Microscopes

for advanced materials science



Delphi-X Observer

Superior materials imaging

euromex
microscopes holland



State-of-the-art microscopes

for advanced materials science applications

The ergonomic design and outstanding state-of-the-art objectives make the Delphi-X Observer the ideal microscope for advanced materials application

The 25 mm field of view of the eyepieces and the plan apochromatic objectives enable observations with perfect color rendering at



FEATURES

1 | Universal photo tube (tube not displayed)
2 | DIN Super Wide field SWF 10x/25 mm
3 | Trinocular head, Siedentopf 30° inclined
4 | 3-Position beamsplitter (100:0 / 80:20 / 0:100)
5 | Polarizer/analyzer
6 | Darkfield/brightfield quick selector
7 | Aperture and field diaphragm for EPi
8 | Shutter
9 | Epi illuminator, 100 W halogen light source
10 | Slot for Nomarski DIC slider
11 | Revolving sextuple reversed nosepiece
12 | Infinity corrected M26 x 45 mm S-APO or Plan Apochromatic EIS objectives
13 | 210 x 170 mm stage with 105 x 105 mm integrated right-handed mechanical stage
14 | Height adjustable long working distance 0.65 N.A. condenser
15 | 100 W halogen light source
16 | Low stage adjustments
17 | Precise coarse and fine adjustments
18 | iCare sensor for energy saving
19 | Full Köhler diaphragm

A new era

in materials microscopy

With 25 mm field of view, unsurpassed M26 x 45 mm EIS objectives, sextuple nosepiece and a large rackless stage with scratch-resistant coating, the Delphi-X Observer offers the absolute best materials science microscope available on the market. Long working sessions will not be a problem thanks to the ergonomic design, stage lowering option, low stage controls and (optional) ergonomic tilting head



HEAD

- The Delphi-X Observer materials science microscope is equipped with newly designed optics and is ideal for long, strain free working sessions
- Choose a fixed 30 degrees head or the ergonomic tilting head which allows the inclination of eyepiece tubes to vary in angle between 0 and 35 degrees for maximum ergonomety. Interpupillary distance is adjustable between 47 and 78 mm and diopter correction is available on both eyepieces
- The standard 23.2 mm tube or optional camera sensor specific C-mounts enable cameras to capture high quality images. Digital SLR-camera adapters are available on request
- A 3-way beamsplitter (100:0 / 80:20 / 0:100) allows maximum flexibility for camera use. The beamsplitter selection rod can be switched to either side of the head according to user's preference

EPI ILLUMINATOR

The rotating disc of the Epi illuminator enables fast switching between darkfield, brightfield and dimmed brightfield positions, thus improving ease of use. A rotating analyzer combined with polarizer can easily be inserted into the epi illuminators slots for high quality polarized images. The smoothly controlled field and aperture diaphragms are used to enhance image contrast

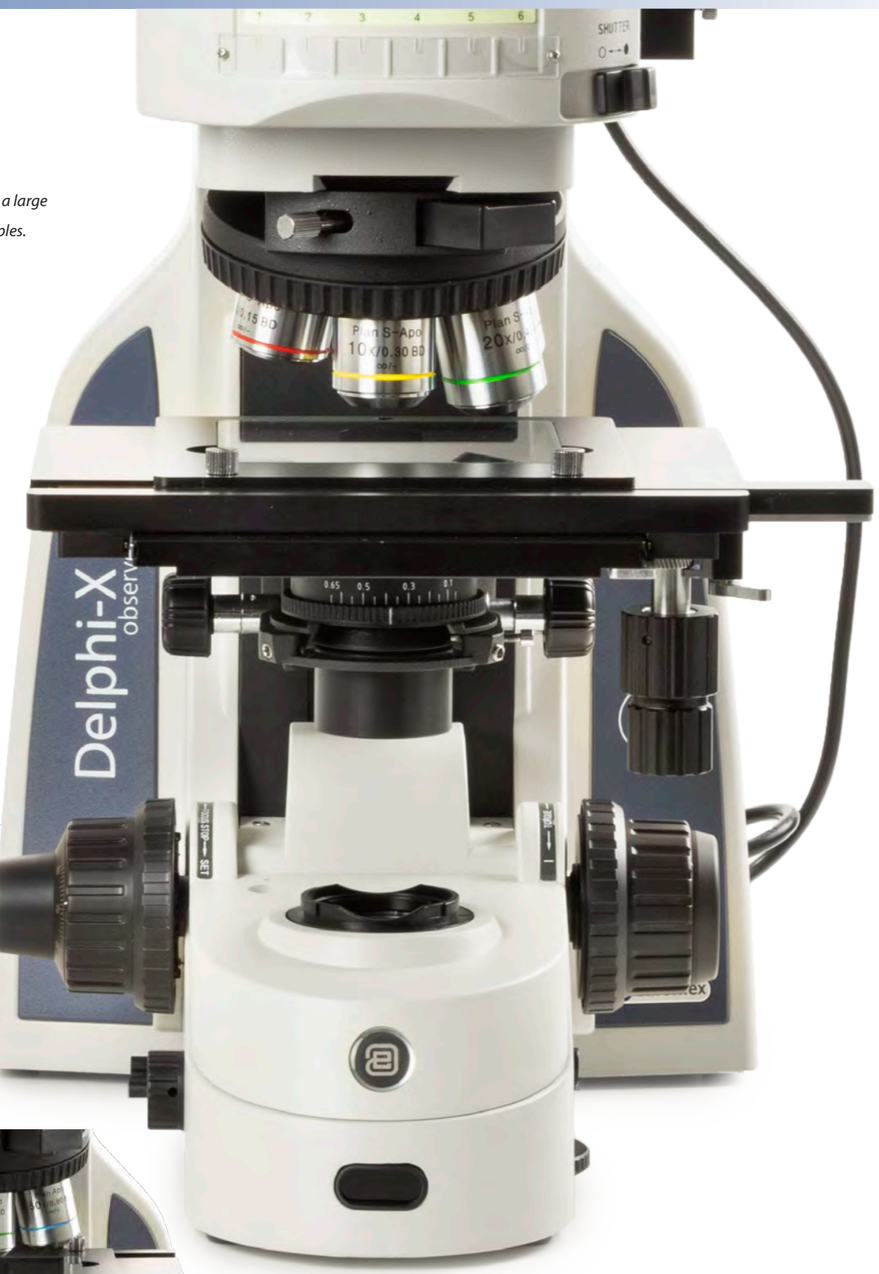
NO MARSKI DIC

With the redesign of the DIC module height differences - which normally can not be displayed using brightfield techniques - can now be visualized. These relief like images are ideal for surface inspections of wafers, LCD screens etc



