



Microscope Camera

ODC 854



PROFESSIONAL MEASURING

Operating instructions

Microscope camera ODC 854

Version 1.0
2026-01
EN
ODC-854-BA-e-2610

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KERN & Sohn GmbH
Ziegelei 1
72336 Balingen-Frommern
Germany



+0049-[0]7433-9933-0



+0049-[0]7433-9933-149



info@kern-sohn.com



www.kern-sohn.com

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OPTICS

KERN Optics**Operating instructions microscope camera ODC 854**

Version 1.0 2026-01

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1 Technical data

| Model KERN | ODC 854 |
|-----------------------------|--|
| Item number | TODC 854-A |
| Camera type | 4K Microscope camera |
| Mounting | C-Mount |
| Resolution / Pixel size | 8 MP 4K / 2 x 2 µm |
| Sensor | 1/1,8" Sony CMOS IMX678 |
| Sensor Dimension / Diagonal | 7,18 x 5,32 mm / 8,89 mm |
| Exposure process | Rolling Shutter |
| Exposure time min / max | 0,2 ms / 33,3 ms |
| Images per second | 30 FPS at 3840 x 2160 |
| Interfaces | USB 2.0 (2x) HDMI 4K |
| Software used | Integrated measurement software via HDMI External software S-Viewer (OXM 904) |
| Supported operating systems | Windows 7 and upper |
| System requirements: | |
| CPU | Quad-Core, x64 |
| RAM | 8 GB |
| Memory (ext.) | 256 GB SSD |
| Graphics card | DirectX 12 |
| Screen | 13" Full HD, 1920 x 1080 |
| Clock frequency | 2,5 GHz |
| Net weight | 0,2 kg |
| Dimension | 63 x 63 x 54 mm |

2 Declaration of conformity

You can find the current EU Declaration of Conformity online at:

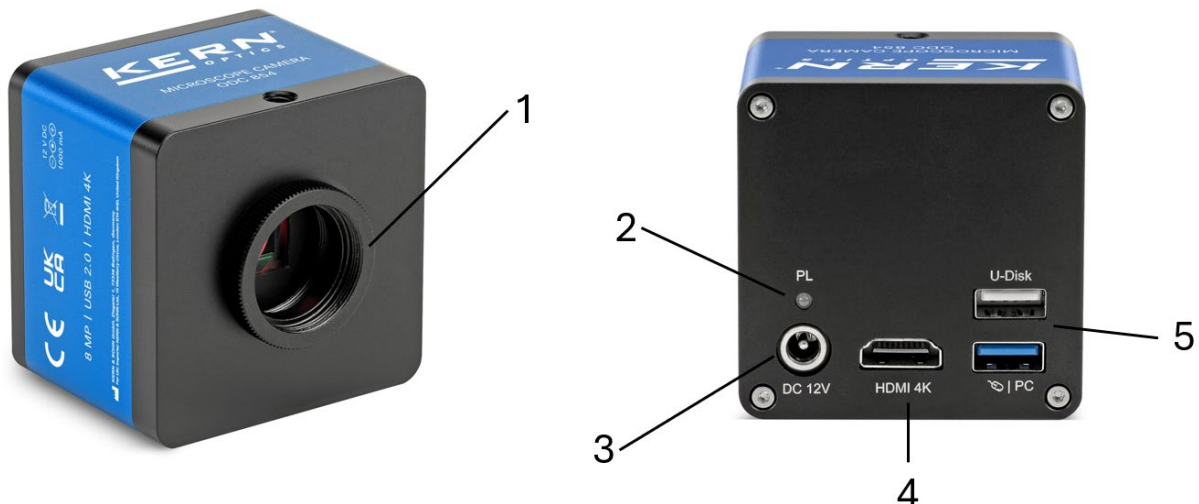
<https://www.kern-sohn.com/shop/de/DOWNLOADS/>

3 Overview of the device

3.1 Scope of delivery

- Microscope camera
- Plug-in power supply (100-240 V, 50/60 Hz, Output: 12 V DC, 1 A, 12 W)
- USB-Wireless mouse (1,5 V AA-battery, not included)
- USB-Interface cable
- HDMI-Interface cable
- Calibration slide (multi)
- Operating instructions

3.2 Nomenclature






| Number | Description |
|--------|---|
| 1 | C-Mount adapter (with cover) |
| 2 | Status-LED <u>This signals the current device status:</u> LED off No power supply / device de-energised LED red Power supply available, fault LED blue Device in operation, normal operating status |
| 3 | 12 V DC connection |
| 4 | HDMI 4K interface |
| 5 | USB 2.0 (2x) |


4 Basic information (general)

4.1 General information on warnings

Warnings are used in these operating instructions to warn you of possible personal injury or damage to property in certain situations.

