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KRÜSS

Laboratory microscopes

High quality optics, precise mechanics - 5 years warranty

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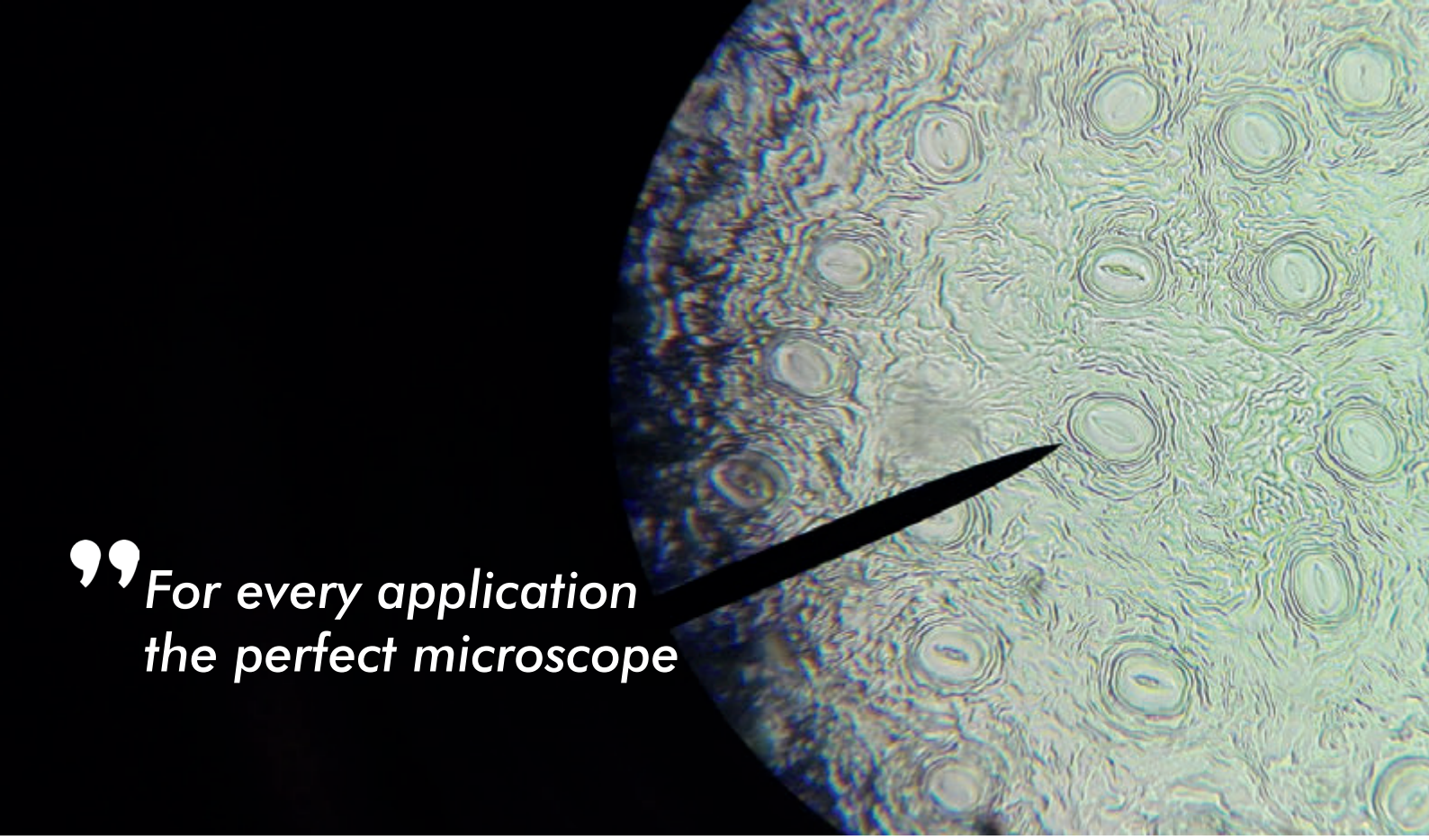

For every application the perfect microscope

OUR LAB MICROSCOPES

Optical microscopes are universally applicable measuring instruments for producing detailed and precise object and structural images of a wide spectrum of samples. The sample sizes are mostly below of the resolution of a human eye.

Laboratory microscopes are available in different versions. The monocular, binocular and trinocular microscopes are just a small small selection.

They can be used universally for teaching, research and training as well as in the fields of biology, histology, forensics or material testing.

Our laboratory microscopes are individually configurable. It is possible to connect a camera to a trinocular microscope. Other configurations, e.g. with special darkfield condensers, allow blood examinations according to Enderlein.

