



Operating instructions

LCD Digital Microscope DM 5

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Subject to changes.

Safety information

Please read these safety instructions through thoroughly before using the product for the first time.

General instructions

- Never place the device on an unstable base.
The device can be damaged by falling.
- The device is not for use by children. It is not a toy.
- Please also note the safety instructions and operating instructions of other devices connected to this device.
- Commercial facilities must comply with the accident-prevention regulations established by the Employer's Liability Insurance Association for electrical systems and equipment.
- The operation of this device must be overseen by trained personnel in schools, educational establishments, hobby and self-help workshops.
- If you have any questions or doubts about the device, its operation, safety or correct connection, please contact our customer service.
- The seller accepts no liability for damages that occur during the use of the device or for third-party complaints.

Packaging materials

- Keep children and animals away from packaging materials.
Danger of suffocation!

Ambient conditions

- Avoid subjecting the device to strong mechanical stress.
Protect the device against vibration, hard knocks, do not let it fall and do not shake it.
- Do not subject the device to extreme temperatures (below -5 °C or above 50 °C) or to extreme or rapid temperature fluctuations.
Protect the device against direct sunlight and proximity to heat sources such as open fires, ovens or heating elements.
- The device is not waterproof. Do not use the device in rooms with high humidity, for example in bathrooms, and do not drop it in water.
- Do not use the device in dusty locations.
- Protect the lens and LCD display from strong lighting such as e.g. direct sunlight. This could damage the light sensitivity of the device.
- It cannot be entirely excluded that certain paints, plastics or furniture care products could damage the material of the housing. To avoid unwanted marks on furniture, keep the device away from sensitive surfaces.

Use

- Do not touch the lens or the LCD display to avoid scratches and fingerprints.
- Do not look directly into the LED lamps when they are switched on.
The light could damage your eyes.
- The LCD display may become slightly warm during operation.
This is normal and not an indication of a malfunction.

Malfunctions

- Switch the device off immediately if any object or liquid penetrates the device, if smoke comes out of the device or if you notice a strange odour. Have the device checked by an authorised expert before using it again.
- Do not disassemble the device and do not try to repair it yourself.

Batteries

- Batteries must not be subjected to excessive heat such as sunlight, fire or anything similar.
- When not using the device for long periods of time, remove the batteries to prevent damage caused by leaking batteries.
- If you wish to replace the batteries, replace them all at once and ensure that the new batteries are inserted with the correct polarity (+/-).
- Only use batteries from well-known brands and of the same type (1.5 V, AA).
- Spent batteries must not be recharged, short-circuited or forcibly opened.
- Do not dispose of used batteries with household waste. Hand them in to a local disposal centre.
- Keep batteries out of the reach of children. Should a battery be swallowed, consult a doctor or the emergency services immediately.

Cleaning and care

- Always store the device in a clean, dry place.
- Use a dry soft cloth to clean the outer surfaces.

Delivery includes



LCD-Digital Microscope DM5



2x USB lights



4 GB micro SD card



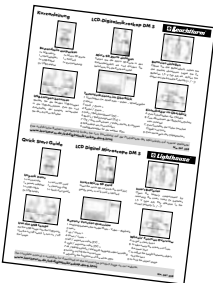
Mains adapter



USB cable



AV cable

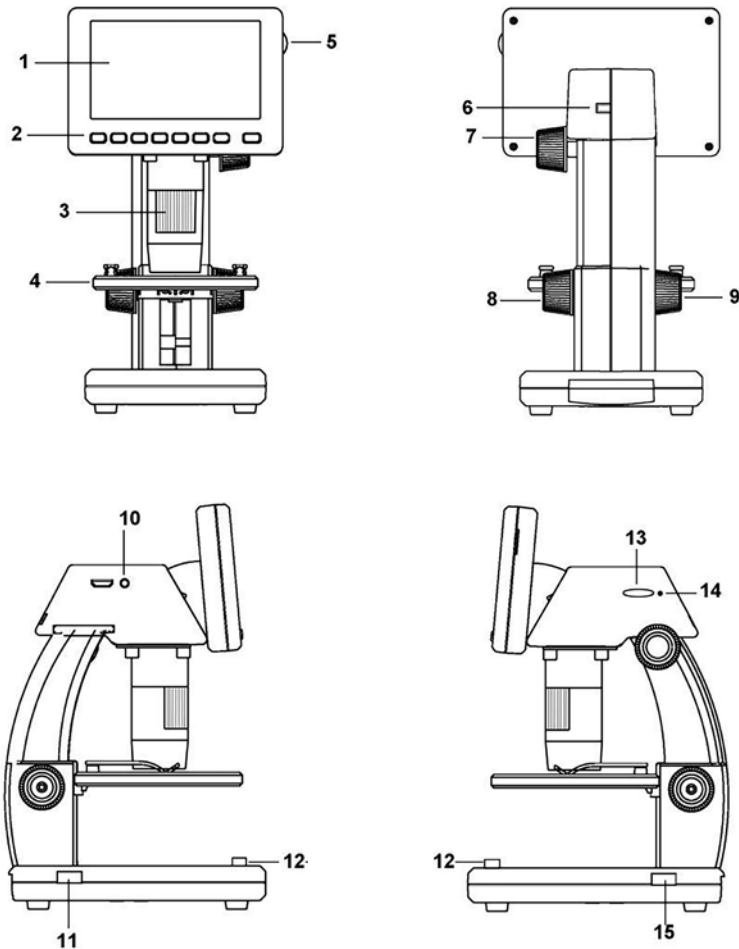


Quick guide

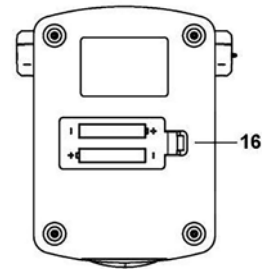


Cleaning cloth

Overview of device



- 1 LCD display
- 2 Control buttons
- 3 Adjusting wheel for object focusing
- 4 Specimen stage
- 5 LED dimmer
- 6 Power supply (mini USB connection)
- 7 Screw for removing the screen unit from lower section
- 8 Screw for locking the specimen stage
- 9 Adjusting wheel for adjusting the height between object and lens
- 10 AV output
- 11 Connection for separate USB lamp
- 12 On/off switch for separate USB lamps
- 13 Slot for micro SD card
- 14 Battery status display
- 15 Connection for separate USB lamp
- 16 Battery compartment for separate USB lamps



Overview of button functions



- 1 Switches between the modes
Photo - Video - Play
- 2 Menu
- 3 Up | Zoom +
- 4 Down | Zoom -
- 5 Left | Exposure value (EV) -
- 6 Right | Exposure value (EV) +
- 7 OK | Take photo | Start & stop video
- 8 Switch microscope on/off

Commissioning

Charge device battery

First connect the mains adapter and USB mains cable together and then connect the cable to the device. Insert the mains adapter into a properly installed socket. A charge is sufficient for approx. 6 hours operation. A completely discharged battery requires approx. 3 hours charging. The battery status display is lit up during the charging process. The battery is fully charged when the display goes out.

PLEASE
NOTE!

The battery charging status is shown at the bottom left of the display. The LED lighting and the image quality are additional indicators. When the battery is low, the brightness of the lighting and therefore the image quality is reduced.

Insert micro SD card

Switch the digital microscope off. The card slot has a spring mechanism. Insert the microSD card in the slot and push it down carefully until it engages. To remove, press down on the SD card again.

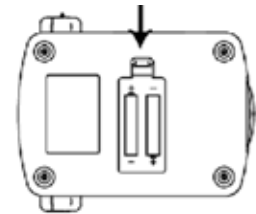
PLEASE
NOTE!

The SD card symbol appears on the display on the right-hand side. The card must be formatted before you can take photos (see "Menu - General settings", section "Format SD card", page 13).

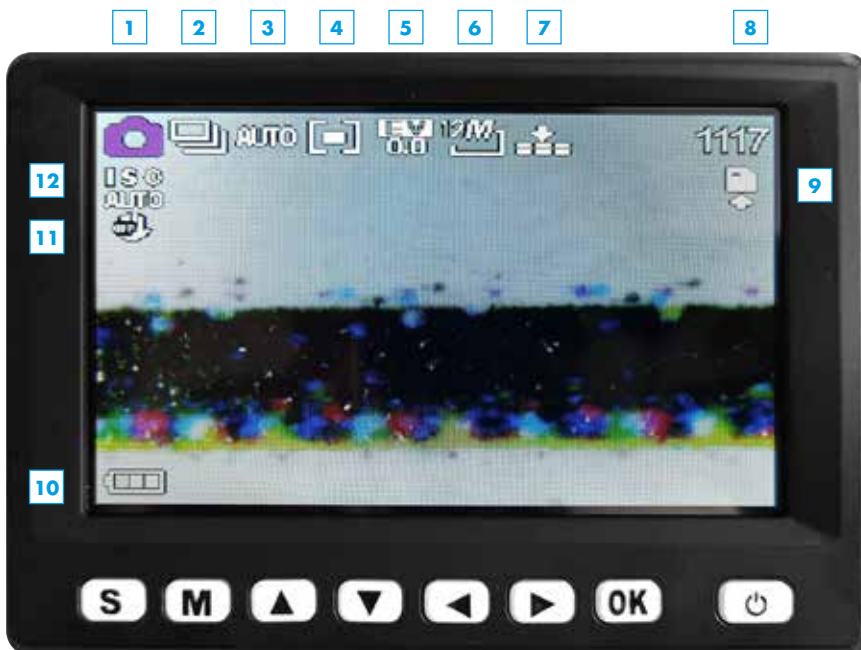
Insert USB lamp batteries

Open the battery compartment by removing the cover. Insert 2x 1.5 V type AA batteries. These are not included in the delivery. Ensure the new batteries are inserted with the correct polarity (+ / -)!

NOTE: Replace the batteries when the brightness of the USB lamps decreases. Do not dispose of used batteries with household waste, instead, hand them in to a local disposal centre.



Overview of display symbols



- 1 Mode: Photo - Video - Play
- 2 Capture method (in photo mode only): timer or series capture (can also be switched off completely)
- 3 White balance
- 4 Exposure measurement
- 5 Exposure value*
- 6 Resolution*
- 7 Image quality
- 8 In photo mode: number of photos that can still be stored. In video mode: video recording time that can still be stored (both dependent on actual settings)
- 9 Micro SD card inserted
- 10 Battery capacity display
- 11 Image stabiliser
- 12 ISO value

* The sequence in the video mode is the other way around: resolution first, then the exposure value.

Operation

Using the USB lamps

To use both separate USB lamps, connect the lamps to the supplied USB connections. Use the on/off switch to switch the lamps on and off.

Switching the device on/off

To switch the device on and off, briefly press the on/off button on the display.

Capturing images/videos

1. Switch the device on.
2. Select the required capture mode (photo or video) by pressing the selection button (S) several times.
3. If necessary, carry out menu settings (see "Overview of menus", page 9 onwards).
4. Place the object on the specimen stage.
5. Move the specimen stage down by using the adjusting wheel for height adjustment (Up - Down) in order to position the object. Then move the specimen stage upwards close to the microscope aperture.
6. Magnification and image section are obtained by setting the magnification with the focus adjusting wheel (Minus - Plus) on the front of the microscope and with the stage height. Once the object on the stage has been moved up to the lower edge of the microscope, a second focus for maximum magnification can be set with the adjusting wheel just before the right limit (+).
7. Fix the specimen stage in place with the locking screw (Loose - Tight).
8. Select the appropriate LED brightness. If necessary, switch the USB lamps on.
9. Use the zoom buttons (▲ and ▼) to digitally zoom the display in and out (zoom factor: 1x to 5x).
10. Press the capture button (OK). Video recording is stopped by pressing the recording button again.

TIP!

Set the required menu language, if required. (see "Menu - General settings", section "Language", page 12).

TIP!

If the image cannot be focused sharply, check whether the protective cap is still on the microscope lens. Remove the cap.



TIP!

The screen can be incrementally tilted to an angle of 30° for additional convenience. The screen unit can also be detached from the base and used as a portable device. To do this, under the screw for removing the screen unit (Loose – Tight) and then pull the unit off sideways from the base.


Play images/videos

Select Play mode by pressing on the selection button (S) until the Play symbol appears top left in the display.

Use both the buttons ▲ and ▼, as well as the buttons ► and ◀ to scroll between photos and videos. Keep the applicable button pressed to scroll forwards or backwards more rapidly.


Connecting the device to a television

The device can be connected to a television with the supplied AV cable in order to transfer a photo displayed on the display to the television screen.

1. Switch the microscope on and select the television standard used in your region (NTSC or PAL) (see "Menu – General settings", section "TV output", page 13).
In general, the television standard NTSC applies for USA, and PAL in the rest of the world.
2. Connect the 1/8-inch connector (black) of the AV cable into the AV output of the microscope.
3. Then connect the cinch plug (yellow) of the cable to the video input (usually yellow) of the television.
4. Switch the television on and select, if not automatically recognised, the corresponding input channel on the television. Also note the instructions for the television.

Transferring photos/videos to the computer

A card reader device (not included in delivery) for micro SD cards is required to transfer existing photos and videos to a computer or laptop. Remove the card from the microscope (see "Commissioning", section "Insert micro SD card", page 6) and insert the card in the reader device. Connect the reader device with the computer/laptop. The card reader device of the micro SD card will be recognised as a removable data carrier that can then be accessed. The photos and videos can then be copied from the card to the computer/laptop.

Overview of menus

Play menu

Press the menu button (M) in play mode to access the Play menu. Select from the functions *Protect*, *Delete* and *Slide show*.



Navigation

through the menu:

- ▼ / ▲ : Selecting menu items
- ◀ / ▶ : Selecting values in a submenu
- OK : Confirm selection, execute action
- M : Quit menu

Protect:

Protect photos or videos against unintentional deletion.

- *Protect one* : Protects the photo/video in the display
- *Protect all* : Protect all recorded files
- *Release all* : Remove protection from all files

Delete:

Delete photos or videos.

- *One* : Deletes the currently displayed file.
- *All* : Deletes all files

NOTE: A security prompt appears before final deletion. Confirm this with OK if the file(s) really should be deleted. Or select **No** with the ▼ button and confirm with OK to **not** delete the file(s). Once an individual file has been deleted, the display automatically shows the next file. A security prompt also appears here again.

Slide show:

Display photos in a slide show (videos are not displayed!)

- *Start* : Start slide show
- *Interval* : Set the frame rate at between 1 and 10 seconds (in increments of 1)
- *Repeat* : Select repeat slide show (Yes: continuous loop; No: play once)

NOTE: Use the ▲ arrow button to pause and play the slide show. Use the menu button (M) to end the slide show.

Menu – photo settings

Press the menu button (M) in Photo mode to enter the photo settings menu. The following values can be set here: *Resolution*, *image quality*, *exposure measurement*, *white balance*, *exposure value*, *capture method*, *display effects*, *date stamp*, *image stabiliser* and *ISO value*.

Resolution

Select the image resolution. Select between 1, 3, 5, 8, 12, 16, 20 and 24 megapixel.

Image quality

Select the size/compression rate of the image file (JPG). Select between *normal*, *fine* and *very fine* image quality.





Exposure measurement

Select the exposure measurement methods so that a correctly exposed image can be generated. Available for selection:

- *Middle* : Area around the middle of the image is used for measurement.
- *Multi* : Several fields in the image are used for measurement.
- *Point* : A very small area in the middle of the image is used for measurement.

White balance

Select settings for white balance based on the prevailing light conditions. Select from Auto (automatic balance), Daylight, Cloudy, Fluorescent tube or Incandescent lamp.



Exposure value

Select the exposure value. Select a value between +2.0 and -2.0.

NOTE: The exposure value can also be set outside the menu using the ► and ◀ buttons (see "Overview of button functions", page 5).



Image stabiliser

The device comes with an image stabiliser that significantly reduces jiggling in images. Select On or Off to switch the stabiliser on or off.



Capture method

Select the method for capturing the photo. Available for selection:

- *Off* : Press the capture button (OK) to immediately take a photo.
- *2-sec timer* : A photo will be taken 2 seconds after the capture button is pressed (OK).
- *10-sec timer* : A photo will be taken 10 seconds after the capture button is pressed (OK).
- *Series capture* : Press the capture button (OK) to immediately take three photos in sequence.

Display effect

Various effects/filters are available for photos. Choose between Normal, Black-White, Sepia, Negative, Red, Green and Blue.



Date stamp

A date and/or time stamp can be added to every photo. Choose between Date or Date/Time. Select OFF if no stamp is required. To set the date and the time, see "Menu - General settings", section "Date and time", page 12.



ISO value

Select an ISO value. Select from Auto (automatic setting), 100, 200 and 400.





Menu – Video settings

Press the menu button (M) in Video mode to enter the video settings menu.

The following values can be set here: *Movie size (resolution), exposure measurements, white balance, display effects and date stamp.*

Movie size

Select the video size (resolution). Select from 640, HD and FHD (Full-HD).



White balance

Select settings for white balance based on the prevailing light conditions. Select from *Auto* (automatic balance), *Daylight*, *Cloudy*, *Neon light* or *Incandescent lamp*.



Display effect

Various effects/filters are available for video. Choose between *Normal*, *Black-White*, *Sepia*, *Negative*, *Red*, *Green* and *Blue*.



Exposure measurement

Select the exposure measurement methods so that a correctly exposed video can be generated.

Available for selection:

- *Middle* : Area around the middle of the image section is used for measurement.
- *Multi* : Several fields in the image section are used for measurement.
- *Point* : A very small area in the middle of the image section is used for measurement.

NOTE: The exposure value can also be set outside the menu using the ► and ◀ buttons (see "Overview of button functions", page 5).



Date stamp

A date and/or time stamp can be added to every video. Choose between *Date* or *Date/Time*.

Select *OFF* if no stamp is required. To set the date and the time, see "Menu – General settings", section "Date and time", page 12.



Menu – General settings

The menu for general settings can be called from both the Photo mode and from the Video or Play mode. To access this menu, press the menu button (M) and then the arrow button ►. The following settings can be made here: *Sounds, Automatic preview, Mains frequency, Energy-saving mode, Date and Time, Language, TV output, Format SD card and Reset all.*

Sounds

Select whether an acoustic signal should be played or not for various elements. Select from *Trigger, Start (when the device switches on/off), Buttons and Volume (from 0 - Off to 3 - very loud).*

Automatic preview (in Photo mode only)

Select whether a photo should be briefly visible in the display directly after capture. Choose between *1 second and 3 seconds.* Select *OFF* if a preview is not required.

Mains frequency

Select the mains frequency. Choose between *50 Hz (Hertz) and 60 Hz (Hertz).*



Energy-saving mode

If the energy saving mode is switched on, the device switches off automatically after the set time if not used. This increases the life of the batteries. Choose between *1 minute, 3 minutes and 5 minutes.* Select *OFF* to switch off the energy-saving mode.

Date and time

Set the date and time. Use the ◀ / ▶ buttons to switch between the items Day, Month, Year, Hour, Minute and Date format. Use the ▼ / ▲ buttons to select the required value for each item. The date format is available in three variants: *MM / DD / YYYY (Month - Day - Year), YYYY / MM / DD (Year - Month - Day) and DD / MM / YYYY (Day - Month - Year)*

Language

Set the required menu language.



TV output

The device can be connected to a television with the supplied AV cable in order to transfer a photo displayed on the display to the television screen (see "Operation", section "Connecting the device to a television", page 8). Select the television standard used in your region (transmission format for image and sound data). *NTSC* and *PAL* are available. In general, the television standard *NTSC* applies for USA, and *PAL* in the rest of the world.

Format SD card

The SD card must be formatted before the first use. All data on the card will be deleted during the formatting process. A security prompt appears before final deletion. Confirm this with OK if the file(s) really should be deleted. Or select *No* with the ▼ button and confirm with OK to **not** delete the file(s).

Reset all

This function resets all settings in the menu to the default/standard settings. A security prompt appears before final reset. Confirm this with OK if the settings really should be reset. Or select *No* with the ▼ button and confirm with OK to **not** reset the settings.



Technical specifications

Image sensor: HD sensor (720 P CMOS sensor)

Display: 4.3", LCD, colour

Resolution: Photo: 24 M, 20 M, 16 M, 8 M, 5 M, 3 M, 1 M (JPG)

Video: 1920 x 1080 (FHD), 1280 x 720 (HD), 640 x 480 pixel (VGA)

Frame rate: max. 30 images/second

Photo format: JPG

Video format: AVI

Magnification: 20 to 200x, 5x integrated digital zoom

Lighting: 8 white LEDs (infinitely variable on device), 2 separate USP lights (white light)

Tilt angle of screen: 30°

Power supply: Power supply unit: 100 – 240 V, 50/60 Hz, 5 V, 1 A

Device: Li-ions battery 3.7 V / 2350 mAh

USB lights: 2x batteries 1.5 V Type AA

Weight (including battery): 770 g

Dimensions (housing): 230 x 125 x 149 mm

Troubleshooting

The device cannot be switched on.	<ul style="list-style-type: none"> o Charge the battery.
The display is empty.	<ul style="list-style-type: none"> o Ensure that the device is switched on. o Ensure that the object to be magnified is correctly positioned under the microscope aperture.
Dirt or blemishes on the screen.	<ul style="list-style-type: none"> o Clean the screen and lens carefully with the supplied cleaning cloth.
The image cannot be focused.	<ul style="list-style-type: none"> o Set the correct television standard on the microscope (see "Menu – General settings", section "TV output", page 13). Ensure that the microscope and the television are switched on. Set the television to the correct video input. Ensure that the video cable is securely connected to the video outputs of the microscope and the video input of the television.
The device is connected to a television. But no image is displayed on the screen.	<ul style="list-style-type: none"> o Ensure that the mains cable is correctly connected to the microscope and the mains adapter. o Ensure that the socket is working correctly. o The battery is fully charged.
The battery and charge display are not lit up even though the power supply unit is connected. / The battery is not charging.	<ul style="list-style-type: none"> o Ensure that the On/Off switch of the lights is set to ON. o Ensure that the batteries are inserted in the device (2x 1.5 V, Type AA). o Ensure that the USB lights are correctly connected to the device.
The USB lights cannot be switched on.	<ul style="list-style-type: none"> o Ensure that the On/Off switch of the lights is set to ON. o Ensure that the batteries are inserted in the device (2x 1.5 V, Type AA). o Ensure that the USB lights are correctly connected to the device.

Customer service

If you have any reasons for complaints or your device has a defect, please contact your retailer or contact us directly:

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NOTE: Please do not send your device without our prior confirmation to our address. The costs and the risk of loss will be borne by the sender. We reserve the right to refuse acceptance of unsolicited mailings or to return the applicable goods back to the sender carriage forward or at the sender's expense.



Disposal

This device complies with the 2002/96/EC European Directive on waste electrical and electronic equipment. Please use your local authority's collection point to return and recycle waste electrical and electronic equipment.