Premium Surgical Microscope

STAY FOCUSED
M530 OHX with FusionOptics

European Brochure Version
STAY FOCUSED

Focus on your patient, focus on your surgery and let the M530 OHX surgical microscope support you to achieve the best possible outcome.

Designed to be your trusted partner in the OR, the M530 OHX microscope unites the exclusive innovation FusionOptics with a flexible, ergonomic design and customizable imaging options. Experience outstanding visualization and feel the ongoing benefits of a comfortable working position - for you and your team.
**PRECISION OPTICS**

See more with optical innovations

- FusionOptics for high resolution with enhanced depth of field
- Better visibility in deep cavities

See pages 4 to 5.

**ERGONOMICS & EFFICIENCY**

Comfort and efficiency built in

- More space to work
- Full integration
- Flexible positioning for everyone
- Superior maneuverability

See pages 6 to 7.

**CUSTOMIZATION**

Customizable to your needs

Individually configurable and upgradeable

- Select from 2D or 3D HD visualization and recording and image injection of data from IGS systems
- Features TriFluoro for three fluorescence modules in one microscope

See pages 8 to 11.

**SAFETY**

Patient safety first

- Automatic illumination controls help protect skin
- Consistent light intensity
- Hygiene protection built in

See pages 12 to 13.
FusionOptics technology combined with intelligent illumination and apochromatic optics delivers astounding image quality.

See more, refocus less with FusionOptics

Achieving depth of field and high resolution in one image has always been a challenge. Leica Microsystems has developed an innovative new approach to overcome this challenge: FusionOptics. Making use of the power of the human brain, FusionOptics technology captures different information from each of the two beam paths, delivering the highest possible resolution to the left eye and maximum depth of field to the right. The brain then easily merges the visual information into a single, optimal spatial image with amazing clarity and a significantly expanded area in full focus. A larger area in full focus also means you need to refocus less frequently, potentially enhancing your workflow efficiency. FusionOptics helps you to stay focused, in every sense of the word.
**FusionOptics Technology**

1. Two separate beam paths
2. One beam path provides depth of field
3. The other provides high resolution
4. The brain merges the two images into a single, optimal spatial image

**Deep insights**

Small Angle Illumination (SAI) combined with bright 400-Watt xenon light provides a concentrated light beam that penetrates to the bottom of deep, narrow cavities. The result is better illumination with less shadow. SAI provides you with more details and an improved depth perception.

**See even more, fast**

Adapt the M530 OHX optics to meet the requirements of your surgery and your team

- Additional 40% magnification boost with the optional Magnification Multiplier
- Fast focusing with two laser beams acting as a focusing reference to quickly provide a defined focus point for all three viewing positions (surgeon, assistant, camera)
- Independent fine focus for the rear assistant with a range of +/- 5 diopters
- A selection of binoculars all with full 360°-rotation to allow adjustment to different heights and positioning needs - no need to swap binoculars
COMFORT AND EFFICIENCY BUILT IN

Ergonomic working positions, smooth maneuverability and ease of use for comfort and streamlined workflow.

The M530 OHX surgical microscope is designed to fully adapt to you and the needs of your surgical specialty. Its intelligent ergonomic features and smooth maneuverability limit physical distraction and workflow interruptions so you can stay even more focused on the critical task at hand.

Ease of use
Setting up the M530 OHX microscope is fast and simple with the intuitive touch-screen control panel. For your comfort and efficiency key functions can be controlled via handgrip, foot or mouth switches. To confirm settings just glance to the surgeon information panel above the optics carrier.

Smooth handling
With cables routed internally and electromagnetic brakes, maneuvering is smooth and effortless, reducing the potential strain of harsh movements. For unmatched positioning flexibility, the optics carrier has an extensive range of movement. Fast stabilization keeps workflow interruptions to a minimum.

Perfect balance
The time-saving auto-balance system requires only two pushes of one button to fully balance all six axes. To quickly and accurately re-balance the microscope intraoperatively, even through a sterile drape, simply push the AC/BC button, conveniently located by the left handgrip.