Nosepiece with slot for Nomarski DIC slider

The Delphi-X Observer is equipped with a large mechanical stage accepting large samples. An extra hard coating makes the stage scratch- resistant





The stage can optionally be supplied as a left-handed version
The stage can also be mounted in two positions (see illustration on the left)

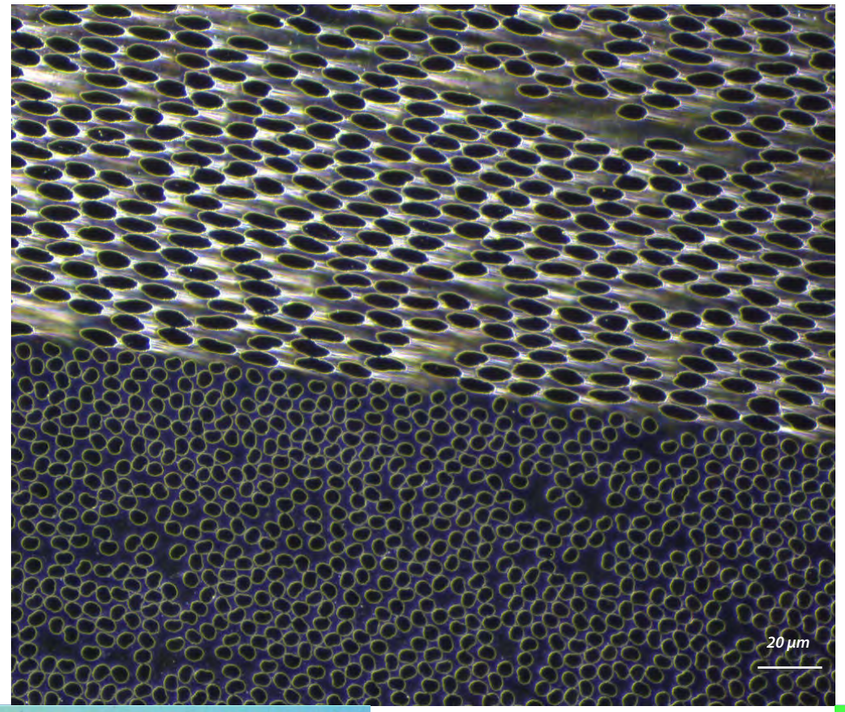
Wide range

of contrast techniques

Reflected light microscopy spans a range of applications and industries. These are just a selection of examples of what can be achieved using different observation methods

DARKFIELD

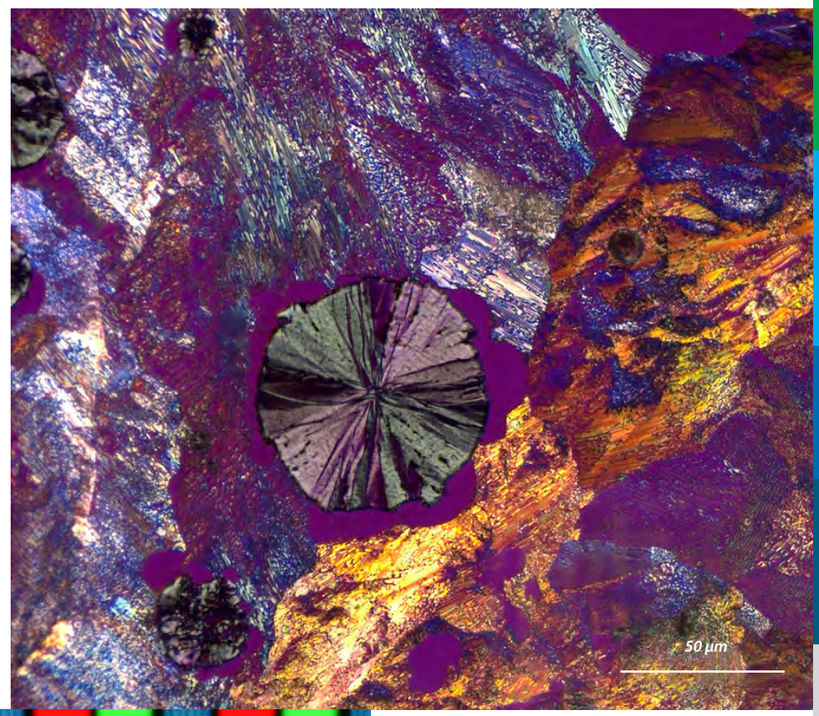
Darkfield is an effective visualization technique for surface imperfections. Only scattered or diffracted light will appear bright against a dark background. Even the smallest scratch or surface imperfection will be clearly visible, making darkfield ideal for examining polished metal surfaces