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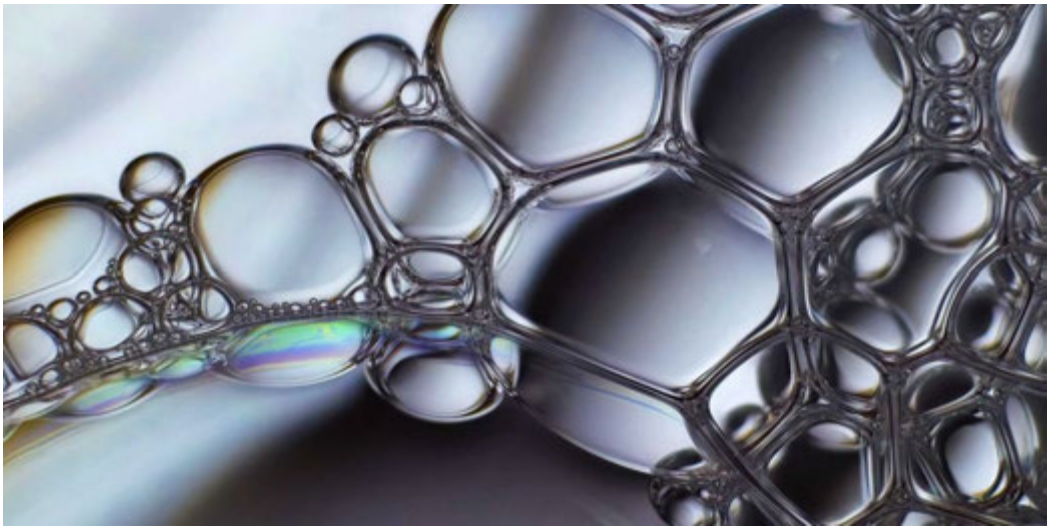

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We demonstrate our products for you on site or via video conference direct from our laboratory in Hamburg.
Online you can experience our devices live and speak directly with our experts.

☑ Arrange appointment

1 Monocular microscope MML1200

These practical microscopes are great for kids or newcomers. Common for simple laboratory applications, excursion and examination of low-light specimens. These microscopes are very convenient to use, because they usually have a minimum of adjusting screws, so that little can go wrong during use. The single tube is ideal for the eyesight of children, who often find it difficult to look into the microscope with two eyes. Monocular microscopes are small, lightweight and can be flexibly placed anywhere. Therefore, they are ideal for teaching and training in courses. They are also frequently used to make a preliminary selection of specimens that are later to be examined in more detail with high-quality laboratory microscopes.

Monocular microscope for lab and educational use

Basic features:

- 45° inclined viewing for ergonomic work
- 360° rotating optical head
- Sturdy metal tripod ensures high stability
- Coarse and fine adjustment facilitates precise working
- Integrated illumination
- Power supply 230 V, 50 Hz
- A wide range of accessories is available.

1.1 Basic technical data MML1200

MICROSCOPE	OPTICAL EQUIPMENT	OBJECTIVE	ILLUMINATION
MML1200 Objective Revolver: 3-fold	▪ 10x wide field eyepiece	▪ Achromatic ▪ 4x/NA 0.10 ▪ 10x/NA 0.25 ▪ 40x/NA 0.65	▪ 6 V 10 W with reflector brightfield Abbe condenser NA 1.25, with iris diaphragm and filter holder

1.2 Accessories for microscope MML1200

Order number	Item
MML1116	▪ Wide-field eyepiece 16x
MML1110	▪ Wide-field eyepiece 10X
MML1105	▪ Wide-field eyepiece 5X
MML1016	▪ Plane eyepiece 16X
MML1115	▪ Plane eyepiece 15X
MML1017	▪ Eyepiece with pointer 10X
MML1003	▪ Stage micrometer
MML1002	▪ Micrometer eyepiece 15X
MML1004	▪ Micrometer eyepiece 10X
MML1001	▪ Polarization feature
MML1005	▪ Mirror

2 MBL4000 series - Transmitted light trinocular microscope

The MBL4000 series devices are transmitted light microscopes designed for the examination of specimens/samples/objects on microscope slides. The microscopes belong to the class of compound microscopes. These microscopes are used for the magnification of objects in two stages, using objectives and an eyepiece. The devices are equipped with several plan-achromatic objectives with different magnifications from 4X - 100X. In combination with a 10X plan eyepiece pair, magnifications of up to 1000X are possible. The transmitted light illumination consists of a 5W LED with Köhler illumination. The microscopes in the MBL4000 series are all trinocular microscopes, which makes it easy to connect a microscope camera. The different models in the MBL4000 series ensures a wide range of applications: from bright-field microscopy to dark-field and phase contrast microscopy to fluorescence microscopy or blood analyses according to Enderlein. The MBL4000 series fluorescence microscopes are equipped with B & G filters.

Basic features:

- Microscopy with a magnification of up to 1000X
- Fully rotatable Siedentopf trinocular head with C-MOUNT and adjustable eye relief
- Wide field eyepiece pair with dioptre compensation
- Five infinity corrected plan-achromatic objectives
- Revolving nosepiece for five objectives with parfocal distance
- Mechanical stage with holding clamps and scale
- Coarse and fine drive
- Bright-field condenser, dark-field condenser available as option
- 100X objective with iris diaphragm and dark-field condenser for blood testing according to Enderlein available as an option
- Phase contrast device with corresponding objectives available as an option
- 5W LED Köhler illumination
- 3W LED epi-fluorescence unit (B/G) available as an option