| Signal word | Description |
|----------------|--|
| DANGER | Failure to observe the instructions will lead directly to serious injury, permanent impairment (e.g. loss of a limb) or death of the user or third parties |
| WARNING | Failure to observe the instructions may result in serious injury, permanent impairment (e.g. loss of a limb) or death of the user or third parties |
| CAUTION | Failure to observe the instructions may result in minor injuries or temporary damage to the user or third parties (e.g. minor cuts) |
| NOTE | Failure to observe the instructions may result in damage to property |

| Symbol | Meaning |
|---|--|
| Warning signs | Warning signs warn you of dangers that may lead to personal injury. The symbol indicates the type of hazard. |
|  | Indicates general hazards or a danger point |
|  | Warning of electrical voltage |
|  | Warning of electromagnetic interference |

| Symbol | Meaning |
|---|--|
| Command sign | Mandatory signs prescribe measures that you must take to avoid personal injury or damage to property. The symbol indicates the necessary actions or objects to prevent damage. |
|  | Indicates a prescribed action |

4.2 Intended use

The intended use of the microscope camera is the non-contact, optical magnification and digital representation of objects or surfaces for visual inspection, documentation or analysis. It is typically used in laboratories, quality assurance or research to visualise details that cannot be seen with the naked eye. It is operated in combination with a suitable microscope and a suitable C-mount adapter.

4.3 Improper use

The microscope camera is not to be used for medical purposes. Do not use the device in potentially explosive atmospheres or for measurements in liquids or on live parts. Unauthorised structural changes, additions or conversions to the device are prohibited.

4.4 Warranty

Warranty expires with

- Non-compliance with our specifications in the operating instructions
- Use outside the described applications
- Modification or opening of the device
- Mechanical damages and damages caused by media, liquids, natural wear and tear
- Improper installation, incorrect assembly or electrical installation

5 Basic warnings and safety instructions

5.1 Observe the notes in the operating instructions




Read the operating instructions carefully before commissioning/using the device, even if you already have experience with KERN devices. Always keep the manual in the immediate vicinity of the device. If you lose these instructions, you can find them in our download area at **www.kern-sohn.com**.

5.2 Staff training

The appliance may only be used by persons who have read and understood the operating instructions, particularly the chapter on safety.

5.3 Security

| ⚠ WARNING | |
|--|---|
|  | <p>Read all safety information and instructions. Failure to comply with the safety information and instructions may result in electric shock, fire and/or serious injury.</p> <p>Keep all safety information and instructions for future reference.</p> <ul style="list-style-type: none">• The camera must not be modified in any way. This can lead to incorrect measurement results, safety-related defects and destruction of the sensor• Do not operate the device in potentially explosive rooms or areas and do not set it up there.• Do not operate the device in an aggressive atmosphere.• Do not immerse the device in water. Do not allow any liquids to penetrate the inside of the device.• The device may only be used in a dry environment and under no circumstances in rain or at a relative humidity above the operating conditions.• Protect the device from permanent direct sunlight.• Do not expose the device to strong vibrations.• Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in a legible condition.• Do not open the appliance. |

⚠ WARNING



Risk of injury from electric shock!

- There is a risk of short circuit due to liquids penetrating the housing!
- Do not immerse the device and accessories under water. Ensure that no water or other liquids get into the housing.
- Work on electrical components may only be carried out by an authorised specialist company!
- Take care not to twist or kink the mains or connection cable.
- Only use the mains adapter supplied.

⚠ WARNING



Choking hazard!

Do not leave the packaging material lying around carelessly. It could become a dangerous toy for children.

- The appliance is not a toy and does not belong in the hands of children.
- This appliance can be dangerous if it is used improperly or not as intended by untrained persons! Therefore, observe the personnel qualifications!

⚠ WARNING



Electrostatic sensitive device!

- The device can be destroyed by electrostatic discharge. Connectors for HF signals are particularly at risk.
- Please observe the handling instructions for electrostatically sensitive components.

CAUTION

- Keep sufficient distance from heat sources and extreme temperatures.
- Do not use the device in environments with high humidity or water mist.

! NOTE

- When setting up the appliance, take care when laying the cables to avoid tripping hazards.
- Do not use sharp-edged objects or unsuitable cleaning agents, abrasives or solvents to clean the appliance.

6 Transport and storage

6.1 Note

Improper storage or incorrect transport can damage the appliance. Therefore, please observe the information in these operating instructions.

- ✓ Protect the device from direct sunlight, extreme temperatures, shocks, dust and high humidity.
- ✓ Only store and operate the device within a temperature range of 0 - 40 °C.
- ✓ The relative humidity must not exceed 85 %.
- ✓ Cover the sensor when the camera is not in use.

6.2 Transport

Always use the original packaging when transporting the device to protect it reliably from external influences.

6.3 Storage

Please observe the following guidelines when storing the device:

- ✓ Store in a dry place and protect from frost and heat
- ✓ Always cover the sensor with the lid
- ✓ Observe the storage temperature according to the technical data

6.4 Packaging / Return transport

Returns are only possible within the framework of the general terms and conditions. Please keep the complete original packaging for possible return transport.

Please note the following instructions for returns:

- ✓ Only use the original packaging.
- ✓ Disconnect all connected cables and loose or moving parts before shipping.
- ✓ Reattach any existing transport locks.
- ✓ Carefully secure all parts against slipping and damage.