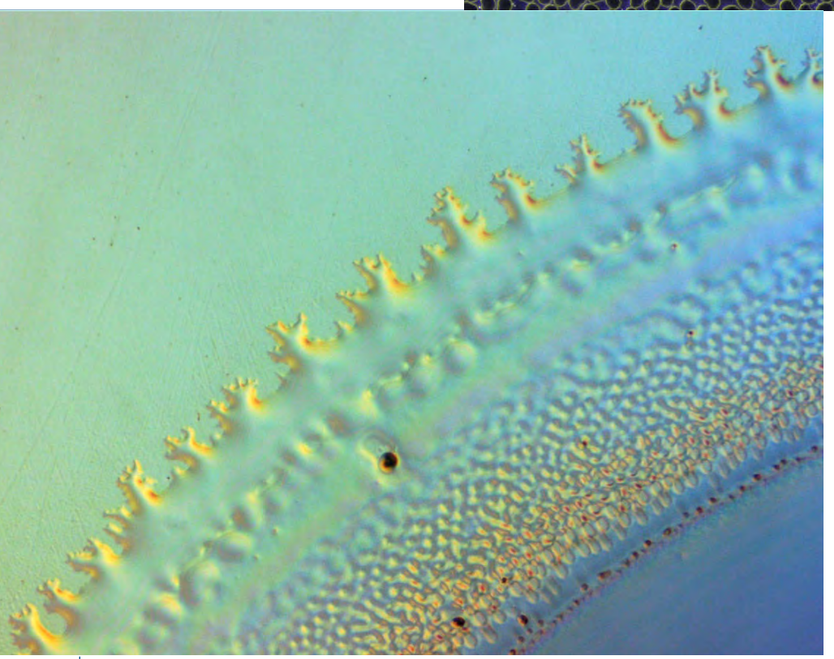


POLARIZATION

Besides eliminating some annoying reflectance of surfaces, the use of a polarization filter and cross-polarized filters (polarizer and analyzer) improves the quality of the image obtained with birefringent materials and can be used for both quantitative and qualitative studies around a wide range of anisotropic specimens (property of being directionally dependent, which implies different properties in different directions)

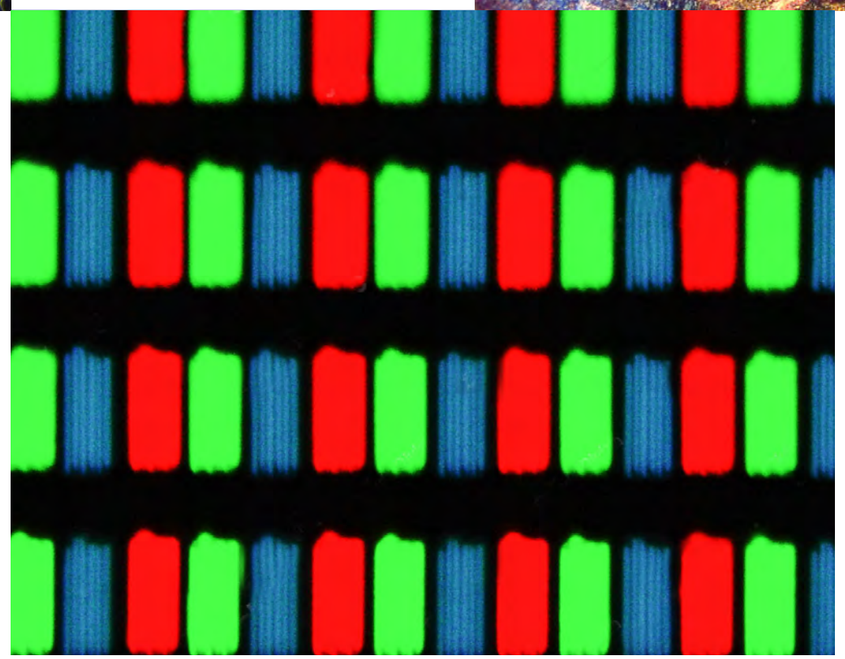
Primarily used by mineralogists, geologists and chemists for crystallography and petrology applications the polarization microscope is nowadays also used by materials science engineers and biologists to study the birefringence anisotropic materials





DIC

DIC is a microscopic visualization technique that produces 3-dimensional or relief-like images that show height differences in a specimen. These tiny height differences are normally undetectable in brightfield. The additional advantage is that DIC improves contrast. Using dedicated prisms and polarization techniques DIC is ideal for examining specimens with metallurgical structures, minerals, polished wafers and hard disk media



TRANSMITTED LIGHT

Transmitted light visualization can be ideal for transparent materials such as glass windows, LCD-displays and plastics. Delphi-X Observer offers models with and without the transmitted light feature. Polarization options are also available for transmitted light

Observe details

you have never seen before

The new design of infinity corrected S-Apochromatic and Apochromatic M26 x 45 mm EIS-objectives produces images with the highest possible resolving power and contrast. Virtually free of image distortion the image quality is absolutely superb and will let you observe details you have never seen before. With a field of view up to 25 mm, the Delphi-X Observer is suitable for the most demanding applications



OBJECTIVES

The Delphi-X Observer™ is as a standard supplied with Plan Semi-Apochromatic BD 5x/0.15 WD 20 mm, 10x/0.30 WD 11 mm and 20x/0.45 WD 3.1 mm Plan Apochromatic BD 50x/0.80 WD 1 mm, 100x/0.90 WD 1 mm objectives infinity corrected brightfield/darkfield objectives

The sextuple nosepiece enables users to choose six M26 x 45 mm EIS objectives with the highest possible resolving power and maximum contrast. Designed to be superior in accuracy and color reproduction, the EIS objectives are virtually free of aberrations

NOSEPIECE

The high capacity revolving nosepiece allows six EIS M26 objectives and has been precisely machined for maximum accuracy and repeatability. The reversed angle and ball-beared movement allows increased comfort of use. The nosepiece also has an incorporated slot for a range of sliders such as Nomarski DIC or polarization

LONG W.D. CONDENSER

In height adjustable long working distance (10.2 mm) N.A. 0.65 condenser with numerical aperture identification marks allows easy setting

Plan Semi-Apo (SAMi)		5x/0.15, WD 20 mm	10x/0.30, WD 11 mm	20x/0.45, WD 3.1 mm	
Plan Apo (PLAMi)				50x/0.80, WD 1 mm	100x/0.90, WD 1 mm*
Plan (PLMi)	2x/0.06, WD 7.5 mm*				

** Optional*

All objectives are 45 mm parafocal and have a M26 mm mounting thread.

