

Operating instructions Tablet microscope camera

KERN

ODC-25

ODC 251

Version 1.1
02/2025
English





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Operating instructions

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1 Declaration of conformity

The current EC/EU Declaration of Conformity can be found online at:
<https://www.kern-sohn.com/shop/de/DOWNLOADS/>

2 Before commissioning



2.1 General information


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

Signal words and their description:

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 material damage.

Symbols, warnings and their meaning:

Icon	Meaning
Warnings	Warning signs warn you of dangers that could lead to injury. The symbol indicates the type of danger.
	Indicates general hazards or a danger point
	Warning of electrical voltage

Icon	Meaning
Command character	Mandatory signs prescribe measures that you must take to avoid personal injury or damage to property. The symbol indicates the actions or objects required to prevent damage.
	Designates a prescribed measure

2.2 Intended use

The tablet microscope camera enables a more convenient and effective way of microscopy by projecting the view of the sample onto a screen and providing the ability to measure, record and document.

2.3 Improper use

The 4K camera with HD touch display must not be used for medical purposes. Do not use the device in potentially explosive atmospheres or for measurements in liquids or on live parts. Unauthorized structural changes, attachments and conversions to the device are prohibited.

2.4 Guarantee

The warranty expires in the following cases:

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

3 Basic warnings and safety instructions

3.1 Follow the instructions in the operating instructions






Read the operating instructions carefully before using the device, even if you already have experience with KERN products. Always keep the instructions in the immediate vicinity of the appliance.

3.2 Training of the user

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

3.3 Security

 WARNING	
 	<p>Read all safety information and instructions. Failure to observe the safety information and instructions may result in electric shock, fire and/or serious injury. Keep all safety information and instructions for future reference.</p> <ul style="list-style-type: none">• The packaging must be opened carefully to prevent the accessories inside from falling to the floor and being damaged. <p>Avoid dirt or fingerprints on the camera's sensor, as in most cases this impairs the image quality.</p> <ul style="list-style-type: none">• The sensors and electronics inside the camera are very sensitive to light. Therefore, never hold the camera in direct sunlight for a long period of time.• Do not expose the appliance to strong vibrations.• Do not use the appliance in a damp environment, do not place it under water and do not allow any liquids to penetrate the inside of the appliance.• Do not operate the appliance in potentially explosive rooms or areas and do not install it there.• Do not open the device and do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in a legible condition.

4 Transportation and storage

Note

If you store or transport the device improperly, the device may be damaged. Observe the instructions for transporting and storing the appliance.

Transportation

Use the original packaging when transporting the device to protect it from external influences.

Storage

Observe the following storage conditions when the device is not in use:

- Dry and protected from frost and heat
- The ideal temperature range is between 0 and 40 °C and a relative humidity of 85 % should not be exceeded
- Protected against the ingress of dust

Packaging/return transportation

Returns are only possible within the framework of the general terms and conditions. Keep all parts of the original packaging for any necessary return transportation

- Only use the original packaging for return transportation
- Disconnect all connected cables and loose/movable parts before shipping
- Reattach any existing transport locks
- Secure all parts against slipping and damage

5 Scope of delivery

On receipt of the device, you should first check whether any damage has occurred during transportation, whether the outer packaging, the housing, other parts or even the device itself have been damaged. If any damage is apparent, please notify KERN & SOHN GmbH immediately.

- Tablet microscope camera
- Plug-in power supply 12 V / 2 A
- Calibration scale with multi-micrometer
- Operating instructions



Before installing the display, make sure that all listed parts are included in the packaging. In the event of a return shipment, please observe the instructions in the chapter "Packaging/return transportation".

6 Technical data and specifications

Model	ODC 251
Category	All-in-one tablet camera
Sensor	1/1.8" CMOS
Effective pixels	8 MP, 4K
Pixel size	2.0 μm \times 2.0 μm
Screen	10.5" touchscreen
Resolution	1920 \times 1280 (Full HD)
Frames per second (FPS)	30 FPS at 3840 \times 2158
CPU	Rockchip RK3568 Quad-Core
Operating system	Android 11
WLAN	2.4 GHz / 5 GHz, supports Wi-Fi 6
Bluetooth	5.0
Interfaces	USB 3.0 (OTG), USB 2.0, HDMI, Gigabit LAN
Input voltage	12 V DC / 2 A (no battery operation)
Measuring software	S-EYE 2.0
Functions	Image adjustments, length measurement, geometric measurements, user interface supported
Image / video recording	8 MP / 1080 P
Image / video format	JPG / MP4
Measurement table format	XLS
Frame rate	30 FPS @ 1920 \times 1080
Internal memory for image and video recordings	32 GB
Languages	German, English
Firmware software update	Made possible by KERN service
Connection type to the microscope	C-mount adapter
Overall dimensions	235 \times 190 \times 56 mm
Net weight	0.7 kg