More room to work
With a compact base for space-restricted areas, superior overhead clearance and one of the longest reaches on the market, the M530 OHX offers you positioning flexibility and more space to work whatever the surgery.
Positioned for your comfort

> Compact optics carrier design means less distance from eyepiece to objective lens so arms can remain in a natural position and are not over extended
> Accommodates different operating positions and body frames with a range of binoculars for main surgeon and assistant all with full 360°-rotation
> The design of the optics carrier means that the opposite assistant can also achieve a comfortable upright working posture
> Large 600 mm working distance allows for easy maneuvering and passing of instruments enabling the microscope to be used in spine procedures where previously only loupes could be used
CUSTOMIZABLE TO YOUR NEEDS

A modular yet integrated design for configuration flexibility today and in the future.

The streamlined, cable-free M530 optics carriers were developed with a modular Open Architecture design to allow for maximum configuration flexibility. Choose the optics carrier to best suit your surgery needs and then configure with imaging and recording options. And if your requirements change or you want to add a new imaging technology in the future, the upgrade-ready design makes it simple.

Basic configuration: Integrated video adapter
The compact design of the IVA530 optics carrier is ideal for otolaryngology and neurotology. With no opposite assistant, more light is directed to the main surgeon and side assistant. The integrated video adapter has a built-in depth enhancer, for outstanding screen display and recording.

Standard configuration: Flexibility for your surgery type
The ULT530 optics carrier is the optimal configuration for neurosurgery, spine and plastic reconstructive surgery. There are interfaces for left, right and rear assistant binoculars as well as optional integrated HD C100 camera, FL400 and FL560 fluorescence.

Advanced: Integrated FL800 and/or CaptiView image injection
The M530 OHX can be supplied with fully integrated FL800 vascular fluorescence and CaptiView image injection. The CaptiView module allows the surgeon to inject data directly into the eye-piece, from external and internal sources, such as FL800, MRI, CT, and Image Guided Surgery (IGS) systems.
Integrated TrueVision 3D visualization and recording is also available. 3D imagery can greatly enhance microsurgery education, providing staff and students with the same 3D view as the surgeon during live surgery or a seminar. With TrueVision Smart 3D built in, set-up time is minimized and OR space freed up.

Ready for today and tomorrow
The OpenArchitecture design of the microscope allows easy integration of systems such as the user-friendly Med X Change HDMO full HD digital recording system or IGS in combination with the CaptiView module. Upgrade easily when your requirements change or when new imaging technologies become available.

Fully integrated and under control
HD 2D and 3D cameras, fluorescence modules, documentation systems and all cables are fully integrated inside the microscope. Not only does this give a sleek, clean appearance, it ensures seamless integration and flexible control via the handgrip or optional mouth and foot switches.
FULL HD IMAGE INJECTION, FULL CONFIDENCE

With CaptiView image injection you see full-HD visual data with 500:1 contrast directly in the field of view, for confident surgical decisions without interruption.

Every detail you need before your eyes
- Full-HD 1080p resolution and 500:1 contrast
- Overlay data onto the live surgical image or view as non-correlated
- Data can be injected from IGS system, FL800 fluorescence and monitor
- View in left, right or both* eyepieces

Integration avoids interruption
CaptiView image injection is compatible with leading IGS systems and fully integrated with your M530 OHX microscope for an interruption-free workflow. You no longer need to switch between eyepieces and screen, and a single touch of the microscope handgrip or footswitch activates CaptiView.

Share your view, share your skill
A shared view for main surgeon and assistant enhances the assistant’s ability to follow each delicate surgical action. Full HD display and recording, complete with injected images, enable later review and teaching outside of the OR.
THREE-IN-ONE FLUORESCENCE

Available with three fluorescence modes* fully integrated, the M530 OHX enables you to go beyond the visible.

The M530 OHX microscope can be supplied with three types of fluorescence fully integrated: FL800 for vascular fluorescence, FL400 for oncological fluorescence, and FL560. With only a few button clicks, you can easily switch from white light to fluorescence mode or between fluorescence modes. Brilliant HD fluorescence video can be easily viewed on screen and recorded. For best viewing results, the built-in Mode Control video technology automatically optimizes the settings of cameras according to the selected mode.

**FL400 oncological fluorescence**

The fluorescence module FL400 for M530 is used in conjunction with the 5-ALA fluorescent agent for characterization of tumor tissue in open neurosurgery.

**FL800 vascular fluorescence**

The FL800 ULT intraoperative video-angiography module is used in conjunction with ICG fluorescent agent and allows surgeons to see blood flow through vessels in real-time during surgery.

**FL560 fluorescence**

The FL560 for M530 module is designed to enable fluorescence observation of fluorophores with an excitation peak between ~460 nm and ~500 nm (blue) and fluorescence emission observation comprising the green, yellow, and red spectrum in a spectral band above ~510 nm.