All optics are anti-fungus treated and anti-reflection coated for maximum light throughput

Designed
with ergonomics in mind



NOSEPIECE LOWERING ATTACHMENT

With the nosepiece lowering attachment users can lower the height of the nosepiece by 40 mm and can therefore use the stage in a lower position as well (DX.9887)



EYE-LEVEL RISER

The eye-level riser can help raise the eye-point height by 25.4 mm (DX.9885)

The Delphi-X Observer's design provides more comfort and convenience for professional microscopists. The double fine and coarse focus control knobs can be switched from left to right according to user preference. The anti-slip coated adjustment knobs provide maximum comfort during displacement of the sample. Switching between transmitted and epi-illumination, adjusting light intensity, changing filters, all can be controlled without lifting your hands to prevent fatigue

STAGE

- Large 215 x 170 mm stage with 105 x 105 mm integrated right-handed mechanical stage, with glass and metal insert
- Stage height can be lowered for large samples (1 to 28 mm standard sample size, large sample size up to 55 mm)

For user ergonomics the stage height can be lowered by one inch while maintaining standard sample height, using the optional nosepiece lowering attachment (DX.9887)

FOCUSING

- Coaxial coarse and fine adjustment, 100 graduations, 1 µm precision, 100 µm per rotation, total travel approximately 35 mm
- Supplied with an adjustable rack stop to prevent damage to sample and objectives
- The coarse adjustments are equipped with friction control
- The double fine and coarse focus control knobs can be switched from left to right according to user preference

DIASCOPIC ILLUMINATION

The Delphi-X Observer materials science microscope is equipped with

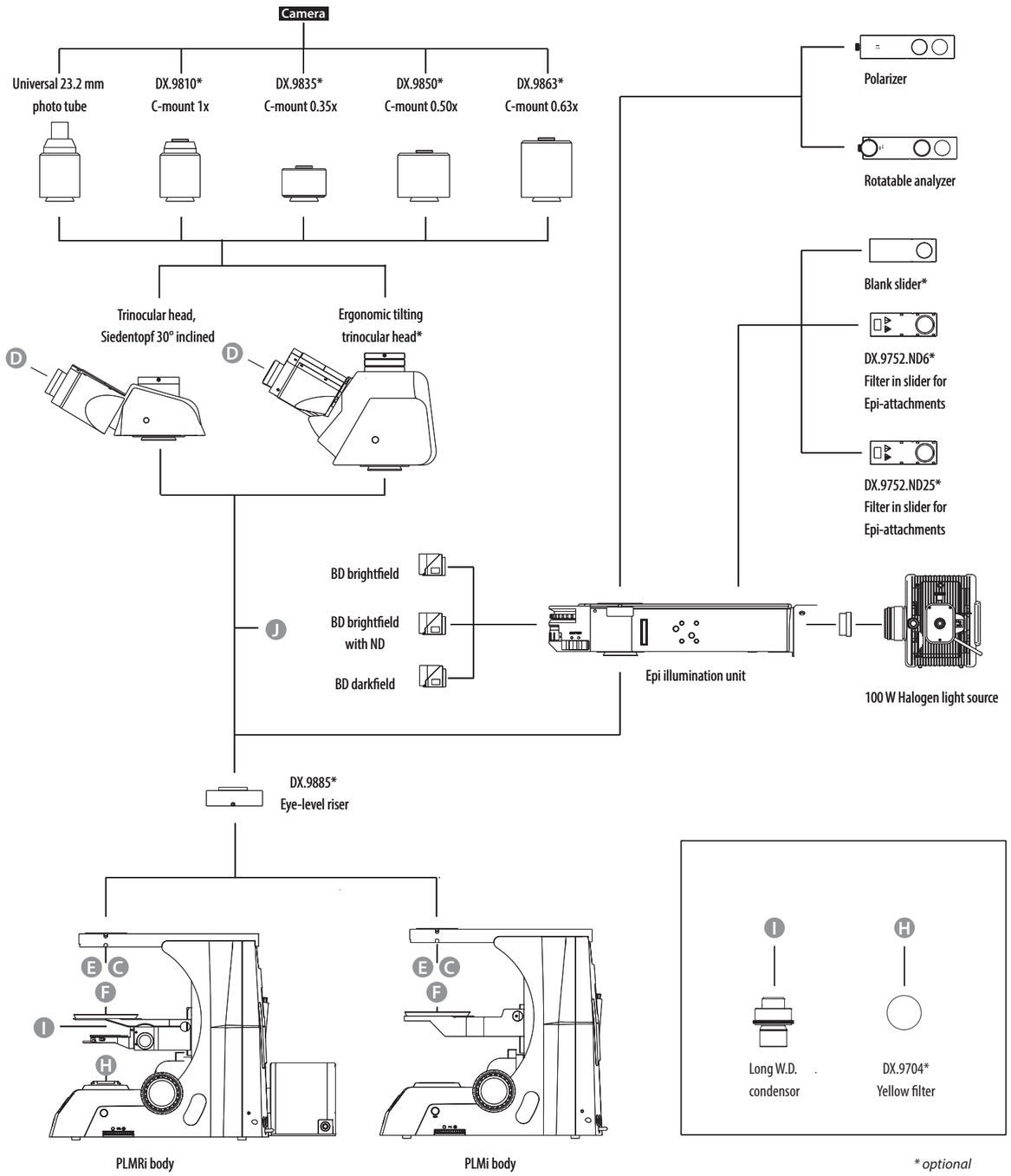
- Epi and Diascopic intensity adjustable 100 W halogen illumination with internal 100-240 Vac power supply. The diascopic halogen illumination comes with two push-in/push-out neutral density filters for smooth attenuation of the light intensity for all kinds of samples
- The Epi-illuminator comes with slots for a rotating analyzer and a polarizer which can easily be inserted into the illuminator for quality polarized images. Furthermore, a rotating cassette is implemented for fast switching between darkfield, brightfield and dimmed brightfield

