Application	Method	Solution
Colocalization Studies	STED Super-Resolution	Leica TCS SP8 STED 3X
	Confocal Imaging	Leica TCS SP8
	Multiphoton	Leica TCS SP8 MP
	FRET	Leica TCS SP8
Deep Tissue	CARS	Leica TCS SP8 CARS
	Multiphoton	Leica TCS SP8 MP
	Electrophysiology	Leica TCS SP8 MP
Live Cell Imaging	CARS	Leica TCS SP8 CARS
	Multiphoton	Leica TCS SP8 MP
Time-lapse	FLIM	Leica TCS SP8 SMD FLIM
	FCS	Leica TCS SP8 SMD FCS
	FLCS	Leica TCS SP8 SMD FLCS
	High Content Screening	Leica HCS A
	STED Super-Resolution	Leica TCS SP8 STED 3X
	FRAP	Leica TCS SP8
	Supercontinuum Imaging	Leica TCS SP8 X
	Low Light Imaging	Leica TCS SP8 HyD
Quantitative Imaging	FLIM	Leica TCS SP8 SMD FLIM
	FCS	Leica TCS SP8 SMD FLIM
	FLCS	Leica TCS SP8 SMD FLIM
3D Imaging	High Content Screening	Leica HCS A
	Photon Counting	Leica TCS SP8 HyD
	STED Super-Resolution	Leica TCS SP8 STED 3X
	Multiphoton	Leica TCS SP8 MP
	Confocal Imaging	Leica TCS SP8
	Confocal Imaging	Leica TCS SP8 HyD
	High Content Screening	Leica HCS A
	Supercontinuum Imaging	Leica TCS SP8 X

From Eye to Insight

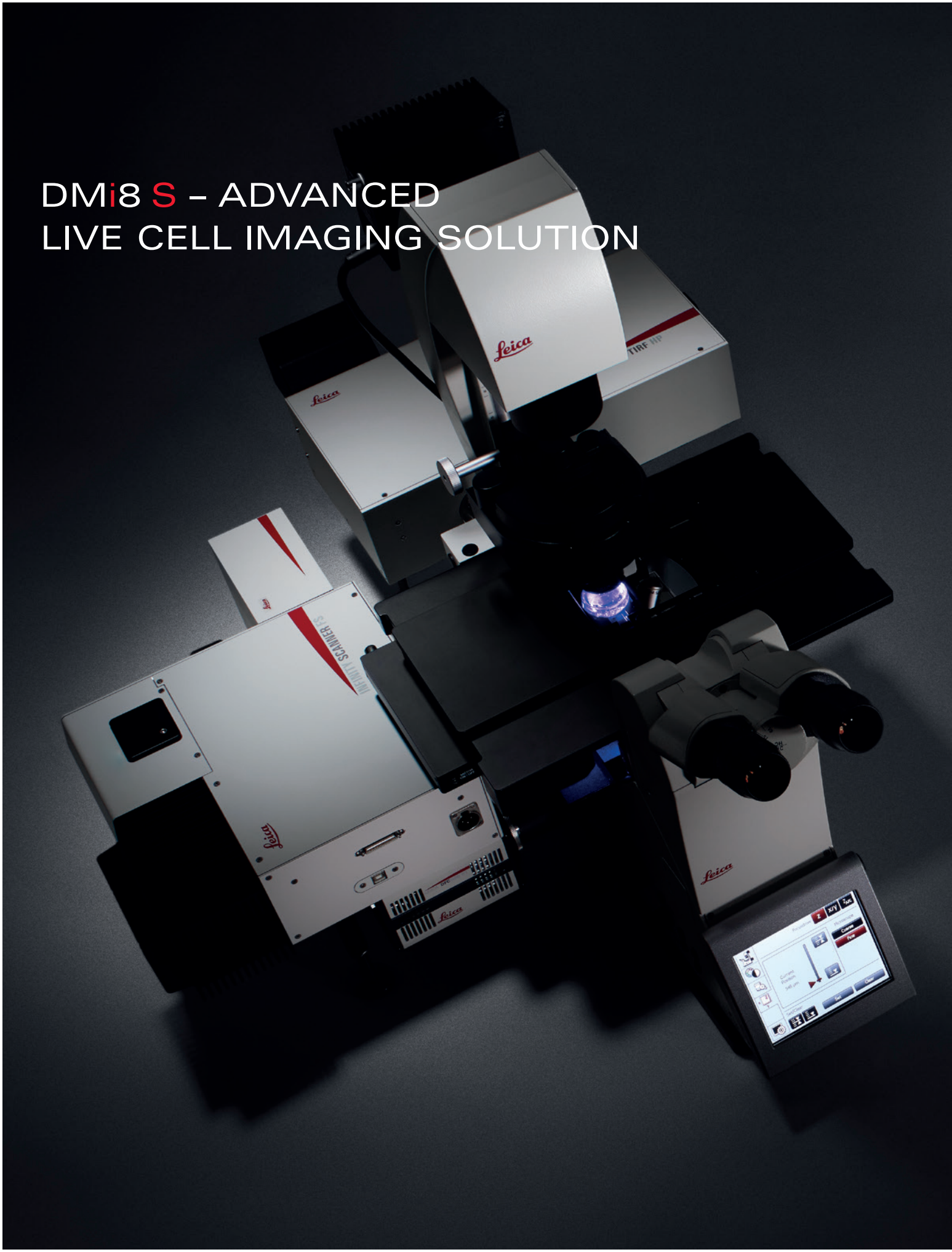
Leica
MICROSYSTEMS

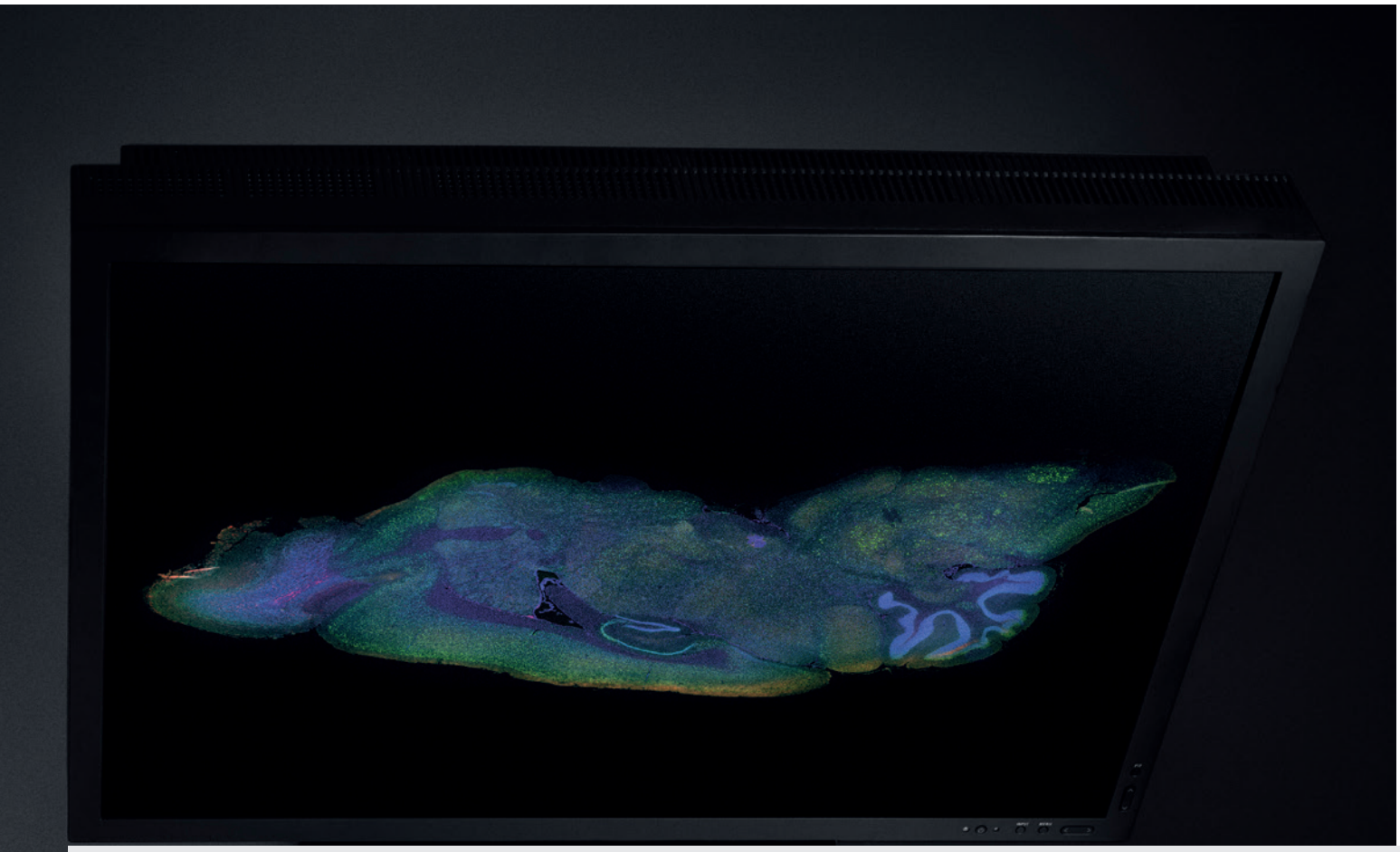
FIND THE MISSING LINKS

DMi8 S

Advanced Live Cell Imaging Solution

DMi8 S – ADVANCED LIVE CELL IMAGING SOLUTION





See what you've been missing

The DMi8 S is a complete solution for advanced widefield research. The research process begins with the discovery and analysis of single molecules. From there, piecing together interactions between complexes and signaling pathways leads to the analysis of complete systems – culminating in breakthroughs in understanding and treating human health.

The key to the next scientific discovery lies in finding the missing links connecting your data. Whether you need to precisely follow the development of a single cell in a dish, screen through multiple assays, obtain single molecule resolution, or tease out behaviors of complex processes, the DMi8 S system will enable you to see more, see faster, and find the hidden.

The next chapter in widefield imaging

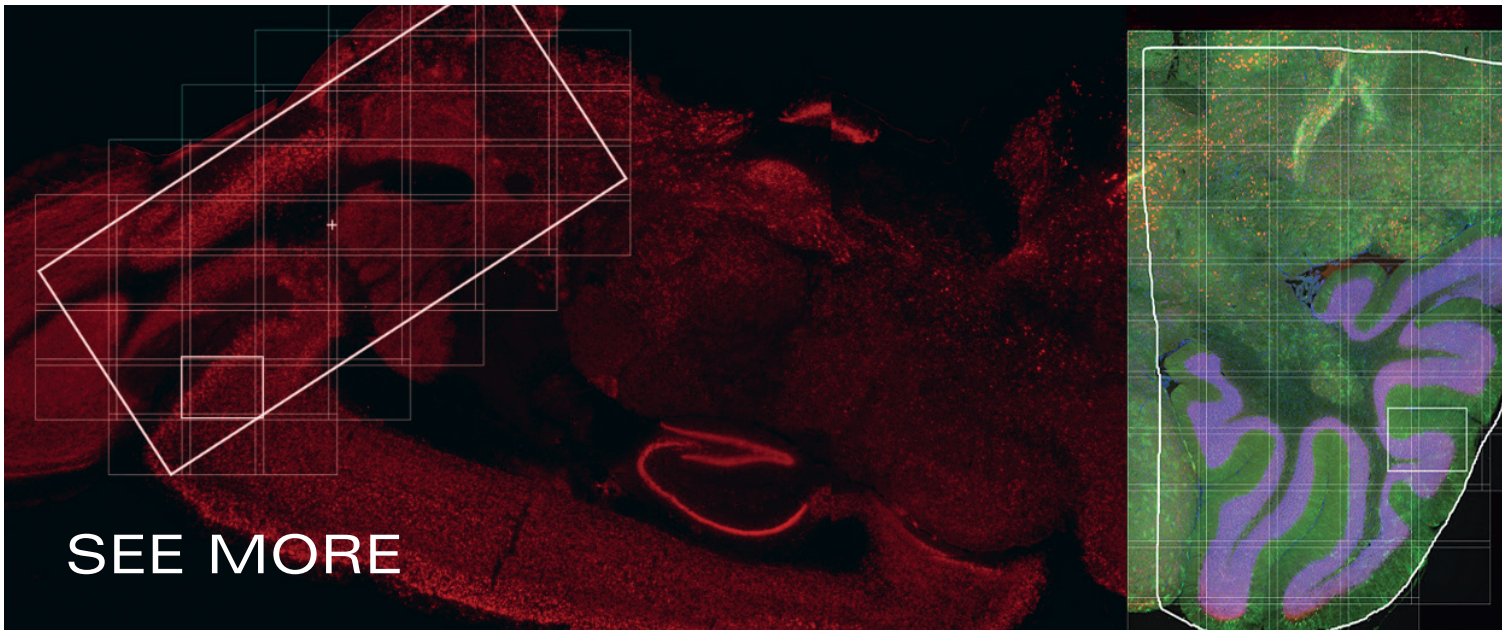
At the heart of the DMi8 S system is the modular DMi8 inverted microscope. Fully configurable with manual to motorized components, it allows you to create the ideal imaging system for your research and budget needs.

Every DMi8 microscope can be equipped with up to two Infinity Ports, allowing direct access to the infinity space for flexible upgrading of your DMi8. Flexibility is built into the DMi8 microscope, and this is extended even further with the DMi8 S. With added software tools, revolutionary high speed control, and the Infinity modules, the DMi8 S is truly a complete research solution.

See more – Increase your viewing area up to 10,000x

See faster – Image up to 5x faster

See the hidden – Activate, ablate, and bleach within one experiment



Overview scan of mouse brain section with proliferating cells (BrdU – red), cell nuclei (Dapi – blue), and mature neurons (NeuN – green) stained, with two regions of interest selected for higher resolution tile scans. Courtesy of Dr. Wei Mo, School of Life Sciences, Xiamen University, China.

LAS X NAVIGATOR SOFTWARE

INCREASE YOUR VIEWING AREA UP TO 10,000X

See more of the links you've been missing

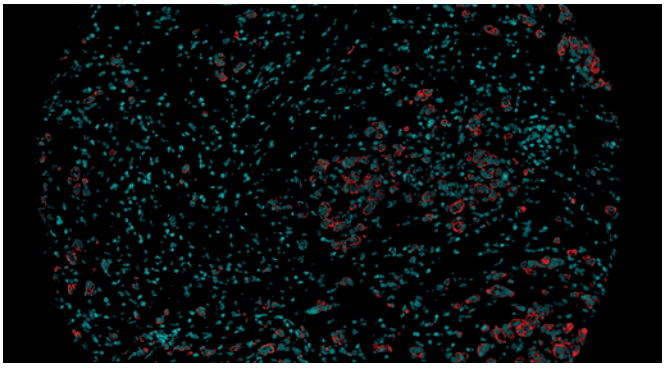
Switch from searching image by image to seeing the full overview of your samples. Like a GPS for your cells, LAS X Navigator ensures that you always have a clear roadmap to brilliant data. Create fast overviews of your samples and identify the important details instantly. Then set up high resolution image acquisition automatically using templates for slides, dishes and multiwell plates.

For drug screening assays, use LAS X Navigator to take a fast overview of an entire 96 well plate using a low magnification. Quickly identify the wells with interesting morphology, then set up a high resolution image acquisition of the chosen candidates for deeper analysis, all within the same workspace.

When searching for rare cellular events to image, searching manually often takes a lot of time and causes significant photostress to the cells. LAS X Navigator enables quick overviews of an entire dish, saving valuable time to find the interesting cells to study.

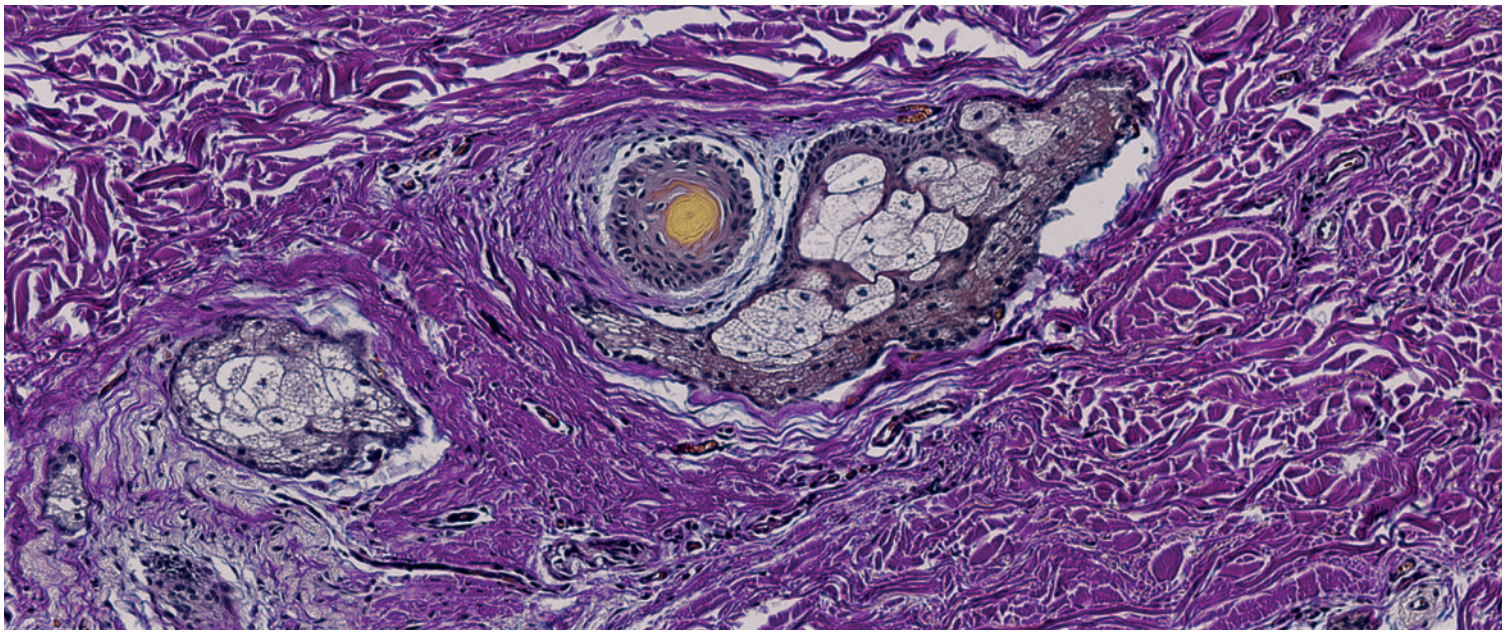
LAS X Software

LAS X Navigator is the latest addition to the Leica Application Suite X (LAS X) software, an integral part of the DMi8 S solution. The software is packed with features for advanced experiments, yet remains as flexible and usable as the microscope itself. Choose from a host of acquisition modules, plus add powerful analysis capabilities to create meaningful and publishable data.



Tile scan image of tissue micro array (TMA) of human tissue stained with two fluorescent markers. Courtesy of Dr. Angela Nieto Toledano, Institute of Neurosciences, Universidad Miguel Hernández (UMH), Spain.

Mouse embryonic sections. Courtesy of Didier Hensch, IGBMC, Strasbourg, France.

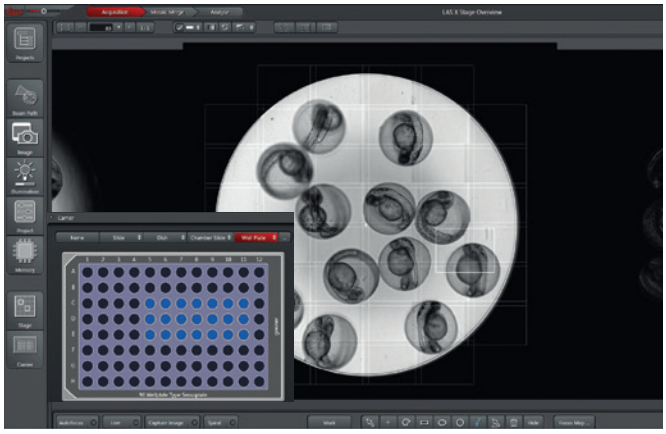


Herovici staining of human skin with scar tissue. Courtesy of Dr. Swathi Balaji, Baylor College of Medicine, Houston, Texas, USA.

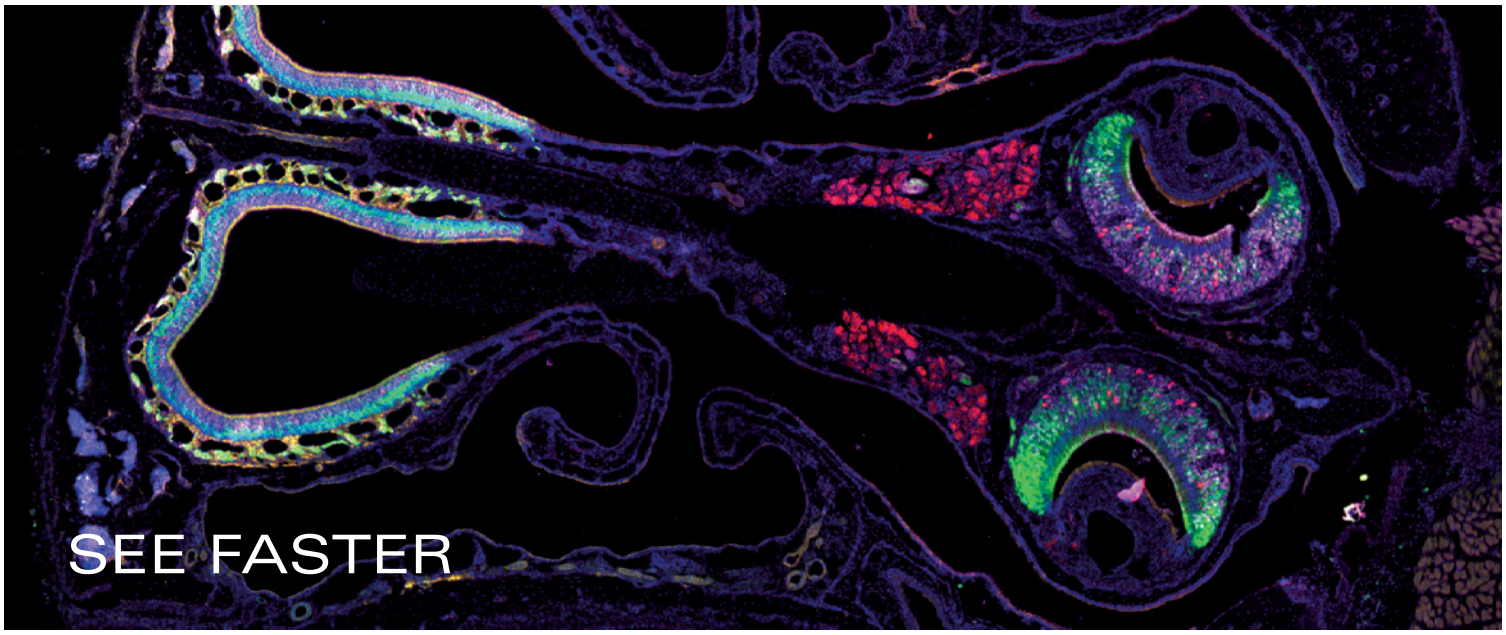
Find your answers

No matter what experiments you have in mind, LAS X Navigator is the key to all applications on your DMi8 S imaging system.

- **Generate overviews from your live image**
- **Create spiral scans to search in the vicinity of your current location**
- **Display images in sample carrier templates for quick orientation**
- **Use any magnification, camera, detector, and contrasting method in the same workspace**
- **Define an unlimited number of regions and positions for high resolution scans or multiwell projects**
- **Zoom swiftly in and out of your sample**
- **Move to any stage location by mouse click**



Zebrafish larvae. Courtesy of Ravindra Peravali, Institute of Toxicology and Genetics, Eggenstein-Leopoldshafen, Germany.



Three color immunostained coronal section of mouse nasal cavity.

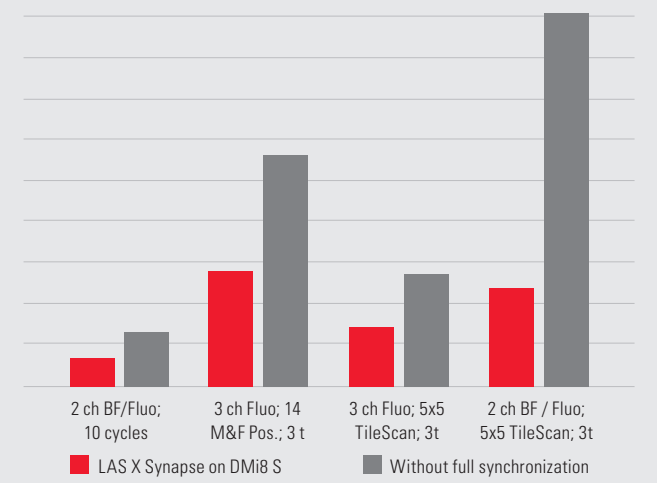
DMi8 S POWERED BY LAS X SYNAPSE

CAPTURE MORE DETAILS WITH UP TO 5X FASTER EXPERIMENTS

Find the missing links in your data faster

Utilize the LAS X Synapse advanced sequencer to follow events like vesicle trafficking and movement of kinesin motors along axonemes in simultaneous multi-color TIRF fluorescence at multiple stage positions over time. No matter which of the instrument components are part of the experiment, the system will run at the highest speed possible.

The DMi8 S imaging solution with LAS X Synapse software eliminates the bottlenecks between system components, resulting in dramatically faster imaging. With an integrated real-time controller that directly interacts with all of your hardware components, cameras and peripherals, you can control your entire system with micro-second precision. Time lapse experiments up to 5x faster mean you can both save time and capture more details.



Faster imaging with DMi8 S. Comparison of total time for standard experiments before and after LAS X Synapse control.

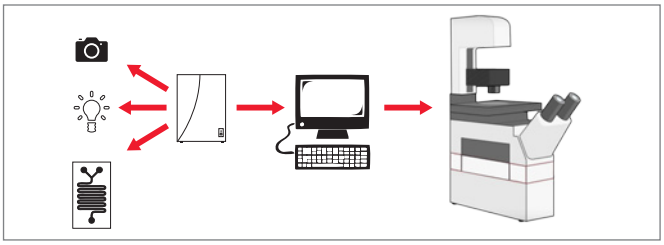


Fig. 1: Slow and convoluted connections between the system components limit the system's overall acquisition speed.

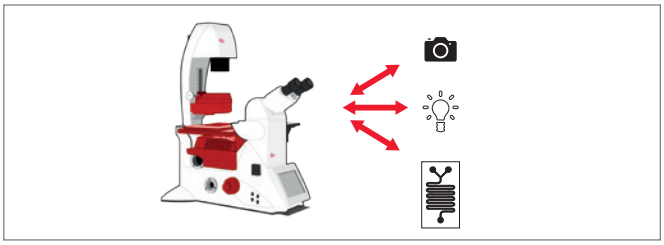
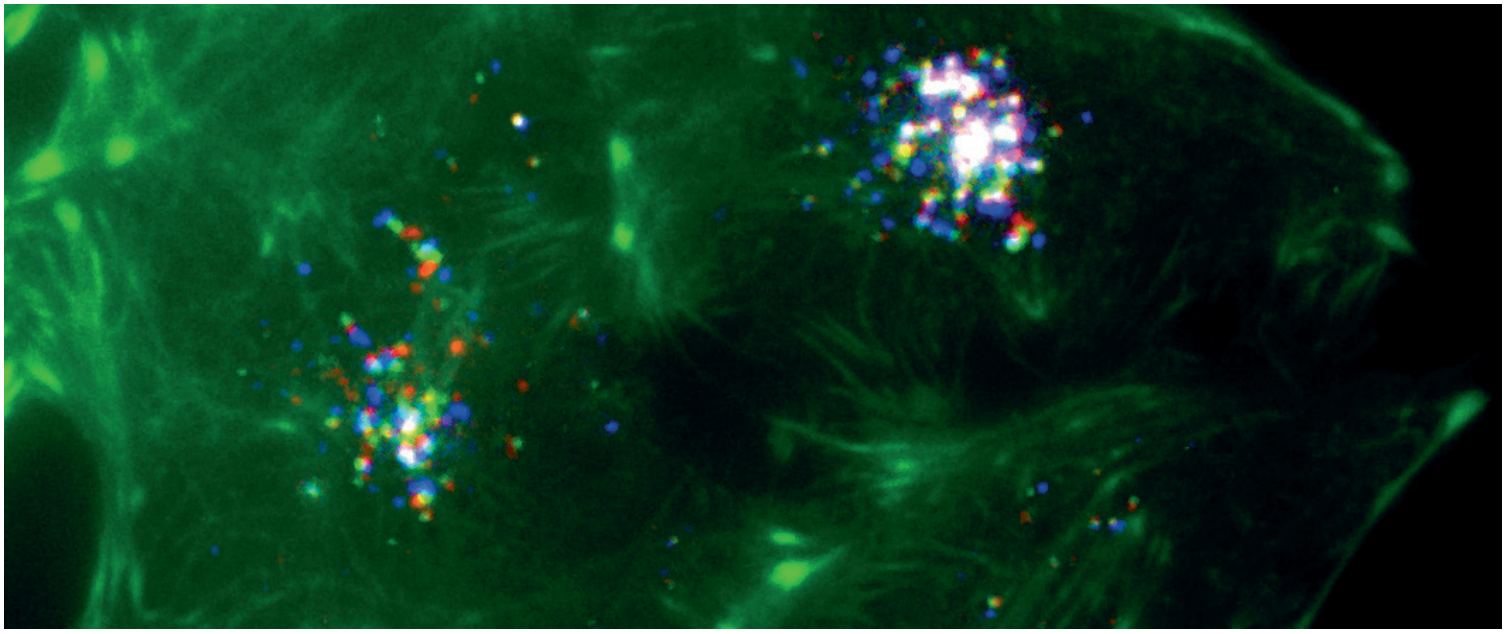
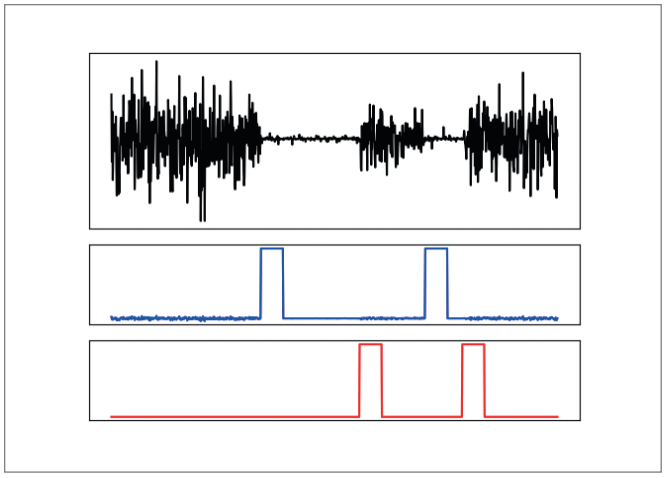


Fig. 2: The DMi8 S with LAS X Synapse allows you to achieve the highest acquisition speed possible by processing data more efficiently.



Hela cells stably expressing Actin Chromobody-TagGFP2 and SIR-Lysosome. Overlay of three separately colored timepoints collected using Hi-Lo illumination showing lysosomal movements. Chromobody-TagGFP2 imaged using TIRF. Courtesy of ChromoTek GmbH, Munich, Germany, and Spirochrome SA.

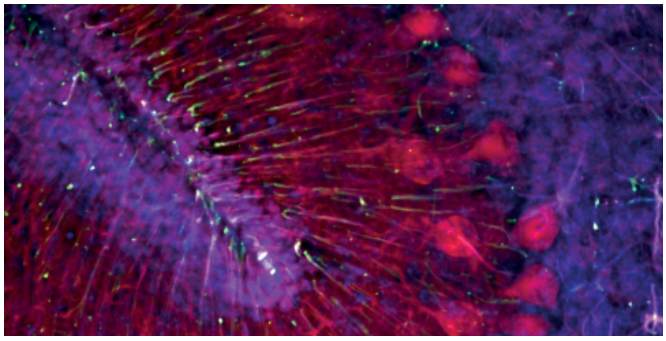


Precisely synchronize your functional imaging to external stimuli. External sensor data (black) used to control imaging by sending stimuli triggers (red) and receiving imaging triggers (blue).

Full synchronization – Control any motorized component in the system without software jitter

Microsecond controller – Reach the highest speed through control of all parameters in real-time

Addition of peripherals – Control and sequence peripheral devices like light sources, microfluidics, and robotics with the full flexibility of LAS X

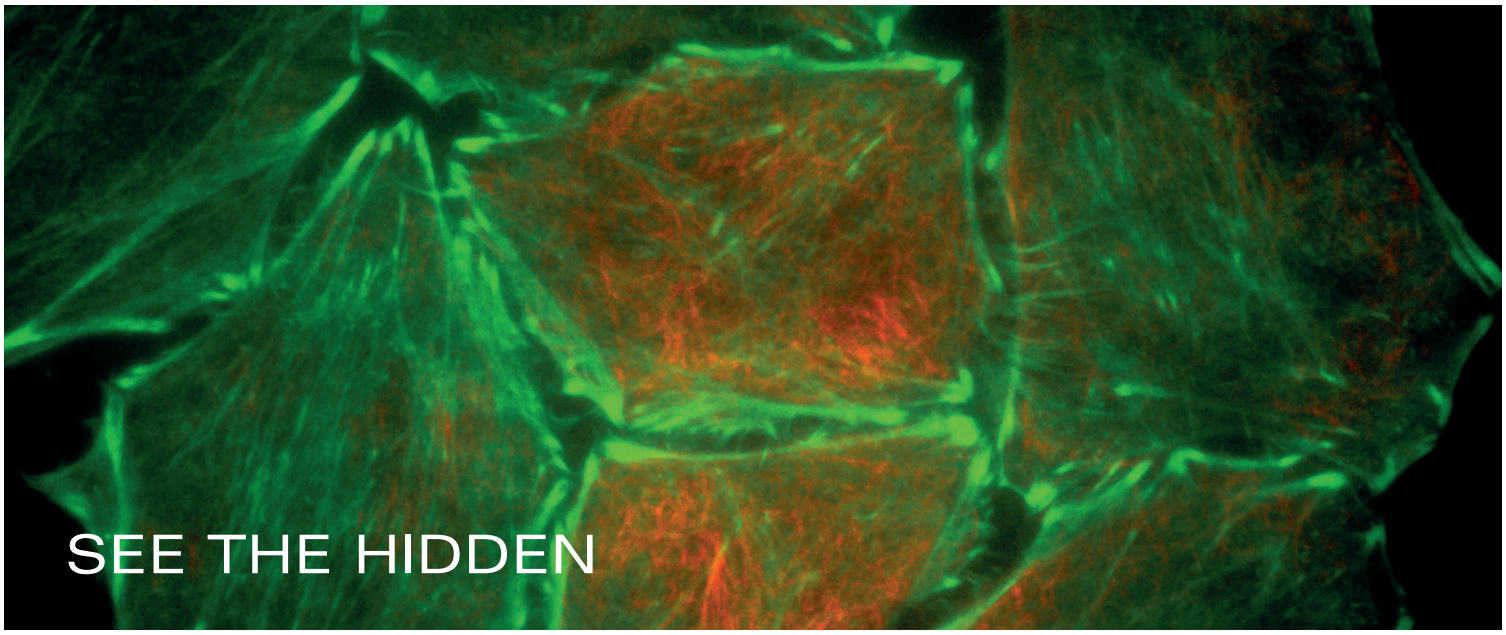


Use the DMi8 S with the advanced sequencer to set up dynamic experiments examining cellular responses.

Precise control

For specialized live cell applications, you can now add additional devices to the system and set up fully LAS X controlled experiments with precise timing and control of third party devices. With the ability to freely specify the behavior of the connections, you can create imaging sequences to analyze an organism's response to external stimuli delivered via third party devices. Define both digital and analog signals, and set up the trigger signaling independently from the image acquisition with exact timings and full reproducibility.

You can freely specify the behavior of the connections, by defining analog and digital signals. Then, set up the trigger signaling to send signal to and from devices independently from the image acquisition, allowing you to flexibly control the parameters of your experiment.



Hela cells stably expressing Actin Chromobody-TagGFP2 and stained with SIR-Tubulin. Courtesy of ChromoTek GmbH, Munich, Germany, and Spirochrome SA.

DMi8 S INFINITY TIRF

SIMULTANEOUS MULTI-COLOR TIRF & SUPER-RESOLUTION MODULE

Reveal the missing links in your cells

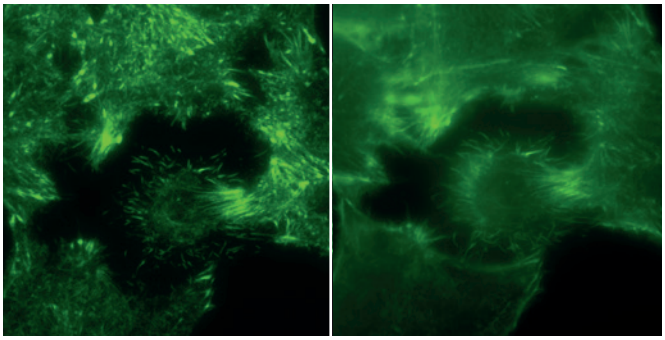
Observe samples with outstanding clarity, control, and confidence with the DMi8 S Infinity TIRF module. For dynamic processes at the cell surface, TIRF (Total Internal Reflection Fluorescence) microscopy is the method of choice to visualize single molecules with super-resolution by maximizing the fluorescent signal-to-noise ratio. The Infinity TIRF module delivers versatile application possibilities with simultaneous multi-color EPI, Hi-Lo and TIRF illumination capability, as well as a high power illumination option for super-resolution applications.

Super-resolution

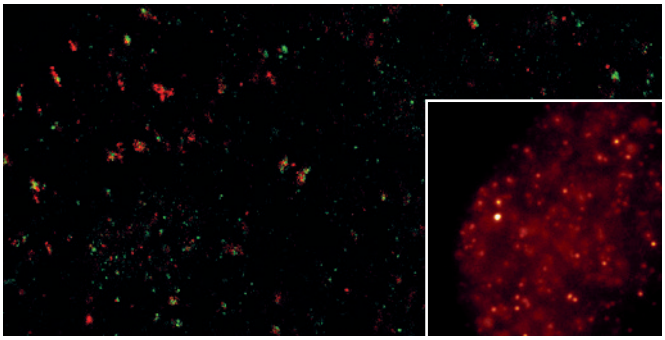
Supercharge your system with super-resolution and nanoscopy capabilities. Choose the Infinity TIRF High Power (HP) system to give you the ability to achieve multi-color single molecule resolution at the cell surface to resolve structures involved in receptor trafficking, synaptic organization, or cell adhesion. With the high-powered lasers option, you can image and analyze down to 20nm resolution with techniques such as single molecule particle tracking, GSD, dSTORM and uPaint.

Infinite possibilities

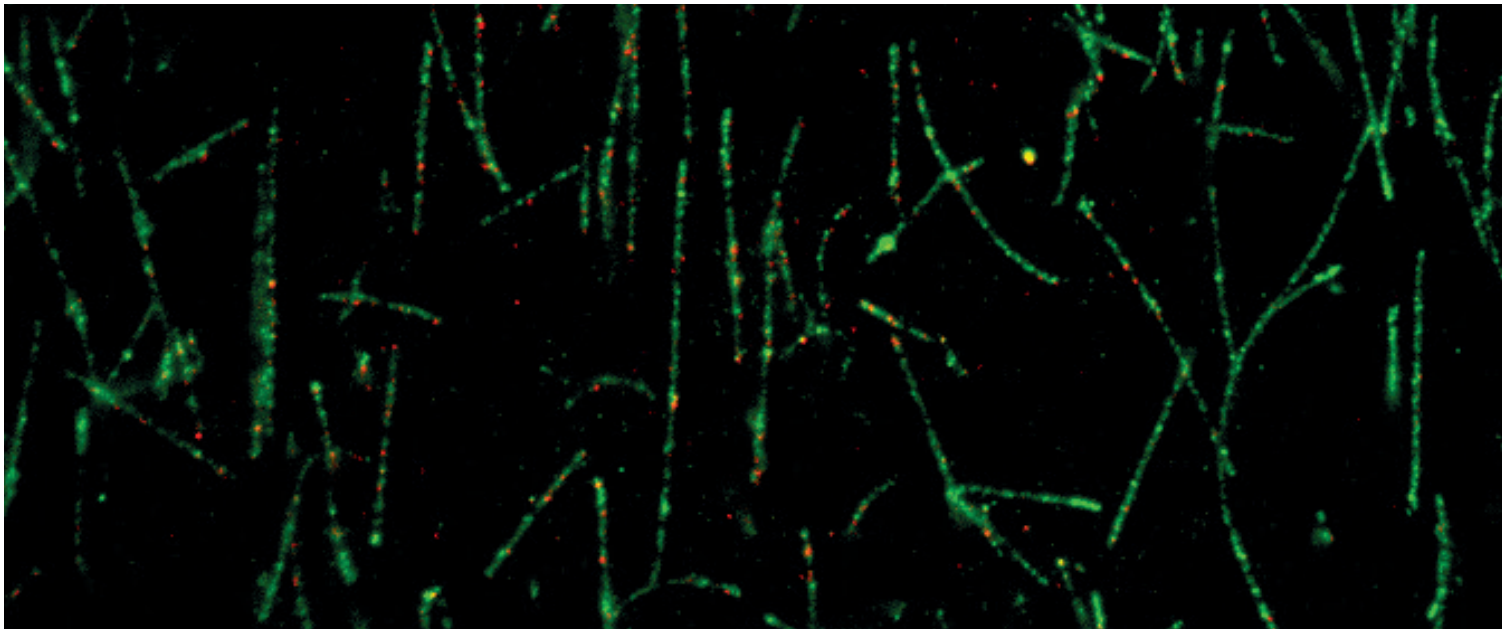
The DMi8 S solution is built with flexibility in mind. The Infinity TIRF module adds another Infinity Port to the system, allowing you to put up to three devices on the system at once. The unique optical design optimizes your ability to customize the system to your needs, without compromising the quality of your data.



TIRF versus widefield: Hela cells stably expressing Actin Chromobody-TagGFP2. Courtesy of ChromoTek GmbH, Munich, Germany.



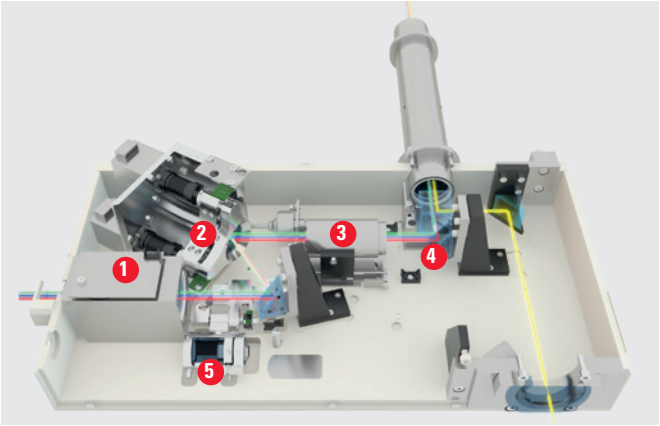
Comparison of 2 color widefield (inset) versus STORM imaging of radiation induced foci showing colocalization of two DNA damage repair proteins. Courtesy of Dr. Kalina Haas, Hutchison MRC Research Centre, University of Cambridge, UK.



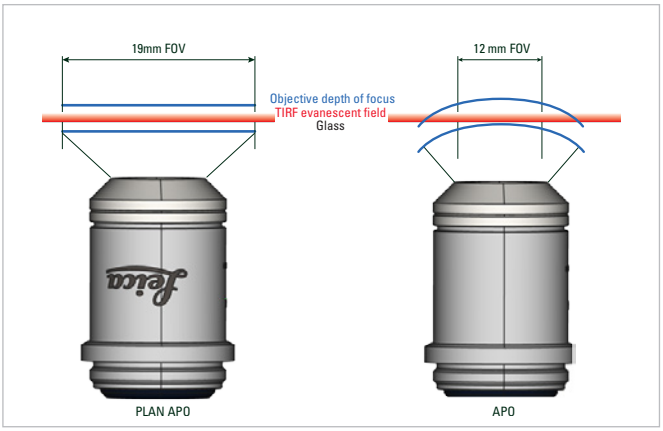
In vitro tracking experiment of Kinesin-2 from c.elegans at saturating ATP concentration. 11 subunit labeled with Snap-Alexa 488, 20 subunit labeled with Halo-660. Courtesy of Willi Stepp, Technical University of Munich, Germany.

Usability and reproducibility

Take the mystery out of setting up a TIRF experiment with the fully automated Infinity TIRF. Sample-specific alignment and calibration via integrated sensors ensure that your results are consistent and reproducible. Full integration with LAS X software helps you minimize setup and training time so that you can get to what really matters: your experiment. The Infinity TIRF can be customized with up to 5 lasers spanning from 405 to 640nm, so you can see the entire spectrum of fluorescence in your samples, with simultaneous multi-color imaging.