Trinocular microscopes with Köhler illumination

MODEL	APPLICATIONS	SPECIAL MICROSCOPE COMPONENTS
MBL4000-T-LED	▪ Bright-field microscopy ▪ Use of microscope camera	▪ Optional dark-field condenser
MBL4000-T-PH-LED	▪ Bright-field microscopy ▪ Phase contrast microscopy ▪ Use of microscope camera	▪ Phase contrast device for 10X, 20X, 40X and 100X ▪ Optional dark-field condenser
MBL4000-T-F-LED	▪ Bright-field microscopy ▪ Fluorescence microscopy ▪ Use of microscope camera	▪ Fluorescence unit (B/G filter) ▪ Optional dark-field condenser
MBL4000-T-F-PH-LED	▪ Bright-field microscopy ▪ Phase contrast microscopy ▪ Fluorescence microscopy ▪ Use of microscope camera	▪ Phase contrast device for 10X, 20X, 40X and 100X ▪ Fluorescence unit (B/G filter) ▪ Optional dark-field condenser
MBL4000-T-B-LED	▪ Bright-field microscopy ▪ Dark-field microscopy according to Enderlein ▪ Use of microscope camera	▪ Plan achromatic 100X objective with iris diaphragm ▪ Dark-field condenser

2.1 Basic technical data MBL4000

DESIGNATION	KEY DATA
MICROSCOPE HEAD	▪ Siedentopf trinocular head, 30° angled, 360° rotatable, eye distance adjustment: 48 mm – 76 mm ▪ Beam splitter position 1: 100% for eyepieces ▪ Beam splitter position 2: 20% for eyepieces and 80% for third tube (camera connection with C-mount)
EYEPIECES	▪ WF10X/22 mm with dioptre compensation
REVOLVING NOSEPIECE	▪ 5-times ▪ Backwards facing
OBJECTIVE	▪ All objectives are infinity corrected with 0.17 mm cover glass correction ▪ 4X, NA 0.1, working distance 12.1 mm ▪ 10X, NA 0.25, working distance 4.64 mm ▪ 20X(S), NA 0.40, working distance 2.41 mm ▪ 40X, NA 0.65, working distance 0.65 mm ▪ 100X (S, oil), NA 1.25, working distance 0.12 mm ▪ Only for MBL4000-T-PH-LED & MBL4000-T-PH-F-LED: 10X/20X/40X/100X phase contrast objectives ▪ Only with MBL4000-T-B-LED: 100X (S, oil) with iris diaphragm, NA 1.25
MECHANICAL STAGE	▪ Mechanical stage (182 mm – 140 mm) ▪ With marker scale 0.1 mm graduation ▪ Range of motion: 77 mm x 52 mm
CONDENSER	▪ Double-lens ABBE condenser, NA 1.25, with centring for Köhler illumination, aperture diaphragm and height adjustment ▪ Only with MBL4000-T-B-LED: Dark-field condenser, NA 0.83 – 0.91
STAND	▪ Made of metal with coaxial coarse/fine drive in the range of 25 mm ▪ Accuracy of the fine drive: 2 µm
ILLUMINATION	▪ Köhler illumination ▪ 5W LED with field diaphragm and brightness control ▪ Recess for colour filter
FLUORESCENCE ILLUMINATION	▪ 3W LED epi-fluorescence (six-hole disc, B&G filter)
FLUORESCENCE FILTER	▪ Filter wheel for 6 positions, filters B & G installed (B for 470 nm, G for 500 nm – 550 nm)
PROTECTION TYPE	▪ IP20
DIMENSIONS (W X H X D)	▪ 230 mm x 420 mm x 390 mm (MBL4000-T-LED; MBL4000-T-PH-LED; MBL4000-T-B-LED) ▪ 230 mm x 490 mm x 530 mm & 150 mm x 80 mm x 220 mm (MBL4000-T-F-LED; MBL4000-T-F-PH-LED)
DEVICE WEIGHT	▪ 10 kg (MBL4000-T-LED; MBL4000-T-PH-LED; MBL4000-T-B-LED) ▪ 15 kg (MBL4000-T-F-LED; MBL4000-T-F-PH-LED)

2.2 Temperature data

DESIGNATION	KEY DATA
AMBIENT TEMPERATURE	▪ 0-40°C
AMBIENT HUMIDITY	▪ 10 - 90% (non-condensing)

2.3 Electrical data

DESIGNATION	KEY DATA
OPERATING VOLTAGE	▪ External mains adaptor: 100-240 V_{AC}, microscope: 5-12 V_{DC}
OPERATING VOLTAGE FLUORESCENCE	▪ External mains adaptor: 100-240 VAC, fluorescence unit: 5-12 VDC ⓘ (only with MBL4000-T-F-LED & MBL4000-T-PH-F-LED)
POWER CONSUMPTION	▪ 12 W (MBL4000-T-LED; MBL4000-T-PH-LED; MBL4000-T-B-LED) ▪ 36 W (MBL4000-T-F-LED; MBL4000-T-PH-F-LED)
RATED FREQUENCY	▪ 50/60 Hz

Different imaging techniques are available for examining different specimens.

