

## KRÜSS: Providing you with insight **Microscopes**

- MML series
- MBL2000 series
- MBL3000 series
- MBL3200
- MBL3300
- MBL3400
- MSL4000 series
- MSZ5000 series
- KSW4000 series
- KSW5000 series
- Accessories



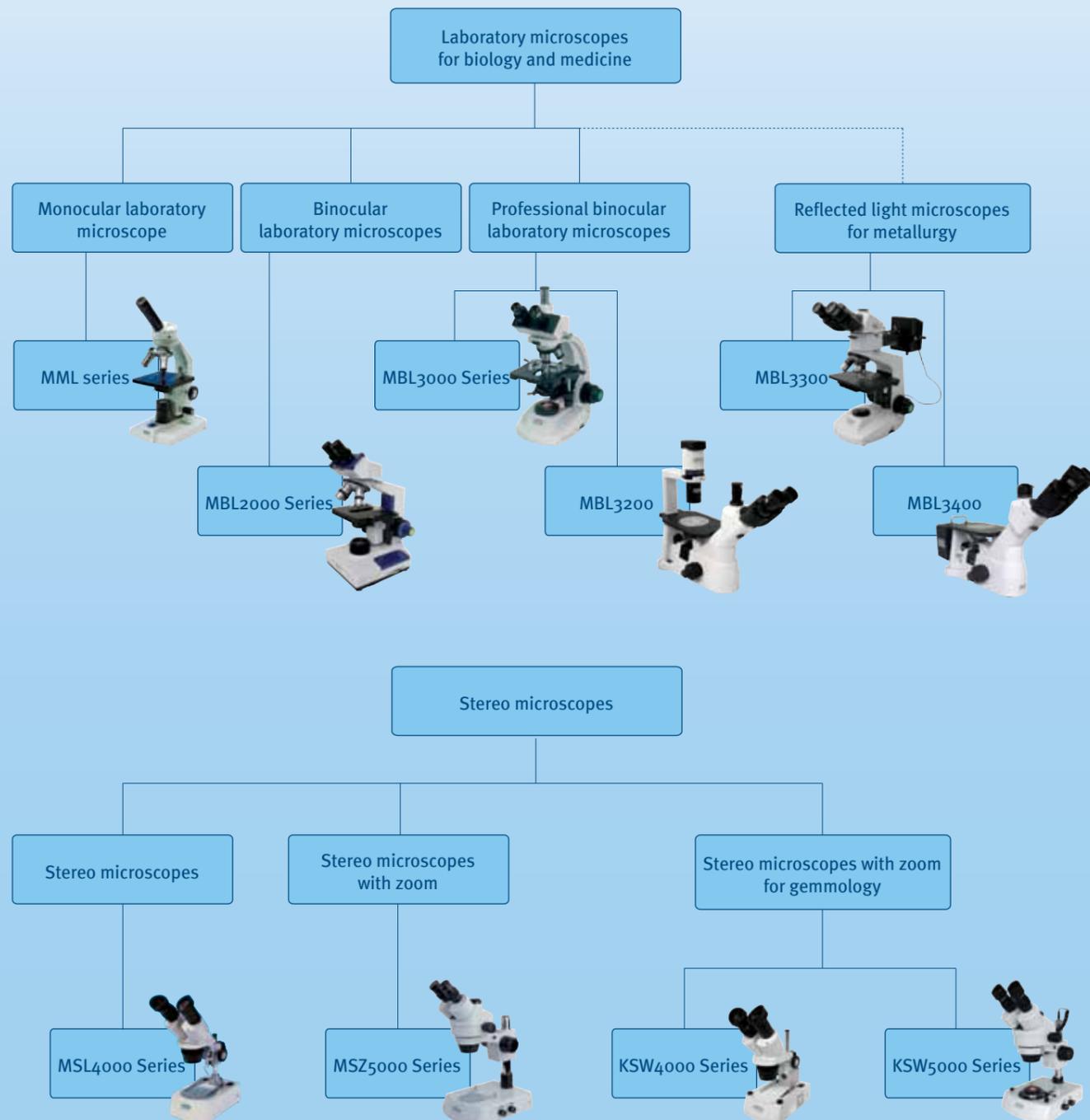
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# KRÜSS Microscopes

As a company with a long-standing tradition, KRÜSS has set the goal for itself of offering top quality and an excellent value for money. We build instruments providing the performance and reliability buyers can depend on in the long run. The solid weight of the microscopes ensures stability even in harsh environments and the long-lasting precision engineering ensures quality work in the laboratory for many years to come. Take advantage of over 200 years of tradition and experience. The **3-year warranty** on the housing, optics and mechanics shows that KRÜSS truly believes in the products it makes!

Customer satisfaction is our top priority, which is why our developers and production staff are more than happy to make special customer requests a reality. All microscopes can be upgraded or converted, thus giving you the best quality at a good price. KRÜSS: microscopes you can depend on!



