



## The new IOLMaster 500 from ZEISS

Defining biometry

**NEW**  
Markerless  
Toric IOL  
Alignment



We make it visible.

The moment you trust the experience  
of 100 million IOL power calculations.  
**This is the moment we work for.**

//IOLMASTER 500  
MADE BY ZEISS

## Gold standard biometry with the new ZEISS IOLMaster 500

The IOLMaster® from ZEISS revolutionized the field of IOL power calculations. For over a decade, we have partnered with surgeons like you to continue improving the gold standard in biometry. With the new version of the ZEISS IOLMaster 500, we are continuing the success story – the numbers speak for themselves:

**More than 3 out of 4 surgeons**

worldwide working with optical biometers trust the IOLMaster devices for their IOL power calculation.<sup>1</sup>

**More than 200 IOL models**

can be found in the User Group for Laser Interference Biometry (ULIB) with optimized A-constants for the IOLMaster.<sup>2</sup>

**More than 40,000 surgeries**

contributed to enhancing IOL power calculation with the IOLMaster by providing optimized A-constants in the ULIB.<sup>2</sup>

**More than 100 million power calculations**

have already been successfully performed with the ZEISS IOLMaster.

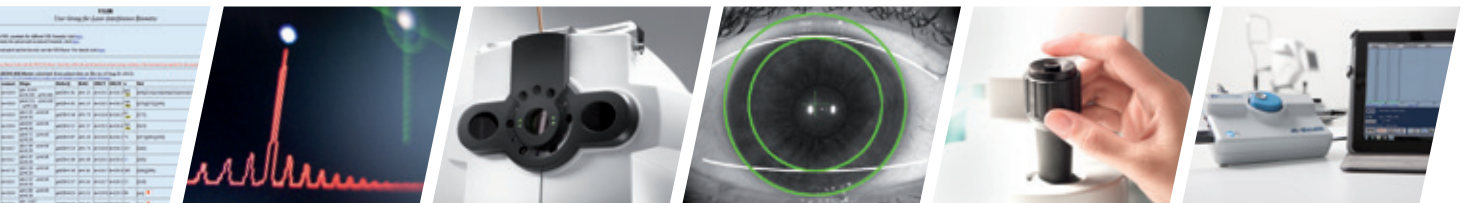


1) Leaming DV, 2010 Practice Styles and Preferences of U.S. ASCRS Members Survey  
2) Haigis W, <http://www.augenklinik.uni-wuerzburg.de/ulib/>

# Working with gold standard biometry

## The ZEISS IOLMaster 500 highlights

When you work with the new version of the ZEISS IOLMaster 500 you not only directly experience the result of continuous refinement; you also get a piece of cutting-edge technology that points the way to the future of optical biometry.



### Improving refractive outcomes

Exclusive formula integration, more than 200 optimized lens constants and unique telecentric keratometry for refractive outcomes you can trust.<sup>3</sup>

### Advanced measurement of challenging eyes

Up to 20 % higher measurement success ratio for dense cataracts.<sup>4</sup> Measurement along the visual axis, even with staphyloma, pseudophakic and silicone-filled eyes.

### Proven toric outcomes

Toric outcomes proven by large number of peer-reviewed, published scientific papers.<sup>5</sup>

### Markerless toric IOL alignment

New reference image capabilities, as the starting point of a game-changing, streamlined markerless toric workflow.

### Ease of use

Well-designed user interface, plausibility checks, distance-independent measurements and speedy readings for one-of-a-kind usability and reduced chairtime.<sup>6</sup>

### Superb connectivity: Ties in the A-scan ultrasound

Universal ultrasound interface to connect the dedicated ultrasound A-scan device for a better workflow and improved quality.

3) Aristodemou P, Knox Cartwright NE, Sparrow JM, Johnston RL, Intraocular lens formula constant optimization and partial coherence interferometry biometry: Refractive outcomes in 8108 eyes after cataract surgery, *J Cataract Refract Surg.* 2011 Jan;37(1):50-62

4) Rivero L, IOLMaster Version 5 vs. Lenstar LS900, presented at 2010 AAO – MEACO Joint Meeting in Chicago, Illinois.

5) Bullimore MA, The IOLMaster and determining toric IOL Power, White Paper, Carl Zeiss Meditec, 2013

6) Chen YA, Hirschall N, Findl O, Evaluation of 2 new optical biometry devices and comparison with the current gold standard biometer, *J Cataract Refract Surg.* 2011 Mar;37(3):513-517







## Improving refractive outcomes

### Holladay 2 integrated

The ZEISS IOLMaster 500 exclusively has the recognized Holladay 2 formula on board. You can continuously minimize your prediction error for IOL power calculation. Just enter the postoperative refraction of your patients – all other data is automatically fed into the Holladay 2 software calculation.

