The new OPD-Scan III is the latest diagnostic/refractive instrument that serves the practice as an autorefractor, keratometer, pupillometer, corneal topographer and wavefront aberrometer.

### OPD-Scan III Specifications

**PHEROS MAPPING**
- Spherical power range: -20.00 to +22.00 D
- Cylindrical power range: 0.00 to ±12.00 D
- Axis range: 0 to 180°
- Measurement area: 2.0 to 9.5 mm (7 zone measurement)
- Data points: 2,520 points (7 x 360)
- Measuring time: <10 seconds
- Measurement method: Automated objective refraction (dynamic skiascopy)
- Mapping methods: OPD, Internal OPD, Wavefront maps, Zernike graph, PSF, MTF graph

**TORIC MAPPING**
- Measurement rings: 33 vertical, 39 horizontal
- Measurement area: 0.5 to 11.0 mm (r = 7.9)
- Dioptric range: 33.75 to 67.5 D
- Axis range: 0 to 359˚
- Data points: More than 11,880
- Mapping methods: Axial, Instantaneous, "Refractive", Elevation, Wavefront maps, Zernike graph, PSF, MTF graph

### General Information
- Working distance: 75 mm
- Auto-tracking: X-Y-Z directions
- Observation area: 14 x 11 mm
- Operating system: Windows embedded standard 2009
- Display: 10.4-inch color LCD touch panel
- Printer: Built-in thermal type line printer for data print
- External color printer (optional) for map print
- Power supply: 100 to 240 Vac, 50 / 60 Hz
- Power consumption: 110 VAC
- Dimensions / Mass: 286 (W) x 525 (D) x 530 (H) mm / 23 kg

### IOL Applications
- APP – Average Pupil Power for Post Myopic LASIK calculations
- Angle Kappa
- Central Aberrations including Cerebral Corona and Spherical Aberration
- Pupilometry – photosic and mesopic pupils
- Corneal Topography
- Placido Rings for detection of any Ocular Surface Disease (OSD)
- Zernike Graph of Total, Corneal and Internal aberrations
- White to White corneal diameter measurements
- Retina Illustration – Displays post-op Toric lens markings, opacities, etc.
- ECCP–Effective Corneal Power for IOL power calculation
- Toric IOL Summary to mark axes pre-op
- Eye image can allow for marking the cornea based on landmarks
- Color Summary displays the pertinent data together
- Point Spread Function graphs and VA simulation charts

### Functional Highlights
- 10 second eye measurement
- Auto-alignment
- Auto-tracking
- Auto-capture
- Electronically adjustable chinrest
- Touch screen keyboard
- Verification after each measurement
- Easily integrates with EPIC and TBS-3000

### Marco Technologies Integrate with Marco Connect Software

**OPD-Scan III: Multi-Modality Functions**
Options to view the data include:
- Axial
- Graduants
- Instantaneous
- Numeric & display
- Numeric power display
- Pupil (Wave-Spread Function)
- Zernike Graph (including Corneal)
- Contact lens summary
- VA-ETDRS simulations
- Internal OPD
- Eye Image
- Comparison maps
- Difference Maps

Unique Features:
- Object orientation
- Visual Acuity Simulation
- Point Spread Function
- Wavefront
- Eye Image With Pupils
- Internal OPD Map
- OPD Map
- Axial Map

Available Data Displays Include:
- Axis Map
- OPD Map
- Eye Image With Pupils
- Zernike Graph
- Front Spread Function
- Visual Acuity Simulation
- Retro Illumination
- HOA [um]: @6.00mm/ Order = 8
- WF@4.00:
  Sph
  Cyl
  Axis
  RMS
- WF@6.00:
  Sph
  Cyl
  Axis
  RMS
- DKN
- Cornea:
  0.721
  0.804
  0.460
- Total:
  0.496
  0.804
  0.460
- Internal:
  0.496
  0.804
  0.460

The above map is a measurement of a prior myopic LASIK patient with Dysfunctional Lens Syndrome (DLS). The Point Spread Function (PSF) maps show that the cornea is contributing to the problem but the majority of the patient’s issue is lenticular change. The patient thought she needed another LASIK treatment, when in actuality, the lens changed. A refractive lens exchange is recommended.

