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## 5 General safety instructions

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### **DANGER**

#### **Risk of an electric shock!**

This device contains electronic parts that are powered by a power source (AC adapter and/or batteries). Improper use of this product may result in electric shock. Electric shock can cause serious or fatal injuries. It is therefore imperative that you observe the following safety information.

- Disconnect the power supply by pulling the mains plug when the appliance is not in use, in case of a longer interruption of operation and before any maintenance and cleaning work.
- Place your device so that it can be disconnected from the power supply at any time. The power outlet should always be near your appliance and should be easily accessible, as the plug of the power cord serves as a disconnect device from the mains supply.
- To disconnect the unit from the mains, always pull the mains plug and never pull the cable!
- Check this device, cables and connections for damage before use.
- Never attempt to operate a damaged device, or a device with damaged electrical parts! Damaged parts must be replaced immediately by an authorized service agent.
- Operate the device only in a completely dry environment and do not touch the device with wet or damp body parts.



### **DANGER**

#### **Danger of suffocation!**

Improper use of this product may result in suffocation, especially for children. It is therefore imperative that you observe the following safety information.

- Keep packaging materials (plastic bags, rubber bands, etc.) away from children! There is a danger of choking!
- This product contains small parts that can be swallowed by children! Choking hazard!
- If small parts are swallowed, consult a doctor immediately!



### **DANGER**

#### **Explosion hazard!**

Improper use of this product may result in fire. It is essential that you observe the following safety information in order to avoid fires.

- Do not expose the device to high temperatures. Use only the supplied AC adapter. Do not short-circuit the device or batteries or dispose of in fire! Excessive heat and improper handling can cause short circuits, fires and even explosions!



### **CAUTION**

#### **Risk of body injury!**

This device contains components and/or accessories that can cause minor or serious body injury if used improperly. It is therefore essential that you observe the following safety information in order to prevent body injuries.

- Sharp-edged and pointed tools are often used for working with this device. Therefore, keep this device and all accessories and tools in a place inaccessible to children. Danger of body injury!

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- Chemicals and liquids do not belong in children's hands! Don't drink! Clean hands thoroughly under running water after use. In case of accidental contact with eyes or mouth, rinse with water. In case of complaints, consult a doctor immediately and show the substances.



## **⚠ CAUTION**

### **Fire hazard!**

Improper use of this product may result in fire. It is essential that you observe the following safety information in order to avoid fires.

- Never cover the ventilation slots or cooling fins of the device during operation or until it has cooled down completely!



## **NOTICE**

### **Danger of material damage!**

Improper handling may result in damage to the unit and/or accessories. Therefore, use the device only in accordance with the following safety information.

- Do not disassemble the device! In the event of a defect, please contact your dealer. They will contact the Service Center and can arrange the return of this device for repair if necessary.
- Do not expose the device to high temperatures and protect it from water and high humidity.
- Do not subject the device to excessive vibrations.
- Only use accessories and spare parts for this device that comply with the technical specifications.

## 6 About this microscope

Since this microscope is a digital microscope, it is only suitable for visual observation to a limited extent.

It is equipped with a lens and a camera sensor for capturing images. The digital images can be viewed directly on the built-in LCD display or optionally stored on a MicroSD memory card\*.

\*not included

## 7 Features

- High definition colour LCD screen
- 1080p@30fps / 720p@60fps
- Sensor resolution: 2688x1512 pixels (4MP)
- Professional image processing DSP, 3D noise reduction
- Built-in HD lens
- Rotatable zoom ring for precise and smooth focusing
- Optical zoom range: 2x to 44x
- Digital zoom 1x-16x
- LED touch bar for easy brightness control
- Supports image, video recording and playback function
- Supports mouse control and remote control
- Supports HDMI+USB(UVC)+WIFI output
- Picture-in-picture function
- Various measurement and calibration functions
- Various image functions (brightness, contrast, colour modes, mirroring, etc.)

- Supports microSD cards up to 64 GB
- Power supply via 5V power adapter (USB Type-C) or battery operation (optional): 1x Li-Ion battery 3.7V (type 18650)

## 8 Choice of location

Choose a suitable location before installation and commissioning.

Place the device on a stable, level and vibration-free surface.

## 9 Parts overview and scope of delivery

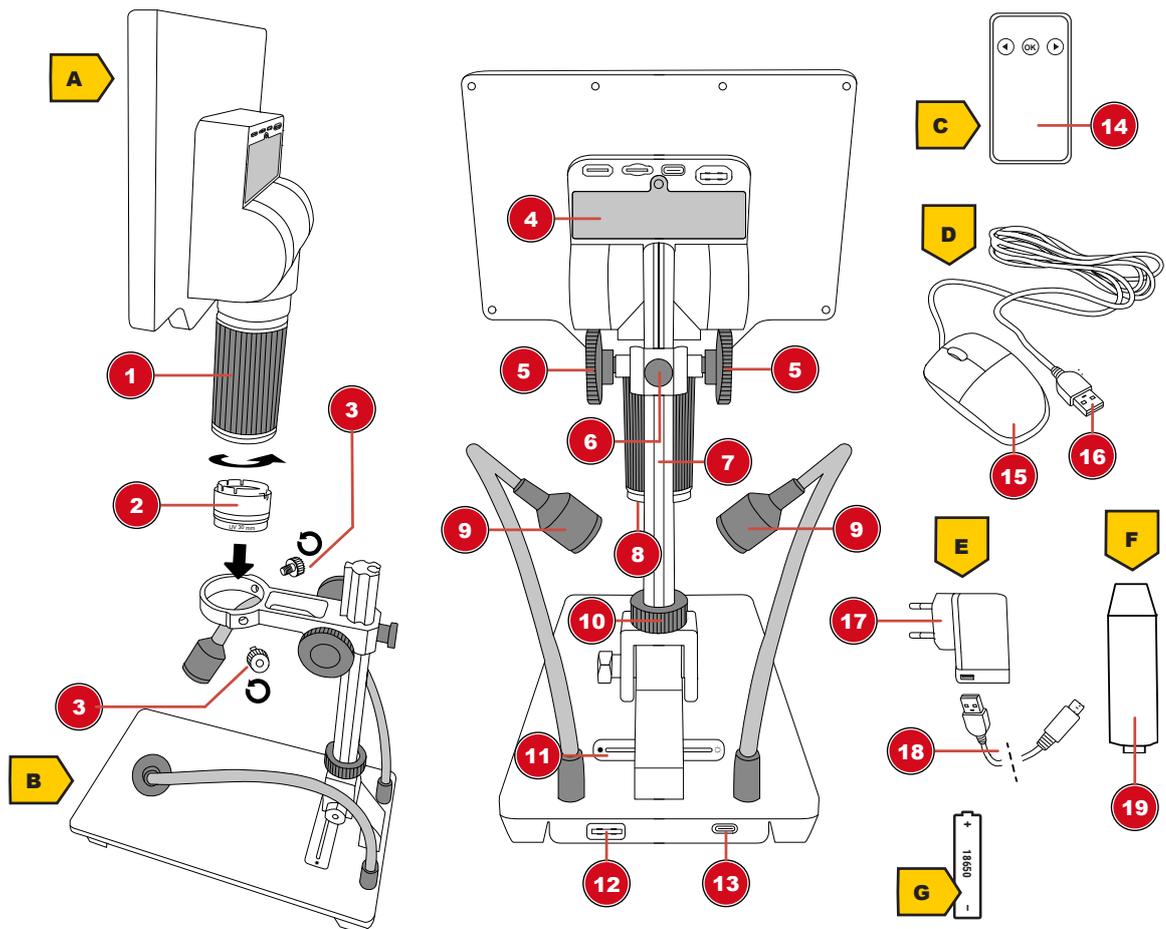


Illustration 1: All parts of the microscope

1 Zoom ring	2 Diffuser with UV filter (30 mm)
3 Fixing screw (holder)	4 Battery compartment
5 Coarse focus	6 Locking screw for height adjustment
7 Running rail with integrated rack	8 LED ring illumination on the LCD microscope
9 Gooseneck reflected light on the base	10 Locking screw for horizontal adjustment
11 LED touch bar to control brightness	12 USB-A port on stand (to connect to LCD microscope)
13 USB-C port on the stand (to connect to the power plug)	14 IR remote control
15 Mouse	16 USB-A connector (to connect the mouse to the LCD microscope)

17 Mains plug

18 USB-A to USB-C connector (for connection directly to the LCD microscope or to the microscope stand)

19 Extension piece

**Scope of delivery:**

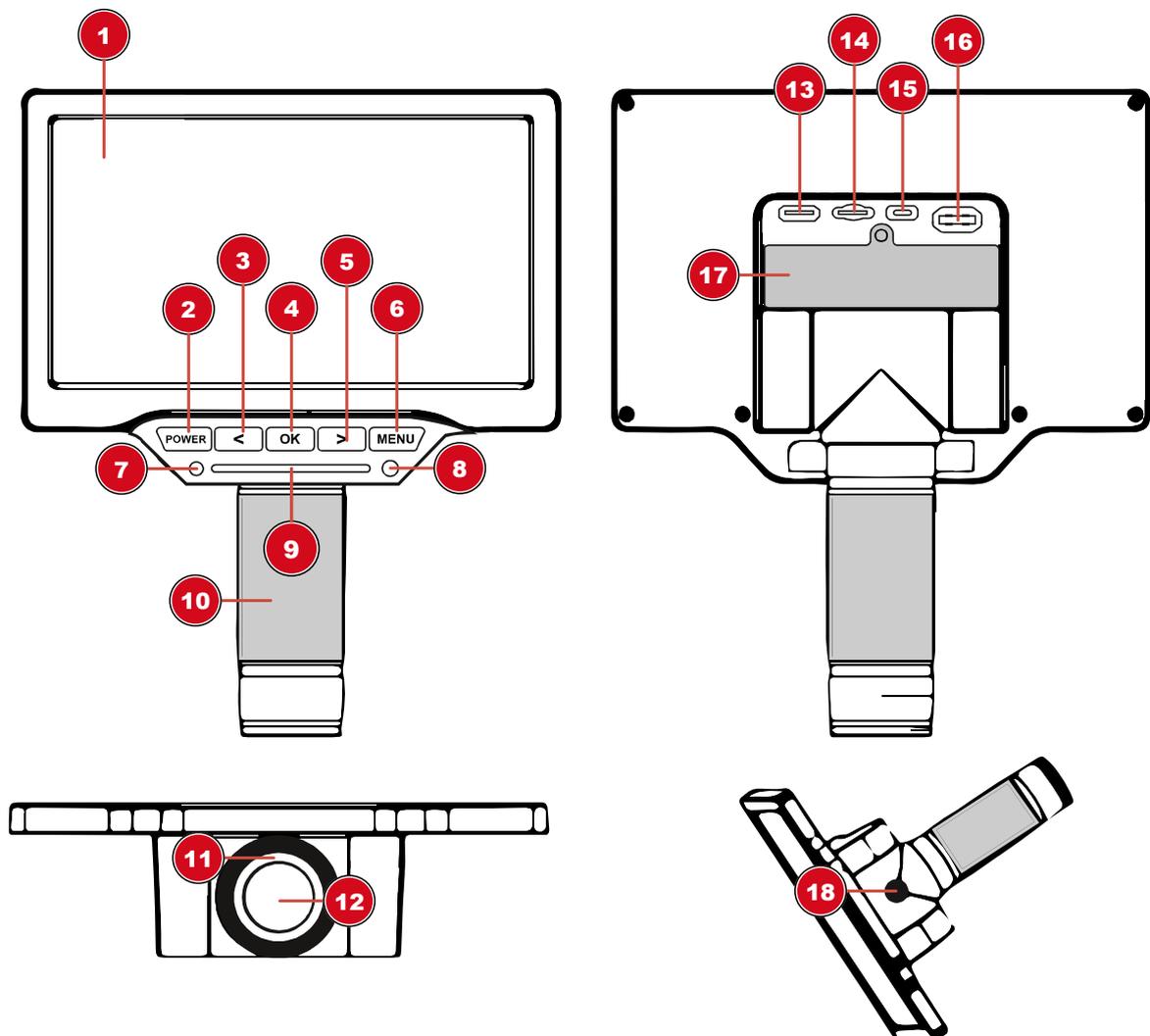
LCD microscope (A), microscope stand (B), remote control (C), mouse (D), power adapter (E), 2x USB-C cable, extension piece (F)

*Optional (not included):*

1x Li-Ion battery 3.7V type 18650 (G)

For object measurements, the use of a micrometer scale slide is recommended.

## 10 LCD microscope



1 LCD screen (movable)

2 Power button (press and hold)

3 Left button (zoom in)

4 OK button (take photo/video)

5 Right button (zoom out)

6 MENU button

7 Function light (display)

8 IR receiver

9 LED touch bar to control brightness

10 Zoom / fine focus

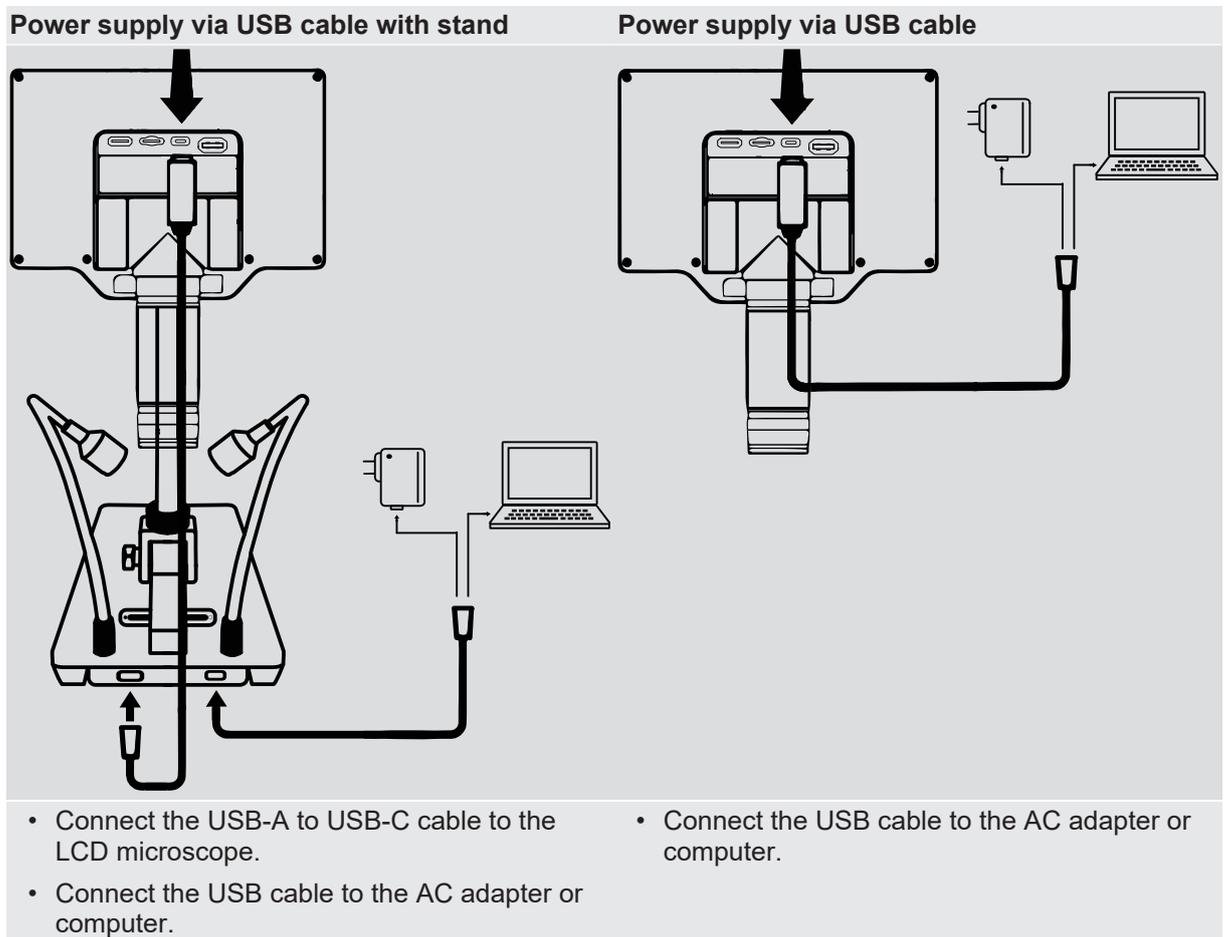
11 LED ring lighting	12 Objective
13 Video out (mini HDMI)	14 MicroSD/TF slot (max. 64 GB)
15 USB-C port (to connect to the stand or directly to the power plug)	16 USB-A port (mouse port)
17 USB-A to USB-C male	18 Tripod connection

## 11 Assembling the microscope

To mount the LCD microscope on the stand, do the following:

1. Insert the LCD microscope into the holder and hand-tighten the two fixing screws.
2. **NOTE! For higher observation objects, the supplied extension piece can first be screwed into the mounting thread. The rail is then screwed into the extension piece. This will increase the working height significantly.**

## 12 Setting up power supply



### Power supply via battery (optional)

1. Loosen and remove the fixing screw on the battery compartment with a Phillips screwdriver.
2. Remove the battery compartment cover.
3. Insert a 18650 battery into the battery compartment. Make sure that the battery poles (+/-) are correctly aligned.
4. Replace the battery compartment cover.
5. Reinsert the fixing screw and hand-tighten with the screwdriver.

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Briefly pressing the POWER button shows the current status of the power supply or the battery status.

## 13 Adjusting the lighting

The LCD microscope is equipped with an LED ring light for optimal object illumination. In addition, there are two gooseneck LEDs on the microscope stand. The brightness can be continuously adjusted using the touch bar.

1. Connect the digital microscope to the PC.
2. To adjust the brightness, press or slide your finger on the touch area on the LCD microscope or on the stand. The touch area shows the current brightness, which can be increased from left to right. The brightness follows the touch position.
3. Use the diffuser to counteract reflections/shine. You can also use the gooseneck lighting to illuminate the diffuser from the outside.

## 14 Connecting to a PC

It is possible to connect this LCD microscope to a PC with the operating system Windows via USB. For proper connection, proceed as follows:

1. Insert the USB-A plug of the USB connection cable into a free USB port on the PC. If the connection is successful, the LED lights up. The digital microscope is ready for use.
2. After connecting the USB cable to the computer, the device can be powered (USB UVC mode) and used as a mass storage device (MSDC mode). You can switch between USB UVC and MSDC mode by pressing the OK button.
3. Mass storage MSDC mode allows access to photos and videos for data storage.

### Video Out (Mini HDMI)

The current picture can also be transferred to an external screen by connecting a mini HDMI cable. To do this, connect the mini HDMI cable to the "HD" socket on the LCD microscope.

### Use as webcam

The camera can focus to infinity. This means it can also be used as a webcam.

## 15 WIFI function

This unit provides a WIFI function to view, control, playback and photos and videos via smartphone/tablet.

1. Download the iSmartDV app (iOS or Android):



<http://www.bresser.de/download/9652100>

2. Press the MENU button and use the right arrow button to navigate to WIFI.
3. Press the OK button to start the WIFI connection.
4. Connect to the WIFI of the LCD microscope on the smartphone (HG700PRO\_XXXXX). Password: 1234567890
5. Launch the iSmartDV app and select the LCD microscope.

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## 16 Adjusting the zoom

The device has a particularly wide zoom range. The camera can magnify small objects, but it can also focus on objects several meters away.

### Zoom ring

By turning the zoom ring, the zoom range can be changed and the sharpness can be adjusted by fine focusing.

### Digital Zoom

On the LCD microscope, press the left arrow button to zoom out and the right arrow button to zoom in. This device has a digital zoom of 1x-16x.

**NOTICE! When changing the zoom range, the focus may also need to be adjusted. (see also "Focusing the object")**

## 17 Focusing the object

The microscope has a coarse focusing on the microscope stand. This can be used for object focusing as described below.

1. Depending on the object height, assemble the extension piece if necessary.
2. Make the desired zoom setting.
3. Focus on the observation object using coarse focusing.
4. If necessary, adjust object sharpness individually using the zoom ring (fine focusing), especially when changing the zoom level and/or changing the object distance.

## 18 Recording

Three different actions can be assigned to the OK button in the menu.

1. Press the MENU button and use the right arrow button to switch to Settings. Press OK button.
2. For Photo/Video (SHORTCUT), press the OK button and select Photo, Video or Freeze and press the OK button to confirm. Press the MENU button to exit the menu.
3. Pressing the OK button will now execute the assigned action. For example, a photo or video is taken (only with an SD card inserted) or a still image (FREEZE) is generated for the picture-in-picture function.

### Picture-in-Picture (FREEZE) function

Set to Freeze in Photo/Video (SHORTCUT) settings.

Now it is possible to set the freeze/still picture (FREEZE) menu to full screen, left, top or  $\frac{1}{4}$  picture in the settings. This enables a picture-in-picture function for direct comparison of the recordings.

## 19 Playback

Press the MENU button and use the right arrow button to switch to playback. Press OK button to confirm.

### Photo Playback Mode

- Press right button to go to the next photo.
- Hold right button to zoom in.
- Press the OK button to reset the magnification.
- Press right button to go to the previous photo.

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- Press left button to zoom out.
  - Press the MENU button to switch to the playback menu.

### Video playback

1. Press right button to go to the next video.
2. Press OK button to play or pause the video.
3. Press left button to go to the previous video.
4. Press the MENU button to switch to the playback menu.

## 20 IR remote control

This device supports IR remote control to avoid camera shake.

MENU button: Press the OK button twice.

Power On/Off: Long press the OK button.

## 21 mouse operation

Left mouse button = left click (hold down to move in zoom)

Middle button = OK button (or double click left mouse button)

Right mouse button: Open or close menu

Mouse wheel = increase or decrease (zoom)

## 22 Picture settings

Notes:

- Always double-click on submenu items.
- Click 1/2 IMAGE to go to the next page in the menu or use the arrow buttons on the device to go to the next page.

**Exposure (AE):** Auto / Locked (LOCK): Lock the current exposure value setting.

**Image brightness (IMAGE BRIGHT.):** Adjust the brightness value

**White balance (WB):** White balance adjustment

Automatic (AUTO): The white balance algorithm achieves a white balance that is suitable for most applications.

Manual (MANUAL): Adjust the R/G/B value according to your preference for different applications.

Calibrate (CAL): Calibrate the white balance to match the current lighting conditions and achieve an accurate white balance. If possible, use a calibration card.

**Effect (EFFECT)**

Color (COLOR): Color image

B/W: Black & White image

Negative (NEGA.): Negative image

**WDR:** WDR (Wide Dynamic Range) compensates for strong differences in contrast and brightness.

**Contrast, saturation, image sharpness:** set individually for different applications.

**Flip horizontally (H MIRROR):** Flip the image horizontally

**Flip Vertical (V FLIP):** Flip the image in the vertical direction

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**Frequency (FREQUENCY):** Choose 50HZ or 60HZ according to the frequency of the light source in the current environment to effectively prevent stripes in the image.

## 23 Settings

**Photo/Video (SHORTCUT):** Select function for the OK button (Photo/Video/Freeze)

Photo: select image resolution: 4 MP or 16 MP\* (\*interpolated)

Video: Choose video resolution: 1080p @ 30 fps or 720p @ 60 fps

**LCD brightness (LCD BRIGHT.):** Set the brightness of the LCD screen.

**AUTO OFF:** Turn device off after 1, 3, or 5 minutes of inactivity.

**LANGUAGE: Set menu language :** EN (English), CN (Chinese), JA (Japanese), RU (Russian), DE (German), FR (French), ES (Spanish), PT (Portuguese).

**Date / Time (DATE TIME):** Set date (year / month) and time (hour / minute / second).

**Standard (DEFAULT):** Reset to factory settings.

**Format (FORMAT):** Format SD/TF card.

## 24 Marking function

Notes:

- Always double-click on sub-menu items.

### Mouse

Select cursor: Arrow (ARROW), Cross (CROSS), Hand (Hand)

**Cross cursor (CROSS CUR.):**

Off (OFF): Cross off

Ruler: Show cross ruler in the center

Center: Show cross in the center

**Line index (LINE INDEX)**

Selection of one of the 8 workspaces

**Line display (LINE SHOW)**

OFF / ON: Show or hide the workspace

**LINE TYPE**

Select Horizontal or Vertical line

**Line Position (LINE POSITION)**

Use the mouse wheel to move the position of the line

**Line width (LINE WIDTH)**

Increase or decrease the width of the line

**Line color (LINE COLOR)**

Select the color of the line (black, white, red, green, blue, yellow)

## 25 Measurement function

Notes:

- Right-click the mouse to open the menu and then click on the measurement functions menu.
- Always double-click on submenu items.
- Maximum 100 groups of data possible.

- Each group supports a maximum of 10 points.
- To reset the currently selected function: Right click to open the menu and then click QUIT. Now you can use a new function.

### **Measurement (MEAS.)**

Delete: Choose what to delete.

Save: Save to one of the 8 save points.

Back: Reset to be able to use a new function.

### **Calibration index (CAL INDEX)**

Selection of one of the 8 workspaces

### **Calibration (CALIBRATION)**

Select unit: 100 mm / 10 mm / 1 mm

### **POINT**

Count: Measuring point assigned with coordinates

RGB: Measure current RGB value

YUV: Measure current YUV value

### **LINE:**

Point (PP): Measure the distance between two points

Line (PL): Measuring the vertical distance from a point to a straight line

Segment (ML): Irregular line. Drive along the line bit by bit with a mouse click. Press the middle mouse button to stop setting the points.

### **Shape**

Rectangle (RECT): Measure the length of the rectangle

Polygon (POLYGON): Measure the area of the polygon

### **Round (CIRCLE)**

Radius (RADIUS): Set a circle point and radius.

Diameter (DIAM): Set a circle point and radius with diameter calculation.

3POINT: Set 3 points and use them to calculate the radius and area of the circle.

### **ANGLE**

Arc: Set 3 points to confirm a circle and use it to calculate the radius and area of the circle.

Angle: Measure the angle between two line segments.

## 26 Technical data

Screen size	17,8 cm (7")
Display resolution	1024x600 pixels
Optical zoom range	2x to 44x
Digital Zoom	1x-16x
Sensor	1/3" (BSI)

Sensor resolution	2688x1512 pixels (4MP)
Pixel size	2µm x 2µm
Image Resolution	2688x1512 pixels, 5376x3024 pixels (interpolated)
Refresh rate	1080p@30fps, 720p@60fps
Image field:	36 x 20.5 mm (10x) or 1.6 x 2.9 mm (280x)
Working distance	22mm to approx. 195mm
Focus distance	22mm to infinity
Lighting ring	6 LEDs
Gooseneck lighting	One spot LED each
PC connection	USB-A*
Connection interface:	USB Type-C (USB 2.0)
Video output	Mini-HDMI
Memory card slot	microSD / TF (Maximum 64GB memory cards)
WIFI range	Maximum 10 meters
IR remote control range	Maximum 5 meters
Mouse interface	USB A
Power supply	5V via USB connection* or mains adapter
Battery (optional)	18650 lithium-ion battery
Dimensions	174 x 129 x 51 mm
Weight	320g (with batteries), 270g (without batteries)
*Data transfer and power supply are carried out via the USB port on the PC at the same time	

## 27 Troubleshooting

Question	Answer
The LCD microscope does not turn on.	Make sure the power is connected properly. Check if the battery is inserted correctly.
The LCD screen shows nothing.	Make sure the monitor is turned on. Check if the monitor is switched to HDMI output mode.
Malfunction or insensitivity of the white LED touch bar.	Check if your finger is too dry or too wet. Make sure there is no source of interference in the area. Please use the supplied power adapter.
The white LED touch bar is reflected in the screen.	Try dimming or turning off the white LED (use ambient light). Try to make an angle between the lens barrel and the observation object to avoid the reflection point.
The LCD microscope image is too dark or too bright.	Make sure the lens is focused on the observation object. Check if the lighting is switched on. Check if the screen brightness is set too dark.
The LCD microscope is out of focus or dirty.	Clean lens and filter. Make sure the lens is focused on the observation object.
The LCD microscope cannot save images or videos, or it shows a card error.	Format the SD/TF card or switch to a new card.

The mouse doesn't work.

Plug and unplug the mouse again or restart the device.

Cannot connect or image lag.

Avoid covering the antenna area.

Check if there is a source of interference in the area.

## 28 EC declaration of conformity



Bresser GmbH hereby declares that the radio equipment type with item number 9652100 is in compliance with Directive 2014/53/EU. The full text of the EC Declaration of Conformity is available at the following web address: [www.bresser.de/download/9652100/CE/9652100\\_CE.pdf](http://www.bresser.de/download/9652100/CE/9652100_CE.pdf)

## 29 UKCA declaration of conformity



A "Declaration of Conformity" in accordance with the applicable directives and relevant standards has been issued by Bresser GmbH. The full text of the UKCA Declaration of Conformity is available at the following web address: [www.bresser.de/download/9652100/UKCA/9652100\\_UKCA.pdf](http://www.bresser.de/download/9652100/UKCA/9652100_UKCA.pdf)

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## 30 Disposal



Dispose of the packaging materials according to its type. Information on proper disposal can be obtained from the municipal waste disposal service provider or environmental agency.



Do not dispose of electronic devices in the household garbage!

According to the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment and its transposition into national law, used electrical equipment must be collected separately and recycled in an environmentally sound manner.

## 31 Warranty

The regular warranty period is 2 years and starts on the day of purchase. To benefit from an extended voluntary warranty period as indicated on the gift box, registration on our website is required.

You can consult the full guarantee terms as well as information on extending the guarantee period and details of our services at [www.bresser.de/warranty\\_terms](http://www.bresser.de/warranty_terms).