Recording Devices

- Recording devices
- Analog cameras
- IP cameras
- USB devices
- Important notes about USB
- GigE Vision cameras
- Screen capture devices
- Use of the Screen Capture tool
- Epiphan screen capture devices

Recording devices

Supported device types

MediaRecorder is supported with the following device types. See the section on the device type which specific devices have been tested.

- Analog cameras
- IP cameras
- USB devices
- GigE Vision cameras
- Screen capture devices

Analog cameras

When do I need an analog camera?

Under certain conditions analog cameras will serve you better than digital cameras. If cables longer than 5 m are needed between the camera and recording equipment, for most digital cameras, you need an amplifier. Industrial analog cameras may be more suitable in these cases. Cable lengths of 30-50 meters are generally no problem.

An additional advantage of analog cameras is that their signals can easily be splitted by simply splitting the cable. To split a signal from a digital camera a video splitter or video splitting software is needed.

Install and setup

To convert the output of analog cameras into a digital format, a video capture card is needed. If you bought a complete solution from Noldus IT, the video capture card is present in the computer. If you bought your cameras, video capture card and MediaRecorder separately, you must do the installation and setup yourself.

See Set up analog cameras

Supported analog cameras

In theory, MediaRecorder works with output of every analog camera that is used with the Euresys Picolo Alert PCIe Video Capture Board. We specifically tested MediaRecorder with output of the following cameras with the Euresys Picolo Alert PCIe Video Capture Board with Multicam driver 6.15.13573:

- Ikegami B/W ICD-49 PAL
- Panasonic WV-CP504 NTSC
- Ikegami Analog PAL/CCIR
- Ikegami Analog NTSC/EIA

Maximum supported number of cameras

- Euresys Picolo Alert PCIe Video Capture Board - Four cameras or PhenoTyper Top Units.

Tested setups with EthoVision XT

The table below shows the maximum supported (1) resolution, (2) frame rate (fps), (3) color space, (4) number of devices and (5) recording time (hours). Tests were done on a Dell 3640 PC

	Device	Resolution	Frame rate	Color space	No of devices	Recording time
	Ikegami B/W ICD-49 PAL-Analog CCIR Euresys Picolo Alert PCIe	768 x 576	25	YUY2 RGB32	1	0.5

	Panasonic WV-CP504 NTSC - Analog EIA Euresys Picolo Alert PCIe	640 x 480	30	YUY2	1	0.5 18 60
	Analog PAL/CCIR	768 x 576	25	RGB24	4	24
	Analog NTSC/EIA	640 x 480	30	RGB24	4	24

IMPORTANT The file size of a 18, 24 and 60 hours recording is very large.

Note CCIR is the monochrome version of PAL and EIA is the monochrome version of NTSC.

Cable length

In theory, a length of 250 m should be possible, however we did not test that. We know that a length of 100 m can be used without problems.

Notes

PAL or NTSC

MediaRecorder automatically identifies the analog cameras as PAL / CCIR (=monochrome PAL), or NTSC / EIA (=monochrome NTSC). It selects the correct frame rate and resolution automatically.

IP cameras

When do I need an IP camera?

IP cameras are connected directly to a network. IP cameras are especially useful to film for example at a remote location and receive the video files through an Ethernet network on your computer.

Network requirements

To use MediaRecorder with IP cameras, the following network requirements apply:

- An Intel Pro/1000 CT or Intel Pro/1000 PT (1 Gb) network adapter is installed in the computer with MediaRecorder.
- The cables are suitable for Gigabit Ethernet. The minimum cable quality is CAT5e.

See https://en.wikipedia.org/wiki/Category_5_cable

- We recommend to use a dedicated network.

Install and setup

If you bought a complete solution from Noldus IT, the network adapter is present in the computer, the IP cameras are set up and the MediaRecorder settings are made. If you bought your cameras and MediaRecorder separately, you must do the installation and setup yourself.

See Set up IP cameras

Supported IP cameras

- Axis M5525
- Axis M1075
- Axis M1375

Cable length

In theory, for IP devices, a cable length 150 m should be possible. However, it has not been tested by us. We know that a setup with a cable of 1 m and an extension cable of 50 m with a switch between the cables works well with MediaRecorder.

