

Polarising microscopes KERN OPO-1



Bertrand lens,  $\lambda$  Slip, 360° rotatable analyser (removable)



Center-adjustable and turnable polarisation stage



“Swing-Out” condenser

**PROFESSIONAL LINE POL**

The flexible and powerful polarising microscope for all professional applications with reflected and transmitted light

**Features**

- This device is a professional, fully-equipped polarising microscope, which uses the polarisation of light to analyse minerals, crystals and isotropic materials
- The KERN OKO 185 is a combi variant of LED incident illumination and LED transmitted illumination. A height-adjustable 0.9/0.13 Swing-out Abbe condenser which can be centred for complete Köhler illumination are part of the standard version.
- A 360° revolving stage with 1° division, 6' fine division and locking function is integrated into all series as standard
- As standard all series are fitted with a complete polarising unit with scale, a Bertrand lens, a  $\lambda + \frac{1}{4} \lambda$  Slip as well as a quartz wedge
- A large selection of accessories such as, for example, a mechanical stage attachment as well as further objectives for a long working distance and filter units are also available
- A protective dust cover, eye cups, as well as multi-lingual user instructions are included in the scope of delivery
- A C-Mount adapter is required to connect a camera. You can select this adapter from the following model outfit list
- Please find detailed information in the following model outfit list

**Scope of application**

- Mineralogy, texture observations, material testing, observation of crystals

**Applications/Samples**

- More complex samples with polarising properties

**Technical data**

- Infinity optical system
- Quintuple nosepiece
- Siedentopf 30° inclined
- Diopter adjustment: Both-sided
- Overall dimensions W×D×H 500×200×500 mm
- Net weight approx. 14,5 kg

STANDARD



Model	Standard configuration				
	Tube	Eyepiece	Objective quality	Objectives	Illumination
<b>KERN OPO 185</b>	Trinocular	HWF 10×/ø 20 mm	Infinity Plan	Non-stress 4×/10×/20×/40×/50×	5W LED (incident + transmitted)

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Model outfit		Model KERN	Order number	
		OPO 185		
Eyepieces (23,2 mm)	HWF 10×/20 mm	✓	OBB-A1591	
	HWF 10×/20 mm (reticule 0,1 mm) (adjustable)	✓	OBB-A1592	
Non-stress Infinity Plan objectives (transmitted)	4×/0,10 W.D. 12,1 mm	✓	OBB-A1294	
	10×/0,25 W.D. 4,64 mm	✓	OBB-A1289	
	20×/0,40 (spring-loaded) W.D. 2,41 mm	✓	OBB-A1290	
	40×/0,66 (spring-loaded) W.D. 0,65 mm	✓	OBB-A1292	
Non-stress Infinity Plan objectives (incident) for long working distance	5×/0,13 W.D. 16,04 mm	○	OBB-A1593	
	10×/0,25 W.D. 18,48 mm	○	OBB-A1594	
	20×/0,40 W.D. 8,35 mm	○	OBB-A1291	
	50×/0,70 (spring-loaded) W.D. 1,95 mm	✓	OBB-A1295	
	100×/0,85 (dry) (spring-loaded) W.D. 3,00 mm	○	OBB-A1595	
Trinocular tube	· Siedentopf 30° inclined · Interpupillary distance 48 – 76 mm · Light distribution 100:0	✓		
Analyser unit with scale	360° rotatable, lockable	✓		
Bertrand lens	Insertable, center-adjustable	✓	OBB-A1121	
λ + ¼ λ Slip	λ Slip and ¼ λ Slip (combination)	✓	OBB-A1316	
Quartz wedge	I – IV Class	✓	OBB-A1321	
Revolving round stage	360° rotatable, center-adjustable, division 1°, Vernier division 6'	✓		
Polarising attached mechanical stage	Polarising attached mechanical stage	○	OBB-A1337	
Swing-out condenser	N.A. 0,9/0,13 swing-out achromatic condenser (aperture diaphragm)	✓	OBB-A1107	
Polarising unit with scale (transmitted)	360° rotatable, lockable	✓		
Koehler illumination	5 W LED spare bulb (transmitted)	✓	OBB-A1589	
Illumination polarising unit	5 W LED spare bulb (incident)			
Colour filters for transmitted illumination	Blue	✓	OBB-A1170	
	Green	○	OBB-A1188	
	Yellow	○	OBB-A1165	
	Grey	○	OBB-A1183	
C-Mount	1×	○	OBB-A1514	
	0,75×	○	OBB-A1590	
	0,5× (focus adjustable)	○	OBB-A1515	

✓ = Included with delivery

○ = Option

Compound microscope KERN OBS-1



**Note**

Please request special conditions for a classroom set



Objectives OBS



**EDUCATIONAL LINE**

The school microscope – For the first steps in microscopy and for use in biology lessons

