

DS-CAM-165, 640, 1100 DEWESoft®

TECHNICAL REFERENCE MANUAL

DS-CAM-165, DS-CAM-640c & DS-CAM-1100m V26-1



Table of contents

1. About this document	1
1.1. Legend	1
2. Key features	2
2.1. DS-CAM-165c-POE	2
2.2. DS-CAM-640c	2
2.3. DS-CAM-1100m	2
2.4. General specifications for GigE cameras	3
2.5. System Requirement	4
2.5.1. Basic configuration	4
2.5.2. Optimal configuration	4
2.5.3. Key performance recommendations	4
2.6. System performance	5
2.6.1. Camera bandwidth calculation	5
3. Technical data	6
3.1. Specifications	6
3.2. DS-CAM-165c-POE Dimensions (Small-size housing)	8
3.3. DS-CAM-640c & DS-CAM-1100m Dimensions (Large-size housing)	9
3.4. Scope of supply & Accessories	10
3.4.1. DS-CAM-165c-POE Scope of supply	10
3.4.2. DS-CAM-640c & DS-CAM-1100m Scope of supply	10
3.4.3. DS-CAM-165c-POE Accessories	11
3.4.4. DS-CAM-640c & DS-CAM-1100m Accessories	11
3.5. Important accessory specifications	12
3.5.1. DS-CAM-PoE-SPLITTER: Specifications	12
3.5.2. DS-CAM-PoE-SPLITTER: Wiring diagram	13
3.6. Camera pinouts	14
3.6.1. Connector locations and functions	14
3.6.1.1. DS-CAM-165c-POE	14
3.6.1.2. DS-CAM-640c & 1100m	15
3.6.2. LED Signaling	15
3.6.3. DATA CONNECTOR PINOUT DS-CAM-165c-POE	16
3.6.4. DATA CONNECTOR PINOUT DS-CAM-640c & 1100m	16
3.6.5. POWER CONNECTOR PINOUT DS-CAM-165c-POE	17
3.6.6. POWER CONNECTOR PINOUT DS-CAM-640c & 1100m	17
3.7. Connection examples	18
3.7.1. Stand-alone DS-CAM	18
3.7.2. SIRIUS with DS-CAM	19
3.7.3. SBOX, SIRIUS with DS-CAM	19
3.7.4. KRYPTON® connection example	19
3.7.5. Multi-camera solution	20
3.8. Resolutions / Frame rates	24
4. Installation and start-up	25
4.1. DewesoftX® full installer	25
4.2. DewesoftX® partial installation	25
4.3. Manual installation	27
4.3.1. Required files	27

4.3.2. Adding GigE Addon	27
4.4. Step-by-step procedure for a first start-up	28
4.4.1. Install OptoMotive_OptoStreamSDK	28
4.4.2. Connect and power up	29
4.4.3. Assigning an IP address to the camera	29
4.4.4. Enable video	30
4.4.5. Preview and settings	31
5. Troubleshooting guide	33
5.1. No data in DewesoftX® camera setup	33
5.2. The GigE checkbox in Settings is missing	33
5.3. No picture shown, “No frames received” error	33
5.4. Camera not found (not in OptoStreamViewer, not in DewesoftX®)	33
5.5. Camera “not found”	34
5.6. Change the IP address of the camera with OptoStreamViewer.	34
5.7. Change the IP address of the camera with the Baumer IPConfig tool.	35
5.8. GigE Vision client does not start, error message when starting	36
5.9. Cameras are not working in DewesoftX®.	36
5.10. Manual driver Uninstall/Install	37
5.11. Performance improvements	42
5.12. Optimizing system and preventing data loss	43
6. Warranty information	45
6.1. Calibration	45
6.2. Support	45
6.3. Service/repair	45
6.4. Restricted Rights	45
6.5. Copyright	46
6.6. Trademarks	46
7. Safety instructions	47
7.1. Safety symbols in the manual	47
7.2. General Safety Instructions	47
7.2.1. Environmental Considerations	47
7.2.2. Product End-of-Life Handling	47
7.2.3. General safety and hazard warnings for all Dewesoft systems	48
8. Documentation Version	51
9. NOTES	52

1. About this document

1.1. Legend

The following symbols and formats will be used throughout the document.



Important

It gives you important information about the subject.
Please read carefully!



Hint

It gives you a hint or provides additional information about a subject.



Example

It gives you an example of a specific subject.

2. Key features

2.1. DS-CAM-165c-POE

The DS-CAM-165c-POE is a mid-speed Gigabit Ethernet camera with the following key data:

- Up to 165 FPS @VGA (640x480)
- Color camera
- Auto white balance
- PTP Synchronization
- PoE Power supply (Class 1 device VCC: 36 ... 57 V DC)
- Standard C-mount lens mounting
- Small form factor

2.2. DS-CAM-640c

The DS-CAM-640c is a high-speed 10-Gigabit Ethernet camera with the following key data:

- Up to 640 FPS @ VGA (640x480) & 8Bpp or 115 FPS @ 2048x1536 & 12Bpp
- Real-time data streaming with full resolution
- Color camera
- Real-time JPEG compression
- Adjustable & automatic shutter time
- Adjustable & automatic gain
- Auto-white balance
- PTP Synchronization
- Standard C-mount lens mounting
- Small form factor
- Rugged aluminium housing (high shock and vibration resistance)

2.3. DS-CAM-1100m

The DS-CAM-1100c is a high-speed 10-Gigabit Ethernet camera with the following key data:

- Up to 1100 FPS @ VGA (640x480) & 8Bpp
- Real-time data streaming with full resolution
- Monochrome camera
- Real-time JPEG compression
- Adjustable & automatic shutter time
- Adjustable & automatic gain
- PTP Synchronization
- Standard C-mount lens mounting
- Small form factor
- Rugged aluminium housing (high shock and vibration resistance)

2.4. General specifications for GigE cameras

The camera supports the high-performance industrial standard “GigE Vision 2.0”.

The benefits of the GigE Vision protocol are

- High-speed data transfer rates of 1 GBit/s up to 10 GBit/s,
- Should be connectible to every standard GigE Ethernet port, and a switch with PTP support is required if PTP synchronisation is used.



Important

We extensively tested different LAN card providers, but we are unable to guarantee that all will work, due to the vast number of them. The same goes for switches. If in doubt about your choice, contact support@dewesoft.com.

- Cable lengths up to 100m.

DewesoftX® uses OptoStream SDK for communication with cameras that support the GigE Vision standard.

2.5. System Requirement

2.5.1. Basic configuration

- 1x Gigabit Ethernet port
- High-performance PC (Core i5 CPU or better recommended, 8 GB RAM and high-performance SSD storage disc)
- DewesoftX® 2022.1 or newer
- GigE plugin V7.7 or newer
- The latest OptoStream SDK
- Dewesoft GigE driver (cdv)

2.5.2. Optimal configuration

- 1x 10-Gigabit Ethernet port
- High-performance PC (Core i7 CPU, 16 GB RAM, and high-performance M.2 SSD storage disc)
- [Latest DewesoftX®](#)
- The latest OptoStream SDK is provided with a fresh installation of DewesoftX®.
- Dewesoft GigE driver (cdv)

2.5.3. Key performance recommendations

Depending on the camera resolution, pixel bit rate, framerate and compression, proper transmission bandwidth, storage speed and capacity have to be allocated for stable operation.

As a general rule of thumb, at least 20 % overhead is recommended when calculating requirements.

2.6. System performance

2.6.1. Camera bandwidth calculation

The size of each RAW image is calculated by the following formula:

$$\text{Image height (px)} \times \text{Image width (px)} \times \text{Bit depth (Bpp)} = \text{Image size (bits/frame)}$$

We strongly recommend that you transform the Image size in bits per frame (b/f) to a more relatable value of megabytes per frame (MB/f):

$$\frac{\text{Image size (b/f)}}{8} \div 1000000 = \text{Image size (MB/f)}$$

To add the time constant, we need to know the camera framerate:

$$\text{Image size (MB/f)} * \text{Framerate (FPS)} = \text{Data load (MB/s)}$$

Data load (MB/s) is also displayed in the DEWESoft X GigE camera Setup window above the live view. Compare your theoretically calculated values with the measured to confirm proper setup and performance. Using JPEG compression will reduce the data load in case of repeatable image acquisition. If the recorded area is very dynamic the JPEG compression will suffer. In case of a mostly static recording area the compression will perform better.

To determine the whole system performance, add the dataload of each camera and divide by the LAN card bandwidth to get the LAN card overall load.

$$\frac{\text{CAM 1 Data load} + \dots + \text{CAM x Data load (MB/s)}}{(\text{LAN Card Bandwidth (Gbit/s)} \times 125)} \times 100 = \text{Use of bandwidth (\%)}$$

When selecting a PC, keep in mind that the correct interfaces and HDD/SSD have to be selected for optimal performance.

Format:	Type of disc drive / interface:	Write Speed
2,5"	Slow HDD	30 MB/s
Interface	PCIe 3.0 (1x)	117 MB/s
2,5"	Fast HDD	150 MB/s
2,5"	SATA II SSD	250 MB/s
Interface	SATA II	300 MB/s
mSATA	Samsung 840 Evo mSATA 250GB	406 MB/s
2,5"	Samsung 870 EVO 2TB	450 MB/s
Interface	PCIe 3.0 (4x)	468 MB/s
M.2	WDC PC SN730 SDBPNTY-512G-1032 512GB	1400 MB/s
PCIe	Intel 905P Optane NVMe PCIe 960GB	1800 MB/s
M.2	Samsung 980 Pro NVMe PCIe M.2 2TB	2984 MB/s
M.2	WD Black SN850 NVMe PCIe M.2 1TB	3872 MB/s

3. Technical data

3.1. Specifications

System	DS-CAM-165c-PTP	DS-CAM-640c	DS-CAM-1100m
Computer requirements			
Processor	Intel® Core™ i5; 4x 3.4 GHz; 8 threads (Intel® Core™ i7; 8x 4.5 GHz; 16 threads)	Intel® Core™ i5; 4x 3.4 GHz; 8 threads (Intel® Core™ i7; 8x 4.5 GHz; 16 threads)	Intel® Core™ i5; 4x 3.4 GHz; 8 threads (Intel® Core™ i7; 8x 4.5 GHz; 16 threads)
Memory	8 GB (Recommended 16 GB)	8 GB (Recommended 16 GB)	8 GB (Recommended 16 GB)
Storage	High-performance SSD (M.2 SSD)	High-performance SSD (M.2 SSD)	High-performance SSD (M.2 SSD)
Ethernet port	1x Gbit	1x 10Gbit	1x 10Gbit
Software	DewesoftX® 2025.2 or newer GigE plugin V8.9 or newer The latest OptoStream SDK	DewesoftX® 2022.1 or newer GigE plugin V7.7 or newer The latest OptoStream SDK	DewesoftX® 2022.1 or newer GigE plugin V7.7 or newer The latest OptoStream SDK
Interfaces and options			
Lens mount	C-mount	C-mount	C-mount
Data Connector	8P8C Modular Jack (RJ45), screw lock type	M12 / 12 pins (SACC-CI-M12FS-8CON-L180-10G) to RJ45	M12 / 12 pins (SACC-CI-M12FS-8CON-L180-10G) to RJ45
Power Connector	PoE 802.3af (Class 1) or M8/8-pin (SACC-DSI-M8MS-8CON-M8-L180)	M12 / 12 pins (SACC-CI-M12MS-12CON-L180) to L1B2m	M12 / 12 pins (SACC-CI-M12MS-12CON-L180) to L1B2m
Synchronisation	SoftSync [2ms], PTP	SoftSync [2-3 frames (see 1)], PTP Ready	SoftSync [2ms], PTP Ready
Optical specifications			
Type	Color	Color	Monochrome
Image sensor	Sony IMX265	Sony IMX252	Sony IMX421 Gen3
Sensor type	CMOS	CMOS	CMOS
Resolution	Up to 2048 × 1536 px	Up to 2048 px × 1536 px	Up to 1920 px × 1464 px
FPS (Max interface speed)	39 FPS @ 2048x1536 75 FPS @ 1920x1080 (59 FPS interface limited) 135 FPS @ 800x600 165 FPS @ 640x480	200 FPS @ 2048x1536 300 FPS @ 1920x1080 520 FPS @ 800x600 640 FPS @ 640x480	400 FPS @ 1920x1464 540 FPS @ 1920x1080 900 FPS @ 800x600 1100 FPS @ 640x480
Sensor size	1/1.8"	1/1.8"	2/3"
Scan Area	7.06 mm × 5.29 mm	7,06 mm × 5,29 mm	8,71 mm × 6,59 mm
Pixel size (in µm)	3.45 µm × 3.45 µm	3,45 µm (H) × 3,45 µm (V)	4,5 µm (H) × 4,5 µm (V)
Dynamic range	71 dB typical	71 dB typical	71,5 dB typical
Shutter	Global Shutter	Global Shutter	Global Shutter
Auto Functions	Auto white balance	ExposureAuto GainAuto with BrightnessAutoPriority based on BrightnessAuto ROI	ExposureAuto GainAuto with BrightnessAutoPriority based on BrightnessAuto ROI

Picture compression	/	Baseline JPEG (ISO/IEC 10918-1)	Baseline JPEG (ISO/IEC 10918-1)
Power			
Power supply	PoE: 36 ... 57 V DC or M8/8: 12 ... 24 V DC $\pm$ 20%	19,2 ... 28,8 V DC	19,2 ... 28,8 V DC
Power consumption	PoE: I: 65 mA @ 48 VDC or M8/8: 108 ... 218 mA	approx. 10,0 W @ 24 VDC and 216 fps	approx. 11,6 W @ 24 VDC and 411 fps
Environmental			
Operating Temperature	0 °C ... +65 °C @ Measurement Point 0 °C ... +75 °C @ internal Temperature Sensor Ambient temperature above 32 °C requires heat dissipation measures.	0 °C ... +65 °C @ T = Measurement Point	0 °C ... +60 °C (See 2) @ T = Measurement Point
Storage Temperature	-10 °C ... + 70 °C	-10 °C ... + 70 °C	-10 °C ... + 70 °C
Humidity	10 % ... 90 % non-condensing	10 % ... 90 % non-condensing	10 % ... 90 % non-condensing
IP rating	IP40	IP40 (with mounted lens and 10 GigE cable) IP65/67 (with mounted tube and cable)	IP40 (with mounted lens and 10 GigE cable) IP65/67 (with mounted tube and cable)
Physical			
Dimensions	63 x 29 x 29 mm 2.48 x 1.14 x 1.14 in	119 x 60 x 60 mm 4.68 x 2.36 x 2.36 in	119 x 60 x 60 mm 4.68 x 2.36 x 2.36 in
Weight	120 g	485 g	485 g
1) Depending on the performance of the CPU.			
2) Ambient temperatures above +25 °C (77 °F) require forced air cooling (min. 0.9 m/s) and adequate heat dissipation measures to prevent heat damage to the camera.			
Rev: 1784545200			

