Better toric outcomes

Lenstar’s unique dual zone keratometry features a 32 marker points measurement pattern on two concentric rings of 1.65 and 2.3 mm diameter. This assay provides the user with precise determination of the axis and adaptation of the patient, equivalent to the ‘Gold Standard’ manual Keratometry recommended by leading IOL manufacturers for the calculation of their IOLs.

Connectivity is key with EyeSuite

With EyeSuite software, Lenstar is fully networkable, facilitating real-time access to all data everywhere in your practice. Check your biometry results or recalculate an IOL in your office or even in the OR. The EyeSuite’s sophisticated data interface allows easy connection to almost any electronic medical record system either using the EyeSuite* Script Language or through standardized interfaces like GST or DICOM.

Experience counts

‘I have used the Lenstar for IOL power calculation on hundreds of cases. Axial length measurements and K readings are extremely precise. The Lenstar also measures the anterior chamber depth by optical biometry for high accuracy. It is the only optical biometer that also measures the lens thickness, a required measurement for using the more accurate fourth generation IOL power formulas.’
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‘The Lenstar is a remarkably easy to use all-in-one IOL power calculation tool that delivers exceptionally accurate axial length, anterior chamber depth and lens thickness by optical biometry. Its dual zone autokeratometry feature is at the same time precise and uniformly consistent. The Lenstar is an excellent choice for surgeons migrating towards torics and other premium channel IOLs where highly accurate outcomes are critical for success.’
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The precision of these measurements are critical

‘The use of advanced technology intraocular lenses (IOLs) and advanced Phacoemulsification technology in today’s modern cataract procedures demands the best technology available in measuring the eye to optimize our patients’ results. With one scan lasting less than 30 seconds data on 7 independent measurements are obtained. Accurate, and reproducible measurements are obtained including axial length, keratometry, anterior chamber depth, and lens thickness. The precision of these measurements are critical in predicting the most accurate IOL power and is why Lenstar is my biometric instrument of choice.’
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Fame: E. U.S.: FCS – Aliso Viejo, USA
SF: SF in a paid consultant to Haag-Streit

Advance to the future.

Lenstar improves outcomes

LENSTAR LS 900®
*Trademarks are property of their respective owners.

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Mason, OH 45040
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Fax: 513-458-8245
www.myLENSTAR.com
www.haag-streit-usa.com

Biometry

Tradition and Innovation
Defining the future in optical biometry

Complete optical coherence biometry –
Featuring lens thickness, a key parameter for improved IOL calculation using the Holladay 2 or the Olsen formula

Efficient and simple workflow –
Intuitive user guidance allows for an easy-to-delegate and reliable measurement procedure

More data, more accurate outcomes –
Dual zone keratometry, equivalent to the ‘Gold Standard’ manual keratometry for toric IOL planning

LENSTAR LS 900® technical specifications

For important safety information please see back page.

LENSTAR LS 900® Optical Biometer Indications for Use

The LENSTAR LS 900 Biometer is a non-invasive, non-contact OLCR (Optical Low Coherence Reflectometry) Biometer used for obtaining ocular measurements and performing calculations to assist in the determination of the appropriate power and type of IOL (intraocular lens) for implantation after removal of the natural crystalline lens following cataract removal. The LENSTAR LS 900 Biometer measures:

- Axial eye length
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- Radii of curvature of flat and steep meridian
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Electronic medical record system interfaces

- DICOM
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Measured variables & modes

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Laser safety

Class 1 laser product
Biometry of the entire eye in one scan

Precise measurement of the entire eye, from the cornea to the retina, is key to achieving the best IOL prediction accuracy in surgery. The Lenstar is the first optical coherence biometer to provide the surgeon with all measurements necessary to take full advantage of the latest IOL prediction methods such as the Holladay 2 and the Olsen formulae and is ready to meet your needs for future multi-variable formulae.

Lenstar measurements include central corneal thickness, anterior chamber depth, lens thickness, axial length, keratometry, white-to-white distance and pupil diameter.

Fast and precise for better refractive outcomes

The measurement process of the Lenstar is fast and optimized to ensure maximum patient comfort – users report 5 scans on both eyes in 3 minutes or less. Patient blinking and loss of fixation is detected and only good measurements are used for the analysis. All measurements can be validated for efficacy and adjusted if necessary providing confidence that the biometry is correct.

Dual zone keratometry – best toric results

Lenstar’s unique dual zone keratometry provides the user with measurement of the axis and astigmatism equivalent to the ‘Gold Standard’ manual keratometry recommended, by the manufacturer, for the toric IOL.

The closely spaced 32 measurement point pattern improves precision providing more data and minimizes the need for software data interpolation.

