



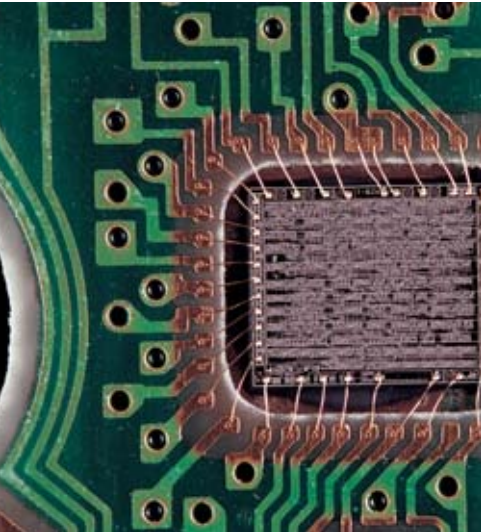
# *Leica S8 APO*

Visibly Better

**StereoZoom® Leica S8 APO: fully apochromatic stereomicroscope for R&D, production, quality assurance, damage analysis and educational applications. Zoom 8:1, 300 Lp/mm resolution and unparalleled 70µm depth of field.**

***Leica***  
MICROSYSTEMS

# Is your company fit for the future?



Microchip on industrial circuit board

## **Be different, better, faster**

Mounting international competition and the breathtaking pace of technological progress is compelling all industrial enterprises – including dominant ones – to continuously improve their products and product efficiency.

Knowledge, skills and creativity are the capital of the future and are becoming ever more decisive for success in a globalized competitive environment. Demand is on the increase for "intelligent products" that contribute to customers' knowledge.

Nondestructive test procedures are essential in quality assurance, materials inspection, damage analysis, assembly and research. With the Leica S8 APO, a cost-effective high-performance instrument with pronounced user benefits is now at the disposal of demanding specialists for quality, research and development tasks in industrial and educational settings.

## **Faster, more precise, more efficient**

Leica Microsystems optical instruments have a worldwide reputation for innovation, performance, value, ergonomics and precision. The StereoZoom® Leica S8 APO with its Leica ErgoDesign™ once again demonstrates our technological edge: the Leica S8 APO is the only 100% apochromatic, corrected Greenough stereomicroscope. It offers unparalleled contrast, image sharpness, resolution, clarity, color fidelity and reproduction precision for faster, more efficient research. Leica S8 APO effectively offers more than any other stereomicroscope with a Greenough optical system – for an astonishingly favorable price.

## **Unparalleled: 300 line pairs/mm resolution plus 70 µm depth of field at 80× magnification**

The apochromatic correction of the Leica S8 APO lens system delivers users precise detail information of fine, low-contrast objects such as metallic microelectronic structures. Of all Greenough stereomicroscopes, the Leica S8 APO provides an 8:1 zoom range, the highest maximum magnification, the largest numerical aperture, the highest resolution, peerless 70-micron depth of field and 10% larger object fields with the 10×/23 wide-field eyepieces!

## **Patented ESD protection**

The StereoZoom®-stereomicroscopes feature a light, tough antistatic polymer housing. The patented Leica ZeroStat® polymer protects objects from the damaging effects of electrostatic discharge (ESD).

## **Digitally documented, of course**

The Leica S8 APO is the perfect high-performance stereomicroscope for demanding users requiring digital documentation, analysis and archiving of their inspection and research findings. Indispensable for documentation of damage analysis and worldwide communication: high-performance Leica Microsystems digital cameras and software with convenient functions for frame-grabbing, image editing, archival and analysis. The photo port is a standard feature of the Leica S8 APO.

## **Details, configuration tool and online ordering**

For further information on its features and user benefits, please visit our website.

Configure and order your StereoZoom® Leica S8 APO online:

[www.stereozoom.com](http://www.stereozoom.com)



Section of plastic component,  
polarization



*"If a company intends to grow old, it has to stay young with continuous innovation." Robotics pioneer Prof. Hans-Jürgen Warnecke, former president of the Fraunhofer Institute for the promotion of applied research in Munich, Germany*

# Room for expansion?



Objectives: apochromatic 0.63 $\times$ , 1.6 $\times$ , 2 $\times$ ,  
achromatic 0.32 $\times$



Ergonomic wide-field eyepieces for wearers  
of spectacles 10 $\times$ /23, 16 $\times$ /15, 25 $\times$ /9.5, 40 $\times$ /6,  
soft eyecups



Incident-light stand with gliding stage



Sub-base for transmitted light for incident-light  
stand with polarizer and analyzer for plastics,  
acids, crystalline liquids



Coaxial illuminator for flat, highly reflective  
surfaces of wafers and metal sections

## Well-positioned zoom magnification changer, parfocal and parcentric

- Entire zoom range covered by a single revolution
- Focus remains constant throughout zoom range (parfocal)
- Image remains centered when changing objectives (parcentric)
- Adjustable zoom stops for repetitive tasks

## Ergonomic wide-field eyepieces for wearers of spectacles 10 $\times$ /23 and ergonomic 38° viewing angle

- Max. 23mm field diameter
- Diopter adjustment from +5 to -5 for eyesight correction
- Soft, detachable eyecups to prevent eye infections
- Graticules for measuring
- Variants: wide-field eyepieces 16 $\times$ /16, 20 $\times$ /12 and wide-field eyepieces for spectacle wearers 10 $\times$ /23, 16 $\times$ /15, 25 $\times$ /9.5, 40 $\times$ /6 with 22mm exit pupil

## Apochromatic objectives 0.63 $\times$ , 1.6 $\times$ , 2 $\times$ , lead-free

- Peak imaging quality
- With objective 2 $\times$  maximum magnification 640 $\times$ , maximum numerical aperture 0.2 NA, maximum resolution 600 Lp/mm
- With objective 0.63 $\times$  maximum field diameter 36.5mm, working distance 101mm
- Achromatic objective 0.32 $\times$  for large field diameters of up to 72mm and working distance 200mm
- Objective protection glass

### Integrated 100% video/photo port

- Universal for digital still and video cameras
- High-resolution Leica DC camera line for a range of requirements
- Modular image editing and analysis software – Leica Image Manager, Materials Workstation

### Fully apochromatic, distortion-free Greenough optical/zoom system for best possible resolution, contrast, imaging and color fidelity

- Apochromatic 8:1 zoom
- 10× to 80× zoom range
- Numerical aperture 0.1 NA, resolution 300 Lp/mm, depth of field 70 microns (at 80× magnification with 10×/23 eyepieces)

### Powerful, compact cold-light source

- Direct connection to stand or free-standing
- Highest total light flux of 63 lm at the fibre-optic light guide source
- No 100Hz flicker, no scattered light, constant color temperature 3200°K
- Voltage-sensitive power supply, stable illumination with automatic mains voltage adjustment

### Complete ESD protection

- Fully antistatic, including optics carrier, stand and Leica L2 cold light source
- Versions: ESD swinging-arm stand and focusing arms for OEM, arresting

### Microscope carrier, tilting

- Installable in high or low position
- Optics carrier can be rotated 360°
- Various versions for custom OEM applications in bonders, probers and other systems

### Well-positioned focusing drive

- Individually adjustable operating torque for effortless focusing
- Precise travel along the optical axis; the image remains centered
- Tilttable focus arm for swinging-arm stand

### ESD swinging-arm stand with focusing arm, tilting, Ø 15.8mm (5/8") mounting plug for OEM

- Illumination with fibre-optic light guides
- Provision for L2 cold light source

# Of course!



Ring illuminator for shadow-free, homogeneous illumination of irregular surfaces



Laser emitting diode, illuminations, transmitted-light base, ring illuminator and spot



Leica L2 cold-light source with 2 swan-neck light guides, free-standing



Digital imaging system from the Leica DC camera line



Image editing and archive software, here the Leica Image Manager

The StereoZoom® trademark has been registered in the Principal Register of the US Patent and Trademark Office.

Leica Design by Christophe Apothéoz

# An eye for detail

## Quality is not a question of luck

In the fields of quality assurance, damage analysis and education, expectations are high when it comes to instrumentation. A useful stereomicroscope must permit fast, precise determination of detail, deliver reliable results in repeated inspections, ensure convenient, fatigue-free handling and provide options for a wide range of examination methods and generation of digital data. The StereoZoom® Leica S8 APO will far exceed your expectations in many regards.

## Highest resolution

Normally, large apertures and high resolutions can only be attained in an optical system at the expense of depth of field. With the Leica S8 APO, we have succeeded in combining a large aperture with a high depth of field and a pronounced 3D image. Of all stereomicroscopes based on the Greenough principle, the Leica S8 APO with 10×/23 wide-field eyepieces delivers the highest values: unparalleled 70 microns depth of field, numerical aperture 0.1 NA, resolution 300 Lp/mm, zoom 8:1, zoom range 10× to 80×.

The great depth of field simplifies working with tools and aids in the comprehension of interconnections without frequent focal corrections.