3.2. DS-CAM-165c-POE Dimensions (Small-size housing)

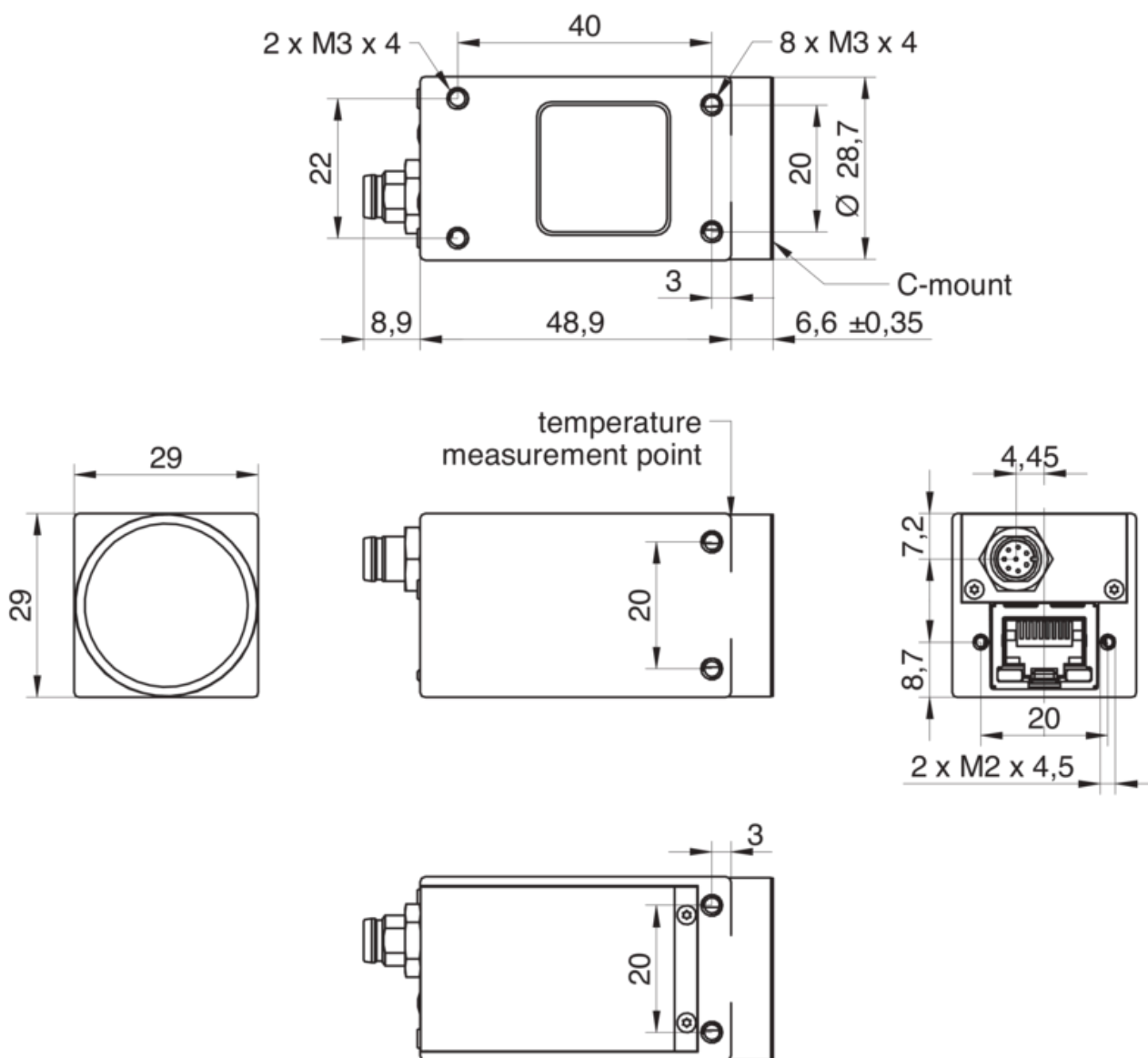


Figure 1. Technical drawing of DS-CAM-165c-POE

3.3. DS-CAM-640c & DS-CAM-1100m Dimensions (Large-size housing)

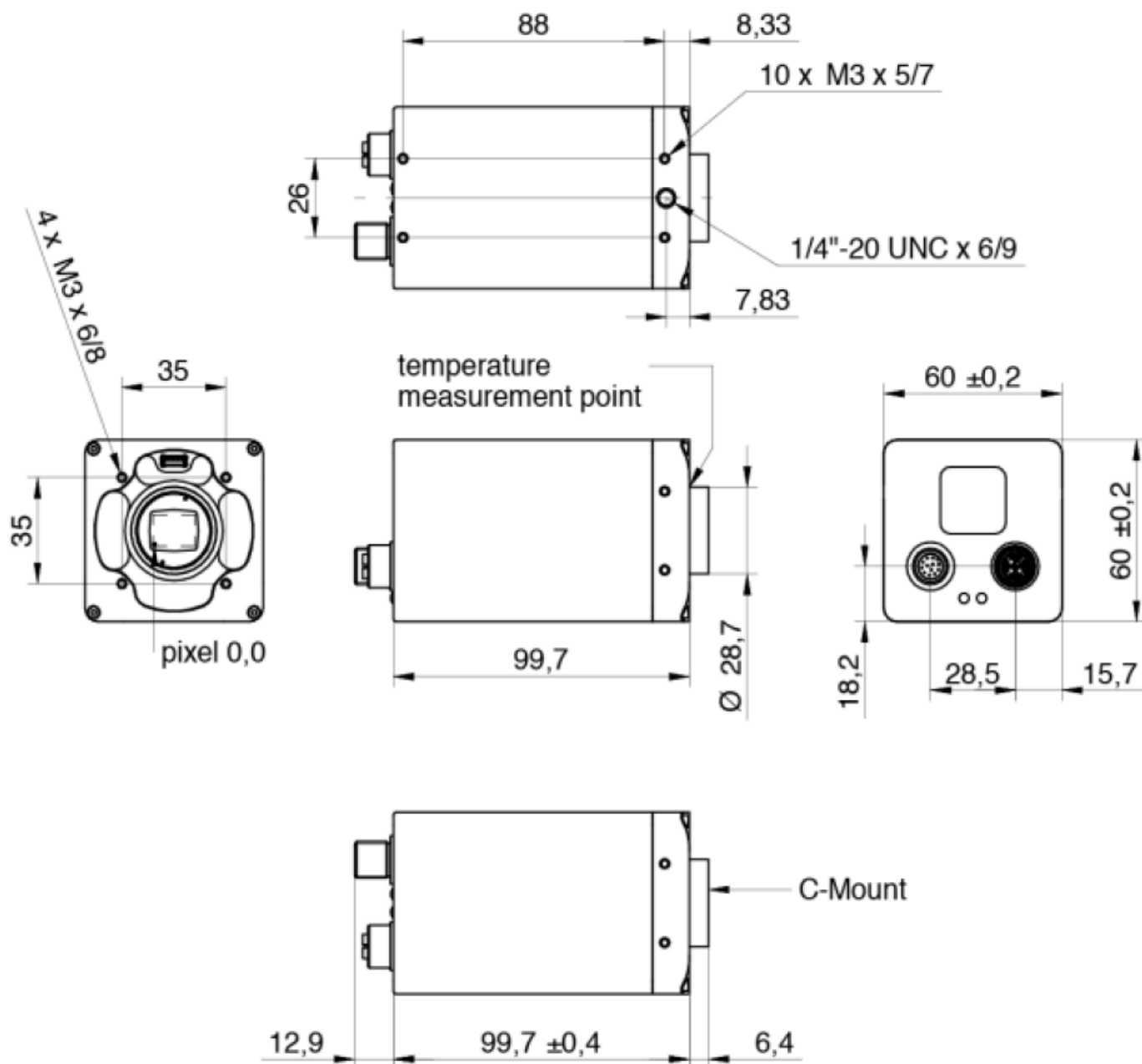


Figure 2. Technical drawing of DS-CAM-640c & DS-CAM-1100m

3.4. Scope of supply & Accessories

3.4.1. DS-CAM-165c-POE Scope of supply

Type	Name DS-CAM-165c-POE	Description
Optics	LENS-AZURE-1614MM	Azure 1614MM C-MOUNT lens
Packaging	Carrying bag	Carrying bag with foam insert for transportation and storage

3.4.2. DS-CAM-640c & DS-CAM-1100m Scope of supply

Type	Name DS-CAM-640c & 1100m	Description
Optics	LENS-AZURE-1614MM	Azure 1614MM C-MOUNT lens
Cooling	HEAT-SINK-TYPE-A	Required for ambient temperatures above 30°C
Signal transfer	CABLE-GigE-M12X/RJ45-5.0m	5m M12X to RJ45 CAT6A signal cable
Power transfer	L1B2m-M1212-5m	5m M1212 to L1B2m power cable compatible with SIRIUS, PS-120W-L1B2f-PHG power supply or POWER-SPLITTER-1xL1B2m-5xL1B2f
Packaging	Carrying bag	Carrying bag with foam insert for transportation and storage

3.4.3. DS-CAM-165c-POE Accessories

Type	Name DS-CAM-165c-POE	Description
IP Protection	DS-CAM-IP-HOUSING with required adapter	Camera IP65 housing consists of an adapter and tube for small and medium-sized cameras.
Power supply	PS-120W-L1B2f-PHG	AC/DC power supply adapter Connectors: Lemo L1B2f-PHG, Country wall socket Power: 120 W (24 V @ 5 A) Fits DS-CAM-640c, DS-CAM-1100m Cable length: 3 m (1.5 m to adapter, 1.5 m from adapter)
Multi-camera power splitter	POWER-SPLITTER-1xL1B2m-5xL1B2f	Power distribution box Input connector: L1B2m Output connector: 5x L1B2f Maximum input current: 15 A

3.4.4. DS-CAM-640c & DS-CAM-1100m Accessories

Type	Name DS-CAM-640c & 1100m	Description
IP Protection	DS-CAM-IP65-COVER	Camera IP65 lens cover consisting of an Adapter and Tube for mounting on DS-CAM-640c & 1100m Combined length of 60mm
Power supply	PS-120W-L1B2f-PHG	AC/DC power supply adapter Connectors: Lemo L1B2f-PHG, Country wall socket Power: 120 W (24 V @ 5 A) Fits DS-CAM-640c, DS-CAM-1100m Cable length: 3 m (1.5 m to adapter, 1.5 m from adapter)
Multi-camera power splitter	POWER-SPLITTER-1xL1B2m-5xL1B2f	Power distribution box Input connector: L1B2m Output connector: 5x L1B2f Maximum input current: 15 A
Power and data adapter	DS-CAM-PoE-SPLITTER	Adapter to connect to DS-18xLAN with PoE; splitting the POWER+DATA coming from the switch to POWER and DATA to connect to the camera

3.5. Important accessory specifications



Figure 3. DS-CAM-PoE-SPLITTER

3.5.1. DS-CAM-PoE-SPLITTER: Specifications

DS-CAM-PoE-SPLITTER	
Interface	
Data interface	GbE (XCP, OPC UA) incl. IEEE1588v2 synchronization (PTP)
Data Rate	up to 1 Gbps
Input connector	Lemo 8-pin (PWR IN + DATA) (See1)
Output connectors	Lemo 2-pin (PWR OUT) RJ45 (DATA)
Power specification	
Power Supply	9-48 V DC
Power Output	24 V (Current limit: 1.6A)
Overvoltage protection	60 V
Environmental specification	
Operating Temperature	-40 to 70°C
Storage Temperature	-40 to 85°C
Shock & Vibration	Shock: SIST EN 60068-2-27:2009 (100 g, 6 ms) Random vibration
1) L1B8m-L1T8f-CAT7 cables should be used for connection. The KRYPTON daisy chain cables are not suitable.	

3.5.2. DS-CAM-PoE-SPLITTER: Wiring diagram

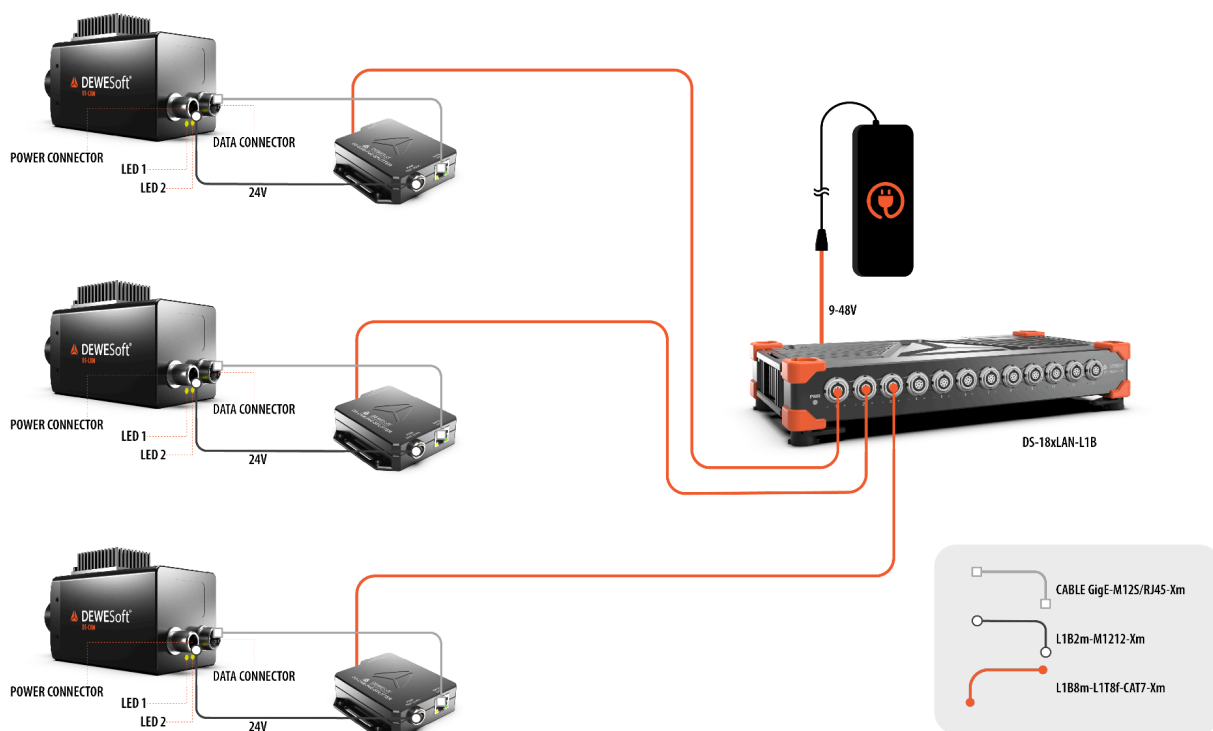


Figure 4. Example of wiring up multiple DS-CAMs with DS-SWITCH



Warning

L1B8m-L1T8f-CAT7 cables should be used for connection. The KRYPTON daisy chain cables are not suitable.

3.6. Camera pinouts

3.6.1. Connector locations and functions

3.6.1.1. DS-CAM-165c-POE

The camera has two connectors on the back: one for the power cable and one for data transfer.

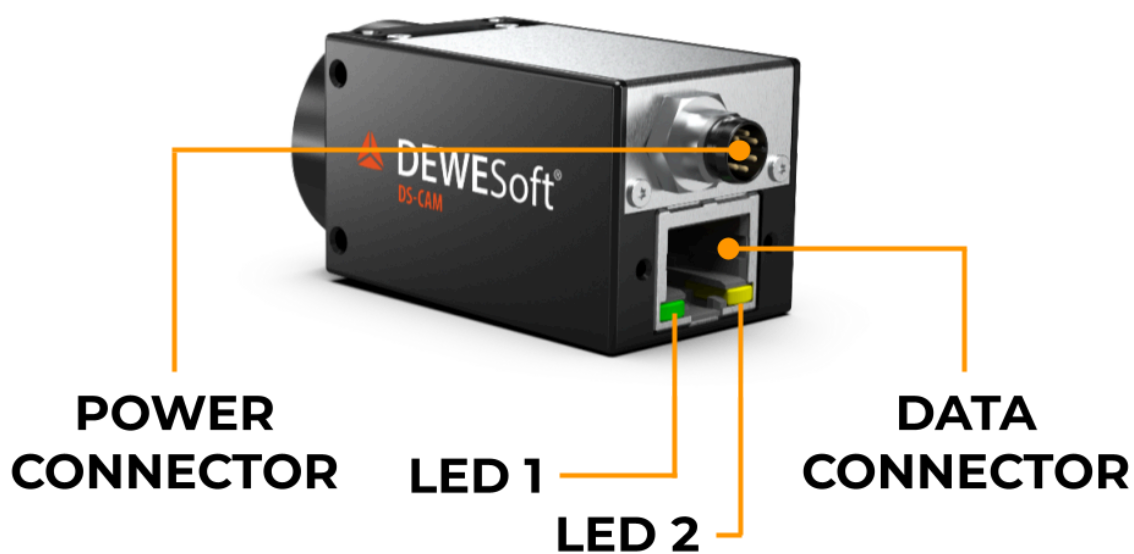


Figure 5. Connectors on DS-CAM-165c-POE

3.6.1.2. DS-CAM-640c & 1100m

On the back of the camera, there are two connectors. One for the Power cable and the second one for the data transfer.