# Overview: KRÜSS Microscopes

## Laboratory microscopes

### MML series:

- MML1200
- MML1300
- MML1400
- MML1500

### MBL2000 series:

- MBL2000
- MBL2000-T
- MBL2000-30W
- MBL2000-T-30W
- MBL2000-PL
- MBL2000-T-PL
- MBL2000-PL-PH
- MBL2000-T-PL-PH
- MBL2000-PL-30W
- MBL2000-T-PL-30W
- MBL2000-PL-PW-30W
- MBL2000-T-PL-PH-30W
- MBL2000-B
- MBL2000-T-B
- MBL2000-PL-B
- MBL2000-T-PL-B

### MBL3000 series:

- MBL3000-PL
- MBL3000-T-PL
- MBL3000-PL-30W
- MBL3000-T-PL-30W
- MBL3000-PL-PH40-63
- MBL3000-T-PL-PH40-63
- MBL3000-PL-PH
- MBL3000-T-PL-PH
- MBL3000-PL-PH-30W
- MBL3000-T-PL-PH-30W
- MBL3000-PL-I
- MBL3000-T-PL-I
- MBL3200 (inverted, biological)
- MBL3300 (metallurgical)
- MBL3400 (inverted metallurgical)

## Stereo microscopes

### MSL4000 series

- MSL4000-10/30-IL-TL
- MSL4000-10/30-IL-S
- MSL4000-10/30-S
- MSL4000-20/40-IL-TL
- MSL4000-20/40-IL-S
- MSL4000-20/40-S

### MSZ5000 series

- MSZ5000
- MSZ5000-T
- MSZ5000-RL
- MSZ5000-T-RL
- MSZ5000-S
- MSZ5000-T-S
- MSZ5000-S-RL
- MSZ5000-T-S-RL
- MSZ5000-IL-TL
- MSZ5000-T-IL-TL

### KSW4000 series:

- KSW4000
- KSW4000-K
- KSW4000-K-W

### KSW5000 series:

- KSW5000
- KSW5000-T
- KSW5000-T-K-W

### Key microscope features:

T	Trinocular/phototube
PL	Planachromatic objectives
PH	Phase contrast feature
PH40	40x phase contrast feature
30 W	30 Watt illumination
63	63x objective
B	Blood test setup
10/30	10x/30x magnification
20/40	20x/40x magnification
IL	Incident light
TL	Transmitted light
S	Swivelling arm/stand
RL	Ring light
I	Infinity System
K	Cold light source
W	Horizontal construction

On request, we are of course happy to build a microscope customised to meet your specific needs.

The microscope was invented around 1600 in the Netherlands and has undergone continuous development ever since. With the advent of electron microscopes, light microscopes have been declared dead numerous times. Yet these predictions have proven overly hasty. Just as before, biologists and physicians appreciate the easy-to-use light microscopes thanks to their natural images and the ability to observe living tissue.

Composite light microscopes consist of two lens systems: one eyepiece toward the eye and one toward the object-side objective. The objectives are the most important and valuable part of the microscope, because their quality is critical for determining the overall performance of the microscope.

Achromatic objectives consist of compound lenses made of different materials. This makes it possible to correct longitudinal chromatic aberration for two colours, i.e. the varying focal points of several different wavelengths.

Apochromatic objectives are corrected for three colours and the deviation of the image location for the intermediate colours is very small. Objectives that are used to correct the curvature of the image field are referred to as plane objectives. The eyepiece acts as a magnifying glass and magnifies the intermediate image of the objective.

Wide-field eyepieces have a larger field-of-vision number than normal eyepieces. The field-of-vision number is the diameter of the object field in mm multiplied by the magnification factor of the objective: an eyepiece with a field-of-vision of 18 mm with a 4x objective yields an object field with 4.5 cm. Plane eyepieces smooth out the image field similar to the plane objectives.

Modern light microscopes are basically categorised as monocular, binocular or stereo microscopes depending on the number of eyepieces and objectives. Monocular microscopes have one eyepiece and one objective and are the most simple type of microscopes. Binocular microscopes have two eyepieces and one objective.

