

# Instruction manual video microscope

**KERN**

**OIV-3**

OIV 345

Version 1.0  
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# KERN OIV-3

Version 1.0 01/2023

## Operating Instructions

### Video Microscope

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## Table of contents

<b>1</b>	<b>Before use .....</b>	<b>3</b>
1.1	General notes .....	3
1.2	Notes on the electrics .....	3
1.3	Storage .....	4
1.4	Maintenance and cleaning .....	5
<b>2</b>	<b>Nomenclature .....</b>	<b>6</b>
<b>3</b>	<b>Basic data .....</b>	<b>7</b>
<b>4</b>	<b>Assembly .....</b>	<b>8</b>
<b>5</b>	<b>Operation .....</b>	<b>9</b>
5.1	Switching on the device.....	9
5.2	Switching the illumination on/off .....	9
5.3	Adjusting the illumination .....	9
5.4	Adjusting the magnification and focus .....	9
5.5	Connections and interfaces .....	10
5.6	MicroSD card connection.....	10
<b>6</b>	<b>Software.....</b>	<b>11</b>
6.1	Main menu .....	11
6.2	Auxiliary tools.....	11
6.3	Image Tools (Screen Tools).....	11
6.4	Parameter settings .....	12
6.5	Image settings .....	12
6.6	System settings .....	13
6.7	Shortcuts .....	13
6.8	Measuring function .....	14
6.9	Measuring tools .....	14
6.10	Calibration setting .....	15
<b>7</b>	<b>Optional equipment.....</b>	<b>16</b>
<b>8</b>	<b>Troubleshooting.....</b>	<b>16</b>
<b>9</b>	<b>Service .....</b>	<b>17</b>
<b>10</b>	<b>Disposal.....</b>	<b>17</b>
<b>11</b>	<b>Further information .....</b>	<b>17</b>

# **1 Before use**

## **1.1 General notes**

The packaging must be opened carefully to prevent any accessories inside from falling to the floor and breaking.

In general, a microscope should always be handled with great care, as it is a sensitive precision instrument. Avoiding abrupt movements during operation or transport is therefore particularly important, especially to avoid endangering the optical components.

Similarly, you should avoid dirt or fingerprints on the lens surfaces, because in most cases this reduces image clarity.

If the performance of the microscope is to be maintained, it must never be disassembled. Components such as objective lenses and other optical components should therefore be left as they are found at the beginning of operation.

## **1.2 Notes on the electrics**

Before connecting to a mains power supply, you must make sure that you are using the correct input voltage. The information to select the correct mains cable is located on the device, on the rear of the product directly above the connection socket. You must comply with this information. If you do not comply with these specifications, then fires or other damage to the device could occur.

The main switch must also be switched off before the mains cable is connected. In this way you will avoid triggering an electric shock.

If you are using an extension cable, then the mains cable you use must be grounded.

When carrying out any procedures whereby you come into contact with the electrical system of the device, such as, for example, changing the LED lamp, only carry out these procedures when the power is disconnected.

### **1.3 Storage**

Avoid exposing the device to direct sunlight, high or low temperatures, shock, dust and high humidity.

The suitable temperature range is 0 - 40° C and a relative humidity of 85% should not be exceeded.

The device should always be on a firm, smooth and horizontal surface.

When the microscope is not in use, it is best to cover it with the dust cover provided. Dust or dirt inside the optics of a microscope can cause irreversible malfunctions or damage in many cases.

Accessories consisting of optical elements, such as additional objectives, are preferably stored in a drying box with desiccant.

## 1.4 Maintenance and cleaning

In any event, the device must be kept clean and dusted regularly.

If any moisture should occur, before you wipe down the device you must ensure that the mains power is switched off.

When glass components become dirty, the best way to clean them is to wipe them gently with a lint-free cloth.

To wipe oil stains or finger prints off the lens surface, moisten the lint free cloth with a mixture of ether and alcohol (70 / 30 ratio) and use this to clean the lens.

You must be careful when handling ether and alcohol, as these are highly flammable substances. You must therefore keep it away from naked flames and electrical devices which can be switched on and off, and only use it in well-ventilated rooms.

However organic solutions of this type should not be used to clean other components of the device. This could lead to damage to the paint finish. To do this, it is sufficient to use a neutral cleaning product.