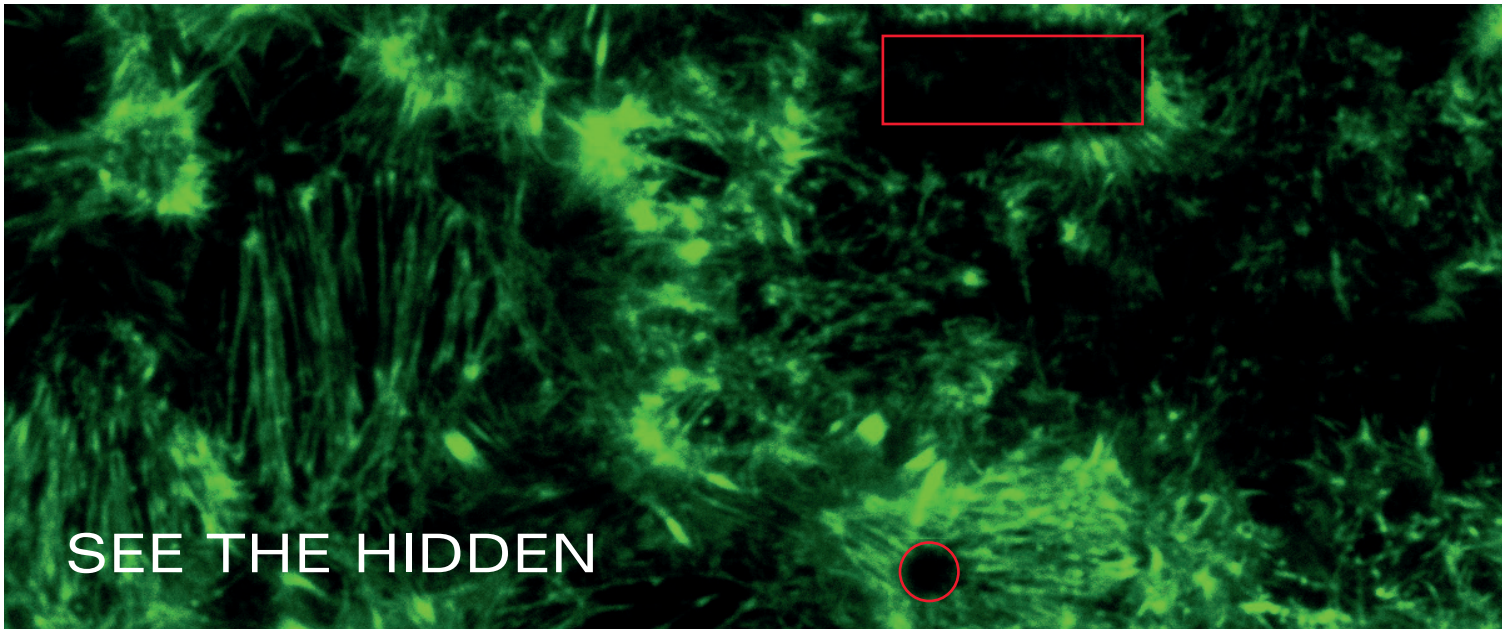
1. TIRF Sensor: Detects the back reflected beam and enabling reproducible automated adjustment of TIRF penetration depth in every sample
2. TIRF Scanner: Fine-tuning of TIRF penetration depth and adjustment of illumination direction (azimuth)
3. Movable collimator: Allows TIRF over full z-travel range with all Leica TIRF objectives
4. Merge Optics: Combines a second illumination light path through Infinity TIRF module
5. Beam Expander: Infinity TIRF HP module increases the power density on the sample for super-resolution imaging



Dedicated TIRF objectives – Leica's high quality PLAN APO corrected TIRF objectives enable a homogenous TIRF imaging over a full 19mm field of view (FOV).

High image quality starts with brilliant optics. With Plan APO corrected TIRF objectives and Field Number 19, you can see the smallest details of your sample, even at the edges of the field. The Infinity TIRF module connects to the DMi8 S imaging solution directly via the Infinity Ports, a perfect match for advanced imaging with sCMOS cameras.

The flexibility of the DMi8 S system extends even further, allowing multiple imaging modalities in one system. The Infinity TIRF module can be combined with the SP8 confocal microscope or the Infinity Scanner module, available both for new systems and to upgrade your existing system.



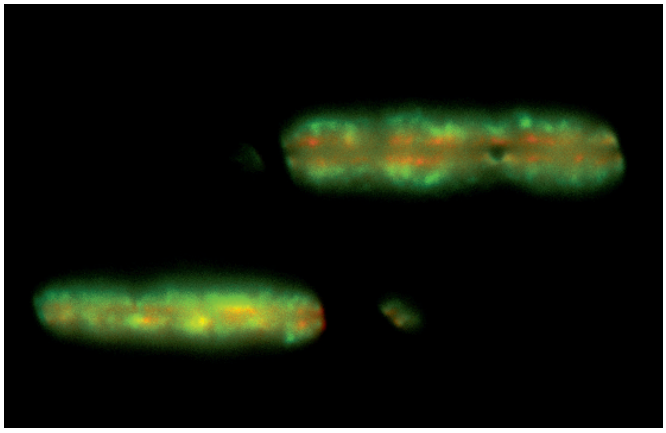
Hela cells stably expressing Actin Chromobody-TagGFP2. Courtesy of ChromoTek GmbH, Munich, Germany.

DMi8 S INFINITY SCANNER

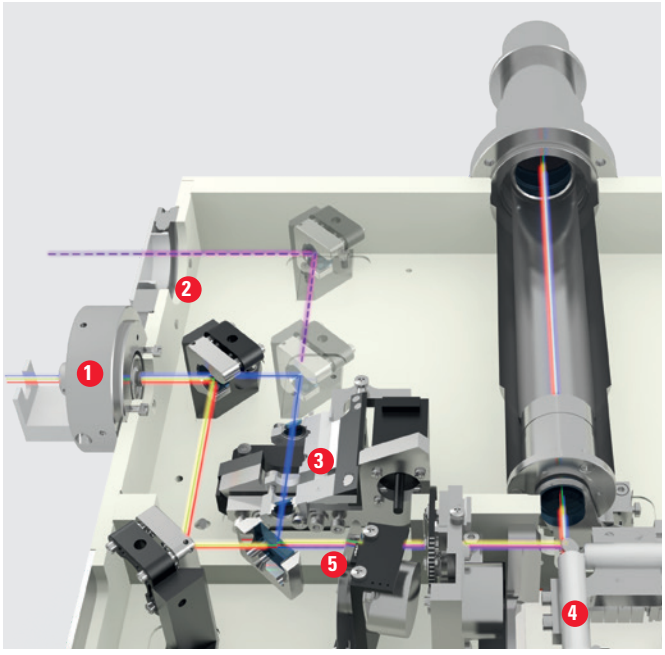
ACTIVATE, ABLATE, AND BLEACH IN ONE EXPERIMENT

Unmask the links hiding within your cells

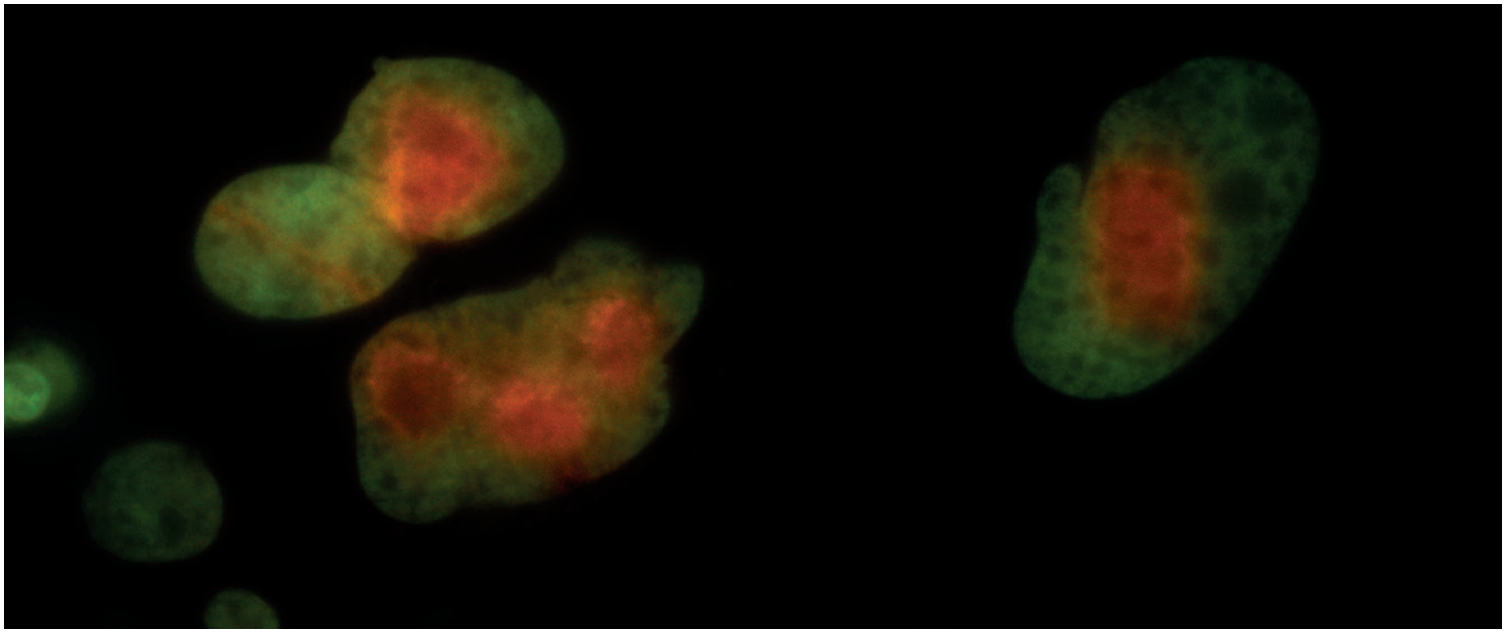
Whether you need to bleach, cut, activate, stimulate or even combine multiple techniques, the Infinity Scanner can be configured to address your needs. The Infinity Scanner is designed to enable your advanced multispectral photomanipulation applications. High speed vector scanning capabilities allow you to not only have precise control, but to take full advantage of the camera-based widefield system of the DMi8 S to capture fast cellular processes.



U2OS cells stably expressing paGFP-H2B treated with Hoechst and photostimulated with 405nm laser. Overlay of two timepoints showing propagation of chromatin decondensation upon DNA damage from a single horizontal line. Courtesy of Dr. Rebecca Smith, Physiological Chemistry, Biomedical Center, Ludwig-Maximilians-University, Martinsried, Germany.



1. Fiber Port: Coupling of laser fiber from Widefield Supply Unit, stand-alone lasers or 3rd party lasers
2. Free Space Port: Fiber free direct laser coupling
3. Vario-Optic: Corrects 350 – 800nm wavelength lasers for parfocal scanning
4. Galvo scanners: High speed X-Y scanning of laser beam
5. Aperture: Adjustment of the scanner laser beam profile



Dendra2-H2B photoswitching. Courtesy of Dr. Rebecca Smith, Physiological Chemistry, Biomedical Center, Ludwig-Maximilians-University, Martinsried, Germany.

LAS X Software integration

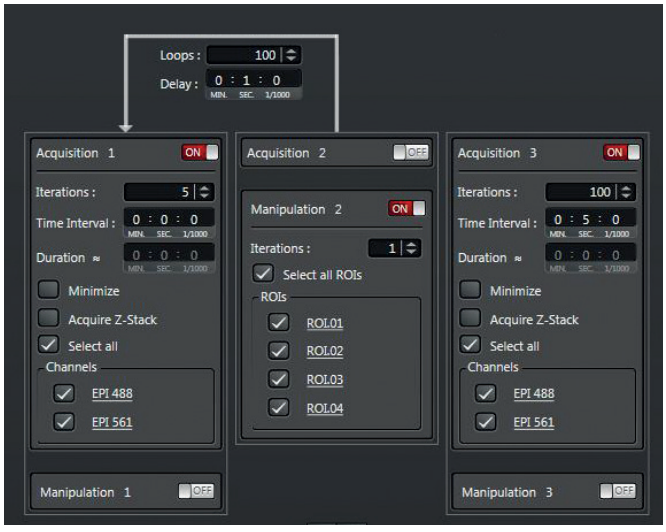
The Infinity Scanner is fully integrated into the LAS X software, so planning and executing even complex experiments is simple. Using the LAS X interface, set up multiple laser powers and channels for techniques like FRAP, FLIP, acceptor bleaching, activation, switching, optogenetics, DNA damage, cutting, ablation, or uncaging within a single experiment.

Tunable Photomanipulation

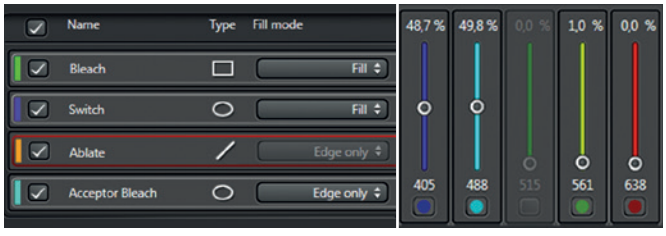
With dual optical pathways, the Infinity Scanner module is able to chromatically correct a wide range of lasers for multi-spectral photomanipulation applications using any objective. Add to that an adjustable beam profile for flexible execution of experiments, and the Infinity Scanner delivers great application flexibility.

Advanced experiment design

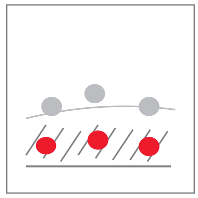
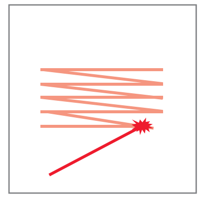
Use the new experiment design tool to set up and execute advanced experiments combining multiple imaging modalities. The modular design allows you to perform imaging tasks, like photomanipulation or TIRF, both simultaneously and sequentially. Quickly master setting up simple to complex time lapse experiments, z-stacks, and acquisition loops with this expandable tool.



Add and configure experiments using the flexible experiment design tool in LAS X software.



Define multiple photomanipulation tasks and laser powers in a single experiment.

Applications	Infinity TIRF	Infinity Scanner	DMi8 S powered by LAS X Synapse	LAS X Navigator
Live Cell Imaging	●	●	●	●
Membrane Physiology	●	●	●	●
Localization Microscopy	●		●	●
Combination with SP8 Confocal	●		●	●
Kinetic Studies	●	●	●	●
Photomanipulation		●	●	●
Molecular Dynamics	●	●	●	●
Nanoscopy/Super-Resolution	●		●	●

Tailor-made service solutions

When you buy equipment from Leica Microsystems, we deliver far more than a technological assembly of beautifully crafted components. Our goal is to deliver tailor-made service solutions to ensure optimal results, peace of mind, success, and pride. With ServiceCare, Leica Microsystems offers a range of service and support programs that are matched to a spectrum of requirements, systems, and budgets.

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www.leica-microsystems.com/dmi8

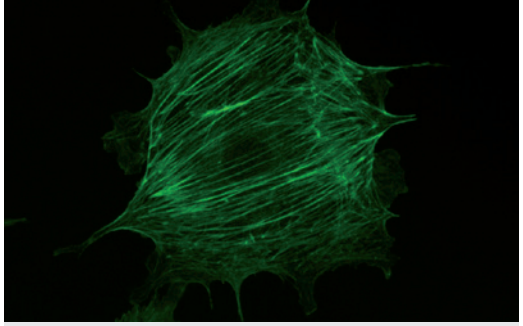
From Eye to Insight

Leica
MICROSYSTEMS

LEICA DM IL LED

Brilliant Optics Combined with Innovative Illumination

The New Inverted Microscope for Routine and Laboratory Microscopy in Cell Biology and Medicine



INVERTED ROUTINE MICROSCOPY IN A NEW LIGHT

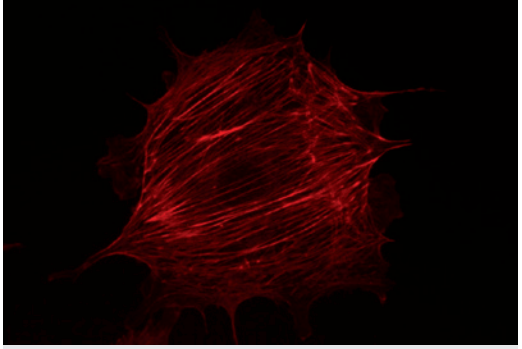
Compact and stable

- Lean and sturdy design
- Plenty of space for operation
- Low stage height
- Large dimensions and low center of gravity of microscope
- Large working distances

Wide variety of possible applications

- Cell biology and medicine
- Micromanipulation (injection, IVF, ICSI)
- Medicine
- Biotechnology
- Developmental biology
- Transgenics
- Molecular biology
- Fluorescence applications

Optical performance and illumination are key elements in microscopy. Both characteristics are unified in the new design of the Leica DM IL LED. As an inverted routine microscope, the Leica DM IL LED is not only equipped with Leica HC optics, but also features innovative LED illumination. The transmitted-light illuminator including optimized condensers and improved contrast methods are adapted specifically for cell biology applications. High stability, plenty of space for operation, large working distances, illumination without heat development and the separately accommodated electronics provide optimum conditions for microscopy. The Leica DM IL LED is exceptionally well-suited for uses ranging from various cell and tissue culture examinations in life sciences, developmental biology studies or micromanipulation in cell biology to living cell examinations in transgenics or electrophysiology.



The fluorescence version, the Leica DM IL LED Fluo, also offers a variety of possible applications. Optionally, it is also available with the new LED illumination.

Heatable microscope stages and 3-plate cross-stages provide great flexibility for experiments on living cells under physiological conditions.

The Leica DM IL LED has a further advantage that distinguishes it from other microscopes in its class: The stand is highly compatible with components of the Leica research microscopes. Objectives, eyepieces, tubes, camera ports, contrast methods. Additionally, special tubes and condensers have been developed for the Leica DM IL LED.

Integrated fluorescence

- Manual fluorescence with three filter cubes
- Integrated shutter
- Optionally LED, classic mercury illumination or fiber optic coupling

Flexible and modular

- A full range of optical components
- Compatible with research stands
- Unheated and heated stages
- Large selection of tubes
- Comprehensive range of accessories for special applications

THE MOST COMPREHENSIVE ARRAY OF CONTRAST METHODS

All available contrast methods can be adapted to individual applications easily and quickly. Two condensers have been developed specifically for the Leica DM IL LED, which can be used for the entire magnification range of the respective contrast method. The high-resolution S40/0.45 condenser makes even tiny details of a specimen visible. Both condensers, the S40/0.45 and S80/0.30, allow for use of phase contrast up to the 63x objective as well as Integrated Modulation Contrast (IMC) up to the 40x objective.

Fatigue-free operation

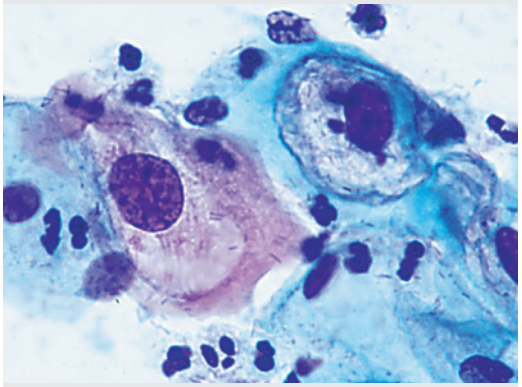
The ergonomic arrangement of all controls such as the focus dial, brightness controller, condenser height adjustment, objective nosepiece and XY stage adjustment allow users to be relaxed while working with the microscope – even for hours. The height-adjustable stages, Ergo tubes with variable tube height, flexible viewing height, and the interpupillary distance and diopter setting enable each user to configure his or her personal Leica DM IL LED. The large working distances provide sufficient room for large culture flasks, and the unobstructed view of the specimen area facilitates handling more difficult specimens.

Brightfield
All Leica brightfield and phase objectives from 2.5x to 100x can be used for stained specimens. The bright field method can be used even for low magnification levels without condenser. A working distance of 200 mm is realized simply by unscrewing the condenser head.

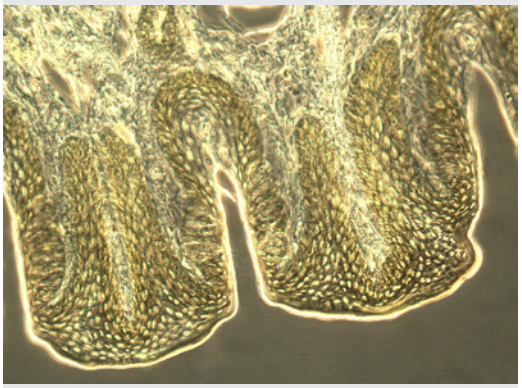
Phase contrast
Phase contrast is used primarily in live cell microscopy to make structures in unstained specimens visible. Three preadjusted light rings on a slider allow phase contrast for all objectives from 5x to 63x. No readjustment is necessary when changing the objectives. The intelligent LED illumination adjusts the brightness automatically when switching between the phase contrast and brightfield method.

Integrated Modulation Contrast (IMC)
IMC creates relief-type images and has proven to be an alternative to Differential Interference Contrast (DIC), particularly in micromanipulation. The IMC developed by Leica Microsystems does not require special objectives because the IMC modulator is not integrated into the objective, but operated via a separate slider. The IMC illumination slider is encoded and controls the LED illumination. IMC is available for both condensers and for standard 10x, 20x, 32x and 40x objectives.

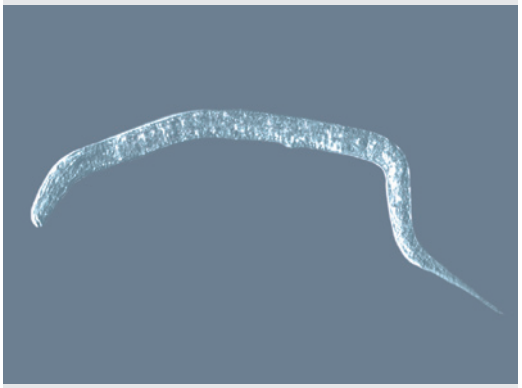
Fluorescence
Incident-light fluorescence is an integral part of the Leica DM IL LED Fluo microscope variant. The fluorescence slider holds three filter blocks. The transmitted light method and fluorescence can be used simultaneously. This way, object structures can be clearly assigned. Each filter block comprises an optimally matched combination of excitation, reflection and barrier filters. Illumination can be generated via the Leica SFL100 LED illumination, the classic mercury illumination or the Leica EL6000 fiber optic coupling.



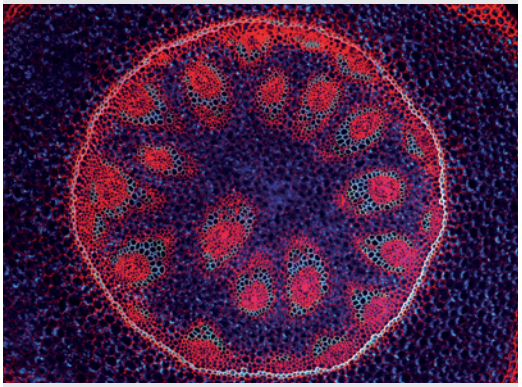
PAP smear, Brightfield



Section taste buds rabbit, Phase Contrast



C. elegans, Integrated Modulation Contrast (IMC)



Convallaria lilly of the valley,10x, Fluorescence

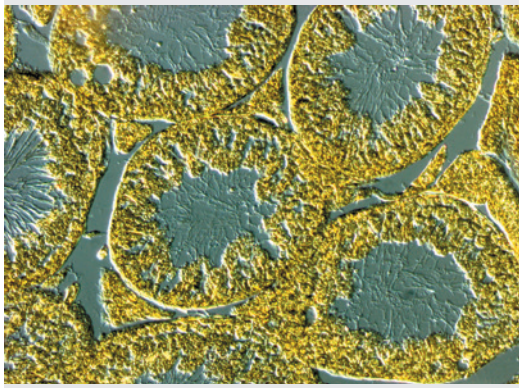
PERFECTLY ILLUMINATED

High-intensity and high-contrast

- 5 watt LED illumination
- Constant color temperature
- Automatic brightness adjustment to the contrast method
- Phase contrast from 5x to 63x
- Modulation contrast for 10x, 20x, 32x and 40x
- Integrated modulation contrast
- Without special objectives; for all condensers

Cost-effective and efficient

- Low energy consumption
- No heat buildup
- LED with a service life of 50,000 hours
- "Auto-off" function for illumination



Rat testes, Integrated Modulation Contrast (IMC)

The Leica DM IL LED is an inverted routine microscope with LED illumination for the transmitted-light method. The compact illumination unit includes a precentered light emitting diode that has a service life of 50,000 hours.

The LED, with a service life at least 250 times longer than that of conventional halogen lamps, is easy to maintain and very cost-effective. The 5 watt power of the LED is completely converted into light while maintaining uniform color temperature. Nearly no unwanted heat is generated. Optionally, users can activate the integrated automatic shut off – an additional contribution to energy savings.

In particular the phase contrast and IMC are optimized by the warm hue of the LED. With the help of the attachable filter, the illumination impression can be individually adapted in both directions of the color spectrum.

The integrated collector attains optimum light utilization and the integrated aperture diaphragm creates optimum contrast and resolution for every specimen and every objective.

ANYTHING GOES

For the first time, a condenser concept has been realized in the Leica DM IL LED that allows all contrast methods with all condensers. With a working distance of at least 40 mm and a numerical aperture of 0.45, the S40 condenser is the perfect tool for applications for which optimum resolution is the most important parameter. Phase contrast and IMC ensure optimum contrasting.

The working distance of at least 80 mm and 0.30 aperture of the S80 condenser are the ideal prerequisites for achieving maximum possible free room around the specimen and optimum contrasting at the same time. The continuous adjustment of the condenser height depending on specimen vessel and liquid layer is a one-of-a-kind feature. It ensures maximum flexibility when using peripheral microtools.

Whether you work with thin sections or thick specimens, phase and modulation contrast produce a brilliant microscopic image for all specimens and applications.

Perfect for your applications –
the S40 and S80 condensers

High-intensity and high-contrast –
the 10 W LED illumination

FLEXIBLE FLUORESCENCE

Innovative LED illumination for fluorescence applications with the Leica SFL100.

Fluorescence applications, in particular GFP labeling, play an ever more important role in clinical diagnostics and routine microscopy. The Leica DM IL LED Fluo has been designed in consideration of this trend. The microscope has been equipped with a fluorescence axis and a 3-position slider to ensure fast and easy switching to different fluorochromes. The slider glides smoothly in an elaborately constructed dovetail guide. An extensive, constantly growing range of filters allows a wide variety of fluorescence examinations. The filter blocks are optimized for minimizing stray light. Excitation, reflection and barrier filters adapt to your application. Transmitted-light methods can be used simultaneously or as an alternative so that fluorescent and nonfluorescent structures can be clearly assigned. An integrated shutter protects the specimen against bleaching.

The Leica DM IL LED Fluo is a routine fluorescence microscope that allows users to choose between classic illumination (halogen, mercury or high-pressure xenon lamps), the "cold" light guide coupling of the Leica EL6000 and the new LED illumination, Leica SFL100. This gives users the ability to excite and examine fluorochromes to see more detail under the microscope. A dark background and the bright emitted fluorescence produce brilliant color images. The field of applications ranges from DAPI (UV) for nuclear staining to CY5 (IR) for immunohistochemical arrays. The Leica DM IL LED Fluo thus is a high-performance instrument for use in immunology, cytology, virology – and in any field that requires fluorescence techniques for living specimens.

Leica DM IL LED with fluorescence axis and 3-position slider

CAPTURING EVERY DETAIL

A large selection of tubes is available for the Leica DM IL LED. All tubes can be rotated individually by 360° and are equipped with a 1x tube lens and an eyepiece holder for HC optics.

In addition, two special tubes have been developed for the Leica DM IL LED:
– ILB binocular tube with a viewing angle of 45°
– ILT trinocular tube with a viewing angle of 45° and vertical camera port with selectable light path (100% photo or 100% visual). The port is positioned 88 mm to the side and allows an unobstructed view of the specimen at all times. It is also possible to center the camera port.

Nine other tubes from the range of accessories for upright Leica microscopes are also available. These include different tubes with fixed viewing angles and Ergo tubes with variable viewing angles, Ergo tubes with camera port and different splittings of the light path.

Apart from the Ergo Modules for variable height adjustment, Leica Microsystems offers a drawing attachment for special examinations and a discussion attachment for two observers.

A large selection of TV adapters is available for a wide variety of camera types. Leica digital cameras offer many advantages for live cell microscopy. The product range includes everything from color cameras for various applications to monochrome camera systems for fluorescence applications. Leica digital cameras offer variable resolutions for live imaging; Resolutions range between 1.3 and 12 megapixels at a color depth of up to 14 bits per color channel.

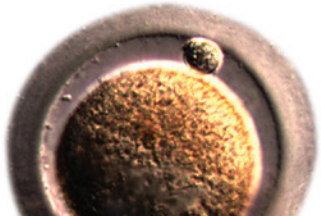
Leica DM IL LED with trinocular tube
for transmitted-light applications

Discussion attachment for two observers
on the Leica DM IL LED

PROPERLY CULTURED

Heating insert for Petri dishes

TempControl 37 for Leica DM IL LED stands with heating stage

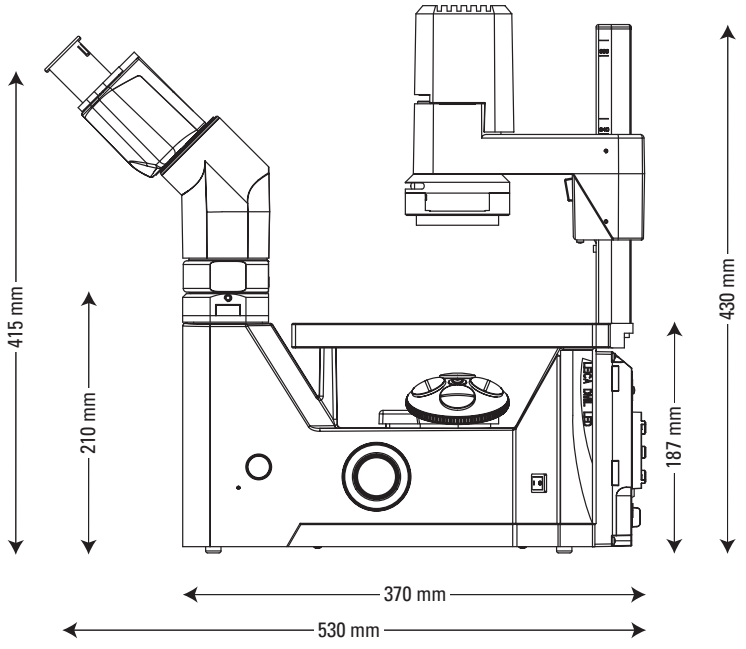


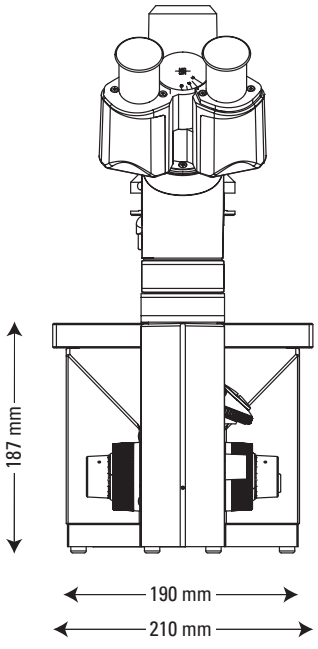
In live cell microscopy, the right microscope stage and the corresponding accessories are important prerequisites for the best results. In addition to the fixed stages with or without mechanical stage, Leica Microsystems offers 3-plate cross-stages with different inserts for a wide variety of culture flasks. All microscopes are also available with heating stages or heating inserts. The sturdy mechanical system and the compact stand ensure best possible stability.

Leica DM IL LED	
Optics	Infinity corrected (HCS), tube factor 1x
Field of view	20 mm
Lamp power supply	External power supply AC input: 100-240 V 0.33-0.19 A DC output: 5 V ⎓ 2 A
Illumination	5 watt LED
Focusing	Coarse and fine adjustment, nosepiece focusing, vertical travel 7 mm
Objective Nose-piece	4-position, M25x0.75 objective thread
Stage	Fixed work stage with 3-point support 248 x 212 x 20 mm or Heating stage 248 x 212 x 20 mm incl. TempControl 37 or 3-plate stage, 150 x 150 mm insert plate, adjustment range 60 x 40 mm
Transmitted-light illuminator arm	with illumination unit, with precentered LED illumination incl. collector, diffusion filter, iris aperture diaphragm, condenser holder
Additionally for fluorescence versions:	
Lamp housing	Interchangeable lamp housings for fluorescence
Fluorescence	Integrated lamp mount in a massive, stable back panel, integrated fluorescence axis, 3-position fluorescence slide for three different filter blocks, dark stop

OVERVIEW OF THE LEICA DM IL LED

		DM IL LED Fluo	DM IL LED
Optics	Leica HC optics (infinity corrected) HC objectives: 2.5x–100x	●	●
Objective Nosepiece	Four positions	●	●
Focus	Coaxial coarse and fine adjustment, travel path 7 mm, nosepiece focusing	●	●
Transmitted-light illuminator	5 watt LED, external power supply (in 100-240, out 5 V/2 A) Filter holder for TL filter Ø 32 mm, collector, scattering filter	●	●
Condenser	Interchangeable condenser heads: S40/0.45: available working distance 40 mm, aperture 0.45 S80/0.30: available working distance 80 mm, aperture 0.30	●	●
Contrasting	Precentered insert with four positions (Brightfield, 5x–63 x Phase Contrast) Insert for IMC illumination (Brightfield, 10x, 20x, 32x, 60x IMC)	●	●
Contrast methods	Brightfield, Phase Contrast, Integrated Modulation Contrast	●	●
Fluorescence	Fluorescence slider with three positions for filter cubes Manual light stop	●	—
Fluorescence illumination	Fluorescence LED Leica SFL100, 50 W Hg, 100 W Hg, Leica EL6000 fiber optic coupling	●	—
Stages	Fixed stage, fixed heating stage, 3-plate stage, attachable mechanical stage for both fixed stages	●	●
Documentation	Camera port for all Leica digital cameras and common camera models	●	●
Tubes	– Binocular tube 45°, interpupillary distance 55–75 mm, field of view 20 mm – Trinocular phototube 45°, interpupillary distance 55–75 mm, field of view 20 mm, with camera port positioned 88 mm to the side, selectable 100% photo or 100% visual Additional options in the Leica DM product line: – Standard binocular tube 30°, Ergo binocular tube 15° – Ergo Vario binocular tube 7.5–15°, Ergo Vario binocular tube 0–55° – Ergo Vario binocular tube 5°–32° and eyepiece extension 0–30 mm – Standard trinocular phototube 30°, Ergo Vario trinocular phototube 0°–35°	●	●





CONNECT
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www.leica-microsystems.com

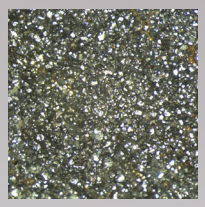
From Eye to Insight

Leica
MICROSYSTEMS

Digital HD Microscope Cameras

The best decision leaves you options

The Leica MC170 HD and Leica MC190 HD



Easy. Fast. Brilliant.

Fast and precise HD live preview images – right on your HD monitor! Absolutely user-friendly and, with an outstanding price/performance ratio, the new Leica MC170 HD and MC190 HD microscope cameras complement the high-definition product range for optimum use in industry and research. The perfect interaction of trend-setting quality, ultimate convenience of operation, and innovative image management create ideal requirements for ergonomic, efficient work with excellent results.

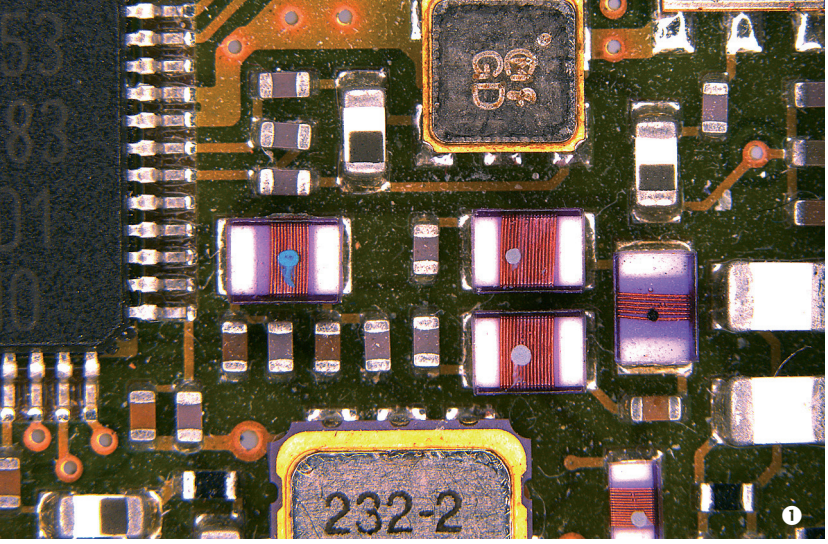
Best performance for highest requirements

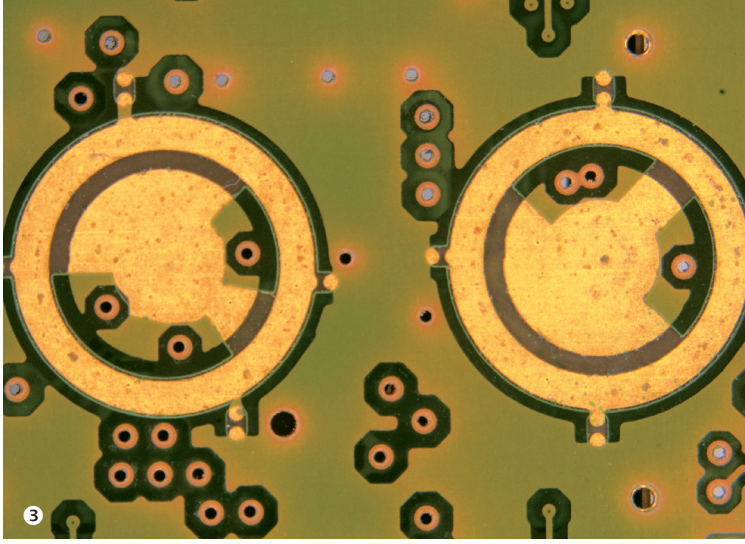
The high-performance Leica MC170 HD and MC190 HD microscope cameras provide ultra-high-speed live images via an HDMI interface to a high-definition monitor, or via a USB interface to a computer screen. Depending on the operating mode configured, the camera can be operated entirely separately, directly with a remote control on an HD monitor, or on a computer with high-performance Leica imaging software that was developed for the special requirements in microscopy. Brilliant and professional – the results of the new HD microscope camera are impressive!

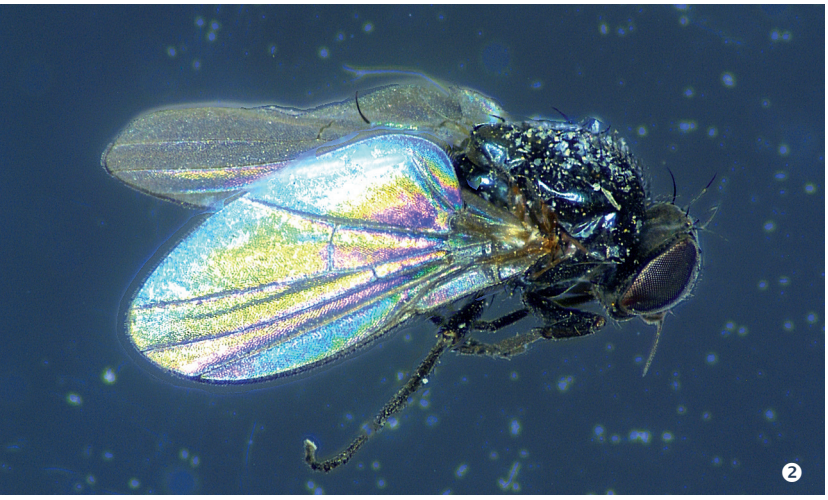
The infrared remote control allows comfortable work: Faster changeover to other camera modes; running a white balance operation; capturing movie clips for fast documentation and hands-on training; saving directly to an SD card. In addition, all camera parameters can be controlled directly and conveniently, even advanced settings such as brightness, intensification, or contrast of the image.

User-friendly menus on the monitor support professional processing of images. This enables digital watermarks, company logos, or even bar displays to be very easily copied right into the images.

Comfort and convenience at the touch of a button: RC2 remote control







❶ Inspection of electrical parts and soldered joints
❷ Visualization of a fruit fly wing *(Drosophila melanogaster)*
❸ Examination of the surface composition of printed circuit boards
❹ Simple and fast: All switches and plug connections are located on the rear side of the camera for easy access.

For all requirements:
Cost efficiency by means of flexibility

With the C-mount interface, the compact HD microscope cameras fit on every commercially available Leica microscope, macroscope, or imaging instrument. That makes them particularly flexible and of interest for individual requirements and budgets.

With the C-mount adapter, even existing microscopes can be easily and cost-efficiently enhanced with the advantages of the Leica MC170 HD and MC190 HD cameras.

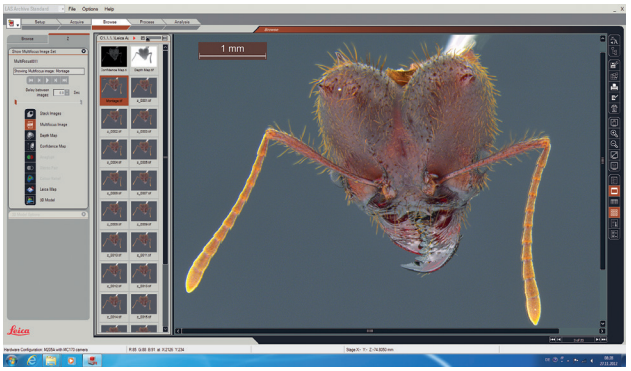
To the heart of the matter.
Perfect image management

It has never been easier to acquire and edit first-class images. The new Leica MC170 HD and MC190 HD cameras get right to the heart of today's requirements for innovative image management.
Use of the latest CMOS image sensors guarantees maximum image quality – pin-sharp and natural images, even in unfavorable light conditions.
The intelligent automatic mode adapts exposure time, gamma, and various other camera settings to nearly every situation with amazing precision.

The latest image processing algorithms provide perfect results in images or brilliant HD videos – whether on a computer, right on the HD screen, or on the mobile SD card.

For all requirements:
Leica Application Suite (LAS) Software

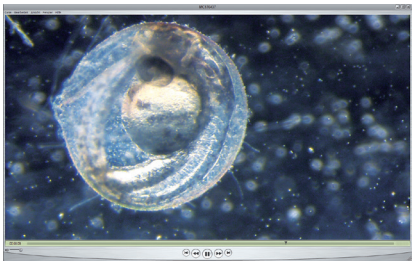
Leica Application Suite (LAS) is the platform for all of the microscopes and microscope cameras from Leica Microsystems. Precise measurements and analyses are carried out on the digital image with it. This software allows expansion with a multitude of modules, which are unified in a collective, easy-to-use user interface. The compact and free Leica EZ software is suited for easily making remarks and measurements. For Apple users there is the user-friendly Leica Acquire camera software. Just like LAS, it contains many intuitive functions for optimal camera settings. Using Leica Acquire, images can be transferred to other image editing programs immediately, such as iPhoto or Aperture, or stored in a simple gallery.



Added value including:
LAS with LAS Montage module (top image) and LAS EZ (bottom image)

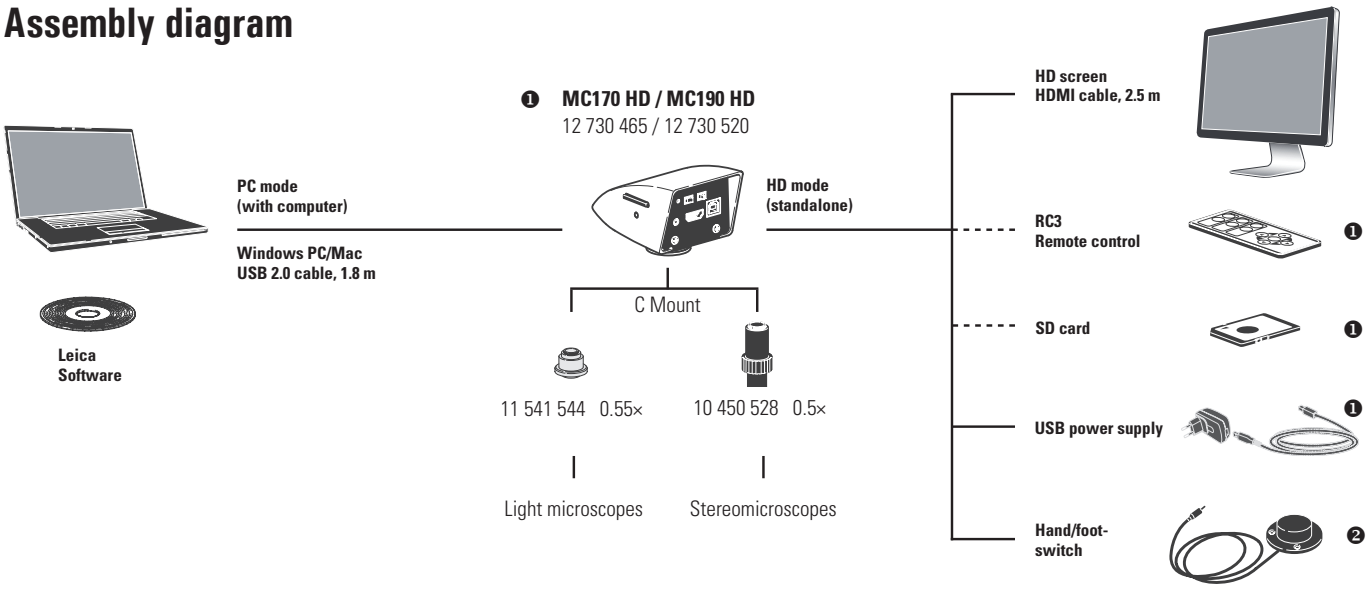
BENEFITS OF THE LEICA MC170 HD & MC190 HD:

- Digital microscope camera with HD live image for operation with or without a computer.
- Leica MC170 HD with a resolution of 5 megapixels, optimum for most microscopy applications.
- Leica MC190 HD with a resolution of 10 megapixels, also suited for acquiring the finest details at low magnifications.
- Very fast or high-resolution live preview images on an HD monitor (720 p or 1080 i/p).
- Outstanding price/performance ratio and cost efficiency.
- Ergonomic, thanks to view switching between the binocular tube and the HD monitor.
- Highly compact – with the corresponding C-mount adapter, it fits on any microscope with a C-mount port.
- Easy, inexpensive, fast and high-quality image storage to the SD card.
- Full HD movie clips recorded directly to the SD card (MP4 format).
- Direct control of all camera parameters via infrared remote control (in HD mode).
- Captured images stored and managed directly on the computer.
- Best image quality and sharpness without vignetting or reflections.
- Automatic, predefined, or user-specific selection of camera parameters.
- USB2 connector for power supply and data transfer via computer.
- Including the standard LAS software for easy camera control, image acquisition, commenting, and measuring.