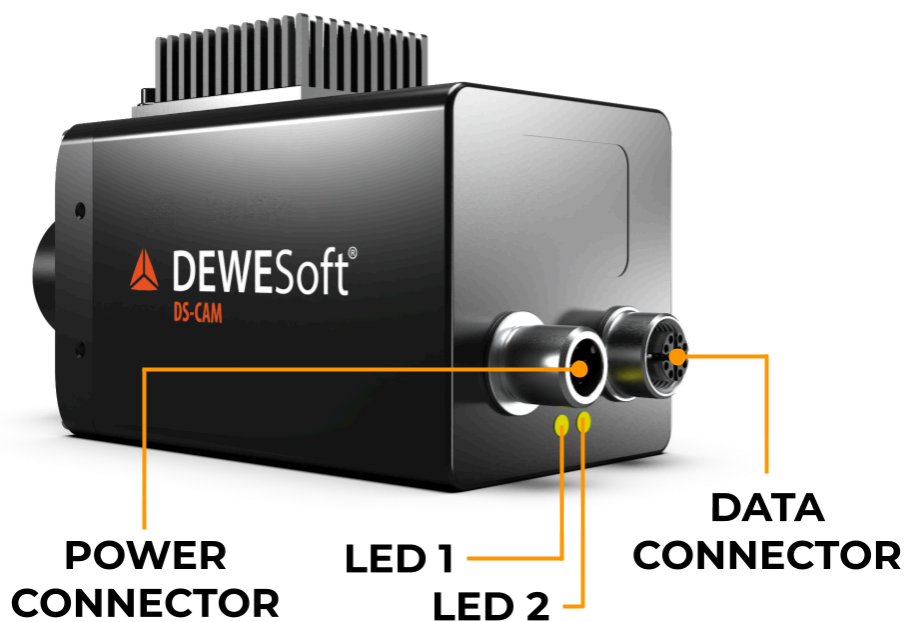
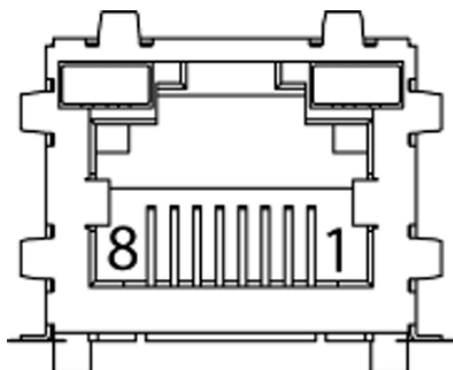


Figure 6. Connectors on DS-CAM-640c & DS-CAM-1100m

3.6.2. LED Signaling

LED color	Description
Green flashing	RX active
Green static	Link ON
Yellow static	Error
Yellow flash	TX active

3.6.3. DATA CONNECTOR PINOUT DS-CAM-165c-POE

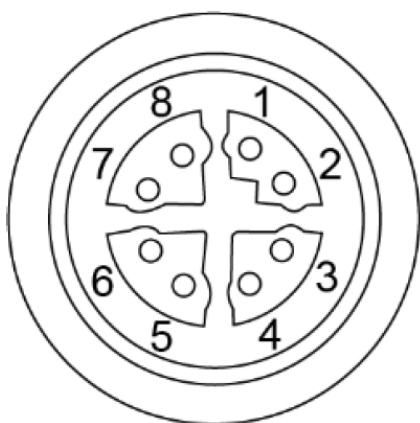


Pin	Name DS-CAM-165c-POE
1	MX1+
2	MX1-
3	MX2+
4	MX3+
5	MX3-
6	MX2-
7	MX4+
8	MX4-

Figure 7. Data interface connector pin-out
DS-CAM-165c-POE

Camera connector: 8P8C Modular Jack (RJ45), screw lock type

3.6.4. DATA CONNECTOR PINOUT DS-CAM-640c & 1100m



Pin	Name DS-CAM-640c & 1100m
1	MX1+
2	MX1-
3	MX2+
4	MX2-
5	MX4+
6	MX4-
7	MX3-
8	MX3+

Figure 8. Data interface connector pin-out
DS-CAM-640c & 1100m

Camera connector: SACC-CI-M12FS-8CON-L180-10G

3.6.5. POWER CONNECTOR PINOUT DS-CAM-165c-POE

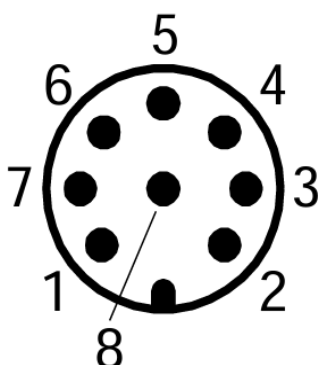


Figure 9. IO connector pin-out (M8/8-pin)

Pin	Name DS-CAM-165c-POE
1	GPIO (Line2)
2	Power Vcc
3	IN1 (Line0)
4	GND IN1
5	Power VCC OUT
6	OUT1 (Line3)
7	GND (Power, GPIO)
8	GPIO (Line1)

Cam. connector:
SACC-DSI-M8MS-8CON-M8-L180

3.6.6. POWER CONNECTOR PINOUT DS-CAM-640c & 1100m

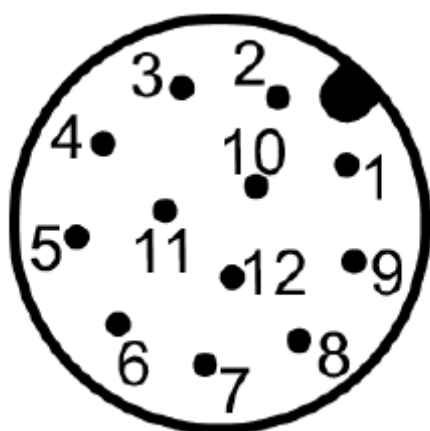


Figure 10. IO connector pin-out (M12/12-pin
a-coded)

Pin	Name DS-CAM-640c & 1100m
1	Power Vcc
2	GND (Power)
3	IN1 (Line0)
4	OUT1 (Line4)
5	IN2 (Line1)
6	OUT2 (Line5)
7	OUT3 (Line6)
8	RS232 TxD (Line2)
9	OUT4 (Line7)
10	RS232 RxD (Line3)
11	GND (IO)
12	Power (IO)

Camera connector: SACC-CI-M12MS-12CON-L180



Hint

To connect the camera to DS-CAM-PoE-SPLITTER or a compatible device, you can use the following cables: L1B2m-M1212-5m for power and CABLE-GigE-M12X/RJ45-5.0m for data.

3.7. Connection examples

Examples below will show typical configurations for DS-CAMs. Keep in mind that the synchronization between other devices is done by PTP or SoftSync (with a precision of 2 - 3 frames).

3.7.1. Stand-alone DS-CAM

The most basic of configurations is a single camera or multiple cameras connected to a PC.



Figure 11. Single-camera connected to a PC

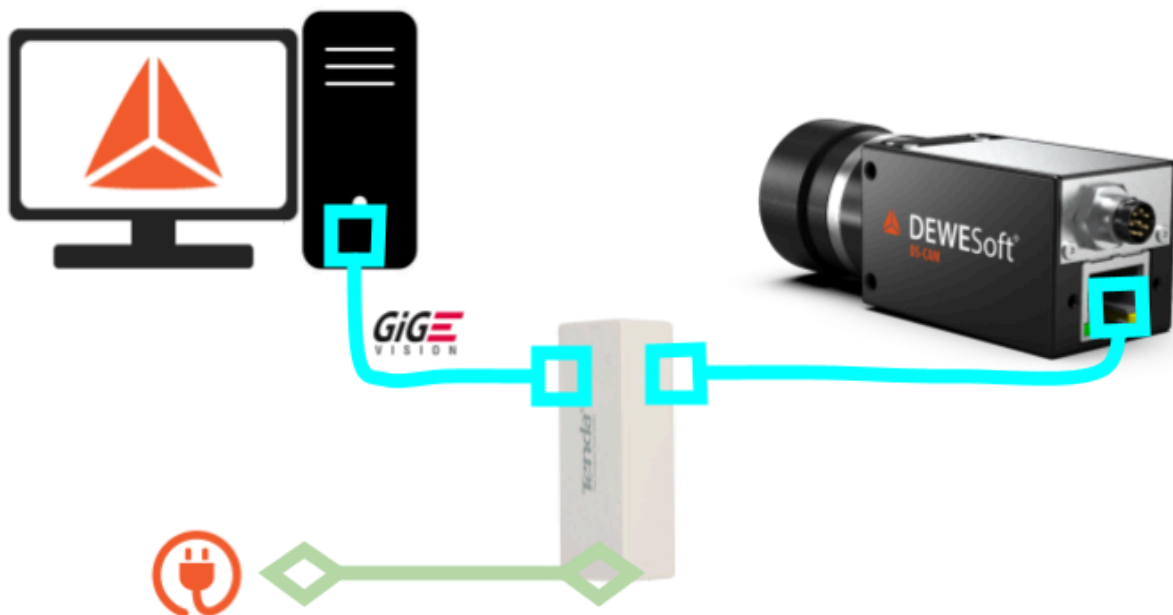


Figure 12. Single-camera with active POE connected to a PC

3.7.2. SIRIUS with DS-CAM

A simple SIRIUS-based measurement system coupled with DS-CAM video acquisition

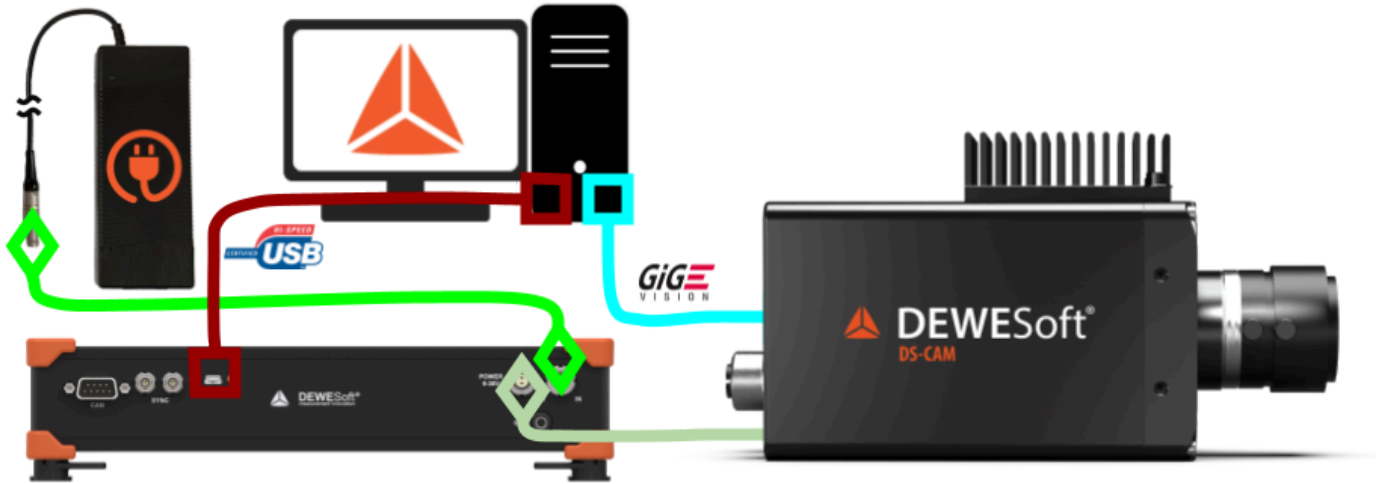


Figure 13. A basic system with a camera, SIRIUS and PC

3.7.3. SBOX, SIRIUS with DS-CAM

In this configuration, a SIRIUS Data Acquisition Device is used, connected to an SBOX. The DS-CAM is connected to the SBOX over one of its two LAN ports. In such configuration, power can be provided either from SIRIUS PWR Out, as then the camera is the last device in the daisy chain, or from SBOX PWR Out, if you supply the SIRIUS from a different source.

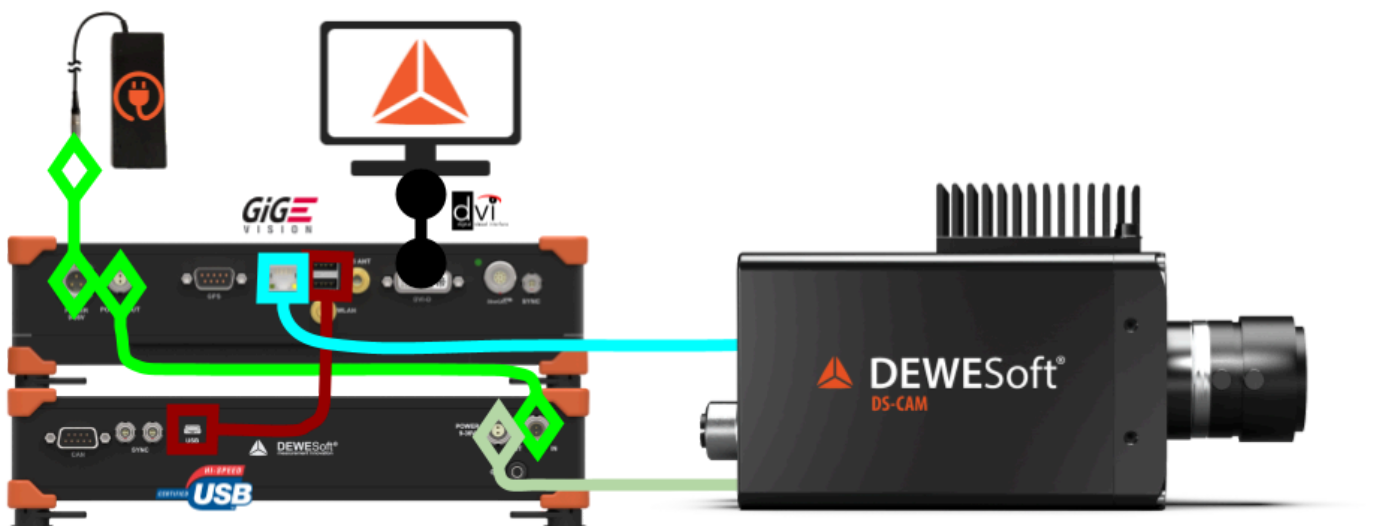


Figure 14. SBOX-based system with SIRIUS and DS-CAM

3.7.4. KRYPTON® connection example

The KRYPTON rugged configuration is not much different from a typical SIRIUS configuration, but in this case, we recommend also using DS-CAM-IP65-COVER for added protection.