7 Nomenclature



Pos. no.	Description
1	Tablet / Touch display
2	Camera housing with C-mount

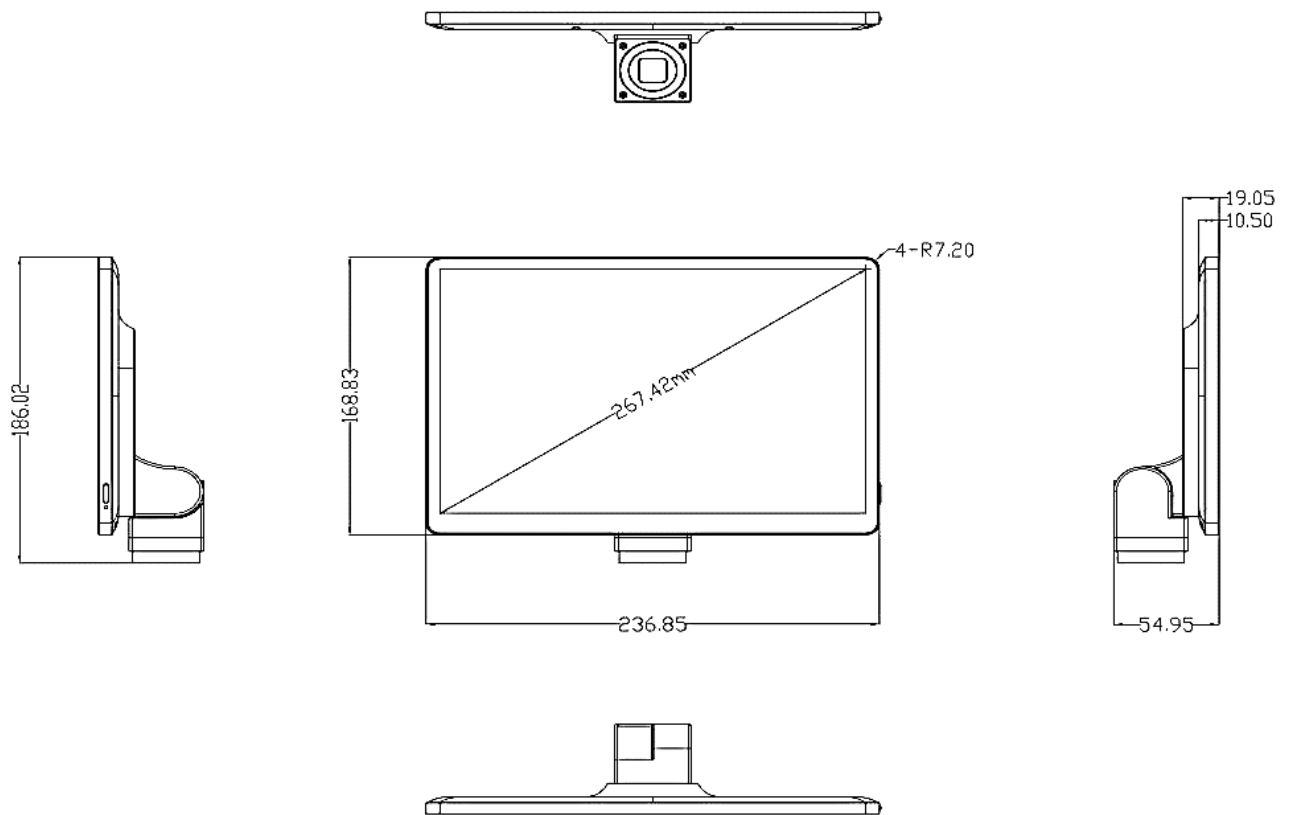


Pos. no.	Description
3	On / Off button
4	Power connection
5	HDMI
6	USB 2.0

Pos. no.	Description
7	USB 3.0 (2x) OTG*
8	Gigabit LAN
9	Loudspeaker
10	Tilt adjustment

**USB OTG (On-The-Go) is an extension of the USB standard that allows a device to function both as a host (e.g. a computer) and as a peripheral device (e.g. a USB stick).*

8 Dimensions



9 Assembly

1. Remove the tablet camera and the power adapter from the packaging.
2. Remove the protective film from the display.
3. Unscrew the camera cover on the underside and remove the protective film from the sensor there too.
4. Screw the tablet onto the *C-mount adapter on the trinocular connection of the microscope (see illustration on page 11).
5. Establish the power supply using the 12 V DC plug-in power supply unit supplied. The socket for the power connection is located on the back of the tablet.

**Not included in the scope of delivery*



Warning:

Disconnect the appliance from the power supply if it will not be used for a long period of time.

Tablet-Camera



C-Mount-Adapter



Microscope



10 Introduction to the S-EYE 2.0 camera software

10.1 Software features

The tablet camera can be connected to an external (larger) monitor via the HDMI port to obtain a synchronized real-time image from the camera.


Photos or videos can be taken via the touchscreen by touching the surface. It is also possible to use a (wireless) USB mouse via the USB 2.0 interface.

Image and video files are stored on the internal 32 GB memory. Using an external hard disk is also no problem. Simply connect it to one of the two USB 3.0 ports.

Devices such as USB sticks, keyboards, mice, external hard drives or printers can be connected and used directly on the tablet via its two USB 3.0 OTG (On-the-Go) interfaces.