*A information provided on this page is applicable for Europe. Product availability may vary depending on regulatory clearance. For more information, please check with your local Leica Microsystems representative.*
REINFORCE PATIENT SAFETY

Innovative illumination controls, fail safes and design features help you optimize patient safety and minimize interruptions.

**Reliable illumination system**

The M530 OHX microscope features two redundant 400-Watt xenon arc-lamp illumination systems, with independent lamps and boards. The microscope automatically switches to the second illumination system when needed.

**Maximum brightness at all times**

The efficient light transmission of the M530 OHX ensures that the maximum possible amount of light is always being provided. Therefore, you can operate at safer light levels and still see more than ever before.

**Protection for team and patients**

For superior hygienic conditions, the M530 OHX stand has a special AgProtect coating. Nano silver minimizes pathogens on the microscope as well as possible transmission to OR staff.

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Bright 400-Watt xenon illumination  
Safe, maximum brightness  
Antimicrobial nano silver coating to minimize pathogens
OPTIMAL FIELD OF ILLUMINATION

Conventional microscope at low magnification

Conventional microscope at high magnification

Leica microscope with AutoIris

At low magnification, the field of illumination (yellow) fills the field of view (green) completely. Previously, as magnification increased, the field of view became smaller, but the illumination outside the field of view could potentially cause tissue burns (red).

AutoIris automatically works with the zoom, decreasing the field of illumination as the field of view decreases. There is no peripheral illumination to cause tissue burns outside the field of view.

OPTIMAL LIGHT INTENSITY

BrightCare Plus optimizes the light intensity relative to the working distance.

Max. illumination

Max. illumination (BrightCare Plus inactive)

Microscope with BrightCare Plus activated

Long working distance.

Decreased working distance at same illumination setting (left) creates burn potential in conventional microscopes.

BrightCare Plus automatically adapts light intensity to the working distance, providing safer illumination (up to 60% reduction of light intensity).

LUXMETER FOR CONSISTENT LIGHTING

BrightCare Plus compensates for decreased light intensity as bulbs age to ensure consistent lighting. With the internal luxmeter providing real-time light intensity data to the BrightCare Plus system, light intensity is calculated on actual bulb output, not by using an algorithm or formula.

STAY OPERATIONAL

To ensure full operability the microscope and the video have completely independent operating systems. In the rare case of a video system error, the microscope retains full functionality and surgery can continue uninterrupted.
## Technical Specifications

### Optics and Illumination

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>FusionOptics</td>
<td>For increased depth of field and high resolution for main surgeon and opposite assistant</td>
</tr>
<tr>
<td>Fully apochromatic optics</td>
<td>For high contrast, natural colors without chromatic aberrations</td>
</tr>
<tr>
<td>Magnification</td>
<td>6:1 zoom, motorized</td>
</tr>
<tr>
<td>Total magnification</td>
<td>1.0× to 12.1× with 10× eyepiece</td>
</tr>
<tr>
<td>Magnification multiplier</td>
<td>1.4× (optional)</td>
</tr>
<tr>
<td>Focus</td>
<td>Motorized via multifocal lens, with manual adjustment</td>
</tr>
<tr>
<td>Fine focus</td>
<td>±5 diopter available for opposite assistant (ULT)</td>
</tr>
<tr>
<td>Objective / working distance</td>
<td>225–600 mm, motorized multifocal lens, continuously adjustable and manual adjustment option</td>
</tr>
<tr>
<td>Field of view</td>
<td>17.4 to 210 mm ø with 10× eyepiece</td>
</tr>
<tr>
<td>Eyepieces</td>
<td>Wide-field eyepieces for persons wearing glasses 8.3×, 10× and 12.5× diopter adjustment, ±5 diopter settings and adjustable eyecup</td>
</tr>
<tr>
<td>Integrated 360° rotatable adapter</td>
<td>For main surgeon binocular (IVA, ULT) and opposite assistant (ULT)</td>
</tr>
<tr>
<td>Illumination</td>
<td>- High-output 2x 400-W redundant xenon arc-lamp systems via fiber optics cable</td>
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<tr>
<td></td>
<td>- Continuously variable illumination field diameter with Gaussian distribution</td>
</tr>
<tr>
<td></td>
<td>- Continuously adjustable brightness at constant color temperature</td>
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<tr>
<td>SpeedSpot</td>
<td>Laser focusing aid for fast and exact positioning of the microscope</td>
</tr>
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</table>