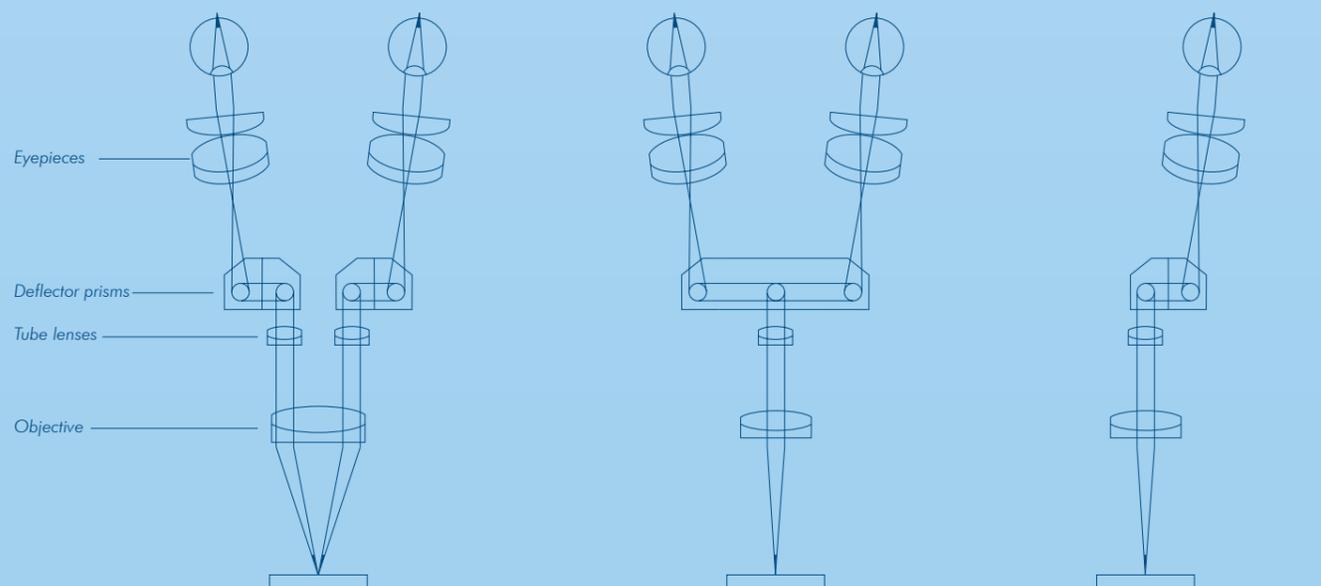
They provide for fatigue-free working as microscopes with one eyepiece. However, they do not allow for three-dimensional viewing of the object. Stereo microscopes have two eyepieces and two objectives, which can, however, be combined to form a main objective and thus project a separate image of the object in each eye. This allows objects to be viewed three dimensionally.

In biology and medicine, the object is usually illuminated with transmitted light before the light passes through the objective. This is referred to as transmitted light microscopy. In incident light microscopy, the light is cast from above onto the object and is reflected back into the objective. Incident light microscopy is used for the microscopic examination of opaque objects.

The Köhler illumination makes it possible to illuminate precisely the object area that can be overlooked. This prevents unnecessary stray light from illuminated parts of the object that are not in the field of view.

Dark-field microscopy is used to examine objects that are particularly lacking in contrast such as micro-organisms or red blood cells. The dark field feature directs the light at an oblique angle through the object, past the objective. The light that is refracted from the object hits the objective where a bright image is then produced against a dark background. This makes it possible to see outlines of objects that are normally mostly transparent.

Phase-contrast microscopy was developed for the microscopy of particularly transparent objects. Transparent objects are, for the most part, optically denser than the surrounding medium and therefore create more resistance to the light. The light is therefore slowed down, which results in a phase shift when it exits the object again. This phase shift is used to create a brightness contrast. This also requires a ring aperture in the condenser and a phase ring in the objective which must be calibrated to each other.



Beam path in the stereo microscope

Beam path in the binocular microscope

Beam path in the monocular microscope

## A strong start

### MML monocular - compact and inexpensive

Monocular microscopes are ideal for many applications in the laboratory, teaching and production. All models have 45° inclined viewing and 360° rotating optical head. The sturdy metal tripod ensures high stability and the option to choose between coarse and fine adjustment facilitates precise working. The microscopes are equipped with integrated illumination.

Power supply: 230 V (115 V optional).  
A wide range of accessories is available for all models.



MML1200



MML1500

	Optical equipment	Illumination	Special features:	Application
MML1200	10x plane eyepiece Objectives (achromatic) 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65	6 V 10 W brightfield Abbe condenser		Schools Training Simple laboratory applications
MML1300	10x plane eyepiece Objectives (achromatic) 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65	6 V 10 W brightfield Abbe condenser, adjustable	Adjustable illumination	Schools Training Simple laboratory applications
MML1400	10x plane eyepiece Objectives (achromatic) 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 10 W brightfield Abbe condenser, adjustable	Adjustable illumination 4x objective turret	Schools Training Simple laboratory applications
MML1500	10x plane eyepiece Objectives (achromatic) 4x/NA 0.10 10x/NA 0.25 40x/NA 0.67 100x/NA 1.25 oil	6 V 20 W brightfield Abbe condenser, adjustable	Adjustable illumination 4x objective turret XY cross table	Schools Training Simple laboratory applications

## MBL2000 Series

### The robust all-rounder

#### MBL2000 - The laboratory microscope for all applications

Robust and universal. This model is ideal for general microscopy in laboratories, schools and universities. The MBL2000 offers an extensive range of add-on options: for example, with phase-contrast setting, a dark-field condenser, micrometre setup, planachromatic objectives and additional eyepieces. A binocular optical head offers inclined viewing and interocular adjustment. A wide range of accessories is available for all models.