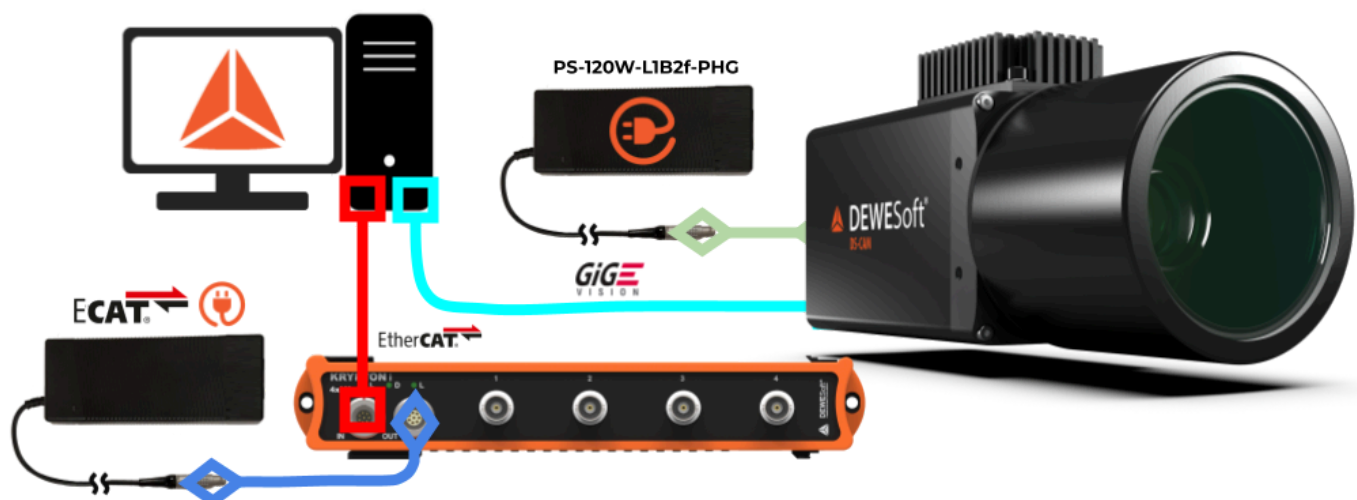


Figure 15. KRYPTON-based system

3.7.5. Multi-camera solution

- Basic switched network configuration

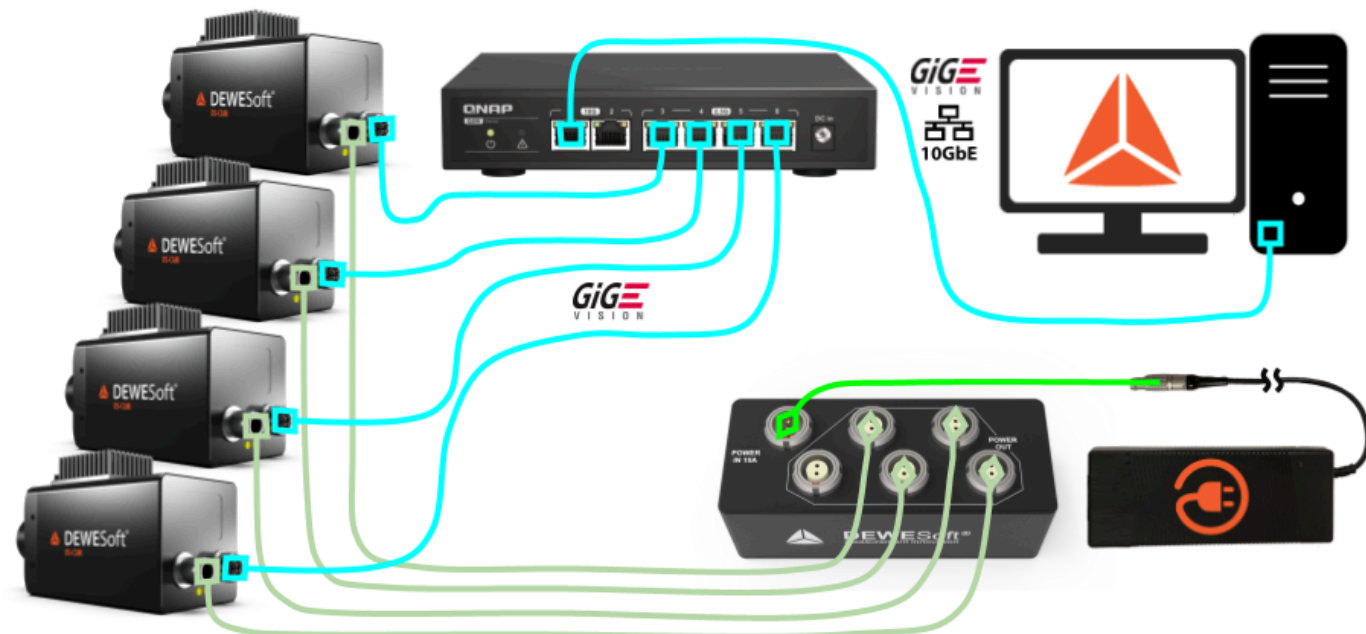


Figure 16. Configuration with multiple cameras over a switched network

- DS-SWITCH PoE solution for NON-PoE cameras

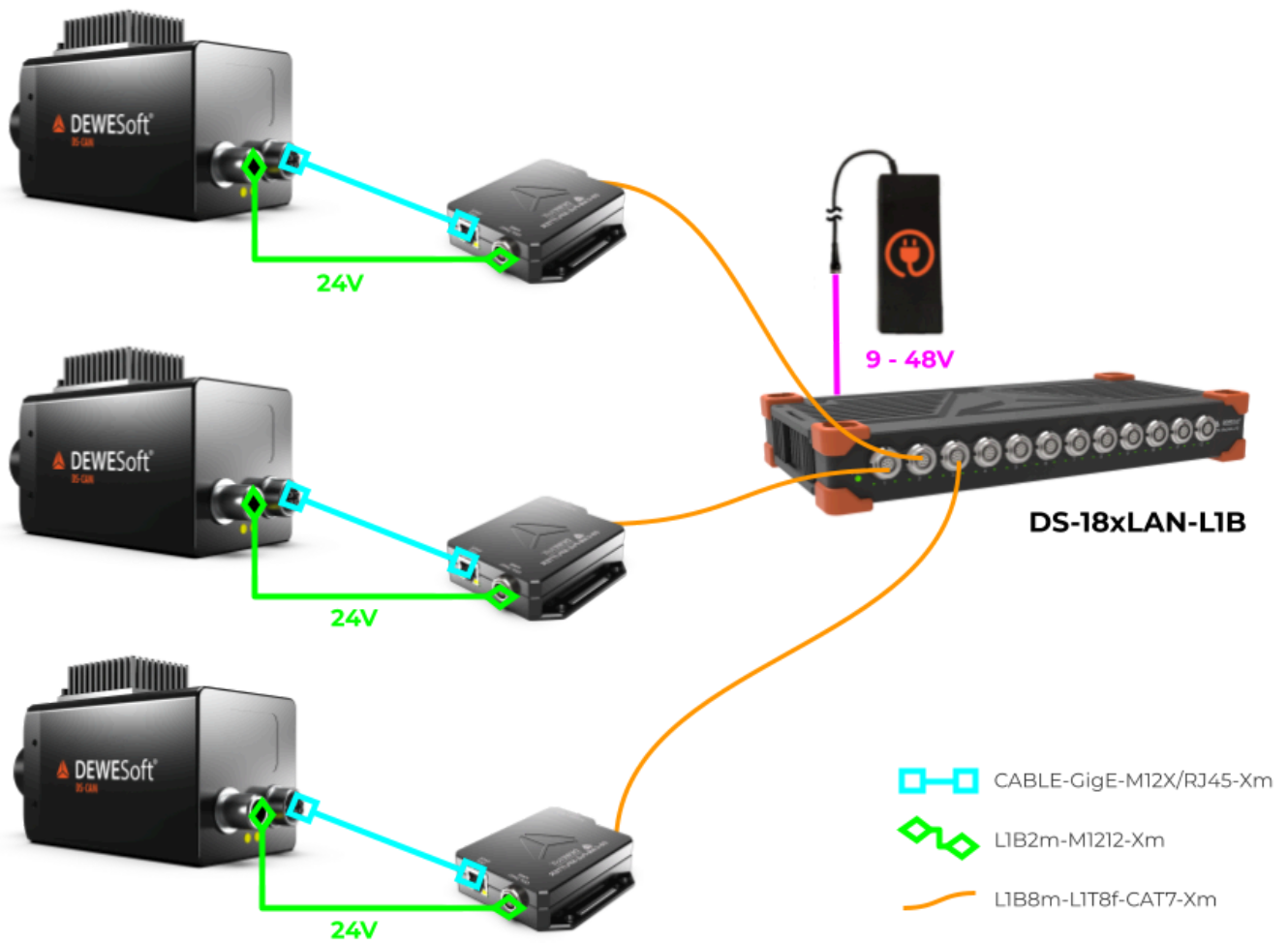


Figure 17. Multiple Non-PoE cameras powered by Passive PoE switch

- Passive PoE switch solution for Non-PoE and Active PoE cameras

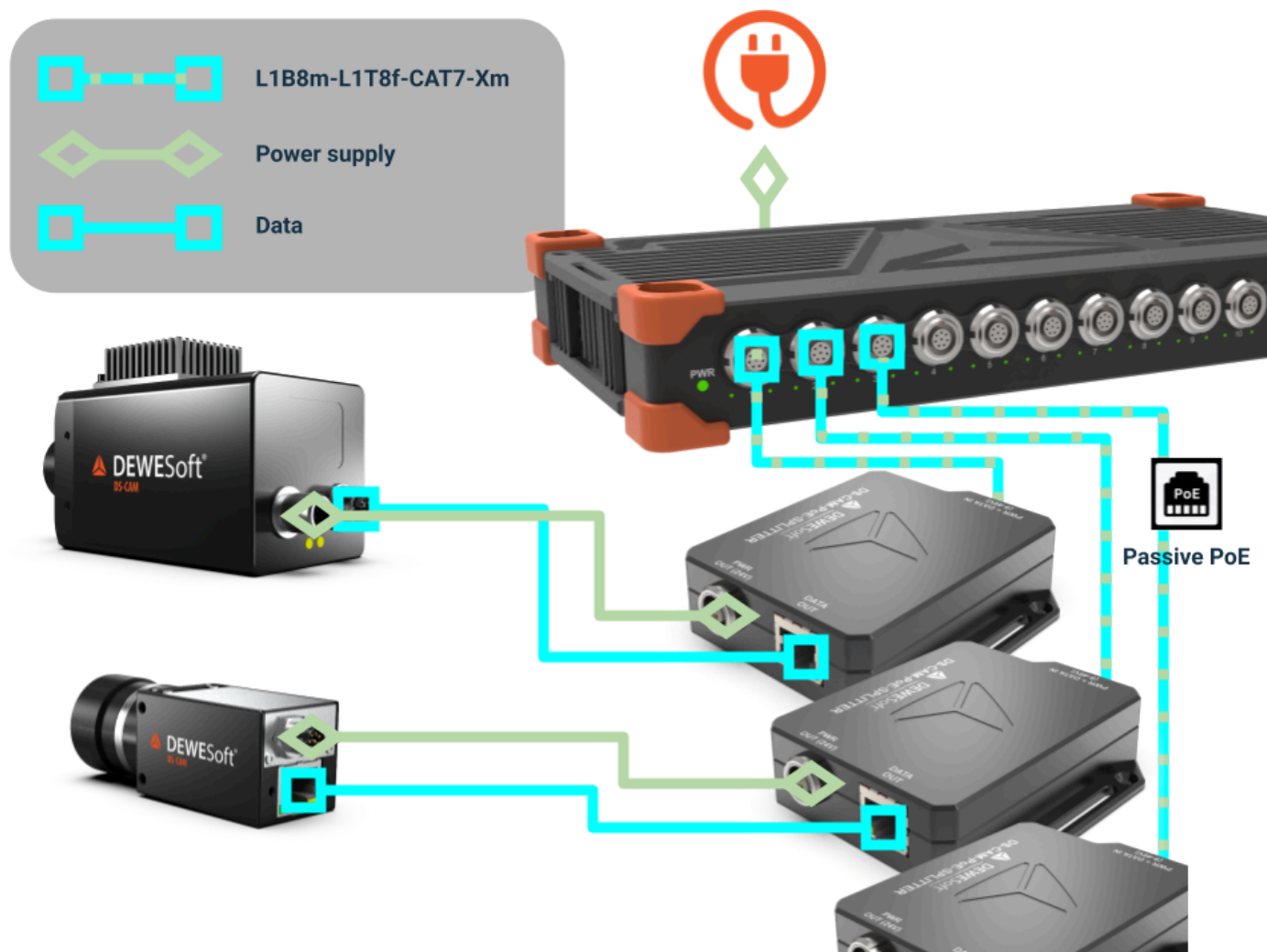


Figure 18. A combination of Non-PoE and Active PoE cameras powered by a Passive PoE switch

- Active PoE solution for automotive applications with a 12-24V supply.

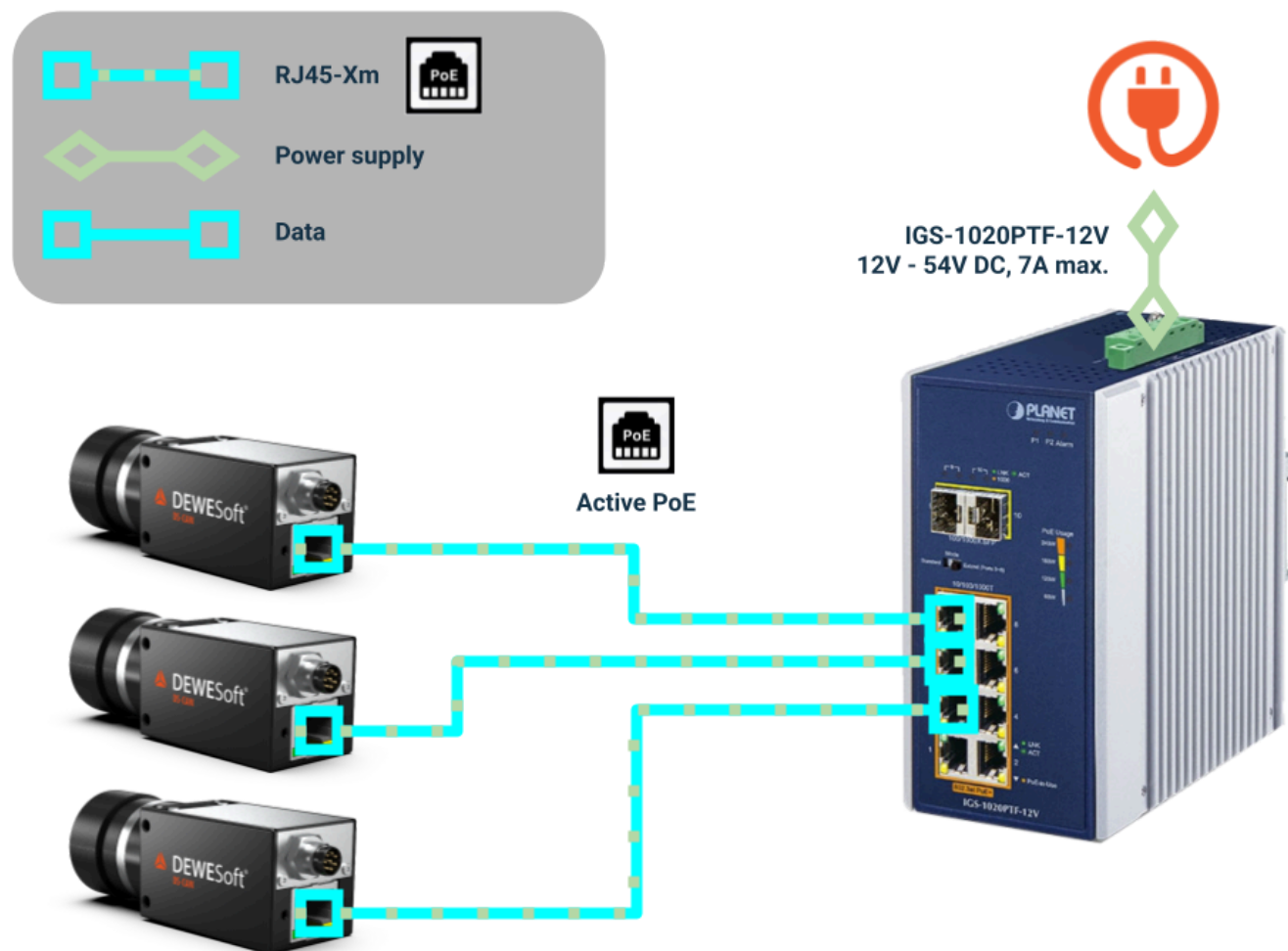


Figure 19. Active PoE solution for automotive applications with 12-24V supply and PTP

3.8. Resolutions / Frame rates

MODEL	DS-CAM-165c-PTP	DS-CAM-640c	DS-CAM-1100m
Sensor type	Sony IMX265	Sony IMX252	Sony IMX421 Gen3
Active pixels	2048 x 1536	2048 x 1536	1920 x 1464
Max-Frame rate	39 FPS (Gbit)	200 FPS (10-Gbit)	400 FPS (10-Gbit)

LIST OF STANDARD RESOLUTIONS AND FRAMERATES WITH 1 Gbit LAN

CAMERA Model		DS-CAM-165c-PTP	DS-CAM-640c	DS-CAM-1100m
Resolution	Active pixels	MAX. FRAME RATE		
QXGA	2048 x 1536	39 FPS	138 FPS	/
	1920 x 1464	/	/	150 FPS
Full HD	1920 x 1080	78 / 59 FPS	200 FPS	195 FPS
HD ready	1280 x 720	116 FPS	330 FPS	380 FPS
XGA	1024 x 768	109 FPS	415 FPS	490 FPS
SVGA	800 x 600	137 FPS	520 FPS	690 FPS
VGA	640 x 480	169 FPS	640 FPS	1100 FPS
QVGA	320 x 240	312 FPS	1150 FPS	1900 FPS



Hint

Maximum Frame rate measurements were done @8bit resolution with 85% JPEG compression on a 1 Gbit LAN connection. Bigger values could be reached with either more JPEG compression or >1 Gbit Lan.



Important

Results (FPS) should be considered only as approximate MAX values. It depends on the system performance (CPU, JPEG compression, hard disk). We recommend testing cameras with your setup at about 0.8*max_FPS and higher to find where corrupted images, frame loss, or buffer overrun will occur.

4. Installation and start-up



Hint

If you encounter any issues, refer to the [GigE Camera's Recommended Ethernet Settings](#) in the DewesoftX online manual. Disabling unneeded options and filters, and adjusting Jumbo packets & Receive Buffer size might solve your issues.

4.1. DewesoftX® full installer

If you run a fresh full installation of DewesoftX®, all the drivers come preinstalled. In this situation, you can skip to chapter [5.4. Step-by-step procedure for a first start-up](#).

4.2. DewesoftX® partial installation

If you already have a version of DewesoftX®, check if the drivers are installed by running **DewesoftX®** and going to **Options** → **Installed extensions**. Check if the “**GigE**” Extension is present and if the version is 7.7 or more.

If not, update DewesoftX® on **Options** → **Check for updates...** or execute the full installer again. When the installer starts up, choose the **Modify** option and proceed to the next step.

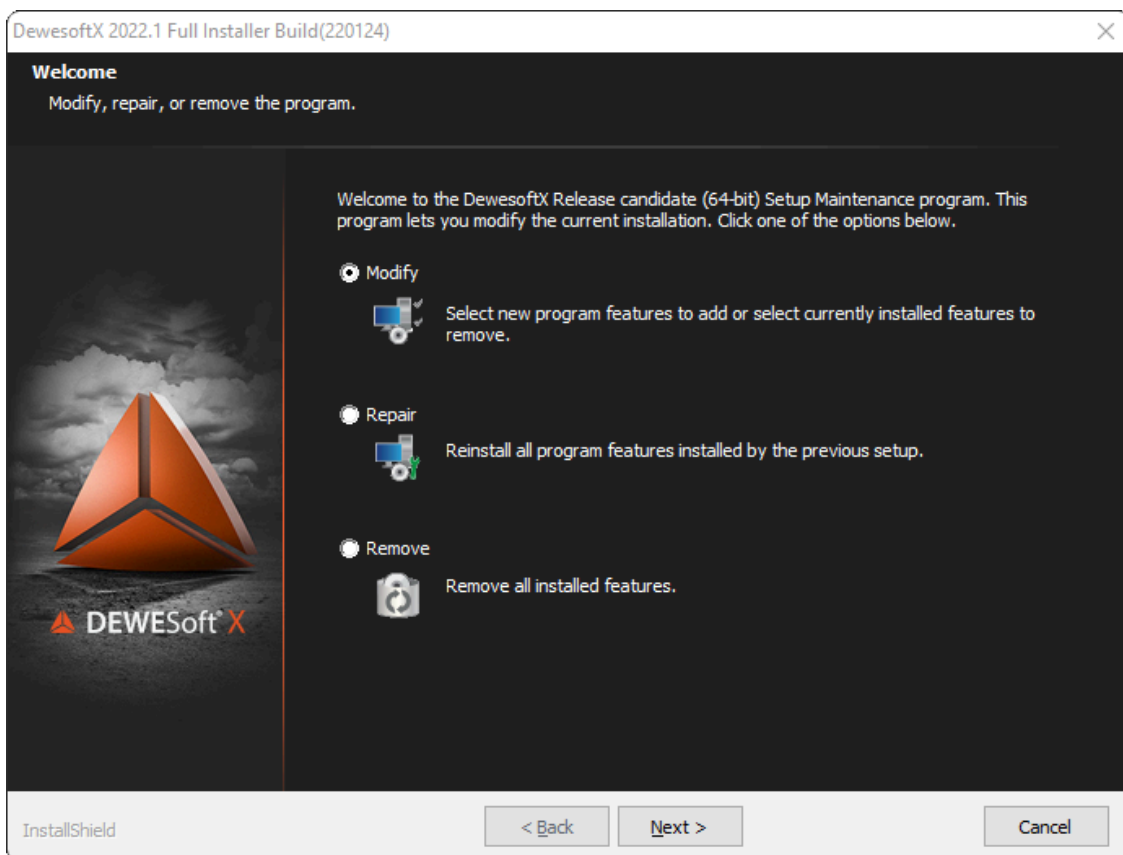


Figure 20. Modification of installation

When the setup prompts to select features, enable the checkbox for the GigE camera, and at this point also check the state of the OptoStream GEV Filter. Select it for installation if not previously installed.

