

Living up to Life

Leica
MICROSYSTEMS



INDUSTRY DIVISION

Leica LED3000 / Leica LED5000

Complete Your Stereomicroscope System with a Wide Range of LED Illumination Systems



Leica LED3000 & Leica LED5000

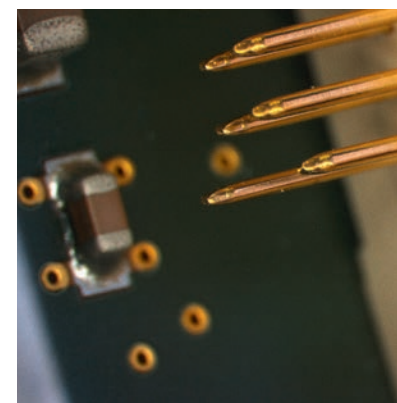
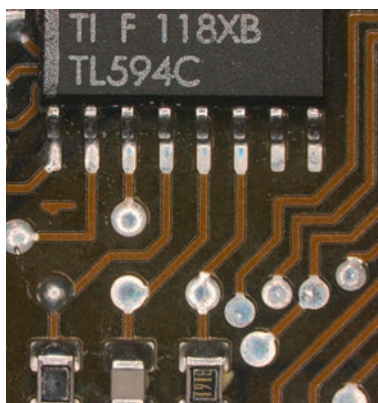
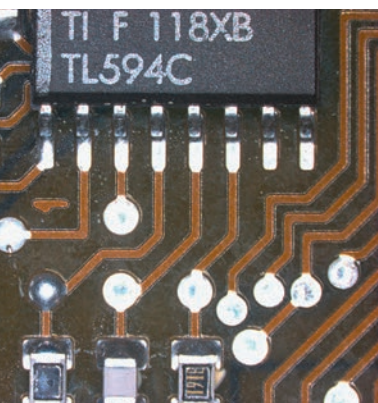
Regardless of the samples you study, with the Leica LED3000 and Leica LED5000, you can find the right illumination for your application.

Leica Microsystems offers a broad spectrum of different LED illuminators for incident and transmitted light applications. The combination of a high performance optical system and optimized illumination gives you the best imaging results.

The **Leica LED3000 series** was designed for the Leica M50 / Leica M60 / Leica M80 routine stereomicroscopes, and the **Leica LED5000 series** for high-performance stereomicroscopes such as the Leica M125, Leica M165 C, and Leica M205. All LED illumination products provide a long life time and minimal power consumption. Using Leica Application Suite software, all illumination settings are quickly and easily changed, saved, and reproduced. Take advantage of this flexibility to provide the best possible illumination for your samples.

An overview of our illumination systems:

- › Leica LED3000 RL & Leica LED5000 RL
Compact LED ring light for general purpose applications
- › Leica LED3000 SLI & Leica LED5000 SLI
Gooseneck spot lights for high flexibility
- › Leica LED3000 NVI & Leica LED5000 NVI
Near vertical illumination for checking holes and recesses
- › Leica LED3000 MCI & Leica LED5000 MCI
Reproducible illumination for analyzing surface topographies
- › Leica LED5000 CXI
Ideal for inspecting shiny, flat samples such as semiconductor wafers
- › Leica LED3000 BLI
For transmitted light applications
- › Leica LED3000 DI & Leica LED5000 HDI
Eliminate glare on shiny and highly reflective samples



Leica LED3000 RL: large amount of glare without using supplemental accessories – reflections on the metal contacts

Leica LED3000 RL with diffuser: more uniform illumination, reflections are reduced

Leica LED3000 RL with crossed polarizers: reflections are almost completely eliminated – bad soldering can be seen easier

Plug contacts with a faulty pin: uniform illumination of the sample with the Leica LED3000 RL ring light

Leica LED3000 RL & Leica LED5000 RL

Compact LED ring lights for routine and high-performance stereomicroscopes

The compact Leica LED3000 RL and Leica LED5000 RL ring lights use latest-generation LEDs and an LED auxiliary lens developed by Leica Microsystems to increase illumination brightness and homogeneity. This technology provides an unprecedented level of color fidelity and lasts up to 50,000 hours. Adjustable segments reveal new visual perspectives without having to move the sample.