- Dioptre compensation with compensation scale
- Sturdy metal stand
- Coarse and fine focussing, double coaxial (0 - 200  $\mu\text{m}$ , division 2  $\mu\text{m}$ )  
Coarse focussing range: 30 mm,  
Fine focussing range: 30 mm
- Right-side coarse focussing knob with fast focus adjustment, left-sided knob with quick-focus setting
- Graduated XY cross table with coaxial operation
- Low-voltage illumination with lighting control and removable pre-condenser
- Twin-lens Abbe condenser: NA 1.25
- Iris diaphragm
- Pivoting filter holder
- Height adjustment
- Glass filters: blue, yellow, green
- Power supply: 230 V (115 V optional)



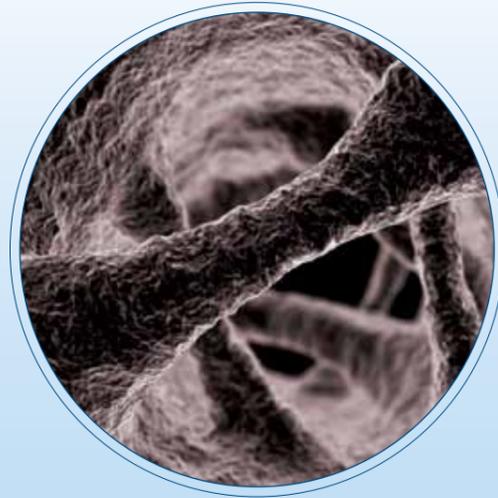
T Trinocular/phototube  
 PL Planachromatic objectives  
 PH Phase contrast feature  
 B Blood test setup  
 30 W 30 Watt illumination

	Optical equipment	Illumination	Special features:	Application
<b>MBL2000 (Basic model)</b>	10x plane eyepiece Lenses: 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 20 W adjustable Bright field Abbe condenser		Research Diagnostics Quality control
<b>MBL2000-T</b>	10x plane eyepiece Lenses: 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 20 W adjustable Bright field Abbe condenser	Phototube	Research Diagnostics Quality control
<b>MBL2000-30W</b>	10x plane eyepiece Lenses: 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 30 W adjustable Bright field Abbe condenser	30 W illumination	Research Diagnostics Quality control
<b>MBL2000-T-30W</b>	10x plane eyepiece Lenses: 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 30 W adjustable Bright field Abbe condenser	Phototube 30 W illumination	Research Diagnostics Quality control
<b>MBL2000-PL</b>	10x plane eyepiece Lenses (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 20 W adjustable Bright field Abbe condenser	Planachromatic Lenses	Research Diagnostics Quality control
<b>MBL2000-T-PL</b>	10x plane eyepiece Lenses (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 20 W adjustable Bright field Abbe condenser	Phototube Planachromatic objectives	Research Diagnostics Quality control
<b>MBL2000-PL-PH</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 PH10x/NA 0.25 PH40x/NA 0.65 PH100x/NA 1.25 oil	6 V 20 W adjustable Bright field Abbe condenser Phase contrast Dark field	Phase contrast feature with dark field	Research Diagnostics Quality control Sewage treatment plants
<b>MBL2000-T-PL-PH</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 PH10x/NA 0.25 PH40x/NA 0.65 PH100x/NA 1.25 oil	6 V 20 W adjustable Bright field Abbe condenser Phase contrast Dark field	Phototube Phase contrast feature with dark field	Research Diagnostics Quality control Sewage treatment plants
<b>MBL2000-PL-30W</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 30 W adjustable Bright field Abbe condenser	Planachromatic objectives 30 W illumination	Research Diagnostics Quality control
<b>MBL2000-T-PL-30W</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 30 W adjustable Bright field Abbe condenser	Phototube Planachromatic objectives 30 W illumination	Research Diagnostics Quality control
<b>MBL2000-B</b>	10x plane eyepiece Objectives: 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	15 V 150 W adjustable cold light source dark-field condenser for blood examination	Cold light source Dark-field for blood	Blood testing with Enderlein microscopy, Non-medical practitioners
<b>MBL2000-T-B</b>	10x plane eyepiece Objectives: 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	15 V 150 W adjustable cold light source Dark-field condenser for blood testing	Phototube Cold light source Dark-field for blood	Blood testing with Enderlein microscopy, Non-medical practitioners
<b>MBL2000-PL-B</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	15 V 150 W adjustable cold light source Dark-field condenser for blood testing	Cold light source Dark-field for blood Planachromatic objectives	Blood testing with Enderlein microscopy, Non-medical practitioners
<b>MBL2000-T-PL-B</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	15 V 150 W adjustable cold light source Dark-field condenser for blood testing	Phototube Cold light source Dark-field for blood Planachromatic objectives	Blood testing with Enderlein microscopy, Non-medical practitioners

## MBL3000 Series

### Perfect vision down to the finest detail

#### MBL3000 - Laboratory microscopes for complex applications



These professional laboratory microscopes with Köhler illumination are perfectly suited for sophisticated types of medical and biological examinations. The adapted phototube (trinocular) provides for presentation of the sample. The MBL3000 series microscopes are also suitable for examining transparent fibres. All models are equipped with planachromatic objectives. The comprehensive range of accessories includes a phase contrast device, dark-field illumination and micrometer eyepieces.

