower eyelid

The new Keratograph 5M is a multi-purpose diagnostic device that easily and efficiently integrates complex examination, such as meibography into the ophthalmological and optometric practices.

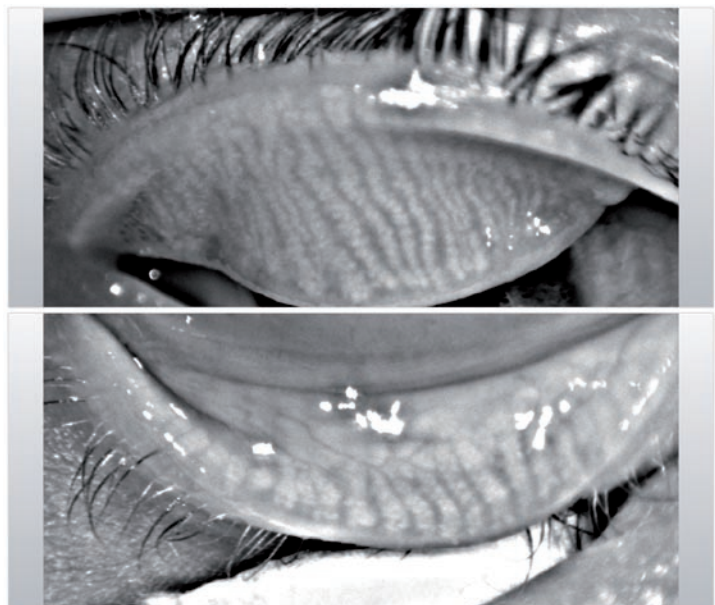
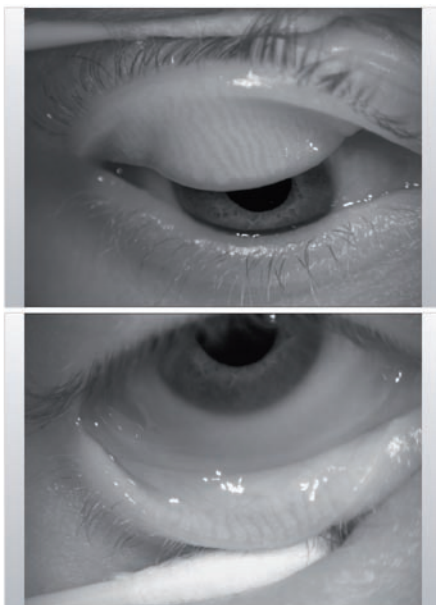
Dry Eye is most commonly caused by the Meibomian Gland Dysfunction (MGD). The Meibo-Scan shows the morphological changes in the glandular tissue.



The new Keratograph 5M is patient-friendly and takes the measurements at a greater distance to the eye. An image section of 26mm enables optimal examination of the lower and upper eyelids.

## 3-D display of the meibomian glands

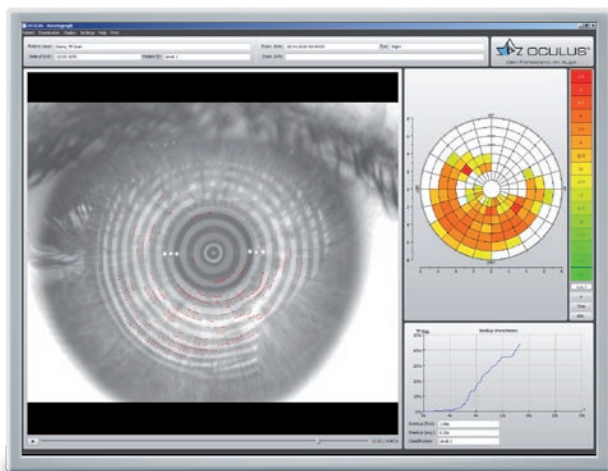
There are different viewing options, such as, the 3-D display, various section planes and the marking of the individual area of examination to easily evaluate the meibomian glands and the morphological changes in the upper and lower eyelids.



# TF-Scan

Visualizing the quality and quantity of the tear film

The OCULUS Keratograph 5M evaluates the tear film with the aid of white or infrared illumination. The new high-definition color camera makes the finest structures visible. The NIKBUT (non-invasive Keratograph break-up time), the tear meniscus height, the lipid layer and the tear film particles movement are examined carefully and documented easily. The exams are non-invasive, user-friendly and reproducible.