LEICA LED3000 RL

- › For objectives with a 58 mm diameter
- › Optimized for 65 mm to 150 mm working distance
- › 24 SMD high-output LEDs
- › Adjustable segments: Full, rotatable half and quarter ring segments

LEICA LED5000 RL

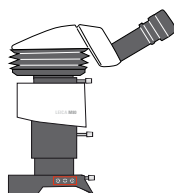
- › For objectives with an 80 mm diameter
- › Optimized for 50 mm to 80 mm working distance
- › 40 SMD high-output LEDs
- › Adjustable segments: Full and rotatable half-, quarter-, eighth ring segments

BENEFITS OF THE LEICA LED RING LIGHT

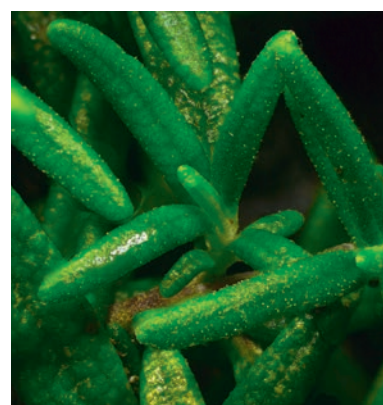
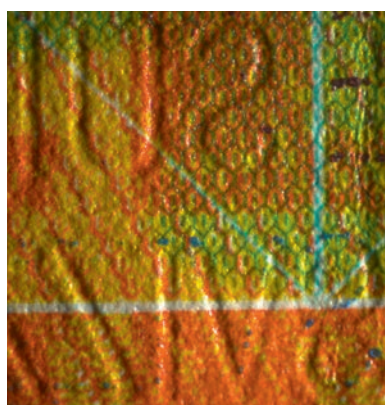
- › Uniform illumination of large object fields using the LED auxiliary lens
- › High color fidelity using latest-generation white LEDs
- › Compact design gives easy access to the sample
- › Extra information gained by adjustable segments
- › Control illumination functions with Leica Application Suite software
- › Optional accessories: diffuser and polarization set
- › LED service life of 50,000 operating hours
- › Low power consumption

LED RING LIGHT

The light is arranged in a ring around the objective and shines down onto the sample. Illuminate from defined segments or uniformly, depending on the properties of the sample.



LED ring illuminator



Leica LED3000 SLI: connecting wires on an electronics board highlighted by a side light

Leica LED3000 SLI: embossed letters on a banknote emphasized by flat light

Leica LED5000 SLI: rosemary leaves illuminated by spot light

Leica LED5000 SLI: pine cone illuminated by spot light

Leica LED3000 SLI & Leica LED5000 SLI

Spot light illuminators for the highest flexibility

The two-armed gooseneck is equipped with small (very compact), but powerful LED spots, allowing to place the source of light closely to the sample. The flexible goosenecks enable illumination of the sample in virtually every possible direction which results in optimal contrast and the ability to visualize even smallest details in the sample.

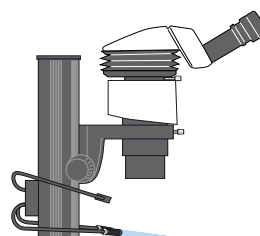
Integrating the controller on a separate gooseneck enables the user to place the control elements where they are best to reach – saving table space for everything the operator needs for work.

LEICA LED3000 SLI AND LEICA LED5000 SLI

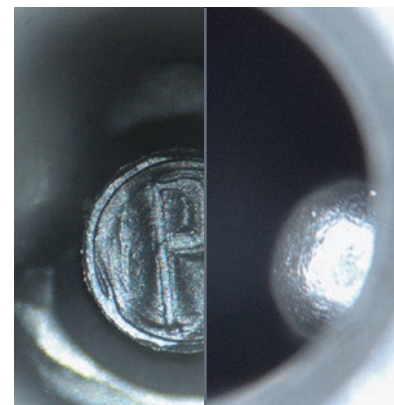
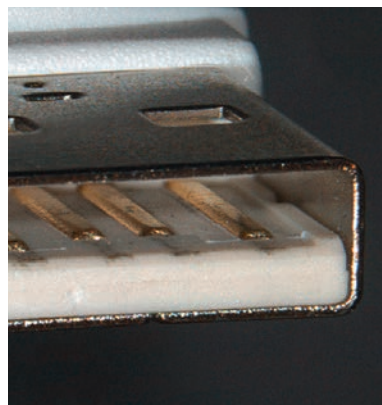
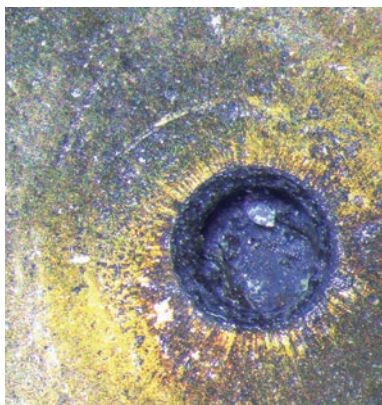
- › Two positionable goosenecks
- › Separate gooseneck with integrated control element
- › Left and right LED spot lights can be individually controlled
- › No cables in the sample area
- › Removable diffuser attachments
- › Fully controllable using Leica Application Suite software
- › Combinable with other LED illuminators with additional power socket
- › Leica LED3000 SLI: 300 mm gooseneck length for routine stands
- › Leica LED5000 SLI: 500 mm gooseneck length for high end stands