Notes

ONVIF Profile S

ONVIF is a communication standard for network devices. ONVIF Profile S applies video and audio streaming and PTZ control. Most IP cameras nowadays support ONVIF Profile S. For cameras that do so, pan, tilt, and zoom control can be done with MediaRecorder and audio from the camera can be recorded. For cameras that do not support ONVIF, pan, tilt, and zoom control must be done with a browser and audio must be recorded with a

microphone connected to the sound card of the computer.

Power over Ethernet

IP cameras can be connected to a PoE (Power over Ethernet) or PoE+ switch to supply them with power. This way no extra power cables are needed. Each device is connected to one channel on the switch. A PoE switch can deliver up to 15 Watt per channel. A PoE+ switch has a higher capacity per channel (up to 30 Watt per channel). Make sure that the maximum total capacity of the switch is high enough for all cameras together.

Cameras may also be powered using a 2 or 4-port Network Interface Card (NIC).

Example - you connect four cameras that need 30 Watt each to a POE+ switch. This POE+ switch must deliver at least 4 x 30 = 120 Watt.

- Axis M5525 - requires a regular PoE switch.
- Axis M5054 - requires a regular PoE Switch.
- Axis P1375 - requires a regular PoE switch.

The PoE or PoE+ switch must allow a speed of at least 1 Gb per second.

USB devices

What information are you looking for?

- Important notes about USB
- Supported USB cameras
- Other supported USB devices

Important notes about USB

USB 2 and 3 ports

The supported USB devices are all USB 3 devices and need to be connected to a USB 3 port. You recognize USB 3 ports by a double-S in front of the USB icon. Some USB 3 ports and connectors have blue labeling.







The Dell Precision T3640 desktop PC sold by Noldus IT has both USB 2 and USB 3 ports. The Dell Precision 3551 mobile workstation only has USB 3 ports.

USB hub

Do not connect your cameras to a USB hub. If you run short of USB connections, connect your license key, keyboard or mouse to a USB hub and connect your USB device directly to the USB port on your computer.

Cable length

USB devices can be connected to the computer without an amplifier with a cable of 5 m. For every subsequent 5 m, an amplifier must be used each. In theory, when using a standard resolution, the cables could be extended this way to 30 m. However we know that not all devices support this.

When do I need a USB camera?

USB cameras are very easy to use. However, the settings may be limited, fo rexample, many USB cameras have fixed zoom. A USB camera may be perfectly suitable for a usability study in which you film a person sitting behind a computer. A USB camera also works very well to create video files for FaceReader. On the other hand, when you need to create a video file of a person further away from your camera, a USB camera may be less suitable.

For videos with accurate time information, needed for EthoVision XT, you need a high-quality USB camera.

Supported USB cameras

- Basler acA1920-155um
- Basler acA2040-90uc

Other USB cameras may also work. However, it could be t.hat you have to change the Color space to MJPG.
See Show frame rate, resolution and format

Tested setups with EthoVision XT

The table below shows the maximum supported (1) resolution, (2) frame rate (fps), (3) number of devices and (4) recording time (hours) and (5) whether the test has been carried out on a desktop PC (Dell T3640) or a laptop (Dell 3551)

	Device	Resolution	Frame rate	No of devices	Recording time	Desktop or laptop
	Basler acA1920-155um	1920 x 1200 1920 x 1080	60	1	0.5	D
	Basler acA2040-90uc	2040 x 2046	5 10 25 50	1	8	D
	Basler acA2040-90uc*	2040 x 2046	25	1	1	D
	Basler acA2040-90uc**	2040 x 2046	25	1	48	D
	Basler acA2040-90uc	1920 x 1200	60	1	10	L

* Tested with output quality settings “EthoVision” and “DanioVision”.

** Tested with output quality setting “EthoVision”.

Tested setups for use in The Observer XT - portable set-up

The table below shows the maximum supported (1) resolution, (2) frame rate (fps), (3) number of devices and (4) recording time (hours). Tests were done on a Dell 3551 notebook

	Device	Resolution	Frame rate	No of devices	Recording time
	Logitech Brio (separate videos, Picture-by-picture & Picture-in_picture, camera audio only)	1920 x 1080	30	2	1
	Logitech Brio	4096 x 2160	10	1	0.5

Notes

- When using the Logitech Brio camera, you have to change the Color space to MJPG. See Show frame rate, resolution and format.
- With multiple USB 3 cameras it takes a while before they become visible in MediaRecorder as it takes time for USB 3 cameras to initialize.
- Encoding the video stream of USB 3 cameras requires quite some processing capacity, which increases power consumption. If you use the supported devices on our recommended laptop, be aware that after 1 hour recording the battery level drops from fully charged to 45%.