Captured in 10 seconds:
- Corneal SA for Applanatic IOL Selection
- Lenticular - Diffractive Aberrations
- Evaluation - Mesopic/Photopic
- Pre/Post Tools IOL Measurements
- Pathologies (Macular Degeneration, Periocular)
- Monophasic (Monocular Pupil Size)
- Retro Illumination Image
- Zernike Graphs: Total, Corneal, Internal
- Internal Refractive Power Map
- IOL Tit Eye Image or Decentration

XERAFraction Process:
- A perfect example of a foundational refractive solution that combines integrated technologies with new algorithms, to gain greater insight into each patient’s complete optical pathway. XERAFraction integrates the OPD Scan III with the TRS-5100/EPIC Refraction System to output Wavefront Optimized Refraction providing:
- Significantly shorter exam times
- Patient verification of old vs. new Rx – instantly
- Educational tools that graphically display all diagnoses
- Fewer remakes in their lens Rx
- More time with you in face-to-face consults
- Solutions to day/night vision frustrations
- Time to spend in optical selection and fittings
- Power recommendations in just a few ms
- Optimal fit of base Rx
- Patient education in just a few ms
- ‘Before’ and ‘after correction’ chart to understand why they are not able to achieve 20/20. Welcome to the next generation of refractive eye care.

The options to view the data include:
- Axial
- Graduants
- Instantaneous
- Numeric & display
- Numeric power display
- Pupil (Wave-Spread Function)
- Zernike Graph (including Corneal)
- Contact lens summary
- VA-ETDRS simulations
- Internal OPD
- Eye Image
- Comparison maps
- Difference Maps

Available Data Displays Include:
- Axis Map
- OPD Map
- Eye Image With Pupils
- Zernike Graph
- Front Spread Function
- Visual Acuity Simulation
- Retro Illumination
- HOA [um]: @6.00mm/ Order = 8
- WF@4.00:
  Sph
  Cyl
  Axis
  RMS
- WF@6.00:
  Sph
  Cyl
  Axis
  RMS
- DKN
- Cornea:
  0.721
  0.804
  0.460
- Total:
  0.496
  0.804
  0.460
- Internal:
  0.496
  0.804
  0.460

The above map is a measurement of a prior myopic LASIK patient with Dysfunctional Lens Syndrome (DLS). The Point Spread Function (PSF) maps show that the cornea is contributing to the problem but the majority of the patient’s issue is lenticular change. The patient thought she needed another LASIK treatment, when in actuality, the lens changed. A refractive lens exchange is recommended.

Captured in 10 seconds:
- Corneal SA for Applanatic IOL Selection
- Lenticular - Diffractive Aberrations
- Evaluation - Mesopic/Photopic
- Pre/Post Tools IOL Measurements
- Pathologies (Macular Degeneration, Periocular)
- Monophasic (Monocular Pupil Size)
- Retro Illumination Image
- Zernike Graphs: Total, Corneal, Internal
- Internal Refractive Power Map
- IOL Tit Eye Image or Decentration

XERAFraction Process:
- A perfect example of a foundational refractive solution that combines integrated technologies with new algorithms, to gain greater insight into each patient’s complete optical pathway. XERAFraction integrates the OPD Scan III with the TRS-5100/EPIC Refraction System to output Wavefront Optimized Refraction providing:
- Significantly shorter exam times
- Patient verification of old vs. new Rx – instantly
- Educational tools that graphically display all diagnoses
- More time with you in face-to-face consults
- Solutions to day/night vision frustrations
- A completely enhanced, high-tech patient experience
Optical coherence tomography (OCT) is a non-invasive imaging technique that can provide detailed cross-sectional images of the retina and other ocular tissues. OCT has revolutionized the diagnosis and management of various eye diseases, offering more accurate and sensitive imaging than traditional imaging modalities like fundus photography and fluorescein angiography.

**Why Use OCT?**

1. **Early Detection**: OCT can detect changes in the retina before they become clinically significant, allowing for early intervention and management.
2. **High Resolution**: OCT provides high-resolution images that can detect even small changes in the retinal layers.
3. **Non-Invasive**: OCT is a non-invasive test that does not involve any discomfort or risks.
4. **Versatility**: OCT can be used to monitor the progression of various retinal diseases and to evaluate the response to treatment.