SPOT LIGHT ILLUMINATION

The Leica LED3000 SLI and Leica LED5000 SLI each feature two bright LED spot lights, which can be individually adjusted to the sample with two goosenecks. The control element is mounted on a separate gooseneck and can be placed in any position.



Spot light illumination



Leica LED5000 NVI: internal image of a grub screw in a brass gear wheel

Leica LED5000 NVI: detonator cap inside a cartridge case

Leica LED3000 NVI: a look into a USB memory stick

Enlarged detail of an injection nozzle: left with Leica LED3000 NVI, right with conventional ring light

Leica LED3000 NVI & Leica LED5000 NVI

Near vertical illumination is optimal for inspecting recessed holes and bores

The Leica LED3000 NVI is ideal for viewing recesses and holes, since the light falls almost vertically on the sample. In contrast to coaxial illumination it is also ideally suited for non-reflective and uneven sample surfaces.

The powerful Leica LED5000 NVI can extend your range of applications to routine monitoring of deep holes, drilled holes, and cavities. The optional polarization set makes it possible to analyze high gloss samples as well. When combined with a high-performance stereomicroscope and high-magnification objectives, this illumination is ideal for working with short working distance objectives like 2×.

LEICA LED3000 NVI

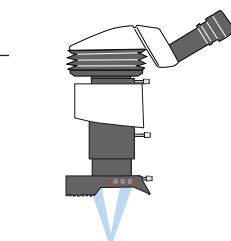
- › Ideal for viewing recesses and cavities
- › Evenly distributed light through 2-point illumination
- › Minimizes shadows caused by tools
- › Compact design – great accessibility to the sample

LEICA LED5000 NVI

- › High-output LEDs give extremely clear visualization
- › Optimized for long working distances on routine stereomicroscopes
- › Optional polarization set for avoiding reflections on shiny surfaces
- › Ideal illumination when using high-magnification objectives (1.6× and 2.0×) with high-performance stereomicroscopes
- › Filter insert for using commercially available filter disks 1/2"

NEAR VERTICAL ILLUMINATION LED3000 NVI

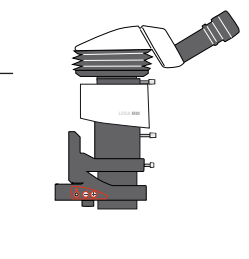
NVI illumination shines almost straight down onto the sample plane. This allows cavities and recesses to be very well illuminated.



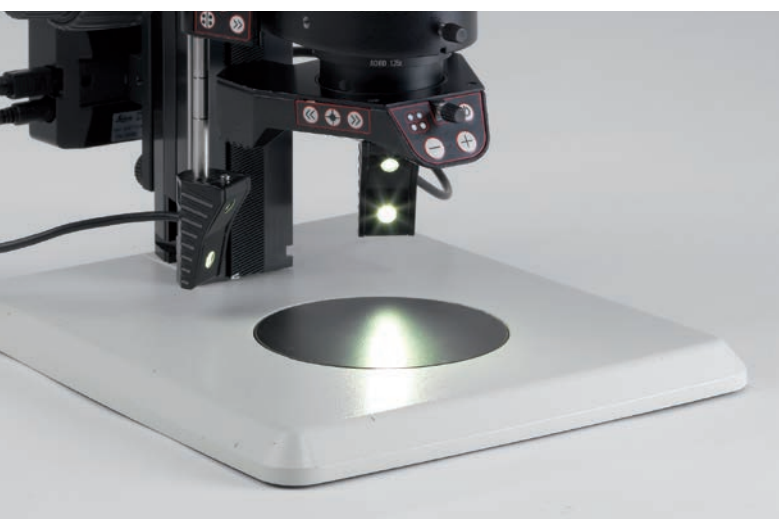
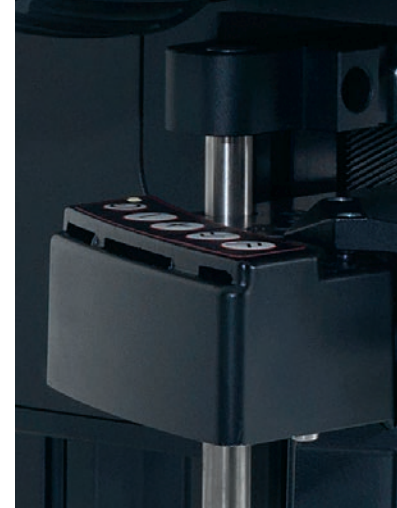
Near vertical illumination