- Dioptre compensation with compensation scale
- Sturdy metal stand
- Coarse and fine focussing, double coaxial (0 - 200  $\mu\text{m}$ , division 2  $\mu\text{m}$ )  
Coarse focussing range: 30 mm,  
Fine focussing range: 30 mm
- Right-side coarse focussing knob with fast focus adjustment, left-sided knob with quick-focus setting
- Twin-lens Abbe condenser: NA 1.25
- Iris diaphragm
- Pivoting filter holder
- Height adjustment
- Glass filters: blue, green
- Köhler illumination
- Planachromatic objectives
- Graduated XY cross table with coaxial operation
- Low-voltage illumination
- Power supply: 90 - 240 V



MBL3000-T-PL

<b>T</b>	Trinocular/phototube	<b>PH40</b>	40x phase contrast feature
<b>PL</b>	Planachromatic objectives	<b>30 W</b>	30 Watt illumination
<b>PH</b>	Phase contrast feature	<b>63</b>	63x objective
<b>I</b>	Infinity System		

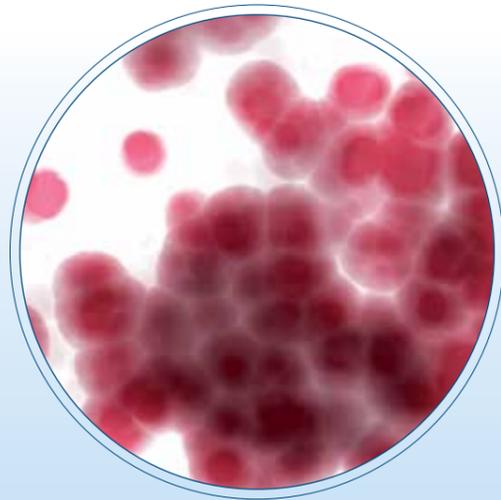
	Optical equipment	Illumination	Special features	Application
<b>MBL3000-PL (Basic model)</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 20 W adjustable Köhler illumination Bright field Abbe condenser		Laboratory Quality control Universities
<b>MBL3000-T-PL</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 20 W adjustable Köhler illumination Bright field Abbe condenser	Phototube	Laboratory Quality control Universities
<b>MBL3000-PL-30W</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 30 W adjustable Köhler illumination Bright field Abbe condenser		Laboratory Quality control Universities
<b>MBL3000-T-PL-30W</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 100x/NA 1.25 oil	6 V 30 W adjustable Köhler illumination Bright field Abbe condenser	Phototube	Laboratory Quality control Universities
<b>MBL3000-PL-PH40-63</b>	10x and 12.5x plane eyepieces Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 63x/NA 0.85 100x/NA 1.25 oil PH40x/NA 0.65	6 V 20 W adjustable Köhler illumination Bright field Abbe condenser	40x phase contrast feature 63x objectives	Breweries
<b>MBL3000-T-PL-PH40-63</b>	10x and 12.5x plane eyepieces Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 63x/NA 0.85 100x/NA 1.25 oil PH40x/NA 0.65	6 V 20 W adjustable Köhler illumination Bright field Abbe condenser	Phototube 40x phase contrast feature 63x objectives	Breweries
<b>MBL3000-PL-PH</b>	10x plane eyepiece PH objectives (planachromatic): PH10x/NA 0.25 PH20x/NA 0.40 PH40x/NA 0.65 PH100x/NA 1.25 oil	6 V 20 W adjustable Köhler illumination Bright field Abbe condenser	Phase contrast setup	Laboratory Quality control Universities
<b>MBL3000-T-PL-PH</b>	10x plane eyepiece PH objectives (planachromatic): PH10x/NA 0.25 PH20x/NA 0.40 PH40x/NA 0.65 PH100x/NA 1.25 oil	6 V 20 W adjustable Köhler illumination Bright field Abbe condenser	Phototube Phase contrast setup	Laboratory Quality control Universities
<b>MBL3000-PL-PH-30W</b>	10x plane eyepiece PH objectives (planachromatic): PH10x/NA 0.25 PH20x/NA 0.40 PH40x/NA 0.65 PH100x/NA 1.25 oil	6 V 30 W adjustable Köhler illumination Bright field Abbe condenser	Phase contrast setup	Laboratory Quality control Universities
<b>MBL3000-T-PL-PH-30W</b>	10x plane eyepiece PH objectives (planachromatic): PH10x/NA 0.25 PH20x/NA 0.40 PH40x/NA 0.65 PH100x/NA 1.25 oil	6 V 30 W adjustable Köhler illumination Bright field Abbe condenser	Phototube Phase contrast setup	Laboratory Quality control Universities
<b>MBL3000-PL-I</b>	10x plane eyepiece Objectives (planachromatic): 4x NA 0.10 10x NA 0.25 40x NA 0.65 100x NA 1.25 oil	6 V 20 W adjustable Köhler illumination Abbe condenser	Infinity System	Laboratory Diagnosis Quality control
<b>MBL3000-T-PL-I</b>	10x plane eyepiece Objectives (planachromatic): 4x NA 0.10 10x NA 0.25 40x NA 0.65 100x NA 1.25 oil	6 V 20 W adjustable Köhler illumination Abbe condenser	Phototube Infinity System	Laboratory Diagnosis Quality control

