



MICROSCOPE CAMERA

USER MANUAL

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Product code: T2010A1
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Software version: 1.0

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1. Overview

The Ossila Microscope Camera is a high-resolution imaging solution designed for scientific and industrial applications. It provides a crystal-clear, real-time view of your samples with a simple plug-and-play setup. The camera is an ideal companion for the Ossila Probe Station or any microscope where live visual feedback is essential. Its key advantage is the dual HDMI and USB 3.0 output, which can be used simultaneously to provide a lag-free live stream to a dedicated monitor while also capturing images and video on a PC.

Equipped with a high-quality Sony 4K sensor, the camera delivers stunning resolution, allowing you to see fine details with exceptional clarity. The camera's intelligent design automatically adjusts image settings such as exposure, white balance, and gain, ensuring that you can immediately start viewing and capturing high-quality images without a complex configuration process. This combination of powerful imaging capabilities and user-friendly operation makes the Ossila Microscope Camera a valuable and versatile tool for any laboratory.



2. EU Declaration of Conformity

We

Company Name: Ossila BV

Postal Address: Biopartner 3 building, Galileiweg 8

Postcode: 2333 BD Leiden

Country: The Netherlands

Telephone number: +31 (0)71 3322992

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declare that the DoC is issued under our sole responsibility and belongs to the following product:

Product: Microscope Camera (T2010A1)

Serial number: T2010A1-xxxx

Object of declaration:

Microscope Camera (T2010A1-xxxx)

The object of declaration described above is in conformity with the relevant Union harmonisation legislation:

EMC Directive 2014/30/EU

RoHS Directive 2011/65/EU

Signed:



Name: Dr James Kingsley

Place: Leiden

Date: 08/08/2025

Декларация за съответствие на ЕС

Производител: Ossila BV, Biopartner 3 building, Galileiweg 8, 2333 BD Leiden, NL.

Декларира с цялата си отговорност, че посоченото оборудване съответства на приложимото законодателство на ЕС за хармонизиране, посочено на предходната(-ите) страница(-и) на настоящия документ.

[Čeština] Prohlášení o shodě EU

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[Deutsch] EU-Konformitätserklärung

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[Eesti keel] ELi vastavusavaldus

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[Lietuvių k.] ES atitikties deklaracija

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[Magyar] EU-s megfelelőségi nyilatkozat

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[Suomi] EU-vaatimusten mukaisuusvakuutus

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[Svenska] EU-försäkran om överensstämmelse

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Vi intygar härmed att den utrustning som förtecknas överensstämmer med relevanta förordningar gällande EU-harmonisering som finns på föregående sidor i detta dokument.

3. Safety

3.1 Use of Equipment

The Ossila Microscope Camera is designed to be used as instructed. It is intended for use under the following conditions:

- Indoors in a laboratory environment (Pollution Degree 2)
- Altitudes up to 2000m
- Temperatures of 5°C to 40°C; maximum relative humidity of 80% up to 31°C.

3.2 Servicing

If servicing is required, please return the unit to Ossila Ltd. The warranty will be invalidated if:

- Modification or service has been carried out by anyone other than an Ossila engineer.
- The Unit has been subjected to chemical damage through improper use.
- The Unit has been operated outside the usage parameters stated in the user documentation associated with the Unit.
- The Unit has been rendered inoperable through accident, misuse, contamination, improper maintenance, modification, or other external causes.

3.3 Health and Safety – Servicing



Servicing should only be performed by an Ossila engineer. Any modification or alteration may damage the equipment, cause injury, or death. It will also void your equipment's warranty.

4. Minimum Requirements

This section details the requirements for operating the Ossila Microscope Camera.

4.1 For Direct Monitor Connection (HDMI)

Power	5V, 800 mA provided through USB-C connector
Monitor Resolution	The camera can output multiple resolutions. A monitor that supports 1920 x 1080 or 3840 x 2160 is recommended for optimal quality.
Monitor Connectivity	HDMI 1.4

4.2 For PC Connection (USB)

Operating System	Windows, macOS, or Linux with UVC (USB Video Class) support
Connectivity	A USB 3.0 port is required for full performance. The camera may function with a USB 2.0 port, but performance and frame rates will be limited
Recommended PC Specifications	A modern multi-core processor (e.g., Quad Core 2 GHz or better) and 8 GB of RAM are recommended. Higher specifications may be required for capturing and processing high framerate 4K video.

