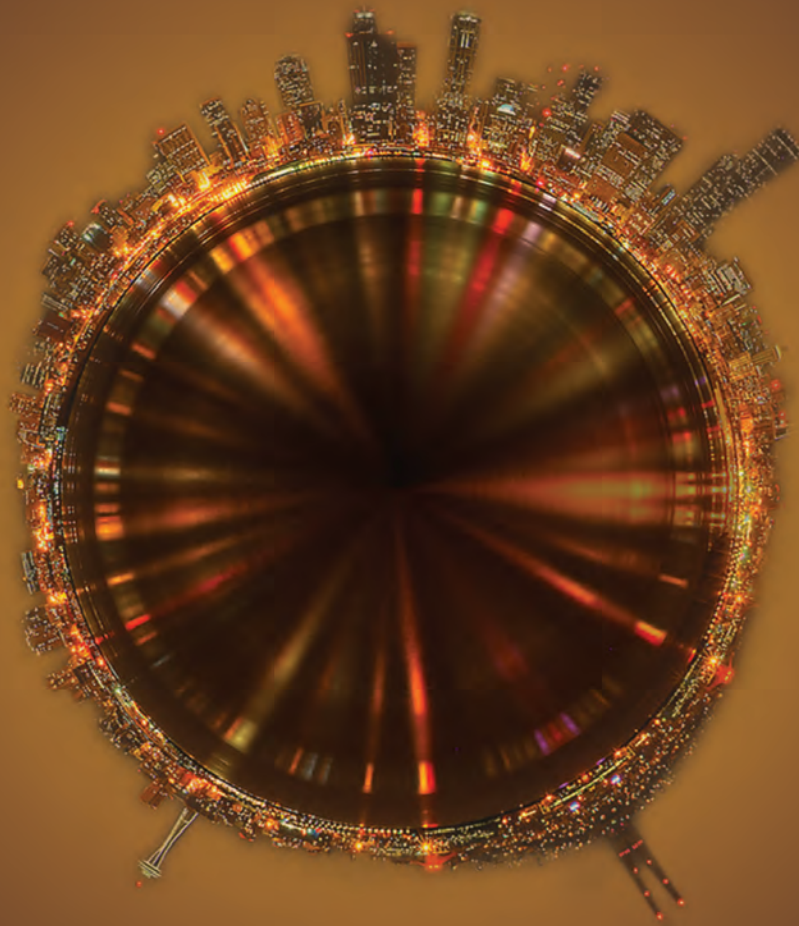


**OPTIKON™**  
Man and Technology

DESIGNED AND  
MANUFACTURED  
IN ITALY



THE SHARPEST VISION.



**Keratron™** *Onda*

# Keratron™ Onda

A complete diagnostic station used in clinical practice and research to analyze the optical environment of ocular aberration.

## Its functions are:

- Corneal Topography
- Ocular, Corneal and Internal Aberrometry
- Pupillometry
- Refraction
- Dynamic Accommodation
- Cataract Densitometry
- Non-invasive break-up time

The Onda's corneal topography function has the same reliability and excellence found in the entire family of **Keratron™** topographers.

Ocular Aberrometry and Refraction can be done under accommodative stress without cycloplegics.

The innovative software is continuously updated to include new refractive investigation features.

The software now identifies the "Strehl ratio", an aberrometric parameter that identifies the sphero-cylindrical correction that yields maximum visual acuity in the presence of higher order aberrations. The Onda's combination of features allows customised ophthalmic correction and full ametropic management.

DATA DISPLAYED ON THE SCREEN OR  
ON AN EXTERNAL COMPUTER

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CONNECTS TO PCS AND PRINTERS  
OVER LAN AND WI-FI NETWORKS

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MANAGES VARIOUS INDEPENDENT  
DATABASES THROUGH NETWORK  
CONNECTIONS