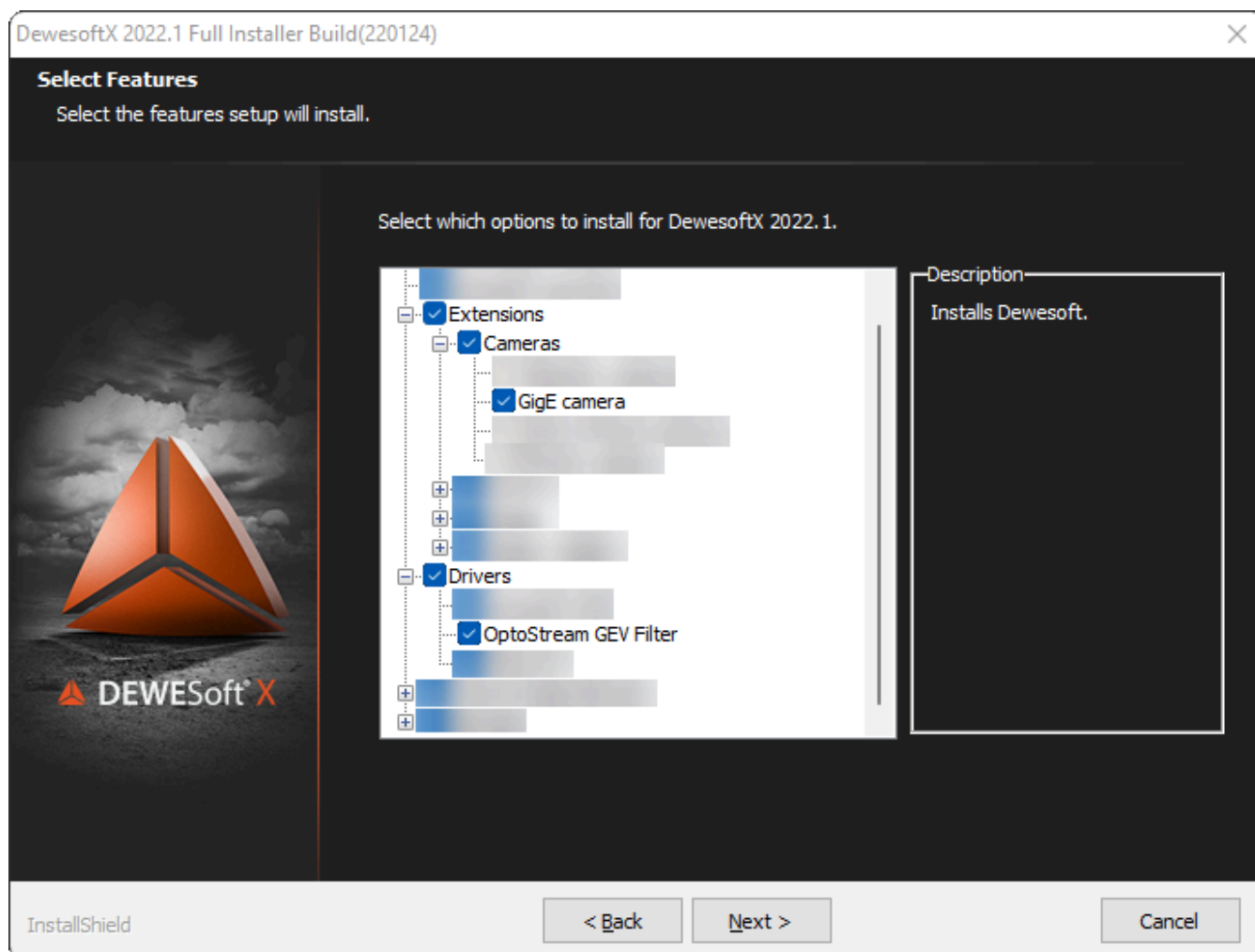


Figure 21. Installing the GigE camera driver and OptoStream GEV Filter

The latest DewesoftX® full installer can be downloaded here: <https://dewesoft.com/download>.

4.3. Manual installation

4.3.1. Required files

OptoStream SDK for GigE Vision

- Go to <https://dewesoft.com/download/dewesoftx-plugins> and download the GigE package.
- It includes the latest OptoStream SDK and Dewesoft driver for GigE Vision.
- When manually installing OptoStream SDK, **NOTE** that you must be an **administrator**, not just a user with admin rights!

DewesoftX®

- Available from <https://dewesoft.com/download>



Hint

You need to be logged into the Dewesoft website to download the latest development versions of DewesoftX®.

4.3.2. Adding GigE Addon

To enable the camera in DewesoftX®, copy the file “GigECamera.cdv” into the Dewesoft Addons folder, usually located in “C:\DewesoftX\Bin64\Addons64\GigeCam”. OK, cameras can be used, close the OptoStreamViewer and start DewesoftX®.

4.4. Step-by-step procedure for a first start-up

4.4.1. Install OptoMotive_OptoStreamSDK

Restart the PC after the installation is complete. After the reboot, be sure that “**OptoStream GEV Filter Driver**” is installed under **Windows 11 Settings** → **Network & internet** → **Advanced network settings** → “**Used Ethernet card**” → **Properties**.



Hint

Note that “Filter Driver” filters out all packets that are not GigE on the hardware level, so the camera will work much faster than without the filter.

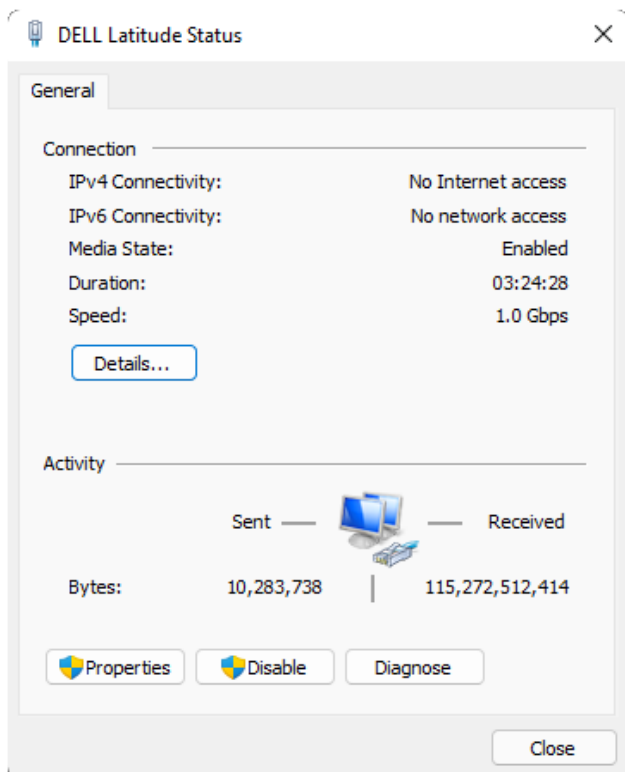


Figure 23. “Used Ethernet card”

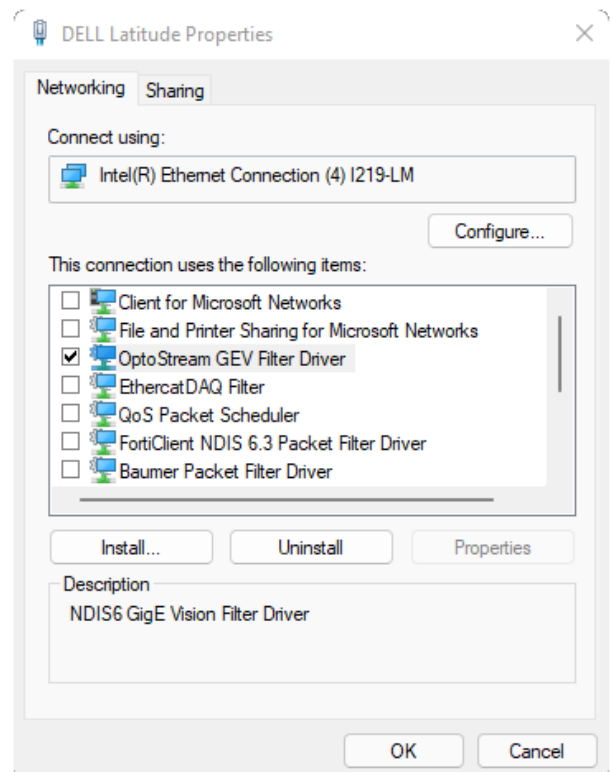


Figure 24. Installed OptoStreamViewer GEV Filter Driver

Important



If you intend to use this Local Area Network card solely for video acquisition, we recommend also disabling all items except **OptoStream GEV Filter Driver** & **Internet Protocol IPv4 (TCP/IPv4)**

4.4.2. Connect and power up

Connect the camera to the PC via Ethernet cable and power it up.



Important

DS-CAM-640c & DS-CAM-1100m require a power supply with **24VDC ± 20%** capable of providing at least 0,5A / 12W or more.

4.4.3. Assigning an IP address to the camera

The DS-CAM-640c & DS-CAM-1100m support DHCP, so connecting them to a managed network should be a straightforward procedure. Open the OptoStreamViewer to check if all of the connected cameras are recognised and working by selecting the **Control** tab and running the **Find devices** command.

When cameras are recognised, you can change their IP with **Control** → **Set IP To Device**.

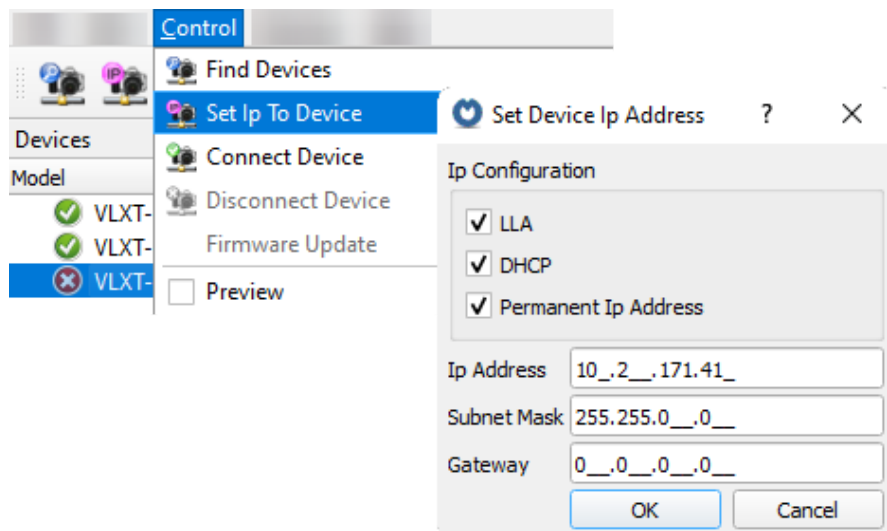


Figure 25. Set IP to Device procedure.

Or connect for adjustment and preview with **Control** → **Connect device**.

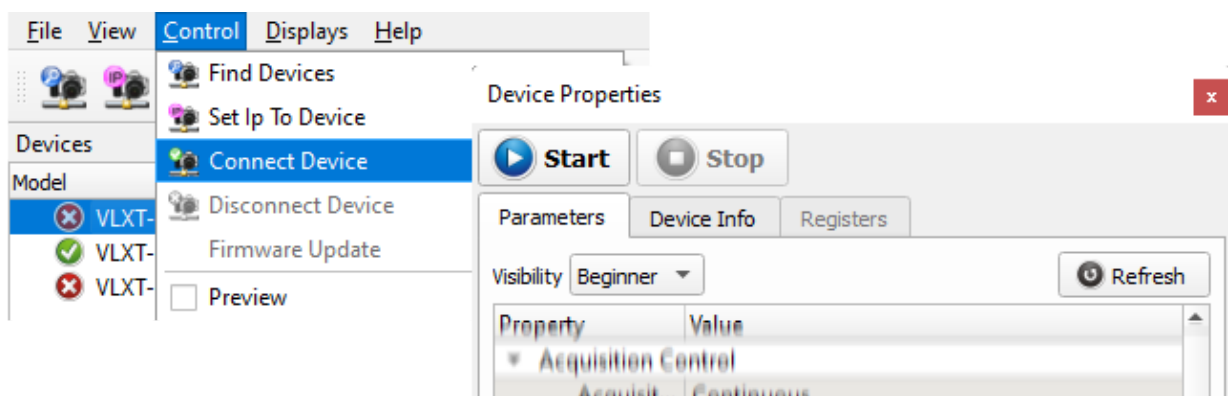


Figure 26. Connecting devices to OptoStreamViewer.



Hint

Although the DS-CAM-640c & DS-CAM-1100m come configured in DHCP mode, at the first startup, we recommend defining a fixed IP for each camera separately before connecting them to a switch or a network. If you are having issues with camera recognition, use the IP Config Tool on the link below for discovery and configuration.

https://drive.google.com/file/d/1ydFkvtvzKP6TUmuXw382toHSYIQkl6_Z/view?usp=sharing

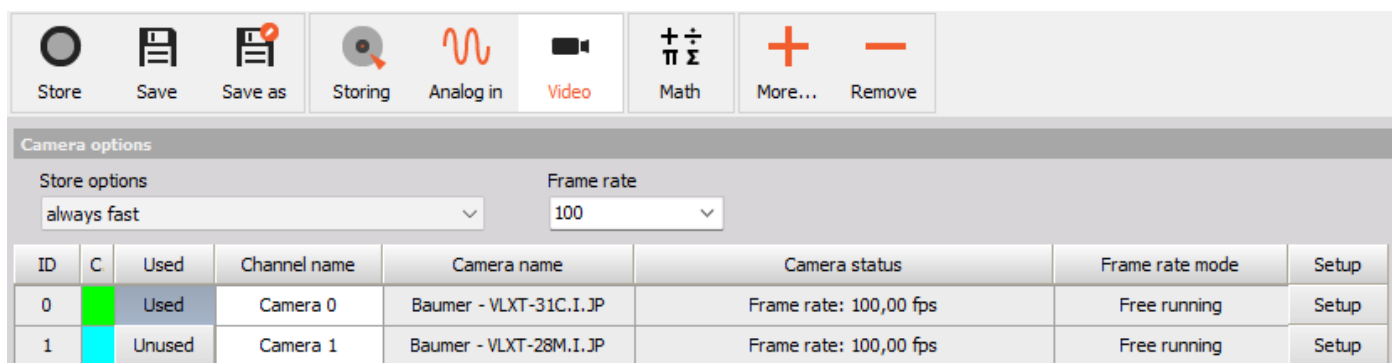


Important

Avoid using OptoStreamViewer and DewesoftX® in parallel.

4.4.4. Enable video

To enable the video channel, go to **Video**, click the Video tab, and switch from **Unused** to **Used**.



The screenshot shows the DewesoftX Channel setup interface. At the top, there is a toolbar with icons for Store, Save, Save as, Storing, Analog in, Video (selected), Math, More..., and Remove. Below the toolbar, the 'Camera options' section is visible, showing 'Store options' set to 'always fast' and 'Frame rate' set to '100'. The main part of the interface is a table with columns: ID, C, Used, Channel name, Camera name, Camera status, Frame rate mode, and Setup.

ID	C	Used	Channel name	Camera name	Camera status	Frame rate mode	Setup
0		Used	Camera 0	Baumer - VLXT-31C.I.JP	Frame rate: 100,00 fps	Free running	Setup
1		Unused	Camera 1	Baumer - VLXT-28M.I.JP	Frame rate: 100,00 fps	Free running	Setup

Figure 27. DewesoftX® Channel setup → add Video

4.4.5. Preview and settings

Enter the channel by pressing the **setup** button of the desired camera for picture preview and settings.