### Over 40,000 cataract surgeries evaluated for better refractive results

The extensive clinical experience of the ZEISS IOLMaster 500 is reflected by the User Group for Laser Interference Biometry (ULIB) website. The ULIB database contains more than 200 lens constants continuously optimized with over 40,000 sets of patient data created with the ZEISS IOLMaster – absolutely unique in the industry.<sup>2</sup>

### Telecentric keratometry

The new ZEISS IOLMaster 500 is the only optical biometer to feature distance-independent telecentric keratometry. It enables robust and repeatable measurements due to constant spot center distances. Thus the ZEISS IOLMaster 500 shows excellent agreement with manual keratometry while achieving superior precision performance, making its keratometry the most trusted among cataract surgeons.<sup>7</sup>

*“The IOLMaster has significantly changed the way biometry is performed and continues to do so.”*

Prof. Kenneth J. Hoffer, M.D.  
Santa Monica, USA

2) Haigis W, <http://www.augenklinik.uni-wuerzburg.de/ulib/>

7) Bullimore MA, Buehren T, Bissmann W, Agreement between a partial coherence interferometer and 2 manual keratometers, J Cataract Refract Surg. 2013 in press

# Advanced measurement of challenging eyes

## Dense cataracts

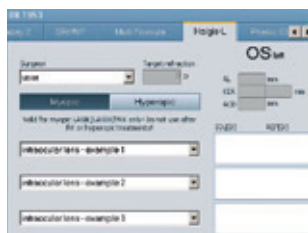
In denser cataracts the ZEISS IOLMaster 500 achieves a measurement success ratio that is up to 20 % higher than that of other optical biometry devices.<sup>4</sup> The underlying composite signal evaluation not only increases the fraction of cataracts measurable with optical technology, but it also greatly increases signal-to-noise values.

## Post-LVC eyes

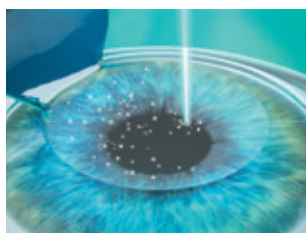
The ZEISS IOLMaster 500 includes the Haigis-L formula which is dedicated to myopic and hyperopic post-LVC cases and is very convenient as it requires no clinical history data.<sup>8</sup>

## Staphyloma, pseudophakic and silicone-filled eyes

Even with staphyloma, pseudophakic and silicone-filled eyes the ZEISS IOLMaster 500 measures along the visual axis, yielding the relevant axial distance.



Reliable IOL power calculation for post-LVC patients with the Haigis-L formula.



The ZEISS IOLMaster 500 simplifies IOL power calculation for patients with prior laser vision correction.

*"For me, there are only few innovations which have revolutionized cataract surgery. The IOLMaster is one of them."*

Prof. Dr. Wolfgang Haigis  
Würzburg, Germany

4) Rivero L, IOLMaster Version 5 vs. Lenstar LS900, presented at 2010 AAO – MEACO Joint Meeting in Chicago, Illinois.

8) Haigis W, Intraocular lens calculation after refractive surgery for myopia: Haigis-L formula. J Cataract Refract Surg. 2008 Oct;34(10):1658-63.



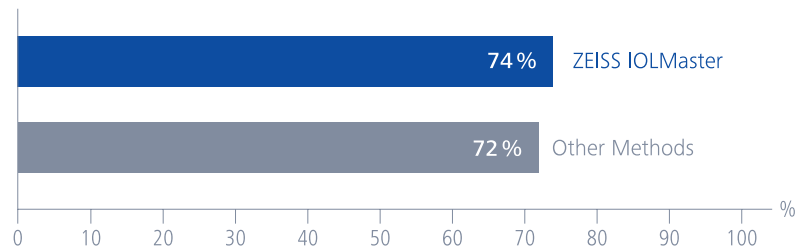


## Proven toric outcomes

The results of a meta-analysis of 28 published clinical papers covering more than 1900 cases speak for themselves: you can trust the ZEISS IOLMaster 500 for toric IOL power calculation!