7 Unpacking



In the event of a return, please follow the instructions in the "Packaging / Return transport" chapter.

Please check the device carefully for possible transport damage upon receipt. Pay attention to:

- ✓ the integrity of the outer packaging
- ✓ the housing and all accessories
- ✓ the device itself

If you notice any damage, please report this to KERN & SOHN GmbH immediately.

8 Connecting camera



Remove the black cover on the underside of the camera housing. Then remove the protective film over the sensor, if present (does not apply to all models).



There is a standardised C-mount thread under the cover. This is used for mounting on a C-mount adapter.

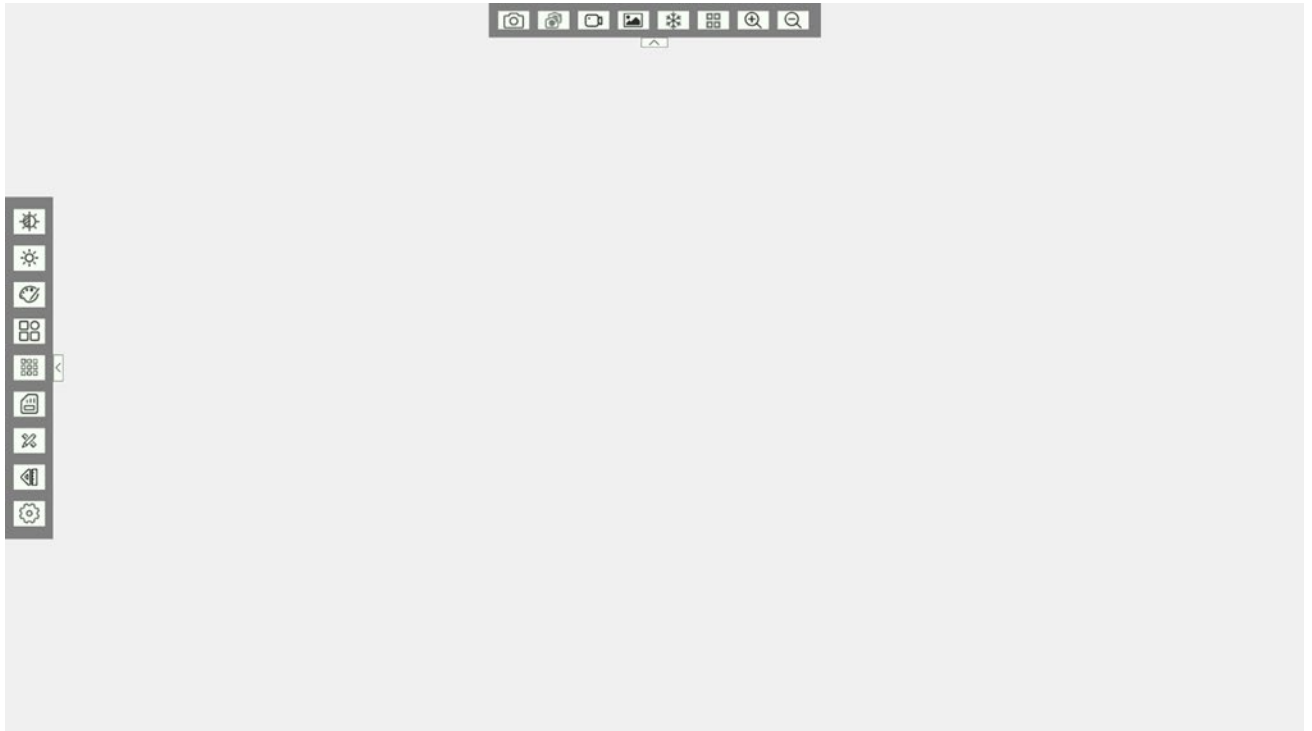
The adapter required depends on the design of the respective microscope and may vary depending on the model. Please only use an adapter from the microscope manufacturer or request one from them.



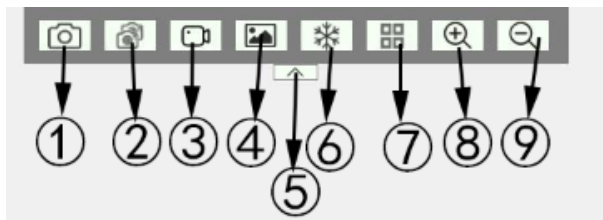
9 4K Camera software

9.1 Connecting the camera to an external screen

Connect the camera to an external monitor using the HDMI cable supplied. As soon as the camera is supplied with power via the mains adapter, the internal 4K measurement software starts automatically. The software has two menu bars: one at the top and one on the left-hand side of the screen:



9.2 Icons and their function in the top menu bar



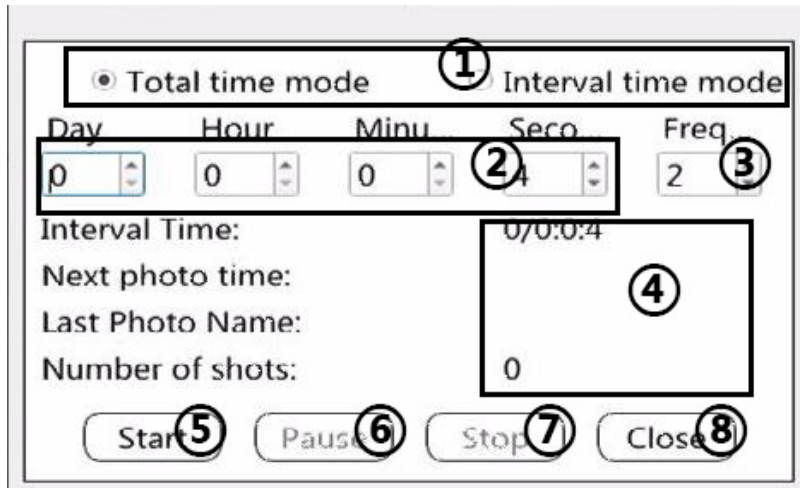
- ① Photo function
- ② Continuous shooting function
- ③ Video recording
- ④ Gallery
- ⑤ Show / hide menu bar
- ⑥ Image freeze function
- ⑦ Multiview function
- ⑧ + ⑨ Zoom function

Photo function

Press this icon to take a photo of the camera preview image. The photo is automatically saved in the gallery. The two menu bars are not included.

Note: This function is only possible if an USB memory stick with sufficient free storage space is inserted.

Continuous shooting function



① Mode selection

Total time mode: Take multiple photos according to the set number of times within the set time.

Interval time mode: Use the set time as the interval and take multiple photos according to the set number of times.

Note: The minimum interval time should not be less than 2 seconds.

② Time setting

Value can be set using the arrow buttons or by scrolling the mouse wheel.

③ Number of photos

Value can also be set using the arrow buttons or by scrolling the mouse wheel.

④ Information field during the photo shoot

Intervals, next photo, file name of the last photo, number of shots

⑤ Start time-controlled recording.

⑥ Pause the time-controlled recording, click again to continue.

⑦ Stop the time-controlled recordings.

⑧ Close the continuous shooting function. This stops active recording and closes the function.

Video recording

Press this symbol to start a video recording. Press again to stop the recording. The video is then saved automatically.

If the remaining storage space for a recording is less than 50 MB, the recording will be ended automatically.

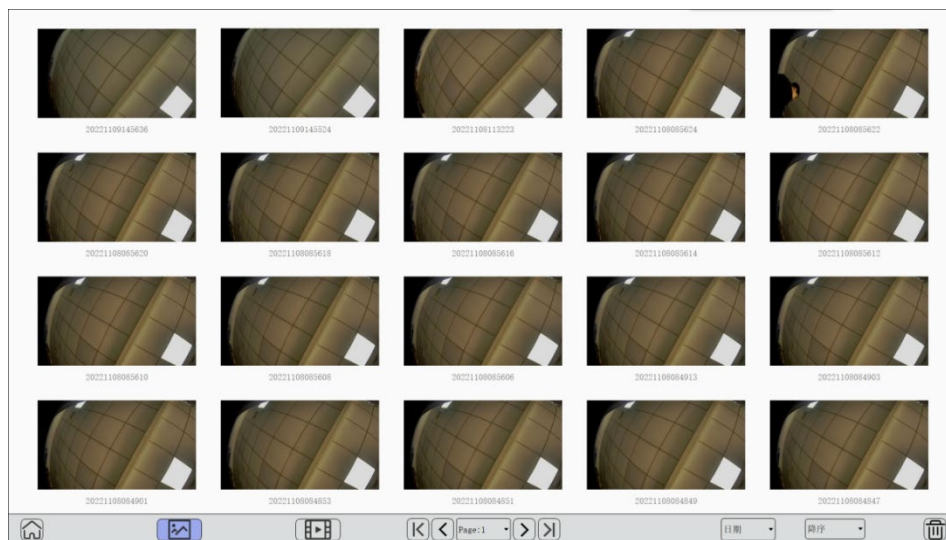
If the USB memory stick is removed during a recording, the video file may be damaged and can no longer be used.

Note: This function is only possible if a USB memory stick with sufficient free storage space is inserted.

Gallery

Image and video recordings can be viewed via the gallery.

Note: This function is only possible if a USB memory stick is inserted.



Overview of photo recordings



Overview video recordings



To the first page



To the last page



To the previous page



To the next page



Select and delete file



Exit gallery

To view a photo or video in full-screen mode, double-click on the desired file. Use the arrow buttons to switch to the next or previous file. To exit full-screen mode, click on the house symbol.

Right-click on an image or video file to rename, delete or open this file. Further file details can also be viewed.

Image freeze function

To be able to measure in a moving image, you can "freeze" it using this function.

Note: Zoom in, zoom out, horizontal/vertical flip, monochromatise and quarter screen cannot be performed in this mode.