**How Does OCT Work?**

OCT uses low-coherence light to create images of the retina. The light is directed through a fiber and reflects off the retina layers. The reflected light is then analyzed to create a detailed image. The OCT machine can measure the thickness of the retinal layers, detect retinal detachments, and visualize the retina in cross-section.

**Types of OCT Scans**

- **Enface OCT**: Provides a cross-sectional view of the retina, similar to a CT scan.
- **Optical coherence tomography angiography (OCTA)**: Utilizes OCT to create detailed images of the retinal vasculature.
- **Mirascan OCT**: A high-speed OCT system that provides high-contrast images of the retinal layers.

**OCT in Practice**

OCT is widely used in clinical settings to evaluate and monitor patients with various retinal diseases, including macular degeneration, diabetic retinopathy, and retinal tears. It is also used in follow-up visits to assess the effectiveness of treatment and to detect any changes in the retinal layers.

In conclusion, OCT is a valuable tool in ophthalmology that allows for precise and non-invasive monitoring of the retina. Its ability to detect early changes in the retina makes it an essential tool in the management of retinal diseases and in patient care.
Options to view the data include:

- Axial
- Graduated
- Instantaneous
- Numeric & display
- Numeric power display
- PDF (Proc. Spread Function)
- Zernike Graph [including Cornea]
- Contrast loss summary
- VA-ETDRS simulations
- Internal: OPD
- Eye Image
- Comparison maps
- Difference Maps
- PSF (Point Spread Function)
- Zernike Graph
- Wavefront
- Eye Image With Pupils
- Retina simulation
- Internal OPD Map
- OPD Map
- Axial Map
- Internal: OPD-Scan III
- Corneal Refractive Power Map
- Lenticular – Residual Astigmatism
- Corneal SA for Aspheric IOL Selection
- Pre/Post Toric IOL Measurements
- Angle Kappa
- Retro Illumination Image
- Mesopic/Photopic Pupil Size
- Axis Kappa
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 0.00
- AO: 0.00 Deg, M: 00
The new OPD-Scan III is the latest diagnostic/refractive instrument that serves the practice as an autorefractor, keratometer, pupillometer, corneal topographer and wavefront aberrometer.

### PEAKS MAPPING
- **Spherical power range**: -20.00 to +22.00 D
- **Cylindrical power range**: 0.00 to ±12.00 D
- **Axis range**: 0 to 180°

### Measurement area
- **2.0 to 9.5 mm (7 zone measurement)**
- **Data points**: 2,520 points (7 x 360)
- **Measuring time**: <10 seconds
- **Measurement method**: Automated objective refraction (dynamic skiascopy)
- **Mapping methods**: OPD, Internal OPD, Wavefront maps, Zernike graph, PSF, MTF graph

### FUNCTIONAL HIGHLIGHTS
- **10 second eye measurement**
- **Auto-alignment**
- **Auto-tracking**
- **Auto-capture**
- **Electronically adjustable chinrest**
- **Touch screen keyboard**
- **Notifications after each measurement**
- **Easily integrates with EPIC and TRS-5100**

### IOL APPLICATIONS
- **APP – Average Pupil Power for Post Myopic LASIK calculations**
- **Angle-Kappa**
- **Coneal Aberrometry including Cerealal Cera and Spherical Aberration**
- **Pupilometry – photopic and mesopic pupillae**
- **Corneal Topography**
- **Placido Rings for detection of any Ocular Surface Disease (OSD)**
- **Zernike Graph of Total, Corneal and Internal Aperations**
- **White to White corneal diameter measurements**
- **Ocular Illumination – Display post-op Toric lens markings, opacities, etc.**
- **ECDP – Effective Central Corneal Power for IOL power calculation**
- **Toric IOL Summary to mark axis pre-op**
- **Eye image can allow for marking the cornea based on landmarks**
- **Cataract Summary displays the pertinent data together**
- **Point Spread Function graphs and VA simulation charts**