**Features**

- The KERN OBS range is a solid and simple school microscope range, which is easy to use due to its intuitive control elements
- The continuously dimmable 0.5W LED guarantees optimum illumination of the samples and also ensures long service life. Mobile use is also no problem through the use of rechargeable batteries
- The simple 0.65 condenser on the OBS 101 (condenser disc) and the OBS 102 (fixed condenser) ensures the very best concentration of light and illumination of the sample. The OBS 103, 104, 105 and 106 models have a 1.25 Abbe condenser which

- is height-adjustable and can therefore be focussed and has an aperture diaphragm, which ensures the very best concentration of light
- To focus the object, all models have a coarse and fine focusing knob on both sides. The mechanical stage enables you to work with the samples and move them rapidly (only for OBS 105, 106)
- A large selection of different eyepieces and objectives is also available
- Please find detailed information in the following model outfit list

**Scope of application**

- Primary school, secondary school, training, hobby use

**Applications/Samples**

- Translucent, thin, high-contrast, less complex samples (e.g. plant tissue, coloured cells/parasites)

**Technical data**

- Finite optical system (DIN)
- Triple (OBS 101, 102) or quadplex (OBS 103, 104, 105, 106) nosepiece
- Tube 45° (OBS 101, 102, 103, 105) or 30° (OBS 104, 106) inclined/360° rotatable
- Diopter adjustment: Both-sided (for binocular models)
- Overall dimensions W×D×H 130×300×310 mm
- Net weight approx. 3 kg

STANDARD



not OBS 101, 102

Model	Standard configuration					
	Tube	Eyepiece	Objective quality	Objectives	Illumination	Stage
<b>OBS 101</b>	Monocular	WF 10×/∅ 18 mm	Achromatic	4×/10×/40×	0,5W LED (transmitted) (battery incl., rechargeable)	fix
<b>OBS 102</b>	Monocular	WF 10×/∅ 18 mm	Achromatic		0,5W LED (transmitted) (battery incl., rechargeable)	fix
<b>OBS 103</b>	Monocular	WF 10×/∅ 18 mm	Achromatic		0,5W LED (transmitted) (battery incl., rechargeable)	fix
<b>OBS 104</b>	Binocular	WF 10×/∅ 18 mm	Achromatic		0,5W LED (transmitted) (battery incl., rechargeable)	fix
<b>OBS 105</b>	Monocular	WF 10×/∅ 18 mm	Achromatic		0,5W LED (transmitted) (battery incl., rechargeable)	mechanical
<b>OBS 106</b>	Binocular	WF 10×/∅ 18 mm	Achromatic		0,5W LED (transmitted) (battery incl., rechargeable)	mechanical

Compound microscope KERN OBS-1

Model outfit		Model KERN						Order number
		OBS 101	OBS 102	OBS 103	OBS 104	OBS 105	OBS 106	
<b>Eyepieces</b> (23,2 mm)	WF 10×/φ 18 mm	✓	✓	✓	✓✓	✓	✓✓	OBB-A 1473
	WF 16×/φ 13 mm	○	○	○	○○	○	○○	OBB-A 1474
	WF 20×/φ 11 mm	○	○	○	○○	○	○○	OBB-A 1475
	WF 10×/φ 18 mm (with Pointer)	○	○	○	○	○	○	OBB-A 1561
<b>Achromatic objectives</b>	4×/0,10 W.D. 18,0 mm	✓	✓	✓	✓	✓	✓	OBB-A 1476
	10×/0,25 W.D. 7,0 mm	✓	✓	✓	✓	✓	✓	OBB-A 1477
	40×/0,65 (spring-loaded) W.D. 0,53 mm	✓	✓	✓	✓	✓	✓	OBB-A 1478
	60×/0,85 (spring-loaded) W.D. 0,1 mm	○	○	○	○	○	○	OBB-A 1479
	100×/1,25 (oil) (spring-loaded) W.D. 0,07 mm	○	○	○	○	○	○	OBB-A 1480
<b>E-Plan objectives</b>	4×/0,10 W.D. 14,5 mm	○	○	○	○	○	○	OBB-A 1562
	10×/0,25 W.D. 5,65 mm	○	○	○	○	○	○	OBB-A 1563
	40×/0,65 (spring-loaded) W.D. 0,85 mm	○	○	○	○	○	○	OBB-A 1564
	100×/1,25 (oil) (spring-loaded) W.D. 0,07 mm	○	○	○	○	○	○	OBB-A 1565
	100×/0,80 (dry) (spring-loaded) W.D. 0,15 mm	○	○	○	○	○	○	OBB-A 1442
	Plan 100×/1,0 (water) (spring-loaded) W.D. 0,18 mm	○	○	○	○	○	○	OBB-A 1441
<b>Monocular tube</b>	45° inclined/360° rotatable	✓	✓	✓		✓		OBB-A 1471
<b>Binocular tube</b>	<ul style="list-style-type: none"> <li>30° inclined/360° rotatable</li> <li>Interpupillary distance 55-75 mm</li> <li>Diopter adjustment: Both-sided</li> </ul>				✓		✓	OBB-A 1472
<b>Fixed stage</b>	<ul style="list-style-type: none"> <li>Stage size W×D 110×120 mm</li> <li>Coaxial coarse and fine focusing knobs, scale: 2,5 μm</li> </ul>	✓	✓	✓	✓			
<b>Mechanical stage</b>	<ul style="list-style-type: none"> <li>Stage size W×D 115×125 mm</li> <li>Travel 75×18 mm</li> <li>Coaxial coarse and fine focusing knobs, scale: 2,5 μm</li> </ul>					✓	✓	
<b>Condenser</b>	Simple condenser N.A. 0,65	✓						
	Simple condenser N.A. 0,65 (aperture diaphragm)		✓					
	Abbe N.A. 1,25 (aperture diaphragm)			✓	✓	✓	✓	
<b>Illumination</b>	0,5 W LED illumination system (transmitted) (rechargeable)	✓	✓	✓	✓	✓	✓	
<b>Colour filters for transmitted illumination</b>	Blue			✓	✓	✓	✓	OBB-A 1466
	Green			○	○	○	○	OBB-A 1467
	Yellow			○	○	○	○	OBB-A 1468
	Grey			○	○	○	○	OBB-A 1184