NEAR VERTICAL ILLUMINATION LED5000 NVI

The Leica LED5000 NVI is installed between the microscope carrier and the objective. This causes the light to brightly illuminate the sample regardless of the working distance.



Near vertical illumination



Leica LED3000 MCI: coin illuminated with right illuminator arc

Leica LED3000 MCI: scratches become visible with the left illuminator arc

Leica LED5000 MCI: fingerprint on a CD in oblique light

Leica LED5000 MCI: the same sample in flat incident light. Clearly visible dust particles

Leica LED3000 MCI & Leica LED5000 MCI

Fully reproducible oblique LED illumination

The unique Leica MCI (Multi Contrast Illumination) systems are ideal for applications that previously required goosenecks. The flat angle of the oblique incident light creates particularly high contrast for precise viewing of even the smallest uneven surfaces and defects such as scratches and dust particles. In contrast to gooseneck illumination, the settings are fully reproducible. Using Leica Application Suite software and Leica SmartTouch control, you can quickly and easily recall stored illumination parameters at any time using the Leica LED5000 MCI.

LEICA LED3000 MCI

- › 4 high-output LEDs
- › Different illumination angles deliver high contrast
- › For Leica M series routine stereomicroscopes

LEICA MCI ILLUMINATION

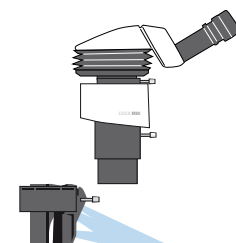
- › Detection of fine surface structures
- › Adjustable illuminator arc height
- › Reproducible illumination settings save time
- › Compact design with no cables cluttering the sample area

LEICA LED5000 MCI

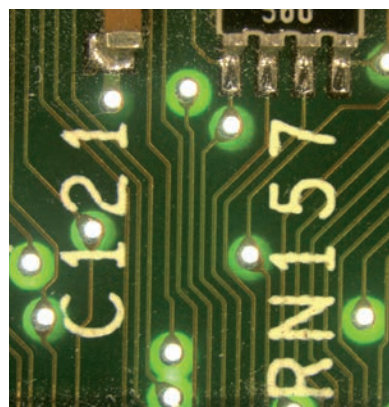
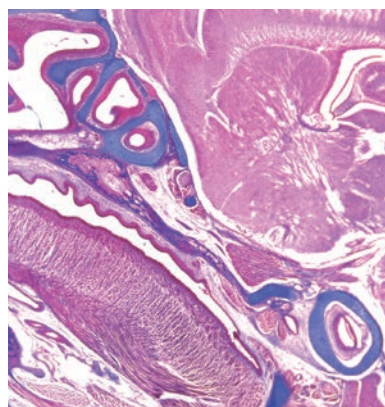
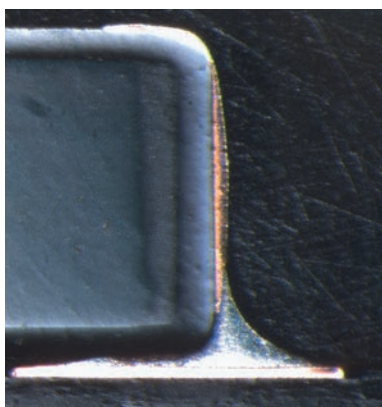
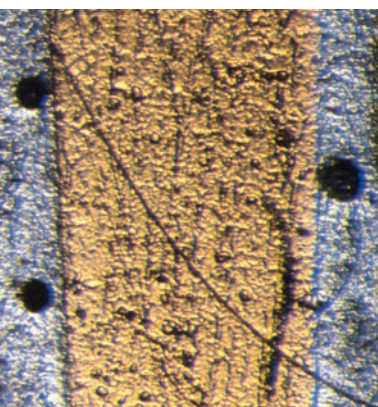
- › 9 high-output LEDs
- › Different illumination angles and directions deliver high contrast
- › Movable left and right illuminator arcs
- › Optional control via Leica Application Suite software
- › For Leica M series high-performance stereomicroscopes

MULTI CONTRAST ILLUMINATION

Two or three height adjustable illuminator arcs with multiple LEDs shine in selectable combinations and illumination angles. A wide variety of illumination scenarios result from the combination of settings.