It was shown that the reported clinical outcomes for the ZEISS IOLMaster with regard to residual astigmatism “[...] exceed, or are at least as good as those using manual or automated keratometry.”<sup>5</sup>

### Mean reported reduction in astigmatism



*“The reference image allows precise alignment of toric IOLs and simplifies workflow. That’s definitely the future of cataract surgery.”*

Prof. Oliver Findl, M.D.  
Vienna, Austria

5) Bullimore MA, The IOLMaster and determining toric IOL Power, White Paper, Carl Zeiss Meditec, 2013





## Markerless toric IOL alignment

### Option Reference Image

The new Option Reference Image is the starting point of a markerless toric IOL workflow: An image of the eye is taken along with the keratometry measurement. Both reference image and keratometry data are transferred to the ZEISS CALLISTO eye® computer-assisted cataract surgery system. Finally, all data needed for precise and markerless toric IOL alignment is injected in color and high resolution where it is needed – in the eyepiece of the surgical microscope from ZEISS.

### Automatic astigmatism detection

The new ZEISS IOLMaster 500 automatically acquires the reference image in case of astigmatism. The reference image is displayed on the report so your practice staff can recognize the astigmatism and you can take the treatment option of a toric IOL into account.



*The new Option Reference Image for a markerless toric IOL workflow.*



*As landmarks for intra-operative matching, small blood vessels are used.*



## Ease of use

### Well-designed user interface

The highly intuitive ZEISS IOLMaster 500 design sets standards in easy-to-delegate biometry. Common sources of error are eliminated through an easy-to-understand traffic light indicator.

### Plausibility checks

With the integrated automatic mode right-eye and left-eye values for axial length and corneal radii are compared and checked for plausibility – providing confidence especially for challenging eyes.

### Automated workflow

The Dual Mode facilitates measurements of axial length and keratometry without the need for manual interaction – minimizing acquisition and chairtime.

### Distance independence

The unique distance-independent telecentric keratometry is one of the reasons for the outstanding ease of use of the new ZEISS IOLMaster 500. Focusing becomes much easier.

### Chairtime

The average time needed to take a reading on the ZEISS IOLMaster 500 is up to 4 times faster compared to other optical devices.<sup>6</sup> A difference you, your team and your patients will notice every day.

*"If you asked my staff **which optical biometer they would go for,** the answer would clearly be: the IOLMaster."*

Prof. Sabong Srivannaboon, M.D.  
Bangkok, Thailand

6) Chen YA, Hirschschall N, Findl O, Evaluation of 2 new optical biometry devices and comparison with the current gold standard biometer; J Cataract Refract Surg. 2011 Mar;37(3):513-517

### Technical data IOLMaster 500 from ZEISS

<b>Measurement range</b>	Axial length 14–38 mm	<b>Interfaces</b>	Ultrasound data link
	Corneal radii 5–10 mm		ZEISS eyecare data management system FORUM®
	Anterior chamber depth 1.5–6.5 mm		ZEISS computer-assisted cataract surgery system CALLISTO eye (via USB)
	White-to-white 8–16 mm		Data interface for electronic medical record (EMR)/ patient management systems (PMS)
<b>Display scaling</b>	Axial length 0.01 mm		Data export to USB storage media
	Corneal radii 0.01 mm		Export database for Holladay IOL Consultant and HIC.SOAP Pro
	Anterior chamber depth 0.01 mm		Ethernet port for network connection and network printer
	White-to-white 0.1 mm		
<b>IOL calculation formulas</b>	SRK® II, SRK®/T, Holladay 1 and 2, Hoffer Q, Haigis	<b>Line voltage</b>	100–240 V ± 10 % (self sensing)
	Clinical history and contact lens fitting method for calculation of corneal refractive power following refractive corneal surgery	<b>Line frequency</b>	50–60 Hz
	Haigis-L IOL calculation for eyes following myopic/hyperopic LASIK/PRK/LASEK surgery	<b>Performance consumption</b>	max. 75 VA
	Calculation of phakic anterior and posterior chamber implants	<b>Laser class</b>	1
	Optimization of IOL constants		

## Superb connectivity

### Connect to ultrasound

Connect your compatible ultrasound devices directly via Option Sonolink. This new ultrasound interface is LAN-based, workflow improved and open for various qualified ultrasound manufacturers.

### Connect to OR

The new ZEISS IOLMaster 500 is part of the **ZEISS Cataract Suite** markerless, providing all relevant diagnostic data when it is needed and where it is needed.

### Connect to IT

For integration into electronic medical records (EMR) and practice management systems, the new ZEISS IOLMaster 500 provides an interface based on well-known DICOM standards.





**Carl Zeiss Meditec AG**  
Goeschwitzer Strasse 51–52  
07745 Jena  
Germany  
[www.meditec.zeiss.com/iolmaster](http://www.meditec.zeiss.com/iolmaster)

IOL 6569 **EN\_32\_010\_002II** CZ-V/2014

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