

HEIDELBERG
OPERA

FULLY DIGITAL
PLATFORM OPTIMIZED
FOR THE FUTURE OF
OPHTHALMIC SURGERY

■ HEIDELBERG
ENGINEERING ■



DIGITAL SURGERY. DESIGNED AROUND THE SURGEON.

See clearly. Work naturally. Teach together.

Heidelberg OPERA is a fully digital ophthalmic surgical microscope platform designed to improve the way surgeons see, work, and teach.

Unlike conventional optical or hybrid systems, it is digital by design, supporting enhanced visualization, improved ergonomics, and the possibilities for teaching, collaboration, and knowledge transfer in the operating room.

Digital surgery is already becoming a reality in ophthalmic surgery, and future developments will increasingly build on digital platforms. Heidelberg OPERA provides a platform for digital surgery today, while laying the foundation for future innovations.

BUILT FOR WHAT COMES NEXT.

A platform designed to evolve.

As a fully digital system, Heidelberg OPERA creates the foundation for future intraoperative technologies and the next generation of ophthalmic workflows. As connections across systems evolve, it lays the groundwork for Heidelberg Engineering's broader vision of connected, multimodal imaging.



CONFIDENCE THROUGH VISUALIZATION.

Premium digital image quality

Help surgeons identify fine anatomical structures clearly. Digital brightness adjustments enable lower illumination levels, supporting patient comfort.

- Excellent color, contrast, resolution
- Enhanced depth of field
- Advanced digital image enhancement

SIT STRAIGHT. LOOK STRAIGHT AHEAD.

Ergonomics designed for surgeons

3D monitors for straight-ahead viewing combined with freely positionable digital binoculars and the C-shaped suspension arm support a healthy posture during surgery.

- Reduced neck and back strain
- Flexible positioning to support ergonomic postures for all display options

COLLABORATIVE SURGERY. INTUITIVE CONTROL.

Efficient workflow meets surgical education

Enhance collaboration and training with large 2D & 3D monitors and live annotations enabling the entire OR team to follow surgery in real time for clearer communication, more effective training, and a more immersive surgical experience.

- Intuitive control via touchscreen / footswitch
- 2D & 3D 4K-UHD recording
- Live annotations for teaching and guidance

A NEW ERA IN DIGITAL SURGERY



SEE CLEARLY.
WORK NATURALLY.
TEACH TOGETHER.

Heidelberg OPERA is a fully digital ophthalmic surgical microscope platform designed to transform the way you see, work, and teach in the operating room (OR).

Digital by design, it supports confident decision-making, reduces physical strain, and enables a more connected surgical experience for the entire OR team.

Key Benefits

- Exceptional digital visualization
- Ergonomics for long surgical careers
- Enhanced teaching and collaboration
- Designed for future innovation

¹ Clinical image used in this brochure courtesy of Dr. Alain Saad, Vice Head of the Anterior Segment and Refractive Surgery Department at Foundation Rothschild, Paris
Heidelberg OPERA is currently not commercially available in all markets and it can only be made available once it has regulatory approval in your region. The iOCT module is not currently commercially available.