Easy and reproducible documentation
Brilliant Full HD movie clips

Assembly diagram



Leica MC170 HD & MC190 HD – Technical Data

CAMERA		MC170 HD	MC190 HD
Resolution (Live images)	HD ready	1280×720 – 50 Hz / 60 Hz – 30 fps	
	Full HD	1920×1080 – 50 Hz / 60 Hz / 25 Hz / 30 Hz – 30 fps	
	PC	1600×1200 – 10 fps 1024x768 – 24 fps	1600x1200 – 10 fps 1400x1050 – 13 fps 1024x768 – 24 fps
Resolution (Individual images)		5 Mpixel (2592×1944) 2.5 Mpixel (1824×1368) 2 Mpixel (1600×1200) 0.8 Mpixel (1024×768)	10 Mpixel (3648×2736) 5 Mpixel (2592x1944) 2.5 Mpixel (1824×1368) 2 Mpixel (1600×1200) 1.5 Mpixel (1400×1050) 0.8 Mpixel (1024×768)
Resolution (Movie clips)		HD1080 (1920×1080) HD720 (1280×720)	
Pixel size	at max. resolution	2.35 µm × 2.35 µm	1.67 µm × 1.67 µm
Sensor grade		Aptina 1/2.3" CMOS	
Sensor size		6.1 mm × 4.6 mm	
Exposure time		0.5 msec – 500 msec	
Gain		1× – 12×	
Color depth		3x8 bit = 24 bit	
Data format	PC	JPG / TIF / AVI	
	HD	JPG / MP4	
Operating systems & Software		Windows 7 and Windows 10 (LAS and LAS X) Windows 8 (LAS only) OS X (Leica Acquire)	
Recommended computer configuration:		PC / Mac, Intel Core 2 Duo, >2.4 GHz, 4 GB RAM, 24-bit graphics	

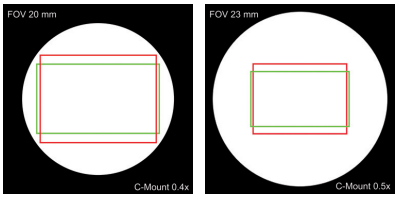
MECHANICAL AND OPTICAL INTERFACES	
Mechanical	C-mount thread
Color filter	Type IRB680, replaceable, (stock number: 12730484)
Recommended C-mount adapter	0.55× / 0.5×

ELECTRONIC INTERFACES	
Computer	USB 2.0, standard USB plug type B
High-definition connector	HDMI 1.3, standard HDMI plug type A
Audio	Audio signals for recording, white balance, etc. (can be turned off)
On/Off switch	Available, on rear side of the camera
PC/HD switch	Available, on rear side of the camera
Pinhole switch	Display for the current resolution, Changeover to the next resolution, reset, firmware upload
Remote control	Infrared remote control RC3
Remote release (Optional: 12730229)	Hand and foot trigger, with 1.5 m cable
SD card (Secure Digital)	SD HC compatible, 128 MB – 32 GB
Status LED	3 colors: green – power on, yellow – busy, red – error
Power supply	Through a USB cable to computer or to external USB power supply 5 V
Power requirement	4 W

OTHER	
Operating temperature range	+5 °C – 50 °C
Rel. humidity	10 – 90 %
Weight	250 g (camera only)
Confirmation of CE conformity	Available
Tested standards	EMI/RFI: EN55011-B EMC: EN61000-3-3 / EN61010-1 / EN61326-1 / EN61326-2-3

ORDER NUMBERS	
12 730 465 ❶	Leica MC170 HD camera (including USB power supply, HDMI cable, SD card, RC3 remote control)
12 730 520 ❶	Leica MC190 HD camera (including USB power supply, HDMI cable, SD card, RC3 remote control)
12 730 229 ❷	Hand or footswitch with 2 m cable

The Leica MC camera has an image section with a 16:9 size ratio for live images on an HD monitor (shown with a green frame). The images are always saved in a 4:3 size ratio (shown with a red frame).



Leica DM500 / DM750

The Leica MC170 HD and MC190 HD fit excellently on the Leica DM500 or DM750 school microscopes. These feature many particularly user-friendly details, such as EZLite, EZStore, and AgTreat™. To use the cameras on these microscopes, we recommend using the high-quality 30° or 45° trinocular tubes.

Leica Z6Apo / Z16Apo

When using the Leica MC170 HD and MC190 HD with a Leica Z6Apo or Z16Apo macroscope, a trinocular tube can be omitted entirely. With an A tube and C-mount adapter, highly compact and optically outstanding systems can be composed. The fast live image can be conveniently viewed on an HD monitor in high resolution.

Leica M60 / M80

The ergonomically and modularly designed Leica M60 and Leica M80 routine stereo microscopes offer a large field of view, high depth of field, and excellent optical resolution. With an HDF or HDV tube, the Leica MC170 HD and MC190 HD cameras can be connected to these microscopes.

Leica M125

The modular Leica M125 stereo microscope offers a fully apochromatically corrected 12.5:1 zoom. This large range of positions allows an overview of the specimen as well as observation and acquisition of the finest structures. With a 50 % or 100 % trinocular tube, the Leica MC170 HD or MC190 HD can be connected to this microscope.

CONNECT
WITH US!

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www.leica-microsystems.com

From Eye to Insight

Leica MICROSYSTEMS

LEICA DFC9000 GT
LEICA DFC9000 GTC

sCMOS Microscope Camera

GET CLOSER TO REALITY

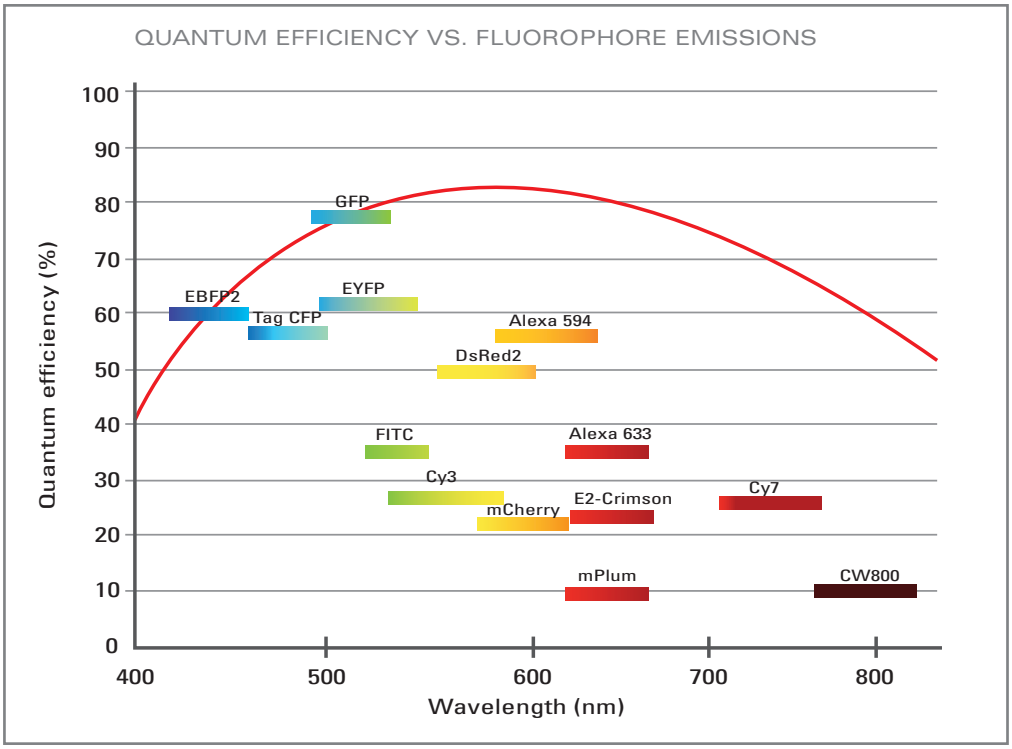
Imagine you could image live cells as close as possible to their native state. Capture even faint fluorescent signal you currently miss. And discover what happens in the time between two subsequent images. Imagine you could get a better view of what really happens in cells!
The Leica DFC9000 will turn your imagination into reality. This monochrome microscope camera with newest scientific CMOS (sCMOS) sensor technology for fluorescence imaging enables you to image your cells under near-native conditions.

- Protect your cells with short exposure times
- Capture highly dynamic processes with high-speed acquisition
- Get more information in one image with large field of view

SPECIFICATIONS

Camera type	4.2 MP sCMOS monochrome fluorescence camera
Sensor	Front-illuminated scientific CMOS CIS2020A from BAE
Shutter	Rolling shutter with global reset
Pixel	2048 x 2048 (4.2 MP); 6.5 µm x 6.5 µm pixel size
Sensor size	13.3 x 13.3 mm (~19 mm diagonal)
Speed of acquisition*	50 fps (USB 3.0); >90 fps (Camera Link)
Maximum quantum efficiency	~82% @ 580 nm
Bit-depth	12 bit / 16 bit
Cooling	0°C @ 27°C ambient, air-cooled
Binning (hardware binning)	2x2, 3x3, 4x4, 8x8
Partial scan	Freely definable region of interest (ROI), combination with binning possible
Internal memory	1 GB
Dark current	~ 0.14 e^-/px/sec
Read noise	0.9 e^-
Dynamic range	1 : 33000
Pixel clocking rate	540 MHz / 216 MHz
Supported operating systems	Windows 7 and Windows 8
Software	Leica Application Suite (LAS) X
C-mount	1x for inverted and upright compound microscopes
Interfaces	USB 3.0 or Camera Link
Camera package	Camera package includes camera head, cables and PCIe board, LAS X DVD, and instructions for use

* depends on software in use



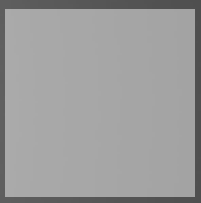
From Eye to Insight

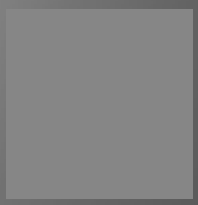
Leica
MICROSYSTEMS

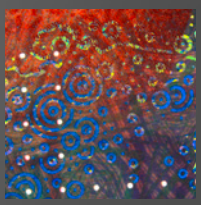
Imaging in Manufacturing and Life Science Research

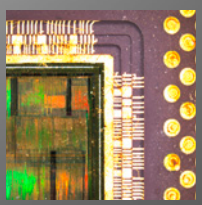
EVERY DETAIL COUNTS

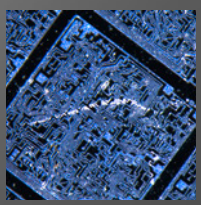
CMOS Microscope Camera
DMC5400 with 20 MP

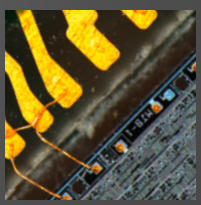








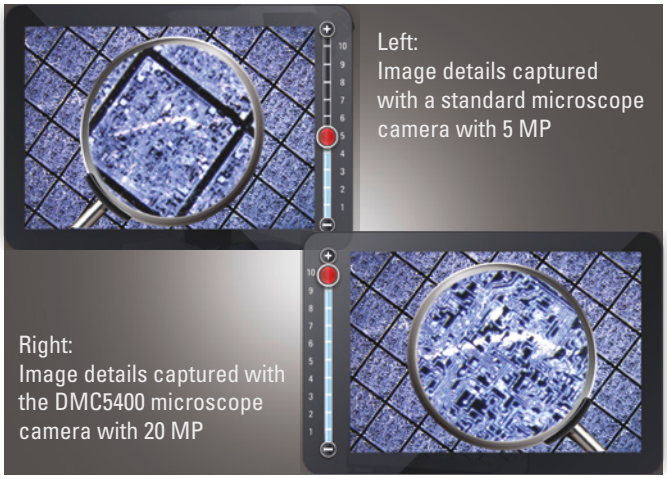




GET THE MAX FROM YOUR IMAGE

See what you need to see without compromises

The DMC5400 microscope camera from Leica Microsystems offers high-resolution color images at high frame rates, even at low magnification. It is optimized to produce fast, high quality images for documentation, evaluation, and analysis for a wide variety of samples and applications in manufacturing and life science research.



Get your image fast

Take images at low light and at any magnification with the built-in CMOS sensor and high sensitivity.

- Benefit from 40 frames per second (fps) for fast focusing and positioning of your samples
- Enjoy working with correct image exposure automatically determined in less than one second
- Experience the latest Sony Exmor R sensor technology for high definition movies and great images
- Capture images with high dynamic range for a maximum of detail in light, as well as dark areas

Every pixel counts

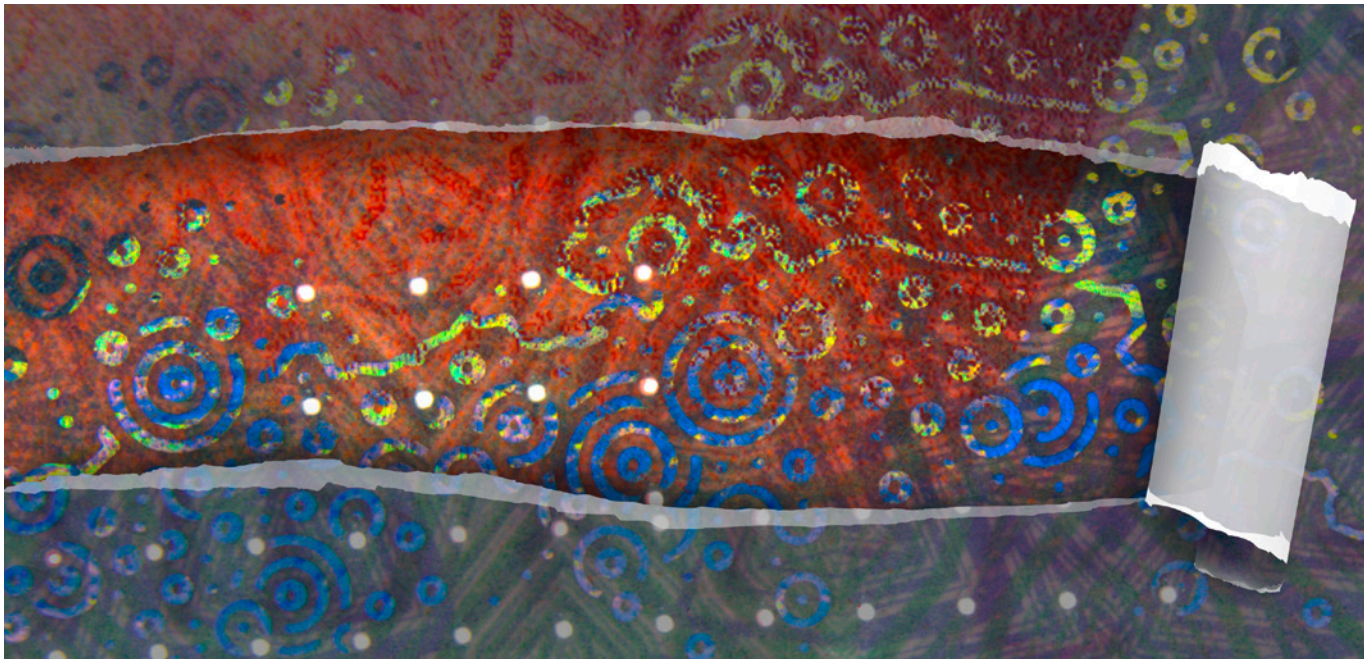
The 20 MP CMOS sensor of the DMC5400 camera enables you to capture all details of your sample in one single shot.

- Save all information from your microscope at every magnification in one image as the camera doesn't limit your microscope's optical resolution
- Capture images with up to 4x more resolution than with conventional 5 MP microscope cameras this saves media storage space as you get the same amount of data with fewer images
- Experience high-speed imaging in full resolution for real-time images of your samples, e.g. with 15 fps at 20 MP
- Explore microscope images with 4K resolution (15 fps)

SEE AND RELY ON NATURAL COLORS

Faithful colors for impressive image quality

Capture the exact same that your eyes see when looking through the microscope. The DMC5400 camera produces pin-sharp images with unsurpassed color accuracy. Enjoy outstanding image fidelity with faithful color rendering, specially customized to the Leica LED illumination. The DMC5400 is true-color calibrated and provides an unbelievably natural color reproduction. Ideal color temperatures for your applications are automatically selected from a set of parameters in the Leica Application Suite X (LAS X) software.



Swiss bank note: upper image captured with the camera DFC495 and lower image captured with the new DMC5400.

SPECIFICATIONS

	DMC5400
Sensor	Sony, CMOS Exmor R rolling shutter
Sensor size	1"
Pixel size	2.4µm x 2.4µm
No. of pixels	20.5 megapixel
Live image formats	Aspect ratio 3/2 > 20 MP Full frame 5472 x 3648 - 7 fps > 5 MP 2x2 Bin. 2736 x 1824 - 19 fps > 2.3 MP 3x3 Bin. 1824 x 1216 - 32 fps Aspect ratio 16/9 > 4K 3840 x 2160 - 13 fps > Full HD 1920 x 1080 - 30 fps All formats are also available for image capture mode.
Bit depth image	3 x 8 bit & 3 x 12 bit
Readout noise	4e-
Saturation capacity	15'000 e-
Dynamic range	71 dB, 3500:1
Quantum efficiency	67% @ 536 nm
Cooling	none
Exposure time	1 ms to 10 s
Gain	1x to 10x
Article number	12 730 531
Recommended C-Mount	1.0x (10 450 829) stereo microscope 1.0x (11 541 510) light microscope
Software PC	> LAS X 3.4.1 or higher + Software Update (Win7, Win10) > LAS 4.13 or higher (Win7, Win8/8.1,10) In LAS automatic selection of white balance is not available, frame rates are expected to be lower (70% of the values above is reached).
Interface	USB 3.0

CONNECT WITH US!

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From Eye to Insight

Leica
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LEICA DFC3000 G

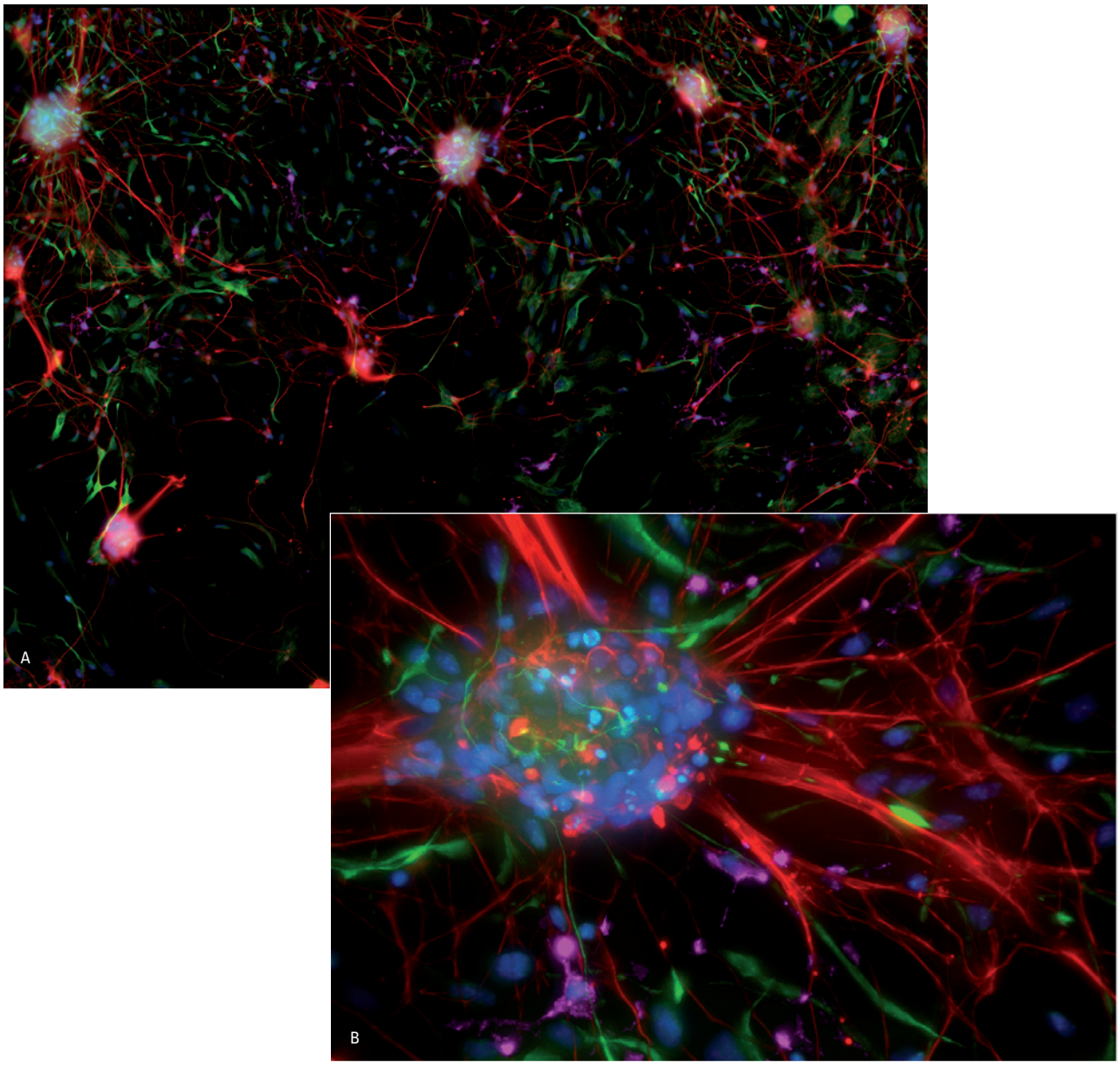
Crisp fluorescence documentation for routine experiments

Leica DFC3000 G – Crisp Fluorescence Documentation for Routine Experiments

The Leica DFC3000 G camera precisely meets the requirements of daily fluorescence microscopy. With a high-sensitivity, high-quality Sony® CCD sensor even weak fluorescence signals can be professionally documented. Leica's unique passive cooling architecture in combination with smart imaging tools ensures excellent quality fluorescence imaging at an affordable price.

IMPRESSIVE IMAGING CAPABILITY

Equipped with a dedicated fluorescence CCD sensor, the Leica DFC3000 G camera provides outstanding imaging quality even under demanding low light conditions. First and foremost designed for daily routine fluorescence documentation, the camera provides advanced features such as image averaging, dynamic hot pixel correction, and external trigger capability.
The camera features Leica's unique passive cooling system with pixel double sampling and enhanced temperature convection – without any compromise on speed of acquisition and power consumption. You'll experience a brilliant fluorescence signal that you wouldn't expect from such a compact system.

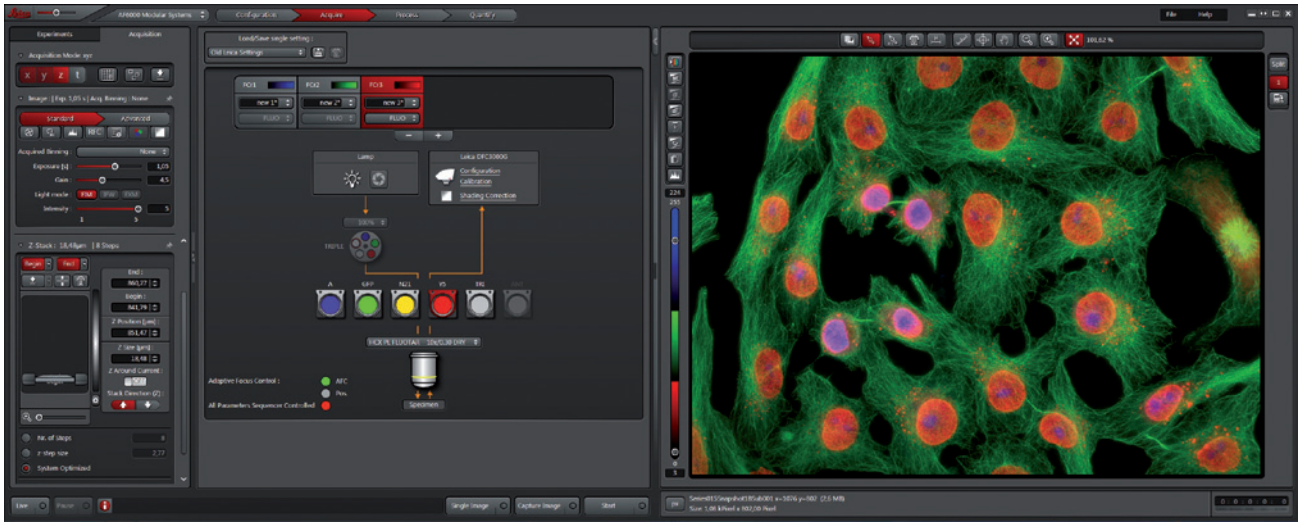


A: Cultured cortical neuronal cells of a mouse. Blue, DAPI, nuclei; green, anti-Nestin-Cy2, Astrocytes; red, beta-III-tubulin-Cy5, mature neurons; purple, NG2-Cy3, immature neurons. Image acquisition was performed using a Leica DFC3000 G digital camera acquiring 7x6 tiles and afterward stitched together using Leica Application Suite X (LAS X) software.

B: Higher magnification of a cultured cortical neuronal cells of a mouse. Stained as above.

AFFORDABLE FLUORESCENCE SYSTEMS

Leica DFC3000 G fits perfectly on all widefield and stereo microscopes. With a standard c-mount thread the camera easily connects to virtually any stand. The Leica DM IL LED manual inverted microscope combined with the camera, for example, creates an affordable fluorescence package for cell transfection studies. Leica's tailor made fluorescence systems fit every budget.



SCALABLE SOFTWARE SOLUTIONS

Leica DFC3000 G is shipped with our standard acquisition and analysis software package Leica Application Suite X (LAS X) for basic documentation and measurement. Other software packages can be upgraded with additional application modules any time later if your requirements grow.

Benefit from these highlights every day:

- Professional fluorescence documentation provided by a high-sensitivity 1.3 megapixel CCD monochrome sensor from Sony® with micro lenses
- Excellent signal to noise ratio due to Leica's unique passive cooling architecture
- Adaptable digitalization with 8, 12, and 16 bit
- Groundbreaking acquisition speed of up to 31 fps in full frame and 54 in 2x2 binning mode
  A live image faster than your eyes
- Advanced camera features such as on-head image buffer, image averaging, sharpening, and high dynamic range acquisition
- Universal scope of application due to standard c-mount interface and data transfer through state-of-the-art USB3 interface

ABSORBING SCIENCE, EMITTING KNOWLEDGE

Leica Microsystems fluorescence technologies and expertise are focused on the one simple certainty of fluorescence – the more perfectly we capture the emitted fluorescence, the more perfectly we capture the image.
The technologies and expertise behind the fluorescence applications of Leica Microsystems systems exist purely to help ensure you can achieve the astonishing imagery you are looking for, as simply as possible.

www.leica-microsystems.com

LEICA DFC3000 G TECHNICAL DATA

Camera type	Digital monochrome, high-sensitivity, passive-cooled camera for fluorescence microscopy		
Housing	Aluminum, Size (L × W × H) 112 mm × 74 mm × 64 mm, Weight 320 g		
Sensor			
CCD sensor	Sony ICX455® interline transfer CCD sensor with EXview HAD technology		
Pixel	1296 x 966 (~ 1.3 MP); 3.75 µm × 3.75 µm pixel size		
Exposure time	7 µsec – 5 sec *		
Bit depth	8 bit / 12 bit / 16 bit		
Binning	2x2; 3x3		
Partial scan	Freely definable ROI (region of interest), combination with binning possible		
Dark noise	8 electrons typical (25 MHz)		
Dynamic range	~ 59 dB (25 MHz); add. High Dynamic Range acquisition mode available via software*		
Pixel clocking rate	25 MHz/ 50 MHz		
Analog gain	1× – 10×		
Advanced features	Image averaging, sharpening, on head image buffer external trigger capability		
Image formats	**Pixel**	**Pixel Clock MHz**	**fps***
Full frame	1296 x 966	50	31
		25	15
2x2 binning	648 x 483	50	54
		25	26
3x3 binning	464 x 346	50	72
		25	35
Supported operating systems	Leica LAS X, MetaMorph (NX)®: SDK available on request		
c-mount	0.35 x or 0.55 x		
Data and power	USB 3.0 single cable		
Power supply	12 V via computer		
Power consumption	~3 W		
Operating temp. range	+5°C .. +50°C		
Air humidity	max 80%, non-condensing		

* depends on software platform

Illustrations, descriptions and technical data are not binding and may be changed without notice.

Leica DFC295 & DFC290 HD

Microscope Cameras for Efficient and Comfortable Documentation

Fast and Easy Presentation and Documentation

The Leica DFC295 and DFC290 HD are powerful digital color cameras for real-time image capture. These latest generation cameras use state-of-the-art innovation in the area of digital imaging and permit precise documentation and presentation of microstructures. Leica technologies are continuously developed with the aim of making even the most complex photography applications as user friendly as possible. Furthermore, the cameras can be integrated with almost any microscope system. Whether for documentation, presentation or critical analysis – there is a Leica microscope camera available for every application.

In contrast to the Leica DFC295, the DFC290 HD has an additional HDMI interface on which a live image can be displayed parallel to the FireWire interface (Dual Live Stream). As soon as you connect an HD-compatible display device (projector, monitor or flat screen TV), you can view the live image on the PC screen as well as on the additional HD screen in previously unattainable quality.

HIGH-RESOLUTION IMAGES

The Leica DFC295 and DFC290 HD cameras provide sharp, high-contrast images that are extremely true to detail. Correct color reproduction, exact image geometry, and precise dimensioning provide optimal image analysis, measurement and image processing results. The core of the camera is a sensitive 1/2" CMOS sensor with 3 Megapixel resolution.

FAST LIVE PREVIEW

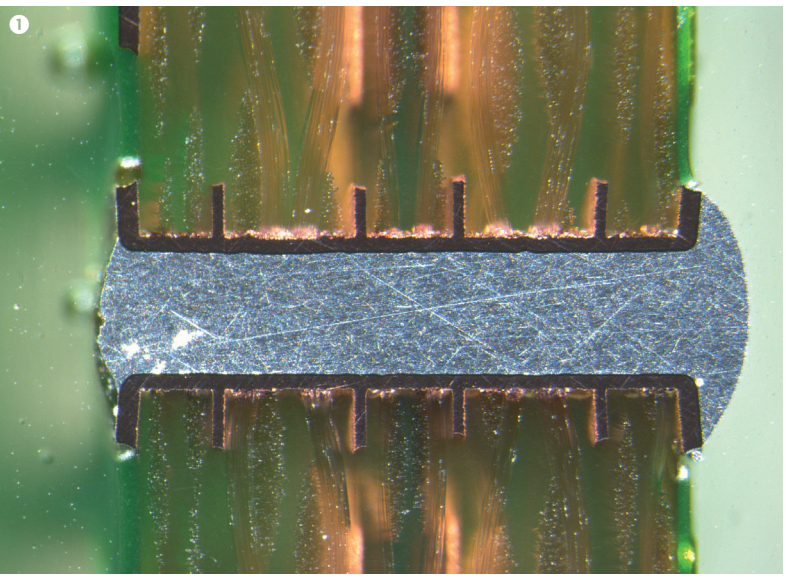
The Leica cameras allow you to take flicker-free live images in real time. You can also focus and align the images directly at the PC. The microscope image appears on the monitor with practically no delay in full camera resolution and at a rate of up to 25 images per second (depending on the size of the live video and the exposure time).

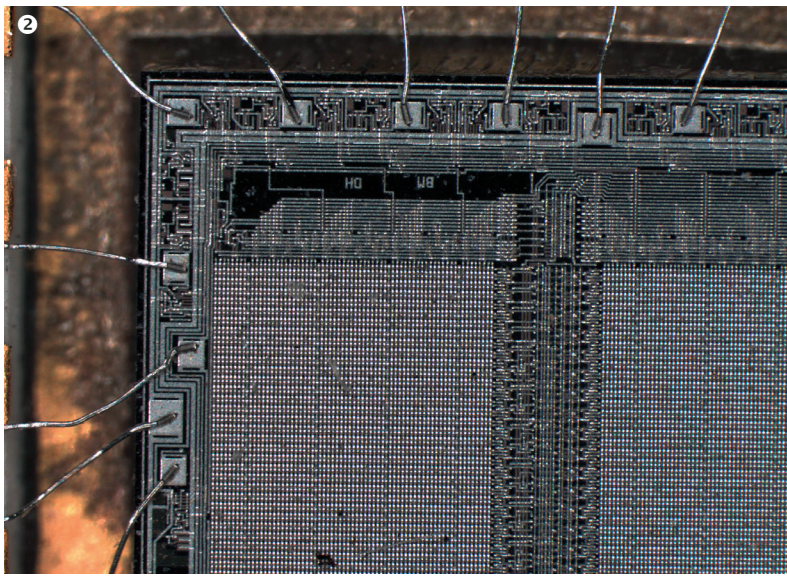
SAVING IMAGE SETTINGS

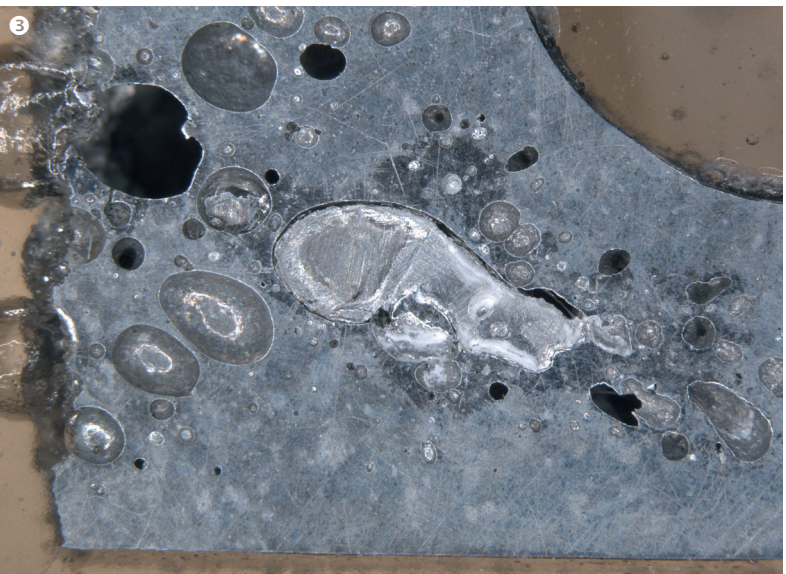
White balance and image brightness are regulated for the entire image, which also ensures exact reproduction. Alternatively, you can define a freely selectable region of interest for the gray balance. The online histogram permits precise setting of the gamma, contrast, and brightness values. Individual image settings can be saved in configuration files, and recalled at any time.

❶ Cross section of a soldered joint
❷ Inspection of bonding wires
❸ Damaged metal device
❹ Head of an insect

Leica S8 APO with LED2500 Illumination, Digital Camera Leica DFC290 HD
with dual live stream on large HD Screen and PC Monitor







HIGH-PERFORMANCE LEICA LAS SOFTWARE

Leica Application Suite (LAS) integrates Leica microscopes, macroscopes, digital cameras, and software into one common environment to provide an easy-to-use and consistent imaging solution with unrivalled performance. The versatility of LAS makes it suitable for a diverse range of life science and industrial applications such as materials quality control, pathology, pharmaceutical testing, and many more. LAS accelerates the visualization, enhancement, measurement, documentation and archiving of digital images. This powerful software solution can control all functions of Leica Compound Microscopes, Stereomicroscopes, and Macroscopes. By providing all the necessary tools for the installed applications to communicate with each other as well as with peripheral devices connected to the computer, LAS simplifies routine and research analysis.

THE HD REVOLUTION!

High Definition with regard to image and color quality goes far beyond anything previously experienced. The result is pin-sharp images, true to detail and with excellent color reproduction. HD technology provides up to five times more detail richness than all previous formats – with a clarity and resolution that will reveal previously hidden details.

720P HD READY

This format achieves approximately double the detail resolution of PAL or NTSC video formats.

1080P FULL HD

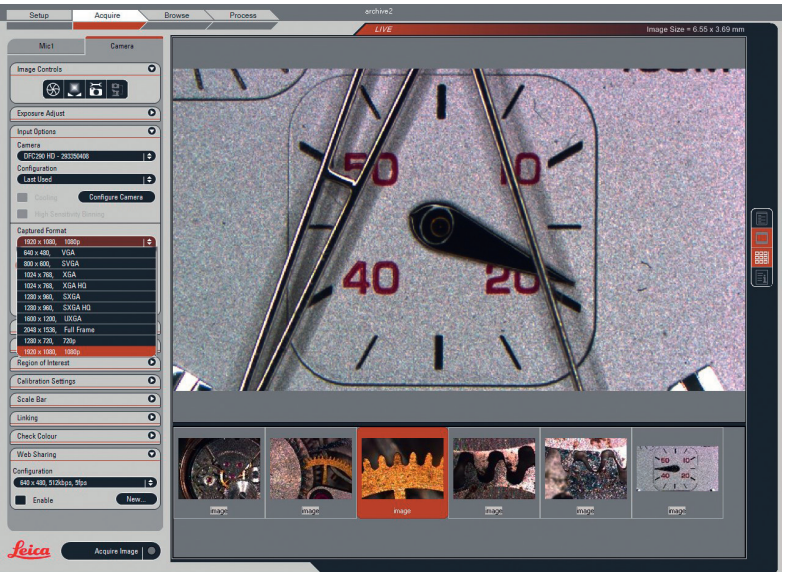
This superior format offers the currently best available resolution and detail sharpness on Flat Panel TVs and Full HD projectors.

LEICA DFC295 & LEICA DFC290 HD:

- Fast, full-color live image capture in real time
- 3 Megapixel standard resolution (2048 × 1536 pixel)
- 1024 × 768 live preview with up to 25 images per second (depending on monitor size and exposure time)
- Various image sizes from small (VGA) to very large (7 MPx)
- CMOS sensor with Bayer Array RGB
- Large pixels for high sensitivity
- Shading correction for live image and captured image
- FireWire-B interface

LEICA DFC290 HD ONLY:

- HDMI output for direct display on HD monitors, Flat Screen TVs or HD projectors
- CIE Lab color processing in the camera head
- Autonomous image output without PC possible
- Simultaneous live image display on PC monitor (FireWire) & HD Screen (HDMI)



Technical Details

DIGITAL CAMERA	LEICA DFC295 / LEICA DFC290 HD
Camera type	Digital camera for microscopy with control software
Sensor	Progressive Scan CMOS, Micron (MT9T001)
Sensor grade/size	6.55 mm × 4.92 mm (type 1/2)
Color filter	RGB Bayer mosaic
Protective color filter	Hoya CM500S (IR cut-coating filter at 650 nm)
Shutter control	Electronic rolling shutter / Progressive scan readout
Number of pixels	3 Megapixel, 2048 × 1536
Max. scalable resolution (only PC)	7 Megapixel, 3072 × 2304
Pixel size	3.2 µm × 3.2 µm
Color depth	30 bit
A/D converter	10 bit
Dynamic range	> 55dB / 600:1
Readout noise	σ < 1.8 LSB (10 bit) typical
Exposure time	0.1 msec – 2 sec
Gain control / Gain	1× – 4× / 0 – 12 dB
Shading correction	Yes, stored for all formats
Region of interest	Freely adjustable in 2-pixel steps from 2 × 2 up to full resolution

LIVE IMAGE SPEED	LEICA DFC295		LEICA DFC290 HD		
Image formats*	**fast (49 MHz)**	**HQ (24.5 MHz)**	**Image formats**	**fast (49 MHz)**	**HQ (24.5 MHz)**
2048 × 1536 – Full frame	12	6	2048 × 1536 – Full frame	9	–
1600 × 1200 – UXGA Center Scan	16	9	1920 × 1080 – 1080p	12	–
1280 × 1024 – SXGA Center Scan	18	13	1600 × 1200 – UXGA	12	–
1024 × 768 – XGA	22	17	1280 × 960 – SXGA	22	12
640 × 480 – VGA	35	25	1280 × 720 – 720p	20	–
			1024 × 768 – XGA	24	12
			640 × 480 – VGA	32	–

* with FireWire B interface, 5 msec exposure time, in frames per second fps

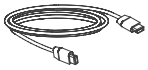
COMPUTER		
Min. Computer configuration	Intel Core 2 Duo 2.4 GHz, or faster 2 GB RAM, high res graphic card with 128 MB or 256 MB RAM, Direct X V9c or V10 FireWire-B port or free PCI-express slot	DFCTwain, Leica LAS Software Windows 7 Prof. or Ultimate, 32 or 64-bit Windows Vista SP2, 32-bit only Windows XP, SP3, 32-bit only

INTERFACES	
Optical	C-mount
Recommended video adapter	0.5× or 0.55×
Digital output	FireWire IEEE1394-B 9-pin (HDMI 1.3 for DFC290 HD only)

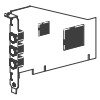
PHYSICAL AND ENVIRONMENTAL	
Power consumption	~ 4W
Power supply	via FireWire cable
Housing	Aluminum die cast
Size	112 × 74 × 68.4 mm
Weight	340 g
Operating temperature	–5° C to +50° C
Relative Humidity	10% – 90% non-condensing

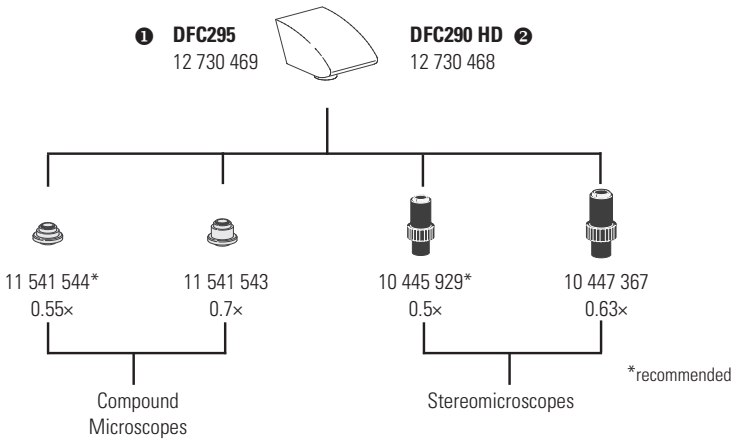
Assembly Diagram

❸ **Cables**
12 730 186 FW-B-B, 2.5 m
12 730 211 HDMI-Cable, 3 m



❹ **FireWire-Cards**
12 730 210 FW-B, PCI-Express
12 730 446 Notebook Kit FW-B
12 730 447 FW-B, PCI-Express Low Profile





ORDER NUMBERS

12 730 469 ❶	LEICA DFC295 Camera kit comprising: Leica DFC295 Camera, PCI-Express FireWire-B card, FireWire B-B cable, 2.5 m, Leica SW
12 730 468 ❷	Leica DFC290 HD Camera kit comprising: Leica DFC290 HD Camera, PCI-Express FireWire-B card, FireWire B-B cable, 2.5 m, HDMI-cable 3 m, Leica SW

ORDER NUMBERS (OPTIONS/EXTRAS)

12 730 210 ❹	PCI-Express FireWire-B card for PCs without FireWire (3 ports)
12 730 447 ❹	PCI-Express FireWire-B card for PCs without FireWire (2 ports) low profile
12 730 466 ❹	FireWire-B notebook kit, comprising of PCI-Express card (2 ports), power supply 100-240 V, FireWire-A-B adapter
12 730 186 ❸	FireWire B-B cable, 2.5 m, 9/9-Pin
12 730 211 ❸	HDMI-cable 3 m

The statement by Ernst Leitz in 1907, "with the user, for the user," describes the fruitful collaboration with end users and driving force of innovation at Leica Microsystems. We have developed five brand values to live up to this tradition: Pioneering, High-end Quality, Team Spirit, Dedication to Science, and Continuous Improvement. For us, living up to these values means: Living up to Life.

INDUSTRY DIVISION

The Leica Microsystems Industry Division's focus is to support customers' pursuit of the highest quality end result. Leica Microsystems provide the best and most innovative imaging systems to see, measure, and analyze the microstructures in routine and research industrial applications, materials science, quality control, forensic science investigation, and educational applications.

Leica Microsystems – an international company with a strong network of worldwide customer services:

Active worldwide		Tel.	Fax
Australia · North Ryde	+61	2 8870 3500	2 9878 1055
Austria · Vienna	+43	1 486 80 50 0	1 486 80 50 30
Belgium · Groot Bijgaarden	+32	2 790 98 50	2 790 98 68
Canada · Concord/Ontario	+1	800 248 0123	847 405 0164
Denmark · Ballerup	+45	4454 0101	4454 0111
France · Nanterre Cedex	+33	811 000 664	1 56 05 23 23
Germany · Wetzlar	+49	64 41 29 40 00	64 41 29 41 55
Italy · Milan	+39	02 574 861	02 574 03392
Japan · Tokyo	+81	3 5421 2800	3 5421 2896
Korea · Seoul	+82	2 514 65 43	2 514 65 48
Netherlands · Rijswijk	+31	70 4132 100	70 4132 109
People's Rep. of China · Hong Kong	+852	2564 6699	2564 4163
· Shanghai	+86	21 6387 6606	21 6387 6698
Portugal · Lisbon	+351	21 388 9112	21 385 4668
Singapore	+65	6779 7823	6773 0628
Spain · Barcelona	+34	93 494 95 30	93 494 95 32
Sweden · Kista	+46	8 625 45 45	8 625 45 10
Switzerland · Heerbrugg	+41	71 726 34 34	71 726 34 44
United Kingdom · Milton Keynes	+44	800 298 2344	1908 246312
USA · Buffalo Grove/Illinois	+1	800 248 0123	847 405 0164

From Eye to Insight

Leica
MICROSYSTEMS

High Definition Cameras for Compound Microscopes

IMAGE SHARING, CAPTURING, AND ARCHIVING MADE EASY

Leica ICC50 W (Wi-Fi) and Leica ICC50 E (Ethernet)

GOOD CONNECTION!

FAST HIGH RESOLUTION LIVE IMAGING

The ability to share, capture, and archive images is an important part of the science laboratory. Keep students on topic and maximize learning time with the Leica ICC50 W wireless HD camera and the Leica ICC50 E network-capable camera. The complete system allows the user to view specimens on the display and through the binocular tube, with or without a computer connection for versatile science education.

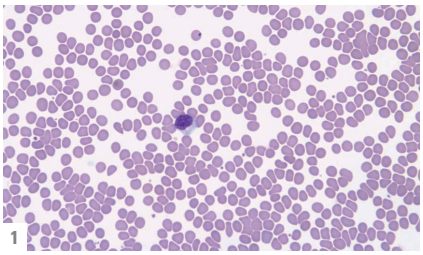
SEAMLESS DESIGN

The Leica ICC50 W or Leica ICC50 E fits between the microscope stand and viewing tube without an additional video or photo tube. It is designed to perfectly match newer generation Leica DM-series microscopes.

EASY TO OPERATE

The Leica ICC50 W or Leica ICC50 E provides excellent image sharpness, brightness, and color impression. In addition, the user can work with the basic presets or adjust the camera's parameters as desired. Pushing the onboard buttons of the camera quickly switches camera modes, performs white balancing, or saves an image to an SD card.