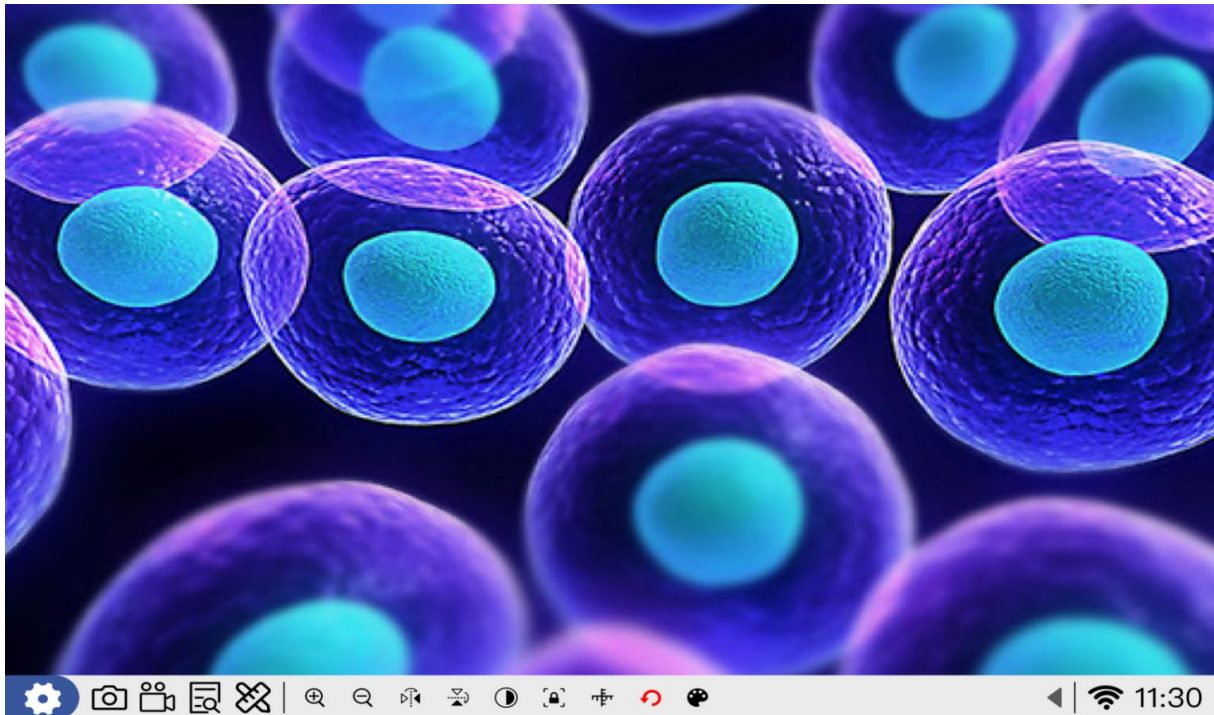
10.2 Switching on the tablet camera

Press the on/off button and hold it down for 2 seconds. The tablet camera must be permanently connected to the power supply for this, as **battery operation is not possible**.

The Android 11 operating system then starts and automatically switches to the S-EYE 2.0 camera software. If this does not happen, start S-EYE manually. You can find the app on the  Android start page.

11 Operating the camera software

11.1 Home screen



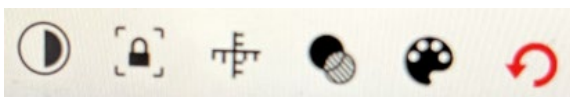
11.2 Basic symbols and their function



Settings (Image Parameters, Length Calibration, PDF Manual), Photo and Video Capture, Gallery, Measurement and Editing



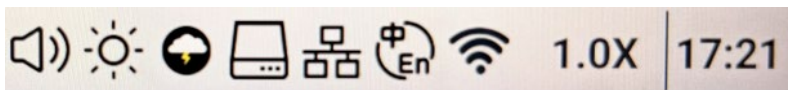
Digital zoom in / zoom out (1x~16x), flip image vertically, flip image horizontally



Black-and-White Mode, Freeze Image, Display Crosshair, Show Focus Value, Adjust Color and Line Thickness, Reset Parameters

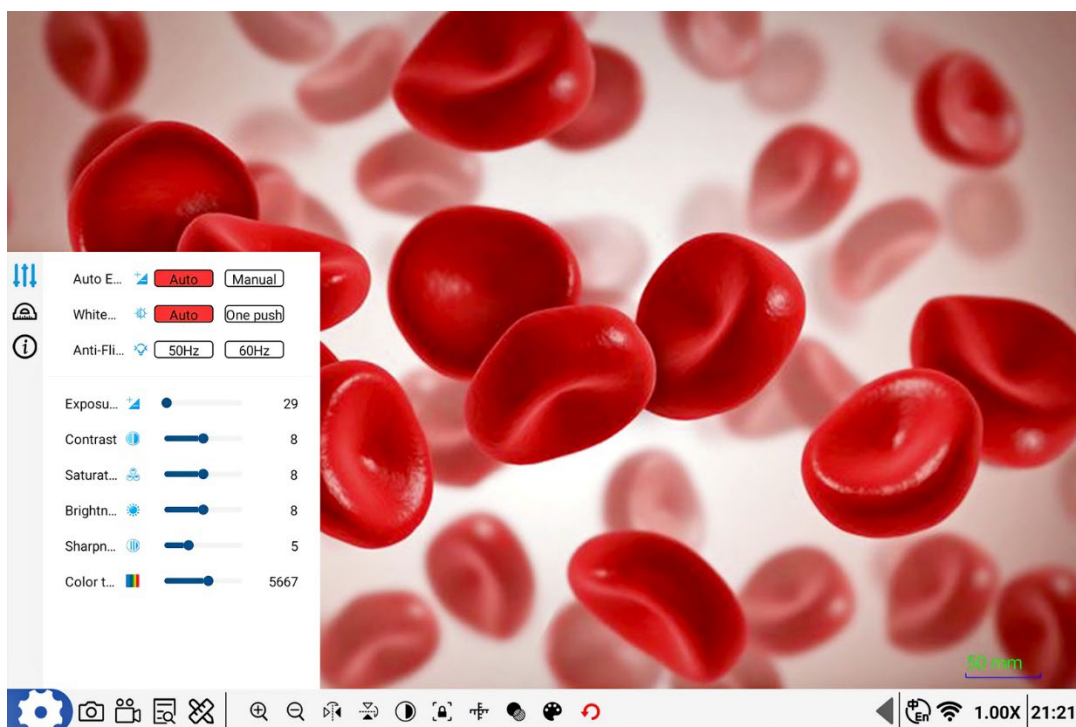



Click on the arrow to display further settings



Volume and Brightness Adjustment, Internet Browser, File Manager, LAN Settings, Language Selection, Wi-Fi Settings, Current Magnification, Time Setting

11.3 Adjust image parameters



Click on the button  to open the settings menu as shown above and adjust the image parameters as required.

Automatic exposure

Select either automatic or manual exposure and adjust it accordingly. The system is set to automatic exposure by default.

Automatic white balance

There are two modes: automatic and manual correction. The automatic mode is active by default. For manual correction, point the camera at standardized light or white paper and press the corresponding button. The camera will automatically adjust the white balance to match the current lighting conditions.

Anti-flicker

The system provides the option to select between two frequencies for flicker reduction: 50 Hz and 60 Hz.