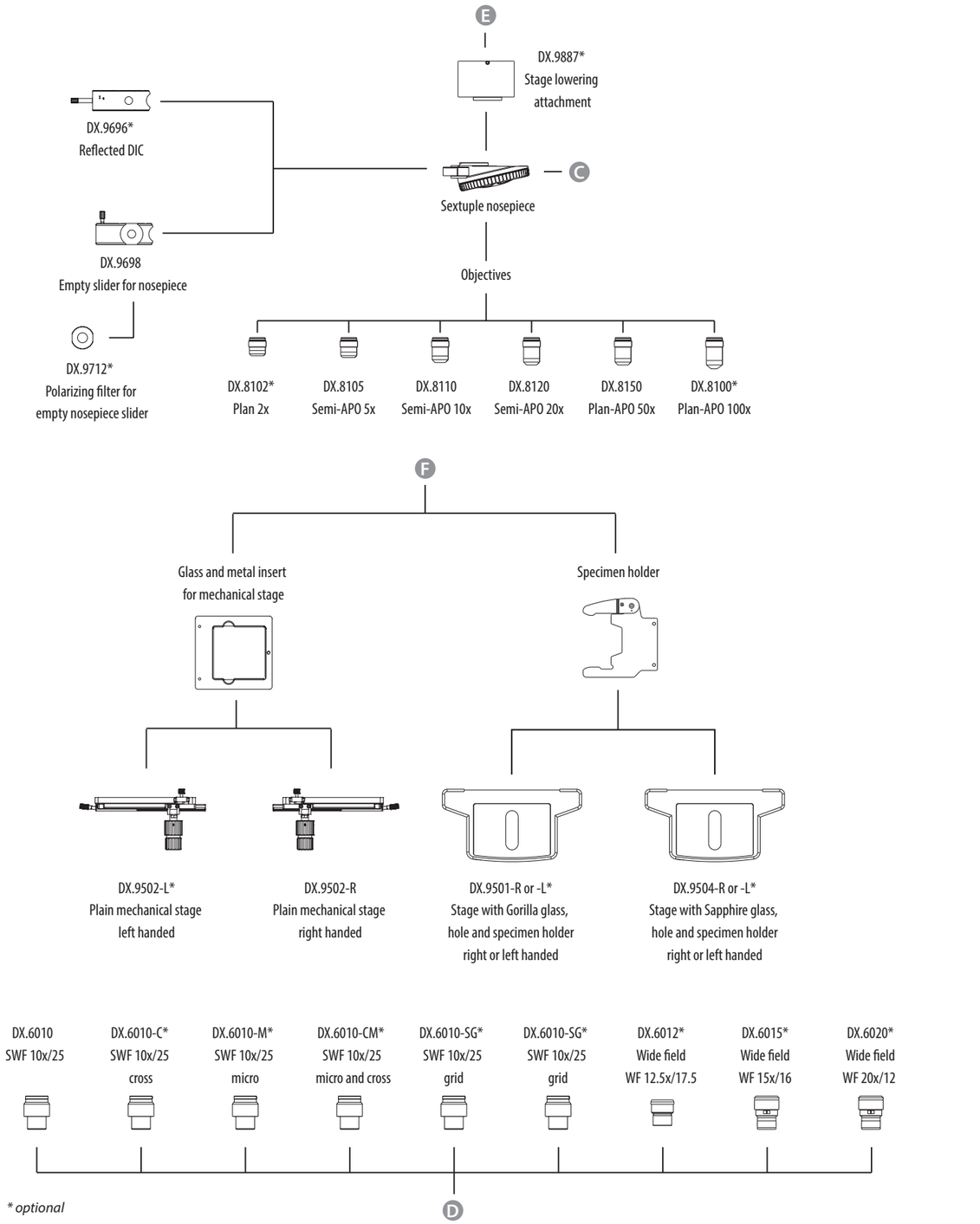
ICARE SENSOR

The unique iCare Sensor is developed to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off shortly after microscopists step away from their position



Schematics

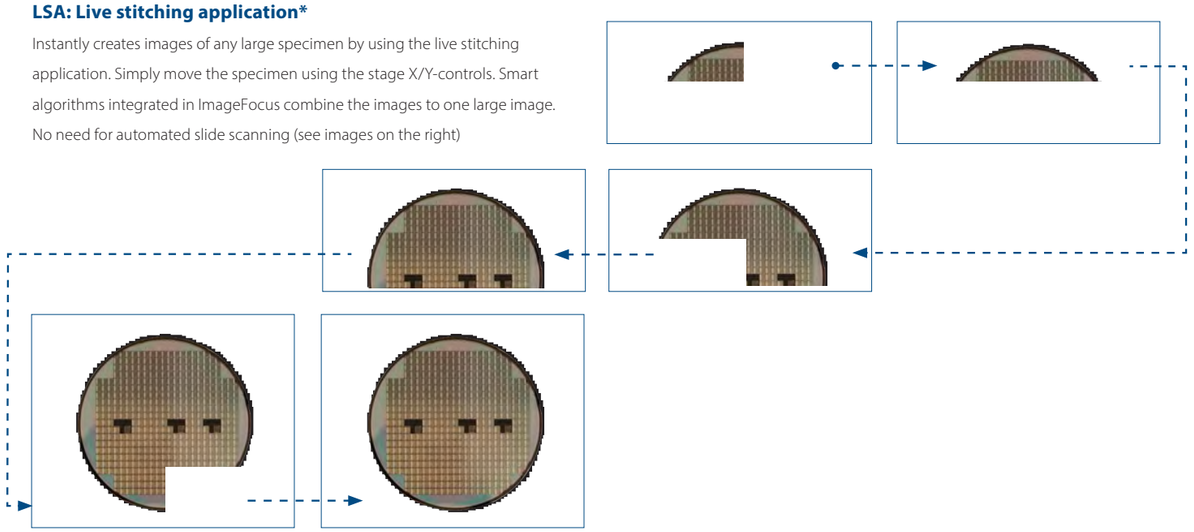

Camera
Universal 23.2 mm photo tube
DX.9810* C-mount 1x
DX.9835* C-mount 0.35x
DX.9850* C-mount 0.50x
DX.9863* C-mount 0.63x
Trinocular head, Siedentopf 30° inclined
Ergonomic tilting trinocular head*
D
D
Polarizer
Rotatable analyzer
Blank slider*
DX.9752.ND6* Filter in slider for Epi-attachments
DX.9752.ND25* Filter in slider for Epi-attachments
BD brightfield
BD brightfield with ND
BD darkfield
J
Epi illumination unit
100 W Halogen light source
DX.9885* Eye-level riser
E C F I H
E C F
PLMRi body
PLMi body
I
H
Long W.D. condensor
DX.9704* Yellow filter
* optional