---



TOUCH SCREEN DISPLAY

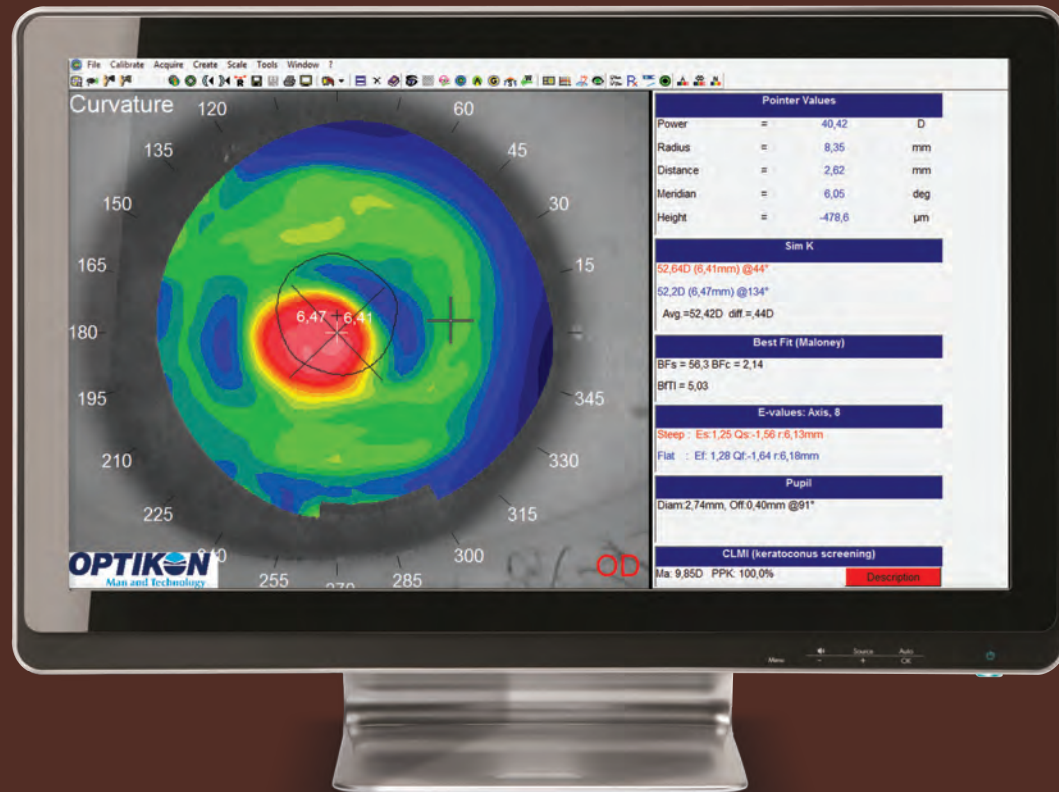
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SENDS TOPOGRAPHIES AS  
ATTACHMENTS TO E-MAILS

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CONNECTS TO AN  
ALPHANUMERIC PRINTER

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# Cornea

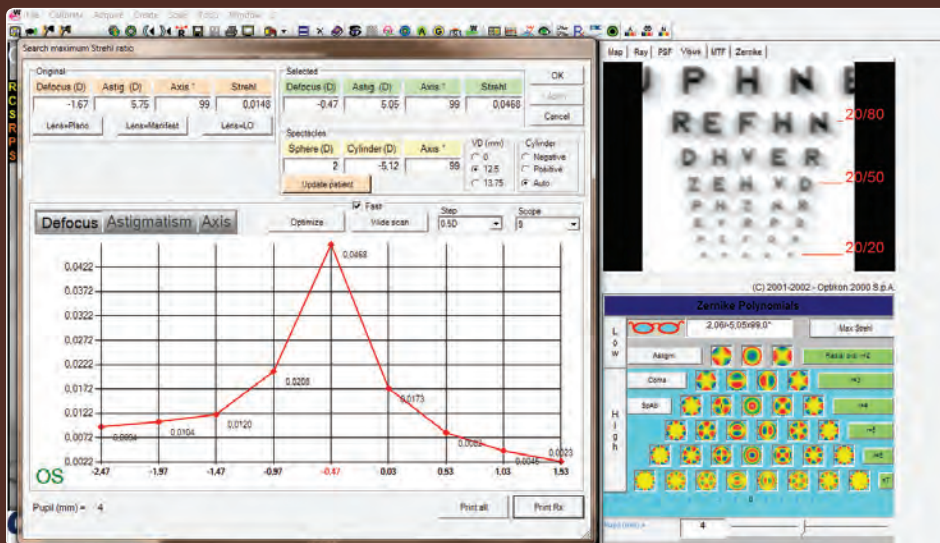
Corneal Topography: curvature, axial, height, wavefront, refractive, gaussian, differential. CLMI keratoconus statistical Indices.

Keratoconus follow-up: graphs corneal aberrations and keratometric parameters over time.

Moving the Axis.

NIBUT: Non-invasive measurement of the tear film break-up over time.

GP simulation of all major international contact lens manufacturers including Ortho K lenses.



# Refraction

Measures refraction in all pupillary conditions: photopic, mesopic and scotopic.