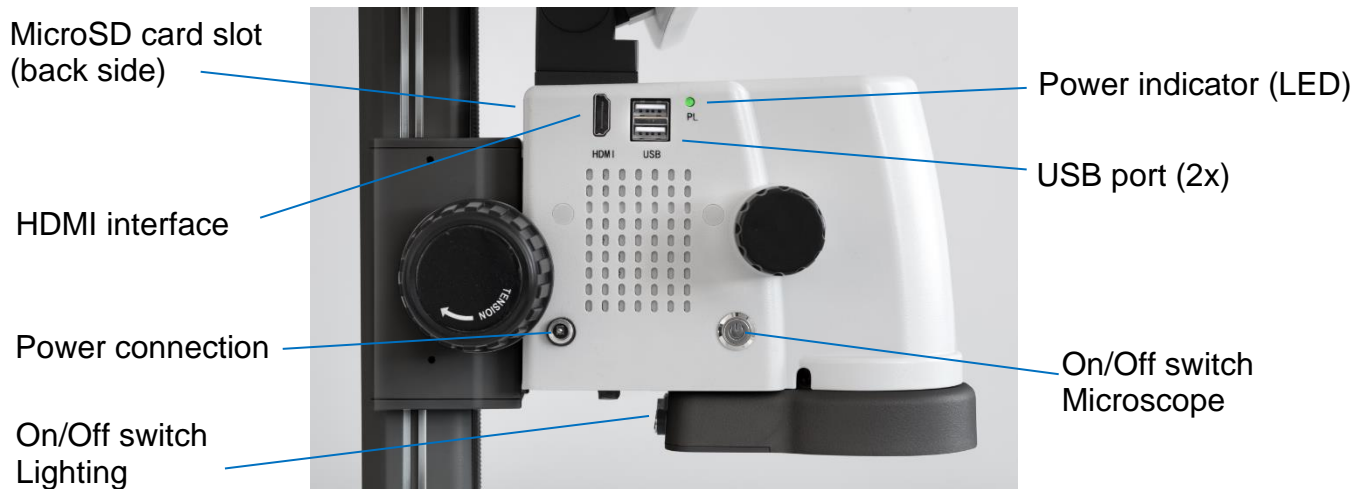
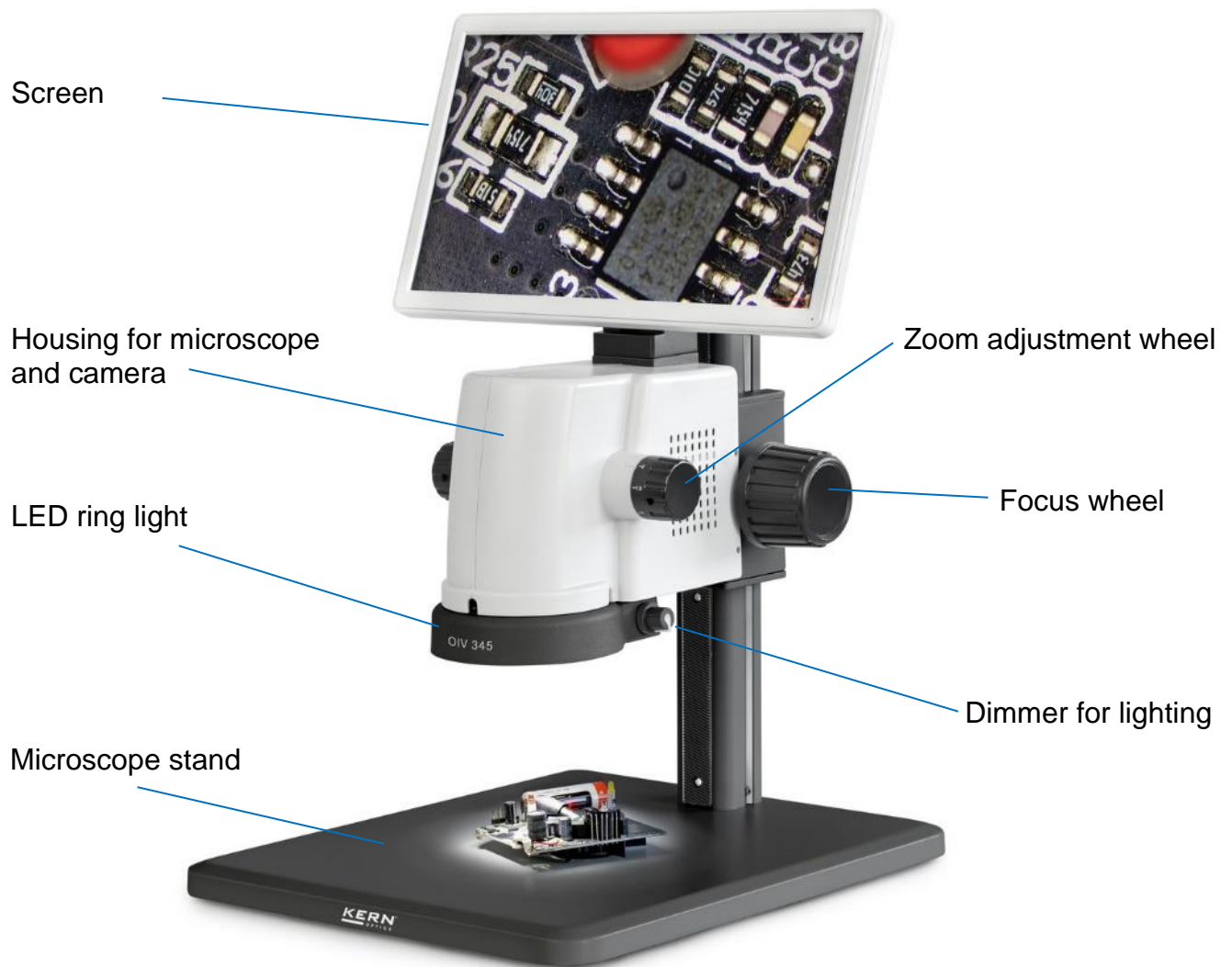
You could also use the following cleaning products to clean the optical components:

- Special cleaner for optical lenses
- Special optical cleaning cloths
- Bellows
- Brush

When handled correctly and checked regularly, the video microscope should give many years of efficient service.

Should repairs still be necessary, please contact your KERN dealer or our Technical Department.

## 2 Nomenclature



### 3 Basic data

Optical system	Axial
Lighting	LED ring light
Lighting dimmable	Yes
Stand	Mechanical
Optical zoom	0.7x - 4.5x
Digital zoom	17x - 110x
Magnification ratio	6,4:1
Field of view	Ø 16 - 2,5 mm
Screen inclination	-5° - 90°
Screen size	12 inch
Screen release	1920x1080 HD
Camera resolution	5 MP
Sensor	CMOS 1/2.8"
Data storage	External via USB (Max 128 GB)
Net weight	4,4 kg
Dimension product WxDxH	320x260x450 mm
Gross weight	6 kg
Dimension packing WxDxH	420x390x250 mm



## 4 Assembly



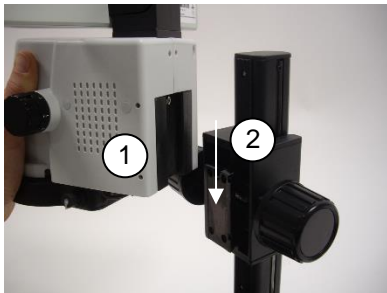
### Assembling the microscope stand

Secure the microscope column with the plate and the supplied M5 threaded screws (3x). Tighten the screws on the underside of the plate using the supplied M5 hexagonal tool.



### View microscope stand

Set up the microscope stand after successful assembly.



### Assembling the microscope body

Then insert the microscope head (1) into the shapes on the holder (2) of the microscope stand.



### Secure microscope head

To secure the microscope head to the stand, tighten the screws (2x) on the outside of the housing using the Allen key provided.



### Power connection

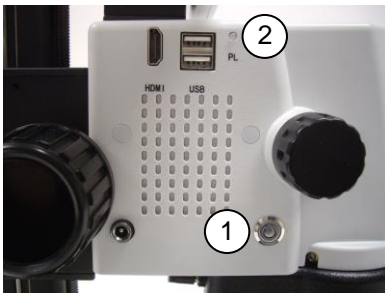
Plug the power cable into the connector on the microscope.

*Be careful not to twist or bend the power cable. Only use the original adapter supplied.*

## 5 Operation

If the microscope is ready for use after it has been assembled, then the power connection must first be made using the power cord. Only insert the power plug into a suitable socket. Make sure that the power cord is properly routed.