## MBL3200 Inverted Microscope

### Multicultural in the lab

#### MBL3200 - Inverted microscope for biology and medicine

The inverted microscope is specially designed for the identification and analysis of biological substances and cultures. It can be used for any application in the laboratory. The photo and C-mount video adapter lets you connect SLR and video cameras. Power supply: 90 - 240 V. A wide range of accessories is available for the MBL3200.



MBL3200

	Optical equipment	Equipment	Illumination	Special features	Application
<b>MBL3200</b>	10x plane eyepiece Objectives (planachromatic, Infinity): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65 PH20x/NA 0.40	XY table coaxial coarse/fine adjustment Iris diaphragm Filter holder Green filter	6 V 30 W adjustable	Inverted microscope, third tube for connecting photo and video cameras	Laboratory

## MBL3300 Incident Light Microscope

### Impeccable view of detailed structures

#### MBL3300 - Metallurgical incident light microscope

The MBL3300 is a real specialist. It is a perfect instrument for the identification and analysis of steel connections and other metals. It is also ideal for quality assessment, raw material analysis and examining metal structures following heat treatment. This metallurgical microscope is particularly well suited for laboratory and industrial applications. It is equipped with a phototube for connecting a camera or video recorder. Power supply: 90 - 240 V. A wide range of accessories is available for the MBL3300.



MBL3300

	Optical equipment	Equipment	Illumination	Special features	Application
<b>MBL3300</b>	10x plane eyepiece Objectives (planachromatic): 4x/NA 0.10 10x/NA 0.25 40x/NA 0.65	XY table coaxial coarse/fine adjustment Iris diaphragm Filter holder Blue filter Green filter	6 V 30 W adjustable Incident light through objectives	Metallurgical microscope with incident light, Phototube	Laboratory Material testing

## MBL3400 Inverted Microscope

### Superb positioning of heavy metal specimens

MBL3400 - Metallurgical inverted microscope for laboratory and industrial use



The MBL3400 is specially designed for the identification and analysis of steel connections and other metals. It is the ideal instrument for determining quality, analysing raw materials and examining metal structures after heat treatment. The inverted microscope is equipped with a 5x turret and is delivered with 5 infinite focus plane objectives with long working distance. Coaxial coarse/fine focus and various filters are also included in the range of features. A phototube allows you to connect a camera or video recorder. Power supply: 90 - 240 V. A wide range of accessories is available for the MBL3400.



MBL3400

	Optical equipment	Equipment	Illumination	Special features	Application
<b>MBL3400</b>	10x plane eyepiece Objectives (planachromatic, infinity): 5x/NA 0.14 10x/NA 0.25 20x/NA 0.40 50x/NA 0.70 80x/NA 0.80	XY table coaxial coarse/fine adjustment Iris diaphragm Filter holder Blue filter Green filter Polarisation feature	12 V 50 W adjustable Köhler illumination	Metallurgical microscope with Köhler illumination, third tube for connecting photo and video cameras	Laboratory Material testing

## MSL4000 series

### Fantastic perspective for small budgets

MSL4000 - stereo microscopes

MSL4000-series stereo microscopes offer an optimal value for money. Thanks to the wide range of accessories and different eyepieces, these microscopes are suitable for a wide range of applications. All microscopes have a 45° inclined viewer piece, an eye-distance adjustment and dioptr adjustment. The metal casing is sturdy and durable. To allow you the option for working anywhere without having to depend on any external power supply, some of the MSL microscopes have a battery providing a user-friendly 25 hours of power. Power supply: 100 - 240 V, 50 - 60 Hz. A wide range of accessories is available for all models.



MSL4000-10/30-S



MSL4000-10/30-IL-TL

IL Incident light  
TL Transmitted light  
10/30 10x/30x magnification  
20/40 20x/40x magnification  
S Swivelling arm

	Optical equipment	Illumination	Special features
<b>MSL4000-10/30-IL-TL</b>	10x wide-field eyepieces 1x and 3x objectives 10x and 30x magnification	LED incident and transmitted light	Battery life: 25 hours
<b>MSL4000-10/30-IL-S</b>	10x wide-field eyepieces 1x and 3x objectives 10x and 30x magnification	LED incident lighting	Swivelling arm
<b>MSL4000-10/30-S</b>	10x wide-field eyepieces 1x and 3x objectives 10x and 30x magnification		Swivelling arm
<b>MSL4000-20/40-IL-TL</b>	10x wide-field eyepieces 2x and 4x objectives 20x and 40x magnification	LED incident and transmitted light	Battery life: 25 hours
<b>MSL4000-20/40-IL-S</b>	10x wide-field eyepieces 2x and 4x objectives 20x and 40x magnification	LED incident lighting	Swivelling arm
<b>MSL4000-20/40-S</b>	10x wide-field eyepieces 2x and 4x objectives 20x and 40x magnification		Swivelling arm

## Zoom in: sharpness for professionals

MSZ5000 - stereo microscopes have an impressive zoom range

A robust zooming stereo microscope for the professional examination of electronics, precision engineering, plastics and medical products. The microscope is used for inspection, assembly, analysis, for soldering and polishing and finishing – an excellent tool for quality control. The large zoom range, large working distance and broad depth of field facilitates very comfortable work in many areas. It offers continuously variable magnification with 7-45x total zoom.