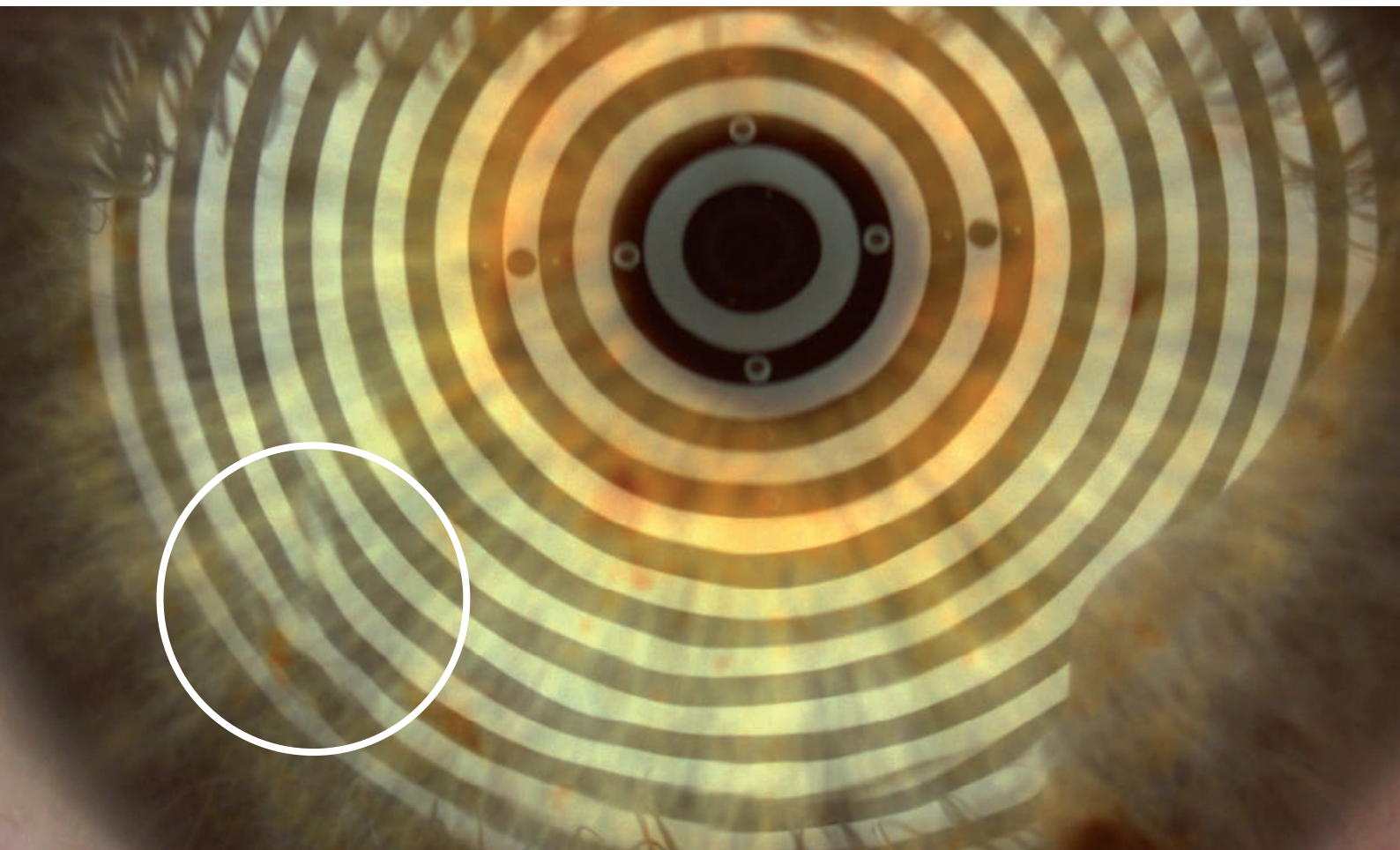


## NIK BUT

### Evaluation of the tear film break-up-time

The tear film break-up-time measurement with the Keratograph 5M is touch-free and fully automatic. The new infrared illumination is invisible to the human eye and produces no glare during the examination and no reflex tearing.

The TF-Scan maps the tear film break up time and is a great tool for follow ups and patient consultation.

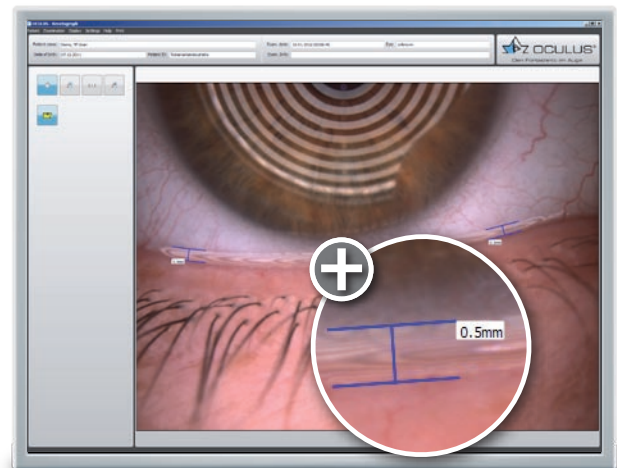




## Tear meniscus-height

### Evaluation of the tear film quantity

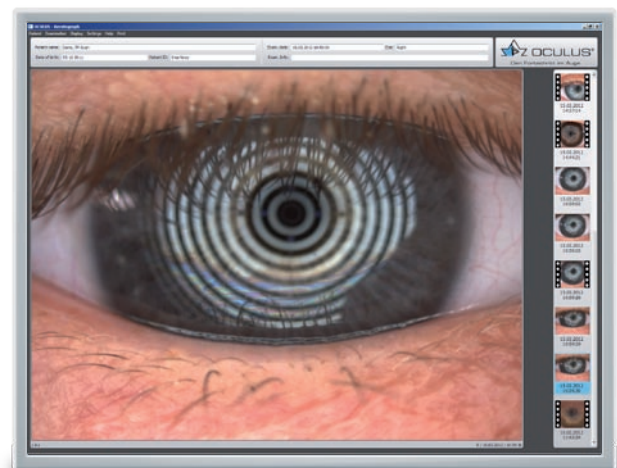
With an integrated measuring guide and various magnification tools, you can measure the tear meniscus height and evaluate its characteristics along the lower lid margin. The result is saved in the patient file.



## Lipid layer

### Evaluation of the lipid layer thickness

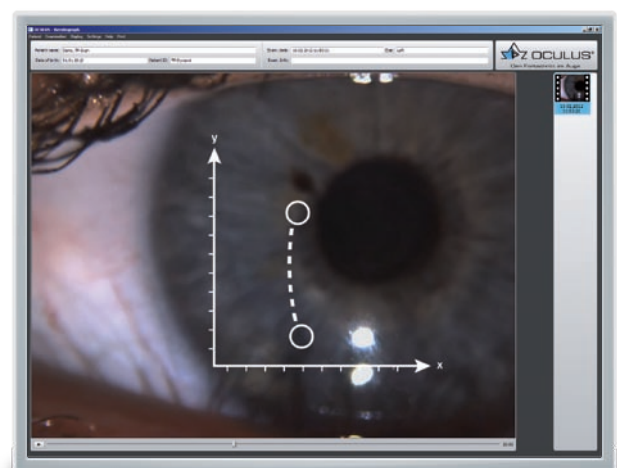
The color and structure of the lipid layer is visible and can be recorded. This shows the lipid layer thickness, which correlates with tear film evaporation and dry eye symptoms. If the lipid layer is too thin or absent, the tear evaporation rate and the tear film instability increase.



## TF dynamics

### Evaluating the particle flow characteristics

A video recording with up to 32 images per second enables the observation of the tear film particle flow characteristics and shows the tear film viscosity.

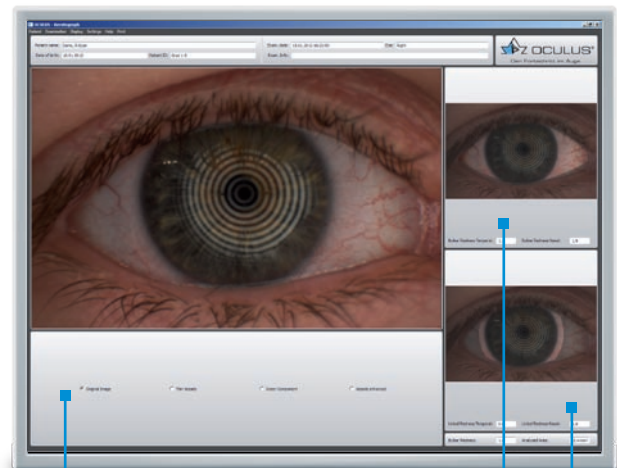


# R-Scan

## Automatic bulbar redness classification

The R-Scan is the first and only technology that automatically and objectively measures and classifies the bulbar and the limbal degree of redness.

The R-Scan detects thin blood vessels in the conjunctiva and evaluates the degree of redness. With automatic evaluation, there is no need to manually compare the classification sheets and you can be more confident in the user-independent results.



Choice of display

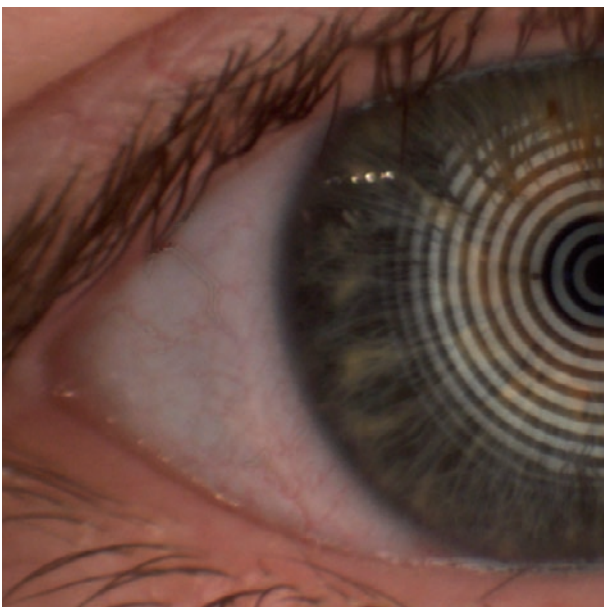
Precise classification  
of bulbar redness

Precise classification  
of limbal redness

## Intelligent recognition of the relevant areas

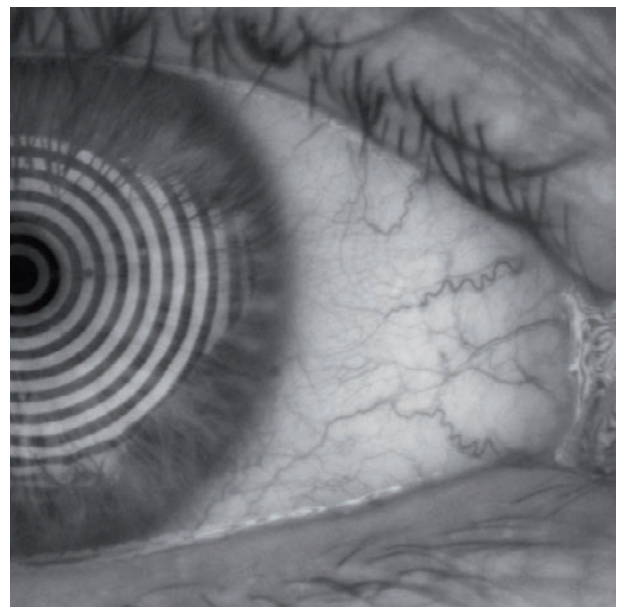
### Display of thin blood vessels in the conjunctiva:

Only the thin blood vessels of the conjunctiva are detected and evaluated.