1: Human Blood
2: Convallaria – Lily of the Valley
3: Taste Buds
4: Pine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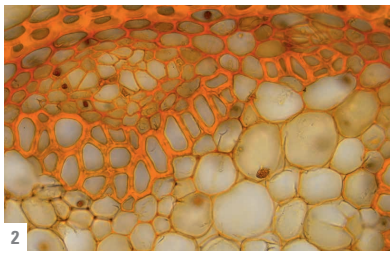
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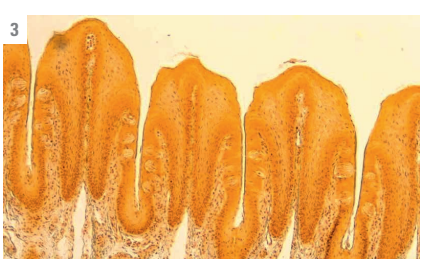

3


4

LEICA ICC50 W AND LEICA ICC50 E

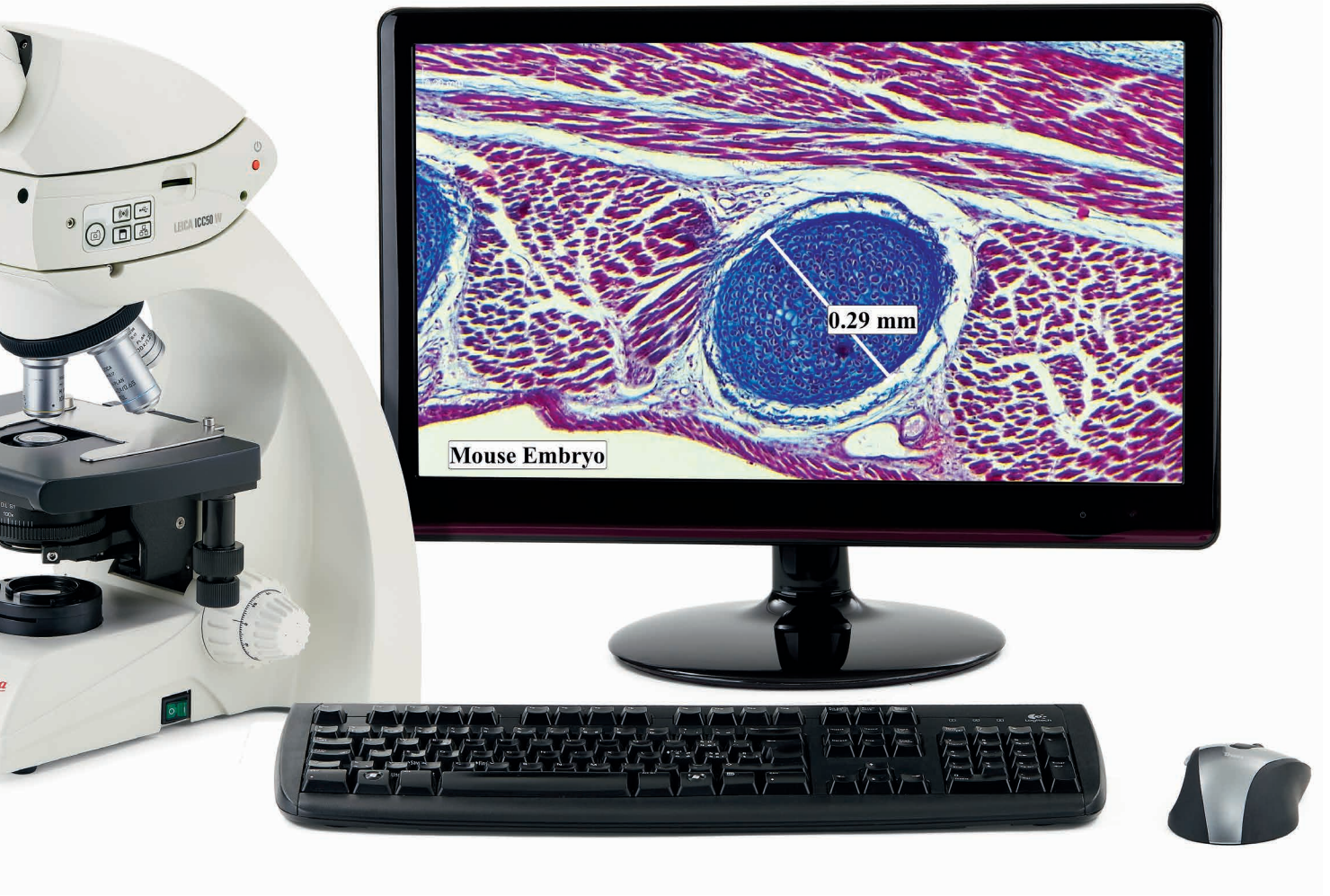
ADVANTAGES

› In Ethernet mode, the connection to the camera is provided through your own network, allowing a maximum number of users to connect to the camera. To use this to full extent, all devices have to be on to same network as the microscope.
› In USB mode you can connect your PC directly via USB cable to the camera, which is helpful when you aim for fastest live images e.g. of moving samples.
› Computer users can use the Leica Imaging software to connect to the camera and work with the images. For PC use Leica Application Suite software, and use Leica Acquire for MAC.
› Use lots of options with Leica AirLab App: It enables camera setup, annotations, measuring, image capture, and sharing to email, photo folders, or other social media connections. Leica AirLab App is available free of charge for Android and iOS devices.
› Stay flexible if there is no PC or mobile device around: Just capture images directly onto a memory card.
› Fine-tune camera settings conveniently, capture images onto the SD card, and view the SD card gallery – all possible with the remote.
› Project your images: Use the HDMI port for screen projections or output to HD screens.
› You don't need any extra power cables: The camera is powered directly from the microscope stand with a USB cable.

Students can connect to the Leica ICC50 W either through its own **internal Wi-Fi signal** using Wi-Fi mode or through the facilities' network using Ethernet mode.

Note: The quantity of mobile device connections and their stability depends on the Wi-Fi traffic and network performance in the environment.

The ICC50 E **exclusively** uses your facilities' **network (WLAN or LAN)** to allow students to connect to the camera. This is an ideal solution if you don't want to add additional Wi-Fi access points to your network.



Leica DM750 microscope
with integrated Leica ICC50 W camera,
RC remote control, and full HD monitor

SPECIFICATIONS

LEICA ICC50 W / LEICA ICC50 E	
Weight	700 g (camera only)
Height	50 mm
Exposure time	1 msec – 500 msec
Live image	30 fps maximum – depends on mode and resolution setting
Full frame image acquisition	5.0 megapixels max.
Movie clip	1,920 x 1,080 max.
Color depth	24-bit
Data format	JPEG / TIFF / BMP / MP4 (choices depend on capture device)
Operating systems	Windows 7, 8, Windows Vista, Macintosh OS X, Mobile devices (iOS 7, 8 and Android 4.2+)
Software available	Leica AirLab (mobile devices), Leica LAS EZ (PC), Leica LAS (PC), Leica Acquire (Mac)
Min. computer config.	PC / Mac, Intel Core 2 Duo, > 2.4 GHz, 4 GB RAM, 24-bit graphics, 1,248 × 1,024
Min. display specification	1,920 × 1,080 resolution, HDMI connection, DVI connection possible with HDMI/DVI adapter cable (not provided)

Note: The quantity of mobile device connections and their stability depends on the Wi-Fi traffic and network performance in the environment.

MECHANICAL AND OPTICAL INTERFACES
Fits between viewing tube and microscope stand via standard Leica Microsystems dovetail interface
Light distribution optical 50 % / camera 50 %
Internal video magnification 0.5×

ELECTRONIC INTERFACES
Computer USB 2.0, standard USB plug type B
High Definition connector HDMI 1.3, standard HDMI plug type A
Ethernet RJ45 standard
Integrated slot SD (Secure Digital) card 1 – 32 GB
WiFi 802.11n standard (only for Leica ICC50 W)
On/Off switch
Pinhole service switch
LED's indicating camera status

OTHER
Power via USB cable to 5 V/1.5 A+ power supply (stand or external)
CE Declaration of Conformity available

ORDERING NUMBERS	
13 613 735	Leica ICC50 W camera – includes camera, USB cable, HDMI cable, disc with LAS EZ and Leica Acquire software
13 613 740	Leica ICC50 E camera – includes camera, USB cable, HDMI cable, disc with LAS EZ and Leica Acquire software
13 613 730	USB power supply – 5 V/2 A
10 450 805	Wireless remote camera control for fine tuning the HD image and making additional camera settings when no computer is being used
13 613 709	Photoframe reticle for use with 13 613 532 focusing eyepiece when capturing images on an SD card without a display for preview

Leica
MICROSYSTEMS

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From Eye to Insight

Leica
MICROSYSTEMS

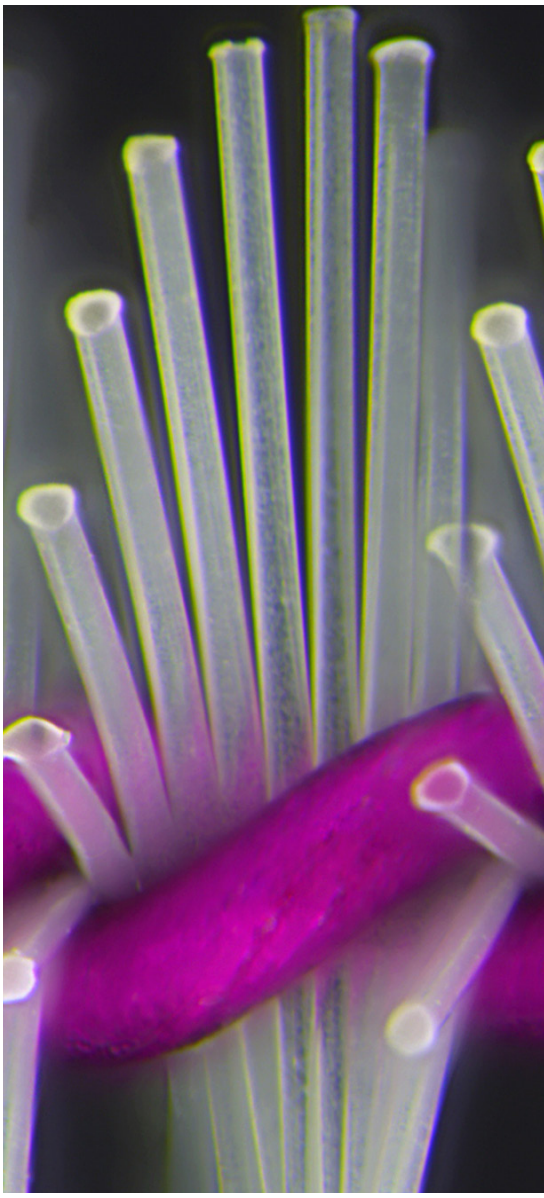
Digital Microscope Camera
for Analysis and Documentation

LEICA DMC4500 FOR INDUSTRY AND LIFE SCIENCE APPLICATIONS

The Amazing Allrounder

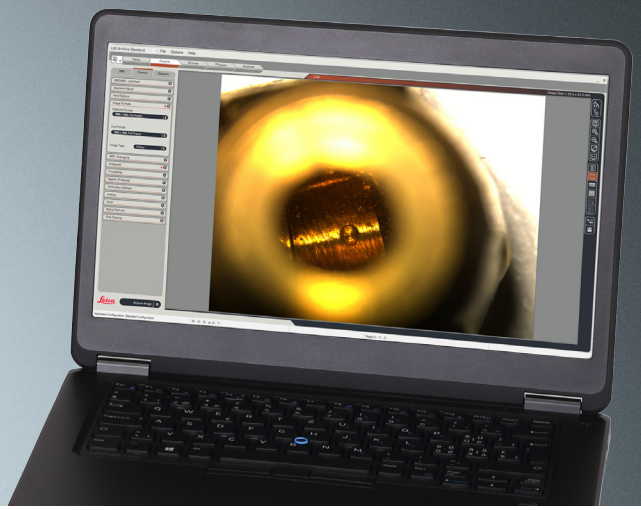
INDUSTRY AND LIFE SCIENCE APPLICATIONS

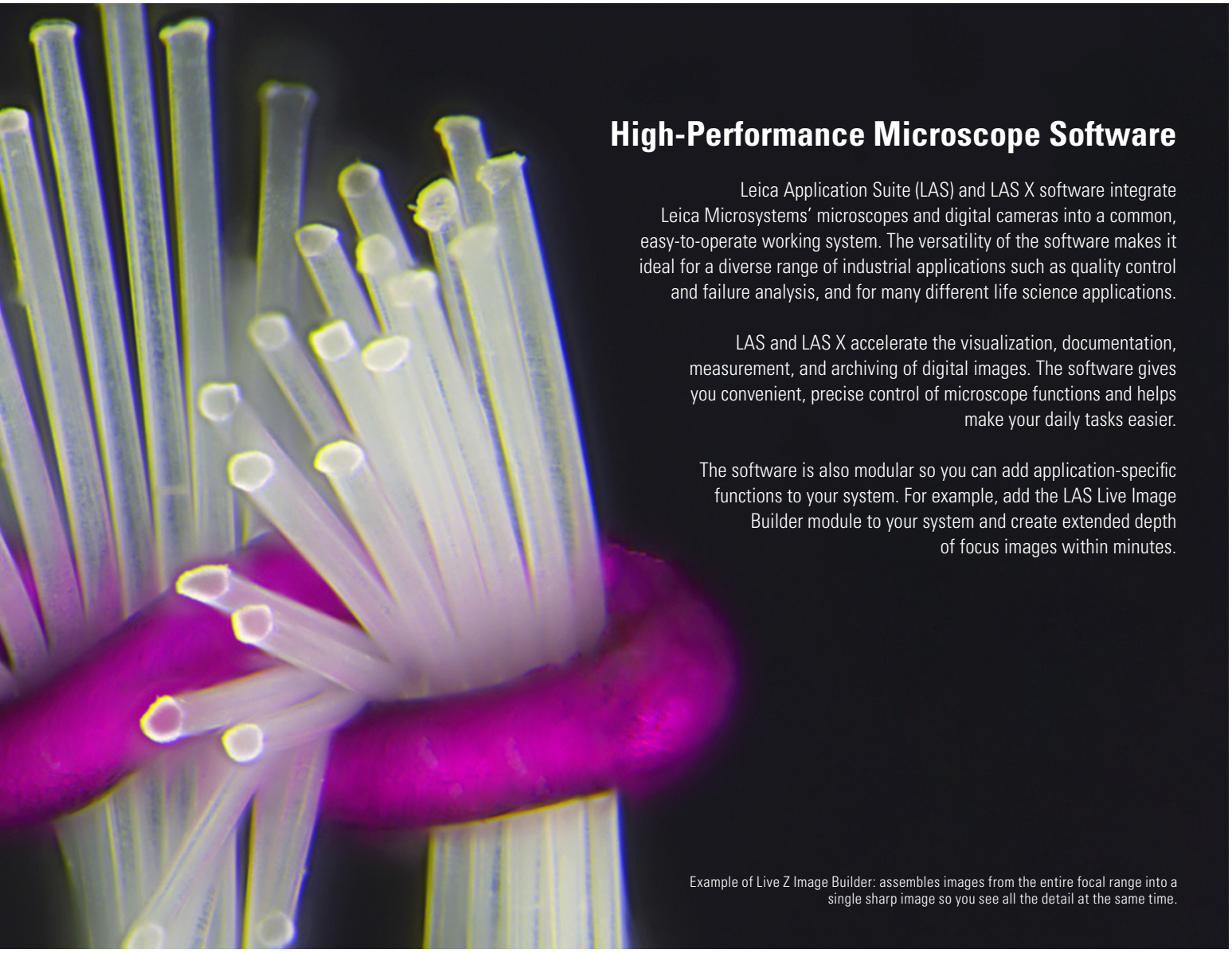
Capture sharp, brilliant images for everyday analysis and documentation with the Leica DMC4500 color camera. This versatile, easy-to-use tool simplifies your imaging process all the way from capture and processing to analysis.



High Speed, Professional Imaging

> USB 3.0 interface: Plug and play, simply connect the camera directly to your computer or laptop
> 5 MP CCD sensor: Sharp, clear, crisp images for precise analysis
> 18 frames per second: Place and position your samples while viewing them on your computer screen





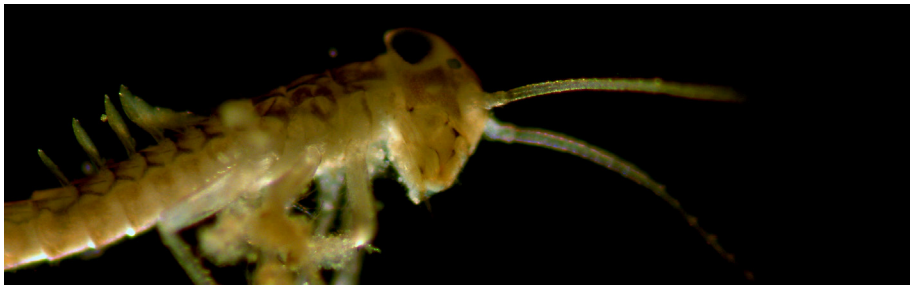
High-Performance Microscope Software

Leica Application Suite (LAS) and LAS X software integrate Leica Microsystems' microscopes and digital cameras into a common, easy-to-operate working system. The versatility of the software makes it ideal for a diverse range of industrial applications such as quality control and failure analysis, and for many different life science applications.

LAS and LAS X accelerate the visualization, documentation, measurement, and archiving of digital images. The software gives you convenient, precise control of microscope functions and helps make your daily tasks easier.

The software is also modular so you can add application-specific functions to your system. For example, add the LAS Live Image Builder module to your system and create extended depth of focus images within minutes.

Example of Live Z Image Builder: assembles images from the entire focal range into a single sharp image so you see all the detail at the same time.



The outstanding contrast of the Leica DMC4500 on the example of an ephemera larva

Excellent Image Quality

> Offers excellent noise suppression and perfect acquisition of the unprocessed CCD signal
> Excellent images at high frame rates, enabled by image pre-processing directly in the camera head of the Leica DMC4500
> Light collected from the sample is digitized with a depth of 12 bit per color channel. Resulting in the ability to differentiate 6 times more color information than the human eye. And hence leaves plenty of headroom for signal dynamic image post processing without compromising image quality
> The true-color calibration of the camera provides natural color reproduction, which translates to high-quality images

Fast and Easy - USB 3.0

> Quickly obtain fast high-quality live images at up to 18 frames per second at SXGA progressive scan and 9 frames per second in full frame mode
> Place and reposition your samples while viewing directly on the computer screen
> The USB 3.0 interface makes the camera connection to your computer easy and convenient
> The system will be up and running in an instant

TECH SPECS

MICROSCOPE CAMERA LEICA DMC4500	
Camera type	Digital camera for microscopy with control software
Sensor	Interline transfer frame readout CCD – ICX282
Scan area	8.7 mm × 6.5 mm
Color filter	RGB Bayer mosaic
Protective color filter	UV & IR filter
Shutter control	Electronic global shutter / 2 frames interlaced readout
Number of pixels / pixel size	5 megapixels, 2560 × 1920 / 3.4 µm × 3.4 µm
A/D converter	14 bit
Dynamic range	59 dB typical / > 900:1 dB
Readout noise	σ 4.5 LSB (12 Bit) typical
Exposure time	total: 1 msec – 60 sec, step 1µsec
Gain control	0 – 20 dB
Device clock frequency	50 MHz fast scan / 25 MHz high quality (HQ) scan
Region of interest	Freely adjustable in 2 pixel steps from 2 × 2 up to full resolution

IMAGE FORMATS	PIXEL	SPEED FPS: (50MHZ/25MHZ)
Full frame	2560 × 1920 interlaced	9 fps / 4.5 fps / 9 fps
Color binning (2x2)	1280 × 960 progressive	18 fps / 9 fps
Subsample	1280 × 960 progressive	18 fps / 9 fps
Grayscale	Transferred from color binning (2x2) to mono in software	
Modes	Formats in fast (50 Mhz) or high quality (25 Mhz) modes	

COMPUTER	
PC requirements	Min. computer configuration Intel Core 2 Duo 2.4 GHz, or faster
	2 GB RAM, high res graphic card with 128 MB or 256 MB RAM
	Direct X V9c or V10 USB3 or free PCI-express slot
Software	Leica LAS and LAS X Software
	Windows 7 and Windows 10 (LAS and LAS X) Windows 8 (LAS only)
	Windows XP not supported

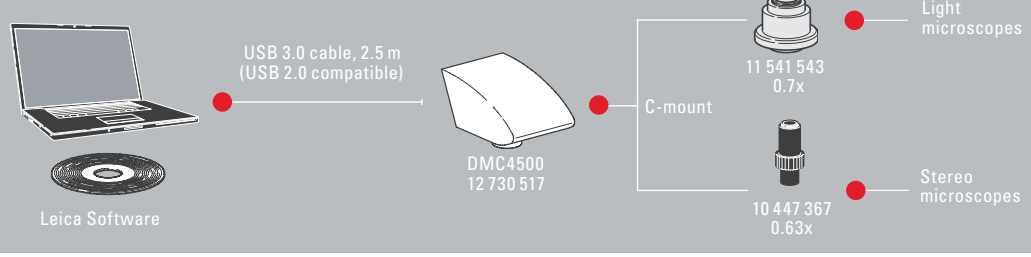
INTERFACES	
Recommended video adapter	C-mount 0.63× (stereo microscope) or 0.7× (light microscope)
Data	Single USB3.0 (Micro-B connector with screw lock)
USB Usage: USB 3.0	Full functionality of the camera
USB Usage: USB 2.0	25 MHz clock only, full frame, without: binning, subsample or partial scan

PHYSICAL AND ENVIRONMENTAL	
Power consumption	Approx.: 4W (USB 3.0) / 3W (USB 2.0)
Power supply	Via USB3 cable
Housing	Die cast aluminum
Size	112 × 70 × 74 mm
Weight	410 g
Operating temperature	5°C to 40°C
Relative humidity	10% – 90% non-condensing

ORDER NUMBER

12 730 517	Leica DMC4500 Camera (incl. USB 3.0 PCI Express card, two mounting brackets (long and short), Molex power connector, SATA adapter cable (3x SATA, 1x Molex), USB 3.0 cable (2.5 m), quick start guide, USB 3.0 cable 2.5 m, LAS and LAS X Software)

ASSEMBLY DIAGRAM



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www.leica-microsystems.com

From Eye to Insight

Leica MICROSYSTEMS

Leica DFC450 & DFC450 C

Digital Microscope Cameras for Analysis and Documentation

FAST AND EASY ANALYSIS AND DOCUMENTATION

Excellent picture quality is essential for precise image analysis, documentation, and reporting. The Leica DFC450 and DFC450 C digital microscope cameras provide detailed high-resolution pictures with outstanding accuracy and brilliant color reproduction. The exceptional picture quality and ease of use, make these cameras the perfect choice for all analysis and documentation needs.

Excellent picture quality

These cameras digitize the image information from the CCD chip directly in the camera head, which leads to excellent noise suppression and perfect acquisition of the unprocessed CCD signal. Digitization takes place with a resolution of 12 bits and Leica Microsystems' true color calibration takes care of the natural color reproduction, which produces excellent picture quality.

Easy to use

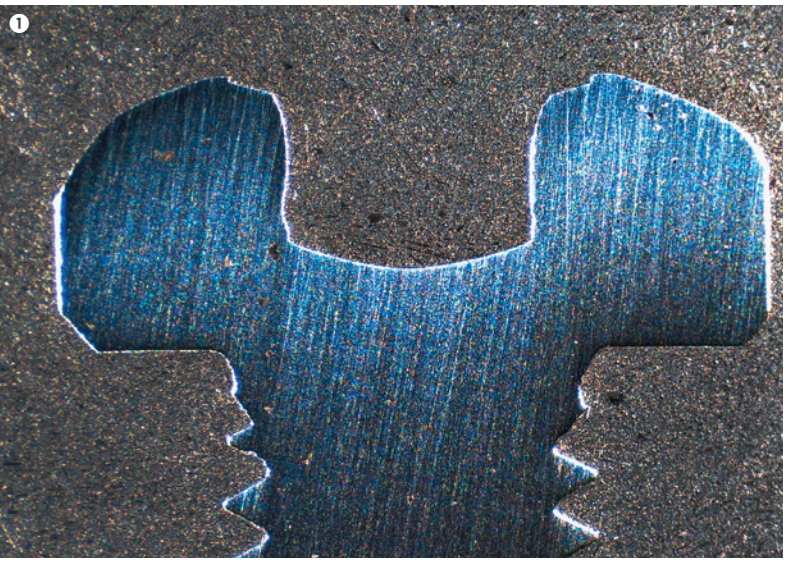
Leica Microsystems' digital technology simplifies all operations, from image capture through image archiving, and allows digital retouching and analysis. In addition, intelligent camera options allow users to conveniently set up the camera parameters. Leica Microsystems' cameras have sophisticated white balance and advanced illumination control and are ready to produce perfect images in seconds.

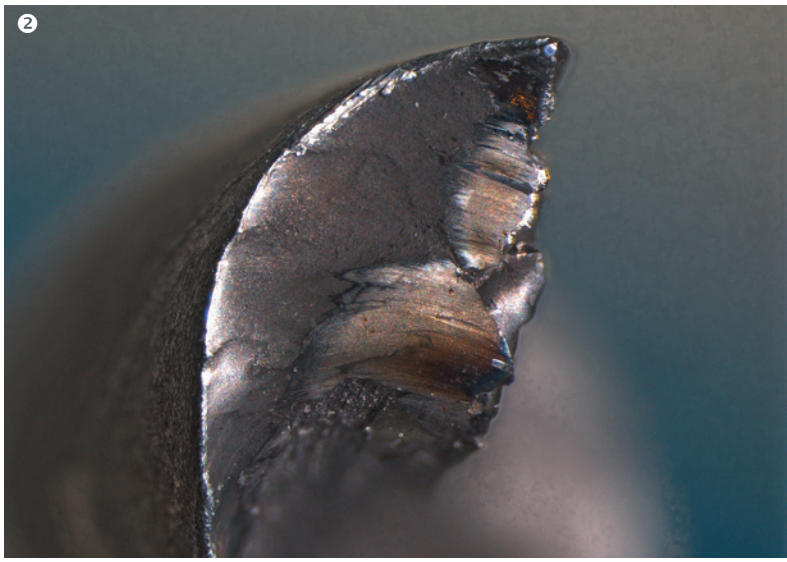
Leica dfc450 c for low light applications

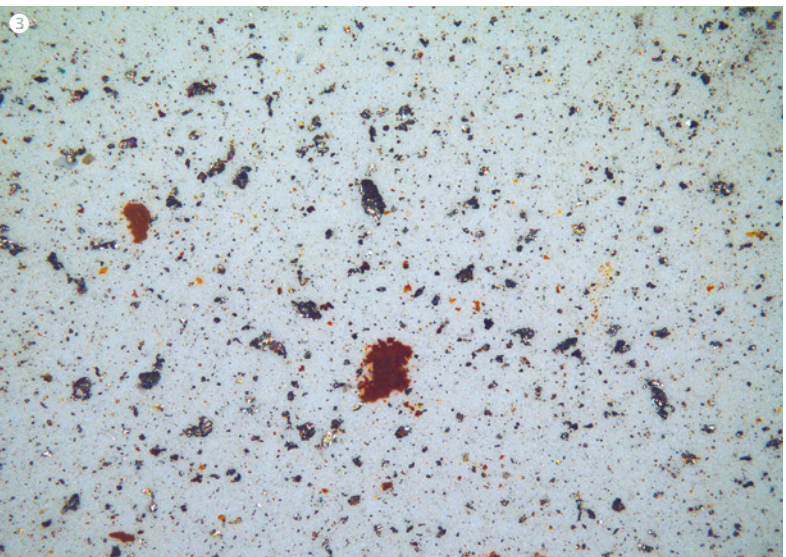
The Leica DFC450 C allows crisp, sharp images to be created with minimum noise in low light situations. Interfering thermal noise is effectively reduced with active cooling by means of a Peltier cooling device. With the innovative, fast readout procedure, even high-resolution low light recording is now possible

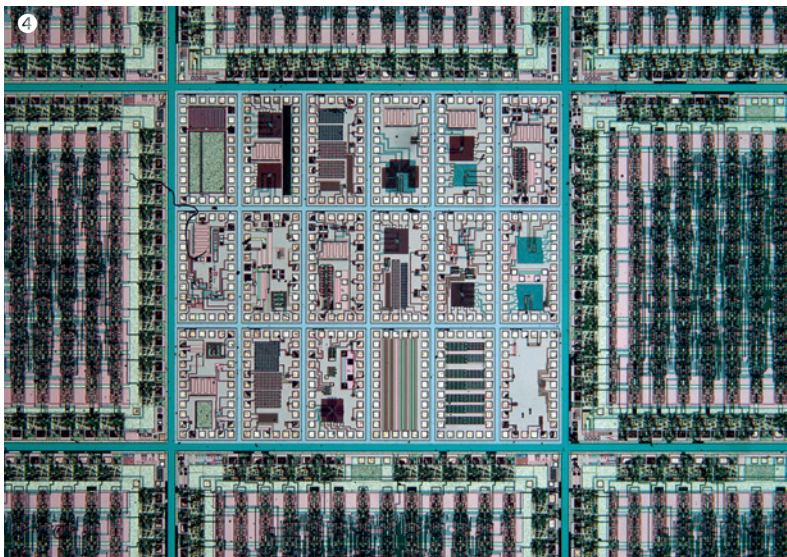
❶ Quality control: cross section of a screw head
❷ Failure analysis: inspection of a metallic sample
❸ Analysis of particles (with LAS Cleanliness Expert)
❹ Semiconductor: Wafer Insepction
❺ Ant from Leica Science Lab (see: www.leica-microsystems.com/science-lab)

Leica DM8000 M with Leica DFC450 digital microscope camera and PC system with Leica LAS software



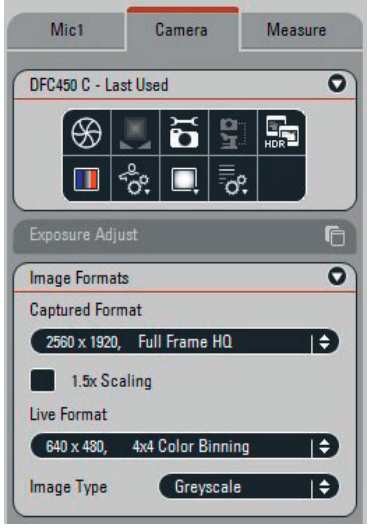


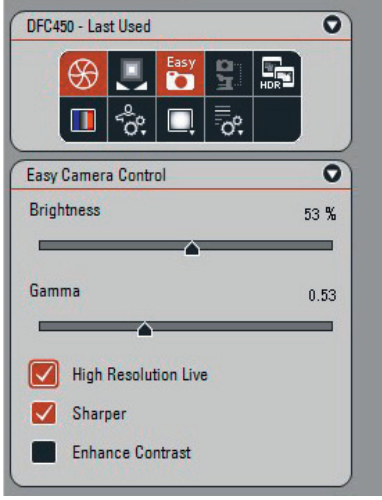


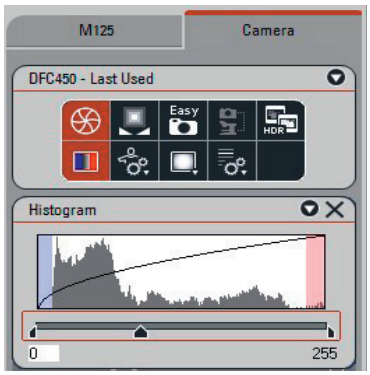


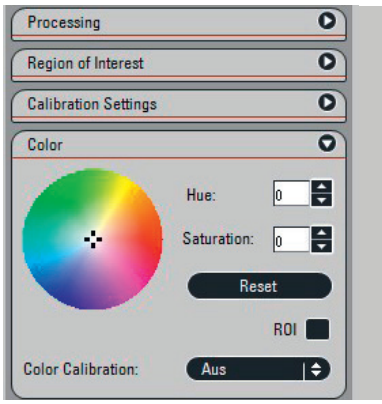
High-performance Leica LAS software

Leica Application Suite (LAS) integrates Leica microscopes, macroscopes, digital cameras, and software into one common environment to provide an easy-to-use and consistent imaging solution with unrivalled performance. The versatility of LAS makes it suitable for a diverse range of life science and industrial applications such as materials quality control, pathology, pharmaceutical testing, and many more. LAS accelerates the visualization, enhancement, measurement, documentation, and archiving of digital images. This powerful software solution can control all functions of Leica compound microscopes, stereomicroscopes, and macroscopes. By providing all the necessary tools for the installed applications to communicate with each other and with peripheral devices connected to the computer, LAS simplifies routine and research analysis.









LEICA DFC450 & LEICA DFC450 C:

- Fast (18 fps) and large (1260 × 960 pixel) live image for fast focusing and positioning of the specimen.
- High quality 5-megapixel CCD for brilliant captured images.
- Wide range of exposure times to match all types of illuminations and contrast techniques.
- Freely defined region of interest for fastest live image update and precise focus position (ZoomFocus).
- Standard hardware interface for easy and quick connection to all microscopes (C-mount, FireWire-B).
- Powerful software and intuitive user interface for convenient image capture and processing functions.
- Complete camera kit with camera head, Firewire cables and Firewire PCexpress board for easy installation to PC.

LEICA DFC450 C ONLY:

- Active peltier cooling for high dynamic range and minimum noise level in low light situations.
- Additional binning mode for increased brightness and faster frame rate in low light situations.

TECHNICAL DETAILS

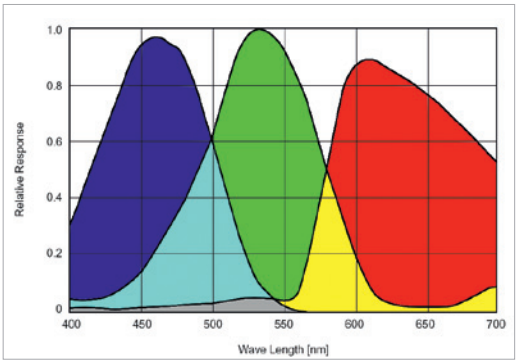
DIGITAL CAMERA	LEICA DFC450 / LEICA DFC450 C
Camera type	Digital camera for microscopy with control software
Sensor	Interline transfer frame readout CCD – ICX282
Sensor size	8.7 × 6.5 mm, diagonal 11 mm (type 2/3")
Color filter	RGB Bayer mosaic
Protective color filter	Removable dust protection, UV/IR filter
Shutter control	Electronic global shutter / 2 frames interlaced readout
Number of pixels / pixel size	5 megapixel, 2560 × 1920 / 3.4 µm × 3.4 µm
Max. scalable resolution (only PC)	7 Megapixel, 3072 × 2304
Color depth	36 bit
A/D converter	12 bit
Dynamic range	> 59 dB / > 900:1 dB
Readout noise	σ < 4.5 LSB (12 Bit) typical
Exposure time	1 msec – 60 sec / 1 msec – 600 sec
Gain control	1× – 10×
Cooling	not available / Δ –20° compared to ambient
Region of interest	Freely adjustable in 2 pixels steps from 2 × 2 up to full resolution

IMAGE FORMATS	PIXELS	SPEED FPS, FAST/HQ
Full Frame	2560 × 1920	9 fps / 4.5 fps
Color Binning	1280 × 960	18 fps / 8.2 fps
Color Binning 4 × 4 (only available for DFC450 C)	640 × 480	30 fps / 15 fps
Grayscale R G B	1280 × 960	18 fps / 9 fps
Modes	Formats in fast (50 Mhz) or high quality (25 Mhz) modes	

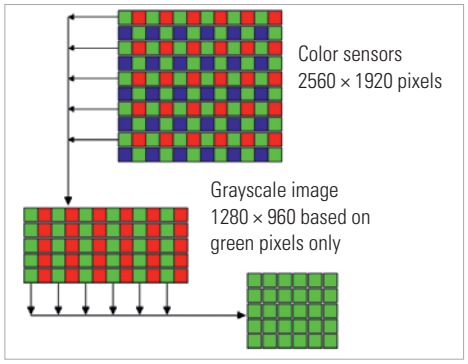
COMPUTER		
Min. Computer configuration	Intel Core 2 Duo 2.4 GHz, or faster 2 GB RAM, high res graphic card with 128 MB or 256 MB RAM, Direct X V9c or V10 FireWire-B port or free PCI-express slot	Windows 7 and Windows 10 (LAS and LAS X) Windows 8 (LAS only) DFCTwain

INTERFACES	
Recommended video adapter	C-mount 0.63× or 0.7×
Data	Single Cable FireWire – B-B, 9/9-Pin, screw lock
Digital input connector	Opto-decoupled trigger
Digital output connector	Flash synch or readout active

PHYSICAL AND ENVIRONMENTAL	
Power consumption	~ 4W / ~ 6W
Power supply	via FireWire cable
Housing	Aluminum die cast
Size	112 × 74 × 69 mm / 132 × 74 × 69 mm
Weight	410 g / 490 g
Operating temperature	–5° C to +50° C
Relative Humidity	10% – 80% non-condensing

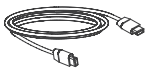


Quantum efficiency of Leica DFC450 camera (WB applied)

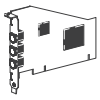


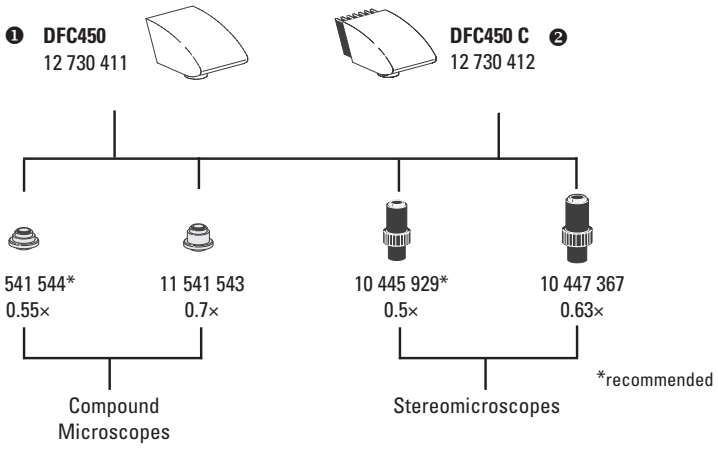
ASSEMBLY DIAGRAM

❸ **Cables**
11 600 269 FW-B-B, 2.5 m



❹ **FireWire-Cards**
12 730 446 Notebook Kit FW-B
12 730 447 FW-B, PCI-Express Low Profile





ORDER NUMBERS

12 730 411 ❶	Leica DFC450 camera kit, comprising: Leica DFC450 camera, LAS Software, FireWire cable B-B, PCI-express FireWire-B board
12 730 412 ❷	Leica DFC450 C camera kit, comprising: Leica DFC450 C camera, LAS Software, FireWire cable B-B, PCI-express FireWire-B board

ORDER NUMBERS (OPTIONS/EXTRAS)

12 730 447 ❹	PCI-Express FireWire-B card for PCs without FireWire (2 ports) low profile
12 730 183 ❹	PCI-32 FireWire A+B+USB card for PCs without FireWire (5 ports)
12 447 066 ❹	FireWire-B notebook kit, comprising of PC-Express card (2 ports), power supply 100-240 V, FireWire-A-B adapter
11 600 269 ❸	FireWire B-B cable, 2.5 m, 9/9-Pin

CONNECT WITH US!

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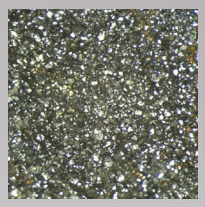
From Eye to Insight

Leica
MICROSYSTEMS

Digital HD Microscope Cameras

The best decision leaves you options

The Leica MC170 HD and Leica MC190 HD



Easy. Fast. Brilliant.

Fast and precise HD live preview images – right on your HD monitor! Absolutely user-friendly and, with an outstanding price/performance ratio, the new Leica MC170 HD and MC190 HD microscope cameras complement the high-definition product range for optimum use in industry and research. The perfect interaction of trend-setting quality, ultimate convenience of operation, and innovative image management create ideal requirements for ergonomic, efficient work with excellent results.

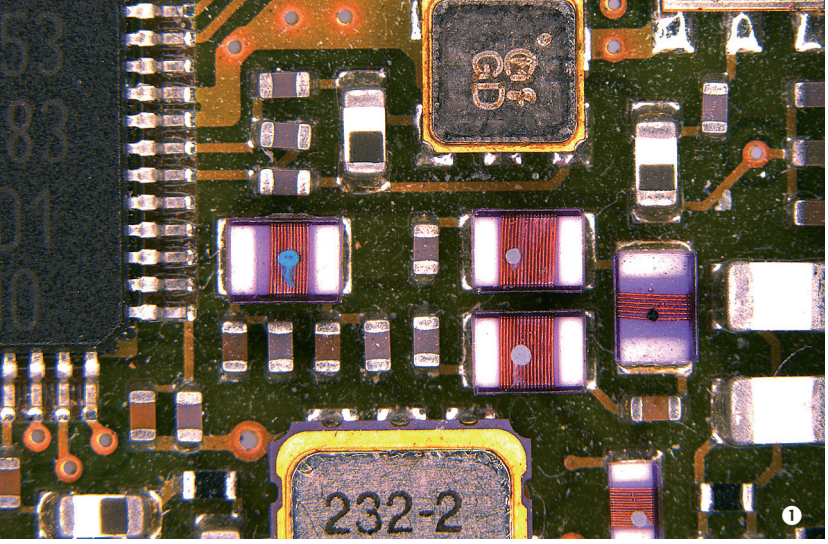
Best performance for highest requirements

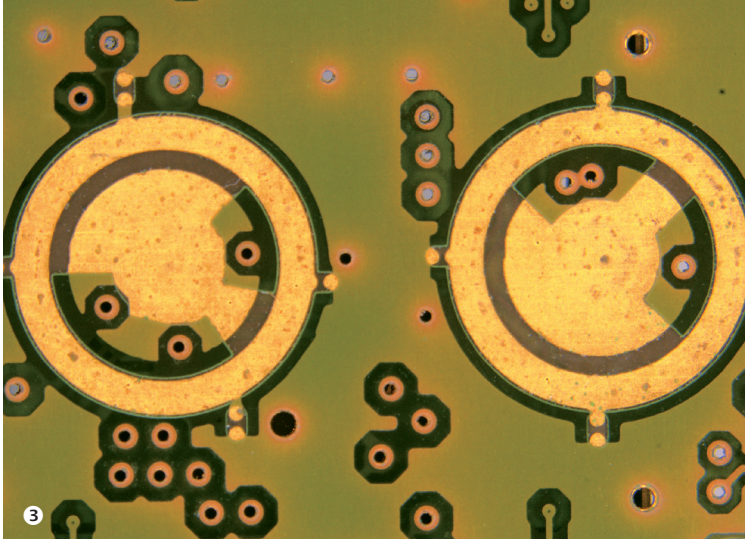
The high-performance Leica MC170 HD and MC190 HD microscope cameras provide ultra-high-speed live images via an HDMI interface to a high-definition monitor, or via a USB interface to a computer screen. Depending on the operating mode configured, the camera can be operated entirely separately, directly with a remote control on an HD monitor, or on a computer with high-performance Leica imaging software that was developed for the special requirements in microscopy. Brilliant and professional – the results of the new HD microscope camera are impressive!

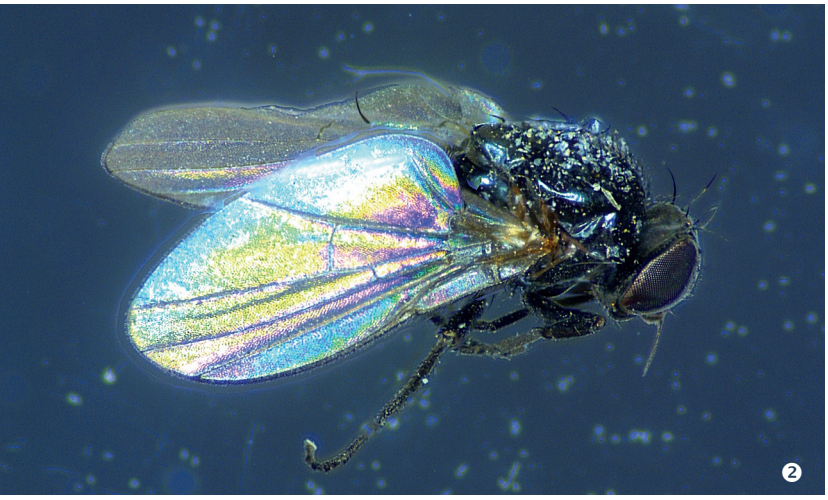
The infrared remote control allows comfortable work: Faster changeover to other camera modes; running a white balance operation; capturing movie clips for fast documentation and hands-on training; saving directly to an SD card. In addition, all camera parameters can be controlled directly and conveniently, even advanced settings such as brightness, intensification, or contrast of the image.

User-friendly menus on the monitor support professional processing of images. This enables digital watermarks, company logos, or even bar displays to be very easily copied right into the images.

Comfort and convenience at the touch of a button: RC2 remote control







❶ Inspection of electrical parts and soldered joints
❷ Visualization of a fruit fly wing *(Drosophila melanogaster)*
❸ Examination of the surface composition of printed circuit boards
❹ Simple and fast: All switches and plug connections are located on the rear side of the camera for easy access.

For all requirements:
Cost efficiency by means of flexibility

With the C-mount interface, the compact HD microscope cameras fit on every commercially available Leica microscope, macroscope, or imaging instrument. That makes them particularly flexible and of interest for individual requirements and budgets.

With the C-mount adapter, even existing microscopes can be easily and cost-efficiently enhanced with the advantages of the Leica MC170 HD and MC190 HD cameras.

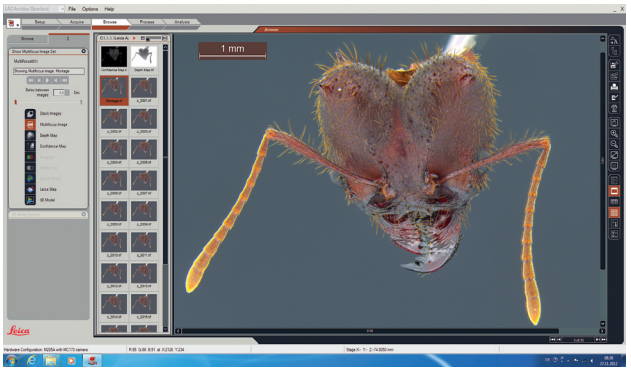
To the heart of the matter.
Perfect image management

It has never been easier to acquire and edit first-class images. The new Leica MC170 HD and MC190 HD cameras get right to the heart of today's requirements for innovative image management.
Use of the latest CMOS image sensors guarantees maximum image quality – pin-sharp and natural images, even in unfavorable light conditions.
The intelligent automatic mode adapts exposure time, gamma, and various other camera settings to nearly every situation with amazing precision.

The latest image processing algorithms provide perfect results in images or brilliant HD videos – whether on a computer, right on the HD screen, or on the mobile SD card.