All important functions which are useful for the operation of the device are described in the following sections.



### 5.1 Switching on the device

To switch on the microscope, press the On/Off button (1) until it is backlighted blue. The LED operating indicator (2) (PL) lights up green as soon as the microscope is switched on. The system now starts in the operating mode.



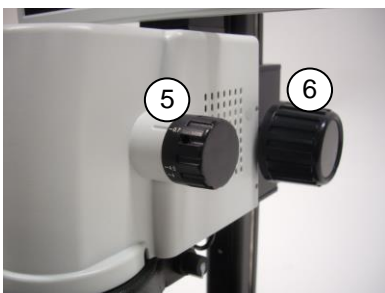
### 5.2 Switching the illumination on/off

The switch for the ring illumination is located on the side of the ring light. To switch the illumination on/off, operate the switch (3)



### 5.3 Adjusting the illumination

Turn the dimmer for lighting (4) on the right side of the ring light to adjust the illumination



### 5.4 Adjusting the magnification and focus

Since the OIV series are zoom microscopes, the zoom factor (0.7x-4.5x) can be changed using the Zoom adjustment wheel (5). Turn the adjustment wheel to the maximum magnification. Focus the image using the focus wheel (6). Repeat the process if necessary.

*The max/min parfocality is already optimally preset upon delivery.*

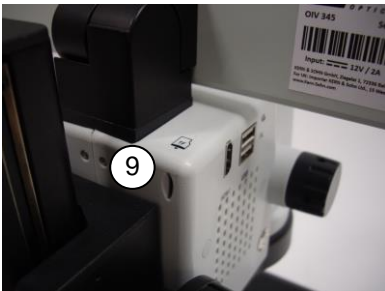


## 5.5 Connections and interfaces

To operate the measuring software, a mouse must be connected via the USB port. To do this, plug the USB receiver, which is located in the battery compartment of the supplied wireless mouse, into one of the two USB slots (7).

A USB stick (max. 128 GB) must be connected for data storage.

The image can be transferred to another output device at the additional HDMI output (8).



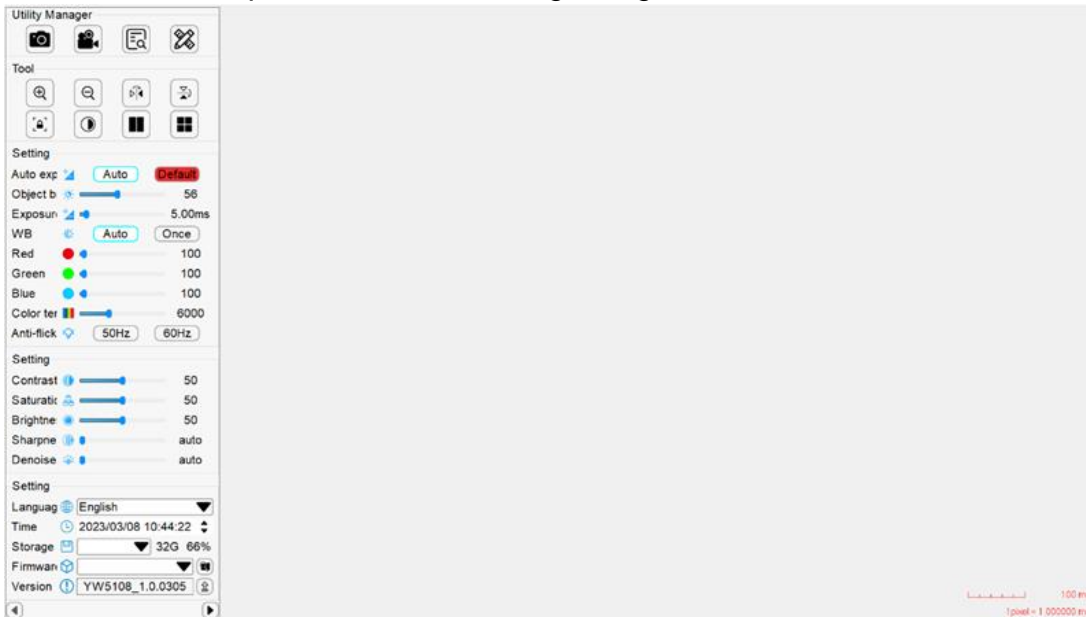
## 5.6 MicroSD card connection

On the back of the device is a slot for a MicroSD memory card. The port provides an additional option for storing data (max. 128 GB). Use a pointed object to push the MicroSD memory card into the card slot until it is fully engaged.