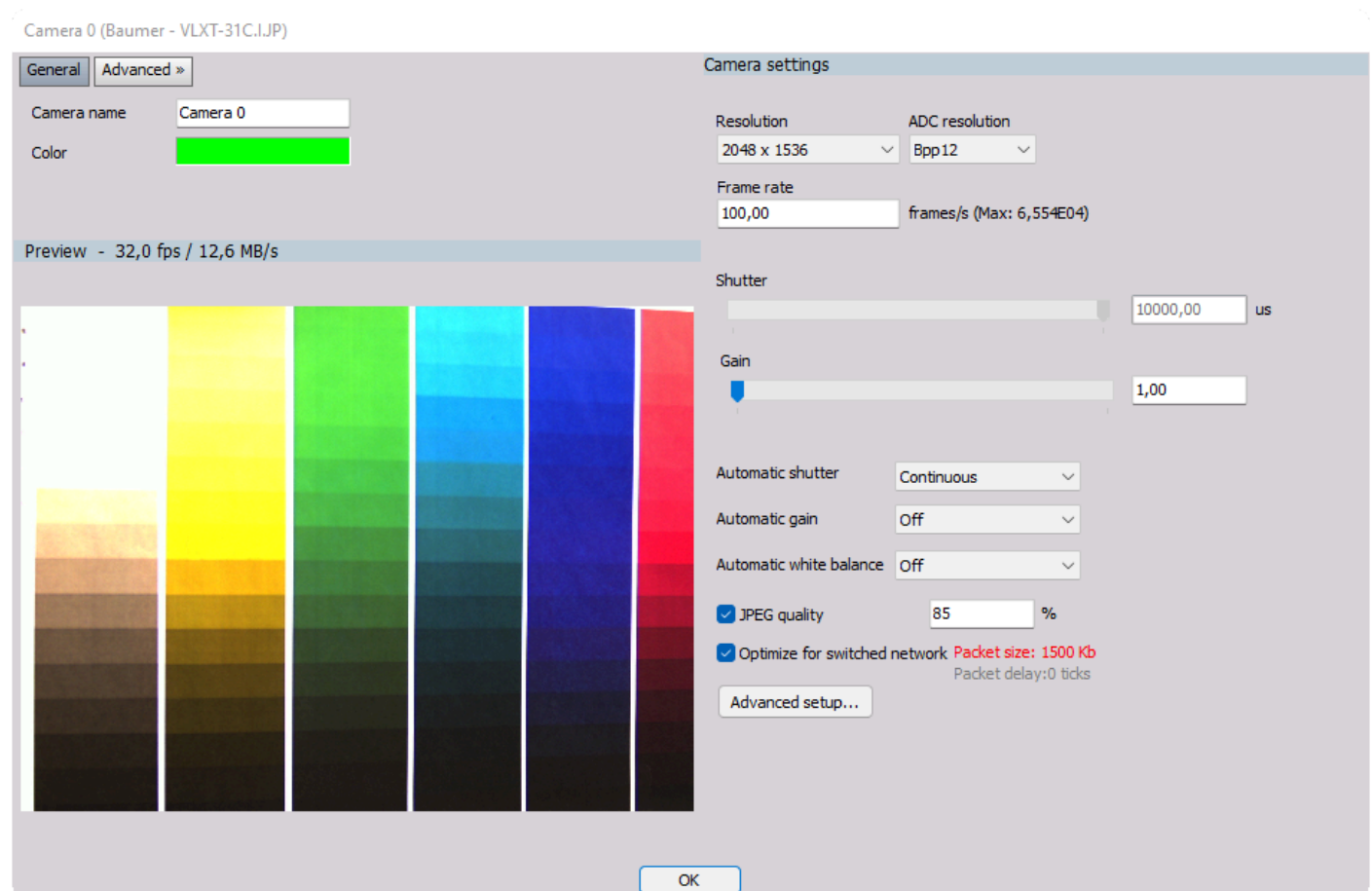


Figure 28. DewesoftX® video channel setup

- **Camera name** defines the “channel” name that will be stored and used for measurement.
- **Color** of the camera “channel” data displayed in measure & analysis can be changed.
- The **resolution** drop-down menu offers some predefined standard sizes or a *Custom* option where Width and height in pixels can be defined.
- **ADC resolution** changes the Bits per pixel sensor acquisition quality.
- **Frame rate** defines the number of pictures acquired per second.
- The **Shutter** bar determines the light exposure duration (brightness).
- If the light is too dim, use the **Gain** bar to increase brightness using by software.
- **White balance** is used for colour source correction.
- The **JPEG quality** is inversely proportional to the compression. 80% means good quality, low compression.
- To improve the performance when using the camera on an Ethernet switch, use “**Optimise for switched network**”
- Use the “**Advanced Setup**” if you want to change specific parameters of the camera, such as the custom resolution and AOI, area of interest, for instance.



Hint

If you change the frame rate, after typing the value, the input field gets a yellow colour; confirm the value by pressing the Enter key.



Important

Changes in Frame rate will have a global effect. All cameras connected to the system will run at set FPS if they are able and their shutter time permits it.

5. Troubleshooting guide

5.1. No data in DewesoftX® camera setup

Due to a delayed startup of the camera, loss of connection, or improper detection, DewesoftX can return a “No data” message instead of a video feed. In this case, navigate to Options → Settings → Devices →  and refresh the devices list. This will re-establish the connection to all devices.

5.2. The GigE checkbox in Settings is missing

Go to My Computer and click System properties → Advanced system settings → Advanced tab → Environment Variables → System variables → select Path → Edit.

Make the following changes:

- %OPTOSTREAM_SDK_PATH%\bin
- %GENICAM_ROOT_V2_4_ARCH%\bin\Windows
- %GENICAM_ROOT_V2_4_ARCH%\bin\Windows\GenApi\Generic

Save and reset Windows. Path correctness can be checked by `GetEnvironmentVariable('PATH');`

5.3. No picture shown, “No frames received” error

If you receive the error “NO FRAMES RECEIVED”, check:

- Try decreasing the Shutter value
- Check under Settings if the Dewesoft USB device is set to Clock/Trigger or Automatic (Standalone)
- Disable the Trigger in the hardware setup. Trigger mode is meant for older models of cameras that have the option of connecting the synchronisation cable. DS-CAM-640c/1100m has PTP-based synchronisation, so an additional cable is not needed as the RJ45 handles this part.

5.4. Camera not found (not in OptoStreamViewer, not in DewesoftX®)

- Check if the status LED on the camera is green, booting takes ABOUT 1 MINUTE!
- If using a GigE-Switch with PoE ports, ensure output power is sufficient, and check the status LED during operation.
- Check Windows Firewall settings.

5.5. Camera “not found”

(not found in DewesoftX®; yellow mark in OptoStreamViewer)

Not able to use the cameras. Please wait a little bit (until the IP is assigned). If that does not help, ensure the computer's network IP is set to automatic, as the camera supports DHCP.

Further troubleshooting, most probably the computer and the camera are not on the same subnet.

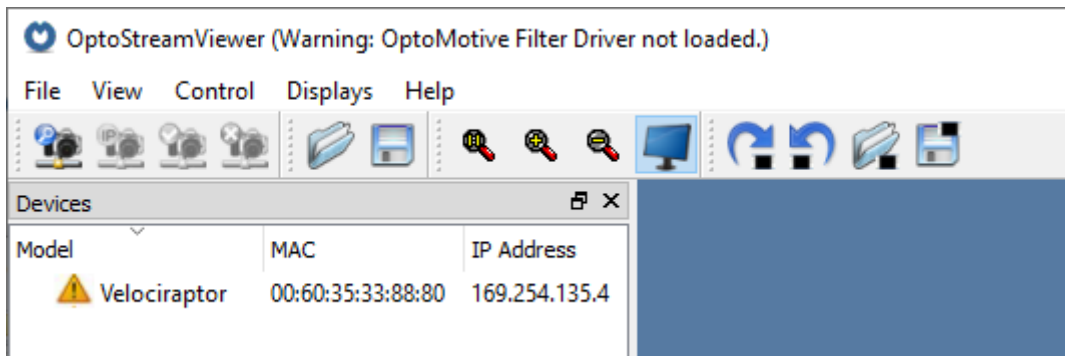


Figure 29. IP address problem



Important

You should avoid using OptoStreamViewer and DewesoftX® in parallel. If the cameras are not found in DewesoftX®, close it and start OptoStreamViewer for troubleshooting.

5.6. Change the IP address of the camera with OptoStreamViewer.

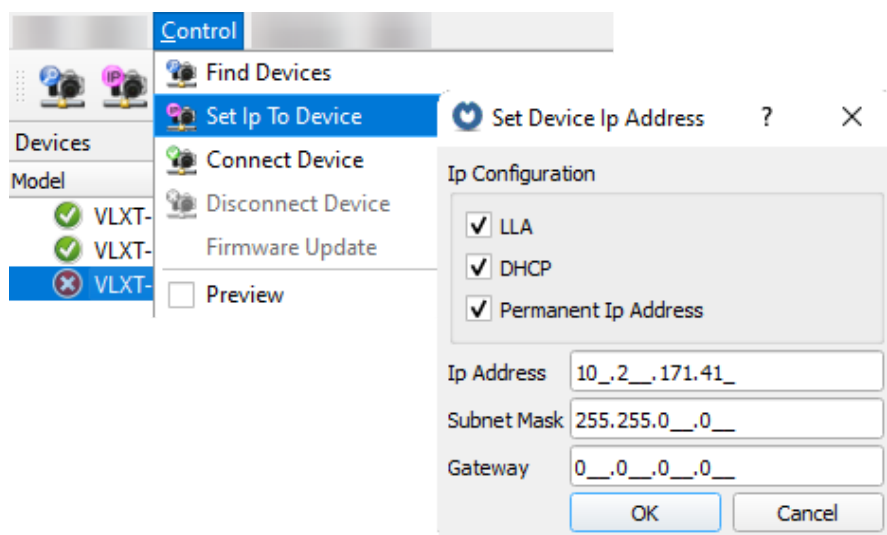


Figure 30. Change the IP address of the camera

If you manually change the IP address, please use the same subnet as the computer, for example,

PC: 169.254.135.5, **Subnet 255.255.255.0**

Camera: 169.254.135.4, **Subnet 255.255.255.0**

The IP is ok, if the cameras are found with a red mark (see Illustration above), close OptoStreamViewer and start DewesoftX®.

5.7. Change the IP address of the camera with the Baumer IPConfig tool.

- A)** Proceed to the [Baumer web page](#) > Product Overview > Industrial cameras/image processing > Software > [Baumer Camera Explorer](#) and download the latest Software packages for your OS.
- B)** Install the software with customised settings, as Baumer Filter Driver is not required if you don't intend to use Camera Explorer.

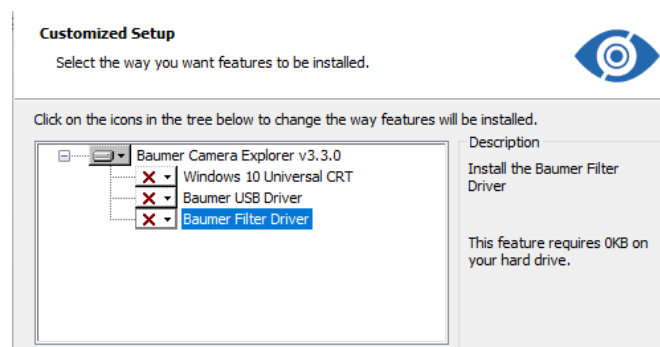


Figure 31. Camera Explorer custom installation options

Important

If you decide to install the full package, don't forget to disable Baumer Filter Driver in LAN card settings, if you encounter any issues with video acquisition in DewesoftX.

- C)** Run IpConfig-Tool from the Start menu and proceed with the following steps.
1. **Rescan** the network for all cameras.
 2. **Select** the desired **camera** you want to edit
 3. Enable **Persistent IP**
 4. Define **IP address** and **Subnet mask**
 5. Press the **Set** button to save the settings
 6. Click the **Rescan** button to refresh and confirm the change
 7. **Power cycle the camera!**

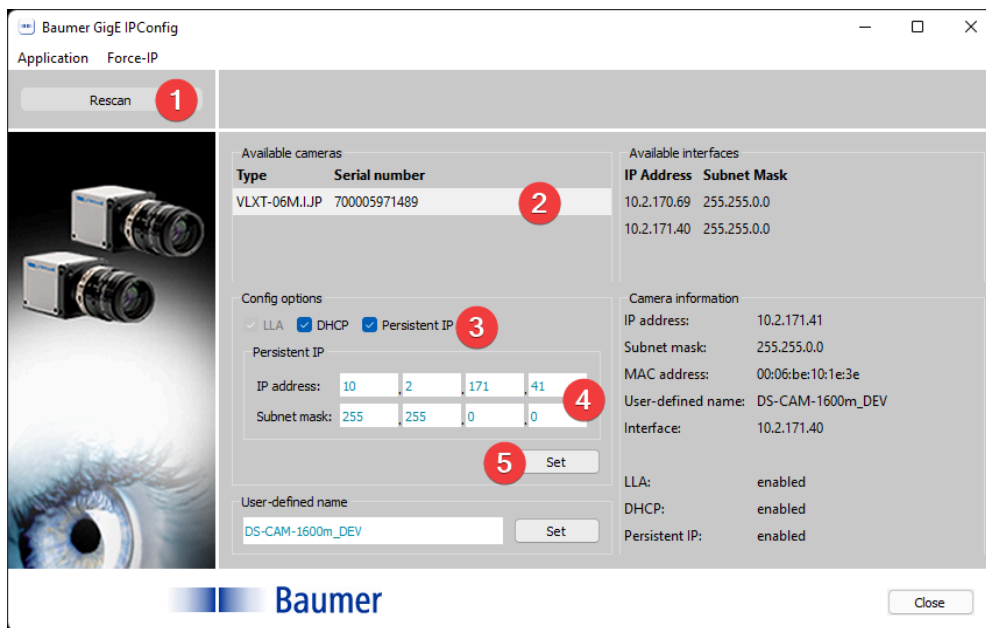


Figure 32. Persistent IP definition procedure

5.8. GigE Vision client does not start, error message when starting

Troubleshoot this using the following steps: Check if the operating system of your computer is 32-bit or 64-bit.

Copy the 64-bit DLLs (otherwise take the ones from the 32-bit directories) from

C:\Program Files\OptoMotive\OptoStreamSDK\bin\Win64 and

C:\Program Files\OptoMotive\OptoStreamSDK\GenICam_v2_4\bin\Win64_x64 to

\Windows\system32 (respectively \Windows\SysWOW64)

Then start the OptoStreamViewer from C:\Program Files\OptoMotive\OptoStreamSDK\bin\Win64.

5.9. Cameras are not working in DewesoftX®.

If you followed the step-by-step installation procedure, but the camera is still not working in DewesoftX®, you can try to copy the used DLLs manually:

Example of Copying the 32-bit DLLs from

C:\Program Files\OptoMotive\OptoStreamSDK\bin\Win32

and

C:\Program Files\OptoMotive\OptoStreamSDK\GenICam_v2_4\bin\Win32_i86

to

Dewesoft's Addons folder.

Then restart DewesoftX®.