4.3 Ossila USB Camera Viewer Software

	Minimum	Recommended
Operating System	Windows 11 (64-bit)	Windows 11 (64-bit)
CPU	Quad Core 2 GHz	13 th gen Intel i7 or equivalent
RAM	8 GB	16 GB
Available Hard Drive Space	260 MB	260 MB
Monitor Resolution	1280 x 720	1920 x 1080
Connectivity	USB 2.0 or 3.0	USB 3.0

5. Unpacking

5.1 Packing List

The standard items included with the Ossila Microscope Camera are:

- The Ossila Microscope Camera.
- USB type-A to USB type-C cable.
- HDMI to HDMI cable.

5.2 Damage Inspection

Examine the components for evidence of shipping damage. If damage has occurred, please contact Ossila directly for further action.

6. Specifications

6.1 Imaging Performance

Sensor Model	Sony IMX415
Sensor Type	CMOS
Sensor Format	1/2.8"
Maximum Resolution	3840 x 2160 (4K UHD)
Pixel Size	1.45 μm x 1.45 μm
Signal to Noise Ratio	30 dB
Sensor Sensitivity	0.65 V/lux-s @ 550 nm
Wavelength Sensitivity	385 – 650 nm
Minimum Illumination	0.2 lux
Image Control	Automatic Exposure (AEC) Automatic White Balance (AWB) Automatic Gain (AGC)

6.2 Digital Interface and Performance

Interface	USB 3.0
Software Compliance	USB Video Class (UVC)
Available Resolutions	3840x2160 2560x1440 1920x1080 1280x720 640x480
Maximum Framerate (compressed, MJPEG)	60 fps @ all available resolutions
Maximum Framerate (uncompressed, YUY2)	15 fps @ 3840x2160 30 fps @ 2560x1440 60 fps @ 1920x1080, 1280x720, 640x480

Note: The framerates listed are the theoretical maximums provided by the camera module. Actual performance and framerates when connected to a PC may vary depending on your computer's processor, the type of USB cable, and the USB port being used. For optimal performance, a high-speed USB 3.0 or higher cable and a modern processor (e.g., a 13th gen Intel i7 or equivalent) are recommended.

6.3 Direct Display Interface and Performance

Interface	HDMI 1.4
Maximum Framerate	30 fps @ 3840x2160 (4K UHD) 60 fps @ 1920x1080 (Full HD)

6.4 Physical and Environmental

Mounting Thread	C-mount
Dimensions (L x W x H)	62 x 62 x 51 mm
Weight	200 g
Power Requirements	5V DC, 800 mA (via USB)
Operating Temperature	0°C - 70°C

7. Installation

7.1 Hardware Installation

1. **Mount the Camera:** Carefully screw the camera's C-mount thread onto your microscope's C-mount port. To avoid damage, ensure the threads are correctly aligned and do not cross-thread the components.
2. **Connect USB Power:** Plug the USB-C end of the provided USB cable into the camera. Plug the USB-A end into either a compatible USB 3.0 port on your computer or a dedicated USB power adapter.
3. **Connect HDMI Display (Optional):** If using a dedicated monitor, connect an HDMI cable from the camera's HDMI port to the monitor's input. If using the Ossila Probe Station monitor, you will need to use the HDMI-to-miniHDMI cable provided with the Probe Station.

Note: The camera requires USB power to function, even when only using the HDMI output.

7.2 Software Installation

The Ossila Microscope Camera is a fully compliant USB Video Class (UVC) device. This means it uses standardised drivers that are already built into modern operating systems (Windows, macOS, and Linux), and no additional driver installation is required.

Once the hardware is connected, you can use the camera with any software that can recognise a standard webcam or video device. This includes a wide range of third-party software such as Micro-Manager, OBS Studio, VLC, and many others.