The rugged metal housing makes it easier to work with reliability, even in harsh environments.

Accessories include various eyepieces and auxiliary objectives to modify the magnification and working distances.

- Zoom feature for continuous magnification settings
- Large depth of focus
- Incident and transmitted light (depending on configuration)
- 45° inclined viewer piece with dioptr adjustment on both sides and eye-distance adjustment 51-75 mm
- Range of vision 20 mm, object field 28.6-4.44 mm
- Power supply: 230 V, option with 115 V available



MSZ5000-T-IL-TL

T Trinocular/phototube      RL Ring light  
 IL Incident light              S Swivelling stand  
 TL Transmitted light

	Optical equipment	Illumination	Special features
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		Phototube
MSZ5000-RL	10x wide-field eyepieces 0.7-4.5x zoom objective 7-45x total magnification	Incident light (ring light)	
MSZ5000-T-RL	10x wide-field eyepieces 0.7-4.5x zoom objective 7-45x total magnification	Incident light (ring light)	Phototube
MSZ5000-S	10x wide-field eyepieces 0.7-4.5x zoom objective 7-45x total magnification		Swivelling stand
MSZ5000-T-S	10x wide-field eyepieces 0.7-4.5x zoom objective 7-45x total magnification		Phototube Swivelling stand
MSZ5000-S-RL	10x wide-field eyepieces 0.7-4.5x zoom objective 7-45x total magnification	Incident light (ring light)	Swivelling stand
MSZ5000-T-S-RL	10x wide-field eyepieces 0.7-4.5x zoom objective 7-45x total magnification	Incident light (ring light)	Phototube Swivelling 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 infinitely variable adjustment	
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 infinitely variable adjustment	Phototube

## Jewels in sight: precision optics for professional gemmology

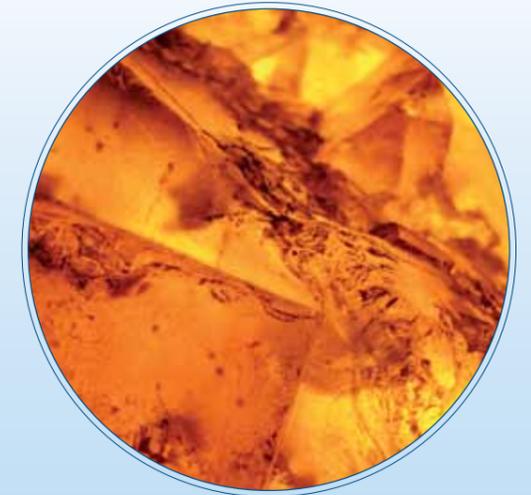
KSW4000 - Stereo microscope for inspecting diamonds and gemstones

The stereo microscopes from the KSW4000 series (each with 1x and 3x objectives) are ideal for inspecting diamonds and gemstones. The magnification factor is 10x and 30x (optional 20x and 60x). The rugged metal housing facilitates reliable work, even in harsh conditions.

These microscopes are equipped with wide-range power units (90-240 V or 100-240 V, 50/60 Hz).

The microscopes of this series are equipped with a dark-field objective turret and stone pincers.

All models have power-saving, long-lasting LED illumination. Also available in options with twin-arm light conductor, cuvette and cuvette table, built-in cold light source or 12 V 10 W. Available with incident and transmitted light.



KSW4000

K cold light source  
 W Horizontal construction

	Optical equipment	Illumination	Special features	Application
KSW4000	10x wide-field eyepieces 1x and 3x objectives 10x and 30x magnification	LED incident and transmitted light Dark-field illumination	Stone pincers Battery life: 25 hours	Gemmology Diamond and gemstone examination
KSW4000-K	10x wide-field eyepieces 1x and 3x objectives 10x and 30x magnification	LED transmitted light LED cold light source with light conductor Dark-field illumination	Stone pincers	Gemmology Diamond and gemstone examination
KSW4000-K-W	10x wide-field eyepieces 1x and 3x objectives 10x and 30x magnification	LED transmitted light, LED cold light source with light conductor Dark-field illumination	Stone holder, glass cuvette and cuvette table, horizontal mounting of the microscope head possible	Gemmology Diamond and gemstone examination

## KSW5000 Series

### Nothing escapes the view of these optics

KSW5000 - stereo microscopes with zoom objective for professional gemmology

The KSW5000 series consists of three models that are based on the MSZ5000 or MSZ5000-T. They offer a continuously variable magnification setting with 7-45x total zoom factor. The rugged metal housing facilitates reliable working, even in difficult environments. The voltage of the microscopes of this series are available in 115 or 230 V models; switching the voltage is not possible. The power supply is not reversible. The microscopes of this series are equipped with dark field and stone holders, some also including a cuvette table and polarisation feature.