For all requirements:
Leica Application Suite (LAS) Software

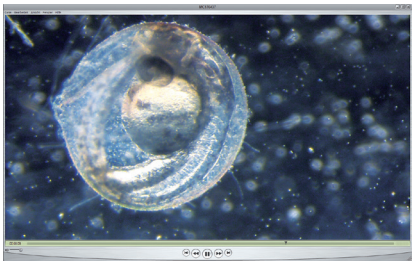
Leica Application Suite (LAS) is the platform for all of the microscopes and microscope cameras from Leica Microsystems. Precise measurements and analyses are carried out on the digital image with it. This software allows expansion with a multitude of modules, which are unified in a collective, easy-to-use user interface. The compact and free Leica EZ software is suited for easily making remarks and measurements. For Apple users there is the user-friendly Leica Acquire camera software. Just like LAS, it contains many intuitive functions for optimal camera settings. Using Leica Acquire, images can be transferred to other image editing programs immediately, such as iPhoto or Aperture, or stored in a simple gallery.



Added value including:
LAS with LAS Montage module (top image) and LAS EZ (bottom image)

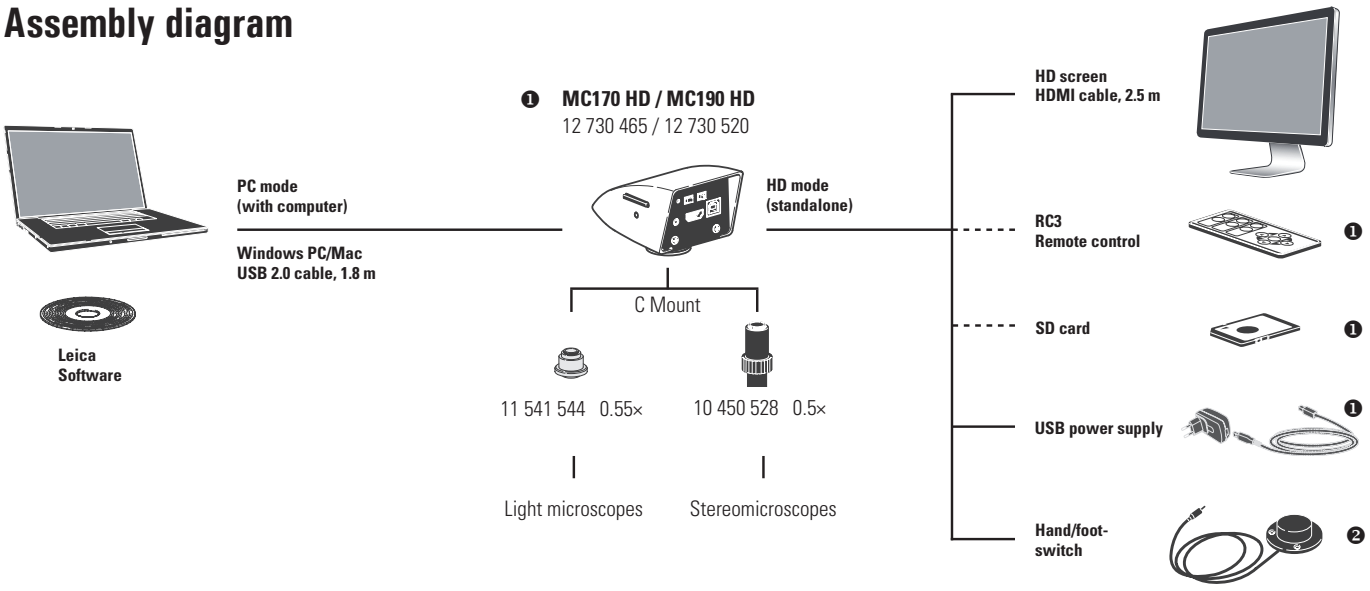
BENEFITS OF THE LEICA MC170 HD & MC190 HD:

- Digital microscope camera with HD live image for operation with or without a computer.
- Leica MC170 HD with a resolution of 5 megapixels, optimum for most microscopy applications.
- Leica MC190 HD with a resolution of 10 megapixels, also suited for acquiring the finest details at low magnifications.
- Very fast or high-resolution live preview images on an HD monitor (720 p or 1080 i/p).
- Outstanding price/performance ratio and cost efficiency.
- Ergonomic, thanks to view switching between the binocular tube and the HD monitor.
- Highly compact – with the corresponding C-mount adapter, it fits on any microscope with a C-mount port.
- Easy, inexpensive, fast and high-quality image storage to the SD card.
- Full HD movie clips recorded directly to the SD card (MP4 format).
- Direct control of all camera parameters via infrared remote control (in HD mode).
- Captured images stored and managed directly on the computer.
- Best image quality and sharpness without vignetting or reflections.
- Automatic, predefined, or user-specific selection of camera parameters.
- USB2 connector for power supply and data transfer via computer.
- Including the standard LAS software for easy camera control, image acquisition, commenting, and measuring.



Easy and reproducible documentation
Brilliant Full HD movie clips

Assembly diagram



Leica MC170 HD & MC190 HD – Technical Data

CAMERA		MC170 HD	MC190 HD
Resolution (Live images)	HD ready	1280×720 – 50 Hz / 60 Hz – 30 fps	
	Full HD	1920×1080 – 50 Hz / 60 Hz / 25 Hz / 30 Hz – 30 fps	
	PC	1600×1200 – 10 fps 1024x768 – 24 fps	1600x1200 – 10 fps 1400x1050 – 13 fps 1024x768 – 24 fps
Resolution (Individual images)		5 Mpixel (2592×1944) 2.5 Mpixel (1824×1368) 2 Mpixel (1600×1200) 0.8 Mpixel (1024×768)	10 Mpixel (3648×2736) 5 Mpixel (2592x1944) 2.5 Mpixel (1824×1368) 2 Mpixel (1600×1200) 1.5 Mpixel (1400×1050) 0.8 Mpixel (1024×768)
Resolution (Movie clips)		HD1080 (1920×1080) HD720 (1280×720)	
Pixel size	at max. resolution	2.35 µm × 2.35 µm	1.67 µm × 1.67 µm
Sensor grade		Aptina 1/2.3" CMOS	
Sensor size		6.1 mm × 4.6 mm	
Exposure time		0.5 msec – 500 msec	
Gain		1× – 12×	
Color depth		3x8 bit = 24 bit	
Data format	PC	JPG / TIF / AVI	
	HD	JPG / MP4	
Operating systems & Software		Windows 7 and Windows 10 (LAS and LAS X) Windows 8 (LAS only) OS X (Leica Acquire)	
Recommended computer configuration:		PC / Mac, Intel Core 2 Duo, >2.4 GHz, 4 GB RAM, 24-bit graphics	

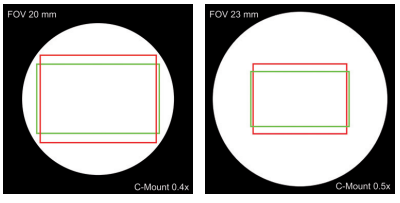
MECHANICAL AND OPTICAL INTERFACES	
Mechanical	C-mount thread
Color filter	Type IRB680, replaceable, (stock number: 12730484)
Recommended C-mount adapter	0.55× / 0.5×

ELECTRONIC INTERFACES	
Computer	USB 2.0, standard USB plug type B
High-definition connector	HDMI 1.3, standard HDMI plug type A
Audio	Audio signals for recording, white balance, etc. (can be turned off)
On/Off switch	Available, on rear side of the camera
PC/HD switch	Available, on rear side of the camera
Pinhole switch	Display for the current resolution, Changeover to the next resolution, reset, firmware upload
Remote control	Infrared remote control RC3
Remote release (Optional: 12730229)	Hand and foot trigger, with 1.5 m cable
SD card (Secure Digital)	SD HC compatible, 128 MB – 32 GB
Status LED	3 colors: green – power on, yellow – busy, red – error
Power supply	Through a USB cable to computer or to external USB power supply 5 V
Power requirement	4 W

OTHER	
Operating temperature range	+5 °C – 50 °C
Rel. humidity	10 – 90 %
Weight	250 g (camera only)
Confirmation of CE conformity	Available
Tested standards	EMI/RFI: EN55011-B EMC: EN61000-3-3 / EN61010-1 / EN61326-1 / EN61326-2-3

ORDER NUMBERS	
12 730 465 ❶	Leica MC170 HD camera (including USB power supply, HDMI cable, SD card, RC3 remote control)
12 730 520 ❶	Leica MC190 HD camera (including USB power supply, HDMI cable, SD card, RC3 remote control)
12 730 229 ❷	Hand or footswitch with 2 m cable

The Leica MC camera has an image section with a 16:9 size ratio for live images on an HD monitor (shown with a green frame). The images are always saved in a 4:3 size ratio (shown with a red frame).



Leica DM500 / DM750

The Leica MC170 HD and MC190 HD fit excellently on the Leica DM500 or DM750 school microscopes. These feature many particularly user-friendly details, such as EZLite, EZStore, and AgTreat™. To use the cameras on these microscopes, we recommend using the high-quality 30° or 45° trinocular tubes.

Leica Z6Apo / Z16Apo

When using the Leica MC170 HD and MC190 HD with a Leica Z6Apo or Z16Apo macroscope, a trinocular tube can be omitted entirely. With an A tube and C-mount adapter, highly compact and optically outstanding systems can be composed. The fast live image can be conveniently viewed on an HD monitor in high resolution.

Leica M60 / M80

The ergonomically and modularly designed Leica M60 and Leica M80 routine stereo microscopes offer a large field of view, high depth of field, and excellent optical resolution. With an HDF or HDV tube, the Leica MC170 HD and MC190 HD cameras can be connected to these microscopes.

Leica M125

The modular Leica M125 stereo microscope offers a fully apochromatically corrected 12.5:1 zoom. This large range of positions allows an overview of the specimen as well as observation and acquisition of the finest structures. With a 50 % or 100 % trinocular tube, the Leica MC170 HD or MC190 HD can be connected to this microscope.

CONNECT
WITH US!

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From Eye to Insight

Leica
MICROSYSTEMS

PRO CLASS FOR FLUORESCENCE

CCD Cameras Leica DFC7000 T and DFC7000 GT

Pro Class for Fluorescence

The DFC7000 cameras from Leica Microsystems are perfect work-horses:
The monochrome DFC7000 GT for demanding fluorescence applications, or the color DFC7000 T developed for both brightfield and fluorescence imaging.
These cooled 2.8 megapixel cameras provide a new paradigm for camera image quality through truly innovative design.

TWO CAMERAS – BEST FITTED FOR YOUR TASKS

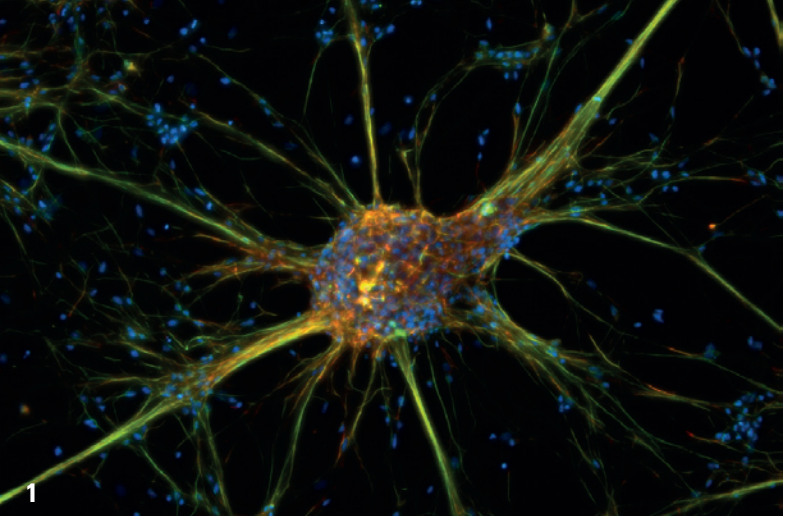
The Leica DFC7000 T is designed for brightfield and fluorescence applications. It can be easily switched from fluorescence imaging to brightfield documentation with outstanding color fidelity. Does your application requires higher sensitivity for low light fluorescence? In this case the monochrome DFC7000 GT is the best choice thanks to its exceptionally sensitive sensor.

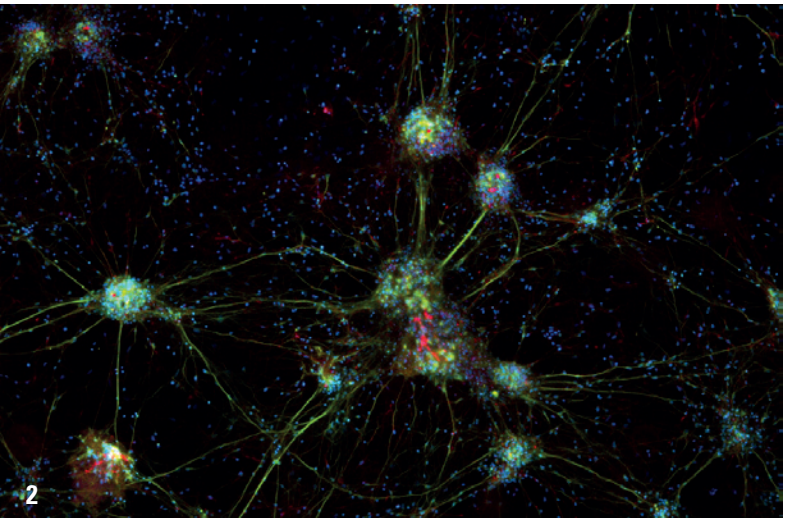
LARGE FIELD OF VIEW OBSERVATION

Two factors enable users to observe extremely large fields of view: First, the camera sensor which features 2.8 Mega-pixels with a pixel pinch of 4.54 µm. Secondly, Leica Microsystems' latest generation objectives with low magnification and high-numerical aperture objectives. It is the combination of the two that enlarges the field of view to speed up applications like tile scans. Based on new pixel architecture, this high resolution camera also maintains a wide dynamic range. We call that a paradigm shift!

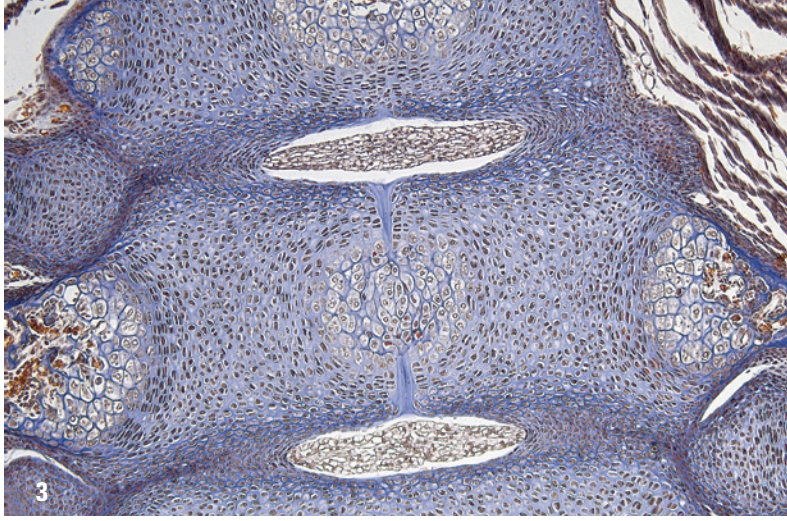
HIGH SPEED OF ACQUISITION

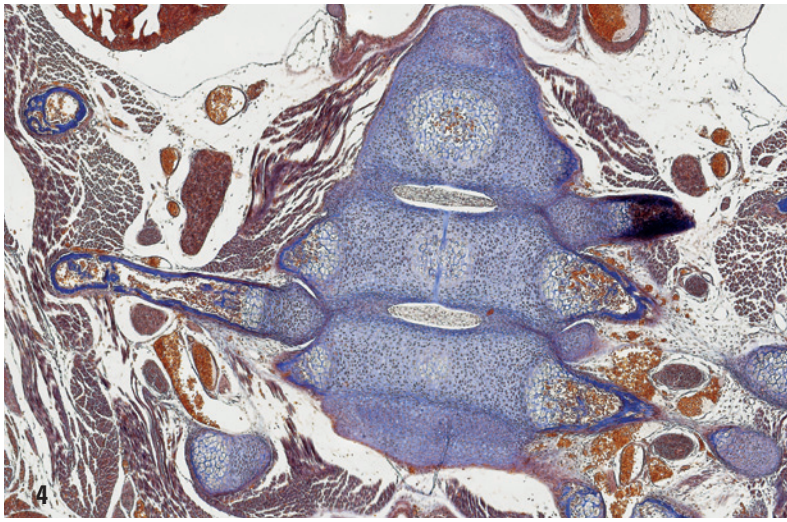
Up to 40 live frames per second at full resolution – in high speed mode, enables you to position and focus samples effortlessly without any time delays. They can capture real-time, high-speed time-lapse recordings easily to collect precise kinetic data labeled with accurate time stamps. And if you need to be really fast, you can achieve up to 120 frames per second in 5 x 5 binning mode.
What else could you want?





Cultured cortical neuronal cells (mouse). Simultaneous acquisition of 3 fluorochromes.
Blue: DAP I, nuclei; Green: Anti-Tubulin-Cy2; Red, Anti-Nestin-Cy3.
(**1)** 40 x magnification, (**2):** 10 x magnification





Stained section of a mouse embryo. Brightfield image with 40 x objective (**3**) and as tile scan (**4**)of the backbone. Sample property of Didier Hensch, IGBMC, France.

MASTERING LOW-LIGHT FLUORESCENCE APPLICATIONS

Fluorescence documentation takes advantage of crisp fluorescent signals against a dark background.
The DFC7000 GT with a maximum Quantum Efficiency of 70% is a master of low light imaging: Peltier Cooling combined with very low dark current, correlated pixel double-sampling, and the optional Black Balance function to reduce unwanted noise. They work together to create favorable environments that so far have not been achievable in this class of CCD cameras.

TRAIL-BLAZING BRIGHTFIELD DOCUMENTATION

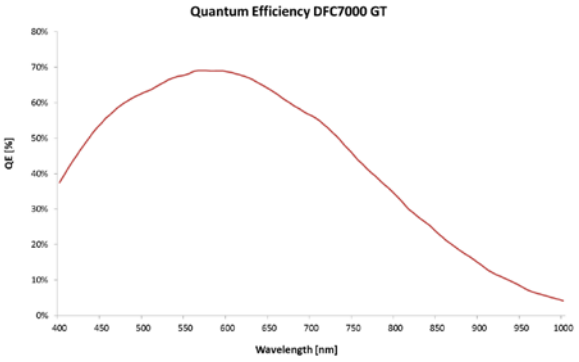
The challenge of stained specimens is to display the colors as close to reality as possible. The DFC7000 T blazes new trails with its color interpolation technology as it is based on an innovative 5 x 5 demosaicing algorithm. This makes the camera exceptionally well suited to discern even subtle color differences and enables users to do so as well.

EFFICIENT SYSTEM SOLUTIONS

Integration of systems provides users confidence that all components will work together smoothly in their experiments. The DFC7000 cameras accomplish a perfect integration: They work seamlessly with Leica Microsystems' software platforms to support a broad range of applications: with Leica Application Suite (LAS) for basic image acquisition and material analysis, and with LAS X, the highly modular, powerful software platform, for acquisition and analysis.

www.leica-microsystems.com

Quantum efficiency Leica DFC7000 GT



KEY FEATURES FOR YOUR SUCCESSFUL EXPERIMENTS:

Brightfield applications:

> Excellent color fidelity to discern subtle color differences
> Reproducible color settings at any time
> High-speed live preview for smooth focusing

Fluorescence applications:

> Excellent signal-to-noise ratio – crisp and clear fluorescence signal against dark background
> High sensitivity reduces sample bleaching and phototoxicity
> Leading-edge trigger capability for efficient interplay of all microscope components

	DFC7000 T	DFC7000 GT
Camera type	Digital color, high-sensitivity, cooled camera for fluorescence and brightfield microscopy	Digital monochrome, high-sensitivity, cooled camera dedicated for fluorescence applications
Housing	Aluminum, Size (L × W × H) 120 mm x 93 mm x 150 mm, Weight 1900 g	
Sensor	Sony ICX674AQG, EXview HAD II CCD technology, quad-tap	Sony ICX674ALG, EXview HAD II CCD technology, quad-tap
Shutter	Interline transfer progressive scan, global shutter	
Pixel	1920 x 1440 (~ 2.8 MP); 4.54 µm x 4.54 µm pixel size	
Full well capacity	> 15.000 electrons (e^-) typical	
Color filter	RGB Bayer mask	no
Exposure time	4 µsec - 200 sec*	
Bit depth	8 bit / 12 bit with A/D converter of 16 bit	
Cooling	One stage Peltier, stabelized	
Binning modes	2 x 2 (color/ mono); 3 x 3 (color/ mono, speed optimized); 4 x 4 (color/ mono); 5 x 5 (color/ mono, speed optimized); color sensitive binning: R,G, or B pixel only	2 x 2 (mono); 3 x 3 (mono); 4 x 4 (mono); 5 x 5 (mono)
Partial scan	Freely definable ROI (region of interest), combination with binning possible	
Dark noise	<0.05 e^-/px/sec	
Read out noise	Typical 6 e^-/ 10 MHz	
Dynamic range	~ 68 dB	
Pixel clocking rate	10 MHz/ 40 MHz	
Analog gain	Continuous 1× – 10×	
Advanced features*	Image averaging, sharpening with active noise reduction, black balance, on-head image buffer, quad-tap read-out and mono-tap read-out, external trigger capability; dynamic defect pixel correction, HDR acquisition, streaming mode	
Image formats	fps*at 40 MHz / 8 bit	
Turbo mode (1280 x 1024)	50	50
Full frame (1920 x 1440)	40	40
2x2 binning (960 x 720)	40	69
3x3 binning (640 x 480)	91	91
4x4 binning (480 x 360)	40	108
5x5 binning (384 x 288)	123	124
Supported operating systems	Windows 7, Windows 8 (32 / 64 bit)*, Windows 10	
Software	LAS X, LAS	LAS X
c-mount	0.7x for inverted and upright compound microscopes; 0.63x for stereo microscopes	
Interfaces	USB 3.0 single cable (5 Gbit/s) and optional trigger cable	
Power supply	5 V via external DC power supply	
Power consumption	~14 W (with Peltier cooling)	~15 W (with Peltier cooling)
Operating temp. range	+5°C .. +50°C	
Storage temperature	-20°C .. +70°C	
Air humidity	max 80%, non-condensing	
Conformity	CE: EN 61326-1, limited class B, EN 61010-1 ROHS 2 compliant, China ROHS 50 compliant	

* depends on software/ hardware in use

From Eye to Insight

Leica
MICROSYSTEMS

Integrated Camera for Stereo Microscopes

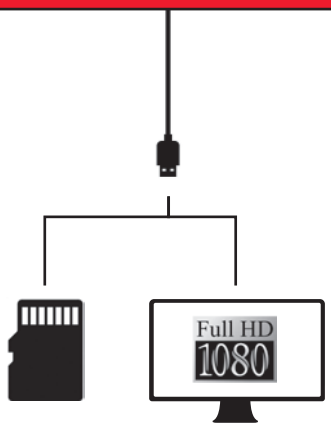
DOCUMENTATION MADE FAST, EASY, AND NETWORKED

Leica IC90 E with Ethernet Capability

CHOOSE YOUR CONNECTION

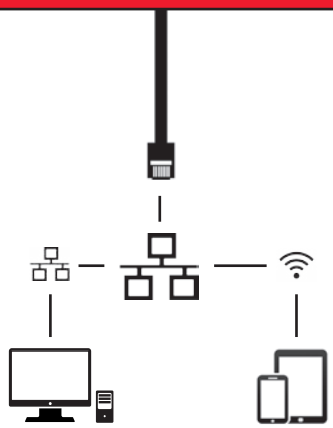
There are various ways to connect the Leica IC90 E with your viewing devices.

HDMI mode



Use **HDMI mode** to connect the camera to a large HD-screen for a **standalone operation** without computer.

Ethernet mode

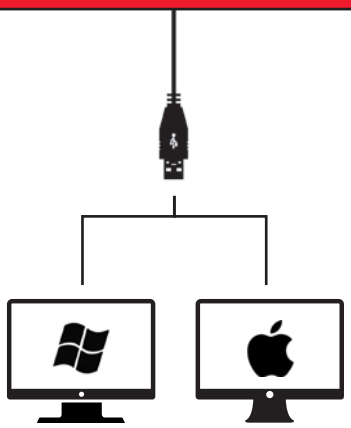


Capture images from any remote PC or Mac with access to your LAN network.

Also mobile devices can be used, if they have access to your network by Wi-Fi.

Use **Ethernet mode** to connect the camera **with your facility's network** via Ethernet (RJ45) cable.

USB mode



Use **USB mode** to connect the camera directly **via USB2 cable** with a **PC** or Mac.

ONE OF A KIND

The Leica IC90 E was developed for the stereo microscopes of the Leica M series. It makes your daily documentation and microscopy work easier and supports you to become more efficient. The camera can be simply integrated into your company network – providing you the freedom to capture images very fast from various devices.

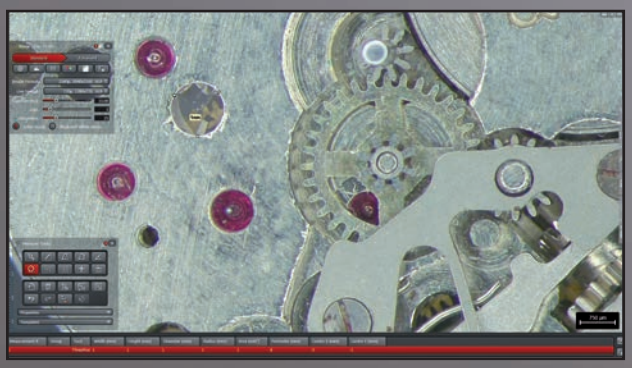
Enjoy high quality images

- See finest details, even at low magnification, the 10-megapixel CMOS sensor paired with the digital zoom ensure full camera power.
- Work smoothly with the live image on screen, the high frame rate of 35 fps ensures smooth imaging even if the sample is in motion.
- Find the best contrast for your sample by using the color and monochrome acquisition modes.
- Inspect, analyze, and organize your images with the LAS X software – the latest imaging technology to simplify your inspection and documentation tasks.

The integrated camera allows you to view samples both on screen and through the microscope's binocular tube.

ADAPTERS BELONG TO THE PAST

All connectors of the Leica IC90 E are housed inside the camera providing you an easy and cost-effective way to add documentation ability to your microscope.



Work with the Leica Application Suite (LAS) X for PCs, with Leica Acquire for Mac or download the Leica AirLab App from iTunes or Google Play Store if you would like to work with mobile devices.

SPECIFICATIONS

LEICA IC90 E	
Exposure time	1 msec – 500 msec
Max. live image rate	Live image on computer screen up to 35 fps (1,024 × 768 pixels) Live image on HDMI screen up to 38 fps (1,280 × 760 pixels) Live image on HDMI screen up to 20 fps (1,920 × 1,080 pixels)
Image formats	2,160p 3,840 × 2,160 16:9 (Capture) 1,080p 1,920 × 1,080 16:9 (Live & Capture) 720p 1,280 × 720 16:9 (Live & Capture) 10 MP 3,648 × 2,736 4:3 (Capture) 5 MP 2,592 × 1,944 4:3 (Capture) 2.5 MP 1,824 × 1,368 4:3 (Capture) 1.9 MP 1,600 × 1,200 4:3 (Live & Capture) 0.8 MP 1,024 × 768 4:3 (Live & Capture)
Movie clip	Full HD (1,920 × 1,080) and HD Ready (1,280 × 720) MP4 with 25 fps
Sensor size	6.44 mm × 4.6 mm, 1/2.3" CMOS
Pixel size	1.67 µm × 1.67 µm
Gain range	1× to 20×
Color depth	3 × 8 bit (24 bit)
Data format	JPEG / MP4
Software	LAS X 3.0 and higher (Windows 7, Windows 10) LAS 4.9 and higher (Windows 7, Windows 8 / 8.1) LAS Acquire 3.3 and higher (MAC OS X) LAS EZ 3.3 and higher (Windows 7, Windows 8 / 8.1, Windows 10)
Recommended computer config.	Depends on the used software

MECHANICAL AND OPTICAL INTERFACES	
Mechanical	Fits between tube and optics carrier via standard Leica dovetail, no additional c-mount or phototube needed
Light distribution	Optical 50 % / Camera 50 %
Internal video magnification	0.5×

INTERFACES	
Connectors	1 × HDMI type A (full size) 1 × USB 2.0 type B 1 × RJ 45 (Ethernet port) 1 × analog input for hand-/footswitch
Remote control	IR remote control: RC3 (recommended) or RC2 (compatible) Cable remote control: Hand-/footswitch
Mode panel	2 push buttons for capture and mode selection 3 LEDs to indicate operation mode (USB, HDMI, and Ethernet mode)
Status LED	2 colors (green and red)
SD card slot	SDHC up to 32 GB
Pinhole switch	Toggle between HDMI output resolution

OTHER	
Power supply	Over USB 2.0 port (power from computer or external power supply)
Power requirement	5 V DC / 800 mA 4 W
Operating temperature	10 °C to 40 °C (50 °F to 104 °F)
Storage temperature	-20 °C to 55 °C (-4 °F to 131 °F)
Relative humidity	10 % to 90 %
Weight	600 g (camera only)

CAMERA KIT AND ACCESSORIES

Article number: 12 730 521

Camera and software kit

Enables you to capture images on a PC with LAS or LAS X.

Content

- Leica IC90 E camera
- USB cable, type A-B
- CD with Leica Application Suite (LAS) Software

Article number: 12 730 528

Standalone kit (accessory)

Enables you to connect your Leica IC90 E to a HDMI monitor and store images on a SD card. Recommended if you use the camera without a PC.

Content

- HDMI cable, type A-A
- Remote control RC3 (art. no. 10 450 805)
- SD card
- Power supply with international connectors for US, EU, UK, and AU
- Ethernet cable

Article number: 12 730 229

Hand-/footswitch (accessory)

Enables you to operate the camera remotly with your hand or foot. The following functions can be programmed: image capture, video, white balance, and overlay. Recommended if you need both hands to manipulate the specimen or if you work with a boom-/floorstand sensitive to vibrations.

Content

- Hand-/footswitch

CONNECT WITH US!

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www.leica-microsystems.com

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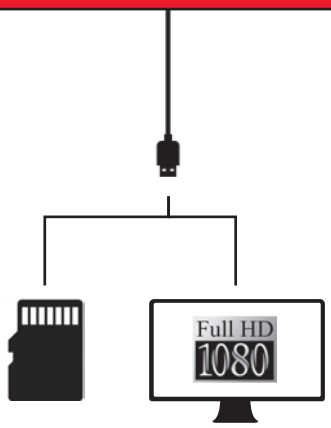
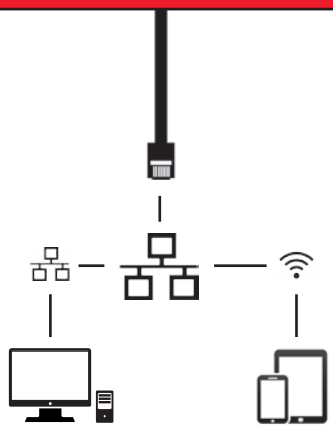
There are various ways to connect the Leica IC90 E with your viewing devices.

HDMI mode



Use **HDMI mode** to connect the camera to a large HD-screen for a **standalone operation** without computer.

Ethernet mode

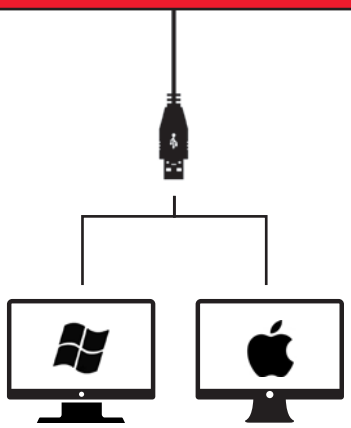


Capture images from any remote PC or Mac with access to your LAN network.

Also mobile devices can be used, if they have access to your network by Wi-Fi.

Use **Ethernet mode** to connect the camera **with your facility's network** via Ethernet (RJ45) cable.

USB mode



Use **USB mode** to connect the camera directly **via USB2 cable** with a **PC** or Mac.

ONE OF A KIND

The Leica IC90 E was developed for the stereo microscopes of the Leica M series. It makes your daily documentation and microscopy work easier and supports you to become more efficient. The camera can be simply integrated into your company network – providing you the freedom to capture images very fast from various devices.

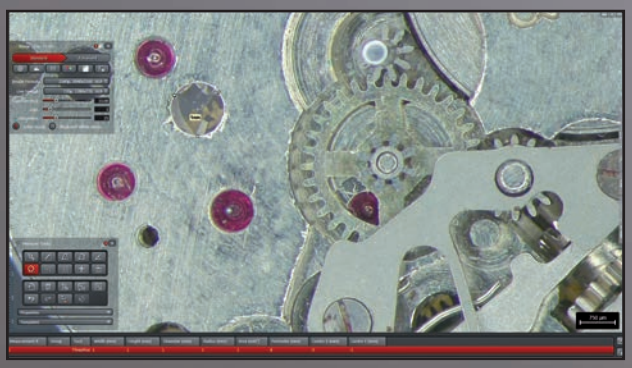
Enjoy high quality images

- See finest details, even at low magnification, the 10-megapixel CMOS sensor paired with the digital zoom ensure full camera power.
- Work smoothly with the live image on screen, the high frame rate of 35 fps ensures smooth imaging even if the sample is in motion.
- Find the best contrast for your sample by using the color and monochrome acquisition modes.
- Inspect, analyze, and organize your images with the LAS X software – the latest imaging technology to simplify your inspection and documentation tasks.

The integrated camera allows you to view samples both on screen and through the microscope's binocular tube.

ADAPTERS BELONG TO THE PAST

All connectors of the Leica IC90 E are housed inside the camera providing you an easy and cost-effective way to add documentation ability to your microscope.



Work with the Leica Application Suite (LAS) X for PCs, with Leica Acquire for Mac or download the Leica AirLab App from iTunes or Google Play Store if you would like to work with mobile devices.

SPECIFICATIONS

LEICA IC90 E	
Exposure time	1 msec – 500 msec
Max. live image rate	Live image on computer screen up to 35 fps (1,024 × 768 pixels) Live image on HDMI screen up to 38 fps (1,280 × 760 pixels) Live image on HDMI screen up to 20 fps (1,920 × 1,080 pixels)
Image formats	2,160p 3,840 × 2,160 16:9 (Capture) 1,080p 1,920 × 1,080 16:9 (Live & Capture) 720p 1,280 × 720 16:9 (Live & Capture) 10 MP 3,648 × 2,736 4:3 (Capture) 5 MP 2,592 × 1,944 4:3 (Capture) 2.5 MP 1,824 × 1,368 4:3 (Capture) 1.9 MP 1,600 × 1,200 4:3 (Live & Capture) 0.8 MP 1,024 × 768 4:3 (Live & Capture)
Movie clip	Full HD (1,920 × 1,080) and HD Ready (1,280 × 720) MP4 with 25 fps
Sensor size	6.44 mm × 4.6 mm, 1/2.3" CMOS
Pixel size	1.67 µm × 1.67 µm
Gain range	1× to 20×
Color depth	3 × 8 bit (24 bit)
Data format	JPEG / MP4
Software	LAS X 3.0 and higher (Windows 7, Windows 10) LAS 4.9 and higher (Windows 7, Windows 8 / 8.1) LAS Acquire 3.3 and higher (MAC OS X) LAS EZ 3.3 and higher (Windows 7, Windows 8 / 8.1, Windows 10)
Recommended computer config.	Depends on the used software

MECHANICAL AND OPTICAL INTERFACES	
Mechanical	Fits between tube and optics carrier via standard Leica dovetail, no additional c-mount or phototube needed
Light distribution	Optical 50 % / Camera 50 %
Internal video magnification	0.5×

INTERFACES	
Connectors	1 × HDMI type A (full size) 1 × USB 2.0 type B 1 × RJ 45 (Ethernet port) 1 × analog input for hand-/footswitch
Remote control	IR remote control: RC3 (recommended) or RC2 (compatible) Cable remote control: Hand-/footswitch
Mode panel	2 push buttons for capture and mode selection 3 LEDs to indicate operation mode (USB, HDMI, and Ethernet mode)
Status LED	2 colors (green and red)
SD card slot	SDHC up to 32 GB
Pinhole switch	Toggle between HDMI output resolution

OTHER	
Power supply	Over USB 2.0 port (power from computer or external power supply)
Power requirement	5 V DC / 800 mA 4 W
Operating temperature	10 °C to 40 °C (50 °F to 104 °F)
Storage temperature	-20 °C to 55 °C (-4 °F to 131 °F)
Relative humidity	10 % to 90 %
Weight	600 g (camera only)

CAMERA KIT AND ACCESSORIES

Article number: 12 730 521

Camera and software kit

Enables you to capture images on a PC with LAS or LAS X.

Content

- Leica IC90 E camera
- USB cable, type A-B
- CD with Leica Application Suite (LAS) Software

Article number: 12 730 528

Standalone kit (accessory)

Enables you to connect your Leica IC90 E to a HDMI monitor and store images on a SD card. Recommended if you use the camera without a PC.

Content

- HDMI cable, type A-A
- Remote control RC3 (art. no. 10 450 805)
- SD card
- Power supply with international connectors for US, EU, UK, and AU
- Ethernet cable

Article number: 12 730 229

Hand-/footswitch (accessory)

Enables you to operate the camera remotly with your hand or foot. The following functions can be programmed: image capture, video, white balance, and overlay. Recommended if you need both hands to manipulate the specimen or if you work with a boom-/floorstand sensitive to vibrations.

Content

- Hand-/footswitch

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From Eye to Insight

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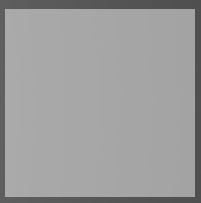
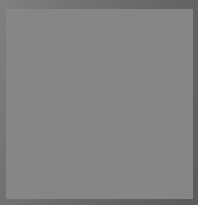
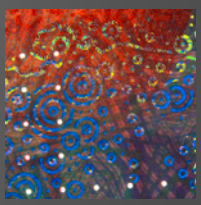
Imaging in Manufacturing and Life Science Research

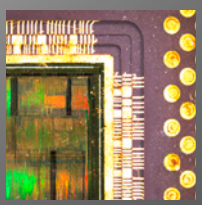
EVERY DETAIL COUNTS

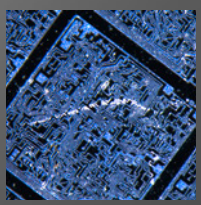
CMOS Microscope Camera
DMC5400 with 20 MP

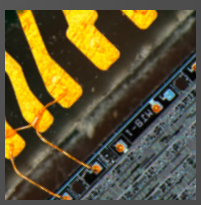








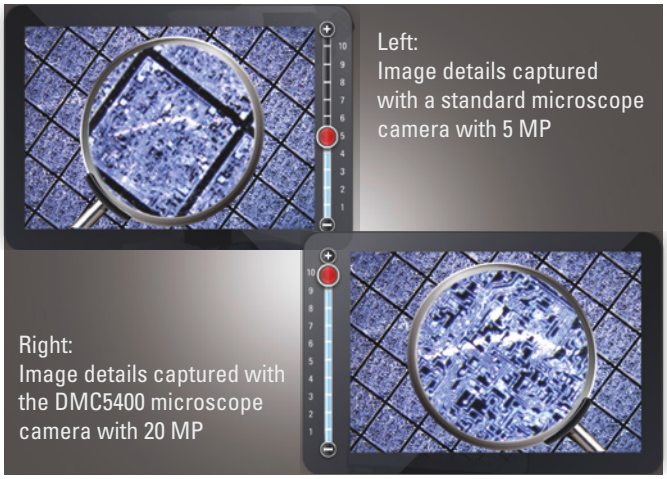




GET THE MAX FROM YOUR IMAGE

See what you need to see without compromises

The DMC5400 microscope camera from Leica Microsystems offers high-resolution color images at high frame rates, even at low magnification. It is optimized to produce fast, high quality images for documentation, evaluation, and analysis for a wide variety of samples and applications in manufacturing and life science research.



Get your image fast

Take images at low light and at any magnification with the built-in CMOS sensor and high sensitivity.

- Benefit from 40 frames per second (fps) for fast focusing and positioning of your samples
- Enjoy working with correct image exposure automatically determined in less than one second
- Experience the latest Sony Exmor R sensor technology for high definition movies and great images
- Capture images with high dynamic range for a maximum of detail in light, as well as dark areas

Every pixel counts

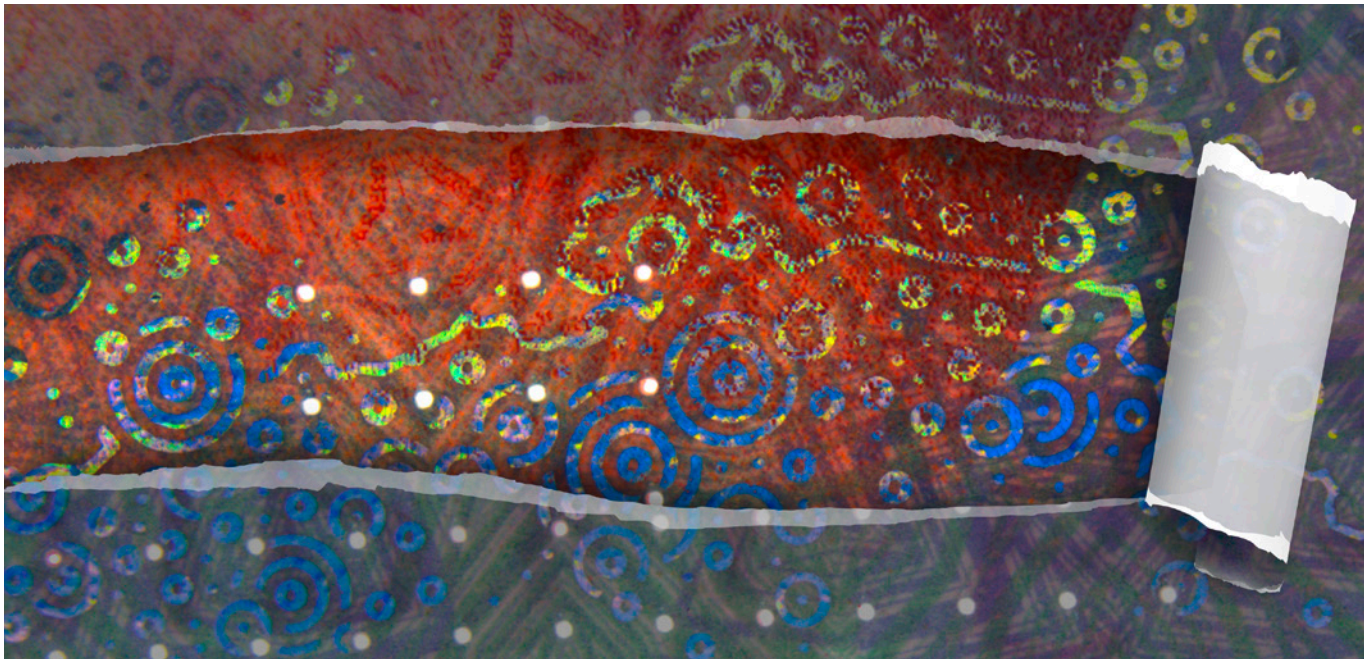
The 20 MP CMOS sensor of the DMC5400 camera enables you to capture all details of your sample in one single shot.

- Save all information from your microscope at every magnification in one image as the camera doesn't limit your microscope's optical resolution
- Capture images with up to 4x more resolution than with conventional 5 MP microscope cameras this saves media storage space as you get the same amount of data with fewer images
- Experience high-speed imaging in full resolution for real-time images of your samples, e.g. with 15 fps at 20 MP
- Explore microscope images with 4K resolution (15 fps)

SEE AND RELY ON NATURAL COLORS

Faithful colors for impressive image quality

Capture the exact same that your eyes see when looking through the microscope. The DMC5400 camera produces pin-sharp images with unsurpassed color accuracy. Enjoy outstanding image fidelity with faithful color rendering, specially customized to the Leica LED illumination. The DMC5400 is true-color calibrated and provides an unbelievably natural color reproduction. Ideal color temperatures for your applications are automatically selected from a set of parameters in the Leica Application Suite X (LAS X) software.



Swiss bank note: upper image captured with the camera DFC495 and lower image captured with the new DMC5400.

SPECIFICATIONS

	DMC5400
Sensor	Sony, CMOS Exmor R rolling shutter
Sensor size	1"
Pixel size	2.4µm x 2.4µm
No. of pixels	20.5 megapixel
Live image formats	Aspect ratio 3/2 > 20 MP Full frame 5472 x 3648 - 7 fps > 5 MP 2x2 Bin. 2736 x 1824 - 19 fps > 2.3 MP 3x3 Bin. 1824 x 1216 - 32 fps Aspect ratio 16/9 > 4K 3840 x 2160 - 13 fps > Full HD 1920 x 1080 - 30 fps All formats are also available for image capture mode.
Bit depth image	3 x 8 bit & 3 x 12 bit
Readout noise	4e-
Saturation capacity	15'000 e-
Dynamic range	71 dB, 3500:1
Quantum efficiency	67% @ 536 nm
Cooling	none
Exposure time	1 ms to 10 s
Gain	1x to 10x
Article number	12 730 531
Recommended C-Mount	1.0x (10 450 829) stereo microscope 1.0x (11 541 510) light microscope
Software PC	> LAS X 3.4.1 or higher + Software Update (Win7, Win10) > LAS 4.13 or higher (Win7, Win8/8.1,10) In LAS automatic selection of white balance is not available, frame rates are expected to be lower (70% of the values above is reached).
Interface	USB 3.0

CONNECT WITH US!

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From Eye to Insight

Leica
MICROSYSTEMS

Digital Imaging Camera for Basic Imaging

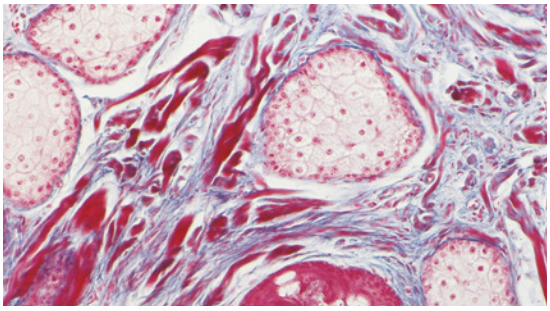
GET YOUR BASICS RIGHT

With the Leica EC4

THE LEICA EC4 MICROSCOPE CAMERA FOR BASIC IMAGING

If you need a camera to document your samples every day, you will enjoy working with the Leica EC4 color camera. It is easy-to-use and produces excellent images for basic documentation. The Leica EC4 is an affordable digital color camera with a 3.3 megapixel CMOS sensor that offers fast, real-time imaging of up to 24 frames per second. Combining the Leica EC4 with a micropscope and the Leica EZ software creates a cost-effective solution for image annotation, calibration, and basic measurements. The user interface is intuitive, so that imaging takes less time than you are used to.

