Compound Microscope KERN OBS-1

## Note

Please request special conditions for a classroom set

Objectives OBS

OBS 101

OBS 104

OBS 106

## 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

STANDARD


### 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

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

| Model outfit | | Model KERN | | | | | | Order number |
|---|---|---|---|---|---|---|---|---|
| | | OBS 101 | OBS 102 | OBS 103 | OBS 104 | OBS 105 | OBS 106 | |
| **Eyepieces** (23,2 mm) | WF 10×/⌀ 18 mm | ✓ | ✓ | ✓ | ✓✓ | ✓ | ✓✓ | OBB-A1473 |
| | WF 16×/⌀ 13 mm | ○ | ○ | ○ | ○○ | ○ | ○○ | OBB-A1474 |
| | WF 20×/⌀ 11 mm | ○ | ○ | ○ | ○○ | ○ | ○○ | OBB-A1475 |
| | WF 10×/⌀ 18 mm (with Pointer) | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1561 |
| **Achromatic objectives** | 4×/0,10 W.D. 18,0 mm | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | OBB-A1476 |
| | 10×/0,25 W.D. 7,0 mm | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | OBB-A1477 |
| | 40×/0,65 (spring-loaded) W.D. 0,53 mm | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | OBB-A1478 |
| | 60×/0,85 (spring-loaded) W.D. 0,1 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1479 |
| | 100×/1,25 (oil) (spring-loaded) W.D. 0,07 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1480 |
| **E-Plan objectives** | 4×/0,10 W.D. 14,5 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1562 |
| | 10×/0,25 W.D. 5,65 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1563 |
| | 40×/0,65 (spring-loaded) W.D. 0,85 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1564 |
| | 100×/1,25 (oil) (spring-loaded) W.D. 0,07 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1565 |
| | 100×/0,80 (dry) (spring-loaded) W.D. 0,15 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1442 |
| | Plan 100×/1,0 (water) (spring-loaded) W.D. 0,18 mm | ○ | ○ | ○ | ○ | ○ | ○ | OBB-A1441 |
| **Monocular tube** | 45° inclined/360° rotatable | ✓ | ✓ | ✓ | | ✓ | | OBB-A1471 |
| **Binocular tube** | · 45° inclined/360° rotatable<br>· Interpupillary distance 55-75 mm<br>· Diopter adjustment: Both-sided | | | | ✓ | | ✓ | OBB-A1472 |
| **Fixed stage** | · Stage size W×D 110×120 mm<br>· Coaxial coarse and fine focusing knobs, scale: 2,5 µm | ✓ | ✓ | ✓ | ✓ | | | |
| **Mechanical stage** | · Stage size W×D 115×125 mm<br>· Travel 75×18 mm<br>· Coaxial coarse and fine focusing knobs, scale: 2,5 µm | | | | | ✓ | ✓ | |
| **Condenser** | Simple condenser N.A. 0,65 | ✓ | | | | | | |
| | Simple condenser N.A. 0,65 (aperture diaphragm) | | ✓ | | | | | |
| | Abbe N.A. 1,25 (aperture diaphragm) | | | ✓ | ✓ | ✓ | ✓ | |
| **Illumination** | 0,5 W LED illumination system (transmitted) (rechargeable) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| **Colour filters** for transmitted illumination | Blue | | | ✓ | ✓ | ✓ | ✓ | OBB-A1466 |
| | Green | | | ○ | ○ | ○ | ○ | OBB-A1467 |
| | Yellow | | | ○ | ○ | ○ | ○ | OBB-A1468 |
| | Grey | | | ○ | ○ | ○ | ○ | OBB-A1184 |

✓ = Included with delivery ○ = Option

**360° rotatable microscope head**

**Monocular Microscope**
For the inspection with one eye

**Binocular Microscope**
For the inspection with both eyes

**Trinocular Microscope**
For the inspection with both eyes and the additional option for the connection of a camera

**Abbe Condenser**
With high numerical aperture for the concentration and the focusing of light

**Halogen illumination**
For pictures bright and rich in contrast

**LED illumination**
Cold, energy-saving and especially long-life illumination

**Incident illumination**
For non-transparent objects

**Transmitting illumination**
For transparent objects

**Fluorescence illumination**
For stereomicroscopes

**Fluorescence illumination for compound microscopes**
With 100 W mercury lamp and filter

**Fluorescence illumination for compound microscopes**
With 3 W LED illumination and filter

**Phase contrast unit**
For a higher contrast

**Darkfield condenser/ unit**
For a higher contrast due to indirect illumination

**Polarising unit**
To polarise the light

**Infinity system**
Infinity corrected optical system

**Zoom magnification**
For stereomicroscopes

**Auto-focus**
For automatic control of the focus level

**Parallel optical system**
For stereomicroscopes, enables fatigue-proof working

**Integrated scale**
In the eyepiece

**SD card**
For data storage

**USB 2.0 interface**
For data transmission

**USB 3.0 interface**
For data transmission

**WIFI data interface:**
For transmitting of the picture to a mobile display device

**HDMI digital camera**
For direct transmitting of the picture to a display device

**PC software**
To transfer the measure-mentsfrom the device to a PC.

**Automatic temperature compesation**
For measurements between 10 °C and 30 °C

**Protection against dust and water splashes IPxx:**
The type of protection is shown in the pictogram cf. DIN EN 60529:2000-09, IEC 60529:1989+A1:1999 +A2:2013

**Battery operation**
Ready for battery operation. The battery type is specified for each device.

**Battery operation rechargeable**
Prepared for a rechargeable battery operation

**Plug-in power supply**
230V/50Hz in standard version for EU.
On request GB, AUS or USA version.

**Integrated power supply unit**
Integrated in microscope. 230V/50Hz standard EU. More standards e.g. GB, AUS or USA on request.

**Package shipment**
The time required to manufacture the product internally is shown in days in the pictogram.

**Pallet shipment**
The time required to manufacture the product internally is shown in days in the pictogram.

## Abbreviations

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

# KERN **OBS 104**

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

| Category | |
|---|---|
| Brand | Optics |
| Product categoriy | Microscope |
| Product group | Compound microscope |
| Product family | OBS-1 |

| Approval | |
|---|---|
| CE mark | ✓ |

| Construction | |
|---|---|
| Dimension (W×D×H) | 130×300×310 mm |
| Optical system | Finite |
| Tube type | Siedentopf |
| Tube type | Binocular |
| Tube angle of inclination | 30° |
| Tube 360° rotation | ✓ |
| Lens quality | achromatic |
| Standard objectives | 4×<br>10×<br>40× |
| Nosepiece screw-in locations | 4 |
| Eyepieces fixed | ✓ |
| Diopter adjustment | both-sided |
| Diopter adjustment [Min] | -5 |
| Diopter adjustment [Max] | 5 |
| Contrasting methods | Bright field |
| Interpupillary distance [Max] | 75 mm |
| Interpupillary distance [Min] | 55 mm |

| Ocular | |
|---|---|
| Ocular field width | WF |
| Eye point | Standard |
| Ocular magnifications | 10 x |
| Ocular visual field | 18 mm |
| Ocular diameter | 23,2 mm |

| Focussing | |
|---|---|
| Fine drive minimum | 0,00025 mm |
| Field of view [Min] | 0,45 mm |
| Field of view [Max] | 4,5 mm |
| Focusing mechanism | coaxial coarse and fine drive |

| Illumination | |
|---|---|
| Illumination intensity transmitted light | 0,5 W |
| Illumination type transmitted light | LED |
| Illuminance | Transmitted light |
| Illumination dimmable | Transmitted light |
| Aperture diaphragm | ✓ |
| Filter possible | ✓ |

| Power Supply | |
|---|---|
| Input voltage power supply / power [Max] | 100 - 240 V |
| Input voltage device / power [Max] | 6 V, 500 mA |
| Plug-in power supply type | Power adapter |
| Supplied power supply | Battery & Power supply |
| Plug-in power supply / adapter for countries - included with the delivery | EURO |
| Plug-in power supply / adapter for countries - optional | EURO<br>UK |
| Rechargeable battery charging time | 10 h |
| Rechargeable battery operating time - backlight on | 4 h |
| Battery | 3×1.2V AA |
| Battery / accumulator type | NiMH |
| Battery connection | Plug-in terminals |

| Environmental conditions | |
|---|---|
| Storage temperature [Min] | -5 °C |
| Storage temperature [Max] | 40 °C |

| Packing & Shipping | |
|---|---|
| Readability force [d] (N) | 1 d |
| Dimensions packaging (W×D×H) | 410×280×210 mm |
| Net weight | 3,138 kg |
| Shipping method | Parcel service |

# KERN **OBS 104**

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

| | |
|---|---|
| Net weight approx. | 3,2 kg |
| Gross weight approx. | 4,0 kg |
| Shipping weight | 4,8 kg |

## Objective

| | |
|---|---|
| Objectives - Details | Objective Achromatic 10 x / 0,25 anti-fungus<br>Objective Achromatic 4 x / 0,1 anti-fungus<br>Objective Achromatic 40 x / 0,65 spring, anti-fungus |

## Pictograms

STANDARD