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○ = Option

## Pictograms

<b>360° rotatable microscope head</b>	<b>Fluorescence illumination for compound microscopes</b> With 3 W LED illumination and filter	<b>USB 3.0 digital camera</b> For direct transmitting of the picture to a PC
<b>Monocular Microscope</b> For the inspection with one eye	<b>Phase contrast unit</b> For a higher contrast	<b>WLAN data interface</b> For transmitting of the picture to a mobile display device
<b>Binocular Microscope</b> For the inspection with both eyes	<b>Darkfield condenser/unit</b> For a higher contrast due to indirect illumination	<b>HDMI digital camera</b> For direct transmitting of the picture to a display device
<b>Trinocular Microscope</b> For the inspection with both eyes and the additional option for the connection of a camera	<b>Polarising unit</b> To polarise the light	<b>PC software</b> To transfer the measurements from the device to a PC
<b>Abbe Condenser</b> With high numerical aperture for the concentration and the focusing of light	<b>Infinity system</b> Infinity corrected optical system	<b>Automatic temperature compensation</b> For measurements between 10 °C and 30 °C
<b>Halogen illumination</b> For pictures bright and rich in contrast	<b>Zoom magnification</b> For stereomicroscopes	<b>Protection against dust and water splashes IPxx:</b> The type of protection is shown in the pictogram cf. DIN EN 60529:2000-09, IEC 60529:1989+A1:1999+A2:2013
<b>LED illumination</b> Cold, energy-saving and especially long-life illumination	<b>Auto-focus</b> For automatic control of the focus level	<b>Battery operation</b> Ready for battery operation. The battery type is specified for each device.
<b>Incident illumination</b> For non-transparent objects	<b>Parallel optical system</b> For stereomicroscopes, enables fatigue-proof working	<b>Battery operation rechargeable</b> Prepared for a rechargeable battery operation
<b>Transmitting illumination</b> For transparent objects	<b>Integrated scale</b> In the eyepiece	<b>Plug-in power supply</b> 230V/50Hz in standard version for EU. On request GB, AUS or USA version.
<b>Fluorescence illumination for stereomicroscopes</b>	<b>SD card</b> For data storage	<b>Integrated power supply unit</b> Integrated in microscope. 230V/50Hz standard EU. More standards e.g. GB, AUS or USA on request.
<b>Fluorescence illumination for compound microscopes</b> With 100 W mercury lamp and filter	<b>USB 2.0 digital camera</b> For direct transmitting of the picture to a PC	<b>Package shipment</b> The time required to manufacture the product internally is shown in days in the pictogram.

## Abbreviations

<b>C-Mount</b> Adapter for the connection of a camera to a trinocular microscope	<b>LWD</b> Long Working Distance	<b>SWF</b> Super Wide Field (Field number at least $\varnothing$ 23 mm for 10 $\times$ eyepiece)
<b>FPS</b> Frames per second	<b>N.A.</b> Numerical Aperture	<b>W.D.</b> Working Distance
<b>H(S)WF</b> High (Super) Wide Field (Eyepiece with high eye point for wearers of glasses)	<b>SLR camera</b> Single-Lens Reflex camera	<b>WF</b> Wide Field (Field number up to $\varnothing$ 22 mm for 10 $\times$ eyepiece)

**Your KERN specialist dealer:**