	BRIGHT-FIELD	DARK-FIELD	PHASE CONTRAST
Principle of imaging	▪ Different levels of light absorption on different objects in the specimen	▪ Deflection of light on objects in the specimen	▪ Phase change when radiating through objects
Suitable for which samples	▪ High contrast samples ▪ Coloured samples ▪ Perfect for the “first look” at the sample	▪ Low contrast samples ▪ Non-coloured samples	▪ Very thin biological specimens ▪ Low contrast samples ▪ Non-coloured samples ▪ Living objects
Advantages	▪ Very easy ▪ Very fast ▪ Flat surface structures clearly visible ▪ Correct colour impression ▪ Components available in almost every optical microscope	▪ Simple ▪ Samples with low contrast in bright field or almost transparent samples can be observed very well ▪ Elevations on objects are easier to see than in bright-field	▪ Samples with low contrast in bright field or almost transparent samples can be observed very well with phase contrast ▪ Elevations on objects are easier to see than in bright-field ▪ Flat surface structures are clearly visible in contrast to dark-field
Disadvantages	▪ Low contrast in many samples, especially biological samples ▪ Almost transparent samples are barely visible ▪ Elevations on objects are difficult to recognise	▪ Not suitable for thick specimens ▪ Flat surface structures of objects are poorly or not at all recognisable ▪ Wrong colour impression ▪ Special condenser required ▪ High light intensity required, which can damage samples ▪ Contamination is very clearly visible	▪ Not suitable for thick and medium-thick specimens ▪ Complex adjustment of the phase contrast device on the microscope ▪ Special phase contrast device and phase contrast objectives required ▪ Phase contrast objectives lead to a loss of contrast, resolution and colour when used in bright-field

3 MBL2000 series - Transmitted light binocular microscope basic model

Robust and universally applicable, MBL2000 microscopes display the unmistakable classic design of all A.KRÜSS microscopes. The series comprises a binocular microscope (basic equipment) and microscopes with two eyepieces. It is thus possible to view the sample under examination with both eyes. The varied scope of application includes many tasks in the field of education at schools and universities, such as when biological studies are being conducted. In addition, the MBL 2000 is ideal in many areas of life science research. In particular, this includes studies on animals, plants, microorganisms and cell cultures, e.g. when investigating pathogens, cures or reactions to active substances. The MBL 2000 laboratory microscopes with phototube can be individually configured. It is possible, for example, to connect a camera to a trinocular microscope for image and film recording. With the aid of a special dark field condenser, the microscope also enables blood tests to be performed according to Enderlein.

Solid all-round microscope, universally applicable

Basic features:

- Dioptre compensation with compensation scale
- S turdy metal stand with graduated XY cross table enabling coaxial operation and height adjustment
- Coarse and fine focusing, double coaxial (0–200 µm, division 2 µm), coarse and fine focusing range: 30 mm
- Right-side coarse focusing knob with fast focus adjustment, left-sided knob with quick focus setting
- Low-voltage illumination with lighting control and removable pre-condenser
- Optional LED or halogen lighting
- Twin-lens Abbe condenser: NA 1.25, with iris diaphragm
- Swiveling filter holder
- Glass filters: blue, yellow, green

3.1 Basic technical data MBL2000

OPTICAL HEAD	OBJECTIVE REVOLVER	OBJECTIVE (MAGNIFICATION; NA, WORKING DISTANCE)	DIMENSIONS
▪ Inclined optical head ▪ Symmetrical eye distance adjustment (55 – 75 mm), ▪ Diopter compensation with scale	▪ Quadruple	▪ Achromatic ▪ 4x 0.10 NA 17.04 mm ▪ 10x 0.25 NA 8.05 mm ▪ 40x 0.65 NA 0.32 mm ▪ 100x 1.25 NA 0.13 mm	▪ Length: 23 cm ▪ Width: 19 cm ▪ Height: 40 cm

EYEPIECES	CONDENSOR	ILLUMINATION	MICROSCOPE STAGE
▪ 10x	▪ Double-lens ABBE condenser, NA 1.25, with iris diaphragm, with centering, height adjustment and swing-in filter holder	▪ Optional LED or halogen lamp (6 V 20 W) ▪ Cold light source for blood examination with brightness control	▪ With 0.1 mm increment memory scale, left-right range of movement 74 mm, forwards - backwards 30 mm.

STAND	OPERATING VOLTAGE	FURTHER EQUIPMENT
▪ Made of metal with coaxial coarse/fine knob with a range of 30 mm each. ▪ The right coarse adjustment knob comes with a mobility adjustment, the left coarse adjustment knob comes with a quick focusing adjustment	▪ Power source: 90-240 V. 50/60 Hz	▪ Glass filters in blue, yellow and green

3.2 Technical data MBL2000 models

Basic models

MICROSCOPE	SPECIAL FEATURE
MBL2000 	▪ Halogen lamp
MBL2000-LED 	▪ LED illumination

MBL2000 basic models can be upgraded with a variety of components.

Upgrades are indicated by additions to the model designations, e.g. MBL2000-T-PL-PH or MBL2000-LED-T-PL-PH.