Multi contrast illumination



Leica LED5000 CXI: trapped air bubbles in the cross-section of a soldered joint

Leica LED5000 CXI: cross-section through an electronic component including solder contact

Leica LED3000 BLI: transmitted light image of a mouse embryo

Leica LED3000 BLI: inspection of the through-connection of a plate using transmitted light

Leica LED5000 CXI

When the light needs to be perpendicular to the sample

The Leica LED5000 CXI coaxial illuminator is used for quality control of flat, polished or reflective samples. Scratches, cracks, impurities, and pores are made exceptionally visible.

Leica LED3000 BLI

For transmitted light applications

The Leica LED3000 BLI makes it easy to equip a microscope system with transmitted light. The illuminator can be combined with standard baseplates or even used as a standalone instrument. The intuitive touch panel and large work surface make it exceptionally easy to use.

LEICA LED5000 CXI

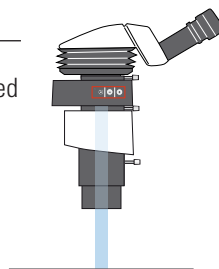
- › Ideal for flat, reflective and polished samples
- › Brightness control directly on the illumination unit
- › No quarter-wave plate required for stereo viewing
- › Optional control via Leica Application Suite software

LEICA LED3000 BLI

- › Large work surface of 170 mm × 220 mm with 77 mm illuminated object field diameter
- › Intuitive touch panel
- › Simple to insert on existing baseplates
- › Option to use as a standalone transmitted light illuminator without baseplate

COAXIAL ILLUMINATION

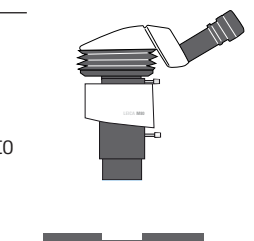
With coaxial illumination, light is coupled directly into a beam path and reflected into another beam path by the flat sample. Uneven areas and scratches do not reflect this light and become visually emphasized.



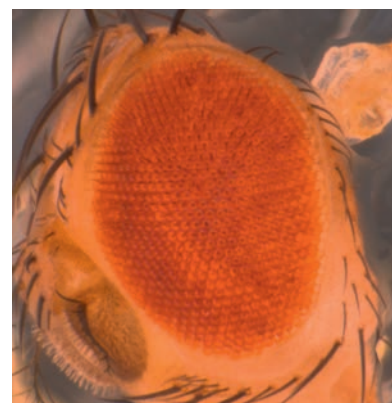
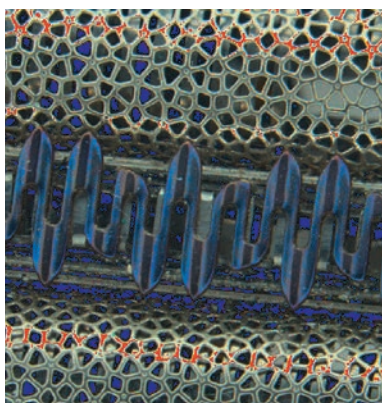
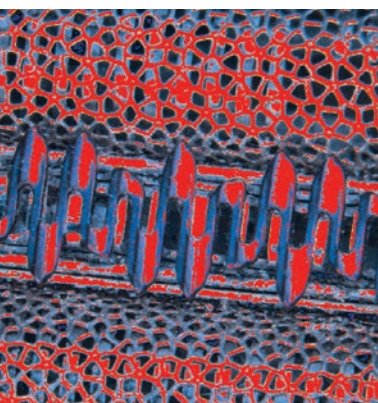
Coaxial illumination

TRANSMITTED LIGHT ILLUMINATION

Transmitted light illumination makes it possible to examine transparent samples. This optional solution is an ideal addition to existing incident illumination systems.



Transmitted light illumination



Foil electric razor head: image with ring light in LAS. Red: overexposed areas without image information

Foil electric razor head: image with Leica LED5000 HDI – uniform illumination, no over- or underexposed areas

LAS Montage image of a rhinoceros beetle under the Leica LED5000 HDI illuminator

Image of the large eye of the Drosophila melanogaster

Leica LED3000 DI & Leica LED5000 HDI

Highly diffused illumination reduces glare and uniformly illuminates the sample

Diffused illumination gives uniform illumination without shadow and glare effects. The Leica LED3000 DI and LED5000 HDI are ideal for documenting samples that are difficult to illuminate using other methods.

With the Leica LED5000 HDI, Leica Microsystems developed the first highly effective and flexible dome illuminator for stereomicroscopes, the Leica FlexiDome. Simply by lifting the illuminator, you can access and rearrange the sample without adjusting the focus. All illumination parameters are easily saved and recalled via Leica Application Suite software. The Leica LED5000 HDI works to maintain uniform illumination and produces optimum quality images when performing z-stacking with Leica Application Suite software.

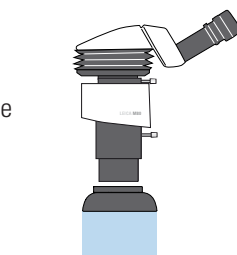
The illumination screen of Leica LED3000 DI is fastened to a gooseneck, which allows good sample accessibility. It can be combined with other illuminators.

LEICA LED3000 DI

- › Increased sample accessibility
- › Perfect positioning flexibility using the gooseneck
- › Separate gooseneck with control element
- › Ideal for combination with ring light or spot light illuminators

DI (DIFFUSED ILLUMINATION)

The versatile illumination screen of the Leica LED3000 DI is ideal for fast documentation. This effectively minimizes the formation of shadows and reflections.



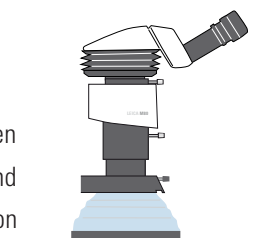
Diffused illumination

LEICA LED5000 HDI

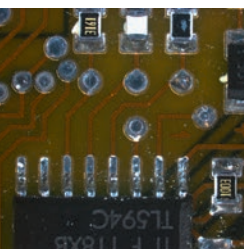
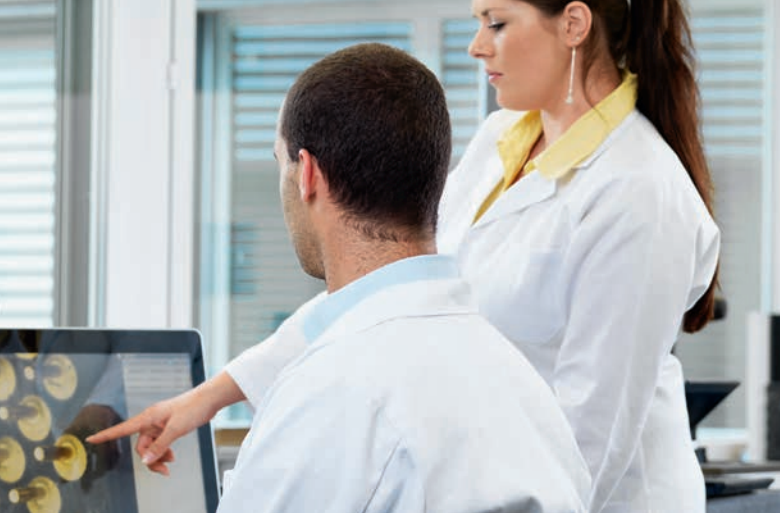
- › Diffused all-around illumination suppresses reflections and shading
- › Stray light/ambient light is eliminated
- › Constant illumination intensity
- › Easy access to the sample for realignment

HDI (HIGHLY DIFFUSED ILLUMINATION)

The light on the inside of the dome of the Leica LED5000 HDI is repeatedly reflected and scattered, ensuring that few shadows or reflections arise. When not needed, the dome can be raised and the LED5000 HDI acts as a circular neon lamp.



Highly diffused illumination



**Leica LED3000 RL /
Leica LED5000 RL**
• Versatile, even illumination
• Variable light directions



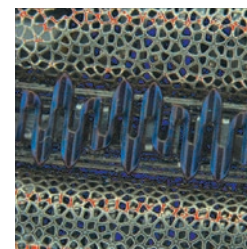
**Leica LED3000 NVI /
Leica LED5000 NVI**
• For recesses, holes, bores
• Low shading



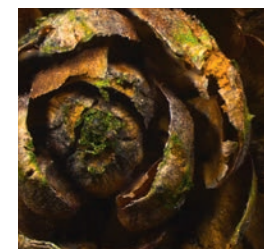
**Leica LED3000 MCI /
Leica LED5000 MCI**
• Repeatable contrast