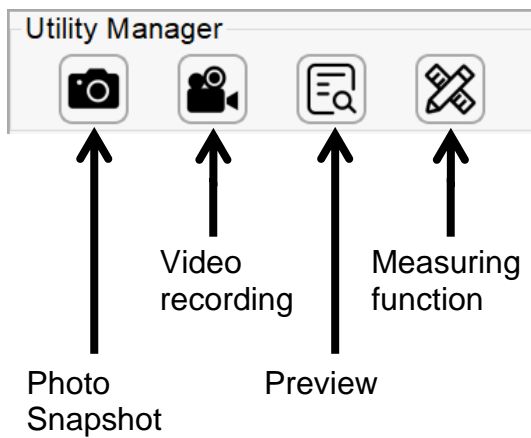
## 6 Software

### 6.1 Main menu

Move the mouse pointer to the left or right edge of the screen, the main menu will open.

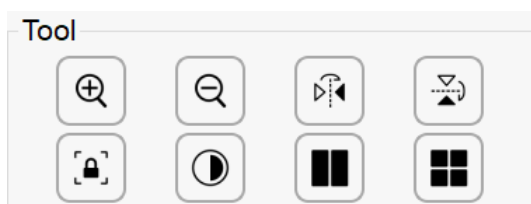


### 6.2 Auxiliary tools



A suitable storage medium (MicroSD memory card or USB stick) must be inserted to activate the photo snapshot or video recording.

### 6.3 Image Tools (Screen Tools)

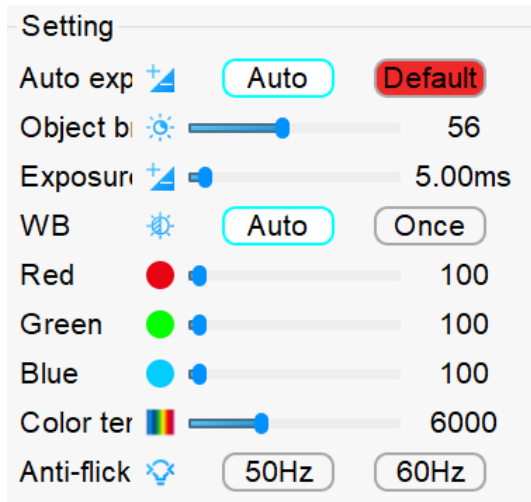


Functions (from left to right):

Zoom in, Zoom out, Flip image vertically, Flip image horizontally, Freeze image, Monochrome, Compare 2 images (Compare an image from external memory with the

live image. Please note that due to the changed format, the images will be distorted), Compare 4 Images (Double-click to freeze images, double-click again to unfreeze the live image. This function helps you to compare products from different angles).

#### 6.4 Parameter settings



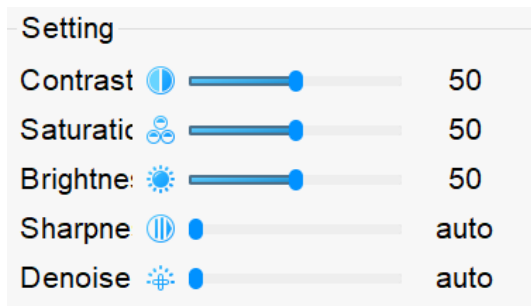
To adjust the image parameters, use the mouse to adjust the corresponding slider in this menu.

If there is a deviation in the automatic exposure or white balance, you can manually adjust the brightness and exposure time via the ring light (see 5.3.).

When the light is set correctly, click a button to adjust the white balance.

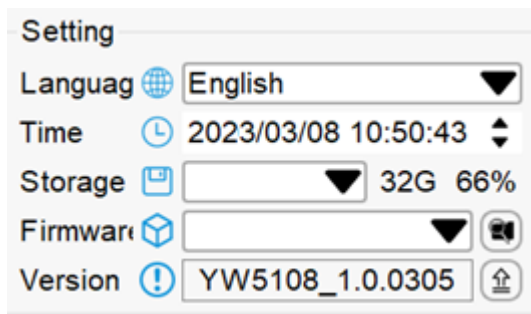
Automatic white balance is no longer possible after calibration.