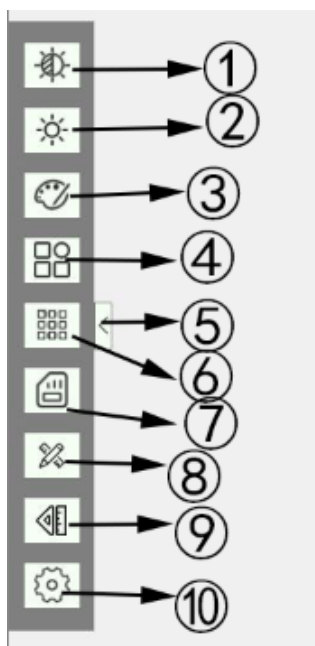
Multiview function

This function divides the screen into quarters. Clicking on a segment freezes the image. This application can contribute to better comparing and analysing. Clicking on a segment again cancels the freeze.

Zoom function

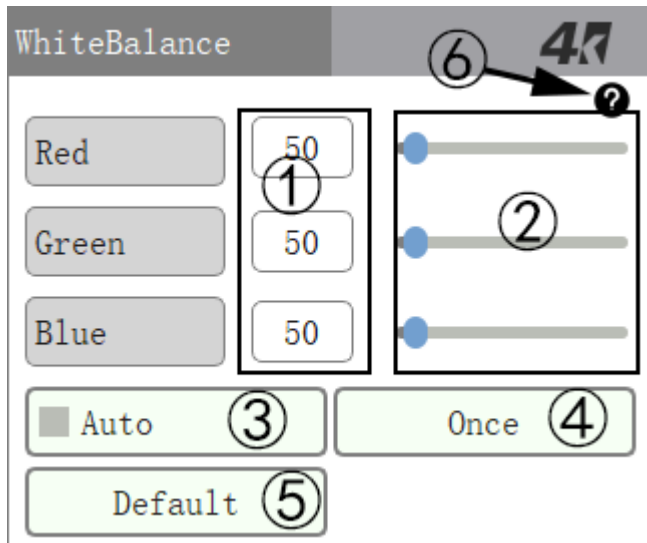
You can enlarge the image up to 5 times. To do this, use the magnifying glass with the plus or minus button. The mouse wheel has the same function.

9.3 Icons and their function in the left-hand menu bar



- ① White balance
- ② Exposure
- ③ Colour settings
- ④ Other functions
- ⑤ Show / hide menu bar
- ⑥ Grid lines
- ⑦ Information on the memory
- ⑧ Measurement calibration
- ⑨ Measurement menu
- ⑩ Settings

White balance



① Adjustment values numerical

Red range 0~255, green range 0~255, blue range 0~255

② If automatic is deactivated, the colour values can be set manually using these sliders.

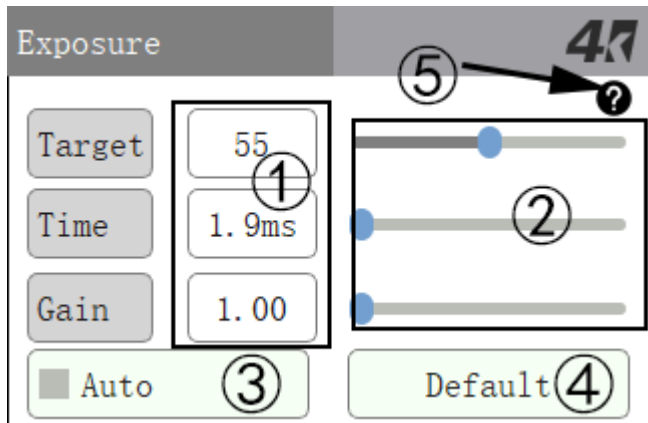
③ If the tick is set, automatic white balance takes place.

④ This button is used to automatically set the white balance to the current optimum value once. If automatic white balance is activated, the button remains deactivated. If automatic white balance is deactivated, the button can be clicked to adjust the white balance immediately.

⑤ Reset manually set values and activate automatic white balance.

⑥ White balance help

Exposure



① Exposure values numerical

Target value range 10~255, exposure time range 0~40ms, gain range 1~16

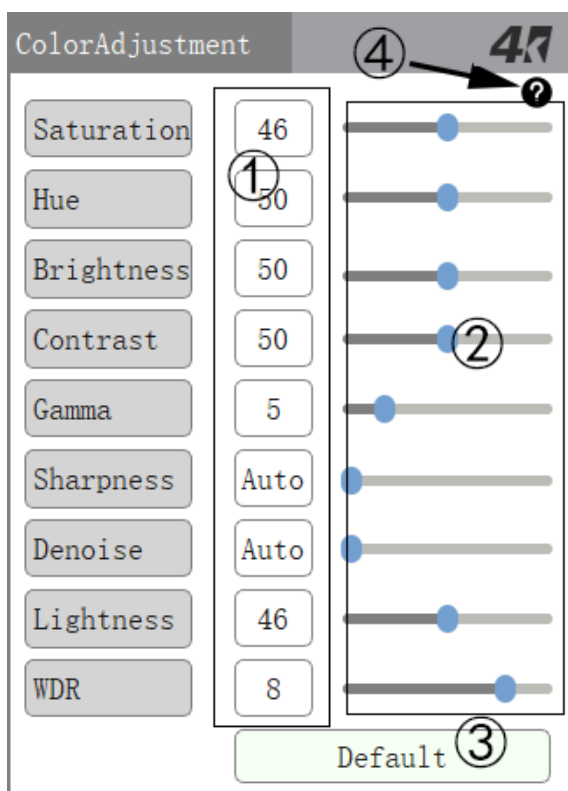
② If automatic exposure is deactivated, the exposure values can be set manually using these sliders.