GigE Vision cameras

GigE Vision cameras are hereinafter referred to as GigE cameras.

When do I need a GigE camera?

GigE cameras are high-performance industrial cameras. They can have a higher frame rate and resolution than the other supported cameras. The images are sent unprocessed to the computer using a standard network cable (UTP). With a high frame rate and resolution this results in a very high transfer of data. You can connect a GigE camera directly to an Ethernet card on your computer. In this way you can obtain very high quality videos. An important advantage of GigE cameras is the possibility to have long cables between the camera and the computer.

Network requirements

To use MediaRecorder with GigE cameras, the following network requirements apply:

- An Intel Pro/1000 CT or Intel Pro/1000 PT (1 Gb) network adapter needs to be installed in the computer.

  https://en.wikipedia.org/wiki/Category_5_cable
- The cables must be suitable for Gigabit Ethernet. The minimum cable quality is CAT5e.
- We recommend to use a dedicated network.

Install and setup

If you bought a complete solution from Noldus IT, the network adapter is present in the computer, the GigE cameras are set up and the MediaRecorder settings are made. If you bought your cameras and MediaRecorder separately, you must do the installation and setup yourself.

See Set up GigE cameras

Power over Ethernet

GigE cameras can be connected to a PoE injector. This is a device that passes power along with data (in this case, video data from the camera) on twisted-pair Ethernet cabling. Cameras may also be powered using a 2 or 4-port Network Interface Card (NIC). This way no separate power supply is needed.

Supported GigE camera

- Basler GigE camera acA1300-60gm mono. Color space: Y800.
- Basler GigE camera acA1920-40gc color. Color space: RGB32.

Tested setups with EthoVision XT

The table below shows the maximum supported (1) resolution, (2) frame rate (fps), (3) number of devices and (4) recording time (hours). Tests were done on a Dell T3640 PC

	Device	Resolution	Frame rate (fps)	No of devices	Recording time (hrs)
	Basler acA1300-60gm	640 x 480 800 x 600 1024 x 768 1280 x 1024	60	1	0.5
	Basler acA1300-60gm	1284 x 1025	25 60	1	8
	Basler acA1300-60gm	960 x 640	30 60	4	24
	Basler acA1300-60gm	1280 x 1040	40	4	24
	Basler acA1300-60gm*	1280 x 960	60	4	1
	Basler acA1920-40gc	1920 x 1200	25	1	18

* Tested with output quality setting “EthoVision” and “DanioVision”.

IMPORTANT The file size of a 8, 18 and 24 hours recording is very large (at least 12 GB).
When four devices were tested, separate videos were made.

Cable length

In theory, a cable length of 150m is possible. However, the maximum length tested in-house with satisfactory results was 25 m.

Screen capture devices

When do I need a screen capture device?

You can easily record what your test participant is doing on his or her computer with a screen capture device. Such a device will provide you with high quality images of the screen at which the test participant is looking.

Supported screen capture devices

Epiphan screen capture devices

Epiphan screen capture devices are hardware devices that will stream the screen captures of the test computer to the computer with MediaRecorder. MediaRecorder supports Epiphan Pearl Nano.

See Epiphan screen capture devices

MR Screen Capture tool

The Screen Capture tool is an add-in to your MediaRecorder license.

See: Use of the Screen Capture tool

Use of the Screen Capture tool

Using the standard Screen Capture tool in MediaRecorder

The Screen Capture tool is an add-in to your MediaRecorder license. It allows you to record the screen of the computer with MediaRecorder. It is a software tool that is built in in MediaRecorder.

IMPORTANT To record the screen of a computer other than the one with MediaRecorder installed, use an Epiphan screen capture device instead.

Prerequisites

- You record the full screen of the PC with MediaRecorder.
- You record one screen only.
- You use MediaRecorder on the Dell Precision 3551 mobile workstation.

See also System requirements.

Drivers

For the MR screen capture option, you do not need to install device drivers.

Supported setup (portable lab)

The table below shows the maximum supported (1) resolution, (2) frame rate (fps), and (3) recording time (hours) on a 3551 notebook.