Opportunities for further enhancement

MBL2000-T	MBL2000-PL	MBL2000-PL-PH
		
MBL2000-T-PL	**MBL2000-T-PL-PH**	
		

- T = Trinocular / phototube[1] tube for the connection of photo and video cameras.
  - ➡ [1] Microscope cameras sold separately
- PL = Planachromatic objectives
- PH = Phase contrast feature[2] for 10x, 40x and 100x and additional dark field condenser

➡ [2] 20x or 40x phase contrast features are available separately. Microscopes with the -PH need no special phase contrast features

3.3 Accessories for microscopes MBL2000 series

Order number	Item
MML1116	▪ Wide field eyepiece 16x
MML1110	▪ Wide field eyepiece 10x
MML1105	▪ Wide field eyepiece 5x
MML1016	▪ Planocular eyepiece 16x
MML1115	▪ Planocular eyepiece 15x
MML1017	▪ Pointer eyepiece 10x
MML1003	▪ Object micrometer
MML1002	▪ Micrometer eyepiece 15x
MML1004	▪ Micrometer eyepiece 10x
MML2051	▪ Polarization device
MML2010	▪ Achromatic objective 4x
MML2011	▪ Achromatic objective 10x
MML2012	▪ Achromatic objective 20x
MML2014	▪ Achromatic objective 40x
MML2013	▪ Achromatic objective 60x
MML2017	▪ Achromatic objective 63x
MML2015	▪ Achromatic objective 100x
MML2020	▪ Planachromatic objective 4x
MML2021	▪ Planachromatic objective 10x
MML2022	▪ Planachromatic objective 20x
MML2024	▪ Planachromatic objective 40x
MML2027	▪ Planachromatic objective 63x
MML2025	▪ Planachromatic objective 100x
MML2028	▪ Planachromatic objective 100x with iris diaphragm
MML2030	▪ Large phase contrast feature
MML2032	▪ 20x phase contrast feature
MML2031	▪ 40x phase contrast feature
MML2052	▪ Dark field condenser
MML2053	▪ Dark field condenser for blood MBL2000-T-B and MBL2000-T-B-PL

4 Inverted microscope MBL3200 with trinocular tube

This inverted microscope was specially designed for the identification and analysis of biological substances and cultures. It is used, for example, in control laboratories for drug production, food production and waste water analysis. Ideal, too, for examining living cells in petri dishes or culture chambers. The objectives of the MBL 3200 have a large working distance thus enabling samples to be viewed through the bottom of petri plates or the examination of sediments. Via the photo and C-mount video adapter, it is possible to connect SLR, microscope or video cameras.

Inverted microscope for cell examination

Basic features:

- Large working distance
- Observation in larger containers possible, e.g. cell culture dishes
- Living cells in cell culture dishes or other, larger containers can be analyzed
- Suitable for documentation purposes, via connection for photo and video camera

4.1 Basic technical data MBL3200 model

OPTICAL HEAD	OBJECTIVE REVOLVER	OBJECTIVE (MAGNIFICATION; NA, WORKING DISTANCE)
▪ Inclined optical head, ▪ Symmetrical eye distance adjustment (55 – 75 mm), ▪ Diopter compensation with scale. ▪ Photo tube	▪ 5-fold	▪ Planachromatic ▪ 4x/NA 0.10 // Ø: 5.5 mm ▪ 10x/NA 0.25 // Ø: 2.2 mm ▪ 40x/NA 0.65 // Ø: 0.55 mm ▪ PH20x/NA 0.45 // Ø: 1.1 mm

EYEPIECES	CONDENSOR	ILLUMINATION	XY ACROSS TABLE
▪ 10x plane eyepiece ▪ Visual field number: 22	▪ Dual lens condenser	▪ 6 V 30 W, adjustable	▪ Range of movement: 118 x 80mm

STAND	OPERATING VOLTAGE	FURTHER EQUIPMENT
▪ Made of metal with coaxial coarse/fine drive	▪ 90–240 V	▪ Iris diaphragm ▪ Filter holder, blue filter, green filter ▪ Third tube for connecting photo and video cameras ▪ Phase contrast device for 20x

4.2 Accessories for microscope MBL3200 model

Order number	Item
MBL3220	▪ Planachromatic objective 20x/NA 0.45 objective
MBL3260	▪ Planachromatic objective 60x/NA 0.85 objective
MBL3240	▪ Phase contrast device for 40x

5 MBL3300 - Metallurgical incident light-microscope

The MBL3300 is specially designed for the analysis of metallic materials and surfaces. Thanks to the integrated incident light illumination, it is suitable for quality determination and for checking metal structures. Using different filters, the microscopy image can be adjusted to individual needs. The MBL3000 is equipped with a photo tube for connection to a microscope, photo or video camera.

Basic features:

- Incident light illumination
- Various filter options
- Connection possibility for microscope, photo or video camera
- Wide range of accessories

Specialist for the examination of metallic materials

5.1 Basic technical data MBL3300 model

OPTICAL HEAD	OBJECTIVE REVOLVER	OBJECTIVE (MAGNIFICATION; NA, WORKING DISTANCE)
▪ Inclined optical head, ▪ Symmetrical eye distance adjustment (55 – 75 mm), ▪ Diopter compensation with scale ▪ Photo tube	▪ 3-fold	▪ Planachromatic ▪ 5x/NA 0.10, object field Ø: 3.6 mm ▪ 10x/NA 0.25, object field Ø: 1.8 mm ▪ 50x/NA 0.65, object field Ø: 0.36 mm

EYEPIECES	CONDENSOR	ILLUMINATION	XY ACROSS TABLE
▪ 10x plane eyepiece ▪ Visual field number: 18	▪ Double-lens ABBE condenser, NA 1.25, with centring and height adjustment	▪ Incident light ▪ 6V 30W adjustable	▪ Range of movement: 120x80 mm

STAND	OPERATING VOLTAGE	FURTHER EQUIPMENT
▪ Consisting of metal with a coaxial coarse/fine drive (30 mm each). With smoothness adjustment and quick focus device	▪ 90–240 V	▪ Iris diaphragm ▪ Filter holder ▪ Blue filter ▪ Green filter (optional)

