



OCULUS
PENTACAM® HR
High Resolution



OCULUS PENTACAM[®] HR

The Oculus Pentacam[®] HR is the first 3D Scheimpflug camera



in the world. **Non-contact-measurement – comfortable and safe.**

Principle of Measurement

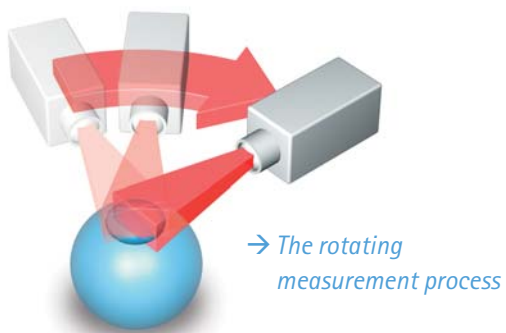
The Pentacam®HR captures Scheimpflug images of the anterior eye segment through a rotating measurement. This rotating measuring process supplies pictures in three dimensions.

The Pentacam®HR is the only instrument which measures and analyses precisely the center of the cornea.

The rotating Scheimpflug principle avoids errors that may arise from an omnidirectional scan, influencing the entire 3D model.

The imaging of the anterior eye segment lasts less than two seconds with up to 138.000 measured and analysed true elevation points. At the same time possible eye movements are automatically captured and corrected.

The Pentacam®HR calculates a 3D model of the anterior eye segment based on the measured elevation data. All further information are deduced from this 3D model.



HR Scheimpflug Images (High Resolution)

The Pentacam®HR with its 1.45 MegaPixel camera provides Scheimpflug images of highest quality. These images allow a good presentation of phakic and pseudo-phakic IOLs. Corneal alterations caused by traumata, implants or refractive treatments can easily be identified.

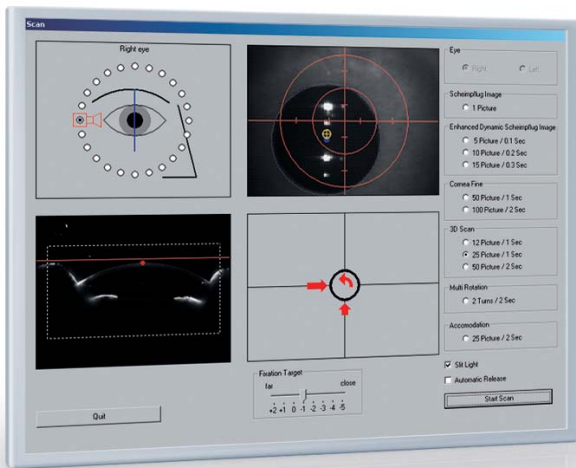
Optional: pIOL-Software

The unique pIOL (phakic IOL) simulation software allows an unprecedented pre-operative planning. The fit of the pIOL in the anterior chamber is simulated, distances of interest are shown and the aging prediction is calculated, too.



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Intuitive alignment – automatic release – 3D model of the



Scheimpflug Image

Basics:

Imaging of the complete anterior eye segment

- Live Scheimpflug image during alignment
- 3D-alignment system
- Auto release for user independence and immediate image capture
- Scheimpflug image capturing
 - conventional, single image from eligible camera positions
 - 3D-scan for anterior segment analyzing
 - Cornea fine scan
 - Multi-rotation mode



Cataract Analyzer

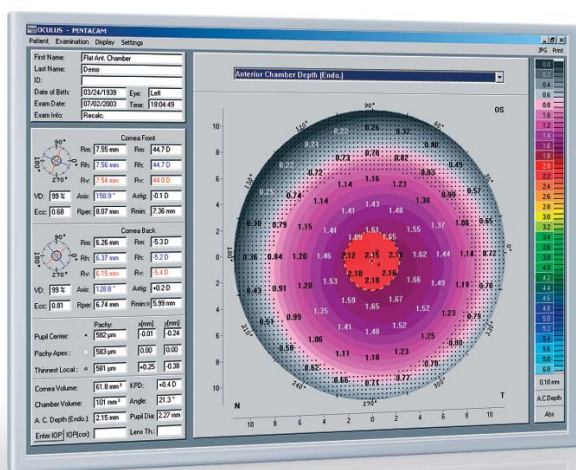
Applications:

- Objective quantification of the lens density
 - In a certain point
 - Along a certain line
 - In a certain area
- Visualisation of the crystalline lens cataract
- Visualisation of PCO (posterior capsular opacification)
- Representation of the Bowman's layer

Details:

The density (light transmittance) of the crystalline lens becomes visible by the illumination with blue light. The superb quality of the Scheimpflug images allows an automatic and objective quantification of the lens density.

anterior eye segment – many indispensable results



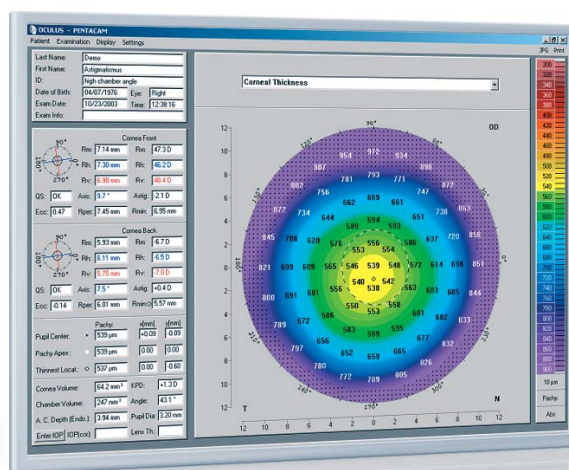
3D Chamber Analyzer

Applications:

- Improved pre-operative planning for implanting phakic lenses as well as post-operative control
- Glaucoma screening

Details:

- Manual measurement function in the Scheimpflug images
- Colored map of the anterior chamber depth
- Tomography tool, virtual model of the anterior segment
- Evaluation of:
 - 360° chamber angle
 - Chamber volume
 - Chamber depth



Pachymetry

Applications:

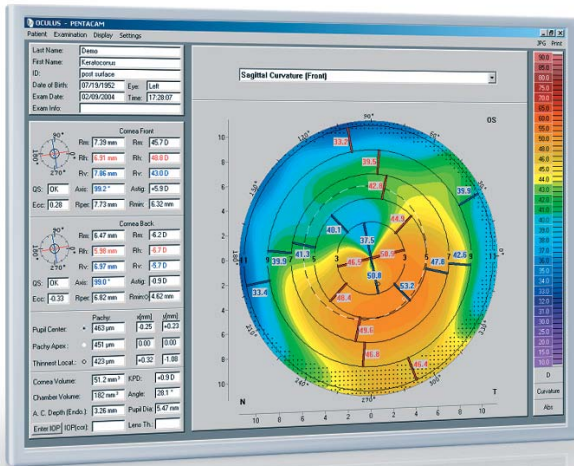
- Pre-operative planning for corneal refractive surgery
- Glaucoma screening
- IOP (Intra Ocular Pressure) modification with regards to corneal thickness
- Keratoconus detection and quantification

Details:

- The corneal thickness is displayed as a color image over its entire area from limbus to limbus. The actual thickness can be evaluated individually by a mouse click at any location or by using the numerical function. The most important points are displayed in values and location, such as:
- Thickness in the pupil center
 - Thickness in the apex
 - Thinnest location
 - Corneal volume