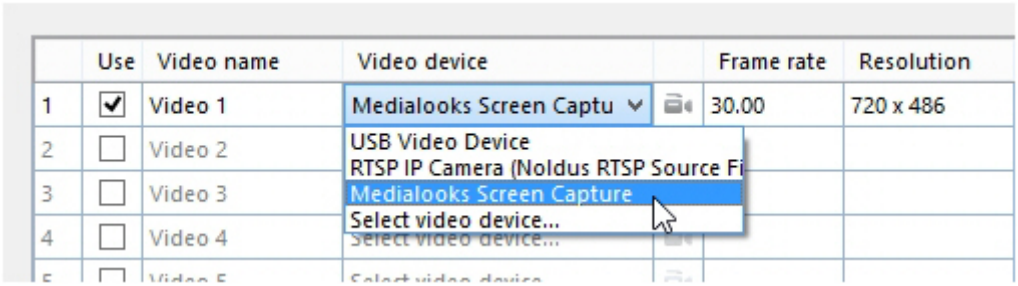
	Device	Resolution	Frame rate	Recording time
	Logitech Brio + Built-in screen capture	1920 x 1080	30	1

Other USB cameras may also work. However, it could be that you have to change the Color space to MJPG. See Show frame rate, resolution and format.

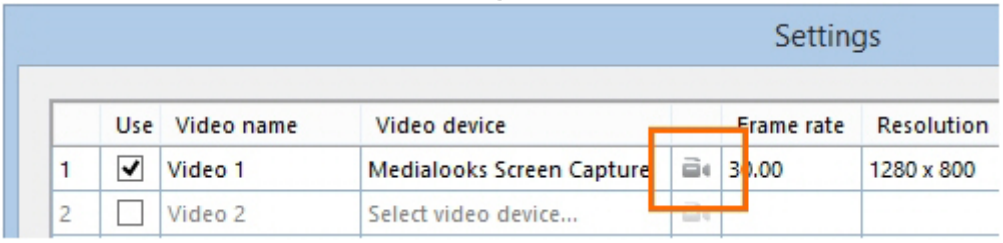
You can also combine built-in screen capture with, for instance, an IP camera.

Procedure

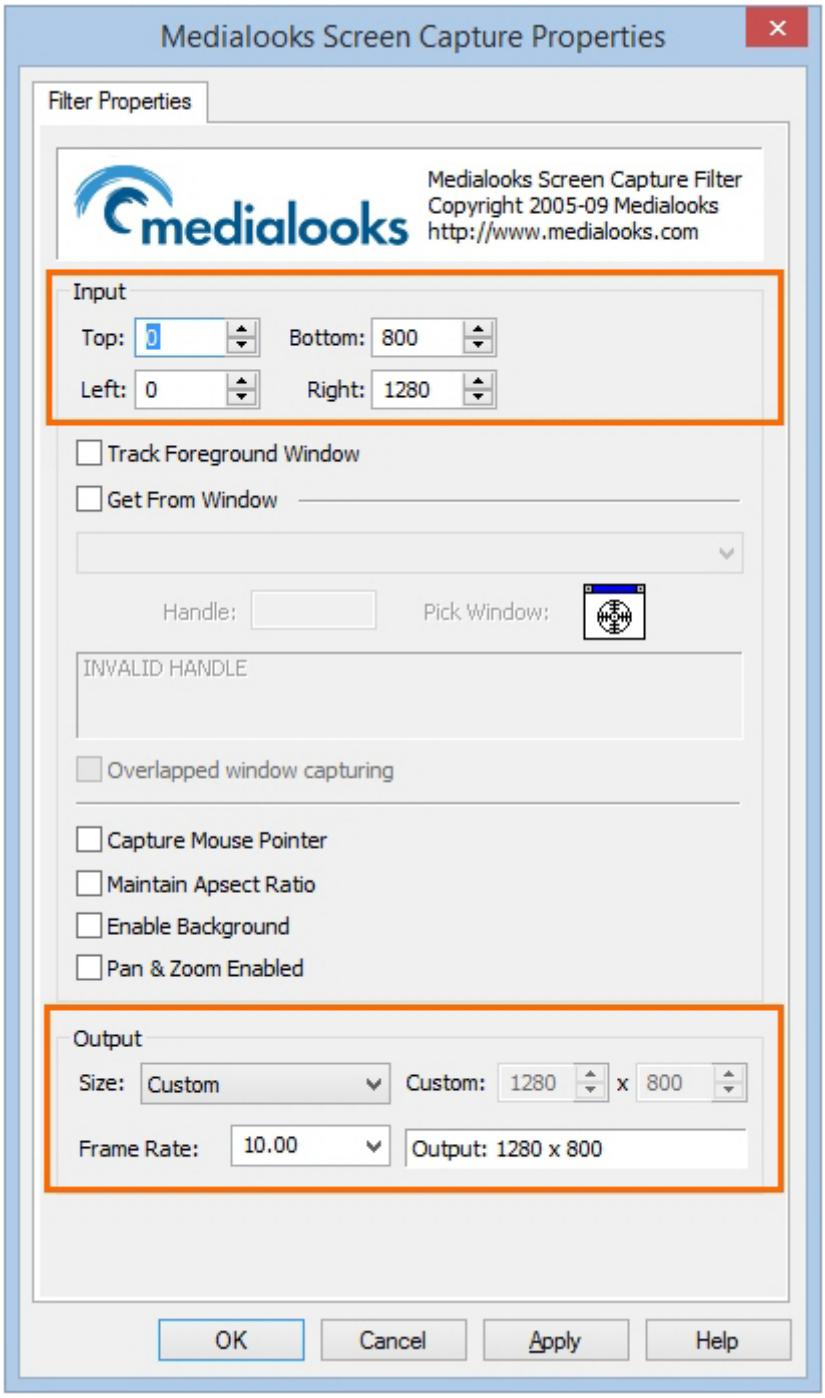
1. In MediaRecorder, choose **File** > **Video Settings**.
2. From the **Video device** list, select **Medialooks Screen Capture**.