5.10. Manual driver Uninstall/Install

a. Open **Network Connections** Dialogue

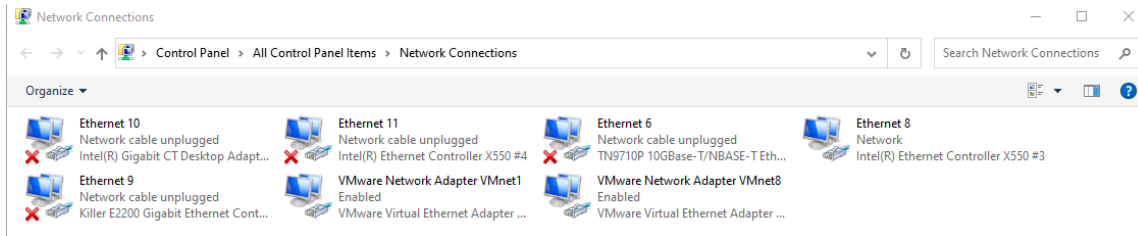


Figure 33. Network Connections

b. Right-click and **properties** to one of the Network Adapters

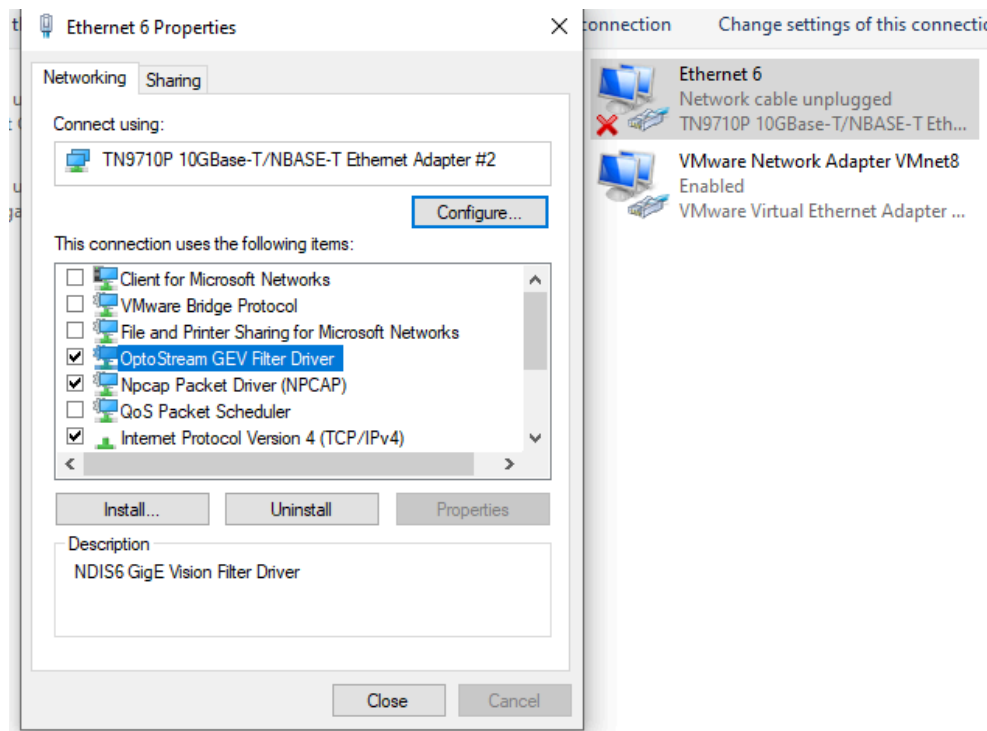


Figure 34. Network Adapter properties

c. Mark the Optostream GEV Filter Driver and Click Uninstall, and Yes

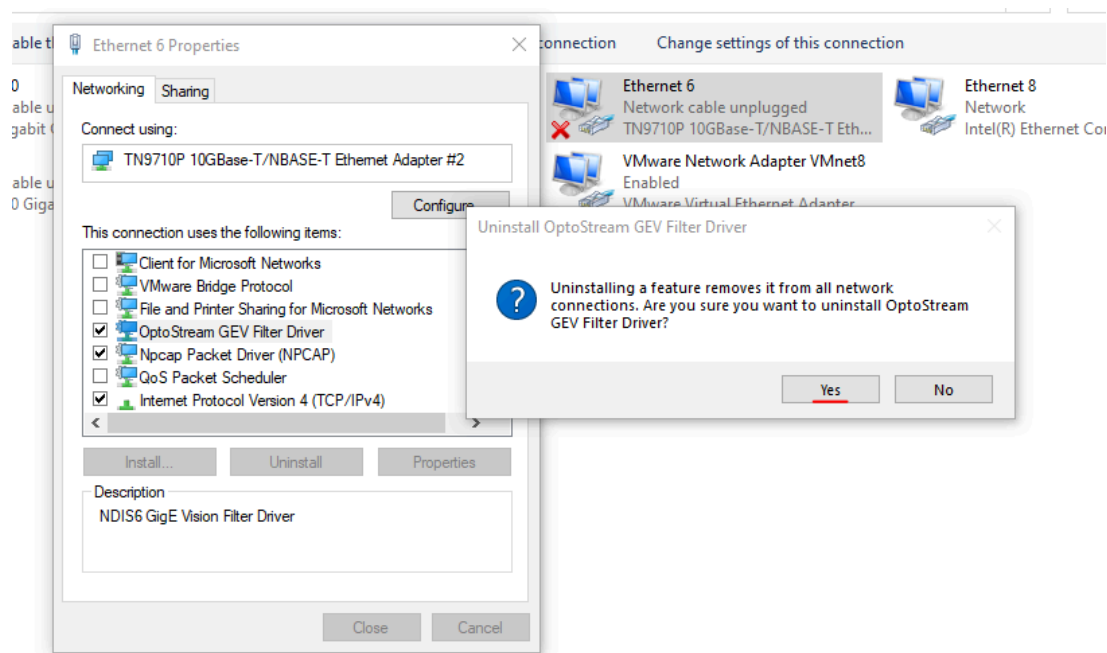


Figure 35. Uninstall GEV Filter driver

č. Now, after the Uninstall, Gevfilter Driver is no longer in the list.

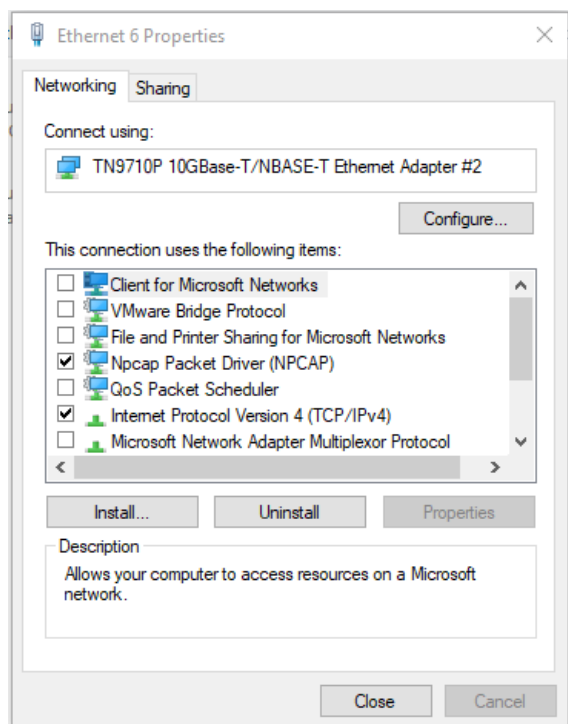


Figure 36. Empty Network Adapter properties

d. After the existing Driver is uninstalled, we install a new GevFilterDriver by clicking on Install, Select Service, and Add.

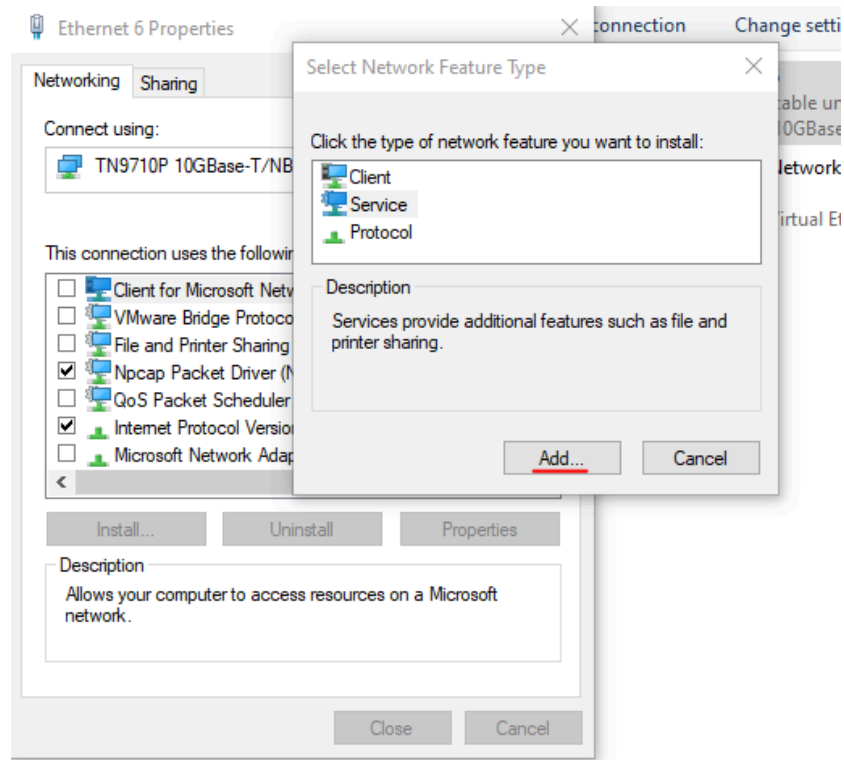


Figure 37. Select feature Type

e. Select Have Disk.

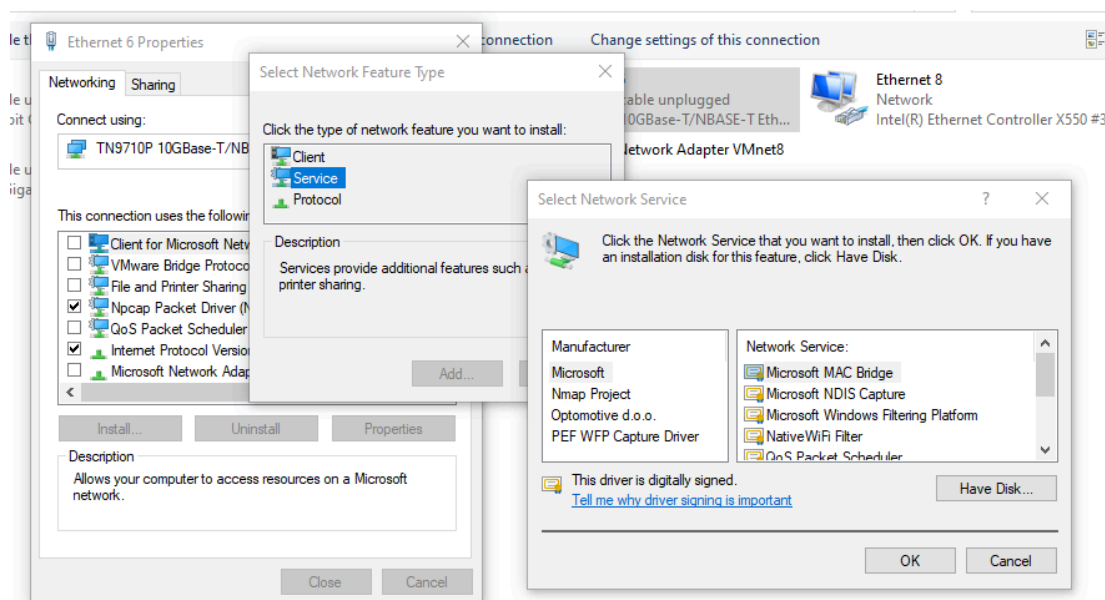


Figure 38. Driver path selection: Have Disk

f. Select Browse and choose Path to a new GevFilterDrivera and click Open

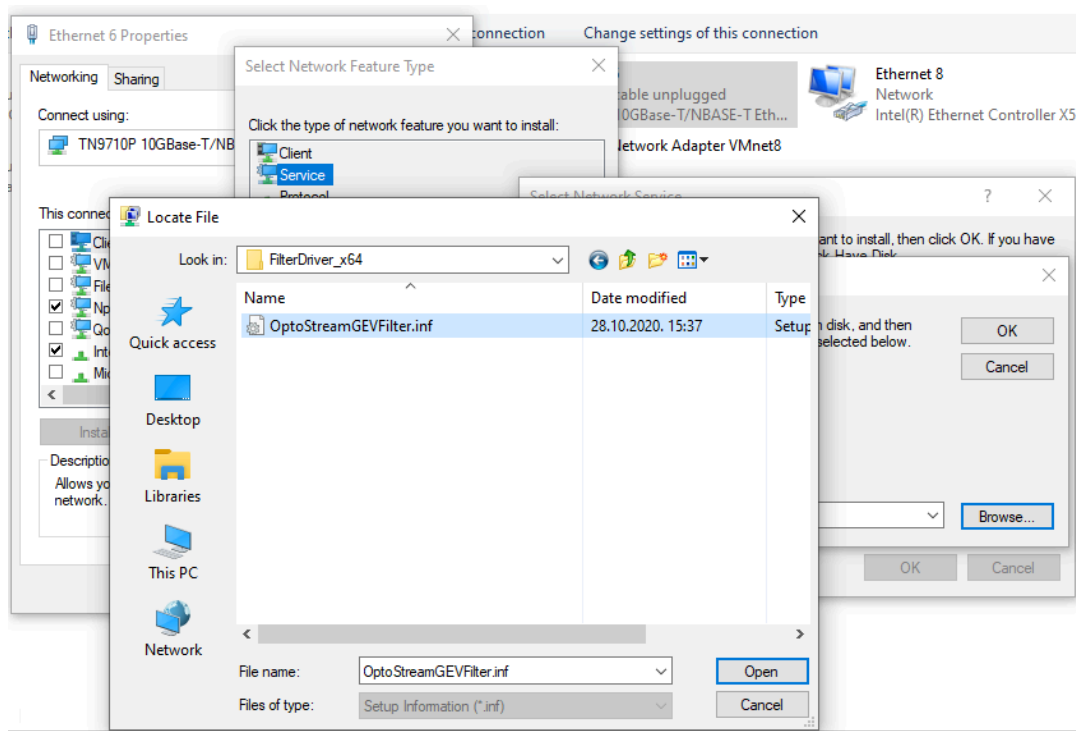


Figure 39. Driver location file select

g. In the Install from Disk Dialogue, Click OK

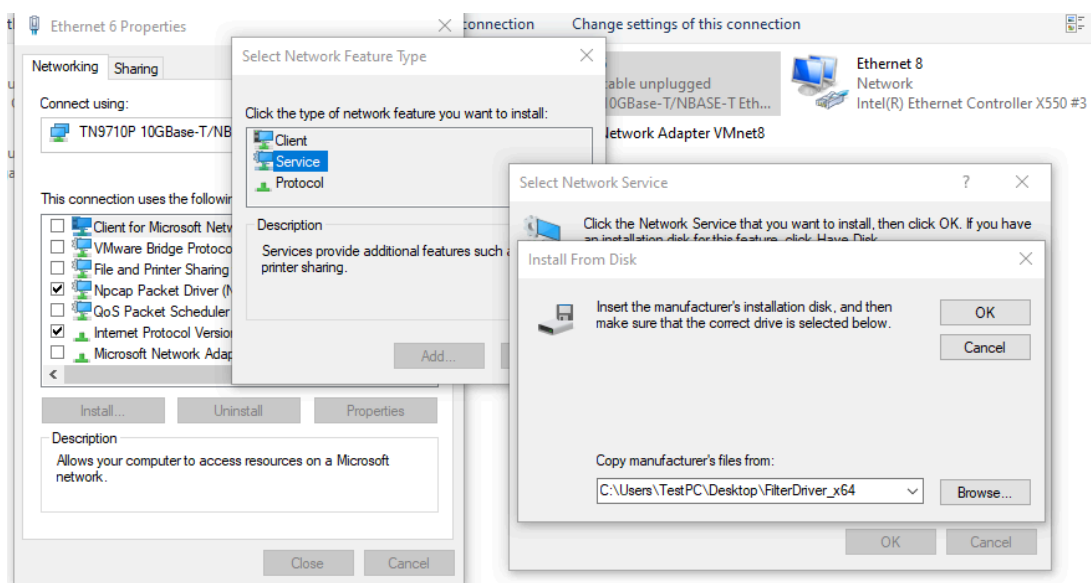


Figure 40. Installation file confirmation

h. Then, to Select Network Service, Click OK

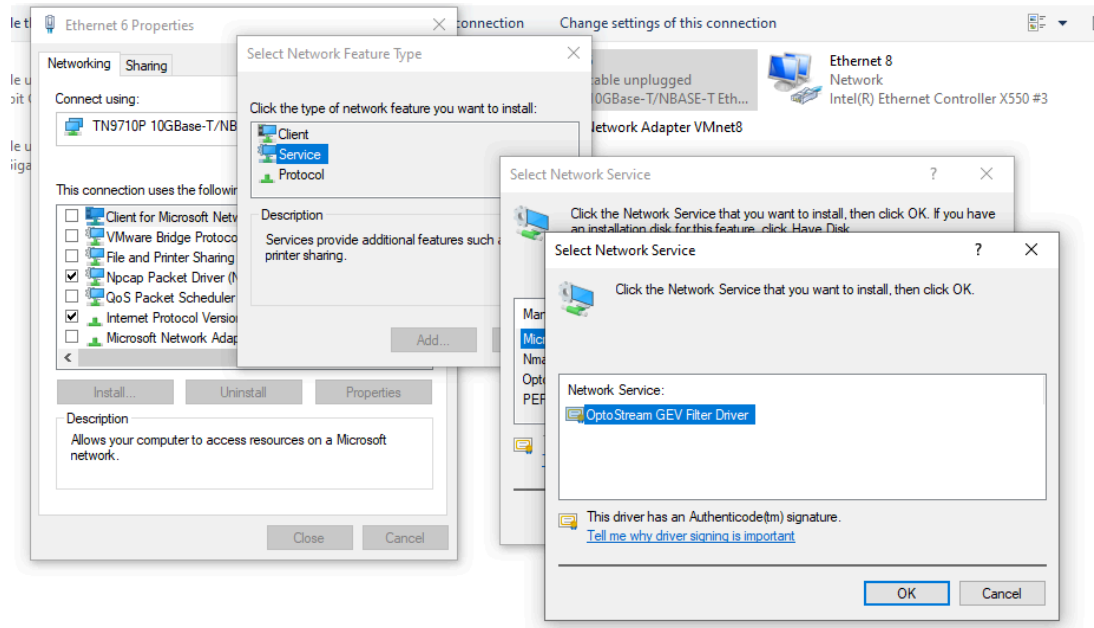


Figure 41. Network Service selection

i. That list would have a new Optostream GEV Filter driver

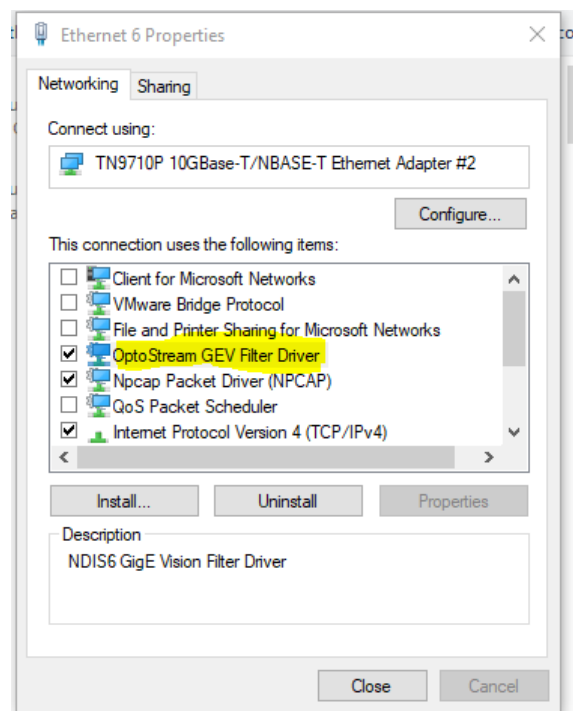


Figure 42. Installation confirmation

This completes the manual installation of the GEV Filter Driver.