## Apochromatically explore the finest structural worlds

Leica S8 APO is the world's only fully apochromatic, corrected Greenough stereomicroscope. The sophisticated optical/zoom system renders the finest structural details with extreme sharpness and permits densely packed structures to be distinguished clearly. Non-corrected lens systems result in distracting color fringes and loss of detail in fine structures. Together with apochromatic supplemental objectives 0.63×, 1.6×, 2×, the Leica S8 APO delivers peak performance levels of up to 640× magnification and 600 Lp/mm resolution for highly efficient quality analyses of surfaces, fractures, metal sections and transparent cuts.

The zoom range can be limited at both ends by stops at two user-defined magnifications. Inspections and experiments can thus be reproduced quickly and precisely under identical conditions.

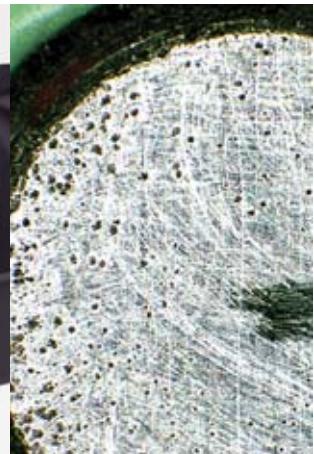
# optics



Polymer materials testing, fluorescence



8:1 zoom with 2 adjustable zoom stops for repetitive tasks



### Perfect 3D image for working on and nondestructive observing of whole objects

Stereomicroscopes enhance natural, three-dimensional vision and are indispensable in precision engineering, electronics and the plastics industry. Using Leica 10×/23 wide-field eyepieces, the upright, laterally correct fields of view are 10% larger than with the eyepieces of other manufacturers. Users can observe and measure three-dimensional components and their correct positioning in their entirety without time-consuming repositioning, apply tools and film their work with ease. The 8:1 zoom permits the continuous enlargement of interesting details for thorough examination at high resolution.

### Compact Greenough optical design

The optical system of the Leica S8 APO has two independent optical paths arranged at a 12° angle, each with its own objective and eyepiece. As the objective pair is tightly spaced, the design of this stereomicroscope type is very slim at the bottom. The advantages hereof are a clear view to the object field, unhindered access to the object and plenty of room for tools. In the StereoZoom® Leica S8 APO, the optimally corrected center of the objective is used for imaging. This results in large, planar viewing fields with optimal chromatic correction and good contrast.

### Patented ESD technology

The Leica S8 APO features antistatic material with a surface resistance of  $<10^{11}$  Ohm/square cm. The patented ZeroStat® polymer prevents the buildup of charges and reduces existing charges from 1000V to 100V in less than 2 seconds. Costly damage resulting from electrostatic discharge can thus be avoided during the assembly and quality assurance of sensitive electronic components such as printed circuit boards, integrated circuits and read heads. A valuable side effect: ZeroStat® prevents the growth of mold, repels dust and dirt, and resists scratching and peeling.

Pitting in metal,  
coaxial illumination



*"Fault costs due to the inadequate quality of process results always arise when intermediate or final results are rejected or require corrective processing. Customer complaints about quality not only result in warranty costs, but also the cost of a lost customer and the potential damage to a company's image arising from poor quality."*

*Wolfgang Gottwald, Association for Management Methodology mbH*

# You set the standard

## Success thanks to motivated employees

Ergonomics isn't a buzzword for us, but a topic of fundamental importance in product development. We take the entire human – his or her senses, locomotor system and brain – into consideration in our fully integrated approach. Our goal is to ensure the interdependence of as many system elements as possible to guarantee the user's comfort, concentration and efficiency. Leica ErgoDesign™ fully exploits the design and technical possibilities of modern optical manufacturing: innovative technologies, quality optics, selected materials, ergonomic design, extremely precise workmanship and tightest possible production tolerances.

## Leica optics – objectively better

Your first look through the wide-field eyepieces will thrill you. See for your self how the Leica S8 APO eases and enhances visual work – over long periods, without eyestrain. The combination of multiple-coated, corrected lens system and an ergonomic 38° viewing angle support natural viewing and a natural posture.



Metal part, material inspection with ring illumination

Precise focusing without exertion

## Ergonomic wide-field eyepieces

Leica's 10×/23 wide-field eyepieces let you view 10% more of the object than comparable eyepieces from other manufacturers. Orientation is easier, connections can be identified quickly without continuously moving the object, and the physical effort of visual accommodation is eliminated. In the case of eyepieces for spectacle wearers, the exit pupil is 22mm in front of the eyepiece lens. The additional space provides ergonomic advantages to users with and without spectacles. Adjustable eyepieces provide eyesight correction over a range from + 5 to – 5 diopters. Soft, detachable eyecups block out distracting room light and help prevent eye infections (when using separate eyecups for each user!).