OCULUS PENTACAM® HR

Precise pre-operative planning – comprehensive post-operative



Corneal Topography

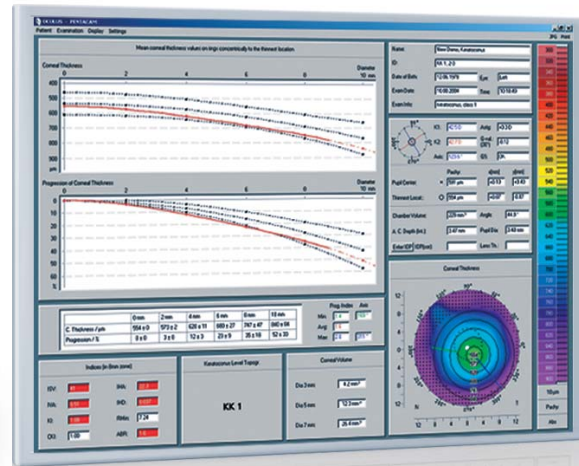
Applications:

- Keratoconus detection
- Pre-operative planning for any corneal refractive surgery
- Progression control after corneal surgery
- Improved IOL-calculation for post LASIK/PRK patients

Details:

Through the rotating measurement the center of the cornea is fine meshed. The topographic analysis of the anterior and posterior corneal surfaces is based on the true elevation measurement, including

- Various topographic maps
- Elevation maps with free selectable reference shapes
- True Net Power map which considers the influence of the posterior corneal refractive power
- Holladay Report, that provides Equivalent Keratometer Readings (EKRs) based on the back to front radii ratio, anterior and posterior refractive power using the correct refractive indices
- Several standard and user selectable 4-maps screens
- Various comparison and difference screens
- Keratoconus detection and quantification
- Corneal wavefront of the anterior and posterior corneal surface using Zernike polynomials



Keratoconus Analysis

Applications:

- Enhanced Keratoconus detection
 - Based on topography data and pachymetry progression
 - Automatic quantification and classification

Details:

The individual pachymetry progression from the thinnest spot to the periphery is analysed. Based on the comparison with normative data a specific index is calculated. The anterior cornea is analysed, too and a keratoconus index is calculated. Additionally the posterior float map shows possible variances of the back of the cornea. The anterior and posterior topography evaluation combined with the pachymetry distribution and progression provides a thorough analysis of the cornea to detect keratoconus.

control – the indispensable tool for any refractive surgery



Optional: pIOL Software (phakic IOL)

Applications:

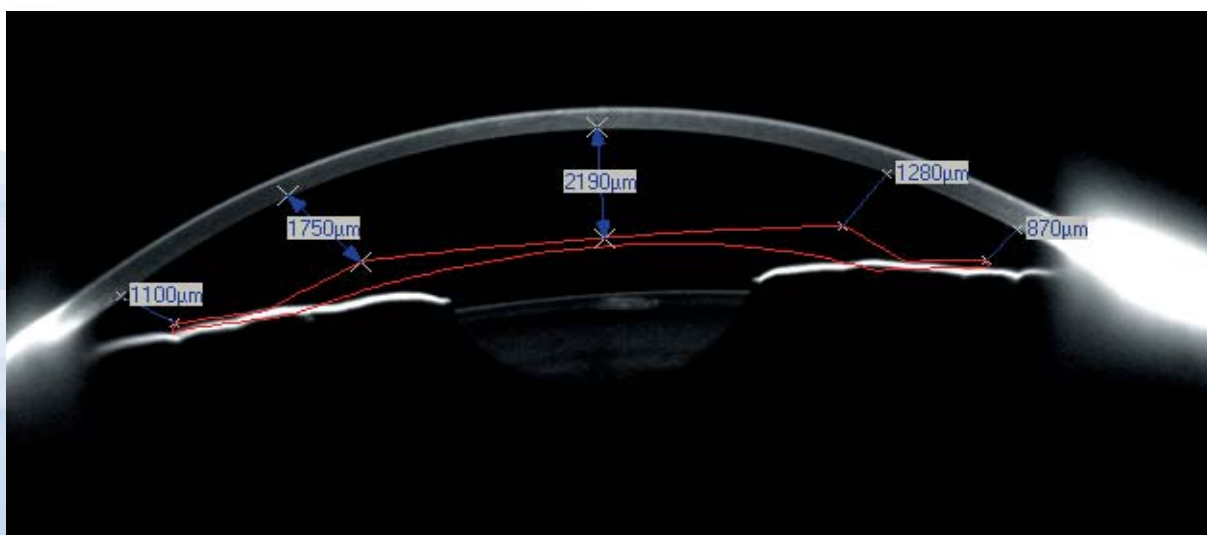
- Pre-operative planning for phakic anterior chamber lens implantation
- Simulation of the post-operative fit
- Pre-operative analysis of the safety distances
- Aging prediction of the pIOL fit years after surgery
- Excluding pre-operative poor candidates