③ Automatic exposure on/off

④ Reset manually set exposure target values and activate automatic exposure.

⑤ Exposure help

Colour adjustment



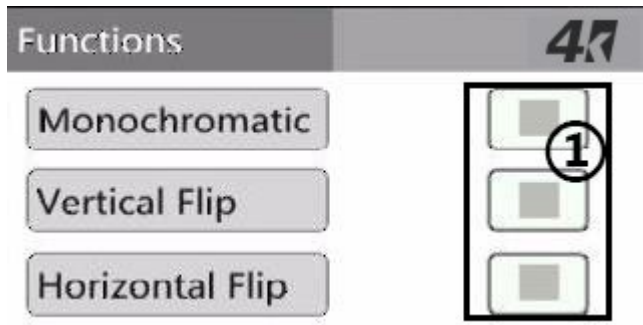
① Colour adjustment function numeric Saturation 0~100, Hue 0~100, Brightness 0~100, Contrast 0~100, Gamma 1~15, Sharpness 29~100, Noise reduction 31~64, Brightness 0~100, Dynamic range 0~15

② If automatic is deactivated, the exposure values can be set manually using these sliders. If the sharpness value (noise reduction value) is equal to the minimum value, automatic sharpness (automatic noise reduction) is switched on.

③ Reset to default values

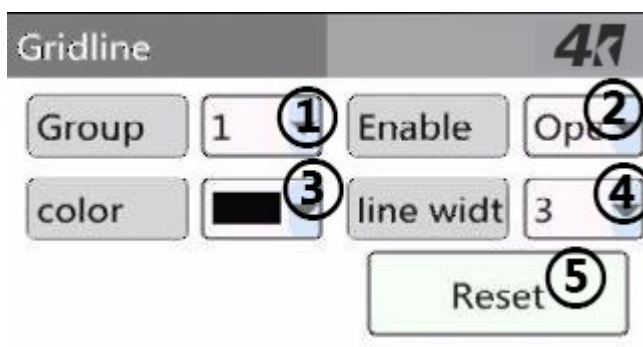
④ Help for colour adjustment

Weitere Funktionen



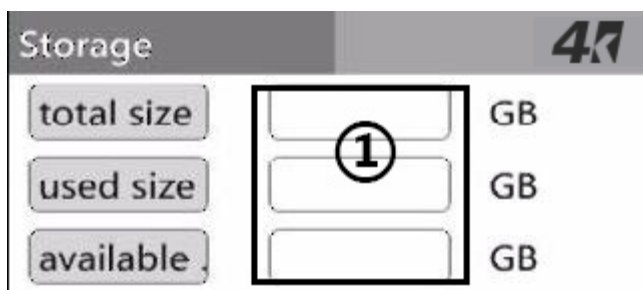
① Switching the grey scale, vertical flip and horizontal flip functions on/off

Grid lines



- ① Select the grid/grid lines 1-8
- ② Show/hide the respective lines
- ③ Colour assignment of the lines, there are 9 colours to choose from
- ④ Select the line width, there are 3 thicknesses to choose from
- ⑤ Reset position of all lines

Information about the memory



- ① Display of total, used and available storage space

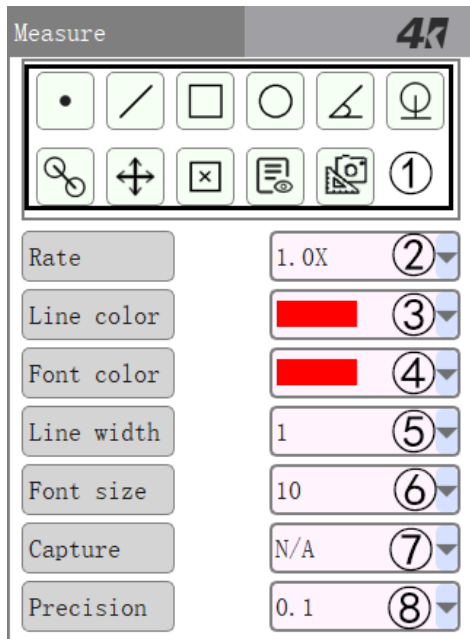
Measurement calibration

The screenshot shows a 'Calibration' dialog box with a title bar containing the text 'Calibration' and a logo '4R'. The dialog contains several input fields and buttons, each with a circled number indicating a step in the process:

- Rate:** A dropdown menu showing '0.7X' with a right arrow button (1).
- Length:** A text input field containing the value '5' (2).
- Unit:** A dropdown menu showing 'mm' with a right arrow button (3).
- Pixel:** A text input field containing the value '1018' (4).
- Resolution:** A text input field containing the value '203.6px/mm' (5).
- Buttons:** 'Add' (7), 'Delete' (8), 'Scale' (9), 'Consta' (partially visible), and 'Save' (6).
- Checkbox:** A checkbox labeled 'Remember to save after c.' (6).