For Windows users, the **Ossila USB Camera Viewer** software is available for viewing the live feed, adjusting the image settings, and capturing images.

1. Download the latest version of the Ossila USB Camera Viewer from the Ossila website: <https://www.ossila.com/pages/software-drivers>.
2. Follow the on-screen instructions to install the software.
3. Once the camera is connected and powered on, the software will detect it automatically.

8. Operation

The Ossila Microscope Camera is designed for simple, out-of-the-box operation. Once installed and powered on, the camera's internal image processing automatically adjusts key settings such as exposure, white balance, and gain. This ensures that you get a clear, high-quality image immediately without complex configuration.

The camera can be operated in several modes:

- Standalone with a direct HDMI monitor.
- Connected to a PC via USB.
- Simultaneously using both HDMI and USB outputs.

8.1 Standalone HDMI Operation

For a live, lag-free viewing experience directly on a monitor, follow these steps:

1. Ensure the camera is powered by connecting the provided USB cable to the camera's USB-C port and a functioning USB power source (such as a computer's USB port or a dedicated power adapter).
2. Connect the provided HDMI cable from the camera's HDMI port to your monitor's HDMI input port.
3. Turn on the monitor and select the correct HDMI input source (e.g., HDMI 1, HDMI 2).
4. The live video feed from the camera will appear on the screen. This mode is ideal for tasks that require real-time manual adjustments, such as positioning probes or manipulating samples.

Note: The camera requires USB power to function, even when only using the HDMI output.

8.2 PC Operation via USB

When connected to a PC, the camera functions as a standard USB Video Class (UVC) device. This means it is automatically recognized by the operating system (Windows, macOS, or Linux) without the need for specific drivers. You can use the dedicated **Ossila USB Camera Viewer** software or a wide range of third-party applications.

The Ossila USB Camera Viewer software operation is described in the corresponding [manual](#).

The framerate you achieve on your PC is dependent on your system's specifications. For the best performance, ensure you are using a fully featured high-speed USB 3.0 or higher cable (like the one provided) and a modern, high-spec processor (e.g., a 13th gen Intel i7). If your PC has lower

specifications, the camera will still function, but the live video framerate may be lower. This is a normal behavior, as the software is throttled by your operating system to maintain stability.

8.3 Simultaneous HDMI and USB Operation

The camera's HDMI and USB outputs can be used at the same time. This allows you to maintain a persistent, lag-free live view on a dedicated monitor for manual work, while concurrently using the Ossila USB Camera Viewer or other PC software to capture images, record video, or perform analysis. This is a particularly useful solution if your PC's specifications result in a low USB framerate, as you can rely on the HDMI output for immediate visual feedback while using the PC for high-quality still image capture. To do this, simply follow the connection instructions for both HDMI (Section 8.1) and USB (Section 8.2) operation.

8.4 Default Camera Image Properties

While the Ossila Microscope Camera is UVC-compliant, the default image settings and allowed property value ranges are not necessarily the same as other UVC-compliant cameras. Moreover, the camera recalls the previously set parameters during power-up. To return to the factory default values, reference Table 8.1 which provides the default image parameter values and the adjustable parameter ranges for each image property.

Note: The camera's automatic image control features (Automatic Exposure, Automatic White Balance, and Automatic Gain) are enabled by default. The default values represent the camera's baseline settings before these automatic adjustments are applied. You can disable the Automatic White Balance in the Ossila USB Camera Viewer software to manually control these properties.

Table 8.1. Ossila Microscope Camera default image settings.

Property	Default Value	Range
Brightness	100	0 – 200
Contrast	100	0 – 200
Hue	0	0 – 360
Saturation	100	0 – 200
Sharpness	100	0 – 200
Gamma	50	0 – 100
Backlight Comp.	16	0 – 32
White Balance	70	0 – 150

9. Maintenance

To ensure the longevity and optimal performance of your Ossila Microscope Camera, follow these simple maintenance guidelines.