Details:

Based on the patient's refraction a pIOL is calculated and selected from the database. The pIOL fit in the anterior chamber is simulated and from each point of the pIOL the minimum distances to adjacent eye structures are calculated.

Additionally, the pIOL fit can be modified manually. The aging prediction tool simulates the pIOL position in up to 50 years after surgery to predict post-operative safety in long term.

Scheimpflug Image in High Resolution

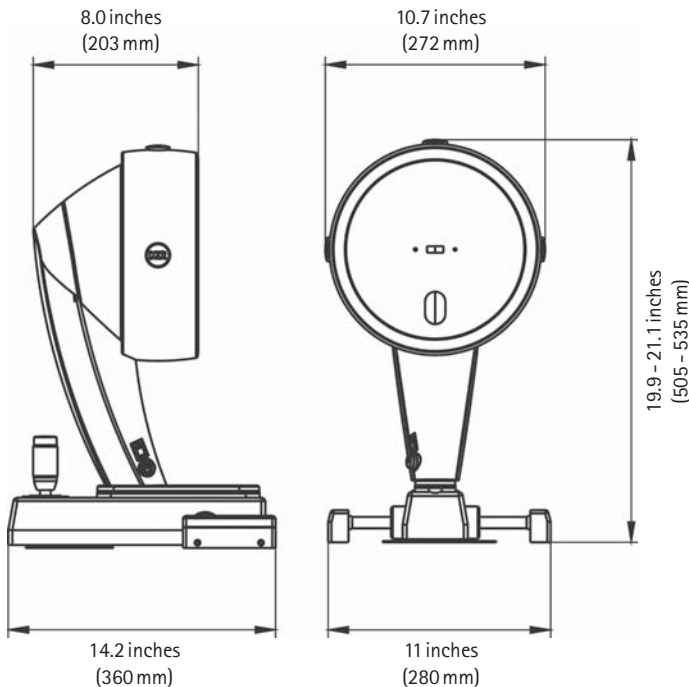


→ Simulation of the phakic IOL in the Scheimpflug image with minimum distances

Technical data – Oculus Pentacam® HR

| | |
|--------------------------------|---|
| Camera | Custom designed digital CCD camera with synchronous pixel sampling |
| Light source | Custom designed blue LED (475 nm, UV free) |
| Processor | Ultra fast DSP with 400 million operations per second |
| Number of scans | 100 in 2 sec or virtually unlimited multirotation mode |
| Resolution | Scheimpflug Camera: 1,392 x 1,040 pixel Pupil Camera: 640 x 480 pixel |
| Measurement range | |
| → Curvature | 3 to 38 mm 9 to 99 dpt |
| → Accuracy | ± 0,1 dpt |
| → Reproducibility | ± 0,1 dpt |
| → Working distance | 80 mm |
| Dimensions max. (HxDxW) | |
| | 21.1 x 14.2 x 11 inches (535 x 280 x 360 mm) |
| Weight | 19.5 pounds (9 kg) |
| PC minimum requirements | Pentium IV, 1,5GHz, Windows XP, 1GB RAM, special graphic card, USB interface, for more details please contact your authorized distributor |

CE0123 According to Medical Device Directive 93/42/EEC, annex IIa



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Oculus is certified by TÜV according to
DIN EN ISO 13485:2003/DIN EN ISO 9001:2000