*"Almost all products can be copied within a matter of weeks, prices often within hours. The most difficult things to copy are competent, efficient employees and lasting customer relationships. People make the difference! Not only your products, but also your employees and customers are strategic factors central to your success and the sustainability of your business in the future."*  
Anne M. Schüller, Total Loyalty Marketing expert





### **Everything perfectly under control**

The sophisticated design of the zoom and focus controls accommodates a comfortable hand position and supports natural eye-hand coordination. A practical feature: a single turn covers the entire zoom range from the lowest to the highest magnification. The instrument will remain perfectly in focus (parfocal) throughout the zoom operation, with no need for annoying corrections. State-of-the-art technology with a patented magnetic assembly system, highly precise single-spindle design and Delrin gearing guarantee that the zoom action will remain even, silky and precise even after years of hard use.

### **Always in focus**

The fine motor skills of the human hand are only effective if the hand is not called upon to exert an appreciable amount of force. The ease of focusing can be adjusted individually to minimize the muscular effort required.

The Leica S8 APO remains precisely in its optical axis and stops at exactly the desired point when focusing – it never moves by itself or loses the selected focal plane. The image even remains centered when changing objectives and the instrument will still be at the same point of observation after focusing. This precise action offers the best preconditions for combining multiple images with different focal planes to a complete image using the multifocus module of the Leica IM1000 image management software (see page 11).

### **Ergonomics and more**

Every person brings a different set of physical preconditions to the job, and every task places a specific set of demands on a stereomicroscope. In addition to the ergonomic advantages described here, we offer a wide range of further options to optimize your workstation layout. Your Leica representative will be pleased to assist you in planning your workstations.

*"The first step in investigating damage is to describe it. Details with regard to design and manufacturing are also of interest. Next, the appearance, position and starting points of deformations, cracks, breaks, corrosion and wear must be recorded. Documenting the damage with drawings and photographs is also useful." Institute for Materials Science, Welding and Non-Cutting Shaping Technology, Graz University of Technology*



Leica S8 APO with Leica digital camera on ESD swinging-arm stand ESD with tilting focusing drive and ring illuminator with Leica L 2 cold light source

# Professional, from the pixel upwards

## **Comprehensive systems for digital documentation**

From stereomicroscopes to digital cameras and application software, Leica Microsystems delivers comprehensive, custom-tailored, future-oriented packages for professional image creation, archiving, analysis, editing, presentation and printing. The StereoZoom® Leica S8 APO delivers high-quality data for further analysis in measurement technology, materials analysis and quality assurance, precise documents for damage analysis reports and logging of evidence, as well as perfect images for demonstrations and educational purposes.

## **Integrated interface**

Its high resolution and accurate imaging predestine the Leica S8 APO for high-quality image processing, suitable for analysis as well as presentation to large groups of viewers at colleges or universities. Its photo/video port is integrated and facilitates quick, simple camera installation (plug&play). A selection of different, high-quality C-mount video objectives ensure versatility in framing image details. The observation and photography optical paths are switchable. The maximum amount of light is thus available for both requirements.

## **High-performance camera systems**

The rapidly growing need for qualified knowledge is calling for fast, convenient digital cameras with ever-higher resolutions and comprehensive image processing software. Our camera line ranges from standard cameras for universal deployment to high-end cameras.

To name a few examples:

- With a genuine 12 megapixels, the Leica DC500 is the ultimate professional digital camera for analyses, measurements and further processing of quality image data.
- The specialty of the 5.07 megapixel Leica DC480 is imaging at lowest light levels.
- The Leica DFC320 digital camera delivers brilliant, detailed, high-resolution images for precise documentation and reporting.
- The Leica DFC280 digital camera stands out with its performance and ease of use. Flicker-free live images in real time guarantee precise results for measurements and image editing.

## **Image management at the highest level**

Leica Microsystems digital cameras use a TWAIN interface for convenient and intuitive operation. The camera software features a wide range of frame-grabbing and editing functions and can be integrated in many common Windows applications (MS Office, Photoshop, etc.) as well as professional image management and image analysis software such as Leica IM1000, Materials Workstation and QWin. Leica IM1000 is a modular image management program suitable for all applications in industry, research, and education. A broad selection of application modules is available for Leica IM1000, such as measuring, multifocus, image correlation, timelapse, presentation, and many more. Thanks to its modular concept, Leica IM1000 can be tailored to your requirements and budget.