E
DX.9887* Stage lowering attachment
DX.9696* Reflected DIC
C
Sextuple nosepiece
DX.9698 Empty slider for nosepiece
Objectives
DX.9712* Polarizing filter for empty nosepiece slider
DX.8102* Plan 2x
DX.8105 Semi-APO 5x
DX.8110 Semi-APO 10x
DX.8120 Semi-APO 20x
DX.8150 Plan-APO 50x
DX.8100* Plan-APO 100x
F
Glass and metal insert for mechanical stage
Specimen holder
DX.9502-L* Plain mechanical stage left handed
DX.9502-R Plain mechanical stage right handed
DX.9501-R or -L* Stage with Gorilla glass, hole and specimen holder right or left handed
DX.9504-R or -L* Stage with Sapphire glass, hole and specimen holder right or left handed
DX.6010 SWF 10x/25
DX.6010-C* SWF 10x/25 cross
DX.6010-M* SWF 10x/25 micro
DX.6010-CM* SWF 10x/25 micro and cross
DX.6010-SG* SWF 10x/25 grid
DX.6010-SG* SWF 10x/25 grid
DX.6012* Wide field WF 12.5x/17.5
DX.6015* Wide field WF 15x/16
DX.6020* Wide field WF 20x/12
D
* optional

Digital solutions

LSA: Live stitching application*

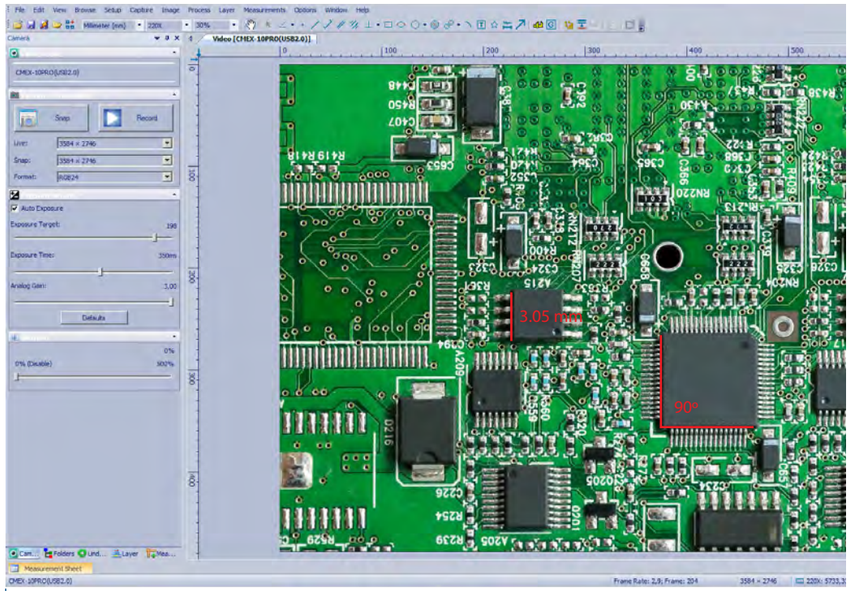
Instantly creates images of any large specimen by using the live stitching application. Simply move the specimen using the stage X/Y-controls. Smart algorithms integrated in ImageFocus combine the images to one large image. No need for automated slide scanning (see images on the right)



IDE: Instant Depth Extention*

The new Instant Depth Extension now allows both live and off-line increase of focal depth. This function stacks a number of images and combines those parts of the images which are in focus, thus creating an image that is fully in focus. Create all in-focus images live or combine images at a later time (see images on right page)

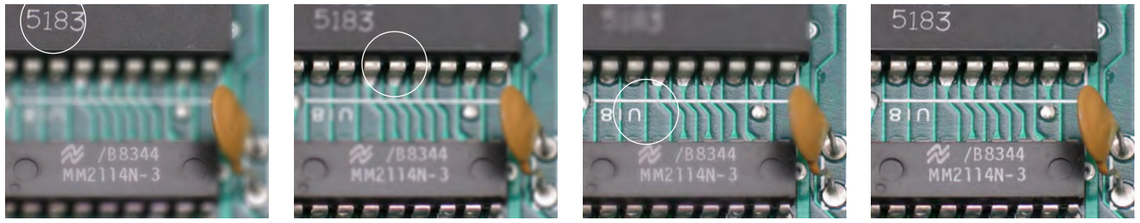
**For cameras using Imagefocus Alpha in USB Mode*



Calibrated measurements

(See image on the left) A vast variety of measurements can be done using the Euromex HD and USB-3 cameras. HD-cameras can be used as stand-alone quality control station without need for computer. Measure directly on any HD-screen. Use our high speed USB-3 cameras to connect to a computer and start using the wide array of functions offered by ImageFocus Alpha software. Generate quality control reports directly from ImageFocus Alpha, showing images and measurement data. Calibrations for all cameras can be done quickly and precisely after which they can be saved for future use