The real-time speed of the Leica EC4 allows you to adjust and focus an image directly on the computer screen. Live or captured images can be displayed in full-screen mode on a computer monitor to allow group discussion.



COST EFFECTIVE

The Leica EC4 offers the best price-performance ratio in the Leica microscope camera portfolio. It can be used with all microscopes that feature a C-mount imaging port.

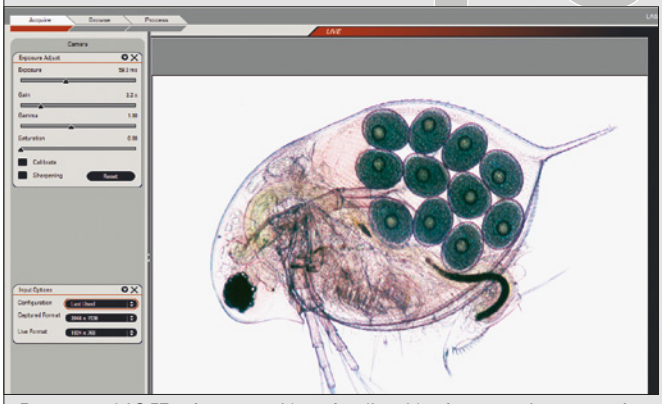
FEATURE HIGHLIGHTS

- Capture high-resolution color images of 3.3 megapixels.
- Powerful camera controls include shading correction and optional predefined illumination settings.
- Create high quality images for use in presentations, lab reports, and course related material.
- Images can be posted on websites or intranets for easy-sharing.
- Single camera cable connects to USB 2.0 port.
- Archive standard and unusual specimens.
- Easy connection to all C-mount- and video adapters.
- Use with external projectors.

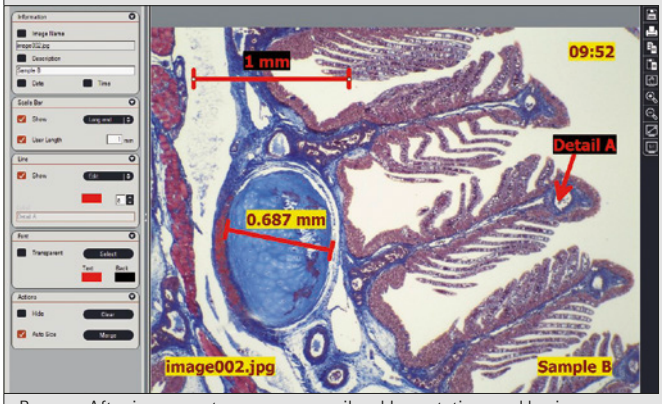
User-friendly software for PC

The Leica EC4 comes with LAS (Leica Application Suite) EZ software, which integrates the Leica microscope and digital camera into one imaging system. The intuitive user interface minimizes the effort required for time-consuming imaging tasks. Microscope and camera settings can be instantly selected and all configurations can be saved for later retrieval. LAS EZ also provides the means to define acquisition preferences by individually setting exposure, gain, and gamma levels as well as color depth and size. The result: Crisp, sharp images that can be saved and displayed as thumbnails in an integrated gallery and reviewed at any time. All image-related information such as acquisition time, bit depth, and calibration is stored, which again simplifies the retrieval process at no additional cost.

PC



Easy-to-use LAS EZ software provides a fast live video for convenient setup of camera parameters and focus distance. The work-flow bar always indicates where you are in the documentation process.



Process: After image capture you can easily add annotations and basic measurements to the images. A gallery of images stores all the calibration and camera data for fast reference.

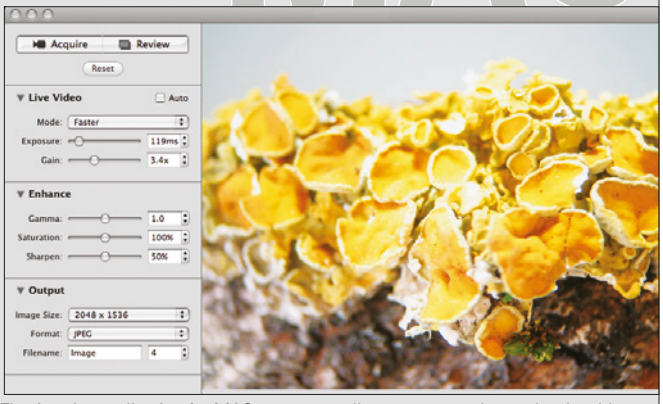
Leica Acquire software for MAC

The Leica EC4 camera also comes with free Leica Acquire software to make on-screen digital recording on MAC computers – quick and easy. In the same manner as LAS EZ, Leica Acquire includes numerous intuitive image capture and editing functions to ensure that high quality images are immediately available for viewing and processing.

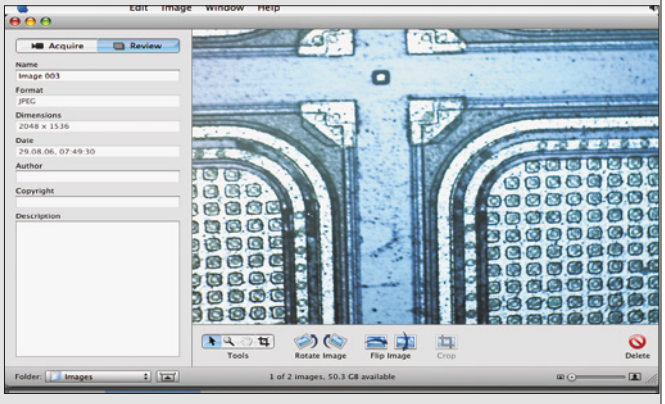
Presentations and reports

All captured images can be refined and enhanced for use in presentations. For instance, the brightness and saturation levels as well as contrast and gamma can be adapted to suit your requirements, and basic annotations can be included such as text data, scale bars, and lines.

MAC



The Acquire application for MAC computers allows you to work seamlessly with all the other MAC software and with the same ease of use. By the touch of a few buttons or sliders you can quickly set up the best capture parameter for your images.



An integrated gallery shows the captured images. You can add comments or do basic image processing. You can easily use all the images in iPhoto or other Mac applications for viewing or documentation.

TECHNICAL DATA: LEICA EC4

Digital Camera	**Leica EC4**	
Weight	250 g (camera only)	
Exposure time	0.5 msec to 500 msec	
Live picture	Color, on computer monitor up to 24 fps (1024 × 768 Pixel)	
Number of pixels	2112 x 1584, 3.3 Mpixel	
Scan Area	6.55 mm × 4.6 mm	
Pixel size	3.2 µm × 3.2 µm	
Sensor type	1/2" CMOS	
Gain	1× – 12×	
Colour depth	24-bit	
Data format	JPEG / TIFF / BMP	
Operating systems	Windows™ 7, 8.1, Macintosh™ OS X 10.9	
Leica software	Leica Acquire (MAC), LAS EZ software (PC)	
Compatibility	USB 2.0 for Windows and Macintosh systems	
Power supply	Via USB 2.0	
Operating temperature	Range +5°C to +50°C	Relative humidity 10 to 90%
Computer	PC	MAC
Recommended computer configuration	Intel Core 2 Duo, 2,4 GHz, 4 GB RAM	Intel Core 2 Duo, 2.4 GHz, 4 GB RAM
	24 bit graphics, 1280 × 1024,	24-bit graphics, 1280 × 1024
	CD drive, USB 2.0	CD drive, USB 2.0

Order number

12 730 519 Leica EC4 digital camera / LAS EZ Software / Leica Acquire Software

Appropriate C-mount adapter and computer system is required.

CONNECT WITH US!

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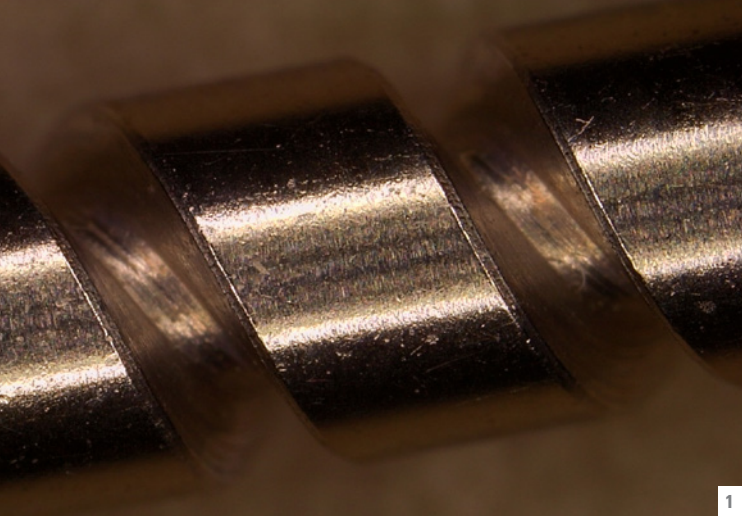
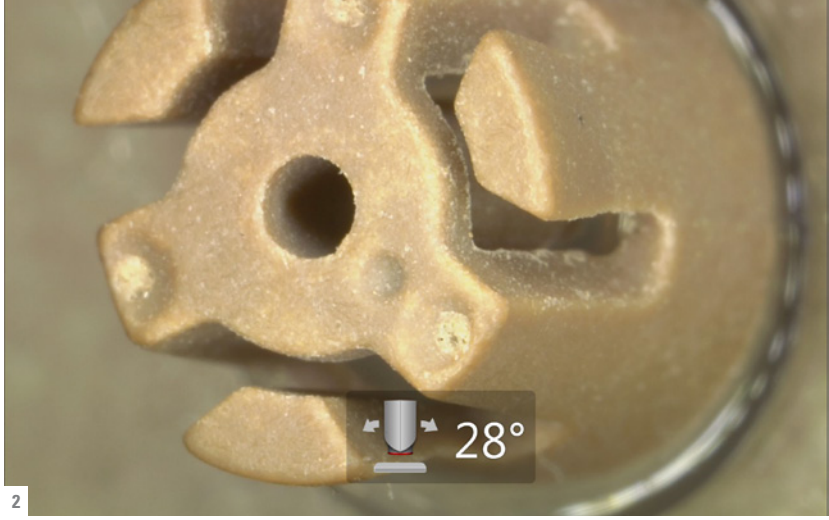
MICROSYSTEMS

DON'T SEARCH. FIND!

The DVM6 digital microscope

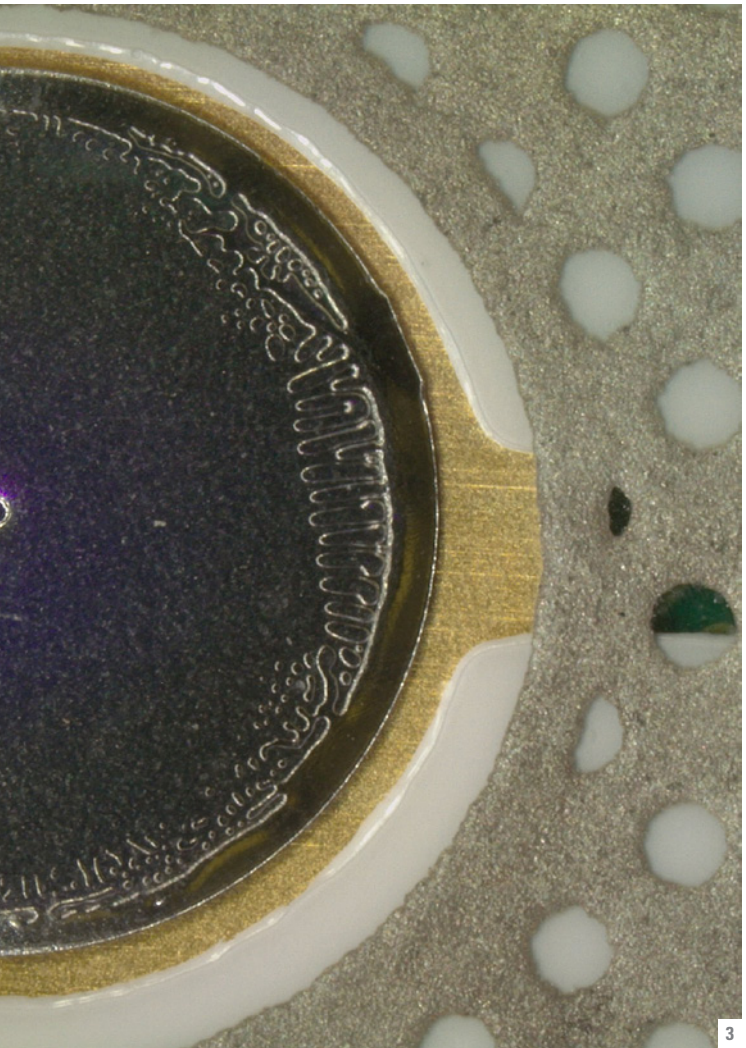


1



2

Don't search. Find!



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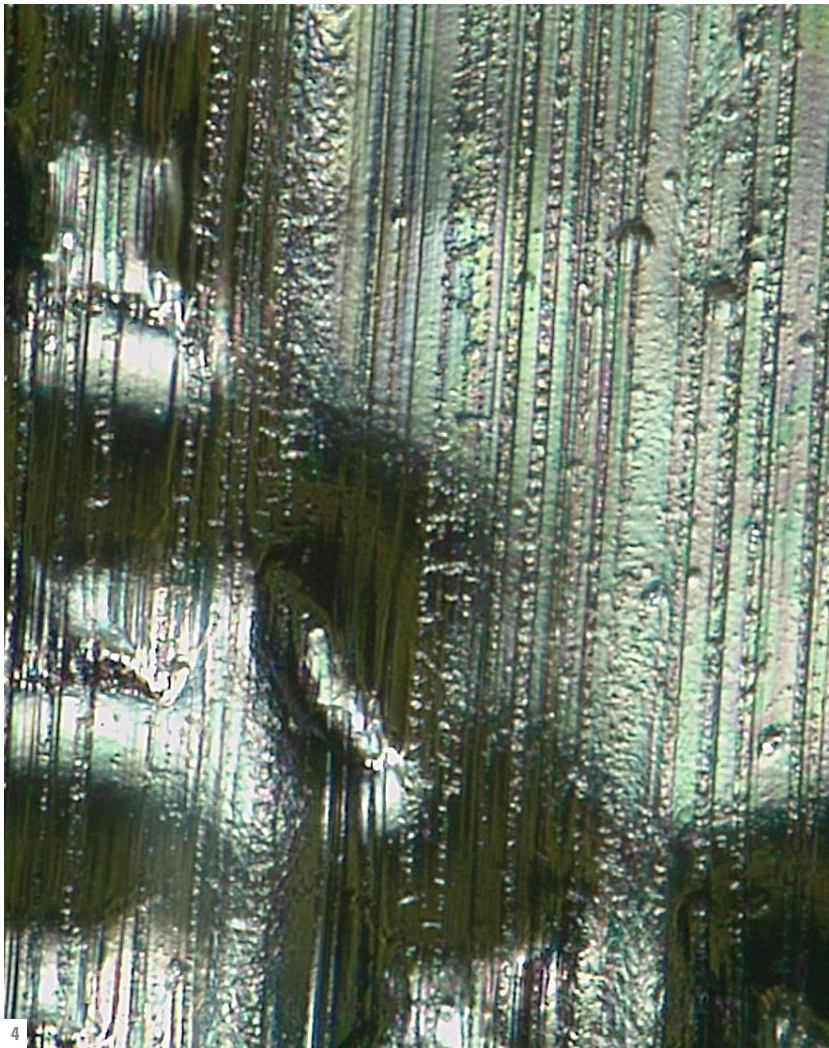


4

PUT AN END TO LONG SEARCHES

The DVM6 digital microscope solution is fast, reliable, and easy to use – no matter if you work in quality assurance, failure analysis, research and development, or forensics.

USABILITY

One step from macro to micro:

- Change magnification fast, thanks to a wide 16:1 zoom range
- Work from 12x up to 4,740x magnification* and change the objective with one hand
- Stay focused, always, with easy one-handed tilting

* based on 1:1 display (10 megapixel)

IMAGE QUALITY

See more with crisper images:

- Discover more details with the high-resolution 10 megapixel camera
- See images in high resolution with top-notch optics
- Get your image with one click via the Image Preview function

IMPRESSIVE INSIGHTS

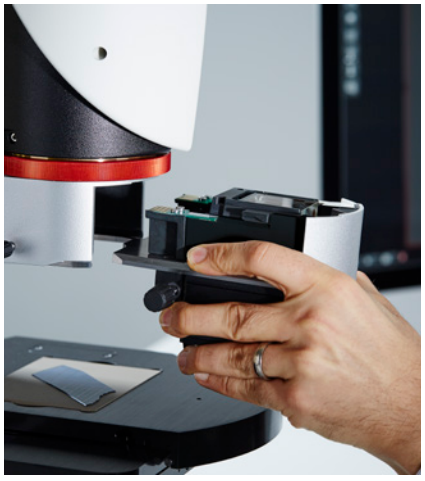
Rely on reproducible results:

- Few clicks to generate a report of results
- System settings are always saved with every image, e.g., position, magnification, illumination

1: Spindle - 63x with HDR, ringlight and coax
2: Injection moulding - 70x, tilted
3: Membrane switch - 60x
4: Embossed Al-paper - 730x, food packaging

EASE OF USE

From the big picture to fine details in an instant. Even an objective change does not interrupt your workflow. The DVM6 works straightforward and saves you time inspecting various samples. This solution enables users to start working with minimal training requirements.



OBJECTIVE CHANGE: PLUG AND SEE

Simply slide in the objective to change to a different magnification. It is a simple one-handed movement while in operation. No additional adjustments, e.g., software setting, cabling, need to be made – parfocal objectives keep the sample in focus.

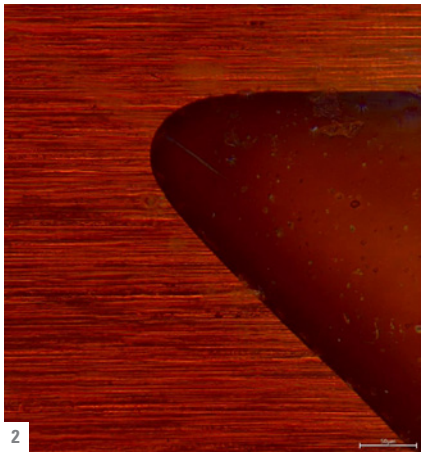
PLANAPO OBJECTIVES:

- PlanAPO FOV 43.75: The objective for large overview (with 45 mm FOV diagonale)
- PlanAPO FOV 12.55: The workhorse with big magnification range (40x-675x) at high working distance (33 mm)
- PlanAPO FOV 3.60: The objective for high resolution (up to 2,350x at 425 nm resolution)

TILTING STAND: CHANGE YOUR PERSPECTIVE

You can tilt the observation angle with one hand. Just concentrate on the monitor to study the sample. By default, the tilting axis is aligned to the focus point so you can see your sample, always in focus, at any angle from - 60° to + 60°. Rotate the stage and explore the sample from completely new perspectives. This helps you to find the details that you are looking for.

1



2

16:1 ZOOM RANGE: EXTREME MAGNIFICATION VERSATILITY

Using only one rotational movement, you can zoom in by a factor of 16. The actual magnification of the PlanAPO-corrected zoom optics is displayed on the monitor. This gives you a reference of the imaging conditions.

BENEFITS OF PLANAPO OPTICS:

- High optical correction power
- Highly detailed images sharp up to the border area
- No color fringes over zoom range

AUTOFOCUS: READY – STEADY – SHARP*

Choose between autofocus and continuous autofocus for your individual tasks. The autofocus of the DVM6 can be applied to any image region (ROI). Stay focused with the DVM6 continuous autofocus.

* only for DVM6 A

STAGE POSITIONING AND NAVIGATION

Get the best of both worlds: manual stage movement combined with precise motorized positioning. Reach any point with a 70 mm x 50 mm travel range.

1: Automotive component 1:1
2: Automotive component 16:1

BRILLIANT IMAGE QUALITY

To obtain really crisp images you need outstanding optics, a variety of illumination options and a high-performance camera that will capture images in natural colors. The DVM6 offers all that!

TOP-NOTCH IN OPTICS

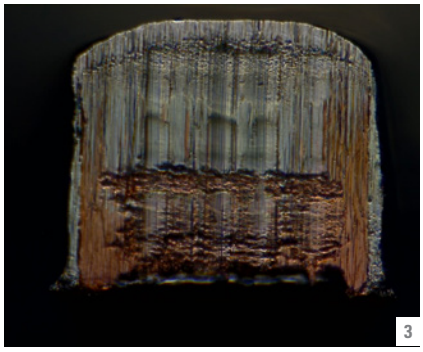
A digital image can only be as good as the system's optics. Leica Microsystems is a pioneer in the optics industry and among the world leaders in precision micro-imaging. The company history and the passion for delivering sample images in the highest degree of detail and clarity go back more than 160 years. Leica engineers have eliminated optical aberrations and constantly pushed for better resolution – this can be seen immediately with the DVM6.

10 MEGAPIXEL CAMERA FOR FAITHFUL RESULTS

Unlike digital microscopes that utilize interpolation and time-consuming pixel-shifting, the heart of the DVM6 contains a native 10 megapixel camera. Fast live image display at 30 frames per second allows you natural hand/eye coordination ensuring comfortable operation. Integrating the camera into the zoom module provides the adequate protection against contamination.


1


2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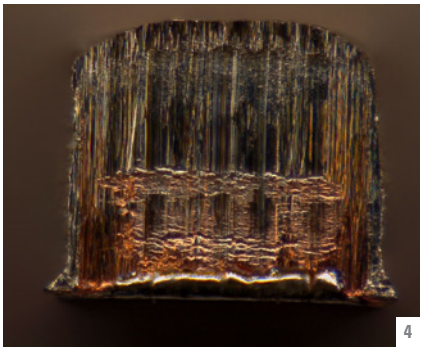
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5

ILLUMINATION: REVEAL HIDDEN DETAILS

Your choice of illumination determines what you see. Depending on the sample, application, and task, you can choose from different integrated LED illumination options. Use the ringlight – either fully or partially – on textured surfaces, or select the coaxial illumination for flat, reflective samples. You can also combine illumination modes and reveal more details.

COAXIAL LIGHT PROVIDES:

- Quarter wave plate control for light/dark control when viewing flat, reflective samples
- Relief contrast for accentuating slight unevenness, such as scratch marks

1: Ringlight all four segments
2: Adjustment relief contrast
3: Metal cut (Sn-plated copper) - 650x, relief contrast
4: Metal cut (Sn-plated copper) - 650x, ringlight segment
5: Adjustment quarter wave plate

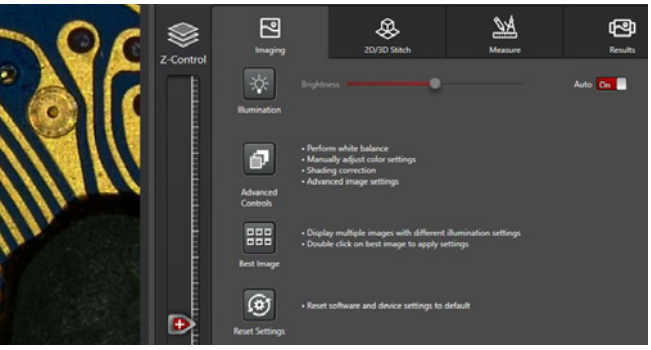
OPTIMIZED WORKFLOW

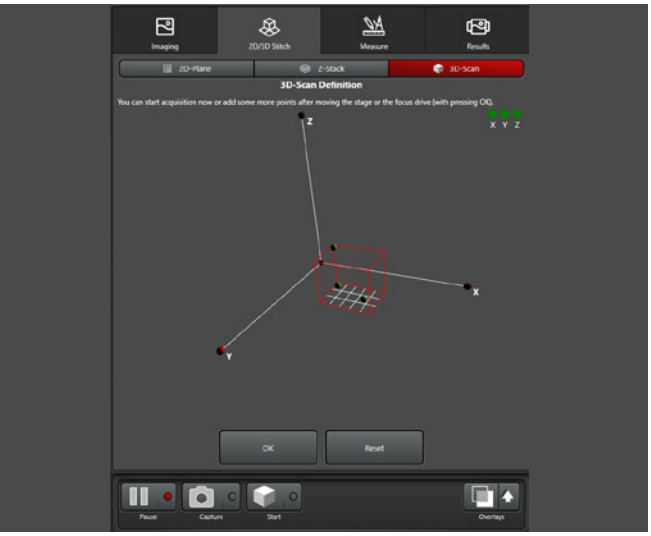
Reproduce an image in its entirety with all selected parameters. The digital microscope not only produces crisp images quickly, all systems settings are saved with the picture and can be recalled. This helps you to speed up many processes throughout your work day, especially when it comes to repetitive tasks. And if your microscope is shared among several operators, the encoded functions ensure that every user achieves the same data quality.

DVM6 DIGITAL MICROSCOPE WITH LAS X.NEXT, THE STREAMLINED SOFTWARE USER INTERFACE

The DVM6 microscope with LAS X.next, the streamlined software user interface, helps you to acquire 2D and 3D scanned images for detailed component analysis in R&D, QC, and failure analysis (FA). LAS X.next makes work steps clear, simple, and intuitive for operators due to its streamlined user interface and image navigator.
It guides you through image acquisition, measurement*, and reporting, providing reliable reproducibility of results.

2D AND 3D ANALYSIS





IMAGING

Supportive algorithms allow you to quickly find the right illumination setting using a slider control. You can also choose from different illumination techniques.

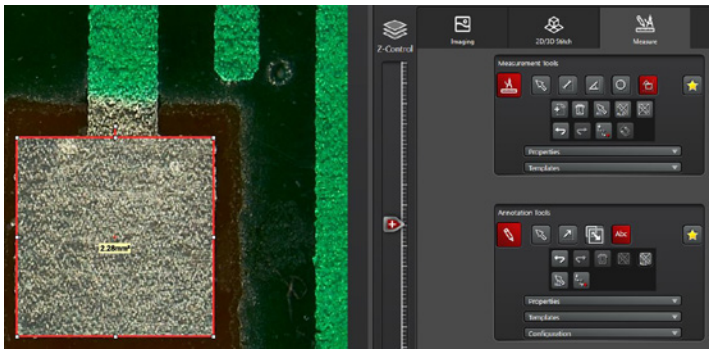
- Camera parameters, such as brightness, exposure and gain, are automatically adjusted with a single slider
- Light intensity and camera settings are automatically synchronized
- Advanced user settings, such as shading, help to optimize stitching of images

2D / 3D STITCHING**

Scan your region of interest quickly. Create 2D & 3D images using interactive scan points and orientation with the image navigator.

- 2D scan areas are defined using interactive scan points or the image navigator
- The LAS X.next graphical user interface guides you through image acquisition, measurements and reporting
- Directly open and view 3D scan images in the surface viewer

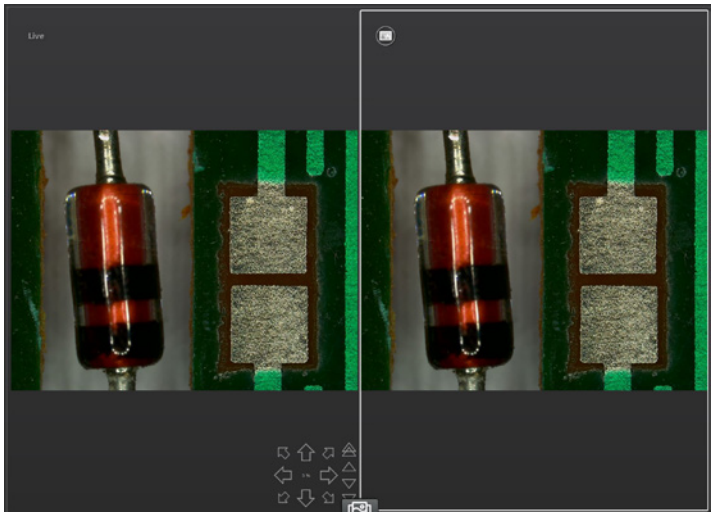
* Measurement results depend on used objective, zoom and microscope settings.
** Results depend on sample, used objective, zoom and microscope settings.



MEASUREMENTS & ANNOTATIONS

Complete your workflow tasks with a streamlined process using measurement and annotation tools, favorite settings, and custom-defined templates.

- Select your favorite, most used measurement tools
- Adapt and save your personal settings for both measurement and annotation tools
- Get reproducibility as your custom-made system settings can be saved and recalled



RESULTS

Take advantage of the results tab to review, edit, and make final changes to your captured images using the interactive image gallery. Once satisfied, generate and reproduce reports to share your results.

- Easy and fast browsing of images thanks to the efficient interface
- Compare up to 9 different images at one time
- Create a list of your favorite images with the ideal illumination settings and then apply them to quickly optimize new images

EFFICIENT DOCUMENTATION

You can make 2D measurements, 3D analyses, and annotations on the image with the LAS X software. Export your results to an Excel report template with few clicks. You can rely on correct measurements for each image because the zoom and objective values are seamlessly displayed and the correct zoom calibration is automatically applied. Additionally, the total magnification is always saved and displayed with each image.

ENCODED SYSTEM: MINIMIZE ERRORS

To help prevent errors, all critical functions of the DVM6 are monitored with sensors.
The encoded components include:

- XY-stage
- Focus drive
- XY-stage rotation, stepless adjustment from – 180° to + 180°
- Tilting angle, continuous adjustment from – 60° to + 60°
- Continuous magnification
- Objective type
- Illumination type and intensity
- Optional accessories

FIND YOUR CONFIGURATION

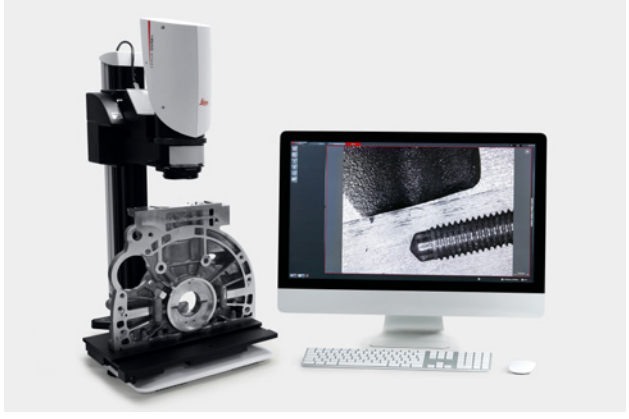
To help you find the solution that best fits your application and budget needs, Leica Microsystems offers the DVM6 in different configurations.

DVM6 A

- Motorized precision xy-stage with manual coarse positioning
- Motorized focus for automatic 3D image-stacking (can also be focused manually)
- Software package including image capture and management, 2D measurements and annotations, images with high depth of field, autofocus function, multi-focus images with 3D view and measurement, and automatic xy panoramas in 2D and 3D

DVM6 M DIGITAL MICROSCOPE ZOOM MODULE

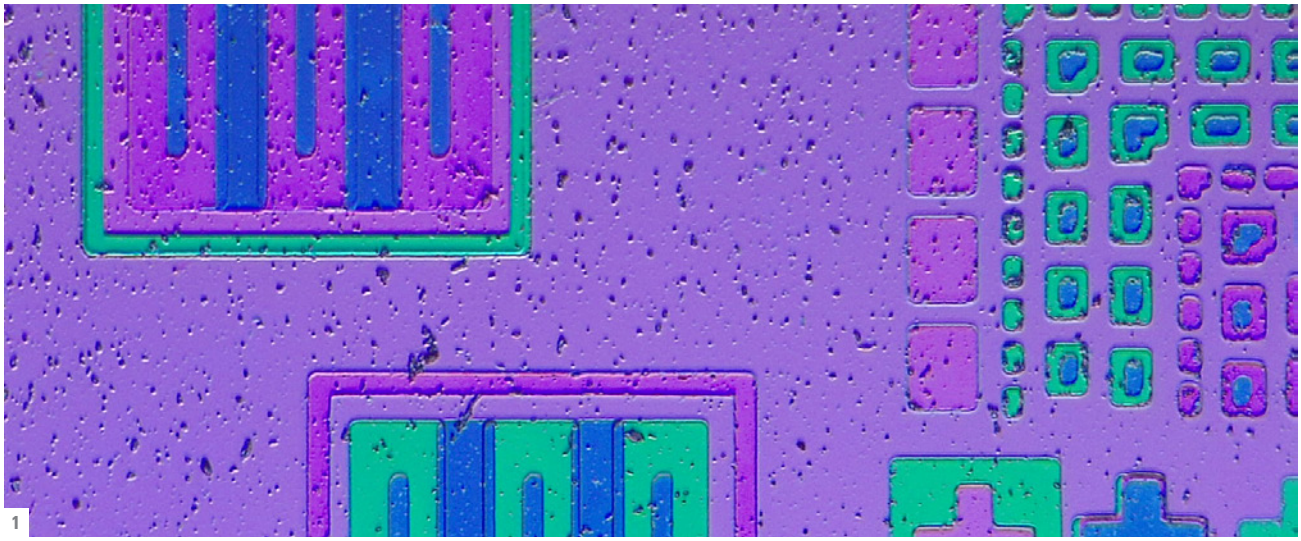
If your sample is too large or bulky for the standard DVM6 configuration, the modular DVM6 M offers you more flexibility for a wide range of applications in automotive and electronics industries, medical device manufacturing, forensics, and earth sciences.



Inspection of large automotive parts

Quick in-line quality control for electronics production

With a special interface adapter, the DVM6 M zoom module can be used with selected stands from the Leica M series. This setup allows you to examine larger and higher samples.



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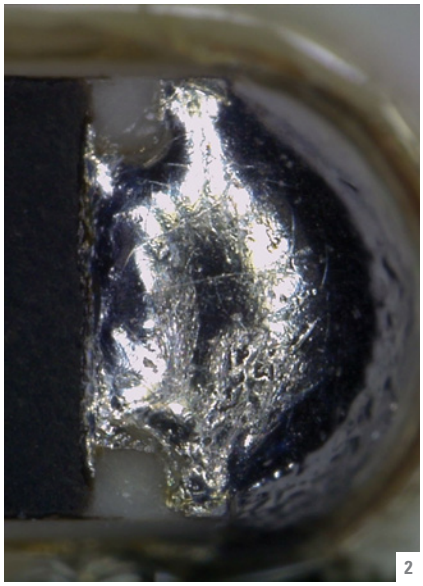

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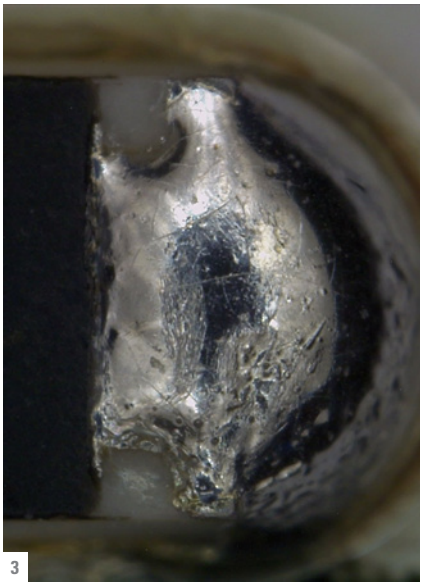

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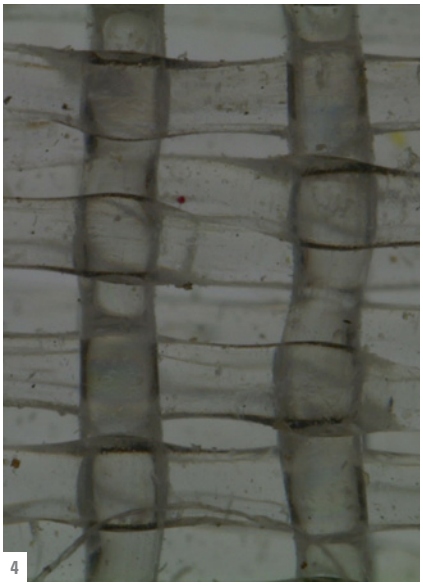

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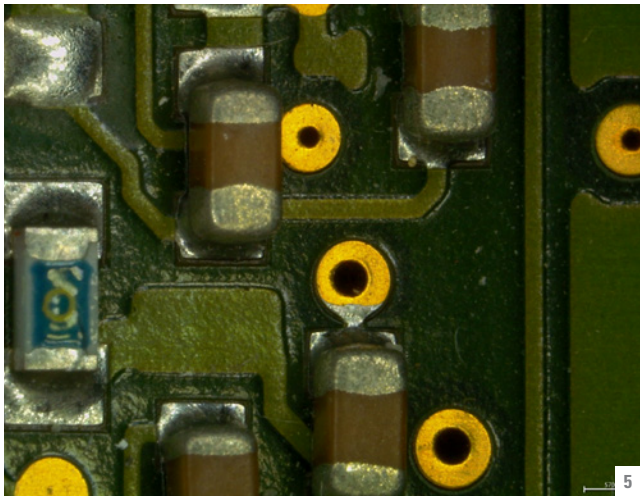

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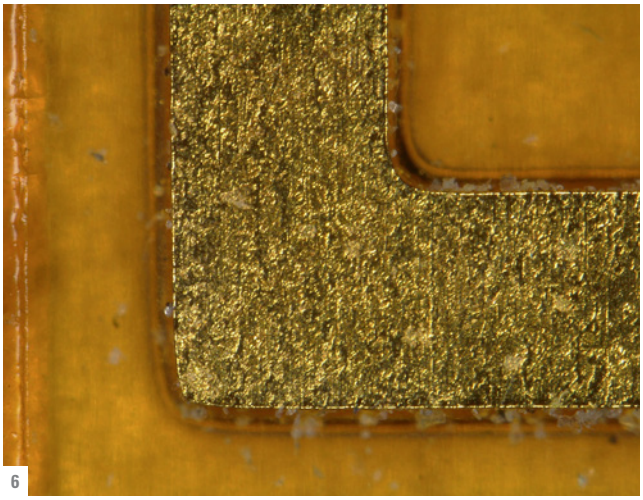
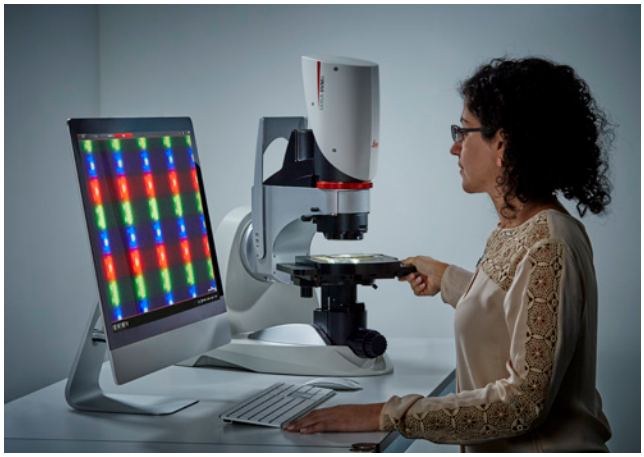


6

1: Wafer - 750x, coax open, relief contrast
2: Solderjoint - 175x, ringlight
3: Solderjoint - 175x ,ringlight and diffusor
4: Filter grid - 200x, backlight
5: PCB - 70x, 14° tilted, ringlight
6: Bondpad - 360x, Au-plated, automotive electronics

SAY YES TO THE DVM6 AND ...



… BENEFIT FROM VERSATILTY

- Different configurations for individual application needs and budgets
- One single system to accommodate various sample types and sizes to 2 kg and travel range of 60 mm

… MAKE MICROSCOPY EASY

- Robust instrument easy to use
- Software features for recurring tasks assure same data quality from user to user
- Flexibility and suitable ergonomics for individual microscope work space arrangements

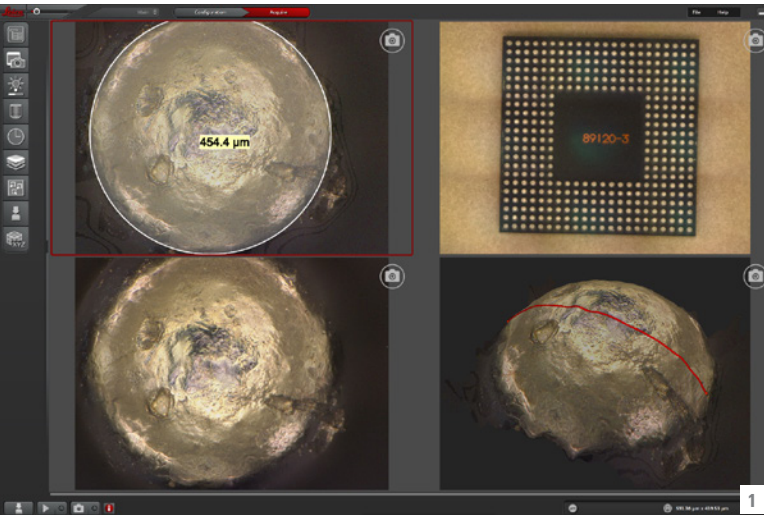
… OPTIMIZE REPORTING

- Reporting with preconfigured excel templates
- Reliable inspection results from user to user and sample to sample
- Reports with comprehensive analysis and measurements for 2D or 3D surfaces

… GET A SYSTEM SOLUTION THAT PAYS OFF

- Windows-based system, easy network integration, and compatible with most PC hardware brands
- Out-of-the-box solution, with only one power cord and USB cable and ready to run
- Minimal training requirements and training on the job is possible
- LAS X updates or additional software modules keep your system up-to-date

1: BGA Solderball with LAS X measurement in 2D and 3D
2: Cr-oxide - 280x, coaxial illumination
3: Leadframe - 13x
4: Detail plastic beverage packaging - 140x



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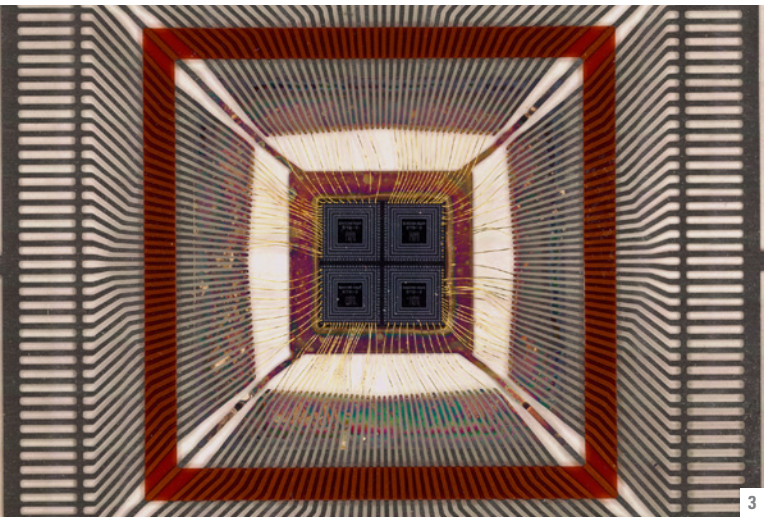


3

4

SYSTEM OVERVIEW AND SPECIFICATIONS

Zoom module

Zoom ring

Objective & illumination

XY-stage

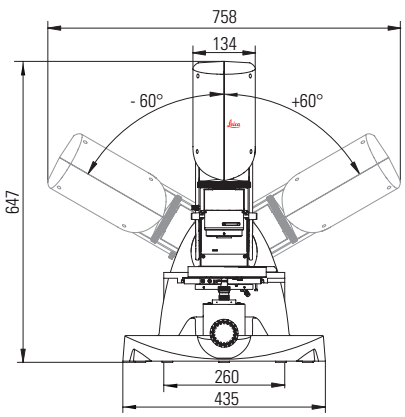
Focus drive coarse / fine

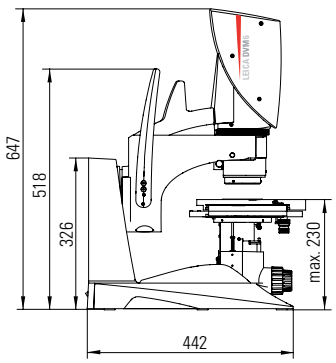
Tilting stand

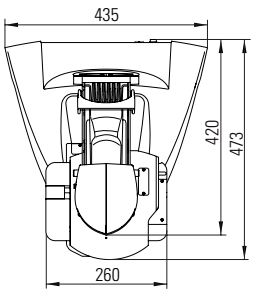
Connections:

- On / off
- Power supply
- USB 3.0
- Hand / foot switch
- Spotlight illumination

DIMENSIONS







Dimensions in mm

SYSTEM CONFIGURATION	DVM6 A
	advanced, motorized focus drive and motorized xy-stage
DVM6 zoom module	✔
Tilting stand	✔
XY-stage	✔
Focus drive	✔
LAS X SOFTWARE	
Parameter recall	✔
HDR	✔
Image preview	✔
Autofocus	✔
Multifocus images	✔
3D surface image	✔
XY-stitching	✔
XYZ-stitching	✔
Annotations	✔
2D Measurement (distance, area, angle)	✔
3D Measurement (distance, area, angle, profile, volume)	✔

ZOOM MODULE

Camera	image sensor	1/2.3" CMOS, 3664 x 2748 Pixel
	image resolution	2MP (1600 x 1200)
		5MP (2592 x 1944)
		10MP (3664 x 2748)
	framerate (max)	37 fps @ 1600 x 1200 live image
Autofocus	sensor	CMOS based sensor
	options	local or global
	modes	single autofocus, continuous autofocus
Iris diaphragm	motorized, software controlled	

OBJECTIVES (according ISO 18221)

PlanAPO FOV 43.75	working distance: 60 mm	max. magnification: 190:1	max. resolution: 415 lp/mm
PlanAPO FOV 12.55	working distance: 33 mm	max. magnification: 675:1	max. resolution: 1073 lp/mm
PlanAPO FOV 3.60	working distance: 5 mm	max. magnification: 2350:1	max. resolution: 2366 lp/mm

TILTING STAND

Tilt angle	max. ± 60°	tilt angle encoded and displayed
Handling	one handed (weight compensation)	
	0° index for home position	

XY-STAGE

Travel range	70 mm x 50 mm
Resolution	1 µm
Rotation	max. ± 180°
Specimen weight (max load)	max. 2 kg

FOCUS DRIVE

Travel range	60 mm
Resolution	0.25 µm (motorized)
	0.50 µm (manual)

ILLUMINATION

Ringlight	integrated in objectives for the DVM6
	LED light source, software controlled
	4 segments switchable
Coaxial light	integrated in tilting stand, available for FOV 12.55 & FOV 3.60 objectives
	LED light source, software controlled
Transmitted light	cable-free insert for xy-stage (optional)
	LED light source, software controlled

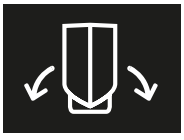
OPTIONAL ACCESSORIES

Ringlight adapters	diffusor
	low angle adapter
	polarizer
BLI for DVM6	transmitted light insert on xy-stage
Hand-/foot switch	
Interface module	connect DVM6 zoom module to Leica (M series) focus column
Travel case	

THE DVM6 DIGITAL MICROSCOPE

10 MEGAPIXEL CAMERA

- Fast live images
- High-resolution capture



EASY TILTING

- One handed operation for improved ergonomy
- Simple and quick change of perspective

PLANAPO OPTICS

- Magnification flexibility with 16:1 zoom range
- Image calibrated in every position

DON'T SEARCH. FIND!