### Maneuverability

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Optics</td>
<td>- 540° rotation</td>
</tr>
<tr>
<td></td>
<td>- 50° lateral tilt to left and right</td>
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<tr>
<td></td>
<td>- -30°/+120° inclination tilt</td>
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<tr>
<td>XY speed</td>
<td>Zoom linked XY speed</td>
</tr>
<tr>
<td>Balancing</td>
<td>One button/two push complete automatic balancing of stand and optics</td>
</tr>
<tr>
<td>Intraoperative balancing</td>
<td>Automatic intraoperative AC/BC balancing of AC and BC axes (not available for Japan).</td>
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<tr>
<td>Brakes</td>
<td>Floor stand with 6 electromagnetic brakes</td>
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</tbody>
</table>

### Modularity

<table>
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<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>Basic: IVA530</td>
<td>- Full stereo view for main surgeon, semi stereo view for 2 side assistants and C-mount interface for camera (HD or SD)</td>
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<tr>
<td>Standard: ULT530</td>
<td>- Full stereo view for main surgeon and opposite assistant, semi stereo view for up to 2 side assistants</td>
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<tr>
<td></td>
<td>- High sensitivity, built-in IR video camera with 1/2” CCD</td>
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<td></td>
<td>- Optional integrated HD Camera (HD C100), FL400, and FL560</td>
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<tr>
<td></td>
<td>- Light distribution: 50% for main surgeon, either 20% for each side assistant or 40% for opposite assistant</td>
</tr>
<tr>
<td>FL400</td>
<td>FL400 oncological fluorescence observation filter module</td>
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<tr>
<td>FL560</td>
<td>FL560 investigational fluorescence observation filter module</td>
</tr>
<tr>
<td>Advanced: FL800 ULT &amp;/or CaptiView image injection</td>
<td>- Full stereo view for main surgeon and opposite assistant, semi stereo view for up to 2 side assistants</td>
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<td></td>
<td>- CaptiView HD image injection (optional)</td>
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<td></td>
<td>- FL800 vascular fluorescence with built-in NIR camera (optional)</td>
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<tr>
<td></td>
<td>- Optional: C-mount interface for camera (HD or SD)</td>
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<tr>
<td>OpenArchitecture</td>
<td>- Easy integration of IGS and laser systems (please ask your Leica Microsystems representative)</td>
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<tr>
<td></td>
<td>- Prepared for integration of video camera system and digital recording system</td>
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<tr>
<td>Connectors</td>
<td>- Numerous built-in connectors for video, IGS and control data transfer</td>
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<tr>
<td></td>
<td>- Internal power supply 12 VDC, 19 VDC and AC terminals</td>
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</table>

### 2D/3D HD Video

- Fully integrated 2D HD and/or 3D HD video and recording
SAFETY

AutoIris
- Built-in automatic zoom-synchronized illumination field diameter, with manual override and reset feature

BrightCare Plus
- Safety function through working distance-dependent limitation of the brightness, controlled by a built-in luxmeter

CONTROL

Control unit
- Programmable touch-screen with user-friendly Graphical User Interface for control of microscope and stand
- Built-in electronic auto-diagnosis and user support
- Software independent hard keys for illumination and auto-balancing
- Indicator for main/backup illumination and fluorescence modes

Control elements
- Pistol handle with 10 programmable functions
- Optional mouthswitch
- Optional 12-function wireless footswitch

IR sensor
For remote control of the external HD C100 camera

CONSTRUCTION

Base
- 690 × 690 mm with four 360° rotating casters with a diameter of 150 mm each, one parking brake

Materials
- All solid metal construction coated with antimicrobial paint

Load
- Min. 6.7 kg, max. 12.2 kg from microscope dovetail ring interface

Weight
- Approx. 320 kg without load

Indicator
- LEDs for fluorescence mode status and video record status

TECHNICAL DATA

Ambient conditions in use
- +10 °C to +40 °C
- +50 °F to +104 °F
- 30% to 95% rel. humidity
- 800 mbar to 1060 mbar atmospheric pressure

Power connection
- 1600 VA 50/60 Hz
- 100 V, 120 V, 220 V, 240 V (+10 %/−15 %)
- 2 × T10 AL 100/120 V
- 2 × T8 AL 220/240 V

Protection class
- Class 1