*IDE: Instant Depth Extention**

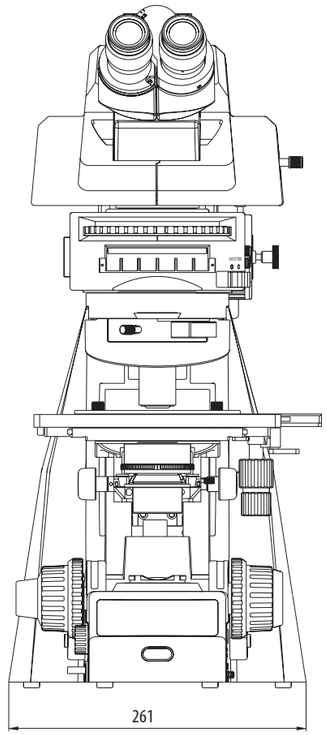


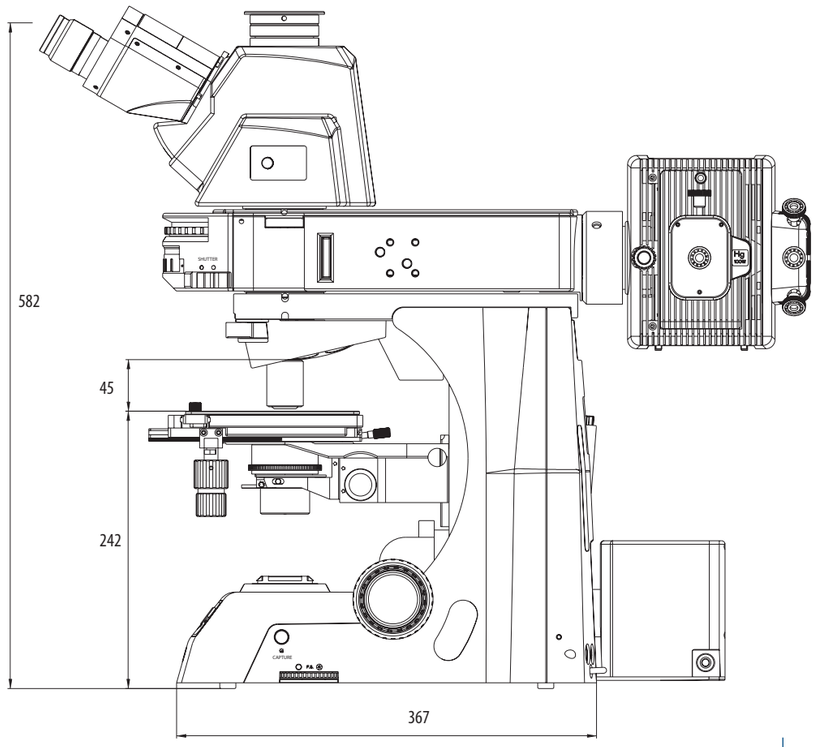
focus on the highest parts | *focus in the mid region* | *focus on the lowest parts* | *combined images*

MODELS	Fixed 30 degree Siedentopf head	Ergonomic tilting head	SWF 10x/25 mm eyepieces	Plan EIS 2x/0.06 objective*	Plan Semi-Apochromatic EIS 5x/0.15, 10x/0.30 and 20x/0.45 objectives*	Plan Apochromatic EIS 50x/0.80 objective*	Plan Apochromatic EIS 100x/0.90 objective*	100 W 12 V transmitted halogen Köhler illumination	100 W 12 V reflected halogen Köhler illumination	Differential interference Contrast (DIC)
DX.2053-PLMRi	•		•	o	•	•	o	•	•	o
DX.2058-PLMRi		•	•	o	•	•	o	•	•	o
DX.2053-PLMi	•		•	o	•	•	o		•	o
DX.2058-PLMi		•	•	o	•	•	o		•	o

** Infinity corrected*

o = optional





and spare parts



DX.6010 Super wide field SWF 10x/25 mm eyepiece for Ø 30 mm tube

DX.6010-C Super wide field SWF 10x/25 mm eyepiece with crosshairs for Ø 30 mm tube

DX.6010-M Super wide field SWF 10x/25 mm eyepiece with 10/100 micrometer for Ø 30 mm tube

DX.6010-CM Super wide field SWF 10x/25 mm eyepiece with 10/100 micrometer and crosshairs for Ø 30 mm tube

DX.6210 Super wide field SWF 10x/22 mm eyepiece for Ø 30 mm tube

DX.6210-C Super wide field SWF 10x/22 mm eyepiece with crosshairs for Ø 30 mm tube

DX.6210-M Super wide field SWF 10x/22 mm eyepiece with micrometer for Ø 30 mm tube

DX.6210-CM Super wide field SWF 10x/22 mm eyepiece with micrometer and crosshairs for Ø 30 mm tube

DX.6012 Wide field WF 12.5x/17.5 mm eyepiece for Ø 30 mm tube

DX.6015 Wide field WF 15x/16 mm eyepiece for Ø 30 mm tube

DX.6020 Wide field WF 20x/12 mm eyepiece for Ø 30 mm tube

DX.6099-L Eyeshade for eyepieces

Infinity corrected objectives

DX.8102 Infinity EIS 45 mm Plan PLMi 2x/0.06 objective. Working distance 7.5 mm *

DX.8105 Infinity EIS 45 mm Plan Semi- Apochromatic SAMi 5x/0.15 BD objective. Working distance 20 mm *

DX.8110 Infinity EIS 45 mm Plan Semi- Apochromatic SAMi 10x/0.30 BD objective. Working distance 11 mm *

DX.8120 Infinity EIS 45 mm Plan Semi- Apochromatic SAMi 20/0,45 BD objective. Working distance 3.1 mm *

DX.8150 Infinity EIS 45 mm Plan Apochromatic PLAMi 50x/0.80 BD objective. Working distance 1 mm *

DX.8100 Infinity EIS 45 mm Plan Apochromatic PLAMi 100x/0.90 BD objective. Working distance 1 mm *

**No cover glass correction, M26 thread*

Stage options

DX.9501-R Stage with Gorilla glass, hole and specimen holder. Right handed

DX.9501-L Stage with Gorilla glass, hole and specimen holder. Left handed

DX.9504-R Stage with Sapphire glass, hole and specimen holder. Right handed

DX.9504-L Stage with Sapphire glass, hole and specimen holder. Left handed

DX.9501-LG Option for left handed stage with Gorilla glass. Only with new Delphi-X Observer microscopes (DX.xx5x-xxx/LG)

DX.9504-RS Option for right handed stage with Sapphire glass. Only with new Delphi-X Observer microscopes (DX.xx5x-xxx/RS)

DX.9504-LS Option for left handed stage with Sapphire glass. Only with new Delphi-X Observer microscopes (DX.xx5x-xxx/LS)

Miscellaneous

DX.9696 DIC attachment for materials sciences Delphi-X Observer models

DX.9704 Yellow filter for lamphouse, diameter 45 mm

DX.9800 Photo port attachment with standard 23,2 mm tube

DX.9810 C-mount with 1 magnification for C-mount camera

DX.9835 C-mount with high resolution relay 0.35x objective for 1/3 inch C-mount camera