- ① Stored selection of the magnification to be calibrated (0.7x / 1.0x / 1.5x / 2.0x / 3.0x)
- ② Enter the actual length of the calibration ruler
- ③ Select the length unit of the calibration ruler (μm , mm, cm, dm, inch, mil)
- ④ Number of pixels of the entered values
- ⑤ Number of pixels per unit (here: mm)
- ⑥ Save input
- ⑦ Add further enlargements. This also appears in the selection bar after saving.
- ⑧ Delete further enlargements. The added calibrations can be deleted. The 5 calibrations stored in the system can only be changed and not deleted.
- ⑨ Show/hide calibration ruler (if selected, the calibration ruler is displayed when changing menus; if not selected, the calibration ruler is hidden when changing menus).

Measuring menu



① Measurement operations (left to right, top to bottom) include drawing points (press after selection), selecting linear primitives (press and move after selection), selecting polygonal primitives (press and move after selection), selecting circular primitives (press and move after selection), drawing three-point angles (click on three points after selection), drawing the distance from a circle to a straight line (click on three points after selection), drawing double circles (click on six points after selection), moving (click on the boundary of the selected shape to move it as a whole, click on the active point to change the size), selecting deletion options (single deletion: select basic elements to be deleted and click, delete all: select and confirm to delete all basic elements),

table (display all drawn basic elements after selection, if you want to export data, please click the "Export" button), measurement fusion (after pressing, the measurement information will be fused with the original image data and saved as JPG images as image data).

② Magnification selection (click on the drop-down button or move the mouse over it to scroll and adjust the magnification)

③ Select the line colour (click on the drop-down button or move the mouse over it to scroll and adjust the line colour).

④ Select the text colour (click on the drop-down button or move the mouse pointer over it to scroll and adjust the text colour).

⑤ Select the line width (click on the drop-down button or move the mouse pointer over it to scroll and adjust the line width).

⑥ Select the font size (click on the drop-down button or move the mouse pointer over it to scroll and adjust the font size).

⑦ Select the detection area (click on the drop-down button or move the mouse pointer over it and scroll to adjust the detection area. The first option is used to deactivate this function).

Function description: When drawing graphical elements, the nearest valid point is automatically searched for based on the size of the detection area. If such a point is found, the mouse moves to this valid point. You can search for valid points again by moving the mouse.

⑧ Select the element accuracy (click on the drop-down button or move the mouse pointer over it and scroll to adjust the element accuracy).



After selecting the corresponding function, the cursor moves out of the current user interface and a user interface for quick functions appears, as shown in the adjacent figure

Measurement operations (from left to right, from top to bottom): Draw point (press after selection), draw line (press and move after selection), draw parallel line (press and move after selection), draw perpendicular line (press and move after selection), draw polyline (click after selection and press right mouse button when closing), draw any line (press and hold left mouse button and move after selection), draw radius circle (click and move after selection), draw a diameter circle (click and move after selection), draw a three-point circle (click on three points after selection), draw an arc (click on three points after selection), draw the distance between a circle and a straight line (click on three points after selection), draw concentric circles (select and click on three points), draw a double circle (select and click on six points), draw three angles (select and click on three points), draw a rectangle (select and click to move), draw a polygon (select and click to exit, right-click to exit), move (select and click on the graphic border to move it as a whole, click on the active point to change the size), delete individually (select and click on the graphic to be deleted), delete all (select and confirm, to delete all graphic elements), Table (select and display the information of all drawn graphic elements, if you need to export data, click the "Export" button), Measurement Merge (press to merge the measurement information with the original image data and save it as a JPG image), Back (this interface disappears after pressing and the home interface is displayed).