This setting helps minimize flickering from light sources such as fluorescent lamps or LED lights, which may be visible in recordings. Depending on the local power supply conditions or the type of lighting, you can select the appropriate frequency to achieve flicker-free recordings. 50 Hz is the optimal choice for regions with a power grid frequency of 50 Hz (e.g., Europe), while 60 Hz is better suited for regions with a 60 Hz power grid frequency (e.g., North America).

Exposure

The camera's exposure time can be adjusted as needed to control the brightness of the image. A longer exposure time allows more light to be captured, which is beneficial in low-light conditions, while a shorter exposure time is better for capturing motion and preventing overexposure in bright light. You can flexibly adjust the exposure time to suit the specific lighting conditions and recording requirements.

Contrast

The image contrast can be adjusted as needed to enhance or reduce the difference between the bright and dark areas of the image. Increasing the contrast results in more vivid and distinct tones, while decreasing it creates softer transitions and less intense colors. This setting allows you to optimize the image display to meet your desired visual requirements.

Saturation

The image saturation can be adjusted as needed to increase or decrease the intensity of the colors in the image. Higher saturation makes the colors appear more vibrant and intense, while lower saturation results in more muted and less vivid colors. This setting helps you tailor the color reproduction to achieve the desired visual effects or adapt to the surrounding conditions.

Brightness

The image brightness can be adjusted as needed to increase or decrease the overall brightness of the image. Higher brightness makes the image brighter and more visible, while lower brightness results in darker images with more contrast. This setting allows you to optimize the image for different lighting conditions or desired visual effects.


Sharpness

The image sharpness can be adjusted as needed to increase or decrease the level of detail in the image. Higher sharpness emphasizes fine details and contours, while lower sharpness gives the image a softer, less defined appearance. This setting helps you tailor the image quality to meet the desired requirements or the type of shot.

Colour temperature

The image color temperature can be adjusted as needed to shift the color tones from warm (yellow/orange) to cool (blue). A higher color temperature (cooler) gives the image a bluish tone, while a lower color temperature (warmer) adds a reddish-yellow hue to the image. This setting allows you to adapt the color reproduction to different light sources or desired visual effects, optimizing the natural color representation.

11.4 Perform measurement calibration

Click on the button  to enter the measurement calibration mode.

1. Select mode

Two calibration methods are available: line calibration and circle calibration. After clicking the line calibration icon, the preview screen will directly display the line segment. Depending on the position and length of the calibration scale, use the mouse to move the line segment so that it aligns with the corresponding scale. Set the name, length, unit, and accuracy, and finally click the save icon to complete the calibration.

2. Delete

You can delete unwanted calibration information by clicking the delete icon.

3. Assign names

After drawing the line segment, the cursor will automatically be positioned at this point. Enter the corresponding name and then select the unit. After confirmation, the cursor will jump to the next window.

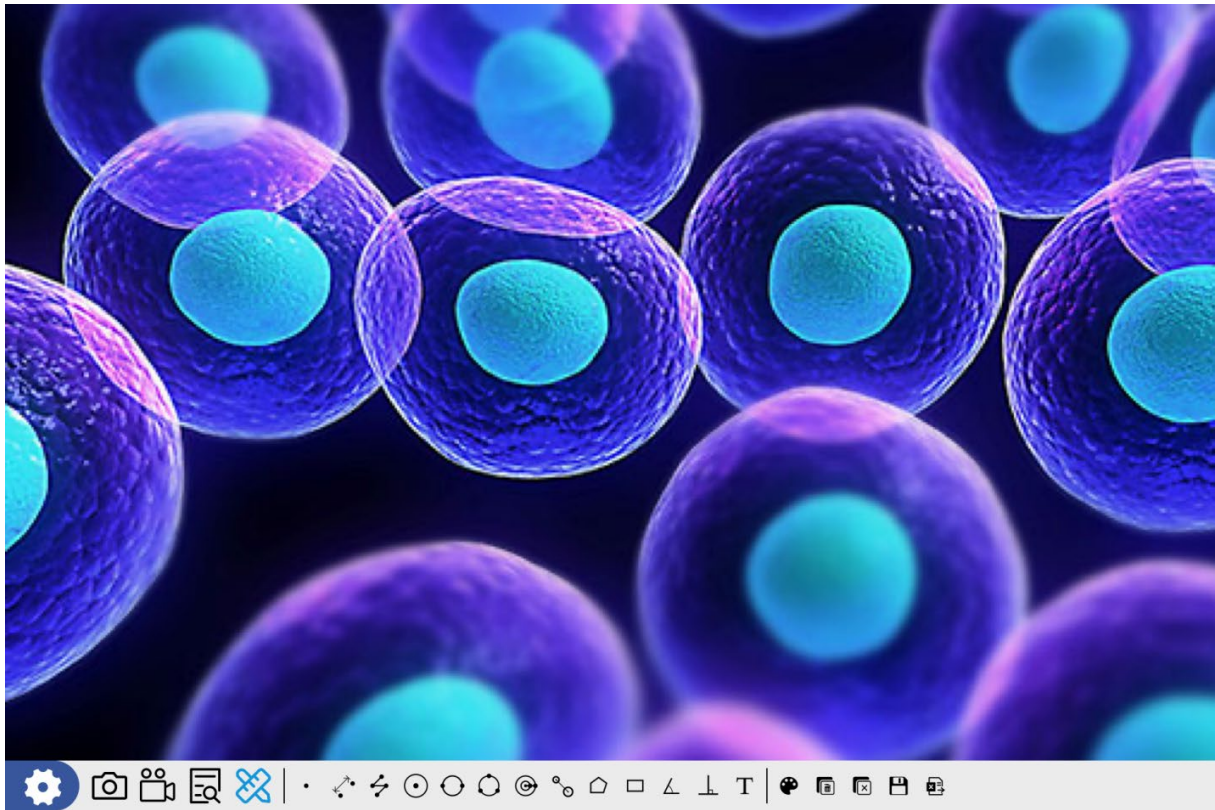
4. Specify accuracy


After setting the name and unit, the corresponding number of decimal places must be configured to ensure measurement accuracy.