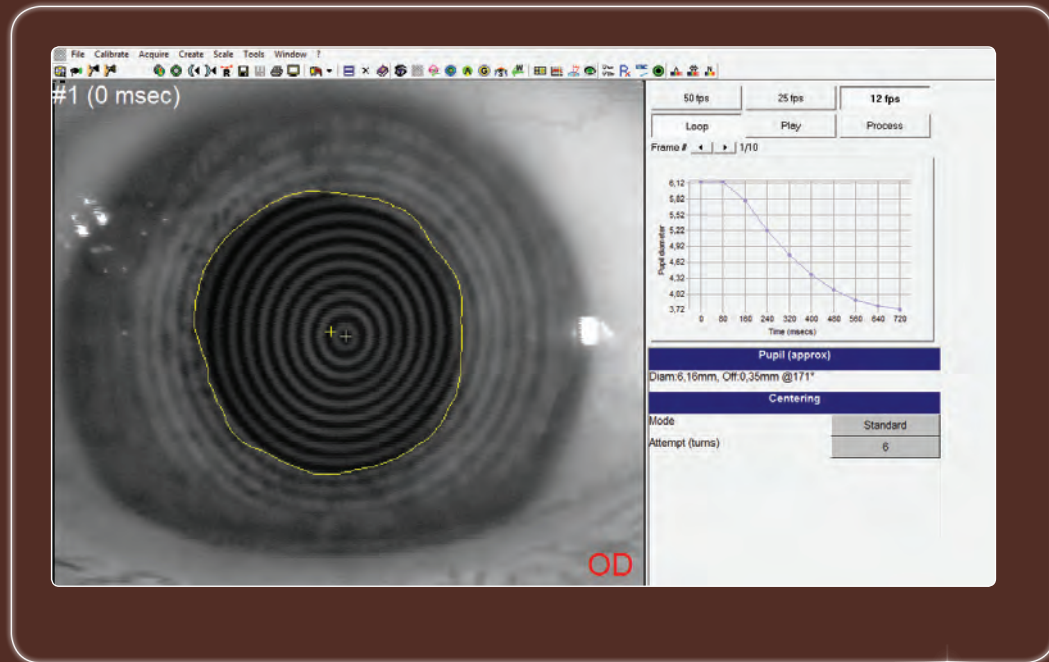
Total aberrometry with Shack Hartmann system.

Topographic corneal aberrometry.

Internal aberrometry as the difference between total and corneal.

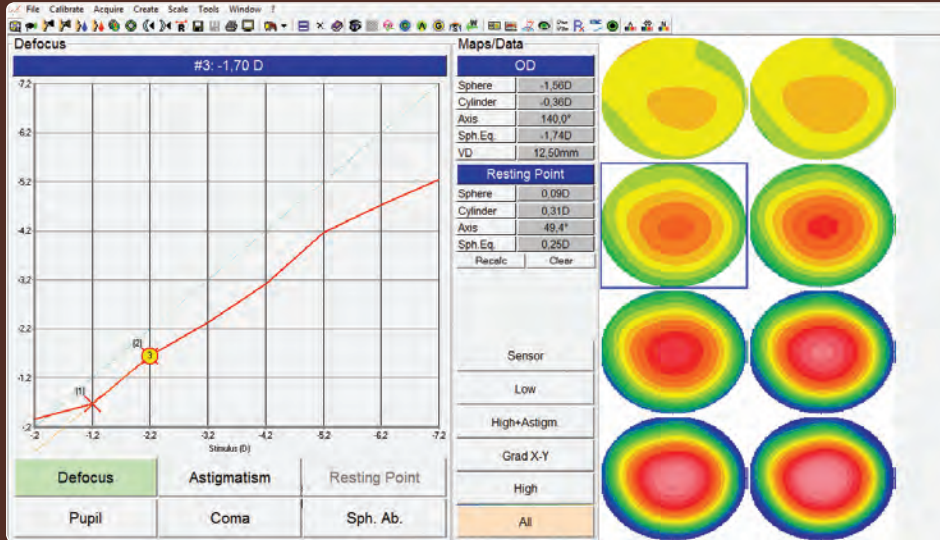
Measures refraction with a target that can be set for any distance.