5.2 Accessories for microscope MBL3300 model

Order number	Item
MBL3320	▪ Planachromatic objective 20x/NA 0.45
MBL3360	▪ Planachromatic objective 60x/NA 0.85
MMB2314	▪ Polarisation device
MMB2310	▪ Yellow filter
MMB2311	▪ Green filter
MMB2312	▪ Neutral density filter

6 MSL4000 series

The stereo microscopes of the MSL4000 series offer optimal value for money. Thanks to the wide range of accessories and different eyepieces, they are suitable for a wide range of applications. All microscopes have a 45° inclined view, interpupillary distance adjustment and dioptric compensation. The metal housing is stable and durable. To allow you the option of working anywhere without dependence on any external power supply, the MSL microscopes have a battery providing a user-friendly 25 hours of power.

Basic features:

- Increased working distance
- Incident and transmitted light (depending on equipment)
- Diopter range adjustable on either eyepiece
- A wide range of accessories is available for all models.
- Integrated battery

Stereo microscope for standard examinations

6.1 Basic technical data MSL4000 series

MICROSCOPE	OPTICAL EQUIPMENT	OBJECTIVE	ILLUMINATION
MSL4000-10/30-IL-TL	▪ 10x Wide field eyepieces	▪ 1x and 3x Objective	▪ LED incident and transmitted light
MSL4000-20/40-IL-TL	▪ 10x Wide field eyepieces	▪ 2x and 4x Objective	▪ LED- Incident and transmitted light

6.2 Accessories for microscopes MSL4000 series

Order number	Item
MSL4331	▪ Pair of wide field eyepieces 15x
MSL4332	▪ Pair of wide field eyepieces 20x
MSL4333	▪ Pair of wide field eyepieces 10x
MSL4334	▪ Pair of eyepieces 5x
MSZ5419	▪ Dark field

7 MSZ5000 series

A sturdy zoom stereo microscope for the professional examination of electronic, precision mechanical, plastic and medical products. An excellent quality control instrument for inspection, assembly, analysis, and fine machining, it can also be used during soldering and polishing. The large zoom range, long working distance and broad depth of field enable work in many areas to be carried out with maximum comfort. Continuously variable magnification with 7– 45x total zoom is possible. The rugged metal housing ensures that tasks are performed accurately and reliably, even in harsh environments. Accessories available: various eyepieces and auxiliary lenses to modify the magnification and working distances.

Stereo microscope for advanced examinations

Basic features:

- Increased working distance
- Incident and transmitted light (depending on configuration)
- Available with LED illumination
- Zoom feature for continuous magnification settings from 7 to 45x
- Optional auxiliary lenses available for maximum magnification adjustment
- Connection possibility for microscope , photo or video camera
- Wide range of accessories

7.1 Basic technical data MSZ5000 series

MICROSCOPE	OPTICAL EQUIPMENT	EQUIPMENT
MSZ5000	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	
MSZ5000-T	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ Photo tube for the connection of photo and video cameras
MSZ5000-RL	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ Incident light (LED ring lamp)
MSZ5000-T-RL	▪ 10x wide field eyepieces ▪ 0.7–4.5x zoom objective ▪ 7–45x total magnification	▪ Incident light (LED ring lamp)) ▪ Photo tube for the connection of photo and video cameras
MSZ5000-S	▪ 10x wide field eyepieces ▪ 0.7–4.5x zoom objective ▪ 7–45x total magnification	▪ Large swiveling stand

7.2 Basic technical data MSZ5000 series

MICROSCOPE	OPTICAL EQUIPMENT	EQUIPMENT
MSZ5000-T-S	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ Photo tube for the connection of photo and video cameras ▪ Large swiveling stand
MSZ5000-S-RL	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ Incident light (LED ring lamp) ▪ Large swiveling stand
MSZ5000-T-S-RL	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ Incident light ▪ Photo tube for the connection of photo and video cameras ▪ Large swiveling stand
MSZ5000-IL-TL	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ 12 V 15 W incident and transmitted light (halogen) infinitely variable
MSZ5000-IL-TL-LED	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ Incident and transmitted light (LED) infinitely variable
MSZ5000-T-IL-TL	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ 12 V 15 W incident and transmitted light (halogen) infinitely variable ▪ Photo tube for the connection of photo and video cameras
MSZ5000-T-IL-TL-LED	▪ 10x wide field eyepieces ▪ 0.7-4.5x zoom objective ▪ 7-45x total magnification	▪ Incident and transmitted light (LED) infinitely variable ▪ Photo tube for the connection of photo and video cameras

7.3 Accessories for microscopes MSZ5000 series

Order number	Item
MSZ5419	▪ Darkfield
MSZ5405-N	▪ Auxiliary lens 0.5x
MSZ5418-N	▪ Auxiliary lens 2x
MSZ5019-N	▪ Halogen lamp for incident light, 12V 10W
MSZ5010-N	▪ Eyepiece 10x
MSZ5008-N	▪ Halogen lamp for transmitted light, 12 V 10 W
MSZ5415	▪ Object micrometer
MSZ5416-N	▪ Micrometer eyepiece 10x
MSZ5417-N	▪ Micrometer eyepiece 20x
MSZ5420-N	▪ Pair of eyepieces 20x
MSZ5020-N	▪ Incident light illumination
MSZ5050	▪ Large swiveling stand
LDR72	▪ LED daylight ring lamp

8 Microscope illumination

Illumination is indispensable for observing objects. In simple terms, there are two types of illumination: transmitted light illumination and incident light illumination.