### Display in red-free light:

Under the green spectrum of visible light, blood vessels are richer in contrast and more visible.

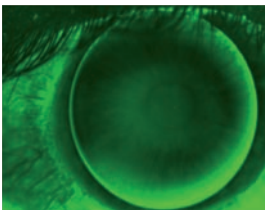




# Imaging

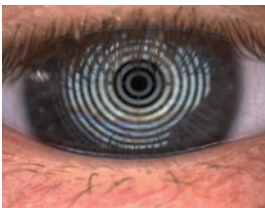
## High-definition color camera for image and video documentation

The Keratograph 5M features an optimal imaging function and a new high-definition camera. This opens new doors for documentation during every day practice. Experience the highest level of multi-functionality, similar to a digital slit lamp. The selectable illumination and variable magnification serve as the basis for high-definition image and video recordings. The simple operation easily integrates into a practice routine and allows the efficient documentation of the examinations.



### For contact lens fitting

Easily evaluate the static and dynamic fit of Rigid Gas Permeable and soft contact lenses and the wetting and drying times.



### For documentation of diagnostic findings

The even illumination and high depth of field are especially important for professional documentation of diagnostic findings. The recordings are saved automatically.



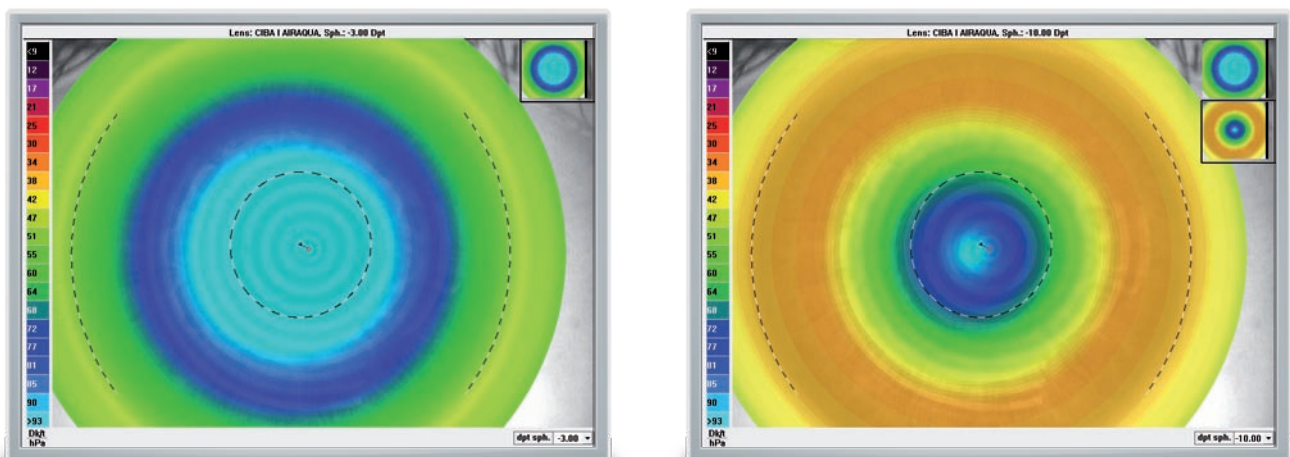
# OxiMap® – visualizing the oxygen transmissibility

## Professional patient consultation

The cornea needs oxygen and a good oxygen supply is fundamental for the comfort of a contact lens wearer. New materials used for soft contact lenses offer excellent oxygen transmissibility. This can be shown with the new OCULUS OxiMap® display. You can easily show these color maps to your patients and help them choose better contact lenses.

## How much oxygen really reaches the cornea?

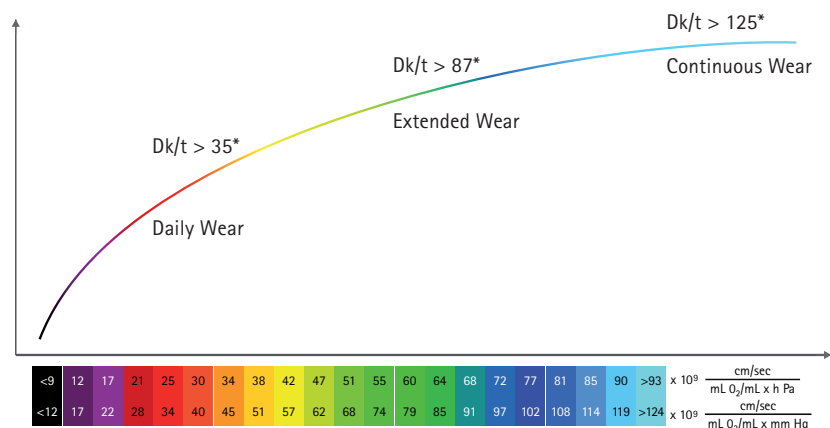
Until now, only the oxygen transmissibility values for the center of a contact lens with  $-3.0$  D were available. The OxiMap® shows the oxygen transmissibility depending on the lens material and the lens thickness. The OxiMap® is available for the most frequently sold spherical soft contact lenses. This impressive tool assists you in the consultation with customers to select the most suitable contact lens.



> Oxygen transmissibility for  $-3.00$  D and  $-10.00$  D for identical type of contact lens

## Plain and comprehensive visualization assures patient loyalty!

Contact lenses act as a potential barrier to oxygen transport even when the eyes are open to the atmosphere. Long hours of wearing comfort can only be guaranteed with a sufficient oxygen supply. The color representation of the various terms of oxygen transmissibility is based on international recommendations for daily, extended and continuous wear.

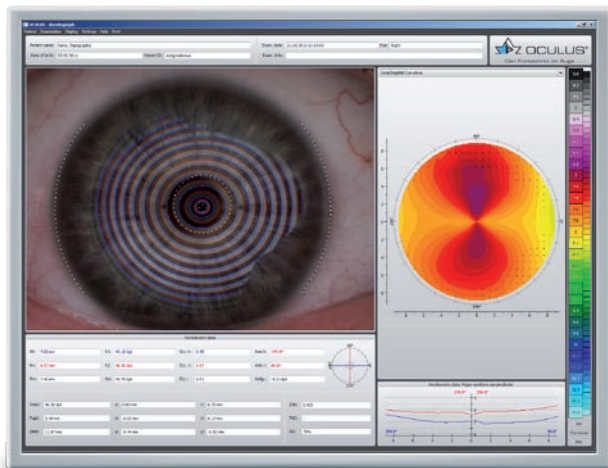


> The OxiMap® color coding of the Dk/T-values and the recommended wearing time

# Basic software

Precise analysis. Clear presentation.

The comprehensive basic software contains various analysis for everyday use; from topography to automatic keratoconus detection and an extensive contact lens database.

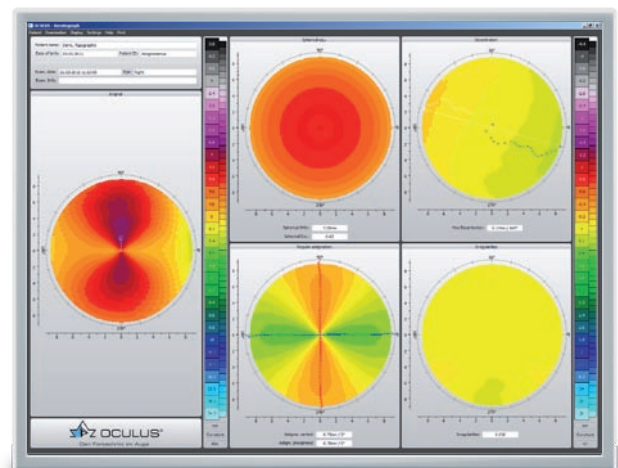


## Overview and 3-D displays

The built-in Keratometer guarantees the utmost measuring precision and reproducibility of the real Ks. The overview display shows the keratometric values, the central radii, the corneal astigmatism, the eccentricity and the corneal diameter. The color topography map shows the curvature of the anterior corneal surface.

## Fourier analysis

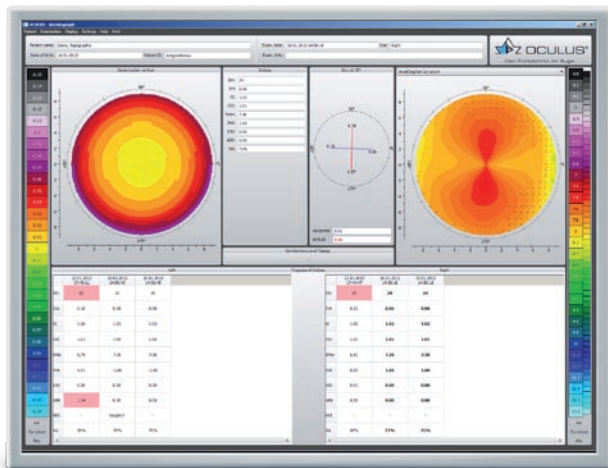
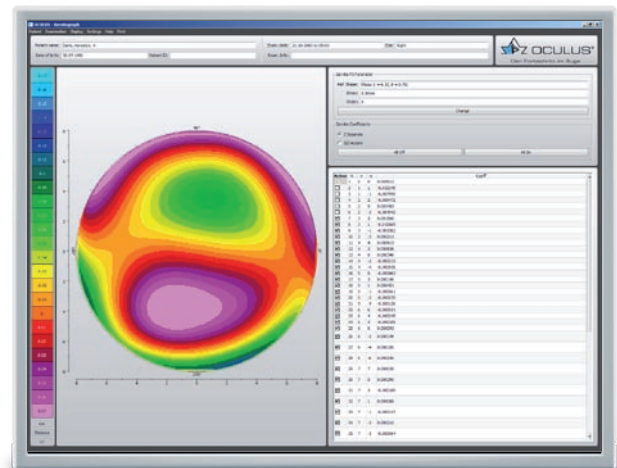
The Fourier analysis is an important tool for visualizing the amount of corneal irregularities. Using the Fourier analysis, the topography map is divided into individual components. The first three are standard components that represent lower order aberration and the fourth map shows the amount of corneal irregularities or higher order aberration.