Leica LED5000 CXI
• Specifically for flat,
reflective samples



**Leica LED5000 HDI /
Leica LED3000 DI**
• Diffused light
• Shadowfree documentation



**Leica LED3000 SLI /
Leica LED5000 SLI**
• Variable contrast

The Modular System Concept of Leica Microsystems

The Leica LED5000 / Leica LED3000 family is also fully integrated into the complete system of stereomicroscopes and accessories from Leica Microsystems. Focusing columns with integrated electronics connect all digital signals and send them to Leica Application Suite software. All data is read out by the software, saved with the captured image, and can be recalled at any time. Recurring experiments can be reproduced in the future with just a few mouse clicks.

Various illumination scenarios can be selected in Leica LAS (e.g., two LED arcs using Leica LED5000 MCI). You can select the speed at which the illuminator switches between the scenarios, and the sample is then automatically illuminated from different perspectives.


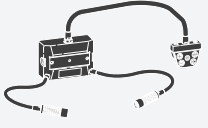

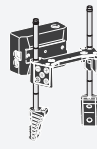
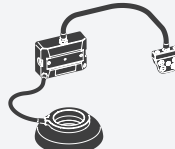

BENEFITS OF LEDS

- › Long service life (up to 50,000 hours)
- › No bulb replacement necessary
- › Up to 90% less power consumption compared to halogen lights
- › Color-neutral illumination of the sample
- › Constant color temperature at different brightness levels produces high level color fidelity
- › Fanless operation without noise
- › Flicker-free light through Leica DC digital camera components
- › Protection from voltage fluctuations in the power supply

ADVANTAGES OF LEICA MICROSYSTEMS' LED ILLUMINATORS

- › Control elements on the instrument
- › Easy installation
- › No additional control units required
- › Integration with LAS software
- › Reproducible settings
- › Illumination setting is saved with the image
- › Easy access to the sample through compact illumination design
- › Saves space at the workstation
- › Durable touch pad controls

Technical Data







	LED3000 RL	LED3000 SLI	LED3000 NVI	LED3000 MCI	LED3000 DI	LED3000 BLI
						
Order number	10 450 271	10 450 508	10 450 656	10 450 507	10 450 660	10 450 661
Number of LEDs	24	2	2	4	36	36
LED service life	50,000 h	50,000 h	50,000 h	50,000 h	30,000 h	30,000 h
Color temperature	5,600 K	5,600 K	5,600 K	5,700 K	6,000 K	6,000 K
Objective diameter	58 mm	–	58 mm	–	58 mm	–
Recommended working distance	60 – 150 mm	–	60 – 150 mm	–	–	–
CTL2 / CAN terminals	1	2	1	1	2	1
Compatible with Leica FusionOptics™	–	✓	–	✓	–	✓
Power consumption	15 watts	5 watts	10 watts	10 watts	10 watts	10 watts
Compatible with						
Leica S4 / S6 / S8 APO	✓	✓	✓	✓	✓	✓
M50 / M60 / M80	✓	✓	✓	✓	✓	✓
M125 / M165 C / M205 A / M205 C	–	–	–	–	–	✓
Remarks / Accessories	Diffuser Polarization set	Length: 300 mm adapters for focussing column				

Note:

LEDs slowly diminish in brightness as they age. By definition, the service life corresponds to the number of operating hours it takes to reach approx. 50% of the original brightness. This does not mean that the illuminator no longer functions. For shift operation, we recommend estimating the year's operating hours to determine the expected service life of an LED illuminator.