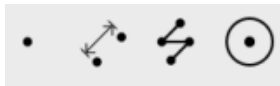
5. Switch scale on/off

There is an option to display the scale on the screen. To do so, check the box.

11.5 Measurement Mode



Click on  to enter the measurement mode. You can measure the objects and create a screenshot for a report.



Draw point coordinates, straight line, dashes (end of right mouse button), circle



2-point circle, 3-point circle, concentric circles, distance between circle centres



Polygon, rectangle, angle, point-line distance, text marker



Set colour and line thickness, delete last measurement, delete all measurements, screenshot measurement, export measurement results table

Messergebnisse								
Einheit:mm								Export report
Anzahl	Center	Durchmesser	Bereich	Länge	Weite	Höhe	Winkel	Distanz
0	(0,4,0,0)	0,0	0,0	0,9	0,0	0,0	0,0	0,0

To export the measurement table, click on the "Export report" button. This measurement table is saved in xls-format under "Measure".

11.6 Gallery

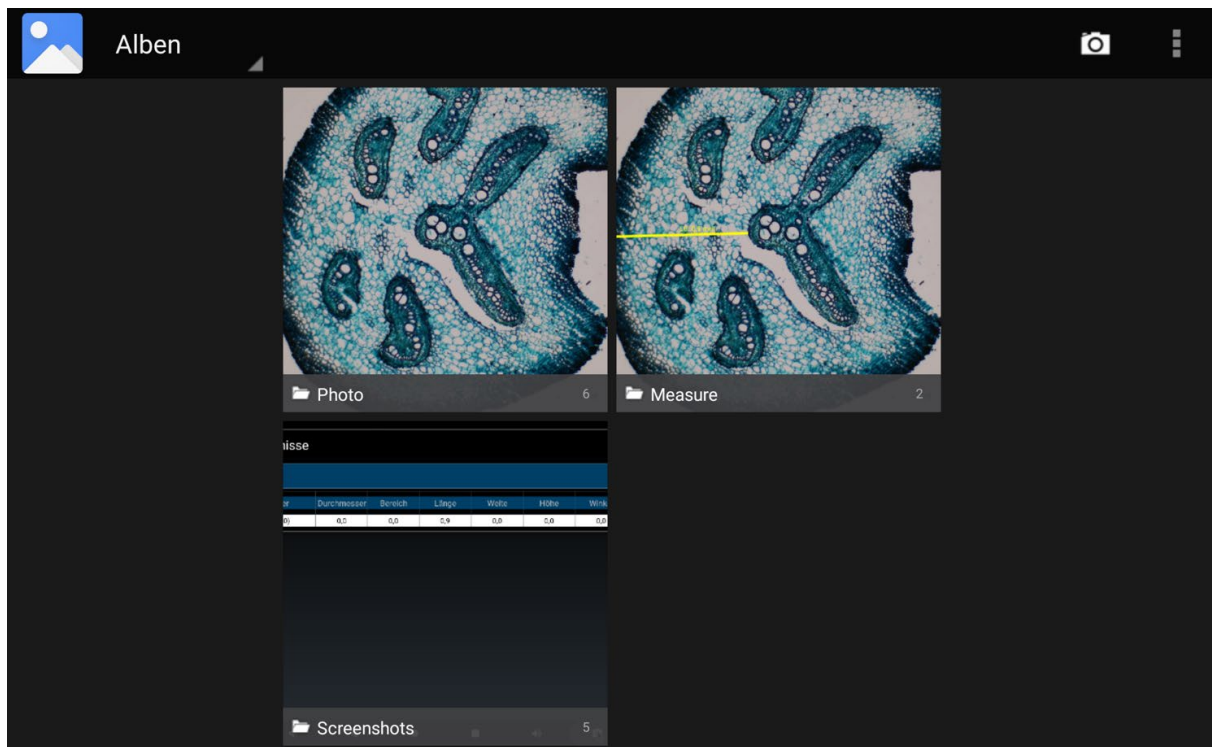


Open the gallery in the tablet's main menu.



Open the gallery under S-EYE.

All images and videos are saved in albums in the gallery.
Example: Photo, Measure, Screenshots



11.7 Explorer

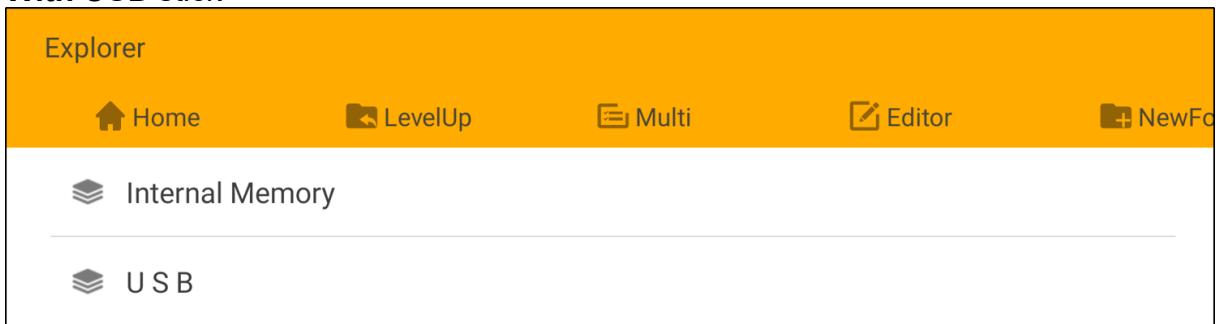
You can start the explorer via this icon:



Without USB stick



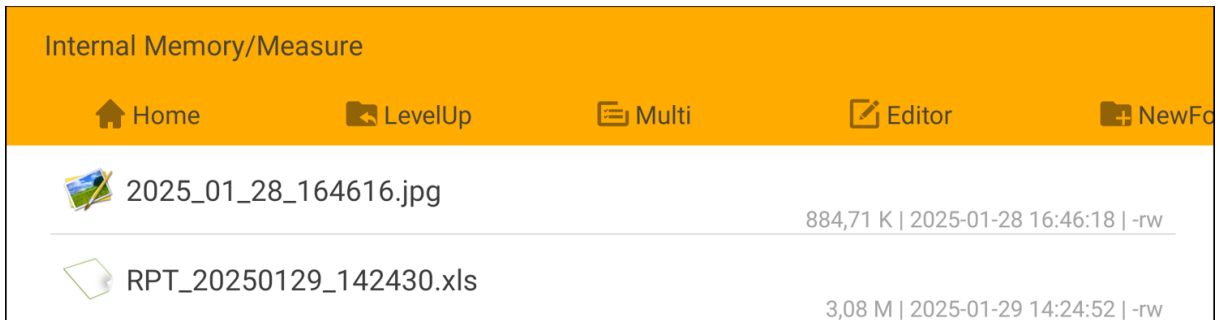
With USB stick



11.8 Description of important folders

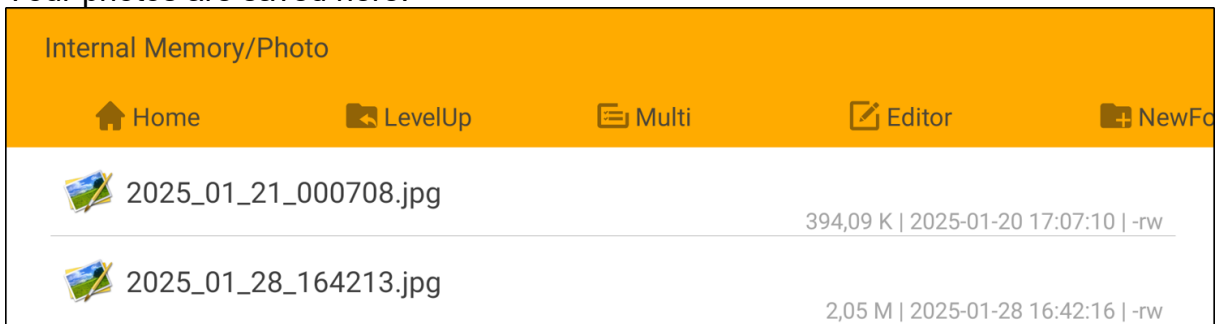
Measure

Your measurements are saved here.



Photo

Your photos are saved here.



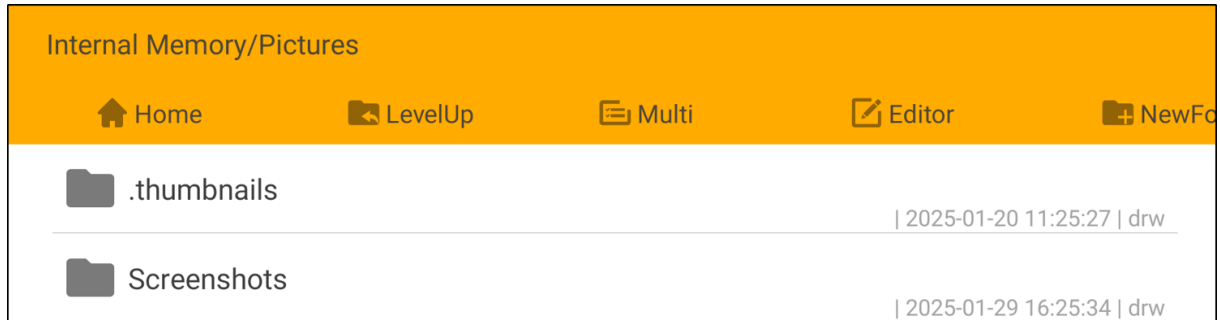
Record

Your video recordings are saved here.



Pictures

Your screenshots are saved here.

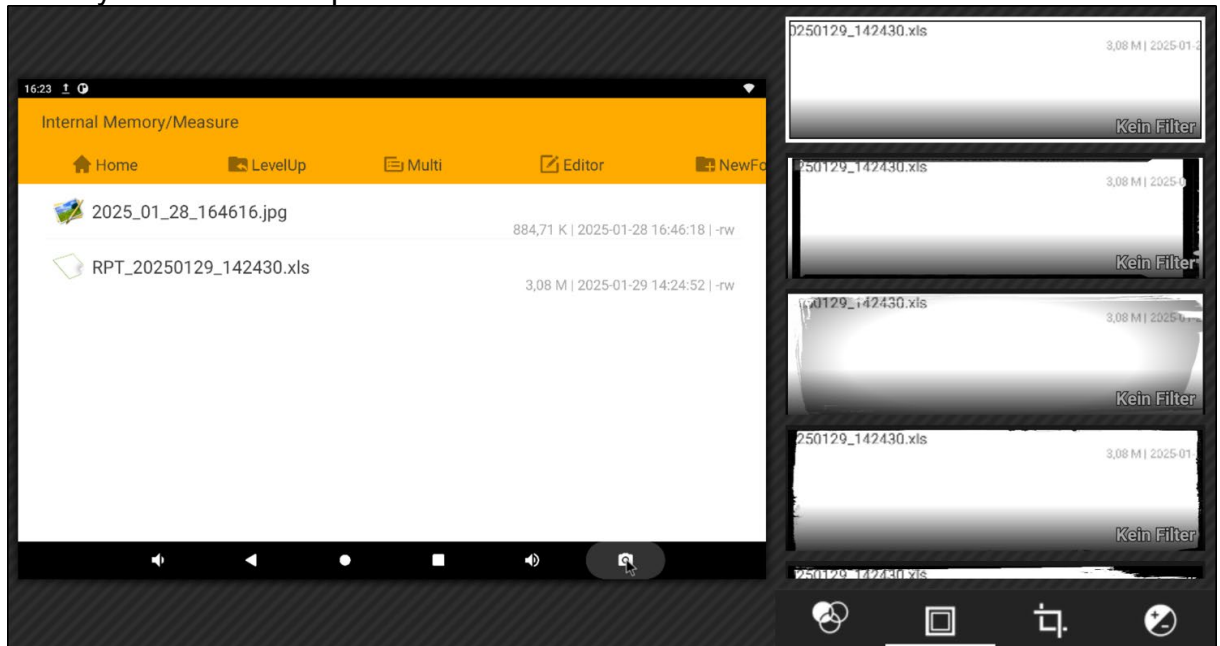


Edit

After triggering a screenshot, this menu appears...



...and you can edit the photo.

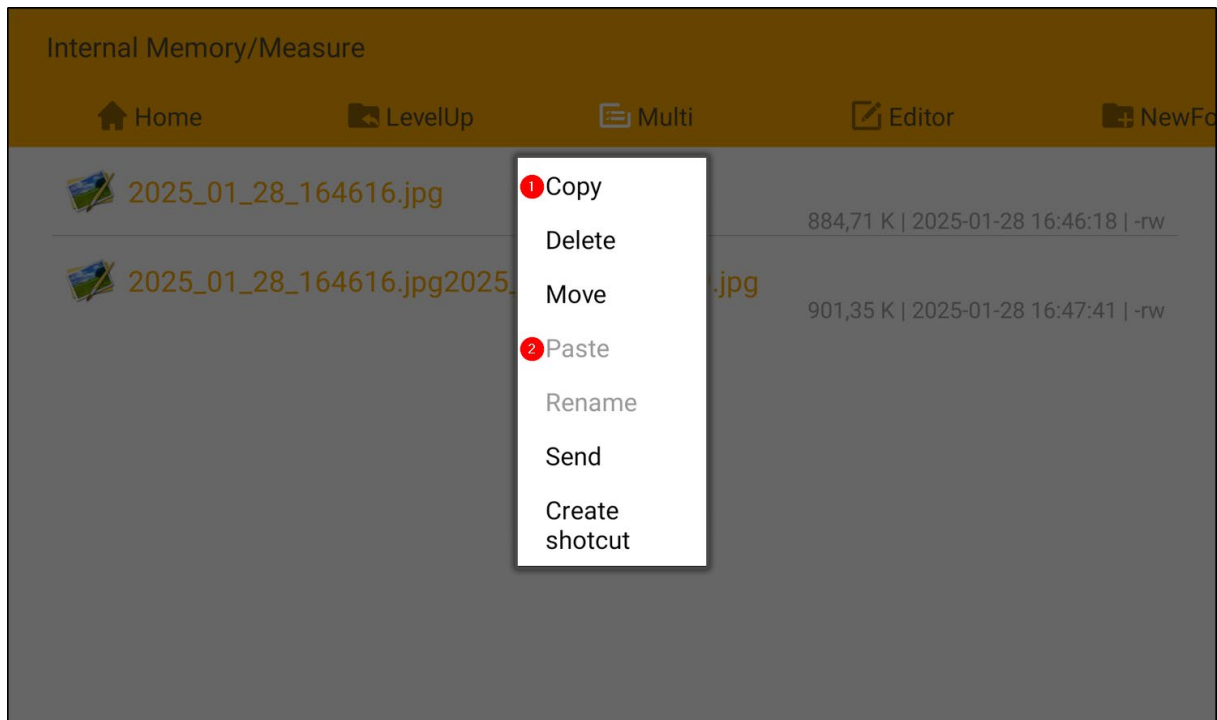


Use "LevelUp" to switch to the folder above.

11.9 Copying files

To transfer files to a memory stick, proceed as follows:

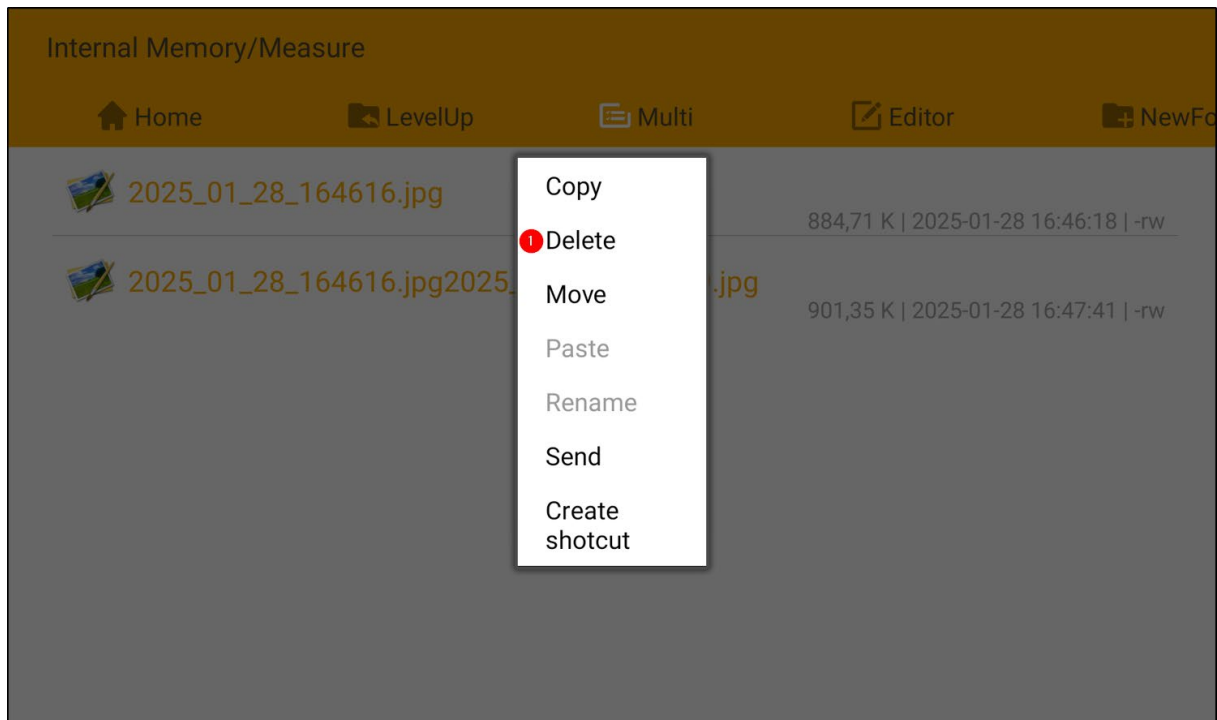
- 1) Insert the USB memory stick into a USB port on the tablet,
- 2) switch to the file manager and open the correct folder,
- 3) click on "Multi" in the menu and select the desired file(s),
- 4) click on "Editor" in the menu and select "Copy" (1),
- 5) switch to the USB stick via the "Home" menu item,
- 6) click on "Editor" in the menu again and select "Paste" (2)



11.10 Delete files

To delete files from the internal memory, proceed as follows:

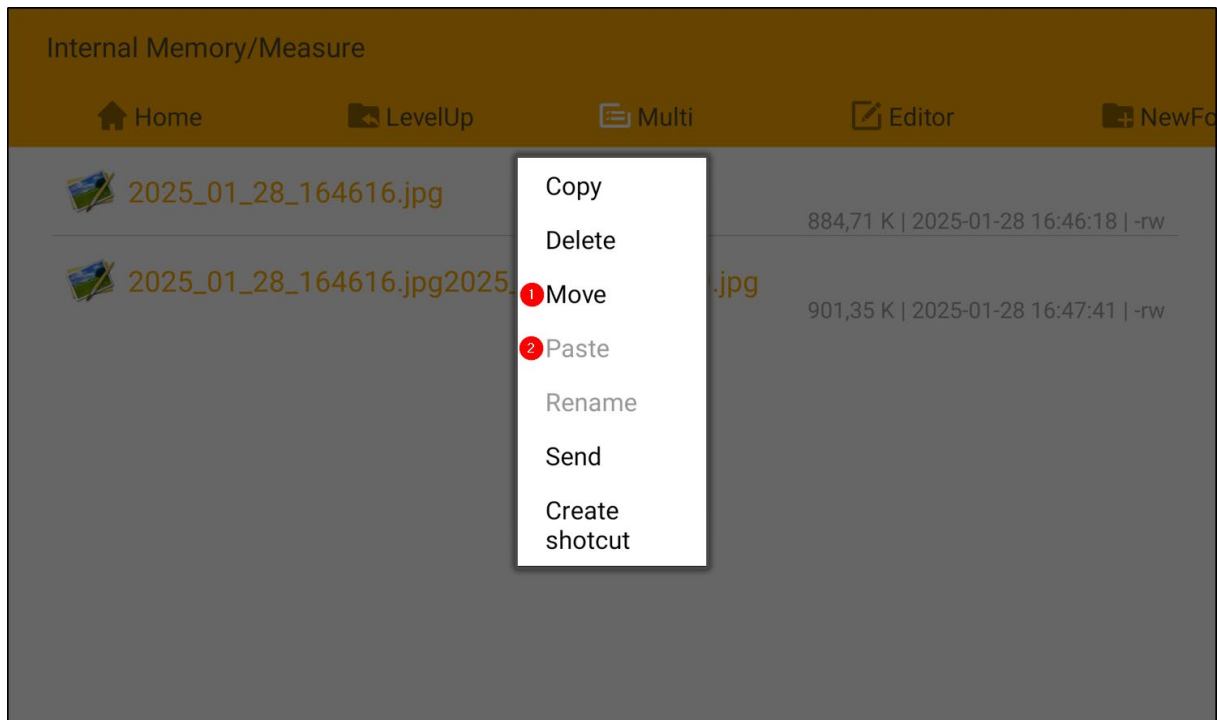
- 1) Open the explorer and go to the correct folder,
- 2) click on "Multi" in the menu and select the desired file(s),
- 3) click on "Editor" in the menu and select "Delete" (1),
- 4) confirm the deletion process with "delete"




11.11 Moving files

To move files from the internal memory, proceed as follows:

- 1) Open the explorer and go to the correct folder,
- 2) click on "Multi" in the menu and select the desired file(s),
- 3) click on "Editor" in the menu and select "Move" (1),
- 4) change to the correct folder and click on "Paste" via the "Editor"



12 Network & Internet

 The setup and use of the network & internet function in conjunction with the tablet microscope camera should only be carried out by trained specialist personnel or your responsible IT department. This ensures correct configuration, a stable connection and compliance with all security-related requirements.

Improper settings or incorrect network configurations can lead to connection problems, data loss or security risks. Therefore, please contact your IT department or a qualified technician to ensure optimum utilisation of the network function.

13 Maintenance and cleaning



Disconnect the appliance from the power supply before carrying out maintenance and cleaning work.

13.1 Cleaning

Clean the device with a damp, soft, lint-free cloth. Make sure that no moisture penetrates the housing. Do not use sprays, solvents, alcohol-based cleaners or abrasive cleaners, but only clear water to moisten the cloth.

If handled correctly and checked regularly, the microscope camera should provide many years of good service.

13.2 Repair

Do not make any modifications to the appliance and do not install any spare parts. Contact your KERN & SOHN dealer or service department for repairs or to have the appliance checked.

14 Waste disposal



Old appliances and accessories must not be disposed of with household waste. The operator must dispose of the packaging and the 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 (printed circuit boards, electrical cables)
- Plastic (housing)
- Metal (hook, 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 Service

If, after reading the operating instructions, you still have questions about commissioning or using the tablet camera, or if unforeseen problems occur, please contact your KERN & SOHN dealer. The device may only be opened by trained service technicians authorized by KERN & SOHN.

16 Further information

The illustrations may differ slightly from the product.

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



All language versions contain a non-binding translation.
The original German document is the binding version.