## Zernike analysis

Zernike analysis provides a means to distinctly describe irregularities of the cornea. If the indicated aberration coefficient is elevated, it shows a decline of the optical quality. The Zernike analysis enables the determination of the exact position of the apex.

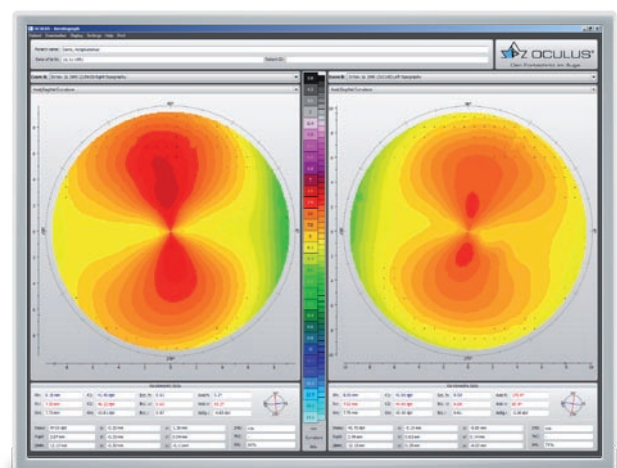


## Indices

The Indices display helps with the quick and easy detection of abnormalities in the topography. The measured values are compared with a standard database. If Keratoconus is present, it is detected at an early stage and categorized according to the topography at hand. The indices display is helpful during the follow-up examination and shows whether the irregularities are changing or staying constant.

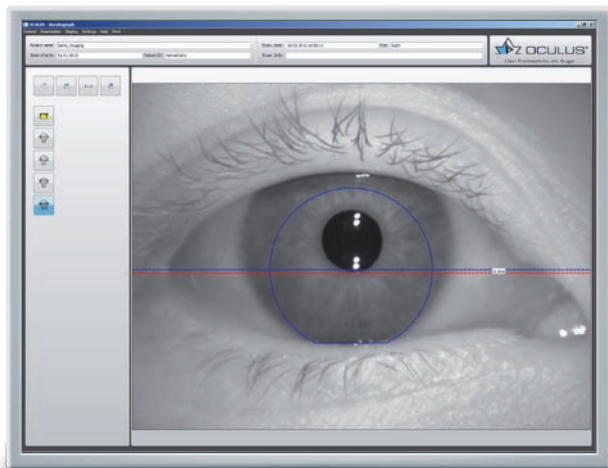
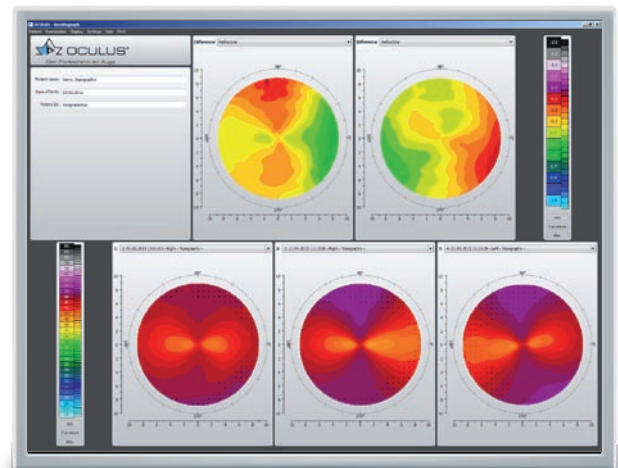
## Show 2 exams

During the follow-up examinations, it is necessary to compare the results with the previous exams. With this feature you can compare the changes in the corneal topography over time for the contact lens wearers or patients with progressive conditions, such as Keratoconus.



## Compare 3 exams

This display shows the changes in the corneal refraction power and allows the documentation of refractive changes caused by refractive surgery or by wearing the Ortho-K lenses.

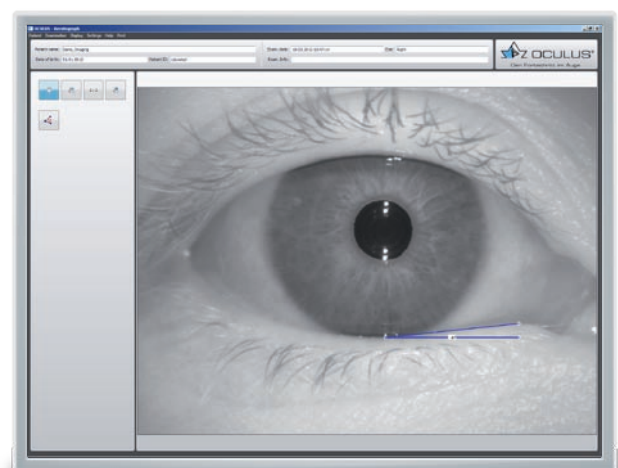


## Near portion height measurement

This software precisely simulates the near portion height of rigid bifocal contact lenses and simplifies the complex fitting process.