#### 6.5 Image settings



In this menu you can adjust the parameters of the live image such as contrast, saturation, brightness, sharpness and noise reduction. To do this, move the corresponding bars with the mouse. The change is immediately visible on the live image.

## 6.6 System settings



In this menu, the user can set the language and time. It also displays information about the external storage device, camera model, firmware and version.

To set the time, the mouse can be moved to the corresponding position and the mouse wheel can be used to set the exact time.

The left and right arrows represent the display position of the toggle menu.

## 6.7 Shortcuts

If you right-click the "Photo" button in the main menu, you can set up the timer function of the camera and set the corresponding interval time and number of photos.



By pressing the mouse wheel on the "Photo" button, the photo format can be set. (A snapshot in JPG format is preset, BMP format takes a little longer due to the file size).

In live image mode, you can use the mouse wheel to quickly adjust the digital zoom (enlarge or reduce). By pressing and holding the mouse wheel, you can move the screen section accordingly.



## 6.10 Calibration setting

Calibration

200mm:200px ▼ + 🗑️ ✎️


Item 📐 ⬇️ ↻

Name 200mm:200px

Length 200.000 mm ▼

Pixel 200.000 px

Scale 1.000000 mm/px

Click the button  to set up the calibration, the user can select the line and circle calibration alternatively. Enter the calibration name in the corresponding name field, draw a standard length of the line or circle on the preview area according to the actual length with the calibration scale provided. Enter the number in the length column and confirm with the Enter key. Select the appropriate unit, click the "Save" button again to finish adding the calibration.

A calibration is preset for each magnification ratio (0.7x, 1x, 1.5x, 2x, 4x, 4.5x).

Calibration

200mm:200px ▼ + 🗑️ ✎️

**Grid line setting**

Grid

**Enable all** Grid reset Scale

Group A ▼ Line V1 ▼ Enable

Color [grey] ▼ Line [white] ▼

**Measurement attribute**

Line c [red] ▼ Line w 1 + -

Font c [red] ▼ Font s 16 + -

Clicking the "Enable all" button enables the 8 horizontal and vertical scale lines. The user can enable or disable each grid line as needed. Also, the color and thickness of each line can be set. Under the "Group" option, 8 groups of grid lines can be saved, which is convenient to quickly open the preset grid lines.

In the "Measurement" property, the user can select the width and the color of the graphic line and set the size of the font color of the measurement information.



## 7 Optional equipment

Accessories	
Auxiliary objective 0.5x	OBB-A3225
Auxiliary objective 2.0x	OBB-A3226
Solder protection lens	OBB-A3227

## 8 Troubleshooting

Problem	Cause	Solution
Stains or dust on the image	Impurities are on the sample	Clean sample
The image is blurred	Impurities are on the lens surface.	Clean lens
	The focus is not correct.	Adjusting the focus
The video image is not displayed.	The external power cable is not connected.	Connect the external power cable.
The image is too bright or too dark.	The LED lighting is set incorrectly.	Adjust the brightness of the LED ring light.
	Check the display settings.	Open the settings display menu to adjust the brightness.
The display does not respond.	Overlaps in the system (too many operations) cause error loops.	Restart the system
The LED ring light does not light up when it is on.	No power	Check the connection of the power cord.
	The LED light is burned out.	Replace it with new lighting.
The LED light has suddenly burned out.	The voltage is too high.	Use a suitable external power adapter.
The illumination brightness is not sufficient.	The voltage is too low.	Use a suitable external power adapter.

## 9 Service

If, despite studying these operating instructions, you still have questions about commissioning or operation, or if, contrary to expectations, a problem should occur, please contact your specialist dealer. The device may only be opened by trained service technicians authorized by KERN.

## 10 Disposal

The packaging is made of environmentally friendly materials that you can dispose of at local recycling points. The disposal of the storage box and the device must be carried out by the operator in accordance with the valid national or regional law of the user location.

## 11 Further information

The images may differ slightly from the product.

The descriptions and illustrations in these operating instructions are subject to change without notice. Further developments to the device may entail such changes.



All language versions include a non-binding translation. The original German document is binding.