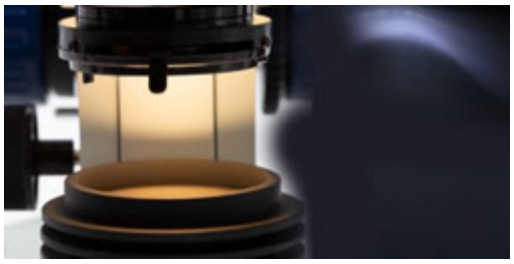
In transmitted light illumination, the light source and observation optics are located on different sides of the object. As a result, the light passes through the object or specimen.

With incident light illumination, the object is illuminated from the side on which the observation optics are also located. This allows examination of objects that are not translucent.

Light sources

A wide variety of light sources are used for microscopy. Usually, halogen lamps or LEDs are used. In simple microscopes, ambient light can also be focused by means of a mirror. Freely positionable illumination, such as ring lights or cold light sources, can provide additional illumination from the side.

8.1 Halogen lamp

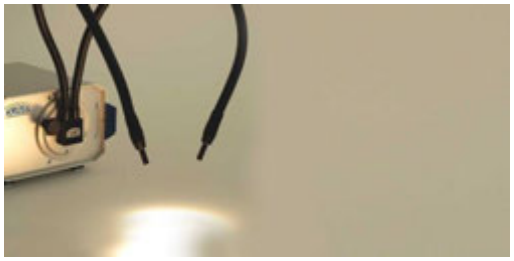


A halogen lamp is a light source that is often used for transmitted light microscopy. Depending on the power, this is inexpensive and offers a high luminous efficacy. A dimmer can be used to adjust the light intensity to suit the objective. For most applications, halogen illumination is suitable.

8.2 LED illumination

A frequently used light source for transmitted light microscopy is a halogen lamp. This is economical and offers a high luminous efficacy regardless of power. A dimmer can be used to adjust the light intensity to match with the objective. Halogen illumination is sufficient for most applications.

8.3 Goosenecks illumination



The illumination by means of movable goosenecks is used to illuminate the spots of an object with pinpoint accuracy. By using two-armed gooseneck illuminators, shadows can be avoided and the area is illuminated evenly. Another advantage, due to the free positioning of the goosenecks, illumination is possible at all angles. Usually, the light source is a halogen lamp, whereby practically no infrared radiation is transmitted through the light conduction. For this reason, this light source is called a cold light source and is particularly suitable for heat-sensitive objects or specimens.

Detailed in-depth and high-resolution image capture

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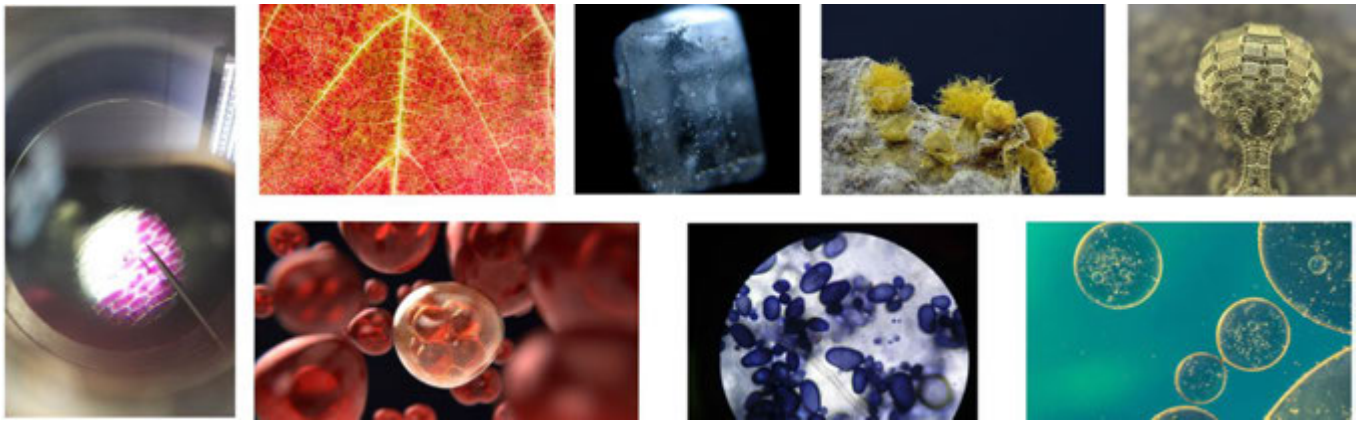

Take a look and discover devices directly. We are only one click away!

We demonstrate our products for you on site or via video conference direct from our laboratory in Hamburg. Online you can experience our devices live and speak to our experts in person.

☑ Arrange appointment

9 Microscope camera Pulse5

Thanks to the standardized USB 3.0 interface, including USB3 Vision Standard, and to the C-mount thread, the Pulse5 microscope camera can be connected to all commercially available microscopes, macroscopes, endoscopes and objectives. The Pulse5 also offers backward compatibility to USB 2.0, and intuitive software swiftly ensures optimal camera control and image capture. Image processing and analysis of the highest quality are thus ensured.