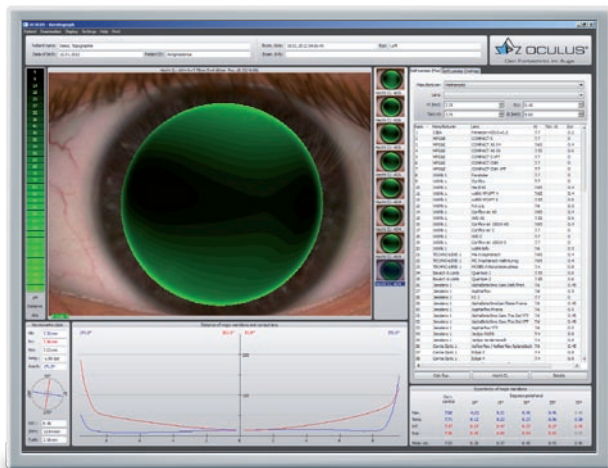
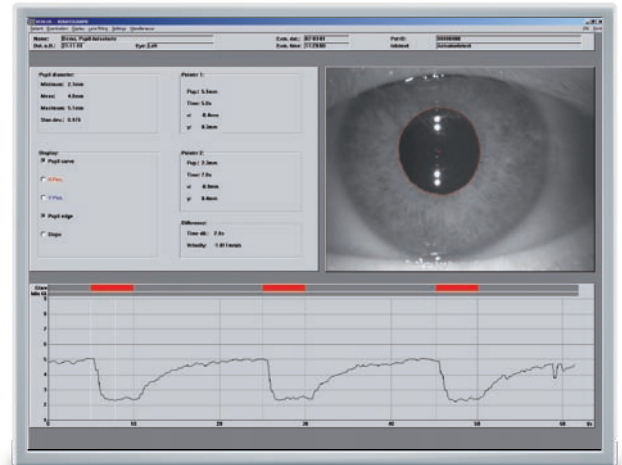
## Palpebral angle measurement

The measurement of the nasal lower palpebral angle facilitates the identification of the expected inclination or stabilization axis when fitting toric contact lenses. Save time and money by giving this information to the contact lens manufacturer when you place an order.



## Pupillometry

The optional pupillometry software measures the pupil reaction to light with and without glare. The reaction of both pupils can be compared to detect an anisocoria.

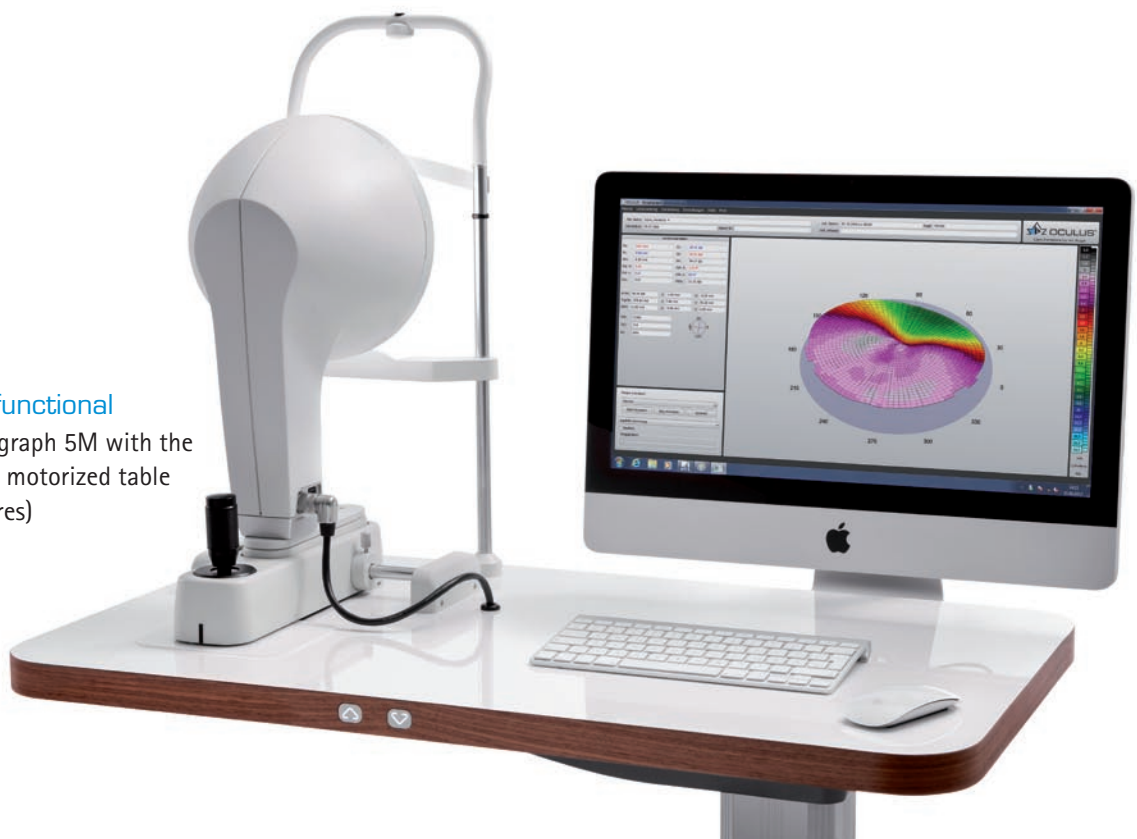


## Contact lens fitting

Contact lenses are recommended on an individual basis and displayed in a list. In order to avoid taking more steps than necessary when fitting contact lenses, the fluorescein image can be simulated beforehand. The contact lens can be rotated and moved around. Fluorescein image simulation is adjusted automatically. The integrated and expandable database contains all customary types of contact lenses and is updated on a regular basis. The user can determine the order in which contact lens manufacturers appear.