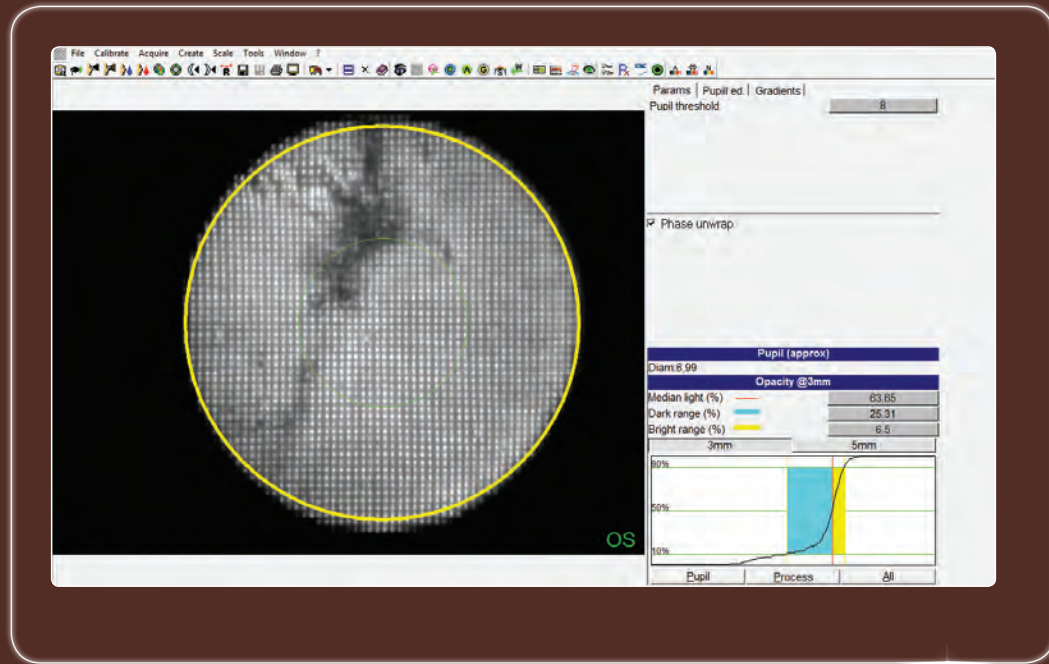
# Pupillometry

Measures the pupil diameter and K angle in any lighting condition.  
Dynamic pupillometry graphs pupillary response to glare.



# Accommodation

Graphs accommodation according to: defocus, astigmatism, coma, spherical aberration, pupil.  
 Measures refraction at the "resting point", even young patients who induce instrumental myopia. This allows refraction measurement with no cyclopegics.

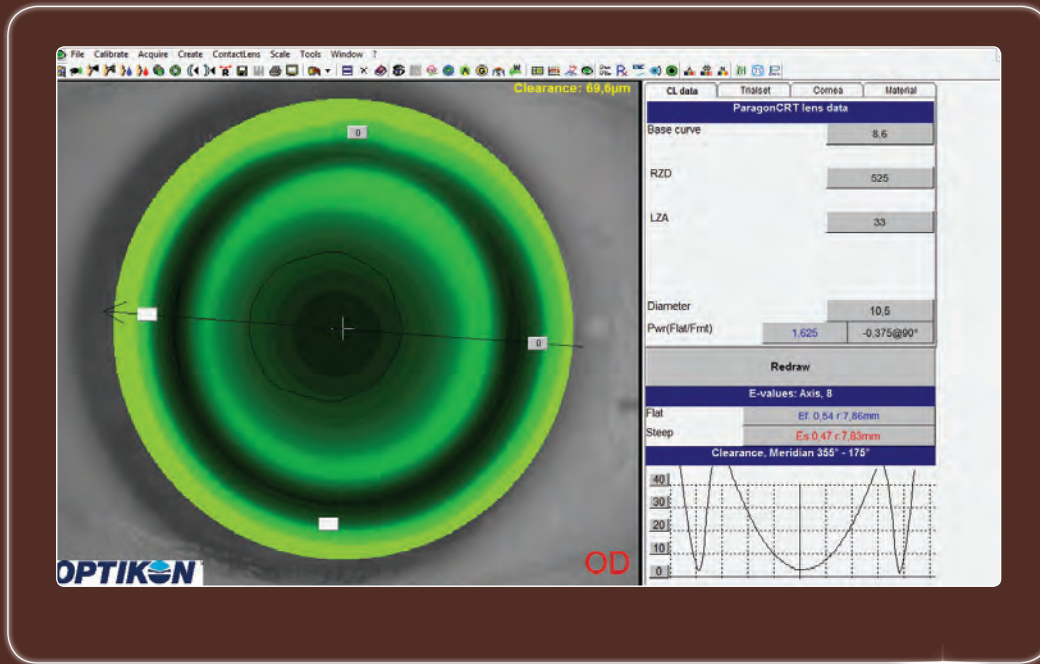


# Cataract

Identifies the pupil area affected by lens opacity, in order to monitor and statistically analyze the type and extent of cataract progression.







# Contact Lenses

Simulates the fit of gas permeable contact lenses for all major international manufacturers.