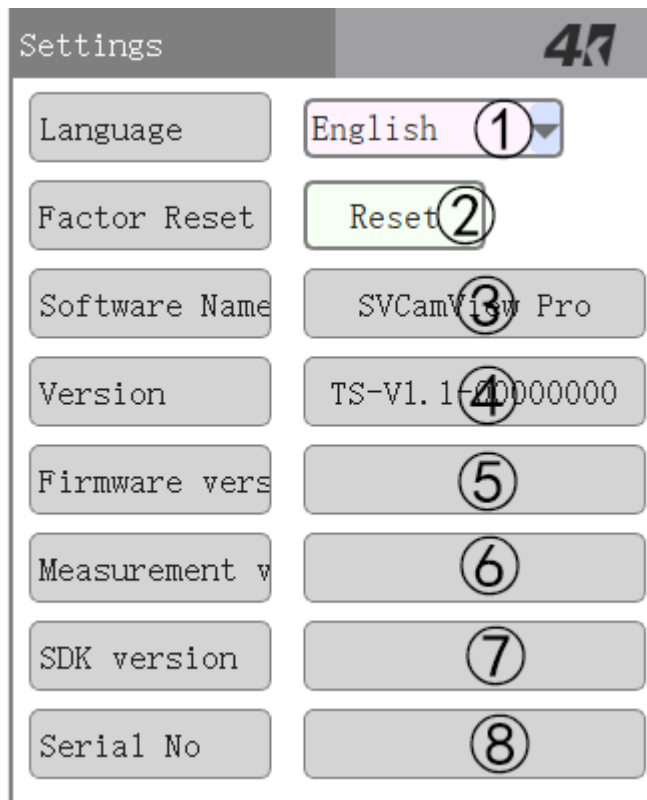
Setting the screen resolution

Here you can choose from two screen resolutions.

1920*1080@60FPS

3840*2160@30FPS

Settings



① Language selection (German, English, French, Italian, and others)

② Restore factory settings

Attention: After restoring the factory settings, the following contents are reset:

(1) The exposure parameters are reset to the default settings and automatic exposure is activated.

(2) The white balance parameters are reset to the default settings and manual white balance is activated.

(3) Contrast, saturation, brightness, sharpness, noise reduction, colour tone and gamma are reset to the default parameters.

(4) Screen flip, freeze, monochromatisation and quad screen

are not part of the factory reset.

(5) Reset the colour of the measurement attribute to red, the line width to 2, the font colour to red, the font size to 10, the accuracy to 0.01 and the detection to 10 px.

(6) Reset the colours of the grid lines for all groups, set all line statuses to "Off", set all line widths to "1" and reset all line positions.

③ Information on the programme name

④ Information on the software version

⑤ Information on the firmware version

⑥ Information on the version of the measurement library

⑦ Information on the SDK version

⑧ Information on the serial number

9.4 Frequently asked questions (FAQ)

(1) When auto exposure is on, the light source is unstable and fluctuations in exposure time and gain may occur, which is normal.

(2) With auto white balance, changes in the image may cause fluctuations in the red, green and blue values, which is a normal phenomenon.

10 Using S-Viewer software

1. Download the free S-Viewer software from our website.
2. Connect the camera to your computer using the USB cable supplied.
3. Detailed PDF instructions are available for S-Viewer, which you can save or print out. You can find this document in the software's menu bar under *About* → *Help*.

11 Optional accessories

| Description | Article-No. |
|-----------------------------|-------------|
| KERN USB memory stick 32 GB | OBB-A3234 |

12 Troubleshooting

| Problem | Cause | Solution |
|---|---|--|
| Stains or dust on the picture | Contaminants are present on the sample | Clean sample |
| The image is blurred | Impurities are on the lens surface | Clean lens |
| | The focus is not correct | Setting the focus |
| The video image is not displayed | The external power cable is not connected | Connect the external power cable |
| The picture is too bright or too dark | The LED lighting is set incorrectly | Set the brightness of the LED ring light. |
| | Check the display settings | Open the "Settings" menu to set the brightness |
| The display does not respond | Overlaps in the system (too many processes) lead to error loops | Restart the system |
| The LED ring light does not light up when it is switched on | No power | Check the connection of the mains cable |
| | The LED light has burnt out | Replace them with new lighting |
| The LED light has suddenly burnt out | The voltage is too high | Use a suitable external mains adapter |
| The lighting brightness is not sufficient | The voltage is too low | Use a suitable external mains adapter |

13 Service

If, after reading these operating instructions, you still have questions about commissioning or operation or if, contrary to expectations, problems occur, please contact your specialist dealer.

 Important:

The device may only be opened by trained specialist personnel or service technicians authorised by KERN & Sohn.

14 Maintenance, servicing and disposal



Disconnect the appliance from the power supply before carrying out any maintenance, cleaning or repair work.

14.1 Maintenance and cleaning

The appliance must always be kept clean, and dust must be removed regularly. Clean the device with a damp, soft, lint-free cloth. Ensure that no moisture penetrates the housing. Do not use sprays, solvents, alcohol-based cleaners or abrasive cleaners, only clear water to moisten the cloth.

Before wiping the appliance when wet, make sure that the power is switched off.

Glass components should preferably be wiped lightly with a lint-free cloth if they become dirty.

Other cleaning agents for the optical components include

- Bellows
- Brushes

Should a repair nevertheless be necessary, please contact your KERN & Sohn dealer or our Technical Service.

14.2 Repairing

Do not make any modifications to the appliance and do not use your own spare parts.

Please only contact the manufacturer for repairs or device inspections.

14.3 Disposal of the appliance and accessories



Old appliances and accessories should not be disposed of with household waste.

The operator must dispose of the packaging and appliance in accordance with the applicable national or regional legislation at the place of use.

The device consists of various components and materials, such as:

- Electronic components (circuit boards, electrical cables)
- Metal (housing)

Improper disposal of the appliance can have harmful effects on people and the environment.

Proper and environmentally friendly disposal can prevent harmful effects and recover raw materials.

15 Further Information

The illustrations 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 result in such changes.



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