The greatest distance that any meridian can be located from a measurement point is approximately 11°. This renders the keratometry for the Lenstar quite accurate for both the determination of the steep and the flat meridians and also the difference in power between them.
Complete optical biometry

The all in one optical biometer

Optical coherence biometry has revolutionized cataract surgery. Featuring OLCR-technology, Lenstar is redefining optical coherence biometry.

State-of-the-art, multivariable IOL calculation formulae like Holladay 2 and Olsen demand more than just the axial length and keratometry measurements to calculate IOL power; Lenstar provides all key biometry parameters at once.

In a single measurement scan Lenstar captures axial dimensions of all segments of the eye using optical low coherence reflectometry (OLCR). In parallel Lenstar measures corneal curvature, white-to-white and more.

Central Corneal Thickness (CCT)

Like every other axial measurement with the Lenstar, optical coherence biometry is used to measure CCT with stunning reproducibility of ±2 μm. CCT is a key parameter in glaucoma diagnosis and for laser refractive surgery and to differentiate prior myopic or hyperopic LASIK procedures, when there is no patient history.

Keratometry

Lenstar’s unique dual zone keratometry, featuring 32 marker points, provides more precise spherical equivalent, magnitude of astigmatism and axis position, making it the biometer of choice for toric IOLs.

White-to-White (WTW)

Based on high resolution color photography of the eye, every white-to-white measurement can be reviewed and if necessary adjusted by the user – providing full confidence in this parameter for use with anterior chamber and sulcus fixated phakic IOLs as well as for advanced IOL calculation formulae.

Pupillometry

Measurement of the pupil diameter in ambient light conditions can be used as an indicator for the patient’s suitability for apodized premium IOLs as well as for laser refractive procedures.

Lens thickness (LT)

Accurate measurement of lens thickness is key to achieving the best IOL prediction accuracy when using the latest IOL calculation formulae like Holladay 2 or Olsen. Measuring lens thickness with Lenstar significantly improves the IOL prediction accuracy of Holladay 2 and leads to a different IOL power selection in 30% of the cases.

Anterior chamber depth (ACD)

Like all axial dimensions captured by the Lenstar, ACD is measured by optical coherence biometry, providing more precision and reproducibility. This allows ACD to be measured on phakic as well as on pseudophakic eyes. Additionally, Lenstar is also able to display the anatomical anterior chamber depth (endothelium to anterior lens surface).

Axial length (AL)

OLCR technology using a superluminescent diode as the laser source allows the measurement of the axial length of the patient’s eye, precisely on the patient’s visual axis, in the presence of dense media.

All ‘measuring gate’ positions on the A-scan can be reviewed and moved by the user if necessary. The Lenstar A-scan appears very similar to an immersion ultrasound scan, for easy user interpretation.

Special eye conditions

All of the described measurements are available for the measurement of the normal eye, as well as for aphakic, pseudophakic and silicone oil filled eyes. In case of an error, you may even change the selected eye condition after completion of the measurement procedure.

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Open interface for optimum workflow and best outcomes

Intuitive, efficient and transparent

The EyeSuite* software is designed for optimum patient flow in busy practices. Paired with Lenstar’s ‘one scan – get all’ measurements technology, biometry acquisition is fast and easy and users report 5 scans on both eyes in 3 minutes or less.

Sophisticated capture and analysis algorithms as well as the possibility of the user to review the raw data of every parameter in detail to ensure correct measurement results with full transparency and confidence that the biometry is accurate and precise.

Optimum IOL prediction – normal and post-refractive eyes

The Lenstar EyeSuite* software provides the user with a comprehensive set of state-of-the-art IOL calculation formulae for normal eyes. IOL Power calculation in patients with prior LASIK or PRK, presenting with no history, are easily calculated with the onboard Shammas No-History method. If the change in refraction is known, then the Masket and modified Masket formulae may be used as well.

The EyeSuite* software's open data interface, combined with Lenstar's separate computer allows auto-population of the data fields in the latest 4th generation calculation formulae such as Holladay 2, the Holladay toric calculator (Holladay IOL Consultant) and Olsen (PhacoOptics). This saves valuable staff time and eliminates the risk of transcription errors.

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Better toric outcomes

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LENSTAR LS 900® technical specifications

Complete optical coherence biometry –
Featuring lens thickness; a key parameter for improved IOL calculation using the Holladay 2 or the Olsen formula

Efficient and simple workflow –
Intuitive user guidance allows for an easy to delegate and reliable measurement procedure

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- White to white distance
- Pupil diameter

Onboard IOL calculation formulae

Higgs, Heffel, Holladay 1, SRK-T, SRK XII, Maseleno, Holladay 2, Shammas No history

IOL calculation data interfaces

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- Okulix (Ray-Tracing by Prof. Preussner) 19)

Electronic medical record system interfaces

- DICOM 7.0
- SST
- Syedale: Spain language
- Syedale command line interface

The above mentioned measurement ranges are based on the standard settings of the device for automatic measurement analysis.