5.11. Performance improvements

(e.g. in case of frames lost or buffer overrun)

A loss of a few frames during a measurement is normal, due to collisions on the Ethernet network.

Here are some useful hints to improve the performance:

- Do not operate the camera in a fully loaded network (e.g. office computers). Just use a direct connection or one switch (with no additional participants).
- Disable all anti-virus, firewall, indexing, and synchronisation programs running in the background.
- Verify that the PC has a Gigabit-Ethernet network card, not only 100Mbit/s.
 - Check this in the Device Manager tools.
- Verify that the LAN cable used between the camera and the PC is at least CAT5 quality. For longer cable lengths, CAT6 cable should be used for optimal performance.
- For this camera, the best quality can be achieved by using a powerful CPU.
- Try to decrease the JPEG compression (e.g. from 80 down to 50%)
- Use the Windows resource monitor (can be found in Task Manager) to check for bottlenecks.
 - Check CPU and RAM
- For optimal performance, we recommend enabling “Jumbo” frames on your PC network card. “Jumbo” frames are Ethernet packets larger than 1500 bytes. This way, less CPU time is spent for data reception, therefore, increasing performance and minimizing data loss.

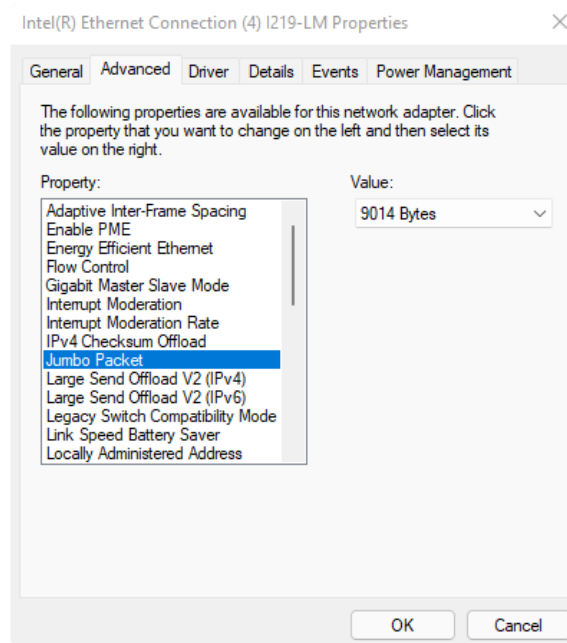


Figure 43. Jumbo packet settings

Windows 11 Settings → Network & internet → Advanced network settings → “Used Ethernet card” → Properties → Configure → Advanced → Jumbo Packet → Set to highest value (e.g. 9kB MTU)

Windows 10 Control panel → network and internet → view network status and tasks (network and sharing centre) → change adapter settings → right-mouse-click on LAN connection → Properties → Configure → Advanced → Jumbo Frame → set to highest value (e.g. 9kB MTU)

- Also, an overloaded DewesoftX® setup (many displays, e.g. high-resolution FFT instruments) will take system power. Try at first only with camera video instruments.
- Press <Ctrl>+<Shift>+<P> in DewesoftX® Measure mode. On the right side, the performance monitor will appear. Watch the Cam video buffer. It should stay stable at low values.

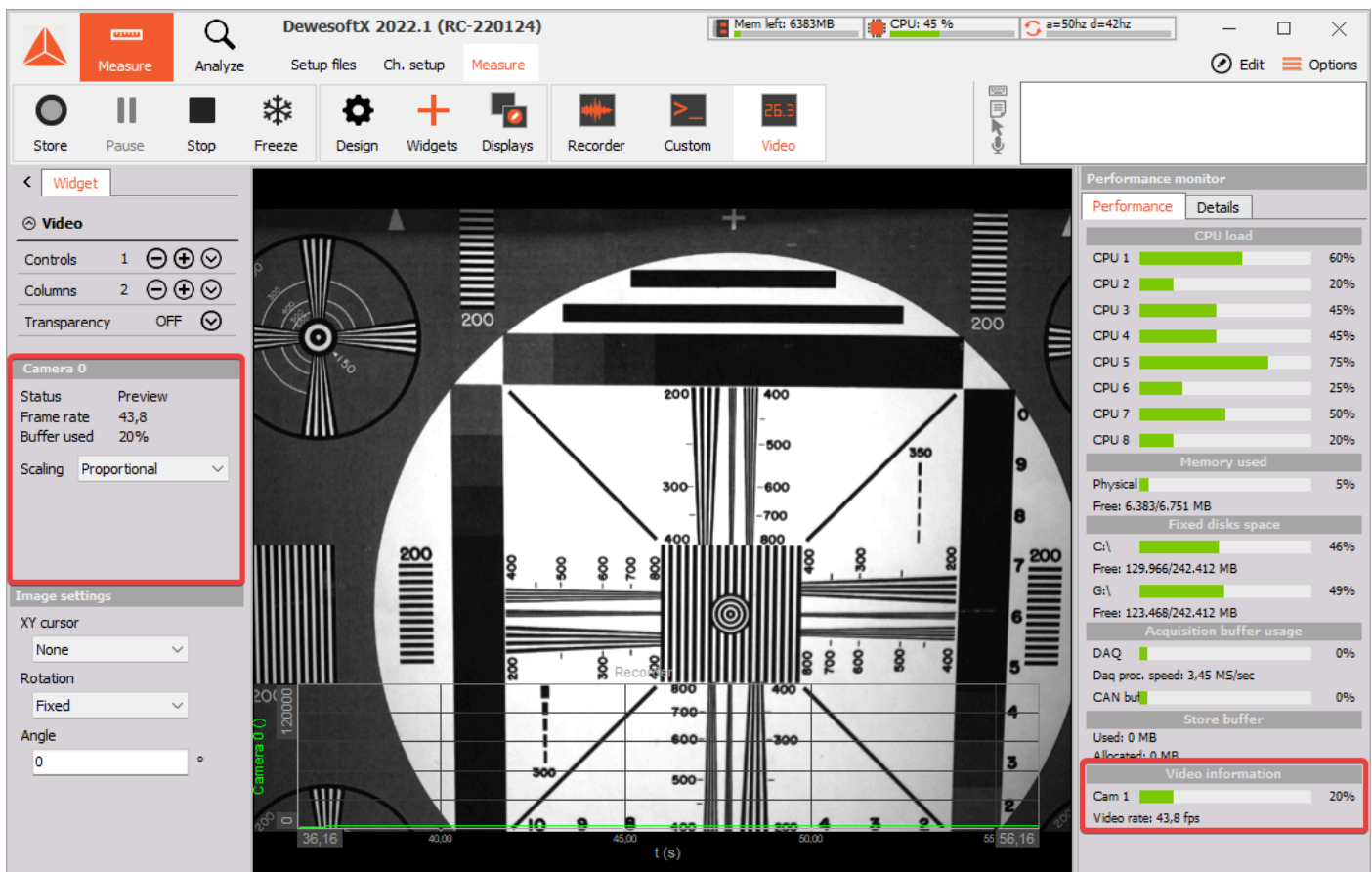


Figure 44. DewesoftX® Performance monitor

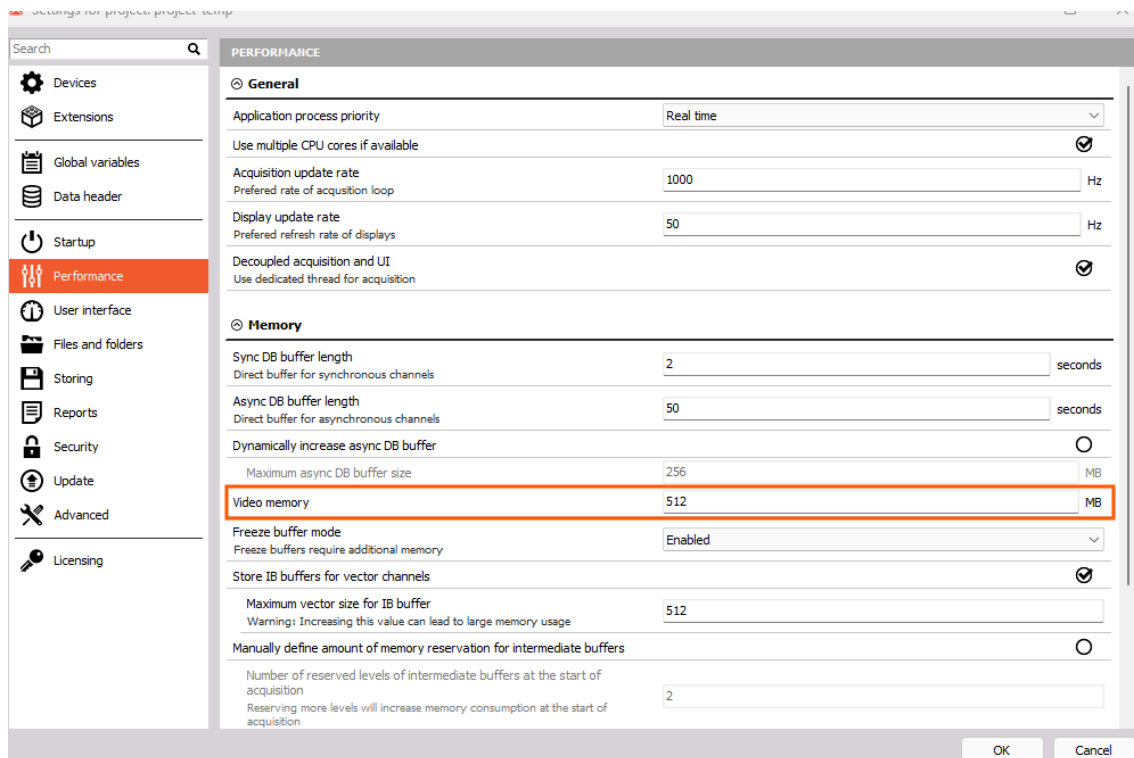
5.12. Optimizing system and preventing data loss

If you experience significant delays in SoftSync (e.g., 20–30 ms) or "Data lost" messages during high-bandwidth acquisition with multiple cameras, follow these optimization steps:

1. Data loss and CPU optimization

High bandwidth increases the likelihood of packet loss, which directly affects SoftSync performance. To reduce CPU load and stabilize the stream:

- Increase Video Memory: Navigate to Options → Settings → Performance → Memory and increase the Video memory buffer to allow more room for intermediate data (recommended: 512 MB for < 8GB RAM systems and 1024 MB for > 8 GB RAM systems).



- **Adjust Display Update Rate:** In the same Performance menu, try lowering the Display update rate (e.g., to 30 Hz or 20 Hz). This reduces the processing power required for live visualization without affecting the recorded data rate

2. Bandwidth reduction via JPEG compression

If the network is congested or the PC cannot keep up with the raw data rate, use onboard JPEG compression:

- In the Camera settings, enable JPEG quality and adjust the percentage.
- Lowering the quality percentage significantly reduces the bandwidth and can help achieve lower synchronization delays.

3. Achieving 2ms SoftSync or better

SoftSync performance is highly system-dependent and affected by resolution and frame rate. To achieve the specified 2 ms (or even 0.5 ms) synchronization, reduce the camera Resolution (e.g., to 320x120 or 160x120) and increase the Frame rate to at least 2000 frames/s. Ensure that the "Optimize for switched network" option is checked in the camera setup if using a network switch.

6. Warranty information

Notice

The information contained in this document is subject to change without notice.

Note:

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The copy of the specific warranty terms applicable to your Dewesoft product and replacement parts can be obtained from your local sales and service office. To find a local dealer for your country, please visit <https://dewesoft.com/support/distributors>.

6.1. Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your Dewesoft data acquisition system is delivered, it is calibrated. Detailed calibration reports for your Dewesoft system can be requested. We retain them for at least one year after system delivery.

6.2. Support

Dewesoft has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support, please contact your local distributor first or Dewesoft directly.

Dewesoft d.o.o.
Gabrsko 11a
1420 Trbovlje Slovenia

Europe Tel.: +386 356 25 300
Web: <http://www.dewesoft.com>
Email: support@dewesoft.com

The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

6.3. Service/repair

The team of Dewesoft also performs any kind of repairs to your system to assure a safe and proper operation in the future. For information regarding service and repairs please contact your local distributor first or Dewesoft directly on <https://dewesoft.com/support/rma-service>.

6.4. Restricted Rights

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7. Safety instructions

Your safety is our primary concern! Please be safe!

7.1. Safety symbols in the manual

Safety reference manual for the IOLITE Data Acquisition Devices can be found in <https://dewesoft.com/download> section. Search for keyword: **Safety technical reference manual**



Warning

Calls attention to a procedure, practice, or condition that could cause the body injury or death



Caution

Calls attention to a procedure, practice, or condition that could cause damage to equipment or permanent loss of data.

7.2. General Safety Instructions



Warning

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Dewesoft d.o.o., assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as an option and will not be shipped as standard parts.

7.2.1. Environmental Considerations

The product is an electronic instrument designed with consideration for environmental impact during its design and use phase. The materials and components used comply with the requirements of the RoHS Directive (2011/65/EU) and the REACH Regulation (EC No. 1907/2006), with no intentional use of restricted or prohibited hazardous substances. During normal operation, the product does not generate direct environmental emissions and features low power consumption. The device is designed for long-term use and serviceability, supporting an extended product lifetime. The product enclosure is made of aluminum, and selected components of the product are suitable for material recycling.

7.2.2. Product End-of-Life Handling

At the end of its service life, the product shall not be disposed of as unsorted municipal waste and shall be collected separately in accordance with the WEEE Directive (2012/19/EU).



The crossed-out wheeled bin symbol on the product, packaging, or accompanying documentation indicates that the equipment must be returned to an authorized collection point for waste electrical and electronic equipment. Recycling, recovery, and disposal activities shall be carried out by authorized operators in compliance with applicable local, national, and EU environmental regulations.

For proper treatment, recovery and recycling of old products and batteries, please take them to applicable collection points in accordance with your national legislation. Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

7.2.3. General safety and hazard warnings for all Dewesoft systems

The safety of the operator and the unit depends on following these rules.

- Use this system under the terms of the specifications only to avoid any possible danger.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- DO NOT touch internal wiring!
- DO NOT use a higher supply voltage than specified!
- Use only original plugs and cables for harnessing.
- You may not connect higher voltages than rated to any connectors.
- The power cable and connector serve as a Power-Breaker. The cable must not exceed 3 meters, the disconnect function must be possible without tools.
- Maintenance must be executed by qualified staff only.
- During the use of the system, it might be possible to access other parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advice for using the system.
- With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non-interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals.
- Please note the characteristics and indicators of the system to avoid fire or electric shocks. Before connecting the system, please read the corresponding specifications in the product manual carefully.
- The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of categories II, III and IV.
- The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- DO NOT use the system if the equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorised personnel only.
- Adverse environmental conditions are Moisture or high humidity, Dust, flammable gases, fumes or dissolver, Thunderstorm or thunderstorm conditions (except assembly PNA), Electrostatic fields, etc.
- The measurement category can be adjusted depending on module configuration.
- Any other use than described above may damage your system and is attended with dangers like short-circuiting, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened.

- DO NOT operate damaged equipment: Whenever the safety protection features built into this product may have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until the safe operation can be verified by service-trained personnel. If necessary, return the product to the Dewesoft sales and service office for service and repair to ensure that safety features are maintained.
- If you assume a more riskless use is not provided anymore, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more riskless operation is not possible anymore if the system is damaged or causes strange noises. The system does not work anymore. The system has been exposed to long storage in adverse environments. The system has been exposed to heavy shipment strain.
- Warranty void if damages are caused by disregarding this manual. For consequential damages, NO liability will be assumed!
- Warranty void if damage to property or persons is caused by improper use or disregard of the safety instructions.
- