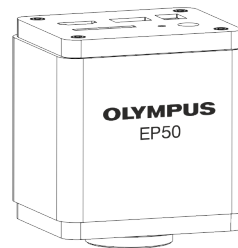


OLYMPUS



Installation Manual

OLYMPUS EP50

Microscope Digital Camera

Optical Microscope Accessory

To obtain optimum performance of this camera and to ensure the safety, study this manual thoroughly before operating the camera and keep it on hand during operation of the camera. Keep this instruction manual in a safe place.

English

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The embedded camera software as well as the EPview software and app that can be used in combination with the camera may contain 3rd party components, including open source software. The license information and the source code of open source software components can be retrieved separately. Please contact your local customer support for information on how to get the data. The Copyright Information can be found in the chapter "Third Party Software

Notice" of this Installation Manual.

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UMA_EP50_en_01_03082023

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1 The OLYMPUS EP50 color camera

1.1 Scope of supply

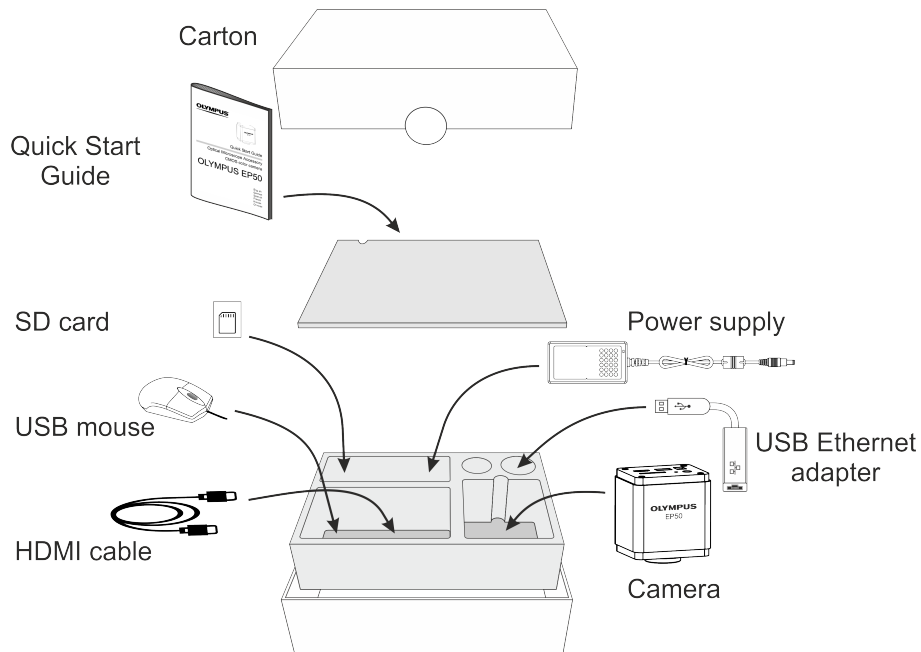
- Camera with protective cap
- SD card for image saving
- Power supply unit
- USB Ethernet adapter
- HDMI cable
- USB mouse
- Quick Start Guide



You require a power supply unit and a power cord to power the camera. The power supply unit is supplied with the camera. The country-specific power cord is not included in the delivery. Please contact your EVIDENT sales representative in this regard.



A USB WLAN adapter is required to operate the camera in WLAN mode. This adapter is not included in the delivery. Please contact your EVIDENT sales representative in this regard.



1.2 Intended use

This camera is intended to be used for the acquisition of digital images, but not for clinical diagnostic purposes.

1.3 Specifications

The OLYMPUS EP50 is a CMOS color camera with a high frame rate. It was specially developed for acquisitions using light microscopy. The camera is of a compact design and can be connected to all common types of light microscopes by a C-mount.

When the camera is used in educational settings, a digital classroom for example, operation in WLAN mode is suitable because it allows several students to access the same OLYMPUS EP50 camera at the same time.

Technical data	OLYMPUS EP50
Chip type	CMOS
Chip size	1/1.8 inch
Effective area (width x height)	7.410 mm x 4.980 mm
Pixel size	2.4 µm x 2.4 µm
Maximum resolution	2592 x 1944 pixels
Bit depth	24 bit
Interfaces	HDMI, SD card, USB (for mouse and WLAN adapter or Ethernet adapter, not for USB data storage devices or for connection to a computer)
Camera mount	Standard C-Mount

Resolutions and frame rates

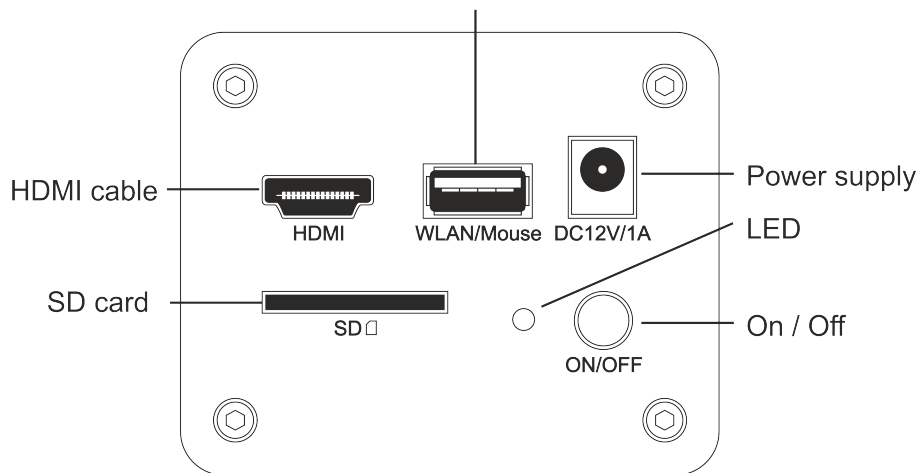
The OLYMPUS EP50 acquires live-images at a lower resolution than it uses for snapshots. It also uses a different image format. This means that the snapshot shows a bigger part of the image than the live-image does.

Acquisition mode	Image format	Resolution	Frame rate	Exposure times
Live and Movie (in WLAN mode and LAN mode)	16:9	1920 x 1080 pixels (Full HD)	up to 25 frames per second (depending on network environment)	1 ms - 918 ms
Live (via HDMI cable)	16:9	1920 x 1080 pixels (Full HD)	60 frames per second	1 ms - 918 ms
Movie (via OSD software)	16:9	1920 x 1080 pixels (Full HD)	30 frames per second	1 ms - 918 ms
Snapshot	4:3	2592 x 1944 pixels	---	1 ms - 918 ms

	Technical data	Power supply unit
Input	Voltage range	100 - 240 VAC
	Frequency range	50 – 60 Hz
	AC current	0.6 A
Output	DC voltage	12 V
	Rated current	2.08 A
	Rated power, max.	25 W
	Overtoltage category	II
	Pollution degree	2

1.4 Ports on the back of the camera

USB mouse, USB WLAN adapter or USB Ethernet adapter



Status of the LED on the back of the camera

- The LED lights up continuously in red color = camera is off
- The LED flashes blue 1x per second = camera initialization
- The LED flashes blue 4x per second = camera transfers data (in WLAN mode)
- The LED lights up continuously in blue color = camera is ready

This status occurs when the camera is used in LAN mode or with the OSD software. OSD stands for On-Screen Display.

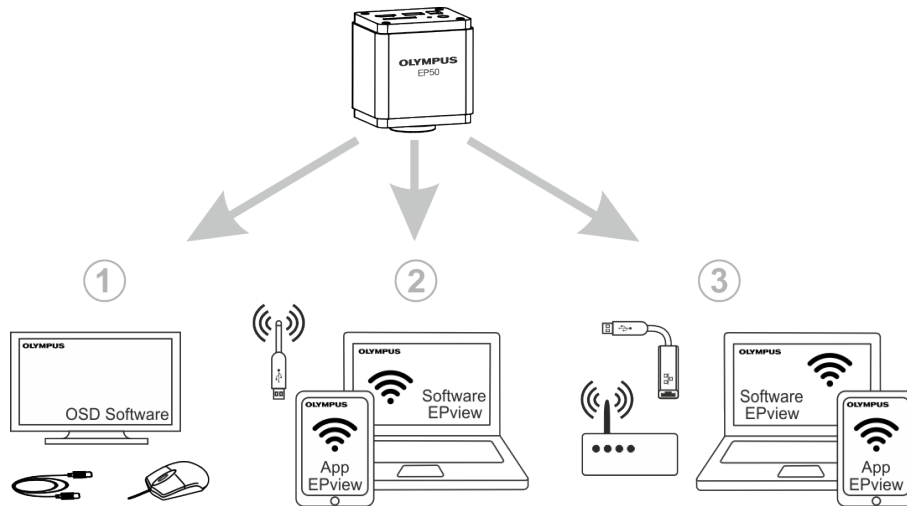
1.5 Operating and storage conditions

Please operate and store your camera under the following conditions:

- The maximum permissible range for the ambient temperature during camera operation is +5°C to +40°C.
- The maximum permissible relative humidity during camera operation is 5 % - 85 % (condensation free).
- When the camera is stored or transported, the ambient temperature must be kept between -20°C and +60°C.
- Indoor use only.
- Maximum altitude: 2,000 m.

1.6 Using the camera (Overview)

You can use the OLYMPUS EP50 in different application scenarios. Each application scenario requires a different hardware environment. Select the application scenario that best meets your requirements.



1 Using the camera with OSD software

For this application scenario, apart from the camera and microscope, you only need a monitor with an HDMI port, the supplied USB mouse and the OLYMPUS EP50 OSD software that is installed on the camera. A computer or a network connection is not required to operate the camera. OSD stands for On-Screen Display.

See [Using the camera with OSD software] on page 19.

2 Using the camera in the camera-specific WLAN

For this application scenario, apart from the camera and the microscope, you need a Windows PC or a mobile device. Additionally, a USB WLAN adapter is required which is not included in the delivery.

See [Using the camera in the camera-specific WLAN] on page 21.

3 Using the camera in LAN mode

For this application scenario, apart from the camera and the microscope, you need a Windows PC or a mobile device. Additionally, you need the supplied USB Ethernet adapter and a LAN router which is not included in the scope of delivery.


See [Using the camera in LAN mode] on page 24.


2 General safety instructions

The camera has been developed and produced in conformity with recognized safety regulations. However, it is not possible to entirely rule out possible hazards for the user, damage to the camera or microscope, or impairments of the camera's functionality. For this reason, always read and follow the general safety instructions and warnings before and during installation.

2.1 Explanation of the symbols used

Personal injuries

 WARNING	The warning sign and the word WARNING indicate dangerous situations that can lead to serious injuries or even death if ignored.
--	--

 CAUTION	The warning sign and the word CAUTION indicate dangerous situations that can lead to light injuries if ignored.
--	--

Device damage


ATTENTION	The word ATTENTION indicates situations, where irreparable damage to the product can occur if ignored.
------------------	---


General notes




This symbol indicates useful advice, tips for the user and important information about the product.

2.2 Avoiding personal injuries

 WARNING	Electric shock due to damaged cable When a cable is frayed or damaged, a person touching it risks receiving an electric shock. Shut off the hardware and replace the cable immediately!
--	--

 WARNING	Poisoning due to toxic gases In the event of a fire, the material of the camera can give off toxic gases. When these are inhaled, it can cause irritation of the respiratory passages and damage to them. Wear respiratory protection when fighting the fire!
--	--

 CAUTION	<p>Tripping hazard</p> <p>Cables laid across a room can be a dangerous tripping hazard. This can cause injuries to people and damage to equipment.</p> <p>Wherever possible, lay cables along the wall or behind furniture. Fix cables that run across the room!</p>
---	---

2.3 Avoiding device damage

ATTENTION	<p>Never open the camera housing!</p> <p>The camera's CMOS chip is extremely sensitive. Electrostatic discharge can permanently damage the camera.</p> <p>Therefore, never, under any circumstances, open the camera housing!</p>
-----------	--

ATTENTION	<p>Avoid vibration shocks</p> <p>Mechanical shocks and strong vibrations can damage the camera.</p> <p>Don't drop the camera during installation. Make sure it is securely mounted on the microscope. When it's not in use, store it in a safe place!</p>
-----------	--

ATTENTION	<p>Secure microscopes with additional components!</p> <p>A top-heavy microscope can tip over or fall down and result in damage to both the camera and the microscope.</p> <p>If the microscope is top-heavy or otherwise unstable, fix it to the wall!</p>
-----------	---

ATTENTION	<p>Don't touch the protective glass</p> <p>The protective glass over the CMOS chip is extremely sensitive and must not come into contact with bare hands or any other objects, otherwise the acquisitions will be impaired by fingerprints or scratches.</p> <p>Remove dust from the protective glass carefully with compressed air. For the removal of dust stuck due to static electricity, ionized air is recommended.</p>
-----------	--

ATTENTION	<p>Observe the operating conditions</p> <p>Exposure to high temperatures or humidity can damage component parts of the camera.</p> <p>Always meet the operating and storage conditions.</p> <p>See [The OLYMPUS EP50 color camera] on page 5.</p>
-----------	--

ATTENTION	Don't expose the camera to strong light Exposure to strong light can cause the camera to overheat, which may cause damage to its component parts. Do not expose the camera to strong light (such as sunlight) for long periods of time.
ATTENTION	Use only the supplied accessories Operate the camera only with the supplied accessories. This ensures that the EMC basic standards are fulfilled.
ATTENTION	Never rest the camera on its front or its back The camera is not stable when it is rested on its front or its back. Always rest the camera on its side when you have to put it down (before mounting it on the microscope for example).
ATTENTION	Only transport the camera in its original packaging Mechanical shocks and strong vibrations can damage the camera. Use the original packaging when you want to unmount the camera and transport it.

3 System environment

3.1 General remarks

To acquire images with best possible quality, the microscope has to be configured correctly. The illumination for example must be set in a way to enable image acquisitions with appropriate exposure times.

This camera installation manual does not contain explanations on how to setup the microscope. Please refer to the microscope manual for this information.



Using the camera with non-Olympus microscopes

The OLYMPUS EP50 can be used in combination with many available microscopes. However, its performance in combination with non-Olympus microscopes has not been tested.

Using the OLYMPUS EP50 in special application contexts

Application context	Explanation / Additional information	Countermeasure
Using objectives with low magnification (<10x)	Depending on the microscope configuration, vignetting might occur in the image if objectives with a magnification of less than 10x are used.	Make sure the condenser you are using is suitable for low magnification objectives. Use a camera adapter with a higher magnification.
Using objectives with high magnification (>40x)	The maximum exposure time might not be sufficient to acquire a correctly exposed image.	Increase illumination intensity or use a camera adapter with a lower magnification.
Darkfield and fluorescence microscopy	The OLYMPUS EP50 is not suitable for darkfield or fluorescence microscopy due to its limited exposure range.	No countermeasure available.
Stereo microscopes with integrated EPI illumination	If you use stereo microscopes with integrated EPI illumination, there may be significant vignetting in the image at low zoom levels.	Use only higher zoom levels and use a camera adapter with higher magnification.
Observing high contrast samples	If you look at high contrast samples, it may happen that the automatically determined exposure time is not optimal. The image can then be under- or overexposed.	In the Camera Control of the software, define an exposure compensation. Alternatively, switch to manual exposure mode.
Acquiring images with a long exposure time	When acquiring images with a long exposure time (e.g. > 300 ms), an	No countermeasure available. This phenomenon is common to all

Application context	Explanation / Additional information	Countermeasure
	increasing amount of hot pixels may become visible.	camera sensors and not caused by a failure of the equipment.

3.2 Microscopes and camera adapters

The table below shows the camera adapters you can use to connect the OLYMPUS EP50 to many available Olympus microscopes.

Please note that you can also use microscopes that are not listed there.

Microscope	Adapter
Upright microscopes BX61/ BX51/ BX41 CX41/ CX31/ MX61 CX23/ CX33/ CX43 BX43/ BX46/ BX53/ BX63	U-TV1x-2 + U-CMAD3 U-TV1XC U-TV0.63xC U-TV0.5xC-3 U-TV0.35xC-2
Inverted microscopes IX81/ IX71/ IX51 IX83/ IX73/ IX53 CKX53	U-TV1x-2 + U-CMAD3 U-TV1XC U-TV0.63xC U-TV0.5xC-3 U-TV0.35xC-2
Stereo microscopes SZX16/ SZX10/ SZX7/ SZX12	U-TV1x-2 + U-CMAD3 U-TV1XC U-TV0.63xC U-TV0.5xC-3 U-TV0.35xC-2
Stereo microscope SZ61TR	0.5x (adapter is integrated)

3.3 Computers or mobile devices

System requirements for the Windows PC

To use the camera with the EPview software on a Windows PC, the system requirements listed in the table must be fulfilled.

Processor (CPU)	Intel Xeon or Intel Core i3, i5, i7, comparable, compatible AMD processors
Hard disk	at least 30 GB free storage space
RAM	at least 4 GB,
Screen resolution	at least 1920 pixels x 1080 pixels, 16:9 format
VGA board	32-bit graphics card, at least 128 MB graphics memory
Interfaces	WLAN (IEEE 802.11n)
Operating system	MS-Windows 10 (64 bit), MS-Windows 11 (64 bit)
Computer power supply	> 300 W



Latest system requirements available from customer service

The system requirements listed here are up to date at the time of creating this manual. The system requirements are often updated by the manufacturer. The latest requirements can be obtained by asking customer service at EVIDENT Technology Center Europe GmbH. To do so, send an e-mail to the following address: TechnicalSupport.EMEA@evidentscientific.com

System requirements for mobile devices

Mobile devices are smartphones and tablets, for example. The mobile device must have one of the operating systems listed below:

- iOS 11 or higher
- Android 8.1 or higher.

Please note: Android is a trademark of Google LLC.

3.4 Software

You'll need the appropriate software to acquire images with the camera. The following options exist:

1. You operate the camera using the OLYMPUS EP50 OSD software that is pre-installed on it.
2. You operate the camera using the free EPview software from EVIDENT Technology Center Europe GmbH installed on a Windows PC.
3. You operate the camera using the free EPview app from EVIDENT Technology Center Europe GmbH installed on a mobile device.

Downloading and installing the EPview software

Use one of the links below to download the EPview software.

<https://www.olympus-lifescience.com/en/support/downloads/>

On the [Software Downloads] website, browse to the subdirectory that contains the EPview software. Click the [Details] button to open a website that contains the download link. You have to log in or register before the download can begin.

Installing the EPview software

To install the EPview software, go to the directory that contains the Setup.exe file and double click it.

Installing the EPview app

Install the free EPview app from EVIDENT Technology Center Europe GmbH.
Use one of the two links listed below.



Apple App Store

<https://itunes.apple.com/app/EPview/id1372702702>



Please note: Apple and the Apple logo are trademarks of Apple Inc., registered in the U.S. and other countries.

App Store is a service mark of Apple Inc.



Google Play Store

<https://play.google.com/store/apps/details?id=com.olympus.epview>



Please note: Google Play is a trademark of Google LLC.

3.5 WLAN adapter

A USB WLAN adapter (which is not included in the delivery) is required to operate the camera in in WLAN mode.

The WLAN adapter must support the IEEE 802.11n standard or higher. In addition, a Realtek Semiconductor Corp. chip must be used.



We recommend the following USB WLAN adapters:

- LM Technologies LM816
- COMFAST CF-WU810N
- TP-Link TL-WN725N (V3)

Note: Please contact your EVIDENT sales representative if none of these USB WLAN adapters is available in your country.



If the computer doesn't have a built-in WLAN adapter, a second USB WLAN adapter is required.

If you want to operate the camera using the EPview software, but the computer used doesn't have a built-in WLAN adapter (because it usually uses LAN for example), you will require a second USB WLAN adapter.

This second USB WLAN adapter can be the same model as the adapter that is plugged in to the camera's USB interface. It must be plugged in to one of the computer's USB ports to enable WLAN connection with this computer.

WLAN Disclaimer

The camera can communicate wirelessly via the existing USB interface using a WLAN adapter. However, the WLAN adapter is not part of the scope of delivery and you are solely responsible for selecting, using and operating this accessory device.

In particular, you must ensure that the WLAN adapter you are using has a corresponding radio license in your region. You are solely responsible for the functionality of the WLAN network. Possible sources of interference in the WLAN network can also influence the camera's functionality and performance.

Selecting the WLAN channel

When using several OLYMPUS EP50 cameras simultaneously, we recommend to use a different WLAN channel for each camera. This avoids interference between the individual cameras.

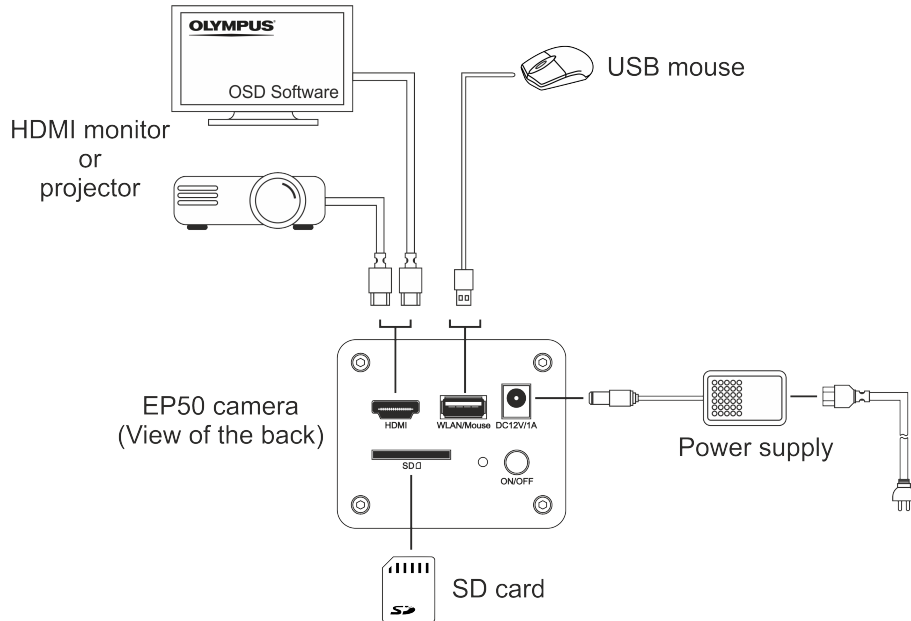
Open the [Settings] > [Network] dialog box in the OSD software and select the [AP] tab. Note that some countries recommend the use of certain WLAN channels:

Country	Channel	Remark
USA	1, 6, 11	IEEE 802.11 g/n (2.4 GHz) 22/20 MHz; channels 12,13 not allowed
Other countries	1, 5, 9, 13	IEEE 802.11 g/n (2.4 GHz) 20 MHz

4 Application scenarios of the camera

You can use the OLYMPUS EP50 in different application scenarios. Each application scenario uses a different free software and requires a different hardware environment. Select the application scenario that best meets your requirements.

4.1 Using the camera with OSD software



For this application scenario, apart from the camera and microscope, you only need a monitor with an HDMI port, the supplied USB mouse and the OLYMPUS EP50 OSD software that is installed on the camera.

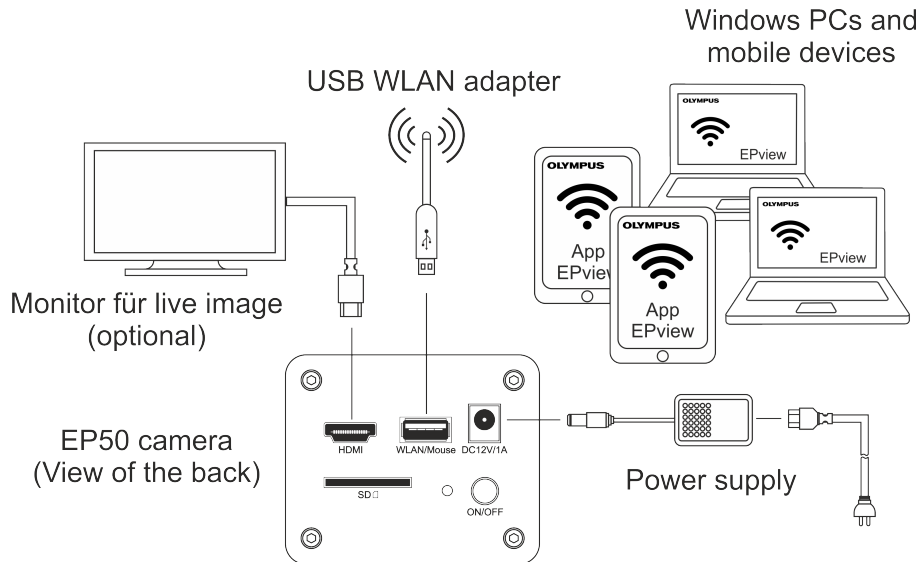
A computer or a network connection is not required to operate the camera. OSD stands for On-Screen Display.

Note: The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc. in the United States and other countries.

Using this application scenario

1. Remove the camera's protective cap and mount the camera on the microscope's camera adapter.
2. Connect the camera with the monitor using the supplied HDMI cable. Alternatively, you can plug the supplied HDMI cable into a projector.
3. Plug the supplied mouse into the camera's USB port.
 - With the mouse pointer, you can access all functions of the OSD software and change settings. If you want to enter text, click once again into the text field. Then an on-screen keyboard is displayed.
4. Insert the supplied SD card into the appropriate port on the back of the camera. Make sure that the card is inserted the right way round (as shown in the illustration above).
 - The acquired images will be saved on this SD card.
5. Connect the camera to the power supply and switch it on.
 - The camera will be initialized. The camera's LED flashes during the initialization process. The blue LED lights up continuously after the initialization process.
6. Switch on the monitor.
 - After a few seconds, the OSD software appears on the monitor. The camera's live-image is displayed.
 - If you move the mouse to the upper, lower or left hand edge of the monitor, different software elements appear. You can use these to operate the OSD software.
7. Make the optimal camera settings for the acquisition of the image.
 - To do so, use the [Camera Control Panel] that appears when you move the mouse to the left side of the monitor.
8. If required, perform measurements on the live-image or add text or drawing elements to the image.
9. Acquire an image. To do this click the [Snapshot] button in the [Camera Control Panel] window.
 - The image is automatically saved to the camera's SD card.

4.2 Using the camera in the camera-specific WLAN



For this application scenario, apart from the camera and the microscope, you need a Windows PC or a mobile device. Additionally, a USB WLAN adapter is required which is not included in the delivery.

When operating the camera with a Windows PC, the free EPview software is required. It does not matter whether the Windows PC is a laptop, a notebook or a desktop PC.

When operating the camera with a mobile device, the free EPview app is required. It does not matter whether the mobile device is a smartphone or tablet.

The app looks largely the same regardless of the device or operating system that is being used.

Overview: WLAN mode

To transfer data using WLAN, a USB WLAN adapter (not supplied) is required. The camera recognizes that this adapter is plugged in and switches to **AP Mode**. AP stands for Access Point.

In this mode, the OLYMPUS EP50 camera provides its own WLAN. The USB WLAN adapter must be plugged in to the camera for this to work. See [WLAN adapter] on page 17.

More than one client can use the WLAN to connect to the same OLYMPUS EP50 camera. This enables all of the clients to view the camera's live-image simultaneously and to change the camera settings.

The clients can use the EPview app on a mobile device, or a Windows PC on which the EPview software has been installed.

The clients select an OLYMPUS EP50 camera's WLAN by selecting the icon for wireless networks on their device first. All of the active OLYMPUS EP50 cameras appear in the list of found networks.

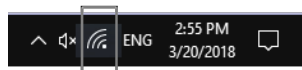
The clients then select the WLAN for the required camera and enter the WLAN password. You can find the preset name of the WLAN as well as the WLAN password on the camera (on the sticker that contains the QR code).



SSID: EP50_6700xxxx
WLAN Key: 12345678

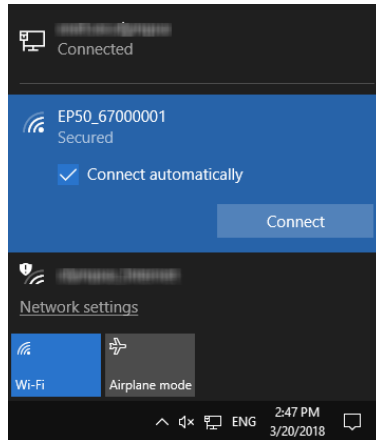
Using this application scenario

1. Install the EPview software on your Windows PC. Alternatively, install the free EPview app on your mobile device.
2. Remove the camera's protective cap and mount the camera on the microscope's camera adapter.
3. Plug the USB WLAN adapter into the USB port of the camera.
4. If you want to display the live-image additionally on a monitor or projector: Use the supplied HDMI cable to connect the monitor or projector to the camera.
5. Connect the camera to the power supply and switch it on.
 - The camera will be initialized. The camera's blue LED flashes slowly during the initialization process.
 - The camera's blue LED lights up continuously after the initialization process is finished. After a few seconds the camera's LED starts to flash quickly. The camera is now transferring data.
 - The camera recognizes that a USB WLAN adapter is being used and switches to AP mode.
6. Connect the computer with the WLAN that the OLYMPUS EP50 provides.
 - This procedure can vary a little depending on the operating system being used. For example, with the Windows 10 operating system, click this icon in the status bar at the bottom right.



- A picklist appears showing the networks that are currently available.

7. From the picklist, select the WLAN that the OLYMPUS EP50 provides and click the [Connect] button.
 - You can find the name of the network that the OLYMPUS EP50 provides on the camera (in the SSID field on the sticker that contains the QR code).



Example of a connection with the WLAN of the camera EP50_67000001.

8. Then enter the WLAN password.

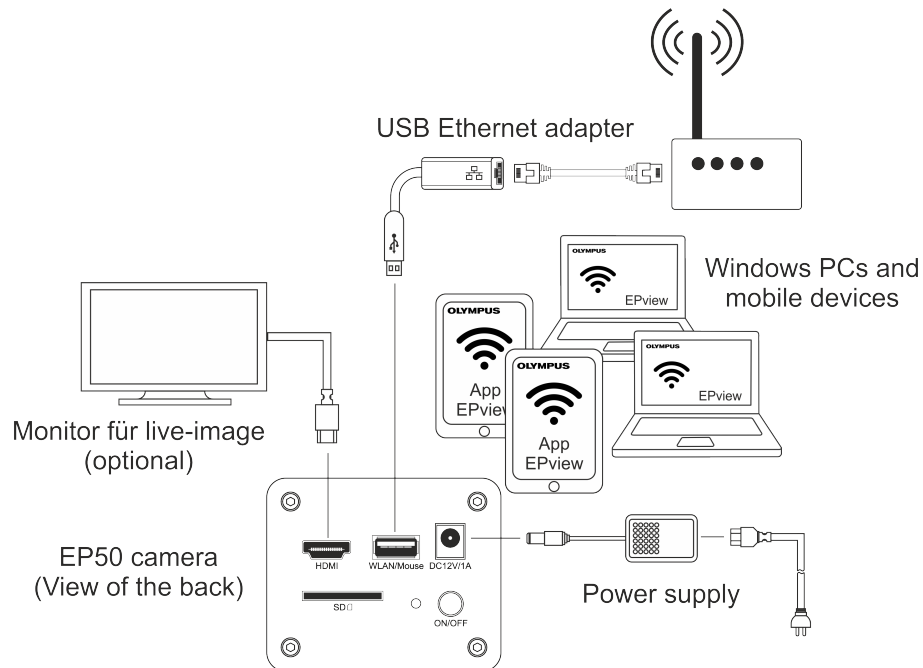


SSID: EP50_6700xxxx
WLAN Key: 12345678

- You can also find the WLAN password on the camera (in the WLAN-Key Key field on the sticker that contains the QR code).
 - You only have to enter the WLAN password the first time you connect to the camera.
9. Start the EPview software or app and check the configuration.
 10. Click the [Live] button.
 - The live-image is now shown in the document group.
 11. Make the optimal camera settings for the acquisition of the image. Perform a white balance and check the exposure time.
 - If you are using a Windows PC with the EPview software, you can find more information in the EPview user manual.
 12. Acquire an image. To do this, click the [Snapshot] button in the EPview software or app.

- If you are using the EPview app, the image is saved in the image gallery of the mobile device in an album named OLYMPUS EP50 by default.
- If you are using the EPview software, the image is displayed in the document group by default. It is not yet saved.

4.3 Using the camera in LAN mode



For this application scenario, apart from the camera and the microscope, you need a Windows PC or a mobile device. Additionally, you need the supplied USB Ethernet adapter.

When operating the camera with a Windows PC, the free EPview software is required. It does not matter whether the Windows PC is a laptop, a notebook or a desktop PC.

When operating the camera with a mobile device, the free EPview app is required. It does not matter whether the mobile device is a smartphone or tablet.

The app looks largely the same regardless of the device or operating system that is being used.

Overview: LAN mode

To transfer data using LAN, a USB Ethernet adapter (supplied) is required. The camera recognizes that this adapter is plugged in and goes into **LAN mode** (LAN stands for Local Area Network).

In this mode, the camera connects to a network (LAN). The USB Ethernet adapter must be plugged into the camera for this to work and the network cable must be plugged in, too.

When the network (LAN) is equipped with the necessary hardware (WLAN router or Access Point), the clients can control the camera via the WLAN with their mobile devices.

Active OLYMPUS EP50 cameras are automatically recognized by the EPview software or the EPview app and they are displayed as a thumbnail.

More than one client can view the same OLYMPUS EP50 camera's live-image simultaneously and change the camera settings.

If active OLYMPUS EP50 cameras cannot be recognized automatically (for example, because they are connected to a different network), they can be manually added by entering the IP address in the EPview software or EPview app. The IP address must be supplied by the network administrator.

Clients that are using a Windows PC with the EPview software can find more information in the EPview user manual.



Note on data security

The data transfer of the OLYMPUS EP50 camera in LAN or WLAN is not encrypted. Anyone who is connected to the network and has installed the EPview software or app, can see the live-image of all active OLYMPUS EP50 cameras. Operate the camera with the OSD software if you want to make sure that nobody else in the network can see the camera's live-image.

Using this application scenario

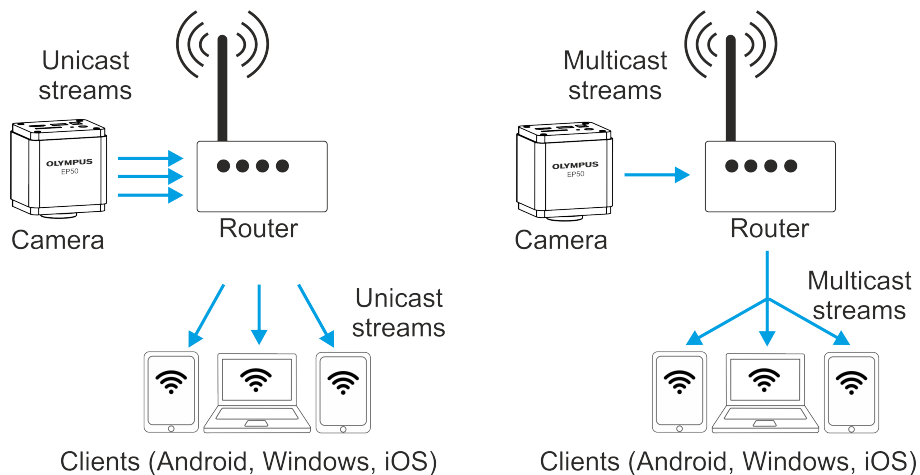
1. Install the EPview software on your Windows PC. Alternatively, install the free EPview app on your mobile device.
2. Remove the camera's protective cap and mount the camera on the microscope's camera adapter.
3. Plug the USB Ethernet adapter into the camera and plug the network cable in, too. Plug the other end of the network cable into the LAN router.
4. Connect the camera to the power supply and switch it on.
 - The camera will be initialized. The camera's blue LED flashes slowly during the initialization process.
 - The blue LED lights up continuously after the initialization process.
 - The camera recognizes that a USB Ethernet adapter is being used and internally switches to LAN mode.
5. If you want to display the live-image additionally on a monitor or projector: Use the supplied HDMI cable to connect the monitor or projector to the camera.

6. Make sure that your Windows PC or your mobile device is connected to the LAN or to the WLAN created by this LAN router.
7. Start the EPview software or app and check the configuration.
 - Normally, active OLYMPUS EP50 cameras are automatically recognized. The live-image of each camera is displayed as a thumbnail. For the display, the [EP50 Camera List] tool window is used in the EPview software, and the [Camera List] dialog box is used in the EPview app.
8. Select the OLYMPUS EP50 camera you are interested in.
 - To do so, click the camera's thumbnail in the [EP50 Camera List] tool window if you use the EPview software.
 - If you use the EPview app, tap the camera's thumbnail in the [Camera List] dialog box.
9. Acquire an image. To do this, click the [Snapshot] button in the EPview software or app.
 - If you are using the EPview app, the image is saved in the image gallery of the mobile device in an album named OLYMPUS EP50 by default.
 - If you are using the EPview software, the image is displayed in the document group by default. It is not yet saved.

Overview: Available data transfer methods

The OLYMPUS EP50 camera supports both of the following methods of transferring data in the network from the sender to the client.

- Unicast
- Multicast



Unicast

The **Unicast** data transfer method is the default setting for the OLYMPUS EP50 camera. This method transfers the data from the camera to each client individually.

Multicast

The **Multicast** data transfer method is also available. This method transfers the data from the camera to more than one client simultaneously. This data transfer method enables you to send data from the camera to significantly more clients.



Pay attention to the network's infrastructure

Check with your network administrator whether the **Multicast** data transfer method is supported by the hardware being used and whether it is active on your network.

Changing the data transfer method

You can change the data transfer method only in the OSD software. Do the following:

1. Switch the camera off.
2. Unplug the USB Ethernet adapter from the USB port on the back of the camera and plug the supplied USB mouse into this port.
 - With the mouse pointer, you can access all functions of the OSD software and change settings.
3. Connect the camera to an HDMI enabled monitor.
4. Switch the camera on.
 - The OSD software opens and the camera's image appears on the monitor.
5. Move the mouse pointer to the bottom edge of the monitor to show different buttons. Click the [Settings] button.
 - The [Settings] dialog box appears.
6. Select the [Network] entry and click the [LAN] tab.
7. Select the [Multicast] option.
8. Click the [Apply] and [Close] buttons to save your settings and to close the dialog box.
9. Unplug the supplied USB mouse from the camera and plug the USB Ethernet adapter back into this port.
 - The camera is now in LAN mode and is using the **Multicast** data transfer method.

4.4 Using the camera in a network environment

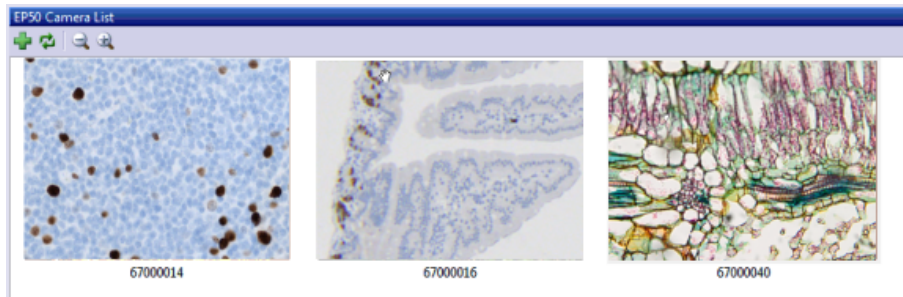
You can use the OLYMPUS EP50 camera with the EPview software or app in a network environment:

More than one client connects to the same OLYMPUS EP50 camera (in AP mode)

To do this, the clients connect to the WLAN that the camera provides. All of the clients can view the live-image, change the camera settings, and acquire images.

Several clients connect to different or the same OLYMPUS EP50 cameras (in LAN mode)

In the EPview app or software the clients see thumbnails of the live-images of all of the active OLYMPUS EP50 cameras that are in the same network as their computer.



Appearance of the [EP50 Camera list] tool window in the EPview software when more than one OLYMPUS EP50 cameras is active.

The clients can connect to each camera to view the live-image, change the camera settings, and acquire images.

OLYMPUS EP50 cameras that are not running in the same network as the Windows PC or mobile device on which the EPview software or app is installed, can also be used by manually adding the IP address.

If you are using the EPview software, you can find more information about the [EP50 Camera List] tool window and manually adding a camera's IP address in the EPview user manual.

Note on image calibration



Make sure to calibrate the images correctly

If you want to make measurements on images, correct image calibration is required. If you are using the OLYMPUS EP50 camera in a network environment, note the following:

The images that are acquired always use the system configuration that is set in the client's EPview software or app (either on their Windows PC or their mobile device). This local

system configuration, however, does not automatically correspond to the system configuration set on the microscope itself.

For this reason, clients who connect to an OLYMPUS EP50 camera in a network environment (to perform length measurements in the live-image for example) must make sure that their local system configuration corresponds to the system configuration that is set on the microscope itself.

If a client has set a 10x objective in his EPview software or app, but the microscope only has a 20x objective, the acquired images will not be correctly calibrated and the measurements on the image will be incorrect.

Note on changing the camera settings

When more than one client is connected to the same OLYMPUS EP50 camera, all of the clients can change the camera settings. If one client increases the exposure time for example, the exposure time will also be increased for the other clients.

5 Care and maintenance

When correctly handled, the camera has a long life span and is to a large extent maintenance-free. The full functionality is assured when you observe the care instructions.

Cleaning the protective glass

To clean the camera's protective glass, use a common blower bulb to blow dust away and wipe it gently with cleaning paper (or clean gauze).

In the case of fingerprints or oil smudges on the protective glass, wipe it with clean gauze moistened with pure alcohol.



WARNING

Danger of fire when using alcohol!

Alcohol is highly flammable and can cause fires.

Make absolutely sure that the alcohol doesn't come into contact with open flames or electric components.

Cleaning the housing

Parts other than the glass components should be cleaned by wiping with a clean cloth. Do not use organic solvents to remove major stains. Use a soft cloth moistened with a neutral detergent solution.



Do not dismantle any parts!

The camera is made up of parts that are easily damaged and their disassembly can quickly cause a malfunction or reduced performance.

Therefore, do not dismantle any parts of the camera.

6 Troubleshooting

6.1 Possible problems

Some of the typical problems that can arise when using the OLYMPUS EP50 camera are described in the text that follows.

Table 1: Problems when operating the camera with OSD software

Error	Possible causes	Solution
A faulty image appears.	Not the supplied HDMI cable is used, but another one. The supplied HDMI cable is used, but not plugged in correctly.	Use the supplied HDMI cable. Make sure that the supplied HDMI cable is plugged in correctly.
The image appears distorted on the monitor.	You are using a monitor that does not support 16: 9 aspect ratio, for example, a 16:10 aspect ratio monitor.	If possible, adjust image scaling functions in the monitor's configuration menu or reduce the output size. If present, disable the overscan function.
Some OSD software controls are cut off or not displayed at all on the monitor.	The monitor used is wrongly configured for the use of the OSD software.	If possible, adjust image scaling functions in the monitor's configuration menu or reduce the output size. If present, disable the overscan function.
The mouse is not working.	You are using a mouse other than the supplied USB mouse.	Use the supplied USB mouse. Connect the mouse before starting the camera.
	You started the camera before connecting the mouse.	Switch off the camera and connect the mouse. Wait a moment and then switch on the camera again.
The SD card is not recognized.	Not the supplied SD card is used, but another one. The supplied SD card is inserted, but not used.	Use the supplied SD card. Make sure that the supplied SD card is inserted correctly.
	The SD card is formatted incorrectly or the formatting is not recognized.	Only if you have not saved important data on the SD card: Re-format the SD card. To do so, open the [Settings] > [SD Card] dialog box in the OSD software and click the [Format to FAT32] button.
The WLAN that the camera provides is not found.	The distance between the mobile device and the camera is too great.	Bring the mobile device or the computer closer to the camera. In

Error	Possible causes	Solution
		general, you should not exceed a distance of 12 meters.
	The USB WLAN adapter is not plugged in to the camera.	Plug the USB WLAN adapter into the USB port of the camera.
	The WLAN support of the mobile device or computer is deactivated.	Activate the WLAN interface in the system settings of the computer or mobile device.
	The computer used does not have WLAN functionality.	Plug a second USB WLAN adapter into one of the computer's USB ports.
	The USB WLAN adapter is not suitable.	Use a suitable USB WLAN adapter. See [WLAN adapter] on page 17.
The camera is not found in the EPview software or EPview app.	The device on which the EPview software or the EPview app is installed is connected to a different WLAN than the one provided by the camera.	Connect the mobile device with the WLAN that the camera provides.
The camera is not found in the EPview software. Therefore, all buttons for image acquisition are disabled.	The Windows PC runs third-party application programs in the background that prevent the reception of data from the camera. For example, a firewall or antivirus software.	Contact your system administrator. If there are no objections, disable or uninstall the application program of the third party, which prevents the reception of data from the camera.
The connection to the camera stops.	There are too many network devices using the same WLAN channel.	Set the camera to a different WLAN channel. To do so, open the [Settings] > [Network] > [AP] dialog box in the OSD software and select a different channel in the [Channel] field. Then connect to the camera again.
You cannot connect to the WLAN that the camera provides.	You have changed the network password and did not enter the new password correctly.	Look at the current password. If required, assign a new password. To do so, open the [Settings] > [Network] > [AP] dialog box in the OSD software. Make a note of the currently displayed password or enter a new one.
The camera is not found in the EPview software or app.	The connection of the camera to the network or the network router is not working.	Use the supplied USB Ethernet adapter. Alternatively make sure that the used USB Ethernet adapter is based on one

Error	Possible causes	Solution
		<p>of the following chipsets: Realtek RTL8152B(N) or Asix AX88772C.</p> <p>Make sure your network infrastructure provides DHCP server functionality. Activate the DHCP server in your router's settings menu. Make sure the router is running before switching on the camera.</p> <p>Use another LAN Ethernet cable. The cable must comply with the specification CAT5 or better.</p> <p>Remove and plug in again the USB to Ethernet adapter while the camera is switched on.</p>
	You are not connected to the network (LAN).	Connect to the network (LAN). Enter login information if required.
	Camera and the mobile device or the Windows PC are not connected to the same network.	<p>If possible, make sure that camera and mobile device or Windows PC are connected to the same network.</p> <p>Add the camera manually by entering its IP address into the [IP Address Input] dialog box, available in the EPview software or the EPview app. Note: You can get the camera's IP address from your network administrator.</p>
	Third-party application programs are running in the background of the Windows PC or mobile device that prevent the reception of data from the camera. For example, a firewall or antivirus software.	Contact your system administrator. If there are no objections, disable or uninstall the application program of the third party, which prevents the reception of data from the camera. Only use default Firewall settings.
The connection to the camera is slow or stops.	There are too many network devices connected to the same network (LAN).	If possible, reduce the amount of connected LAN devices. Install additional or more powerful network hardware.
	The Multicast data transfer method is set on the camera.	Make sure that the network hardware being used supports the Multicast

Error	Possible causes	Solution
		<p>data transfer method. Activate the Multicast functionality in the settings of your router.</p> <p>Alternatively, you can change the camera's data transfer method to Unicast. To do so, start the OSD software and open the [Settings] > [Network] dialog box. Activate the [LAN] tap and select the Unicast option.</p>

6.2 Resetting the camera to the factory defaults

You can reset all settings of the camera to the values with which the camera was delivered. This setting can be made in the OSD software.

To display the OSD software on the monitor, the camera must be connected to the monitor using the supplied HDMI cable. In addition, the supplied mouse must be plugged into the camera's USB port.

Then open the [Settings] > [Miscellaneous] dialog box in the OSD software and click the [Reset to factory defaults] button. A message box is displayed. When you confirm the security prompt, the OSD software restarts and all settings are reset to factory defaults.

6.3 Contacting Customer Service

Please contact your local EVIDENT support if you have any questions about the product.

The addresses can be found on the following websites:

Life Science Solutions: <https://www.olympus-lifescience.com/en/contact-us/>

7 Declarations of conformity and disposal

7.1 CE Conformity (Europe)

This product complies with the requirements of Directive 2014/30/EU concerning electromagnetic compatibility according to Standard IEC/EN61326-1.

- Emission: Class A
- Immunity: Applies to industrial and basic environment requirements.

This camera system complies with the requirements of Directive 2014/35/EU (Low Voltage Directive).

7.2 WEEE declaration (Europe)



In accordance with the European directive on Waste of Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste but should be collected separately. Refer to your local authority in the EU for return and/or collection systems available in your country.

7.3 RoHS conformity (Europe)

This EVIDENT Technology Center Europe GmbH camera conforms with the European Union directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2011/65/EU and (EU) 2015/863.

7.4 FCC conformity (USA)

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

FCC warning	Changes or modifications not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.
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FCC Supplier's Declaration of Conformity

The supplier hereby declares that the product

Product name: Optical Microscope Accessory

Model Number: OLYMPUS EP50

conforms to the following specifications:

FCC Part 15, Subpart B, Section 15.107 and Section 15.109

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party Name: Evident Scientific Inc.

Address: 48 Woerd Ave Waltham, MA 02453, U.S.A.

Phone Number: 781-419-3900


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Equipment Name:	Optical Microscope Accessory
Basic Model Number:	OLYMPUS EP50
Registration No.:	R-R-OIS-67000000
Manufacturer:	EVIDENT Technology Center Europe GmbH, Germany
Country of Origin:	China

7.6 China RoHS conformity (China)

China RoHS conformity (China)

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udev - Userspace Device Management Daemon

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udev - Linux userspace device management

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hostapd-2.3.tar.bz2

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