DX.9850 C-mount with high resolution relay 0.50x objective for 1/2 inch C-mount camera

DX.9863 C-mount with high resolution relay 0,63x objective for 2/3 inch C-mount camera

DX.9885 25.4 mm eye-level riser (1 inch)

DX.9887 40 mm nosepiece and stage lowering attachment

DX.9961 100 Watt 12V halogen bulb for Delphi-X Observer (revision 2 models)

AE.5216 Fuses 5A 250 V, per 10 pcs. models with 100 W halogen

AE.5130 Universal SLR-adapter with built-in 2x lens for standard 23.2 mm tube. Needs T2 adapter

AE.5025 T2 ring for Nikon D SLR-digital camera

AE.5040 T2 ring for Canon EOS SLR-digital camera

PB.5245 Lens cleaning paper, 100 sheets per pack

PB.5274 Iso propyl alcohol 99%, 200 ml

PB.5275 Cleaning kit: lens fluid, lint free lens tissue paper, brush, air blower, cotton swabs

PB.5276 Microscope maintenance and servicing kit, 16pcs: cleaning brush, 6 pcs screwdriver set, air blower, 3 pcs Allen key, 1.5, 2, 2.5 mm, lens cleaning fluid 20 ml, cleaning cloth 140 x 140 mm, 100 pcs Lens tissue sheets, tube of maintenance grease, 10 ml bottle of oil, packed in a nice toolbox

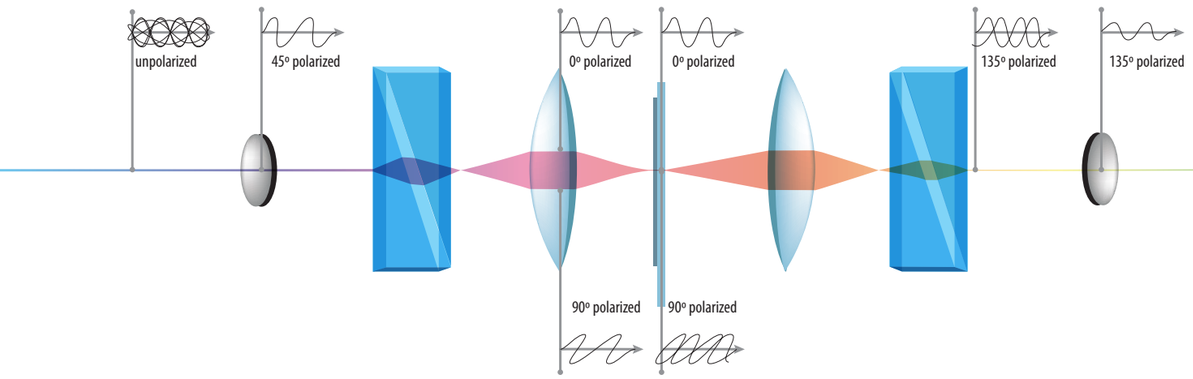
Differential interference contrast microscopy

DIC

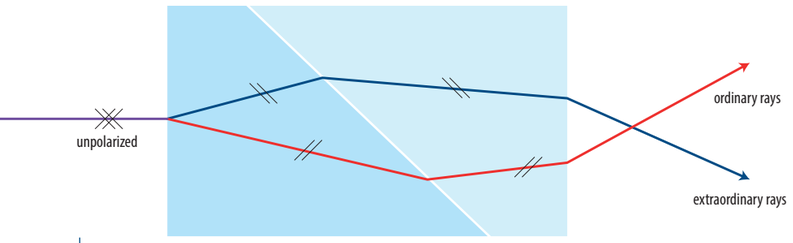
Differential interference contrast (DIC) technique helps in microscopy to enhance the contrast of samples

The technique is based on interferometry to obtain information about the small difference in optical path length between two orthogonally polarized light rays coming from the sample

This results in an image of the sample appearing as a three-dimensional physical relief. Polarized light is split into two orthogonally polarized coherent light by a so-called Nomarski-modified Wollaston prism and is then spatially shifted by the sample by a small amount that is normally similar to the resolution of the microscope



By passing a second Nomarski-modified Wollaston prism, the spatially shifted polarized light is recombined. These recombined light rays pass through a second polarization filter that blocks useless direct transmitted light. The interference of the two rays is sensitive to the optical path difference and by introducing an adjustable offset, the contrast is proportional to the path length so that the heights and depths of the sample appears as three-dimensional objects. Discontinuities on the surface, edges, lines and height differences on the sample create optical path differences that are turned into amplitude / intensity differences in the image, enhancing details in a topographically not correct way but enables imaging of otherwise invisible details



The Nomarski prism consists of two birefringent crystal wedges cemented together at the hypotenus. One wedge is a Wollaston wedge, the second wedge of the prism is modified by cutting the crystal so that the optical axis is oriented obliquely with respect to the flat surface of the prism



Delphi-X observer

euromex microscopes holland

EUROMEX MICROSCOPEN BV

is a leading manufacturer of microscopes and other optical instruments. Founded in 1966, Euromex has become a world-class supplier of biological and stereo microscopes

The corporate office is based in Duiven, The Netherlands. A facility with a 2,000 m^2 conditioned logistics warehouse, an opto-mechanical workshop, an R&D department and a high-level quality control department

Around the world, Euromex operates in more than 80 countries through distributors, resellers and agents. A wide variety of customers such as schools and educational institutes, clinical and research laboratories and a broad range of industrial customers are using Euromex microscopes

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ISO 9001 The Euromex Quality System is certified according to ISO 9001:2015 and supports our pursuit of continuous improvement and our on-going commitment to provide our world-wide customers assurance of product quality

LRQA CERTIFIED ISO 13485

ISO 13485 is the medical device industry's most widely used international standard for quality management. Issued by the International Organization for Standardization (ISO), the ISO 13485 standard is an effective solution to meet the comprehensive requirements for a quality management system in the medical device industry

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