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T +41 71 726 34 34 · F +41 71 726 34 44

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From Eye to Insight

Leica
MICROSYSTEMS

Educational Compound Microscopes

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Leica DM300

AFFORDABLE INNOVATION FOR THE NEXT GENERATION OF SCIENTISTS

Students learn best when their equipment is easy to use and constructed to be robust enough for trouble free operation each day.

Leica Microsystems, with 165 years of microscope design and manufacturing experience, combines the latest technology in optics, mechanics, and illumination in the new Leica DM300 student microscopes. These microscopes provide students with the capabilities they need to study the finest details in all the life sciences.

Construction that lasts

› Focus drive design has been proven in the clinical laboratory

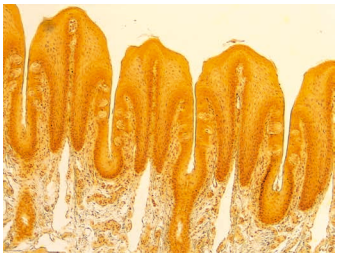
Brilliant illumination

› Leica EZLite™ LED illumination produces crisp, clear images

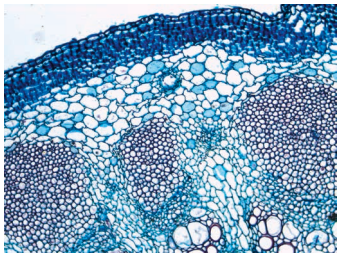
View the finest details

› Outstanding optical quality reveals the finest specimen details

Convallaris - Lily of the Valley

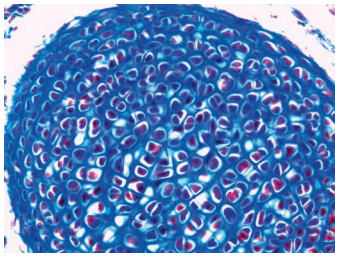


Taste Buds

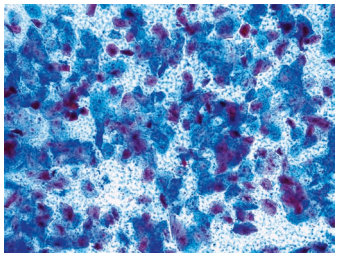


Sunflower

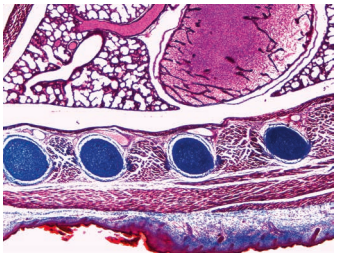
Giant Chromosomes



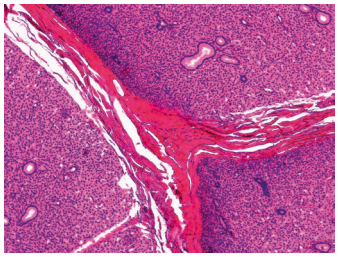
Mouse Embryo



Squamos Epithelium



Mouse Embryo



Parotid Gland


LEICA DM300

BENEFITS: LEICA DM300

Robust construction:

› Maintenance-free, sealed, brass shaft, focus mechanism; the same design that is used in Leica Microsystems' clinical microscopes provides accurate focus control over the life of the microscope

› Spring-loaded, high-magnification objectives prevent broken specimen slides

› Designed to International Safety Standards

Optimized illumination and optics:

› LED illumination saves the cost of replacement lamps and provides a cool white light for over 20 years of average use at 80 % lower energy consumption

› Leica EZLite™ illumination system provides an evenly illuminated field of view for accurate specimen viewing

› The illumination system provides stable, true daylight quality with a wide brightness ratio of 200 to 1

› Superb optical performance as a result of the illumination, objective, viewing tube, and eyepiece working seamlessly together

Student friendly:

› Coaxial focus mechanism for intuitive control

› Compact size with small footprint for easy storage and carrying

› Continuous light intensity control for comfortable viewing with specimens of various thickness and color

› Leica EZTube™ binocular and monocular tubes with integrated eyepieces prevent loss and also provides continuous 360° tube rotation for shared viewing and easy storage

Flexibility:

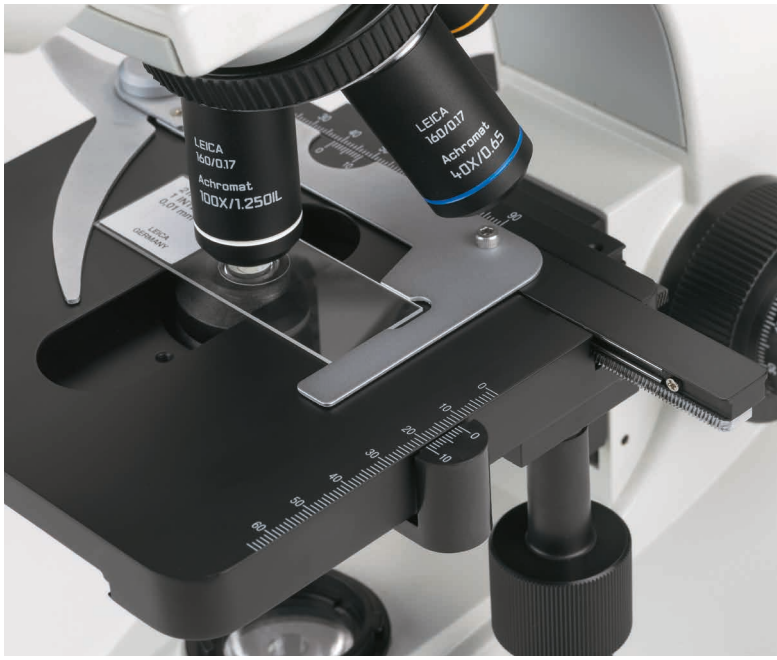
› Pre-configured outfits for easy ordering

› Choice of monocular or binocular tube depending on budget

› Digital version also possible with trinocular tube

Leica DM300

- Second level microscope for full lab sessions
- Built-in mechanical stage with low position X/Y controls for accurate specimen movement at high magnifications
- Pre-centered, pre-focused professional condenser system for maximizing illumination
- Clearly labeled adjustable iris diaphragm for fine tuning the image resolution
- Commonly configured with binocular tube for comfortable viewing during longer lab sessions

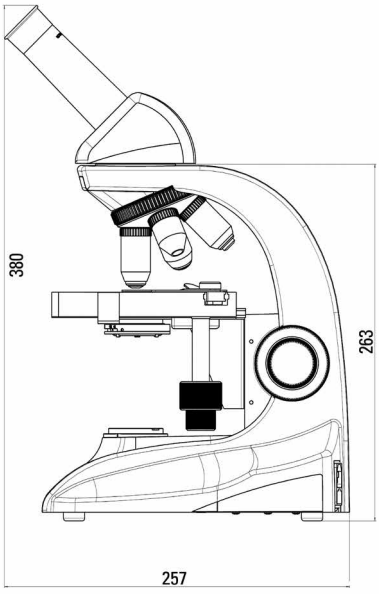


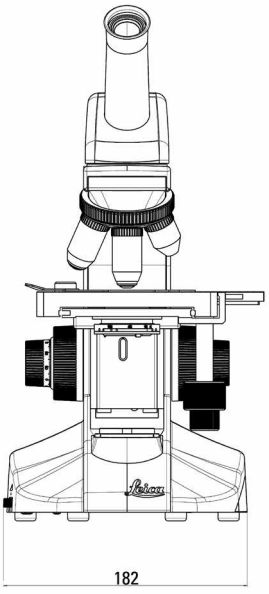
OUTFIT MATRIX

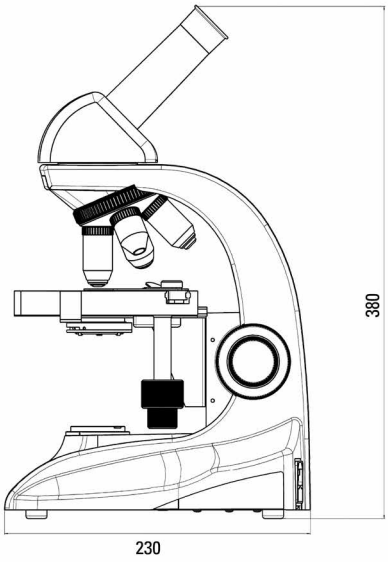
ATTENTION: **POWER CORD MUST BE ORDERED SEPARATELY**	13 613 382 DM300 LED, Monoc, Mechanical Stage, Abbe Condenser, 4×, 10×, 40×, Dust Cover, User Documents	13 613 383 DM300 LED, Monoc, Mechanical Stage, Abbe Condenser, 4×, 10×, 40×, 100×, Oil, Dust Cover, User Documents	13 613 384 DM300 LED, Binoc, Mechanical Stage, Abbe Condenser, 4×, 10×, 40×, 100×, Oil, Dust Cover, User Documents	13 613 385 DM300 LED, Binoc, Mechanical Stage, Abbe Condenser, Plan 4×, 10×, 40×, 100×, Oil, Dust Cover, User Documents
Stands				
13 613 313 DM300 Stand, Mechanical Stage, Abbe Condenser, Dust Cover, User Documents	X	X	X	X
Tubes				
13 613 320 Monocular Leica EZTube™ with eyeguard and pointer	X	X		
13 613 322 Binocular Leica EZTube™ with eyeguards, with pointer in right eyepiece			X	X
Achromat Objectives				
13 613 341 Achromat 4×/0.10	X	X	X	
13 613 342 Achromat 10×/0.25	X	X	X	
13 613 343 Achromat 40×/0.65	X	X	X	
13 613 344 Achromat 100×/1.25 oil		X	X	
Plan Objectives				
13 613 346 Plan Achromat 4×/0.10				X
13 613 347 Plan Achromat 10×/0.25				X
13 613 348 Plan Achromat 40×/0.65				X
13 613 349 Plan Achromat 100×/1.25 oil				X
Accessories				
13 614 800 Immersion oil, 10 ml		X	X	X

DIMENSIONS

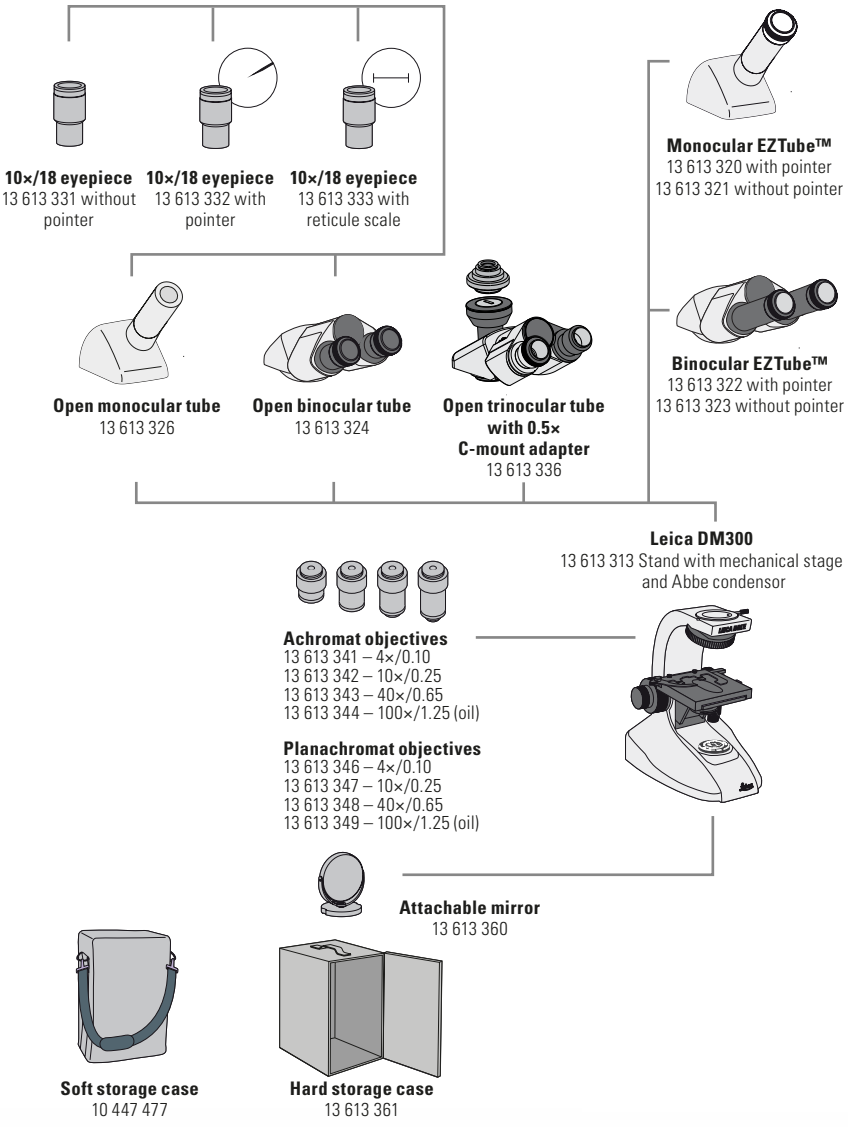
Dimensions in mm







SYSTEM DIAGRAM



BASIC COMPONENTS

13 613 331	10×/18 eyepiece without pointer
13 613 332	10×/18 eyepiece with pointer
13 613 333	10×/18 eyepiece with reticule scale
13 613 320	Monocular EZTube™ with pointer
13 613 321	Monocular EZTube™ without pointer
13 613 322	Binocular EZTube™ with pointer
13 613 323	Binocular EZTube™ without pointer
13 613 324	Open binocular tube
13 613 326	Open monocular tube
13 613 336	Open trinocular tube with 0.5× C-mount adapter
13 613 313	Leica DM300 Stand with mechanical xy-stage and Abbe condenser
13 613 341	Objective Achromat 4×/0.10 NA
13 613 342	Objective Achromat 10×/0.25 NA
13 613 343	Objective Achromat 40×/0.65 NA
13 613 344	Objective Achromat 100×/1.25 (oil)
13 613 346	Objective Planachromat 4×/0.10
13 613 347	Objective Planachromat 10×/0.25
13 613 348	Objective Planachromat 40×/0.65
13 613 349	Objective Planachromat 100×/1.25 (oil)

OPTIONS

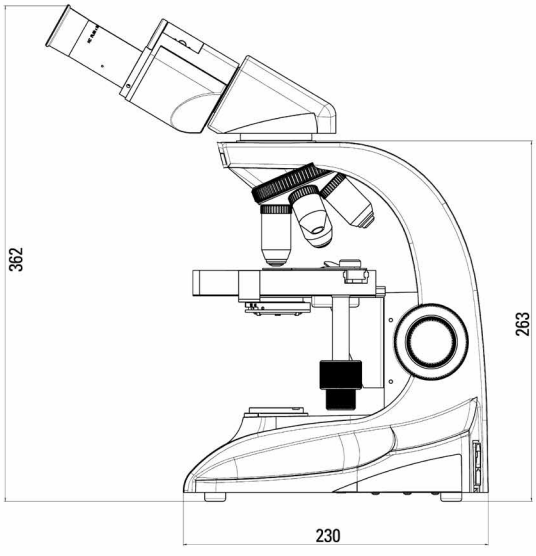
10 447 477	Soft storage case
13 613 361	Hard storage case
13 614 800	Immersion oil 10 ml
13 613 363	Simple pol kit
13 613 360	Attachable mirror

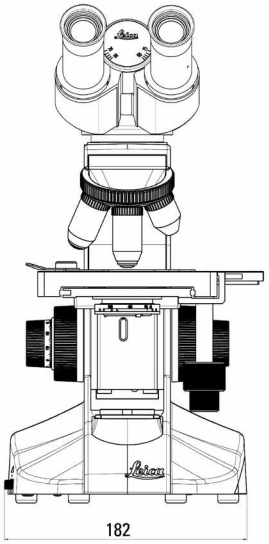
REPLACEMENTS

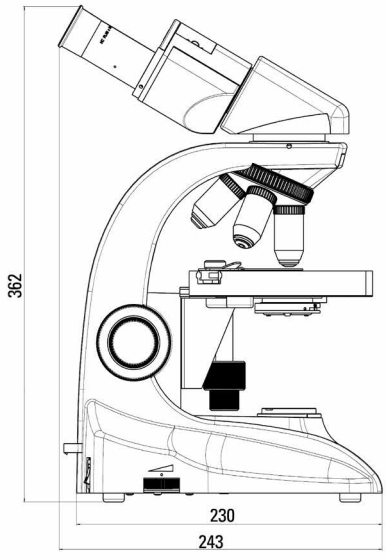
13 613 300-100	User Document
13 596 010	Dust cover
13 613 362	Pair of eyeguards
13RFAG30003	Replacement Fuse

INTERNATIONAL POWER CORDS

13 613 900	U.S.
13 613 901	Europe Continental
13 613 902	U.K.
13 613 903	Switzerland
13 613 904	Denmark
13 613 905	Italy
13 613 906	Australia
13 613 907	China
13 613 908	Japan
13 613 909	Israel
13 613 910	South Africa
13 613 911	India
13 613 912	Argentina







SPECIFICATIONS

SEPARATE EYEPIECES

- High eyepoint
- 10×/18 eyepieces fixed
- Available with or without pointer and with a measuring reticle
- Foldable eyeguards
- 23.2 mm mounting diameter

EZTUBE™ MONOCULAR TUBE

- 45 degree viewing angle
- 10×/18 eyepiece integrated into eyetube
- Attached to stand with 2 set screws
- Rotatable mounting
- Available with and without pointer

STAND

- Stand shape protects controls
- Stand construction – die-cast aluminium
- External fuses
- Knurled nosepiece control
- 4 position nosepiece
- Drop in holder for 32 mm mounted or not mounted filters

EZTUBE™ BINOCULAR TUBE

- Preset diopters for corrected vision
- 30° viewing angle
- 10×/18 high eyepoint eyepieces integrated into eyetubes
- Attached to stand with 2 set screws
- Rotatable mounting
- Available with and without pointer
- Interpupillary distance range 52 mm – 75 mm

OPEN MONOCULAR, BINOCULAR, AND TRINOCULAR TUBES

- Accepts separate 10×/18 eyepieces
- Attached to stand with 2 set screws
- Rotatable mounting
- Left eyetube for binocular tube with diopter focus
- 30° viewing angle for binocular tube
- Interpupillary distance range for binocular tube 52 mm – 75 mm

EZLITE™ ILLUMINATION

- Preset field aperture
- LED illumination – 6 000 K temp, 25 000 h life at full intensity
- Continuous intensity adjustment
- Illumination enough for viewing at lowest intensity
- Simple polarizing kit available

CONDENSER

- Prefocused and precentered condenser
- Leica DM300 – NA = 0.9/1.25 oil – Adjustable diaphragm with magnification labels

STAGE

- Leica DM300 – Mechanical Right handed Size: 14.3 cm (X) × 13.2 cm (Y)
- Travel: 76 mm (X) × 50 mm (Y)
- Front loading specimen holder for two standard slides

FOCUS

- Coaxial focus controls
- Self-adjusting focus mechanism
- 300 microns per fine focus rotation
- Calibrated in 3 micron increments

CERTIFICATIONS

- cULus, CE, RoHS

SHIPPING

- Dimensions: 45 cm × 31.5 cm × 42 cm
- Weight: 6.5 kg

CONNECT WITH US!

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www.leica-microsystems.com

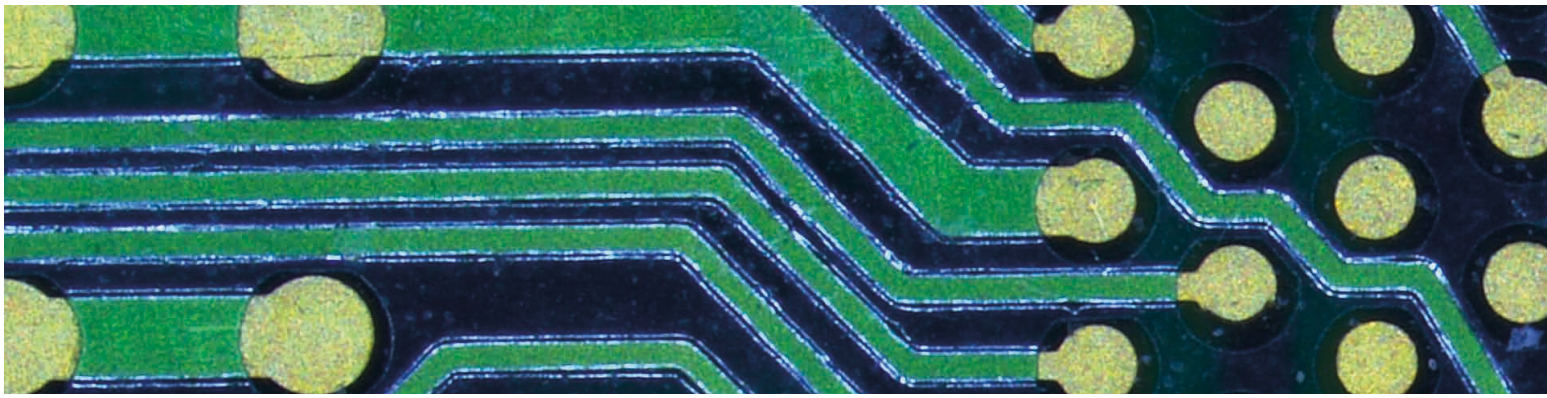
From Eye to Insight

Leica
MICROSYSTEMS

Inspiring simple inspection

Emspira 3
Digital microscope

reddot winner 2022

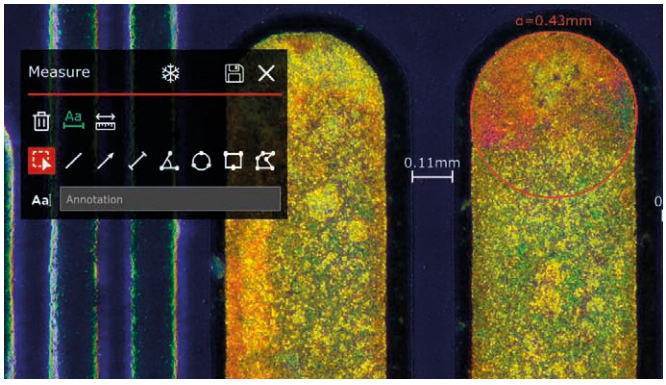


Emspira 3 digital microscope empowers users to streamline inspection processes, cover inspection needs flexibly, and work in a confident and reliable way, with a single system.

STREAMLINE YOUR INSPECTION PROCESS

Inspect with a single system

Perform comprehensive visual inspection tasks with no need for a PC – the integrated on-screen display provides intuitive tools in stand-alone mode. You don't need to have different workstations for dedicated work steps.



Measurements done with the integrated on-screen display in stand-alone mode.

Measure directly during visual inspection without a PC

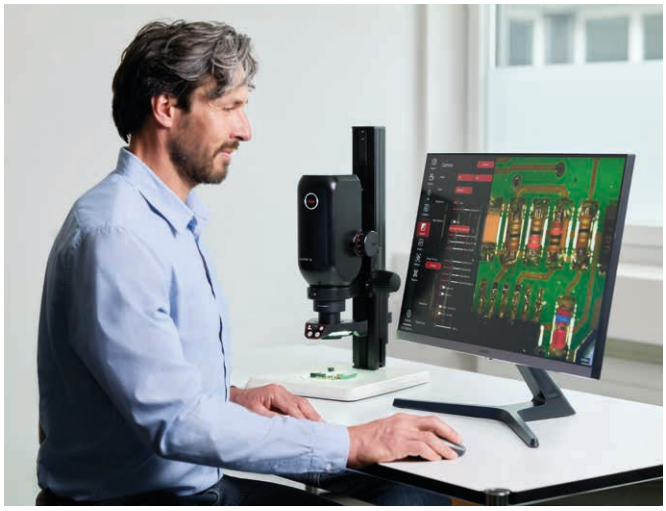
> In stand-alone mode, measure multiple regions on the sample in the live image

Directly compare to references with a single click

> For easier decisions, compare the live image to reference images or customized overlays to check if parts are within tolerances

Enhance communication for fast decisions

Directly save images on network folders and share them with co-workers via email.



Emspira 3 digital microscope with standard base and LED3000 ring light illumination.

Annotate images without a PC

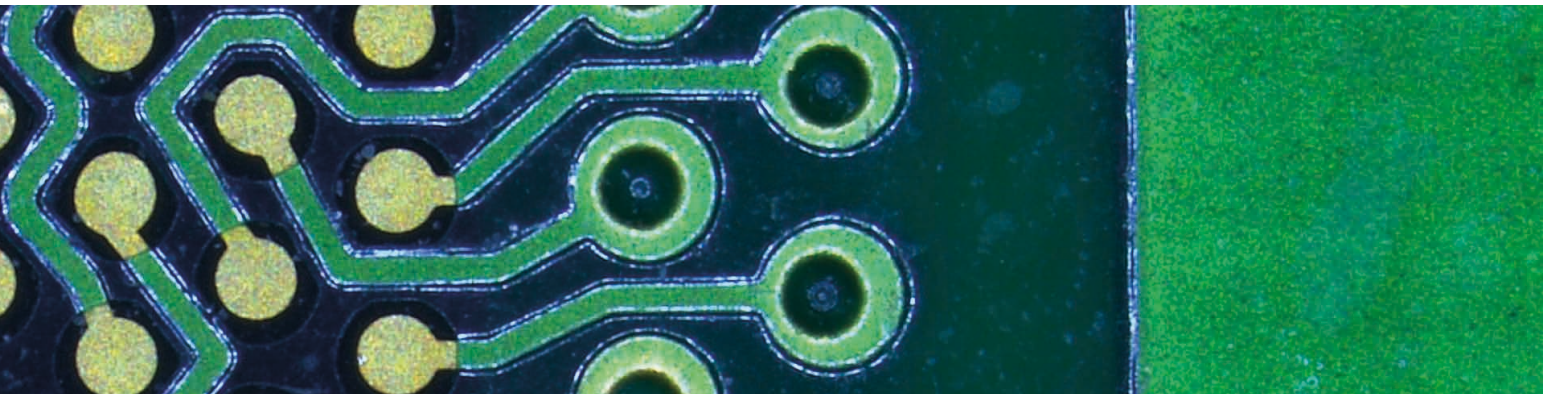
> Add annotations directly to the image using the integrated on-screen display
> Easily highlight features and areas of interest on the sample by adding comments and conclusions, as text and graphical elements, to the image

Automatically save images on your network

> Save images and results from inspection directly to your local network via ethernet connectivity for fast storage
> Simultaneously take and share images with a single press of a button using the optional hand/foot switch

Share results via email with one click

> Easily share documentation directly with email contacts without a PC



COVER YOUR INSPECTION NEEDS FLEXIBLY

Adaptable for your different tasks

Customize Emspira 3 to the demands of many samples and easily adapt it to the changing needs of specific applications, thanks to its modular design and large variety of accessories.

Emspira 3 is adaptable to your requirements – available in different configurations.

Use the illumination that works for your sample

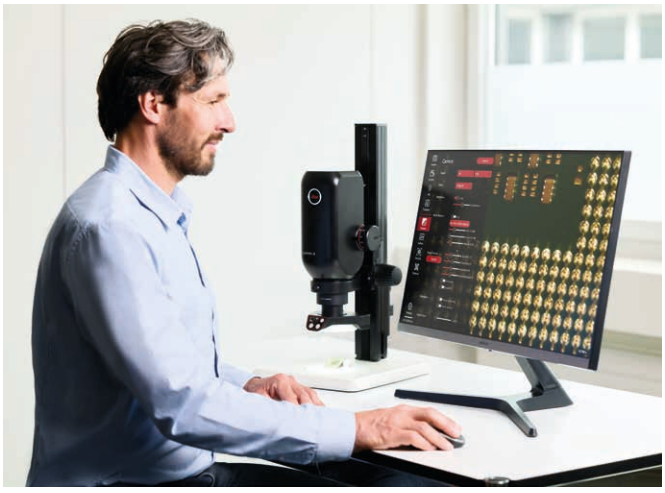
> Reveal relevant details with the appropriate illumination

Go smoothly from overview to details

> Quickly change sample field of view with 8 : 1 zoom range
> Help to ensure correct measurements with encoded zoom

Just use it – designed for everyone

Emspira 3 is designed for users of any skill level and the system can be operated intuitively with minimal training, saving you time and effort. Work according to your preferred style – using a mouse, keyboard, touch display, and hand / foot switch.



Emspira 3 digital microscope with integrated on-screen display.

Simplified use with an adaptable user interface

> Hide functions not needed for simplified operation
> Make the interface as lean as desired

WORK WITH CONFIDENCE

Keep your data easily available at all times

Minimize the risk of data loss by keeping results and data on your local network for worry-free storage. The resulting documentation is accessible anytime.

Designed for robustness

Uptime is maximized as the robust and reliable design minimizes maintenance due to low wear and tear. The robust IP 21 housing of Emspira 3 protects its internal optics and mechanics from industrial environments. Its AgTreat antimicrobial surface also reduces the risk of spreading germs among users.

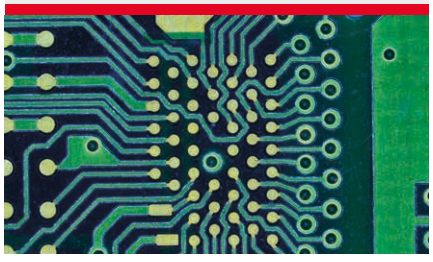
Ergonomic workplace

- View live images (with no eyepieces), displayed at up to 60 fps, in 4K resolution directly on a monitor
- Inspect in a comfortable way with less strain

YOUR ADVANTAGES WITH EMSPIRA 3

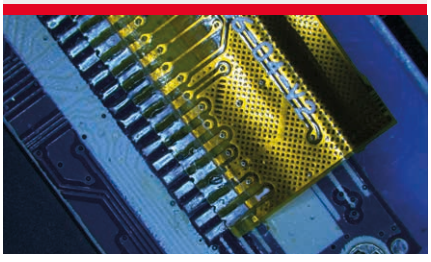
Streamline your inspection process

Your integrated solution for comparison, measurement, and data sharing, allowing you to optimize inspection efficiency and ditch the PC.



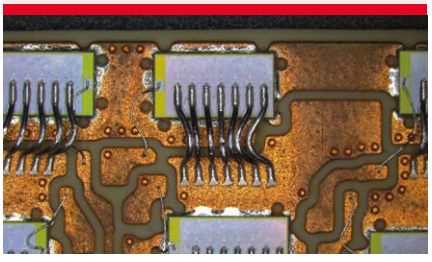
Cover your inspection needs flexibly

Work the way you want. Adapt the solution to your requirements and the needs of individual users.



Work with confidence

Focus confidently and reliably on your inspection work both in production and laboratory environments thanks to the robust design of Emspira 3.



CONNECT WITH US!

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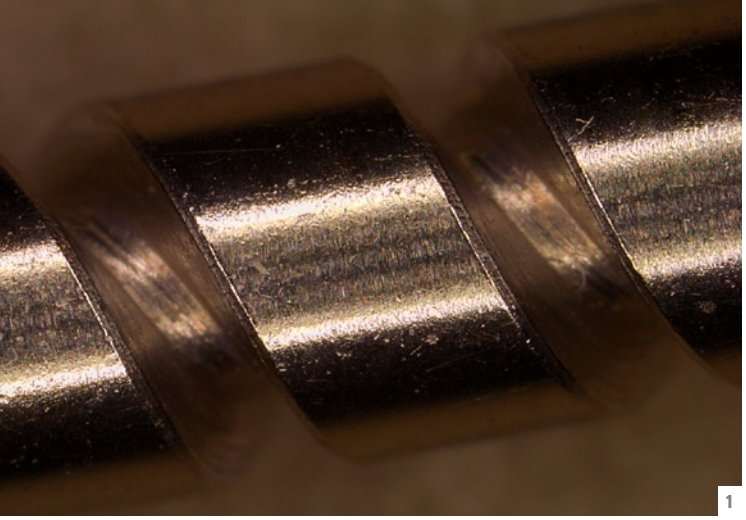
Leica
MICROSYSTEMS

DON'T SEARCH. FIND!

The DVM6 digital microscope



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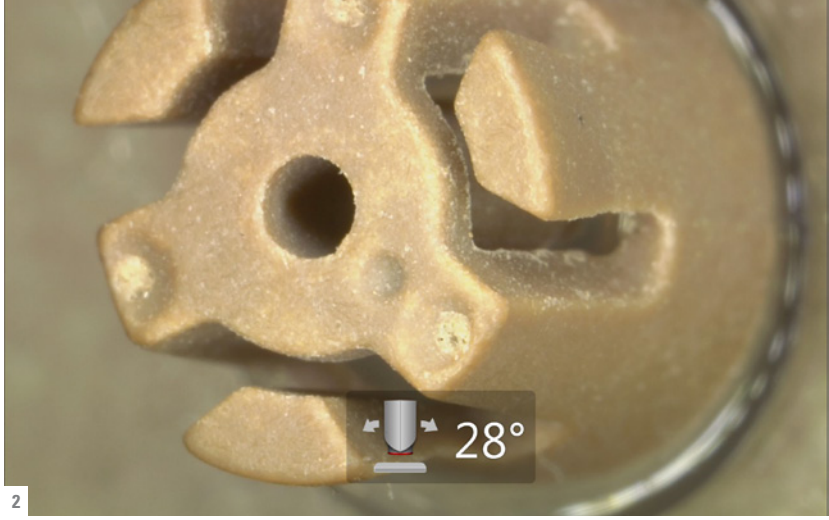
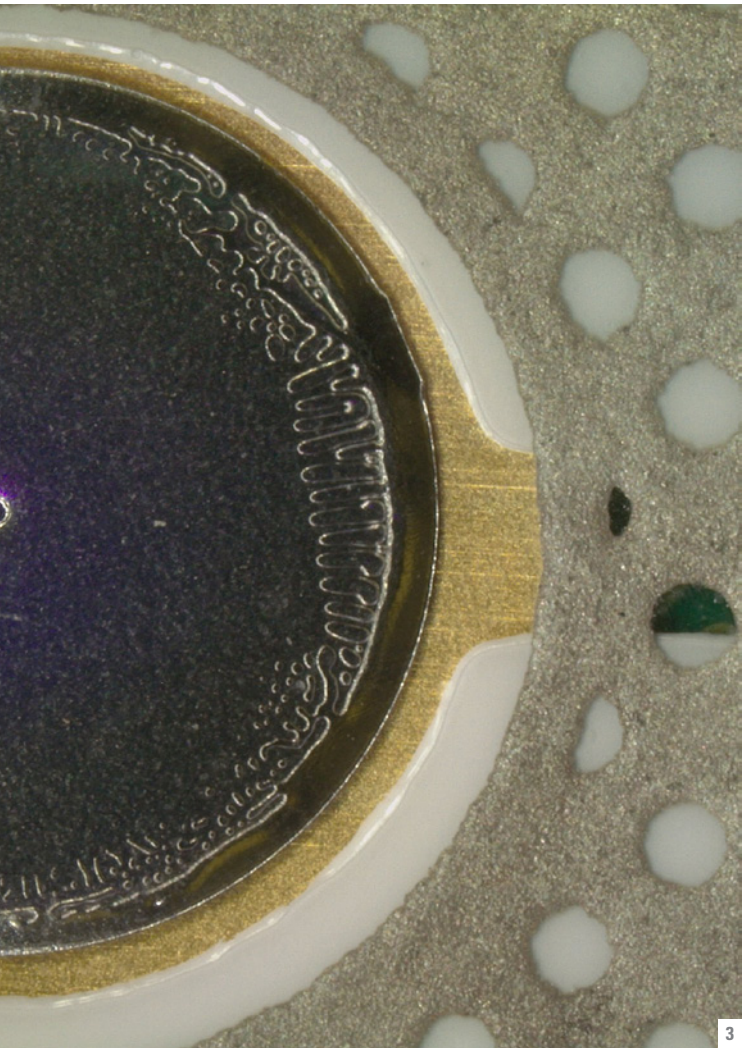


2

Don't search. Find!



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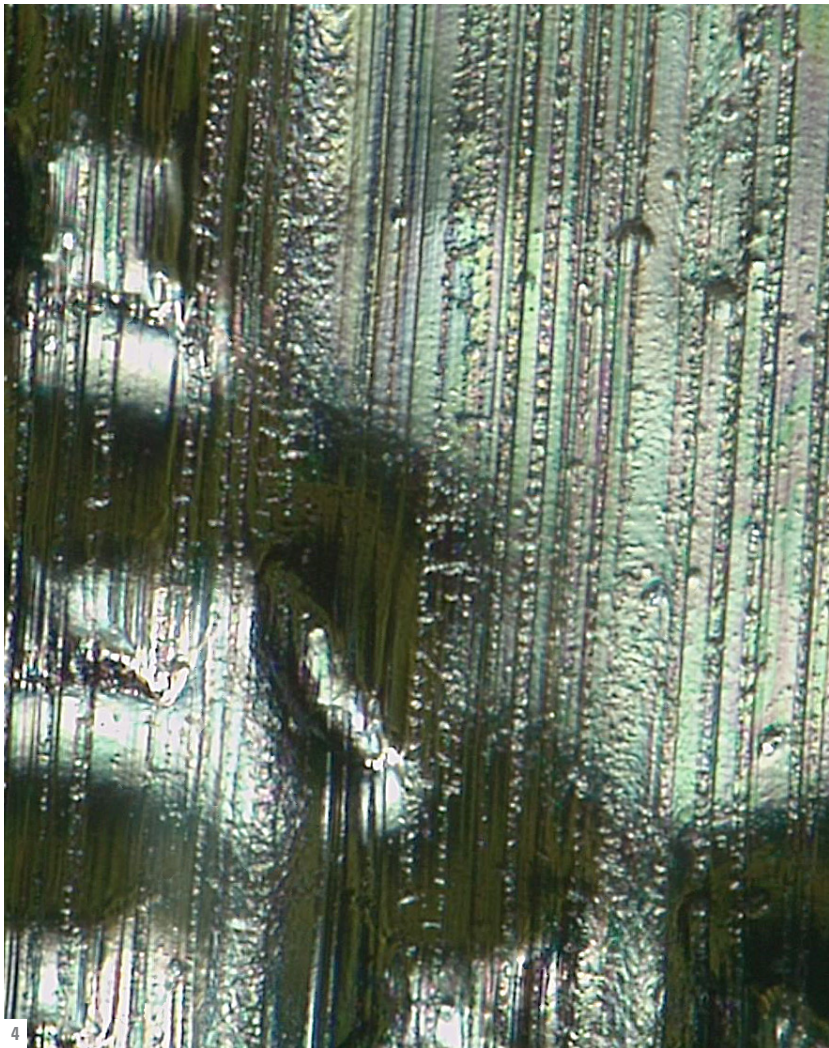


4

PUT AN END TO LONG SEARCHES

The DVM6 digital microscope solution is fast, reliable, and easy to use – no matter if you work in quality assurance, failure analysis, research and development, or forensics.

USABILITY

One step from macro to micro:

- Change magnification fast, thanks to a wide 16:1 zoom range
- Work from 12x up to 4,740x magnification* and change the objective with one hand
- Stay focused, always, with easy one-handed tilting

* based on 1:1 display (10 megapixel)

IMAGE QUALITY

See more with crisper images:

- Discover more details with the high-resolution 10 megapixel camera
- See images in high resolution with top-notch optics
- Get your image with one click via the Image Preview function

IMPRESSIVE INSIGHTS

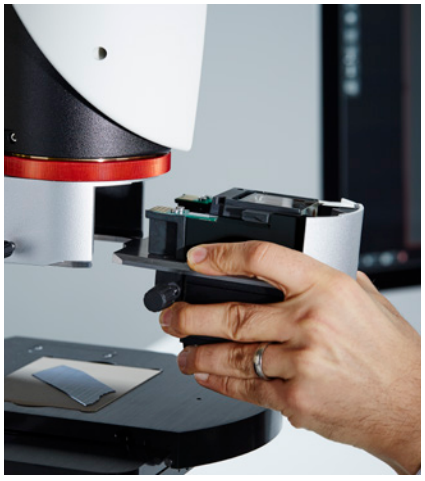
Rely on reproducible results:

- Few clicks to generate a report of results
- System settings are always saved with every image, e.g., position, magnification, illumination

1: Spindle - 63x with HDR, ringlight and coax
2: Injection moulding - 70x, tilted
3: Membrane switch - 60x
4: Embossed Al-paper - 730x, food packaging

EASE OF USE

From the big picture to fine details in an instant. Even an objective change does not interrupt your workflow. The DVM6 works straightforward and saves you time inspecting various samples. This solution enables users to start working with minimal training requirements.



OBJECTIVE CHANGE: PLUG AND SEE

Simply slide in the objective to change to a different magnification. It is a simple one-handed movement while in operation. No additional adjustments, e.g., software setting, cabling, need to be made – parfocal objectives keep the sample in focus.

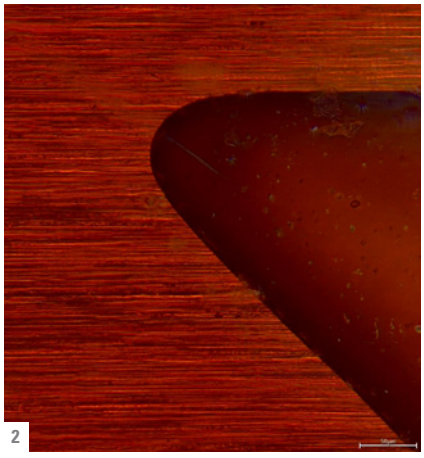
PLANAPO OBJECTIVES:

- PlanAPO FOV 43.75: The objective for large overview (with 45 mm FOV diagonale)
- PlanAPO FOV 12.55: The workhorse with big magnification range (40x-675x) at high working distance (33 mm)
- PlanAPO FOV 3.60: The objective for high resolution (up to 2,350x at 425 nm resolution)

TILTING STAND: CHANGE YOUR PERSPECTIVE

You can tilt the observation angle with one hand. Just concentrate on the monitor to study the sample. By default, the tilting axis is aligned to the focus point so you can see your sample, always in focus, at any angle from - 60° to + 60°. Rotate the stage and explore the sample from completely new perspectives. This helps you to find the details that you are looking for.

1



2

16:1 ZOOM RANGE: EXTREME MAGNIFICATION VERSATILITY

Using only one rotational movement, you can zoom in by a factor of 16. The actual magnification of the PlanAPO-corrected zoom optics is displayed on the monitor. This gives you a reference of the imaging conditions.

BENEFITS OF PLANAPO OPTICS:

- High optical correction power
- Highly detailed images sharp up to the border area
- No color fringes over zoom range

AUTOFOCUS: READY – STEADY – SHARP*

Choose between autofocus and continuous autofocus for your individual tasks. The autofocus of the DVM6 can be applied to any image region (ROI). Stay focused with the DVM6 continuous autofocus.

* only for DVM6 A

STAGE POSITIONING AND NAVIGATION

Get the best of both worlds: manual stage movement combined with precise motorized positioning. Reach any point with a 70 mm x 50 mm travel range.

1: Automotive component 1:1
2: Automotive component 16:1

BRILLIANT IMAGE QUALITY

To obtain really crisp images you need outstanding optics, a variety of illumination options and a high-performance camera that will capture images in natural colors. The DVM6 offers all that!

TOP-NOTCH IN OPTICS

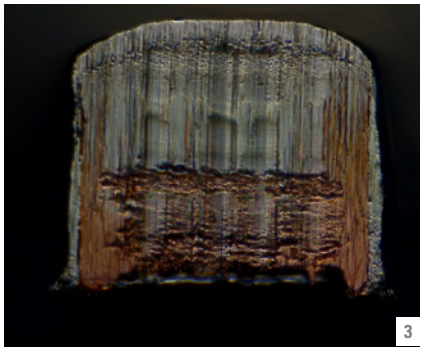
A digital image can only be as good as the system's optics. Leica Microsystems is a pioneer in the optics industry and among the world leaders in precision micro-imaging. The company history and the passion for delivering sample images in the highest degree of detail and clarity go back more than 160 years. Leica engineers have eliminated optical aberrations and constantly pushed for better resolution – this can be seen immediately with the DVM6.

10 MEGAPIXEL CAMERA FOR FAITHFUL RESULTS

Unlike digital microscopes that utilize interpolation and time-consuming pixel-shifting, the heart of the DVM6 contains a native 10 megapixel camera. Fast live image display at 30 frames per second allows you natural hand/eye coordination ensuring comfortable operation. Integrating the camera into the zoom module provides the adequate protection against contamination.


1


2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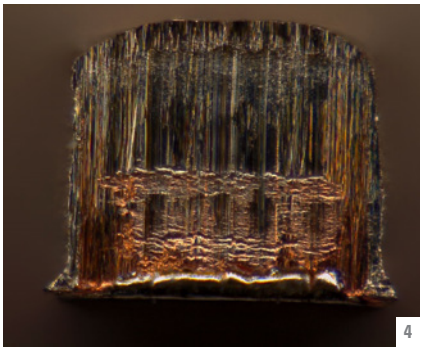

4


5

ILLUMINATION: REVEAL HIDDEN DETAILS

Your choice of illumination determines what you see. Depending on the sample, application, and task, you can choose from different integrated LED illumination options. Use the ringlight – either fully or partially – on textured surfaces, or select the coaxial illumination for flat, reflective samples. You can also combine illumination modes and reveal more details.

