IOLMaster 500

Excellence in Biometry.
Precision. Simplicity. Outcomes.
solution, which provides all relevant diagnostic data when and where the surgeon needs it. The IOLMaster 500 is also integrated into CALLISTO eye, the new ZEISS operating room data management system. Exporting IOLMaster 500 data to CALLISTO eye not only allows IOLMaster printouts to be displayed on the OR Cockpit display, but also enables on-the-fly re-calculation of IOL power. For connectivity with electronic medical records (EMR) and practice management systems, the IOLMaster 500 provides an interface based on the DICOM standard. Seamless integration with FORUM allows you to view your IOLMaster exams virtually anywhere in real time.
IOLMaster 500

The gold standard in biometry is evolving to meet today’s challenges

Mastery is achieved through continuous practice and improvement. The IOLMaster® is the world’s first non-contact, all-in-one biometer. Over the last decade, its simple, intuitive operation and fast, precise measurements have revolutionized cataract surgery. By giving surgeons the tools they need to optimize outcomes, the IOLMaster has become the gold standard in biometry. But that’s only the beginning.

Introducing the IOLMaster 500.

Today, cataract surgery is more demanding than ever. Patient expectations are higher, and greater competition among practices requires more efficient, streamlined workflows. Building upon its guiding principles of precision, simplicity, and outcomes, Carl Zeiss has refined the IOLMaster to meet the challenges of today’s busy cataract practice. The IOLMaster 500 is the clear choice for effortless biometry that facilitates high-confidence IOL selection.
Patient-centered care

Precision

Dependable data for clinical confidence

Proven in the field for more than a decade, the IOLMaster® Partial Coherence Interferometry (PCI) technology is the acknowledged standard for precise measurements.

Composite signal evaluation has also significantly increased the fraction of cataracts measurable with optical technology and raised the signal-to-noise ratio of each measurement, resulting in highly reliable data.1,2

1. Haigis-L formula
2. Haigis formula
3. Holladay IOL Consultant software
4. Post-LVC calculation
5. Users' Group for Interference Biometry (ULIB)
6. Interference Biometry
7. Clinical study
8. Carl Zeiss FORUM®
9. ZEISS Connectivity Solutions
10. FO-RUM
11. Data management
12. Axial length
13. Keratometry readings
14. IOL power calculations
15. Report delivery
16. Carl Zeiss FORUM® data management system
17. EMR system
18. Paper printouts
19. Clinical workflow
20. User error
21. Operator training
22. Easy-to-learn, easy-to-delegate biometry
23. Graphical user interface
24. Process streamlining
25. Workflow optimization
26. IOLMaster 500
27. Accutome A-Scan
28. Stand-alone instruments
29. Networked practice environments
30. IOLMaster 500
31. FO-RUM
32. Carl Zeiss FORUM®
33. ZEISS Connectivity Solutions
34. Data management
Today, patients expect more than excellent refractive outcomes. They also expect convenience and comfort during treatment. With state-of-the-art non-contact biometry, the IOLMaster® 500 redefines simplicity and reduces examination time to a minimum.

A redesigned graphical user interface yields more data with fewer clicks, requiring less seat time. Dual Technology measurements and the optional Sonolink ultrasound A-scan connection deliver results the first time, even for those few cases where axial length cannot be determined optically.

The IOLMaster also makes biometry simple for the operator. In the new dual measurement mode, multiple axial length measurements and keratometry readings are captured automatically, with a simple push of a button.

Seamlessly integrated IOL power calculations offer the shortest possible path to the result that really matters: high-confidence IOL power selection. Clearly structured, concise reports deliver these results when and where they are needed – such as to the Carl Zeiss FORUM® data management system, a highly advanced archive and review solution, to an EMR system, or to paper printouts.

The IOLMaster has long been an indispensable tool for meeting the promise of premium intraocular lenses. The system offers a wide range of built-in IOL calculation options, including the fourth-generation Haigis formula as well as convenient data export to the Holladay IOL Consultant software.3

For patients with prior laser vision correction (LVC), IOL selection can be a challenge. In its post-LVC calculation toolbox, the IOLMaster 500 includes the Haigis-L formula, which requires no clinical history data.4

An IOL calculation is only as reliable as the lens constants on which it is based. The IOLMaster’s leadership and extensive clinical history are revealed in the Users’ Group for Interference Biometry (ULIB) database.5 For virtually all common IOL types, the ULIB database contains lens constants optimized specifically for the IOLMaster. As importantly, the IOLMaster 500 allows these constants to be further refined and personalized.
Measurement

Meeting expectations for total patient satisfaction

The accuracy and precision of the IOLMaster® 500 satisfy the needs of even the most demanding clinicians who expect nothing less than optimal refractive outcomes for their patients.

Optimizing patient flow
In a busy practice, throughput is key. The IOLMaster 500 accelerates the patient flow by performing accurate measurements quickly. The new Dual Technology measuring mode minimizes acquisition time. Axial length and keratometry are now captured at once, and changeover between modes occurs automatically.

Peace-of-mind through unmatched reliability
Because nothing is more important in biometry than reliable measurements, the composite signal of the IOLMaster 500 takes the guesswork out of interpreting axial length scans. With the signal-to-noise ratio values routinely achieved using the composite signal algorithm, dependable data can be achieved for a remarkable percentage of patients.1, 2

With the IOLMaster 500, common sources of error are eliminated through an easy-to-understand traffic light indicator. A green light signals best alignment. Right-eye and left-eye values for axial length and corneal radii are compared and checked for plausibility – adding confidence, especially for challenging eyes.

The high reproducibility of IOLMaster measurements regardless of user has been documented in the clinical literature.6 Clinical experience have shown that the state of accommodation, pupil diameter, and high ametropia do not compromise axial length data.

Fast and accurate, even for challenging eyes
The true test of a biometer is its performance with challenging eyes. The IOLMaster measures along the visual axis, yielding the relevant axial distance even with staphyloma for pseudophakic, silicone-filled, or phakic implants. The process is as simple as selecting the right measurement mode, even after data acquisition. Axial length measurements with the IOLMaster 500 are fast and distance independent – a great help with poorly fixating or restless patients. Even the penetration of dense cataracts has improved significantly since the early days of optical biometry.1, 2
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Meeting expectations for total patient satisfaction

Measurement

No clinical history? No problem!
The number of baby boomers with previous LASIK or PRK procedures is growing rapidly worldwide. Baby boomers are now candidates for cataract surgery and they expect optimal outcomes. The IOLMaster 500 offers the Haigis-L formula for myopic and hyperopic post-LVC eyes.

Calculation of phakic IOLs is another growing need. A database of anterior and posterior phakic IOL types makes the selection of the appropriate dioptic power straightforward.

IOL power calculation

A comprehensive solution

As a comprehensive biometry solution, the IOLMaster® 500 delivers high-precision IOL power calculations with exceptional convenience. The IOLMaster 500 offers a range of recognized formulas for the automatic calculation of the targeted IOL power.

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Focused on customer needs

Patient-centered care

Precision

Dependable data for clinical confidence

Clinical results that make a difference

Outcomes

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Product innovation at Carl Zeiss is guided by one overriding principle: We work to improve on what works best for the user.

Workflow

Working at what works best for the user

Designed with the clinical workflow in mind
Well-designed user interfaces help prevent user error and simplify operator training. The highly intuitive IOLMaster® interactive design set the standard for easy-to-learn, easy-to-delegate biometry. The redesigned IOLMaster 500 graphical user interface continues this success story by further streamlining the process and guiding the user through an optimized workflow sequence.

The ultrasound advantage
Before the latest refinements to the IOLMaster system, patients who could not be measured optically caused a break in the workflow. No more. With the IOLMaster 500 and the optional Sonolink connection, data is seamlessly transferred from the IOLMaster 500 to the Accutome A-Scan. After ultrasound measurement, A-scan data are imported back simply and efficiently to the IOLMaster 500 for IOL power calculation. Patient data, measurements and calculation results are consolidated in a single database, significantly reducing the risk of data entry errors.

When working with both optical biometry and ultrasound A-scan, the relative calibration of the two axial length devices is crucial. A clinical study has shown excellent agreement of data between IOLMaster and Accutome A-scan data.7

ZEISS Connectivity Solutions – A new world of efficiency
The days of stand-alone instruments are over. The IOLMaster 500 fits perfectly in today’s networked practice environments. It is a key component of FORUM, the ZEISS comprehensive data management
solution, which provides all relevant diagnostic data when and where the surgeon needs it. The IOLMaster 500 is also integrated into CALLISTO eye, the new ZEISS operating room data management system. Exporting IOLMaster 500 data to CALLISTO eye not only allows IOLMaster printouts to be displayed on the OR Cockpit display, but also enables on-the-fly re-calculation of IOL power.

For connectivity with electronic medical records (EMR) and practice management systems, the IOLMaster 500 provides an interface based on the DICOM standard.
# Technical Data

## IOLMaster® 500

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>Axial length 14 – 38 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corneal radii 5 – 10 mm</td>
</tr>
<tr>
<td></td>
<td>Anterior chamber depth 1.5 – 6.5 mm</td>
</tr>
<tr>
<td></td>
<td>White-to-white 8 – 16 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Display scaling</th>
<th>Axial length 0.01 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corneal radii 0.01 mm</td>
</tr>
<tr>
<td></td>
<td>Anterior chamber depth 0.01 mm</td>
</tr>
<tr>
<td></td>
<td>White-to-white 0.1 mm</td>
</tr>
</tbody>
</table>

## IOL calculation formulas

- SRK® II, SRK®/T, Holladay, Hoffer Q, Haigis
- Clinical history and contact lens fitting method for calculation of corneal refractive power following refractive corneal surgery
- Haigis-L IOL calculation for eyes following myopic/hyperopic LASIK/PRK/LASEK surgery
- Calculation of phakic anterior and posterior chamber implants
- Optimization of IOL constants

## Interfaces

- Ultrasound data link (to Accutome A-Scan synergy)
- ZEISS data archive and review solution FORUM
- ZEISS OR management system CALLISTO eye
- Data interface for electronic medical record (EMR) / patient management systems (PMS)
- Data export to USB storage media
- Export database for Holladay IOL Consultant and HIC.SOAP Pro
- Ethernet port for network connection and network printer

<table>
<thead>
<tr>
<th>Line voltage</th>
<th>100 – 240 V +/- 10 % (self sensing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line frequency</td>
<td>50 – 60 Hz</td>
</tr>
<tr>
<td>Performance consumption</td>
<td>max. 90 VA</td>
</tr>
<tr>
<td>Laser class</td>
<td>1</td>
</tr>
</tbody>
</table>

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2. Haigis W, Clinical Experience with the IOLMaster Advanced Technology software, presented at the ESCRS meeting in Stockholm, 2007
3. Holladay IOL Consultant software http://www.hicsoap.com