### OPD-Scan III Specifications

#### ABERROMETRY
- **Max 9.5 mm**
- **2,520 Data Points**
- **7 Zone Measurement**

#### TOPOGRAPHY
- **Blue Light Placido Based**
- **Rings 33 Vertical, 39 Horizontal**
- **11,880 Data Points**

#### GENERAL INFORMATION
- **Working distance**: 75 mm
- **Auto-tracking**: ±1° electronically
- **Observation area**: 14 x 11 mm
- **Display**: 10.4-inch color LCD touch panel
- **Printer**: Built-in thermal type line printer for data print (external color printer optional for map print)
- **Power supply**: 100-240 Vac
- **Power consumption**: 150 WAC
- **Dimensions / Mass**: 286 (W) x 525 (D) x 530 (H) mm / 23 kg

### Marco Technologies Integrate with Marco Connect software
The new OPD-Scan III is the latest diagnostic/refractive instrument that serves the practice as an autorefractor, keratometer, pupillometer, corneal topographer and wavefront aberrometer.

**ABERROMETRY**

- Blue Light Placido Based Rings 33 Vertical, 39 Horizontal
- Measurement: 9.5 mm
- Data Points: 2,520
- Measurement Method: Automated objective refraction (dynamic skiascopy)

**TOPOGRAPHY**

- Measurement Area: 2.0 to 9.5 mm (7 zone measurement)
- Data Points: 2,520 points (7 x 360)
- Measuring Time: <10 seconds
- Mapping Methods: OPD, Internal OPD, Wavefront maps, Zernike graph, PSF, MTF graph

**IOL APPLICATIONS**

- APP – Average Pupil Power for Post Myopic LASIK calculations
- Angle Kappa
- Central Aberrations including Cerebral Goma and Spherical Aberration
- Pupilometry – photopic and mesopic pupils
- Corneal Topography
- Placido Rings for detection of any Ocular Surface Disease (OSD)

**FUNCTIONAL HIGHLIGHTS**

- 10 second eye measurement
- Auto alignment
- Auto tracking
- Auto-capture
- Electronically adjustable chinrest
- Touch screen keyboard
- Verifications after each measurement
- Easily Integrates with EPIC and TBS-5000

**GENERAL INFORMATION**

- Working distance: 75 mm
- Auto tracking: X-Y-Z
- Observation area: 14 x 11 mm
- Display: 10.4-inch color LCD touch panel
- Printer: Built-in thermal type line printer for data print
- External color printer (optional) for map print
- Power supply: 100 to 240 Vac
- Dimensions / Mass: 286 (W) x 525 (D) x 530 (H) mm / 23 kg

**PEAKS MAPPING**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spherical power range</td>
<td>-20.00 to +22.00 D</td>
</tr>
<tr>
<td>Cylindrical power range</td>
<td>-20.00 to +22.00 D</td>
</tr>
<tr>
<td>Axis</td>
<td>0 to 180°</td>
</tr>
<tr>
<td>Measurement area</td>
<td>5.00 mm (by one zone measurement)</td>
</tr>
<tr>
<td>Image points</td>
<td>4.00 points (± 30°)</td>
</tr>
<tr>
<td>Measurement data</td>
<td>Wavefront maps, Zernike graph, PSF, MTF graph</td>
</tr>
<tr>
<td>Measurement method</td>
<td>Automated objective refraction (dynamic skiascopy)</td>
</tr>
<tr>
<td>Mapping methods</td>
<td>OPD, Internal OPD, Wavefront maps, Zernike graph, PSF, MTF graph</td>
</tr>
</tbody>
</table>

**TOPOGRAPHY**

- Measurement rings: 33 vertical, 39 horizontal
- Measurement area: 0.5 to 11.0 mm (r = 7.9)
- Dioptric range: 33.75 to 67.5 D
- Axis range: 0 to 359˚
- Data Points: More than 11,880

**IOL APPLICATIONS**

- Average Pupil Power for Post Myopic LASIK calculations
- Angle Kappa
- Central Aberrations including Cerebral Goma and Spherical Aberration
- Pupilometry – photopic and mesopic pupils
- Corneal Topography
- Placido Rings for detection of any Ocular Surface Disease (OSD)
- Zernike Graph of Total, Corneal and Internal aberrations
- White to White corneal diameter measurements
- Retro Illustarion – Displays post-op Toric lens markings, opacities, etc.
- ECCP – Effective Central Corneal Power for IOL power calculation
- Toric IOL Summary to mark axis pre-op
- Eye Image can allow for marking the cornea based on landmarks
- Cataract Summary displays the pertinent data together
- Point Spread Function graphs and VA simulation charts