Measured variables & modes

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Measurement modes

- Normal eye
- Aphakic eye
- Pseudo phakic eye
- Silicone filled eye
- All combination of above

Laser safety

Class 1 laser product

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Electronic medical record system interfaces

- DICOM 3.0
- CDE
- EHR
- EDI
- Electronic order entry

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In-vivo repeatability:

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- (1.σ) ±40 μm (ACD)
- (1.σ) ±80 μm (LT)
- (1.σ) ±35 μm (AL)

Keratometry

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- (1.σ) ±30 μm (Radius)
- (1.σ) ±11° (Axis)

White-to-white distance

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</tr>
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<tbody>
<tr>
<td></td>
<td>7 – 16 mm</td>
<td>0.01 mm</td>
<td></td>
</tr>
</tbody>
</table>

- (1.σ) ±0.04 mm

Pupillometry

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Measurement Range</th>
<th>Display Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 – 13 mm</td>
<td>0.01 mm</td>
</tr>
</tbody>
</table>

- (1.σ) ±0.5 mm

Laser safety

Class 1 laser product

References:

2. Olsen T. Improving IOL power Calculation by measurement of the lens thickness with the Lenstar LS 900 presented at the ESCRS in Paris 2010.

For important safety information please see back page.

LENSTAR LS 900® Biometer Indications for Use

The LENSTAR LS 900 Biometer is a non-invasive, non-contact OLCR (Optical Low Coherence Reflectometry) Biometer used for obtaining ocular measurements and performing calculations to assist in the determination of the appropriate power and type of IOL (intraocular lens) for implantation after removal of the natural crystalline lens following cataract removal. The LENSTAR LS 900 Biometer measures:

- Axial eye length
- Corneal thickness
- Anterior chamber depth
- Lens thickness
- Radii of curvature of flat and steep meridian
- Axis of the flat meridian
- White to white distance
- Pupil diameter

- Haigis, HofferQ, Holladay 1, SRK/T, SRK II, Masket, Modified Masket, Shammas No-History

IOL calculation data interfaces

- Holliday IOL Consultant Professional Edition (Holladay 2 formula and Holladay toric calculator) ¹¹
- PhacoOptics (Olsen formula) ¹²
- Okulix (Ray-Tracing by Prof. Preussner) ¹³

Electronic medical record system interfaces

- DICOM 3.0
- CDE
- EHR
- EDI
- Electronic order entry

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Better toric outcomes
Lenstar’s unique dual zone keratometry features a 32 marker points measurement pattern on two concentric rings of 1.65 and 2.3 mm diameter. This assay provides the user with precise information of the axis and adaptation of the patient, equivalent to the ‘Gold Standard’ manual Keratometry® recommended by leading IOL manufacturers for the calculation of their toric IOLs.

Connectivity is key with EyeSuite
With EyeSuite software, Lenstar is fully networkable, facilitating full real time access to all data everywhere in your practice. Check your biometry results or recalculate an IOL in your office or even in the OR.

The EyeSuite® software’s sophisticated data interface allows easy connection to almost any electronic medical record system either using the EyeSuite® Script Language or through standardized interfaces like GDT or DICOM.

Experience counts
‘I have used the Lenstar for IOL power calculation on hundreds of cases. Axial length measurements and K readings are extremely precise. The Lenstar also measures the anterior chamber depth by optical biometry for high accuracy. It is the only optical biometer that also measures the lens thickness, a required measurement for using the more accurate fourth generation IOL power formulas.’
H. John Shammas, MD, Clinical Professor of Ophthalmology – University of Southern California at Los Angeles, USA

Excellent choice for premium IOLs
‘The Lenstar is a remarkably easy to use all-in-one IOL power calculation tool that delivers exceptionally accurate axial length, anterior chamber depth and lens thickness by optical biometry. Its dual zone autokeratometry feature is at the same time precise and uniformly consistent. The Lenstar is an excellent choice for surgeons migrating towards torics and other premium channel IOLs where highly accurate outcomes are critical for success.’
Warren E. Hill, MD, FACS – Mesa, Arizona, USA

*Dr. Hill is a paid consultant for Haag-Streit

The precision of these measurements are critical
‘The use of advanced technology Intraocular lenses (IOLs) and advanced Phacoemulsification technology in today’s modern surgical procedures demands the best technology available in measuring the eye to optimize our patients’ results. With one scan lasting less than 30 seconds data on 7 independent measurements are obtained. Accurate, and reproducible measurements are obtained including axial length, keratometry, anterior chamber depth, and lens thickness. The precision of these measurements are critical in predicting the most accurate IOL power and is why Lenstar is my biometric instrument of choice.’
Stephen Lane MD, FACS, Adjunct Clinical Professor, University of Minnesota Medical Director, Associated Eye Care

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