KSW5000

T Trinocular/phototube  
K Cold light source  
W Horizontal construction

	Optical equipment	Illumination	Special features	Application
KSW5000	10x wide-field eyepieces 0.7-4.5x zoom objective Total magnification 7-45x	Incident and transmitted light Dark field	Stone pincers	Gemmology Diamond and gemstone examination
KSW5000-T	10x wide-field eyepieces 0.7-4.5x zoom objective Total magnification 7-45x	Incident and transmitted light Dark field	Phototube and stone holder	Gemmology Diamond and gemstone examination
KSW5000-T-K-W	10x wide-field eyepieces 0.7-4.5x zoom objective Total magnification 7-45x	Transmitted light Cold light source with light conductor Dark field Polarisation feature	Phototube, stone holder glass cuvette and cuvette table, horizontal mounting of the microscope head possible	Gemmology Diamond and gemstone examination

## Microscope Accessories

### Cold light sources



KL5110

- Cold light source without light conductor
- 8 V 20 W **not** adjustable
- Power supply 100 - 240 V, i.e. can be used internationally
- Constant colour temperature: 3200 Kelvin



KL5120

- Cold light source without light conductor
- 8 V 20 W adjustable
- Power supply 100 - 240 V, i.e. can be used internationally
- Brightness control using iris diaphragm, therefore no change in colour temperature
- Constant colour temperature of 3200 Kelvin



KL5125

- 230 V cold light source without light conductor
- 150 W halogen lamp
- Colour temperature 3200 Kelvin
- Electronic brightness control

### Light conductor

- KL5130 One-arm light conductor for all cold light sources

- KL5131 Twin-arm light conductor for all cold light sources

## Video Eyepieces



- VOPC91**
- Video eyepiece for PC
  - Resolution: 1.3 megapixels
  - USB 2.0, driver software included
  - Windows 2000/XP/Vista/7
- VOPC93**
- Video eyepiece for PC
  - Resolution: 3 megapixels
  - USB 2.0, driver software included
  - Windows 2000/XP/Vista/7

## Digital Camera



- Canon Powershot S95\***
- We would be happy to recommend a model that is up-to-date and has been tested by us.

\* Example of current model

## UH80 | Universal adapter for digital cameras



- UH80**
- Universal support with tripod socket for inexpensive adapting of any digital camera for use with a microscope.

## Laboratory microscope accessories

	MML1200 MML1300 MML1400	MML1500	MBL2000 series	MBL3000 series
Polarisation feature	X	X	X	X
Mirror	X	X	X	
XY cross table	X	X	X	
Köhler light field aperture	X	X	X	
Wide-field micrometre eyepieces 15x/100 graduations marks, 10x/120 graduations marks	X	X	X	X
Stage micrometer, 0.01 mm graduation	X	X	X	X
Plane eyepieces 5x, 12.5x, 16x, 20x	X	X	X	X
Wide-field eyepieces 10x, 15x	X	X	X	
Wide-field indicator eyepiece 10x	X	X	X	X
Trinocular optical head			X	X
Achromatic objectives: 4x/NA 0.10, 10x/NA 0.25, 20x/NA 0.40, 40x/NA 0.65, 60x/NA 0.85, 63x/NA 0.85, 100x/NA 1.25 oil		X	X	X
Planachromatic objectives: 4x/NA 0.10, 10x/NA 0.25, 20x/NA 0.40, 40x/NA 0.65, 100x/NA 1.25 oil		X	X	X
Phase contrast feature with planachromatic PH objectives: for 10x/0.25, 40x/0.65, 100x/1.20 oil		X	X	
Phase contrast feature for 20x/0.40 and 40x/0.65		X	X	
Phase contrast feature with infinite planachromatic PH objectives and centring telescopes: 10x/0.25, 20x/0.40, 40x/0.65, 100x/1.25 oil				X
Phase contrast feature for 40x/0.65 planachromatic				X
Dark field condenser		X	X	X
Dark field condenser for blood		X	X	

## Accessories for Stereo Microscopes

	MSL4000 series	MSZ5000 series
Swivelling arm	X	
Plane eyepieces 10x, 20x		X
Wide-field eyepieces: 15x, 20x	X	
Dark field	X	X
Objective lens: 0.5x, 2x		X
Micrometre eyepiece with 100 graduation marks: 10x, 20x		X
Swivelling stand		X
LED daylight lamp, adjustable with 110-230 V power supply		X
Daylight ring lamp with 72 LEDs, adjustable, 100-240 V 50/60 Hz		X
UV ring lamp, 220-230 V		X

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