Leica S8 APO on incident-light stand  
with sub-base for transmitted light  
and Leica DC camera

# StereoZoom® Leica S8 APO – Technical Data, Features

<b>Optics carrier</b>		
Instrument type tube	Fully apochromatic high-performance stereomicroscope with 8:1 zoom and integrated photo/video	
ESD protection	– optics carrier and Leica L2 cold light source in patented antistatic ZeroStat® polymer; – specific surface resistance: $2 \times 10^{11}$ Ohm/square, discharge time <2 seconds from 1000V	
Lens system	– 12° convergent Greenough optical system, lead-free – apochromatic, corrected, parfocal – use of optimally corrected objective center	
Zoom	– 8:1, apochromatic – patented magnetic assembly system	– Delrin gearing – highly precise single-spindle design
Zoom range	10x–80x (with 10x/23 wide-field eyepieces)	
Resolution	– 300 Lp/mm (with 10x/23 wide-field eyepieces)	– 600 Lp/mm (with apochromatic objective 2x)
Numerical aperture	– 0.1 (with 10x/23 wide-field eyepieces)	– 0.2 (with apochromatic objective 2x)
Dept of field	70µm (with 10x/23 wide-field eyepieces)	
Field diameter	23mm (with 10x/23 wide-field eyepieces)	
Maximum magnification	640x (with apochromatic objective 2x)	
Working distances	– standard: 75mm – with 1.6x APO objective: 37mm – with 0.32x achromatic objective: 200mm	– with 2x APO objective: 25mm – with 0.63x APO objective: 101mm
Objectives	– apochromatic 0.63x, 1.6x, 2x	– achromatic 0.32x
Viewing angle	ergonomic 38°	
Interpupillary distance	55mm – 75mm, synchronous	
Integrated video/photo tube, switchable	– 100% visual light in both eyepieces for 3D viewing – 100% light for video/photo and 100% visual light in left eyepiece	
Adjustable zoom limits	Stops at top and bottom	
Ergonomic wide-field eyepieces, fixed and adjustable, with eyecups	10x/23, 16x/16, 20x/12	
Ergonomic wide-field eyepieces for spectacle wearers, with eyecups	10x/23, 16x/15, 25x/9.5, 40x/6	
Diopter adjustment	From + 5 to – 5	
Soft, detachable eyecups	– to block out distracting room light and help prevent eye infections – straight and angled type	
Photography with coaxial illuminator	Optimal for wafers and metal sections	
<b>Stands, lighting</b>		
Incident-light stand	With stage plate Ø 120mm	
Transmitted-light stand	– HL-RC™ high-performance base – base for transmitted light for incident-light stand with movable reflector for angled illumination – bright field, bright- and dark field transmitted light stands – laser emitting diode transmitted-light stand	
Ergonomic focusing drive	– types: coarse, coarse/fine – Focusing arm, tilting, with mount Ø 15.8mm (5/8") for OEM and swinging-arm stand – focusing arms for bonders and probers	– parcentric – adjustable ease of movement – motor focus system
Focusing range	135mm with standard-type focusing drive/column	
Microscope carrier	– mountable in 2 positions, high/low	– optics carrier can be rotated 360°
Swinging-arm stand, FlexArm	Wall and table mounting	
Stages	– polarizer/analyzer, gliding stage, cup stage	
Light sources	– Leica L2 cold-light source, coupled to the stand, with a variety of fibre-optic light guides and accessories for coaxial, vertical, transmitted light	– Leica L5 FL fluorescence system – LED ring light and spot
<b>Accessories</b>		
Video objectives	0.32x, 0.5x, 0.63x, 0.8x with C-mount for a variety of CCD cameras	
Digital imaging systems	Leica DC and DFC camera line	
Software	Leica Image Manager, QWin, Materials Workstation	
Photomicrographic systems	Leica MPS30 and MPS60, fully automatic, with databack	
Measuring graticules	For measuring lengths and for counting	

For detailed technical data, scope of delivery and ordering information, please see our detailed leaflet M1-188-4 or our website at [www.stereozoom.com](http://www.stereozoom.com)

Leica Microsystems (Switzerland) Ltd.  
Stereo & Macroscopic Systems  
CH-9435 Heerbrugg

Telephone +41 71 726 33 33  
Fax +41 71 726 33 99  
[www.leica-microsystems.com](http://www.leica-microsystems.com)  
[www.stereomicroscopy.com](http://www.stereomicroscopy.com)

**Leica**  
MICROSYSTEMS