Basic features:

- 5.0 megapixel camera with 1/2 " CMOS sensor
- 2592 x 1944 pixels resolution
- Connection via USB 3.0 or USB 2.0 possible
- Camera adapter with C-mount thread
- Live image, image recording and video function
- Inclusive Basler microscopy software
- The set includes the C-mount adapter

Create microscope photos easily and with optimal quality.
Ideal for documentation and image processing

10 Microscope camera Ace12

The Ace12 microscope camera enables high-resolution observations and measurements in the live image. Equipped with a 1/1.7" CMOS sensor and 12 megapixels, it displays images with high accuracy in the included PC software. In addition, with the appropriate software, it is well suited for the measurement of the microscopic areas and for saving images and videos. Thanks to the standardized USB 3.0 interface, inclusive USB3 Vision Standard, and to the C-mount thread, this microscope camera can be connected to all commercially available microscopes, macroscopes, endoscopes and lenses.

Basic features:

- Resolution of 4024 x 3036 pixels
- 12.2 megapixel camera with 1 / 1.7 “CMOS sensor
- USB 3.0 interface
- Camera adapter with C-mount thread
- Live image, image recording and video function
- Inclusive Basler microscopy software
- The set includes the C-mount adapter

The camera can be easily connected to almost all commercially available microscopes.

10.1 Basler Microscopy Software

This software is the ideal solution for monitoring, documentation and archiving in the fields of education and research, industry and the operation of technical facilities. Many advanced software features ensure that even more demanding microscopy applications in life science, materials science and biomedical or industrial research can be easily performed with camera and software. Single shots and videos are possible, as well as time-lapse recordings, all of which are important for fast moving objects such as biological samples.

Areas of application:

- Live image, image recording and video function
- Adjustment of hue, saturation, brightness, contrast, gamma and gain
- Calibration, measurement and annotations
- Compensation of lighting conditions by focus enhancement and automatic/manual exposure
- Support of zoom levels for sstereo microscopes
- High-speed videos for slow-motion evaluation

Software for Basler cameras Ace12 and Pulse5

11 Microscope camera MKTV8 - Microscopy on the monitor

Regardless of whether a monitor, television, projector, tablet or smartphone is being used, the HDMI and WiFi interfaces of the MKTV8 microscope camera ensure that images are easily and safely transmitted to the desired display. The software integrated on the camera and a connectable USB mouse offer the option of editing the live image. It is also possible to create image and video files and save them directly on an SD card. A PC is not necessary for any of this.
The camera can be connected to a PC using the PC software included in the delivery package, or to a smartphone or tablet using the app. Thanks to the standardized USB 2.0 Hi-Speed interface and the C-mount thread, the MKTV8 microscope camera can be connected to all commercially available microscopes, macroscopes, endoscopes and lenses.

High-quality camera which easily produces perfect microscope photos

Basic features:

- 8.0 megapixel camera with 1 / 1.8 "CMOS sensor
- Resolution of 2592 x 1944 pixels
- USB 3.0 interface for PC (cable included)
- HDMI interface (HDMI cable included)
- USB interface for USB mouse or WiFi adapter (both included)
- Live image, image recording and video function
- Integrated software & additional PC software
- Storage of image and video files on SD card, included
- The set includes the C-mount adapter

11.1 MKTV-display - Microscopy on the monitor

With the MKTV display, we also offer a full HD display that can be connected and attached to the MKTV camera. Accordingly, the display can be mounted directly on the camera, thus saving space.

Full HD display for connection to the MKTV camera

Basic features:

- 11.8 " 1080p IPS LC display
- Resolution of 1920 x 1080 pixels
- HDMI interface for connection to MKTV camera

Areas of application:

- Live image of a connected video source via HDMI
- High-speed digital visualization of the microscope image
- Stand for a flexible or stand-alone use

12 Connecting of digital cameras

We offer various adapters enabling the connection of digital cameras to the microscopes. The universal camera mount UH80 is mounted directly in the phototube of the microscope in combination with a wide-field eyepiece.
Via the adapter UH80 with its 1/4" UNC thread, any digital compact camera can be connected with the appropriate tripod thread.
When connecting digital cameras with a T2 connection, the T2 photo adapter can be used. This is mounted directly in the phototube and includes the matching eyepiece optics.

Digital cameras can be connected directly via suitable adapters.

Basic function:

- Possibility to connect digital cameras
- Can be mounted directly in the phototube of the microscope
- A combination of UH80 and 5x widefield eyepiece (MML1105) for compact camera connection
- Connection to UH80 via 1/4" UNC thread (tripod thread)
- Photo adapter T2 (MML2042) for connecting digital cameras with a T2 connection

12.1 Accessories for connecting digital cameras

Order number	Item
UH80	▪ Universal Camera Mount
MML1105	▪ Widefield Eyepiece 5x
CANON	▪ Canon digital camera
MML2042	▪ Photo adapter T2

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A.KRÜSS Optronic GmbH
Alsterdorfer Straße 276–278
22297 Hamburg | Germany

Tel. +49 40 514317-0
Fax +49 40 514317-60

E-Mail info@kruess.com
Web www.kruess.com

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