COAXIAL LIGHT PROVIDES:

- Quarter wave plate control for light/dark control when viewing flat, reflective samples
- Relief contrast for accentuating slight unevenness, such as scratch marks

1: Ringlight all four segments
2: Adjustment relief contrast
3: Metal cut (Sn-plated copper) - 650x, relief contrast
4: Metal cut (Sn-plated copper) - 650x, ringlight segment
5: Adjustment quarter wave plate

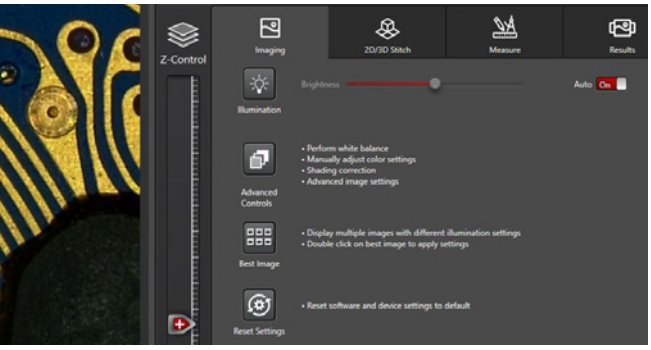
OPTIMIZED WORKFLOW

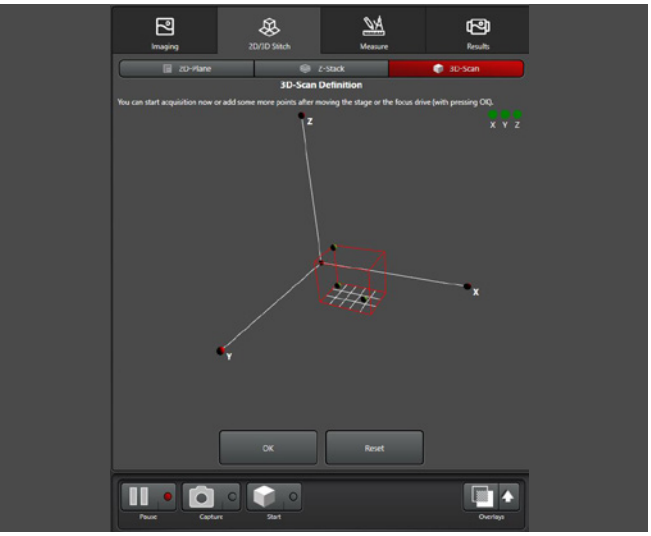
Reproduce an image in its entirety with all selected parameters. The digital microscope not only produces crisp images quickly, all systems settings are saved with the picture and can be recalled. This helps you to speed up many processes throughout your work day, especially when it comes to repetitive tasks. And if your microscope is shared among several operators, the encoded functions ensure that every user achieves the same data quality.

DVM6 DIGITAL MICROSCOPE WITH LAS X.NEXT, THE STREAMLINED SOFTWARE USER INTERFACE

The DVM6 microscope with LAS X.next, the streamlined software user interface, helps you to acquire 2D and 3D scanned images for detailed component analysis in R&D, QC, and failure analysis (FA). LAS X.next makes work steps clear, simple, and intuitive for operators due to its streamlined user interface and image navigator.
It guides you through image acquisition, measurement*, and reporting, providing reliable reproducibility of results.

2D AND 3D ANALYSIS





IMAGING

Supportive algorithms allow you to quickly find the right illumination setting using a slider control. You can also choose from different illumination techniques.

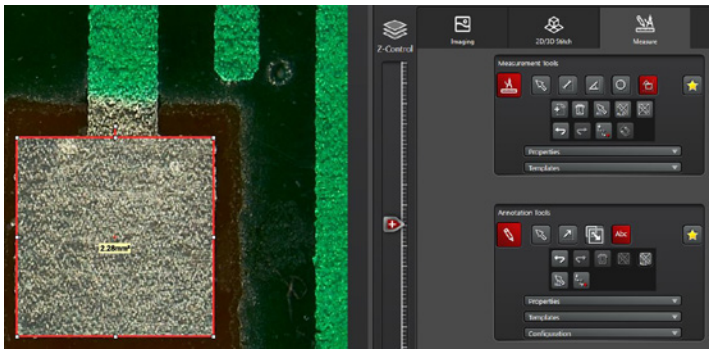
- Camera parameters, such as brightness, exposure and gain, are automatically adjusted with a single slider
- Light intensity and camera settings are automatically synchronized
- Advanced user settings, such as shading, help to optimize stitching of images

2D / 3D STITCHING**

Scan your region of interest quickly. Create 2D & 3D images using interactive scan points and orientation with the image navigator.

- 2D scan areas are defined using interactive scan points or the image navigator
- The LAS X.next graphical user interface guides you through image acquisition, measurements and reporting
- Directly open and view 3D scan images in the surface viewer

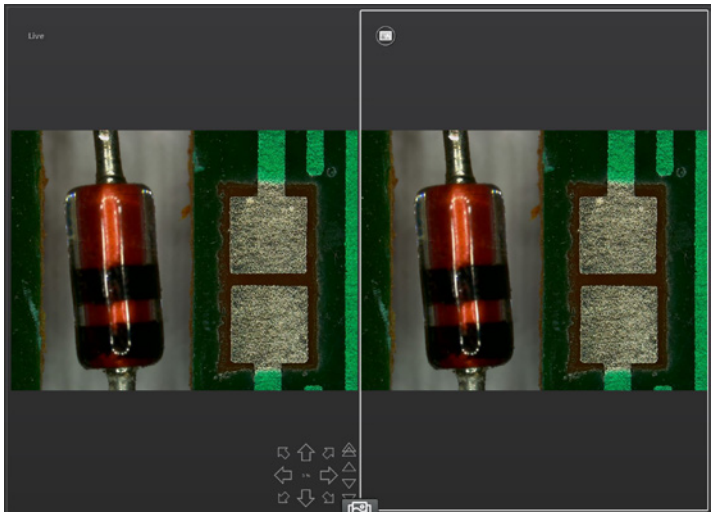
* Measurement results depend on used objective, zoom and microscope settings.
** Results depend on sample, used objective, zoom and microscope settings.



MEASUREMENTS & ANNOTATIONS

Complete your workflow tasks with a streamlined process using measurement and annotation tools, favorite settings, and custom-defined templates.

- Select your favorite, most used measurement tools
- Adapt and save your personal settings for both measurement and annotation tools
- Get reproducibility as your custom-made system settings can be saved and recalled



RESULTS

Take advantage of the results tab to review, edit, and make final changes to your captured images using the interactive image gallery. Once satisfied, generate and reproduce reports to share your results.

- Easy and fast browsing of images thanks to the efficient interface
- Compare up to 9 different images at one time
- Create a list of your favorite images with the ideal illumination settings and then apply them to quickly optimize new images

EFFICIENT DOCUMENTATION

You can make 2D measurements, 3D analyses, and annotations on the image with the LAS X software. Export your results to an Excel report template with few clicks. You can rely on correct measurements for each image because the zoom and objective values are seamlessly displayed and the correct zoom calibration is automatically applied. Additionally, the total magnification is always saved and displayed with each image.

ENCODED SYSTEM: MINIMIZE ERRORS

To help prevent errors, all critical functions of the DVM6 are monitored with sensors.
The encoded components include:

- XY-stage
- Focus drive
- XY-stage rotation, stepless adjustment from – 180° to + 180°
- Tilting angle, continuous adjustment from – 60° to + 60°
- Continuous magnification
- Objective type
- Illumination type and intensity
- Optional accessories

FIND YOUR CONFIGURATION

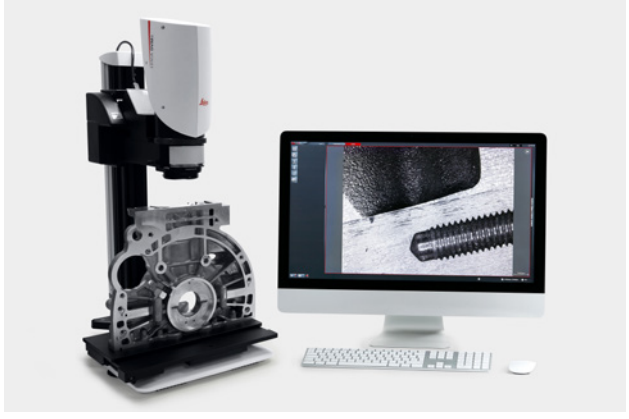
To help you find the solution that best fits your application and budget needs, Leica Microsystems offers the DVM6 in different configurations.

DVM6 A

- Motorized precision xy-stage with manual coarse positioning
- Motorized focus for automatic 3D image-stacking (can also be focused manually)
- Software package including image capture and management, 2D measurements and annotations, images with high depth of field, autofocus function, multi-focus images with 3D view and measurement, and automatic xy panoramas in 2D and 3D

DVM6 M DIGITAL MICROSCOPE ZOOM MODULE

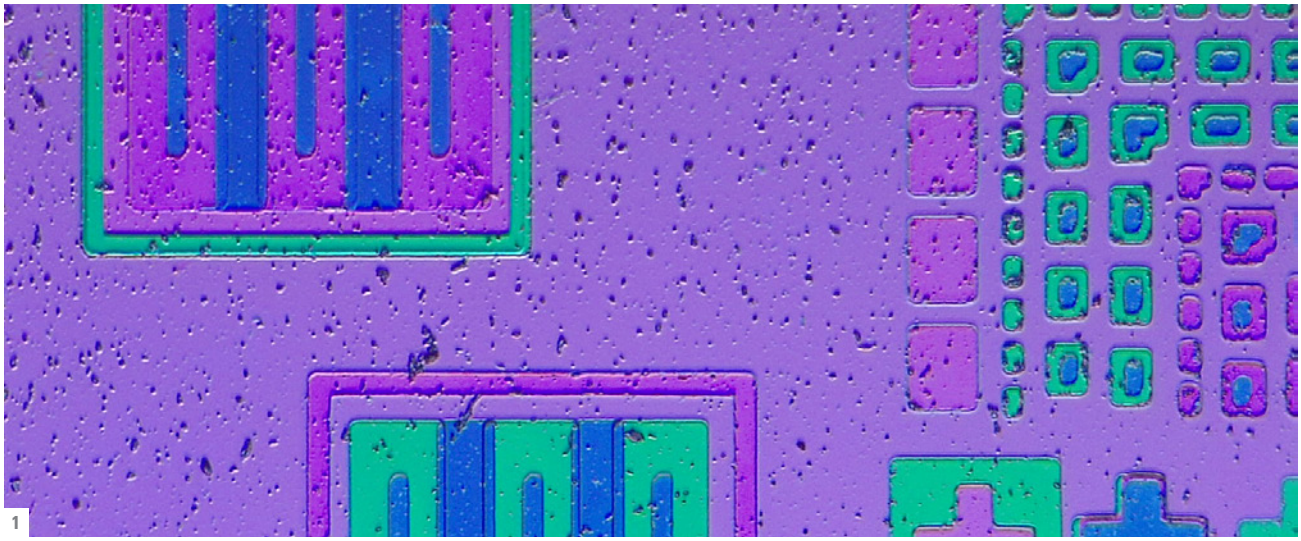
If your sample is too large or bulky for the standard DVM6 configuration, the modular DVM6 M offers you more flexibility for a wide range of applications in automotive and electronics industries, medical device manufacturing, forensics, and earth sciences.



Inspection of large automotive parts

Quick in-line quality control for electronics production

With a special interface adapter, the DVM6 M zoom module can be used with selected stands from the Leica M series. This setup allows you to examine larger and higher samples.



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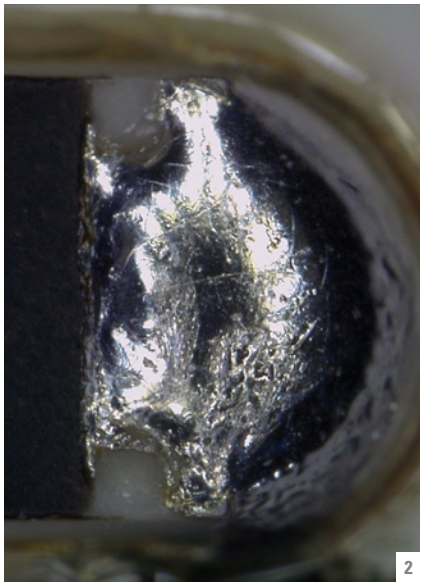

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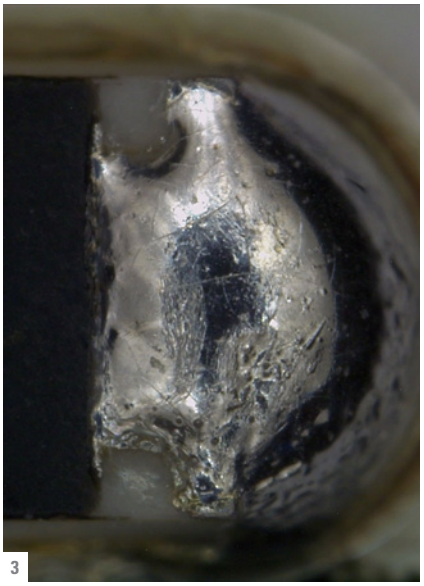

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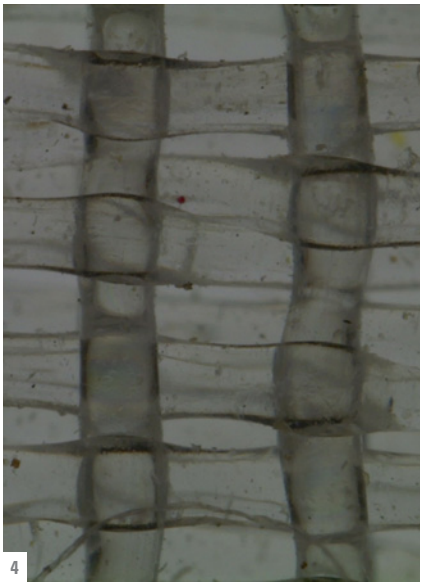

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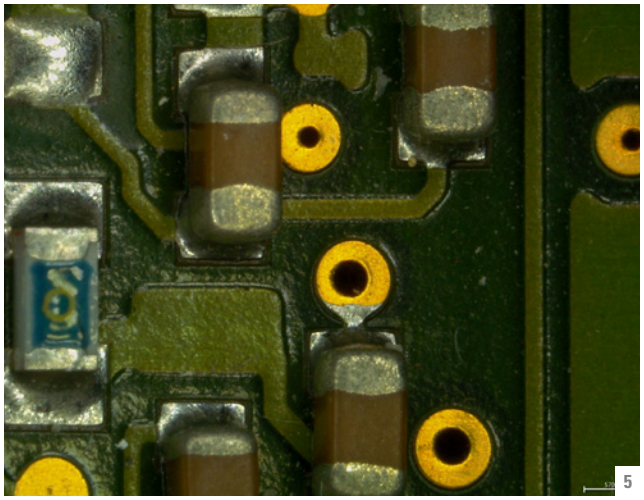

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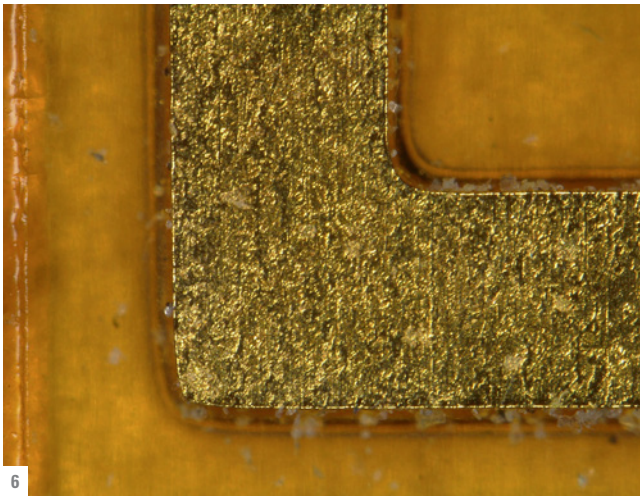
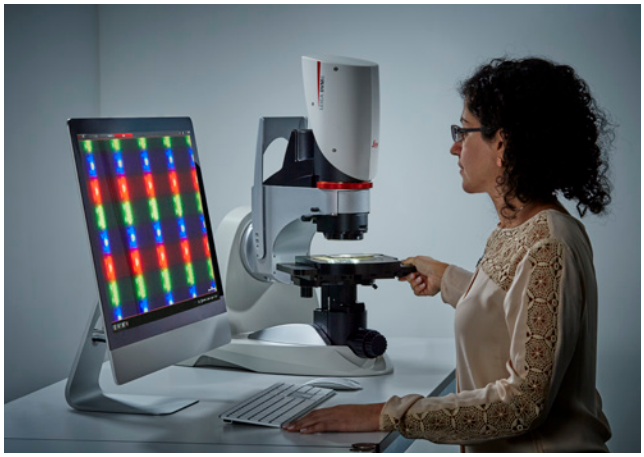


6

1: Wafer - 750x, coax open, relief contrast
2: Solderjoint - 175x, ringlight
3: Solderjoint - 175x ,ringlight and diffusor
4: Filter grid - 200x, backlight
5: PCB - 70x, 14° tilted, ringlight
6: Bondpad - 360x, Au-plated, automotive electronics

SAY YES TO THE DVM6 AND ...



… BENEFIT FROM VERSATILTY

- Different configurations for individual application needs and budgets
- One single system to accommodate various sample types and sizes to 2 kg and travel range of 60 mm

… MAKE MICROSCOPY EASY

- Robust instrument easy to use
- Software features for recurring tasks assure same data quality from user to user
- Flexibility and suitable ergonomics for individual microscope work space arrangements

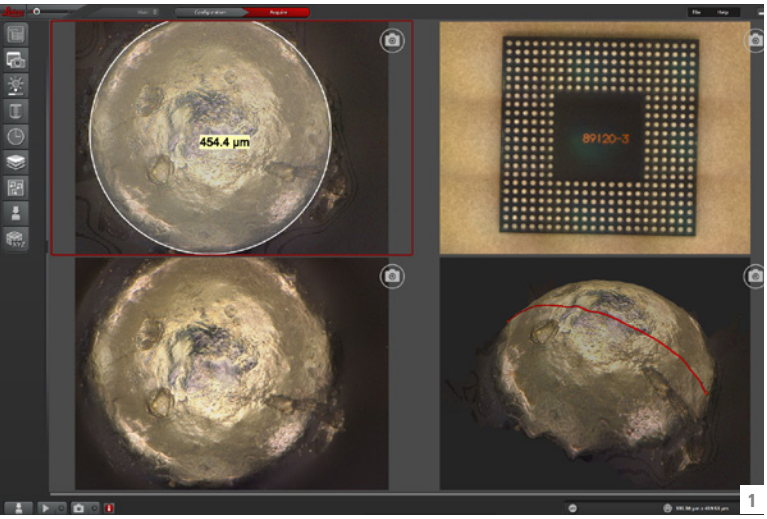
… OPTIMIZE REPORTING

- Reporting with preconfigured excel templates
- Reliable inspection results from user to user and sample to sample
- Reports with comprehensive analysis and measurements for 2D or 3D surfaces

… GET A SYSTEM SOLUTION THAT PAYS OFF

- Windows-based system, easy network integration, and compatible with most PC hardware brands
- Out-of-the-box solution, with only one power cord and USB cable and ready to run
- Minimal training requirements and training on the job is possible
- LAS X updates or additional software modules keep your system up-to-date

1: BGA Solderball with LAS X measurement in 2D and 3D
2: Cr-oxide - 280x, coaxial illumination
3: Leadframe - 13x
4: Detail plastic beverage packaging - 140x



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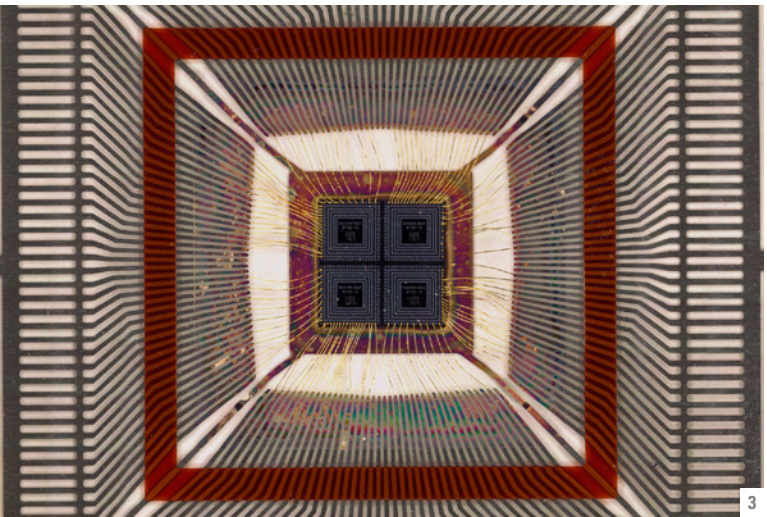


3

4

SYSTEM OVERVIEW AND SPECIFICATIONS

Zoom module

Zoom ring

Objective & illumination

XY-stage

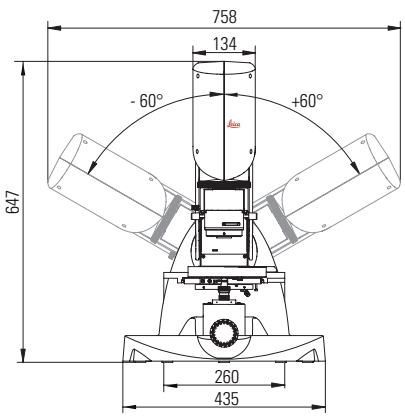
Focus drive coarse / fine

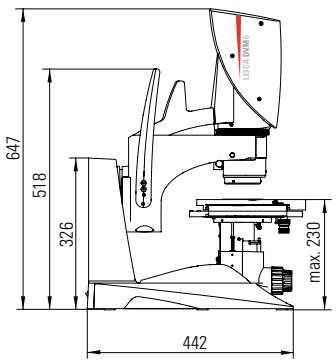
Tilting stand

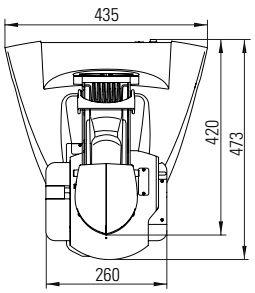
Connections:

- On / off
- Power supply
- USB 3.0
- Hand / foot switch
- Spotlight illumination

DIMENSIONS







Dimensions in mm

SYSTEM CONFIGURATION	DVM6 A
	advanced, motorized focus drive and motorized xy-stage
DVM6 zoom module	✔
Tilting stand	✔
XY-stage	✔
Focus drive	✔
LAS X SOFTWARE	
Parameter recall	✔
HDR	✔
Image preview	✔
Autofocus	✔
Multifocus images	✔
3D surface image	✔
XY-stitching	✔
XYZ-stitching	✔
Annotations	✔
2D Measurement (distance, area, angle)	✔
3D Measurement (distance, area, angle, profile, volume)	✔

ZOOM MODULE

Camera	image sensor	1/2.3" CMOS, 3664 x 2748 Pixel
	image resolution	2MP (1600 x 1200)
		5MP (2592 x 1944)
		10MP (3664 x 2748)
	framerate (max)	37 fps @ 1600 x 1200 live image
Autofocus	sensor	CMOS based sensor
	options	local or global
	modes	single autofocus, continuous autofocus
Iris diaphragm	motorized, software controlled	

OBJECTIVES (according ISO 18221)

PlanAPO FOV 43.75	working distance: 60 mm	max. magnification: 190:1	max. resolution: 415 lp/mm
PlanAPO FOV 12.55	working distance: 33 mm	max. magnification: 675:1	max. resolution: 1073 lp/mm
PlanAPO FOV 3.60	working distance: 5 mm	max. magnification: 2350:1	max. resolution: 2366 lp/mm

TILTING STAND

Tilt angle	max. ± 60°	tilt angle encoded and displayed
Handling	one handed (weight compensation)	
	0° index for home position	

XY-STAGE

Travel range	70 mm x 50 mm
Resolution	1 µm
Rotation	max. ± 180°
Specimen weight (max load)	max. 2 kg

FOCUS DRIVE

Travel range	60 mm
Resolution	0.25 µm (motorized)
	0.50 µm (manual)

ILLUMINATION

Ringlight	integrated in objectives for the DVM6
	LED light source, software controlled
	4 segments switchable
Coaxial light	integrated in tilting stand, available for FOV 12.55 & FOV 3.60 objectives
	LED light source, software controlled
Transmitted light	cable-free insert for xy-stage (optional)
	LED light source, software controlled

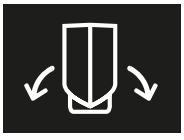
OPTIONAL ACCESSORIES

Ringlight adapters	diffusor
	low angle adapter
	polarizer
BLI for DVM6	transmitted light insert on xy-stage
Hand-/foot switch	
Interface module	connect DVM6 zoom module to Leica (M series) focus column
Travel case	

THE DVM6 DIGITAL MICROSCOPE

10 MEGAPIXEL CAMERA

- Fast live images
- High-resolution capture



EASY TILTING

- One handed operation for improved ergonomy
- Simple and quick change of perspective

PLANAPO OPTICS

- Magnification flexibility with 16:1 zoom range
- Image calibrated in every position

DON'T SEARCH. FIND!

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From Eye to Insight

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MICROSYSTEMS

Software for the Microscopy Classroom

MAKING CLASS INTERACTIVE AND INSPIRING

AirTeach Software Bundle

DIGITAL MICROSCOPY CLASS

Replace the blackboard with the students' tablets

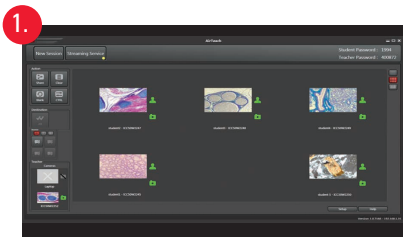
Students and their mobile devices are inseparable. The Wi-Fi Education Solutions from Leica Microsystems allow teachers to meet young minds - and engage them inside the classroom and beyond.

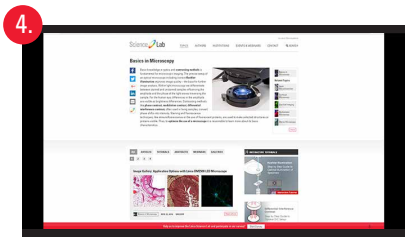
With students' microscope images live-streamed directly onto their mobile devices or shared with the whole class for group discussions class becomes interactive and inspiring.

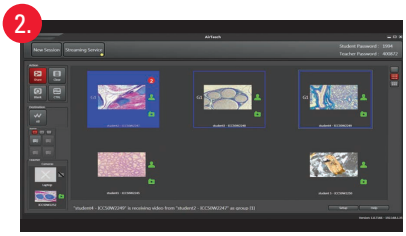
The AirTeach software from Leica Microsystems provides teachers with a tool to share knowledge efficiently, and have everybody on the same page, all the time.

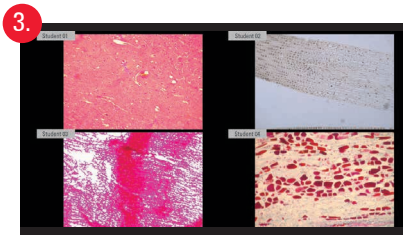
AIRTEACH EMPOWERS TEACHERS TO:

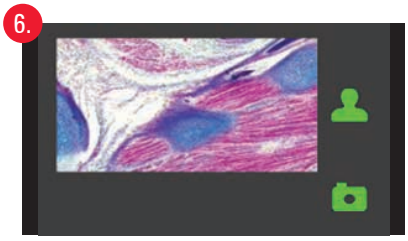
1. See a thumbnail view of students' microscope images in the layout of the classroom.
2. Control which images are shared for class discussion.
3. Share up to four images on a large display or projection to allow a comparison of students' findings.
4. Switch to a presentation or other computer content, with the AirClass sharing function to keep students' attention.
5. Walk freely in the room to give students individual attention, while controlling student's images from a mobile device.
6. Confirm students are logged in to ensure participation.





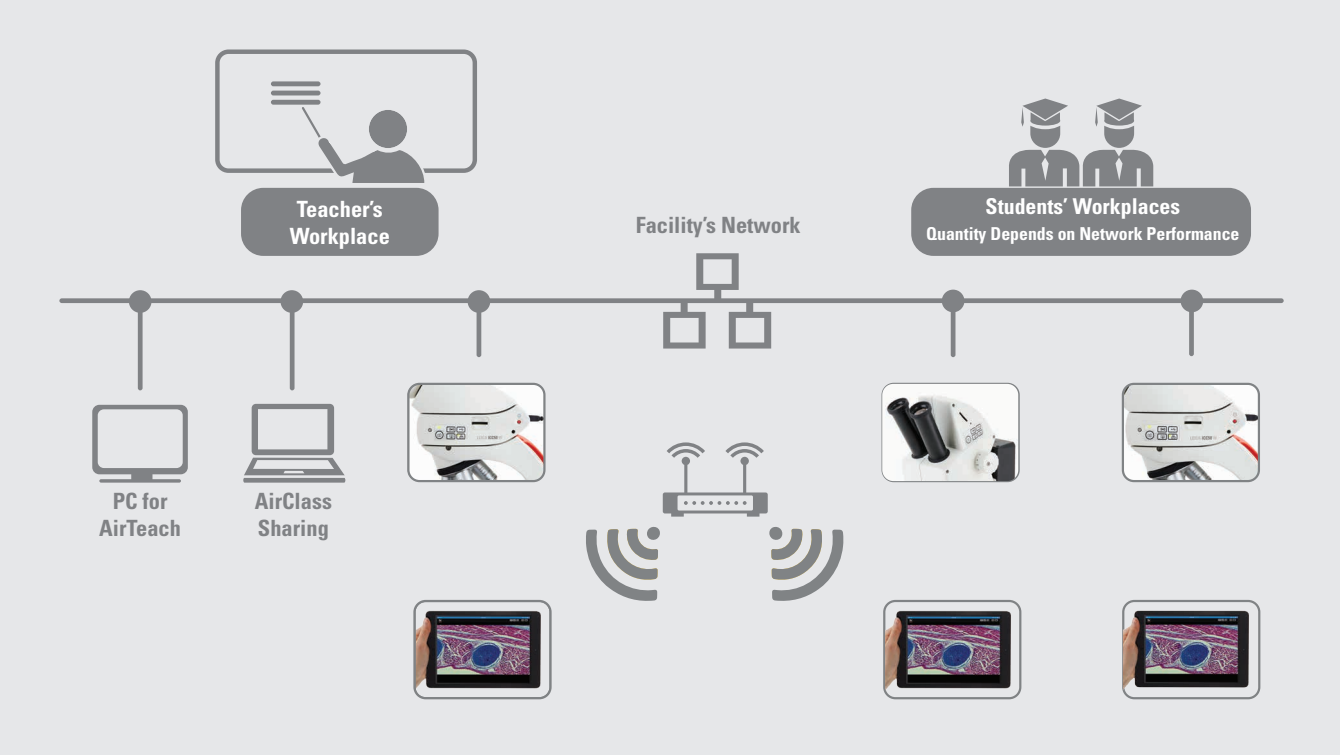






CHECKLIST FOR IT INFRASTRUCTURE

1. Laboratory equipped with cameras from Leica Microsystems which are Ethernet compatible. Select live resolution and maximum frame rate limit suitable for the network performance.
2. Ethernet connections for all microscope workplaces
3. For cameras and PCs: 1 Gigabit Ethernet network ports
4. Dedicated network switch for the classroom.
5. Network capacity of 5 MBit/s per camera is required for a camera setting of 800 × 600 with a framerate of 10 fps.
6. Dedicated 5 Ghz/ac standard Wi-Fi access points for the classroom. There should be a separate access point for every 10 connections of student mobile devices or laptops connecting to the network.
7. One Windows PC for AirTeach (touchscreen or standard), one Windows PC for content sharing and live image streaming (see PC specifications below), and one projector or large screen display.
8. Mobile devices (teacher: iOS 8+ | students: iOS 8+ or Android 4.1+) using 802.11 ac Wi-Fi standard and latest version of AirLab App. Note: The quantity of mobile device connections and their stability depends on the Wi-Fi traffic and network performance in the environment.
9. If Wi-Fi connections of devices are in a different subnet than wired connection of the AirTeach PC, please provide a non expiring static IP address.
10. Please confirm the following ports are opened within the network where the cameras and PCs are connected by cable and the mobile devices are connected by Wi-Fi:
    - TCP 80 (HTTP)
    - TCP 8080 (HTTP)
    - TCP 8081 (Login, classroom communication)
    - TCP 8900 (RTSP Proxy Server Management)
    - TCP 8082
    - TCP 8085 (HTTP)
    - UDP 8086 (Broadcasting)
    - UDP 8554 (RTSP)
    - TCP 8554 (RTSP)
    - UDP 554 (RTSP)
    - TCP 554 (RTSP)
    - TCP 8555 to 8605
    - UDP 8555 to 8605
    - UDP 5353 (Bonjour DNS)
11. PC specifications:
    - Disable: firewalls, sleep mode, power saving, auto network disconnect modes, and anti-virus programs
    - Hard drive: 256 GB or larger (SSD preferred but not mandatory)
    - CPU: Intel Core i7
    - Monitor: 22” or larger (optional touch screen for AirTeach PC)
    - Network: 1 GB Ethernet port
    - Connected to network by cable (Wi-Fi disabled)
    - Memory: 16 GB
    - Bonjour installed on both PCs
    - AirTeach installed on AirTeach PC and set to extended screen view
    - AirClass installed on content PC, must be set to only one monitor (no second screen connection possible)
    - Windows 8.1 minimum
    - 1 GB dedicated stand alone graphics card



Order No.:	13 613 750: AirTeach Software Bundle
Remark	Microscopes and cameras to be purchased separately

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From Eye to Insight

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Intuitive
Innovative
Indispensable

Leica Application Suite X

Imaging and Analysis Software for
Life Science Research

Powerful Performance Made Simple

The Leica Application Suite X (LAS X) focuses on user-friendliness. The workflow-oriented design makes it an **Intuitive** imaging platform which can be personalized to your needs. Researchers can plan and execute even the most complicated experiments easily. Elevate the impact of your work with **Innovative** and powerful features.

INTUITIVE

EASE OF USE

The LAS X workflow guides you intuitively through acquisition, processing and analysis. Save and recall customized system settings for maximum reproducibility. Use the Easy Operation Mode on widefield systems to design your own user interface with the functions you need. Just enter the dyes of your sample in the Dye Assistant and start your multicolor confocal image acquisition. The LAS X application wizards go beyond the pure application by additionally providing sophisticated analysis options.

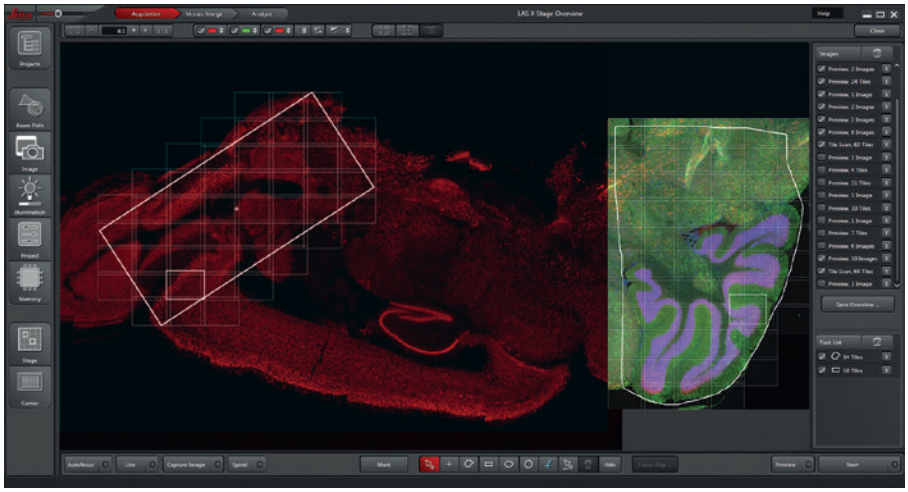
APPLICATION WIZARDS

Intuitive wizards guide you through various applications like FRET, FRAP, or FALCON (FAst Lifetime CONtrast) the future of functional imaging, thus reducing potential mistakes and minimizing time for setup. Redefine the detection limit of confocal imaging with the LIGHTNING Detection Package which extracts the maximum information from each specimen down to 120nm.

INNOVATIVE

LIVE CELL IMAGING

Keep cells in focus. With a click of a button, the hardware based Adaptive Focus Control (AFC) makes refocusing obsolete. Whether you search for the most interesting cells in your dish or you perform a fast multi-position time-lapse experiment, your sample stays reliably in focus, in real time. Experimental conditions can be documented and controlled with the Environmental Control module. You never have to question the validity of your results again, just analyze the environmental conditions together with your image data. The software-controlled water immersion micro dispenser and the motorized correction collar facilitate long-term time-lapse, deep-tissue and screening experiments at best possible image quality. The Mobile Connection module offers you the possibility to increase your working efficiency by controlling your imaging experiments from anywhere and anytime.



LAS X Navigator

NAVIGATION

Switch from searching image by image to seeing the full overview of your samples. Like a GPS for your cells, LAS X Navigator ensures that you always have a clear roadmap to brilliant data.

Create fast overviews of your samples and identify the important details instantly. Then set up high resolution image acquisition automatically using templates for slides, dishes and multiwell plates.

LAS X is the **Indispensable** software solution for all Life Science Imaging Systems from widefield to confocal and super-resolution microscopy. What could be easier than using just one software for all types of microscopes and applications?

INDISPENSABLE

VISUALIZATION

LAS X includes powerful visualization tools. Display images live during acquisition with the Image Viewer. Review data, write annotations, create image overlays or compare different experiments with each other. The Image Gallery offers a thumb nail view with various display and filter options available such as selecting the image with the best focus at each time point automatically. The 3D viewer provides smooth and fast motion of 3D volumes in real time. Use the movie maker to create astonishing 4D animated movie sequences.

ANALYSIS AND MEASUREMENTS

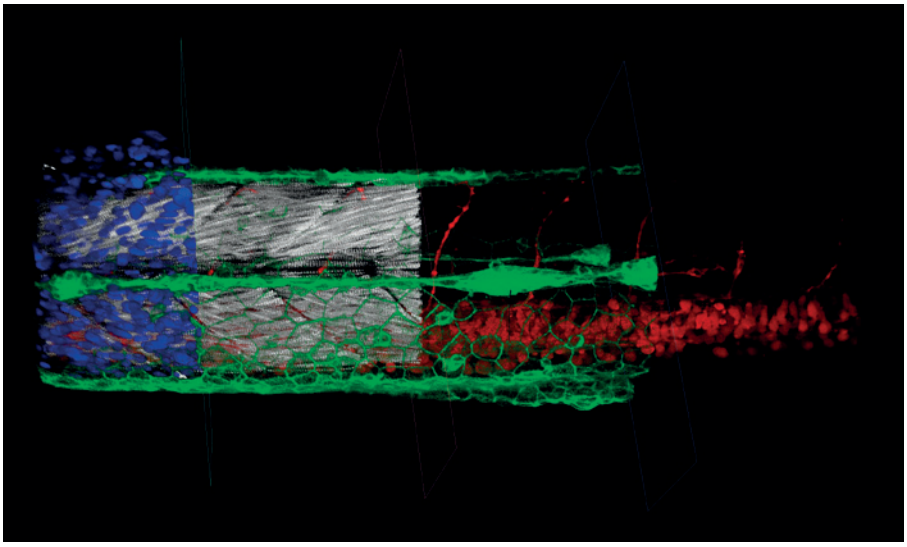
Obtain reproducible analysis results rapidly with the 2D and the 3D image analysis wizards. Go step by step through the workflow from applying filters, thresholding, binary image processing through measurements and classification. In addition, you can perform object tracking or call ImageJ macros within the 2D analysis wizard. Distances, areas, volumes, angles, and much more can be determined with the measurement tools.

POWERFUL LAS X CORE MODULE

The LAS X Core module provides full image viewing capabilities, including annotations, image overlay and image comparison. Create Maximum Intensity Projections, quantify your images and export image series as a movie. You can also apply processing tools such as noise reduction filters, parallax correction and shading correction. To experience the full capabilities of the LAS X software, the LAS X Core module comes with a 30 day trial version of all optional modules (see back page).

HARDWARE INTEGRATION

LAS X is one common software platform for widefield, confocal and super-resolution systems supporting upright, inverted, fixed stage and stereo microscopes from Leica Microsystems. Configure your widefield system with a rich choice of LED light sources, microscope stages and environmental equipment. LAS X supports not only a wide variety of added components, but also CCD, EM CCD and sCMOS cameras from all major suppliers. With LAS X you decide which technology best fits your research. There is no need to learn multiple operating concepts for different applications.



Zebrafish Embryo · Courtesy of Lionel Newton, EMBL Heidelberg · Green: Lateral line primordium (GFP), Red: Neuronal marker (DsRed); Blue: Nucleus marker (BFP), Gray: Muscles (SHG)

Leica
MICROSYSTEMS

LAS X MODULES AND FUNCTIONS

	Short Description	Widefield	Confocal
LAS X Core	Basic building block for all LAS X systems. Operates without the need for a dongle.	●	●[1]
Multi Channel Acquisition	Allows the definition of up to 8 sequential camera channels per experiment. Confocal Scanning allows acqusition of a multitude of channels simultaneously or sequentially.	○	●
Time-Lapse	Define the duration and frequency of image capture for time-lapse experiments.	○	●
Z-Control and Software Autofocus	Position focus or capture 3 dimensional data. Includes software autofocus.	○	●
Mark and Find	Define multiple stage locations and revisit them as part of a time-lapse or Z stacking experiment.	○	●
Stitching	Create overview images of large fields of view.	○	●
Assay Editor	Perform multi well and multi chamber experiments. Automatically distribute regions and positions to each well/chamber.	○	–
Extended Depth of Field	Sums up only the in focus area of each image in a three dimensional image stack and creates a single EDOF image.	○	–
Trigger to Peripherals	Send and receive trigger signals from peripherals within the standard LAS X user interface.	○	–
Live Image Builder	Detects manual sample movement automatically and smoothly extends the image.	○	–
Live Stream Movie Recording			
User Management	Allows system administrators to give different access levels to different LAS X user groups.	○	●
Reticules	Digital overlays displayed on top of the camera image emulating fixed eyepiece graticules.	○	–
Measurements	Simplify the manual tasks involved in generating measurement parameters.	○	–
Extended 2D Annotations	Additional functions such as magnifying a rectangular region on the image or superimposing an imported image.	○	–
Lambda Scan	Imaging method that acquires the emission spectrum in each image pixel using spectral detectors.	–	●
Lambda-lambda scan	Imaging method that acquires the full excitation-emission spectrum in each image pixel using a tunable laser and spectral detectors. Allows Lambda square fluorescence mapping.	–	○
Dye Finder	Multi-color restoration, channel unmixing (online/offline).	○	○
Dye Assistant	Confocal users can select different dyes and LAS X sets up all hardware components accordingly.	–	●
LightGate	Restriction of detection to a certain time window removes unwanted signal from autofluorescene or backscattering with HyD detectors.	–	○
Z intensitiy compensation	Tool to compensate within a z-stack drop of fluorescence intensity that occurs deeper inside your sample with laser power and/or detector gain.	–	●
Live Data Mode	Define acquisition macros. Allows interactive data recording, logging of comments, job-sequencing, and online evaluation.	○	○
HCS A	Versatile tool set for high content screening and automated microscopy.	○	○
3D Visualization	Graphic card based processing for smooth and fast motion of 3D volumes in real time.	○	○
3D Analysis	Easy and Versatile Wizard for 3D multi channel analysis and classification. Includes measurements in 3D and 3D process tools.	○	○
2D Analysis	Easy and Versatile Wizard for 2D multi channel analysis and classification.	○	○
Measurements	Module for 2D measurements such as distances, areas, angles. Count objects and classify objects manually. Create reports.	○	○
Calcium Imaging	Module for online ratio measurement, online display of ratio graphs and ratio image.	○	●
Colocalization	Histogram based colocalization and area measurements.	○	○
LIGHTNING	Fully automated real-time image information extraction based on adaptive deconvolution.	–	○
FRET SE	Powerful wizard for FRET acquisition and analysis (sensitized emission FRET).	○	○
FRET AB	Powerful wizard for FRET acquisition and analysis (acceptor bleaching FRET).	–	○
FRAP	Wizard for user friendly setup and analysis of FRAP and FLIP experiments, optional fast zoom in during bleach with resonant scanner.	–	○
FALCON	Fully integrated FAst Lifetime CONtrast functional imaging for FLIM and FLIM-FRET data acquisition.	–	○
FCS	Wizard for fast and reliable setup of FCS and FLCS experiments and full control of F(L)CS data aquisition.	–	○
Electrophysiology	Package to guide you through E-Phys experiments, incl. Automated recordings, interactive data acquisition, trigger functions.	○	○
SmartSTED Wizard	Intuitive workflow to operate STED 3X with three simple sliders to define the general level of resolution increase and the amount of super-resolution in 3D. With a third slider to adjust between signal-to-noise and the number of achievable images.	–	○
CARS Calculator	Automatic calculation of specific Raman wavenumbers according to the pumplaser wavelength used for exaction and vice versa.	–	○
CARS Spectral Scan	Automatic spectral scan covering the Raman wavenumbers range 1200–3400 cm^{-1}.	–	○
Environmental Control	Have full control of your experimental conditions. Log the environmental data and monitor it during the experiment.	○	○
Mobile Connection	Connect to your acquisition station via web client or mobile device and see the course of your experiment, review the whole experiment or open any image series available in the project tree.	○	–

● = included ○ = optional – = not available

[1] LAS X Core is not sufficient to drive a confocal system, but the offline version can be used to review the acquired data.

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Download a free LAS X Core Offline Version from:
www.leica-microsystems.com/LAS-X

Application	Method	Solution
Colocalization Studies	STED Super-Resolution	Leica TCS SP8 STED 3X
	Confocal Imaging	Leica TCS SP8
	Multiphoton	Leica TCS SP8 MP
	FRET	Leica TCS SP8
Deep Tissue	CARS	Leica TCS SP8 CARS
	Multiphoton	Leica TCS SP8 MP
	Electrophysiology	Leica TCS SP8 MP
Live Cell Imaging	CARS	Leica TCS SP8 CARS
	Multiphoton	Leica TCS SP8 MP
Time-lapse	FLIM	Leica TCS SP8 SMD FLIM
	FCS	Leica TCS SP8 SMD FCS
	FLCS	Leica TCS SP8 SMD FLCS
	High Content Screening	Leica HCS A
	STED Super-Resolution	Leica TCS SP8 STED 3X
	FRAP	Leica TCS SP8
	Supercontinuum Imaging	Leica TCS SP8 X
	Low Light Imaging	Leica TCS SP8 HyD
Quantitative Imaging	FLIM	Leica TCS SP8 SMD FLIM
	FCS	Leica TCS SP8 SMD FLIM
	FLCS	Leica TCS SP8 SMD FLIM
3D Imaging	High Content Screening	Leica HCS A
	Photon Counting	Leica TCS SP8 HyD
	STED Super-Resolution	Leica TCS SP8 STED 3X
	Multiphoton	Leica TCS SP8 MP
	Confocal Imaging	Leica TCS SP8
	Confocal Imaging	Leica TCS SP8 HyD
	High Content Screening	Leica HCS A
	Supercontinuum Imaging	Leica TCS SP8 X