3. Click the **Advanced Video Settings** button to select recording options.



4. In the **Medialooks Screen Capture Properties** window that opens, select the frame rate and resolution in the **Output** field. Although you are allowed to select a high frame rate, the actual frame rate of the recording will depend on the processor speed of your computer. Most likely this will be in the order of magnitude of 10 frames per second.



5. Although this window has several recording options, the use of the built-in screen capture is designed and supported to record one window on the MediaRecorder computer only. Minimize MediaRecorder after you start recording.

To re-enable settings

As soon as you select the screen capture device, it is used for the video preview and you cannot change its settings. The Output fields are grayed out. To enable these fields again:

1. Close the **Medialooks Screen Capture Properties** window.
2. From the **Video device list** choose **Select video device** and click **Apply**.

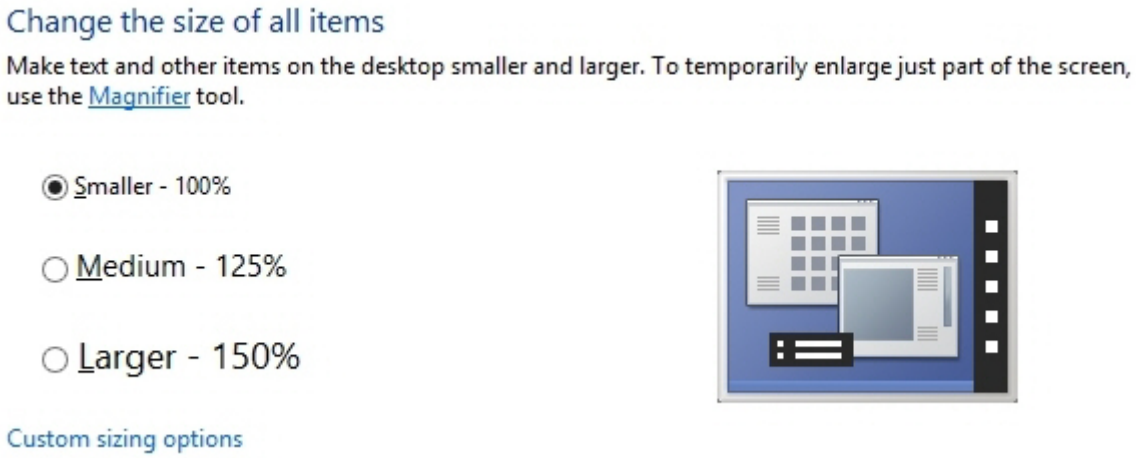


Reselect the **Medialooks Screen Capture** device again and click the video icon to re-open the Medialooks Screen Capture Properties window (see step 3 above). You can now change the frame rate and resolution again.