Article Numbers

10 450 271 Leica LED3000 RL – ring illuminator, Ø 58 mm objectives, 24 power LEDs, 5,600 K color temperature, optimized LED auxiliary lens, selectable segments, optimized for 60 – 150 mm working distance	10 450 656 Leica LED3000 NVI – near vertical illuminator for Ø 58 mm objectives, for 60 – 150 mm working distance	10 450 570 Adapter for combination light guide on focus columns of the routine M series, for Leica LED3000 SLI and Leica LED3000 MCI
10 450 337 Polarization set for Leica LED3000 RL	10 450 266 Power supply for Leica LED3000 / Leica LED5000	10 450 660 Leica LED3000 DI diffused illumination, 36 LEDs integrated in the illumination screen, illumination screen on a flexible gooseneck for flexible placement, 6,000 K color temperature, control unit on a separate gooseneck
10 450 338 Diffuser for Leica LED3000 RL	10 450 267 RLA 80 / 66 ring illuminator adapter for Leica LED5000 RL for Ø 66 mm objectives	10 450 661 Leica LED 3000 BLI transmitted light base for standard baseplates with 120 mm Ø, 36 LEDs, 77 mm Ø of transmitted light, 6,000 K color temperature, size: 220 × 170 mm, control via inductive touch panel, possible insertion without baseplate
10 450 508 Leica LED3000 SLI, spot light illumination, double-armed gooseneck 300 mm long, 2 power LEDs, 5,600 K color temperature, control unit on separate gooseneck, incl. diffuser pair	10 450 501 RLA 58 / 66 ring illuminator adapter for Leica LED3000 RL and Leica LED3000 NVI for Ø 66 mm objectives	
10 450 507 Leica LED3000 MCI, multi-contrast illumination with 4 power LEDs, 5,600 K color temperature, selectable scenarios	10 450 549 Leica LED3000 SLI / MCI adapter – routine, for Leica LED3000 MCI and Leica LED3000 SLI; for installation between the focus column and baseplate	

	LED5000 RL	LED5000 SLI	LED5000 NVI	LED5000 CXI	LED5000 MCI	LED5000 HDI	
							
Order number	10 450 494	10 450 548	10 450 658	10 450 659	10 450 657	10 450 561	10 450 062
Number of LEDs	40	2	2	2	2	9	132
LED service life	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h	50,000 h	30,000 h
Color temperature	5,600 K	5,600 K	5,600 K	5,600 K	6,200 K	5,700 K	6,500 K
Objective diameter	80 mm	–	–	–	–	–	80 mm
Recommended working distance	50 – 80 mm	–	max. 400 mm	max. 400 mm	–	–	60 – 70 mm
CTL2 / CAN terminals	1	2	1	1	1	2	1
Compatible with Leica FusionOptics™	✓	✓	–	✓	Only with AX carrier	✓	✓
Power consumption	10 watts	5 watts	15 watts	15 watts	10 watts	10 watts	25 watts
Compatible with							
Leica S4 / S6 / S8 APO	–	–	–	–	–	–	–
M50 / M60 / M80	–	–	✓	–	✓	–	–
M125 / M165 C / M205 A / M205 C	✓	✓	–	✓	✓	✓	✓
Remarks / Accessories	Diffuser Polarization set	Length: 500 mm adapters for focussing column	Polarization set	Polarization set	1/4-wave plate (AX item)	Two ways of mounting	

10 450 494 Leica LED5000 RL-80/40 – ring illuminator, 2nd generation, for Ø 80 mm objectives, 40 power LEDs, 5,600 K color temperature, optimized LED auxiliary lens, selectable segments, working distance: 50 – 80 mm

10 450 497 Polarization set Leica LED5000 RL-80/40

10 450 498 Diffuser for Leica LED5000 RL-80/40

10 450 548 Leica LED5000 SLI, spot light illumination, double-armed gooseneck 500 mm long, with 2 power LEDs, 5,600 K color temperature, control unit on separate gooseneck, incl. diffuser pair

10 450 561 Leica LED5000 MCI, multi-contrast illumination, 2nd generation; with 9 power LEDs, 2 movable illuminator arcs

10 450 657 Leica LED5000 CXI – coaxial LED incident light illumination, 1.5× magnification factor

10 450 062 Leica LED5000 HDI, diffused illumination, FlexiDome, ideal for highly reflective samples

10 450 658 Leica LED5000 NVI, for Leica M50, Leica M60 and Leica M80, 2 high-output LEDs, ideal for recesses and drilled holes, 5,600 K color temperature

10 450 659 Leica LED5000 NVI, for Leica M125, Leica M165 and Leica M205 high-performance stereomicroscopes, 2 high-output LEDs, ideal for recesses and drilled holes, 5,600 K color temperature, ideal for 1.6× and 2.0× objectives

10 450 671 Polarization set for Leica LED5000 NVI, consisting of temperature resistant polarizer, analyzer

10 725 035 Empty filter holder for Leica LED5000 NVI; for commercially available filter of size ½"

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.**

Leica Microsystems operates globally in three divisions, where we rank with the market leaders.

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The Leica Microsystems Life Science Division supports the imaging needs of the scientific community with advanced innovation and technical expertise for the visualization, measurement, and analysis of microstructures. Our strong focus on understanding scientific applications puts Leica Microsystems’ customers at the leading edge of science.

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.

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USA · Buffalo Grove/Illinois	+1	800 248 0123	847 405 0164