- **Keep the Sensor Window Clean:** The glass window covering the sensor should be kept clean and free from dust.
- **Cleaning Procedure:** If cleaning is necessary, gently wipe the window with an optical cleaning cloth. For smudges, use a small amount of high-purity isopropyl alcohol on the cloth.
- **Environment:** Operate the camera in a clean, dust-free environment, in the conditions specified in Section 3.1.
- **Storage:** When the camera is not in use, protect it from dust and other environmental elements.

10. Troubleshooting

This section details common issues and their solutions. If you encounter a problem not listed here, please contact us at info@ossila.com for assistance.

Problem	Possible Cause	Action
No display on monitor (HDMI)	The camera is not receiving power.	Ensure the USB cable is firmly connected to the camera and a working USB port or power adapter. The camera requires USB power even for HDMI output.
	The HDMI cable is not connected properly.	Check that the HDMI cable is securely plugged into both the camera's HDMI port and the monitor's input.
	The monitor is not set to the correct input source.	Use the monitor's remote or on-screen display (OSD) to cycle through input sources (e.g., HDMI 1, HDMI 2) until the camera feed appears.
	The HDMI cable is defective.	Try using a different or new HDMI cable.

Problem	Possible Cause	Action
No display in PC software (USB)	The camera is not being detected by the operating system.	Check that the USB cable is securely plugged in at both ends. Try a different USB 3.0 port on your computer. As the camera is UVC compliant, no drivers are needed, but occasionally a system restart can help the OS detect new hardware.
	The selected software cannot find the camera.	Ensure the camera is selected as the video source within your chosen software (e.g., Ossila USB Camera Viewer, Micro-Manager, OBS, VLC). Some software may require you to manually refresh the device list.

Problem	Possible Cause	Action
Poor image quality or incorrect colours	The sample is not properly illuminated.	Ensure your microscope's light source is on and the sample is well-lit. Adjust the microscope's illumination settings (e.g., brightness, aperture).
	The camera's automatic settings are being overridden or are struggling with the lighting conditions.	Most third-party software, including the Ossila USB Camera Viewer, allows for manual control over image properties like brightness, contrast, and white balance. Try adjusting these settings to improve the image.
	The camera sensor window is dirty.	Power off the camera and gently clean the sensor window with an optical cleaning cloth and isopropanol if necessary.

Problem	Possible Cause	Action
Low frame rate on PC (USB)	The USB cable or port is not high-speed.	Use the USB-A to USB-C cable provided with the camera, or another fully featured high-speed USB 3.0 or higher cable. Ensure it is plugged into a USB 3.0 port on your computer, often indicated by a blue colour or a "SS" (SuperSpeed) symbol.
	The PC's processor is throttling the video stream.	The camera's maximum framerates depend on your computer's processing power. To achieve the best performance, use a modern multi-core processor (e.g., a 13th gen Intel i7 or better). Lower-spec processors may still work but will deliver a lower framerate. If you require real-time feedback, consider using the simultaneous HDMI output for a lag-free experience.
	The software settings are configured for uncompressed video.	In your software's settings, check if the video format is set to MJPEG (Compressed), which offers higher frame rates (up to 60 fps) at all resolutions. Uncompressed (YUY2) formats provide maximum image data but have a lower maximum framerate at 4K and QHD.

11. Related Products



Probe Station

Reliable and stable manual probing to facilitate the experiments you want, without the high price or complexity of overengineered systems.

Product codes: T2009A1 / T2009B1 / T2009C1 / T2009D1



Differential Interface

Quickly and easily convert unipolar connections to a differential coaxial output.

Product code: T3007A1



Source Measure Unit

Source voltage, measure current, get data. Simplify and accelerate your data collection!

Product code: P2005A2



Micromanipulator

Manual manipulation for intuitive positioning control in advanced applications. Available in 10 μm or 5 μm resolutions.

Product codes: T2007A1 / T2007B1



Probe Tips

Precise probing begins with quality tips. Choose from tungsten or BeCu, available in various sizes.

Product code: T3008A1 / T3008B1 / T3008C1



Triaxial Adapters

Easily and affordably adapt coaxial test fixtures to triaxial-connectorized instrumentation

Product code: C2022 / C2023