Note

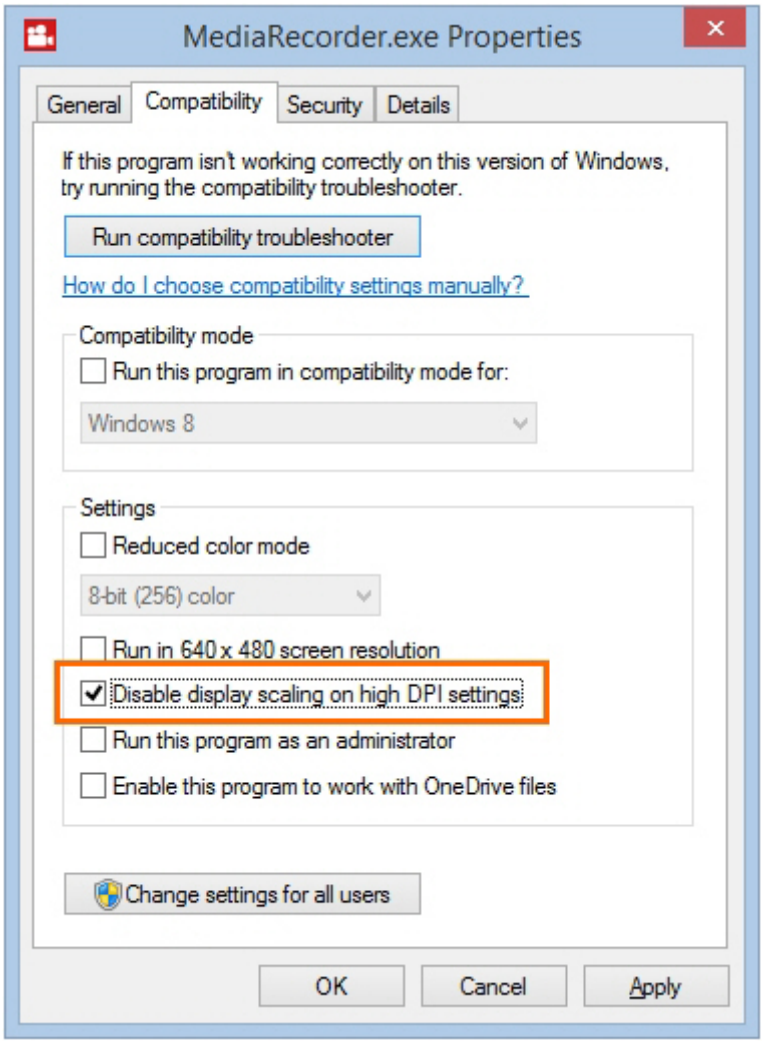
The actual resolution of the recorded file may be lower than the value set in Output.

The use of built-in screen capture option is supported with a Windows text size of 100% or 125% (Control Panel > Display).



If you change Windows text size to 125%, this may result in MediaRecorder capturing only part of the screen. To solve this, do the following:

1. Make sure MediaRecorder is not running.
2. Open the folder **C:\Program Files\Noldus\MediaRecorder 6.**
3. Right-click the file **MediaRecorder.exe** and select **Properties**.
4. Open the **Compatibility** tab.
5. Select **Disable display scaling on high DPI settings** and click **Apply**.


MediaRecorder.exe Properties
General
Compatibility
Security
Details
If this program isn't working correctly on this version of Windows, try running the compatibility troubleshooter.
Run compatibility troubleshooter
How do I choose compatibility settings manually?
Compatibility mode
Run this program in compatibility mode for:
Windows 8
Settings
Reduced color mode
8-bit (256) color
Run in 640 x 480 screen resolution
Disable display scaling on high DPI settings
Run this program as an administrator
Enable this program to work with OneDrive files
Change settings for all users
OK
Cancel
Apply

Epiphan screen capture devices

Supported devices

MediaRecorder supports Epiphan Pearl Nano. This is an encoder device that is able to stream the output of the video card of the test computer to the computer with MediaRecorder.

Notes

Audio

To record audio, connect a microphone to the sound card of your computer and select that source in MediaRecorder settings.

Input

Epiphan Pearl Nano only uses HDMI input.

Frame rate

The actual frame rate of the recorded video is limited by the bandwidth of the screen capture device.

Resolution

To record enough screen detail, we recommend to use signal resolution as frame size when using the screen capture device. MediaRecorder supports a resolution of 1920 x 1200. However, screen capture devices by default use the resolution of the screen of the test computer. To change the recorded resolution, change the resolution of the monitor of the test computer.