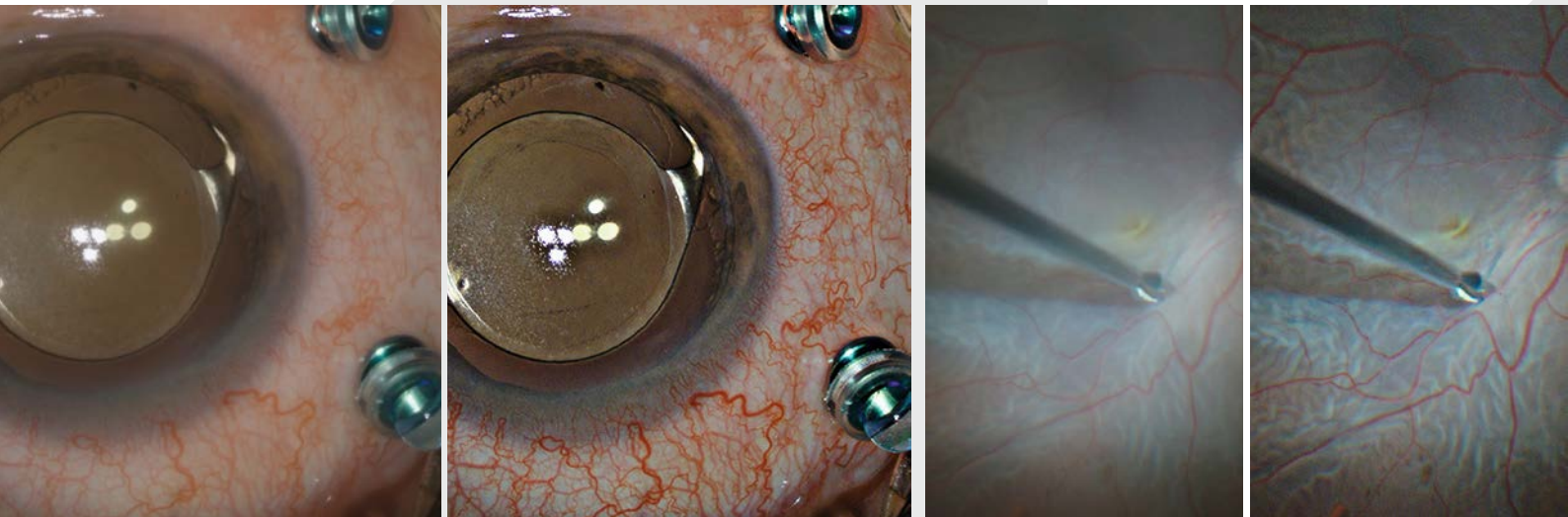
BRINGING THE DETAILS INTO VIEW

Drawing on Heidelberg Engineering’s expertise in diagnostic-quality ophthalmic imaging, Heidelberg OPERA extends exceptional digital visualization into the OR. Outstanding color, contrast and resolution, combined with advanced digital image enhancements, bring subtle anatomical details into clearer view.

Benefits for your patients

Adjustable illumination and digital filters optimize visualization throughout surgery, maintaining excellent image quality even at lower light levels. This helps minimize light exposure to sensitive ocular tissues while providing the clarity and detail surgeons need for precise, controlled maneuvers in delicate ophthalmic procedures.

Advanced Digital Image Enhancements

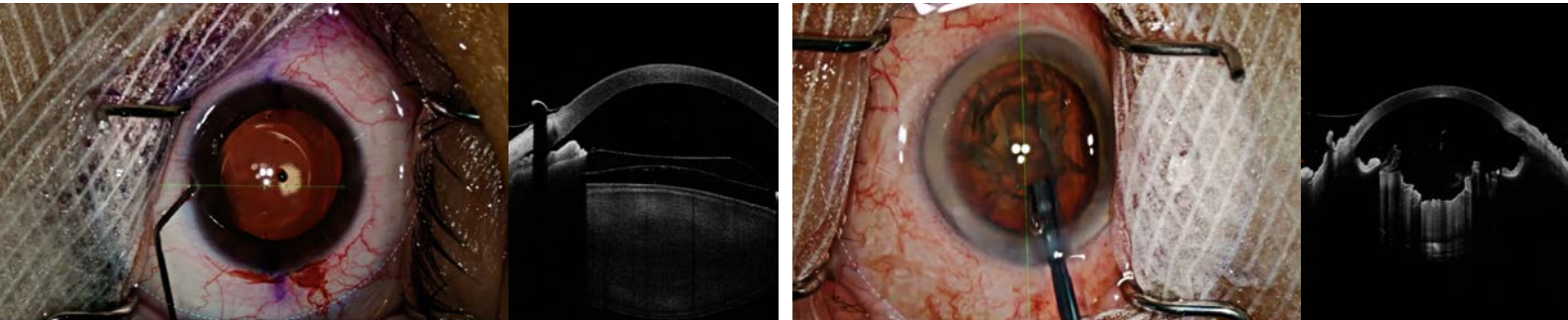


▲ Anterior Segment Surgery without (left) and with (right) image enhancements²

▲ Posterior Segment Surgery without (left) and with (right) image enhancements²

Key Benefits

- Exceptional image clarity
- Visualization of anatomical detail
- Optimized illumination
- Advanced image enhancements



▲ Anterior Segment iOCT:
ICL implantation with visibility of the vault¹

▲ Anterior Segment iOCT:
Cataract surgery during phaco¹

GO BEYOND THE MICROSCOPE

Heidelberg OPERA with next-generation swept-source intraoperative OCT (iOCT)* seamlessly integrates real-time cross-sectional imaging into the surgical workflow, revealing anatomical structures beneath the tissue surface that cannot be seen through microscopy alone.

Operating at 1060 nm and 70,000 A-scans per second, the high-speed swept-source OCT engine provides excellent tissue penetration and visualization of both anterior and posterior segment anatomy. High axial resolution reveals fine structural detail, while rapid image acquisition provides immediate feedback to support surgical decision-making without interrupting the procedure.

Supporting surgery today. Enabling innovation tomorrow.

Integrated iOCT extends the surgeon’s view beyond the visible surface, helping to assess tissue configuration, confirm anatomical relationships, and guide delicate surgical maneuvers in real time. Heidelberg OPERA is designed to evolve, providing a flexible platform that can build on these capabilities as digital surgery advances.

Key Benefits

- Real-time swept-source iOCT
- Diagnostic image quality
- High image depth
- Optional, upgradable module

* The iOCT module is currently not commercially available.

² Images courtesy of Prof. Marco Mura, Professor of Ophthalmology | University of Ferrara | Ferrara | Italy

ERGONOMICS TO SUPPORT LONG SURGICAL CAREERS

Every viewing option with Heidelberg OPERA is designed to support a more natural way of working. Freely positionable digital binoculars and flexible heads-up displays encourage an upright posture, helping reduce strain on the neck and back while supporting long-term comfort and well-being.

Freedom to position your view

The distinctive C-arm of Heidelberg OPERA allows the heads-up displays to be positioned directly in front of the surgeon enabling them to adopt an ergonomic posture. Its open architecture provides unobstructed access to the surgical field while helping to minimize neck tilt.



▲ Freely positionable digital binoculars



▲ Flexible heads-up displays

Key Benefits

- Upright ergonomic posture
- Reduced neck and back strain
- Flexible display positioning
- Designed for long-term well-being

Designed around the OR environment

Heidelberg OPERA offers a range of surgical viewing options that adapt to different operating rooms, surgeon preferences, and clinical workflows. Every configuration is designed to support an ergonomic working posture while delivering an optimal surgical view.

DESIGNED FOR TEACHING

Heidelberg OPERA transforms the OR into a dynamic learning environment. Shared 3D visualization and real-time guidance with Assist Mode annotations help trainees understand surgical techniques as they unfold. Recording and wireless streaming capabilities extend learning beyond the OR, supporting education, review, and knowledge sharing.



▲ Shared 3D visualization for collaboration and learning

▲ Assist Mode annotations for surgical guidance

Connected surgery

With the ability to connect multiple 2D and 3D displays, Heidelberg OPERA gives the entire OR team the same real-time view of the procedure. Sharing a common perspective enhances communication, coordination, and anticipation, helping teams work together more efficiently and responsively throughout surgery.

Collaboration without boundaries

Whether supporting assistants during surgery or connecting with colleagues and audiences remotely, Heidelberg OPERA enables shared viewing experiences that promote engagement, communication, and collaborative decision-making.

Key Benefits

- Shared 3D visualization
- Real-time surgical annotations
- Video recording and streaming
- Improved communication



TECHNICAL SPECIFICATIONS

BUILT FOR WHAT COMES NEXT

Heidelberg OPERA is a fully digital surgical platform designed to evolve alongside ophthalmic surgery. Its modular architecture allows surgeons to configure the system for today's clinical needs while providing the flexibility to integrate future technologies as they become available.

Built on a scalable digital foundation, Heidelberg OPERA is designed to support the next generation of surgical innovation from advanced intraoperative imaging and connected workflows to intelligent decision support and image-guided surgery*.

Key Benefits

- Modular, future-ready platform
- Seamless digital integration
- Designed for evolving surgical workflows
- Scalable architecture for future innovation

Display Options for Surgeons

- Digital binoculars
- 55" 3D 4K monitor
- 32" 3D 4K monitor (mounted to the microscope stand)

Display Options for Observers

- Up to 4 via wireless transmitter (2D/3D, up to 4K-UHD resolution)
- 1x 3D via HD-SDI or
- 2x 2D via HD-SDI

Camera Sensor Resolution

2x 4K-UHD cameras (3840 x 2160 pixels)

Magnification

- Motorized optical 6x zoom
- 50% digital zoom

Focus Range

90 mm (in 0° position)

Working Distance

200 mm

Aperture

Motorized, 9 positions

Red Reflex Illumination

LED

Surrounding Field Illumination

LED

Built-in Keratoscope

LEDs

Surgical Annotations

Yes

Video Editing

Yes

Recording

- 4K-UHD (3840 x 2160), 60 fps
- Full-HD (1920 x 1080), 60 fps
- Full-HD (1920 x 1080), 30 fps
- 2D & 3D

Digital Filters

- Color filters
- Contrast enhancement
- Sharpness
- Digital brightness

Physical Filters (built-in)

- Retina protection filter
- Retina protection plate
- 532 nm laser filter

Interfaces

- 1x HDMI optical output
- 2x HD-SDI in
- 2x HD-SDI out
- Wireless video transmitter
- USB 3.2 gen 2

Uncover the full technical specification for Heidelberg OPERA with iOCT:



Compatible Fundus Viewing Systems

Full microscope integration, including footswitch control, with:

- OCULUS BIOM® 6
- OCULUS BIOM® 5ml/cl
- OCULUS BIOM® ready/ready+

◀ Heidelberg OPERA with OCULUS® BIOM 6

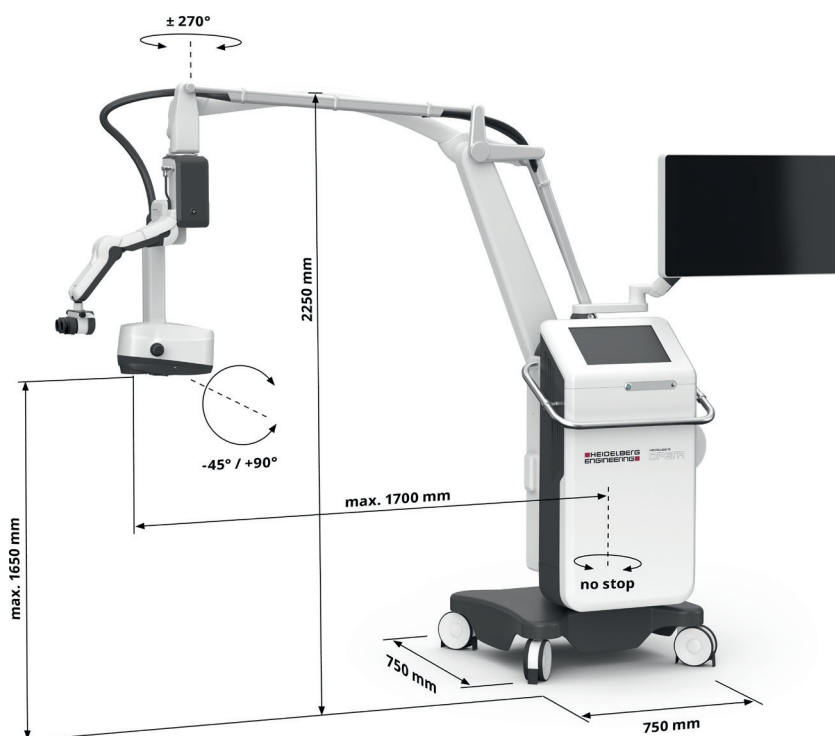
Legal Manufacturer

Munich Surgical Imaging GmbH
Tuerkenstr. 89 · 80799 Munich · Germany

Distributed by

Heidelberg Engineering GmbH
Max-Jarecki-Str. 8 · 69115 Heidelberg · Germany

* Future technologies described represent Heidelberg Engineering's development vision; features under development are not commercially available, and future functionality, specifications and availability may change during development.



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