Includes a software suite for the design of Ortho-K Lenses.

Links with design software: Wave, Dream lite, Menicon, Eikon Calco Lens, Horus, TS, Paragon.

Measures tear film break-up time without fluorescein for dry eye diagnosis for soft and GP lenses.

# Clinical practice

## ■ Cataracts

### ■ Surgical planning

Corneal spherical aberration measurement to select an aspheric IOL.

Corneal astigmatism measurement to select a toric IOL.

Bestfit IOL measures the average K of any pupil area for a more accurate IOL power calculation.

White to white measurement.

Statistical evaluation of ocular media opacity.

### ■ Post surgery

Total refraction and aberrometry.

Internal aberration measurement to evaluate any offset and residual astigmatism.

Evaluation and documentation of secondary cataracts.

## ■ Refraction

Ocular refraction in all pupil conditions.

Far vision and near vision measurement.

Automatic Strehl ratio optimization for the best sphero-cylindrical correction in the presence of high-order aberrations.

Calculation of the resting point in the case of instrumental accommodation in young patients.

## ■ Refractive Surgery

Pre and post surgery aberrometry, topography and refraction.

K angle measurement for the eye-tracker offset.

Ocular and corneal aberrometric data for customised treatment.

Photopic and scotopic pupillometry.

## ■ Cross-Linking

Topographic evaluation of keratoconus with a topographical map:

Curvature and Gaussian.

Early diagnosis of keratoconus by correlation between corneal and internal coma.

CLMI statistical indices.

Follow-up graphs the variation in all the keratoconus and corneal aberrometric indices over time.

# Technical specifications **Keratron™ Onda**

## PARAMETERS SPECIFICATIONS

Model Keratron™ Onda model REF 161401

### TOPOGRAPHICAL PRECISION

Ophthalmometer Data (sim-K) within  $\pm 0.25D$  on a normal cornea  
 BFS (Best Fit Sphere) deviation typically within  $\pm 0.15D$

### ABERROMETRY

Analysis area on the pupil 7x7 mm std (7.3x7.3 mm max)  
 Sensor Microlens Array OPTIKON design  
 Spatial resolution 128 microns ( 2350 points in the maximum pupil)  
 Wavelength SLD 840 nm  
 Wavelength LEDs 750 nm and 590 nm  
 Measurement Range -20D +10D (@VD=14mm) (sphere)  
 $\pm 10D$  (cylinder)  
 Defocus compensation -11D +5D (automatic and manual)  
 Objective measurement of the patient's accommodative response from +1D -4D over the defocus  
 Zernike polynomials 7<sup>th</sup> order

### ENVIRONMENTAL SPECIFICATIONS

Storage temp. range between -10 °C and 60 °C  
 humidity 0-100% (cond. incl.)  
 atm pressure from 500 to 1060 hPa  
 Operation temp. range from 10 °C to +40 °C  
 humidity 30-75% (non-condensing)  
 atm pressure from 700 to 1060 hPa

### ELECTRICAL SPECIFICATIONS

Input voltage from 100 to 240 Volts AC  
 Frequency 50/60 Hz  
 Current consumption 70 VA  
 Fuses 2 x T 1 A (5 x 20 mm)  
 Regulatory compliance Medical Device Directive 93/42/EEC  
 Technical standards EN 60601-1:1998; EN 60601-1-1:2000; EN 60601-1-2:2001+A1:2006; IEC 60825-1:1993+A1:1997+A2:2001; EN 60601-1-4:1997+A1:1999



WEIGHT:  
12 Kg

L x D x H:  
460 x 210 x 440 mm

## AMERICA

Argentina  
Bolivia  
Brazil  
Canada  
Chile  
Colombia  
Costa Rica  
Cuba  
Ecuador  
Mexico  
Paraguay  
USA  
Venezuela

## AFRICA

Algeria  
Egypt  
Morocco  
South Africa  
Sudan  
Tunisia

## EUROPE

Austria  
Belgium  
Denmark  
France  
Germany  
Greece  
Italy  
Netherlands  
Poland  
Portugal

United Kingdom  
Czech Republic  
Russia  
Serbia  
Slovakia  
Spain  
Switzerland  
Turkey

## MIDDLE EAST

Saudi Arabia  
Bahrain  
Jordan  
Iran  
Iraq  
Israel  
Lebanon  
Pakistan  
Syria  
Yemen

## ASIA

Bangladesh  
China  
South Korea  
Philippines  
Japan  
Hong Kong  
India  
Indonesia  
Nepal  
Thailand  
Taiwan  
Vietnam



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Man and Technology

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