### Elegant and functional

OCULUS Keratograph 5M with the Apple iMac and motorized table (Optional features)





# All features at a glance

Customize your OCULUS Keratograph 5M

| Features     | Keratograph 5M |
|--------------|----------------|
| TF-Scan      | ○              |
| R-Scan       | ○              |
| Meibo-Scan   | ○              |
| Imaging      | ○              |
| Pupillometry | ○              |
| OxiMap®      | ○              |

## Basic software

|  |   |
|--|---|
| Topography   | ● |
| Overview display   | ● |
| Color map  | ● |
| 3-D presentation   | ● |
| Fourier analysis   | ● |
| Zernike analysis   | ● |
| Indices (automatic keratoconus detection)                            | ● |
| Compare 3 exams  | ● |
| Asphericity  | ● |
| Camera image   | ● |
| Show 2 exams   | ● |
| Contact lens fitting   | ● |
| Contact lens database  | ● |
| Interfaces to fitting programs of various contact lens manufacturers | ● |
| Palpebral angle measurement  | ● |
| Near portion height measurement                                      | ● |
| Data import and export via USB 2.0                                   | ● |

● Standard ○ Optional

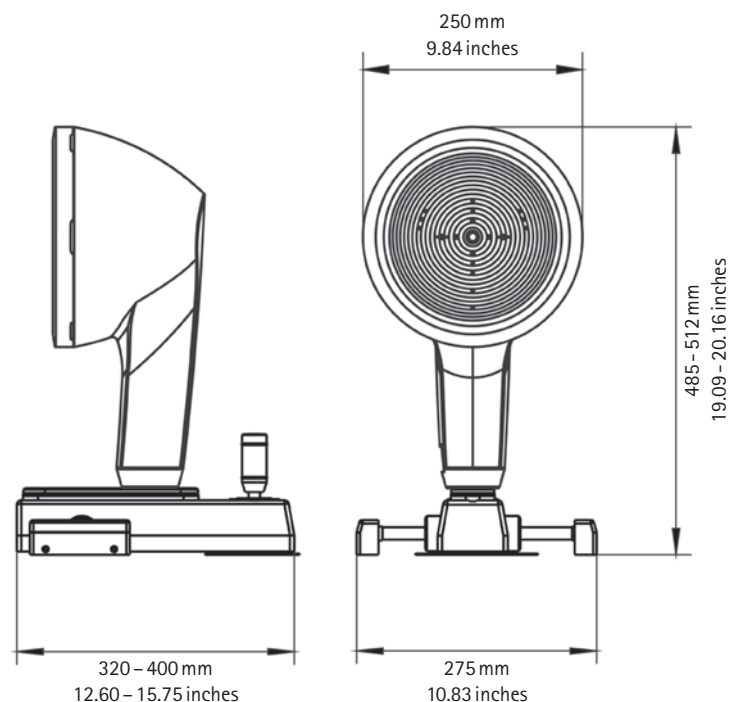
Standard and optional features may differ in your country. Contact your local OCULUS representative for details.

# Technical data

## OCULUS Keratograph 5M

|                                 |   |
|---------------------------------|---|
| Precision                       | ± 0.1 dpt   |
| Reproducibility                 | ± 0.1 dpt   |
| Ring count                      | 22  |
| Working distance                | 78 – 100 mm   |
| Number of evaluated data points | 22,000  |
| Camera                          | Digital CCD camera  |
| Illumination source             | Placido illumination: white diodes<br>Placido illumination: infrared diodes (880 nm)<br>Imaging illumination: blue diodes (465 nm)<br>Meibography: infrared diodes (840 nm))<br>Tear film dynamics: white diodes<br>Pupillometry illumination: infrared diodes (880 nm) |
| Dimensions (WxDxH)              | 275 x 320 – 400 x 485 – 512 mm  |
| Weight                          | 6.8 kg  |
| Minimal PC requirements         | Processor: Intel Core i3 or better, 4 GB main memory,<br>Hard disk: 500GB and up, graphic card: Intel HD Graphics 2000 or better,<br>Recommended screen resolution: 1920 x 1080 (full-HD)   |

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



WWW.OCULUS.DE



OCULUS is certified by TÜV according to  
DIN EN ISO 13485/DIN EN ISO 9001

OCULUS Optikgeräte GmbH  
Postfach • 35549 Wetzlar • GERMANY  
Tel. +49-641-2005-0 • Fax +49-641-2005-295  
E-Mail: export@oculus.de • www.oculus.de

- OCULUS USA, sales@oculususa.com
- OCULUS Asia, info@oculus.hk
- OCULUS Czechia, oculus@oculus.cz
- OCULUS Iberia, info@oculus.es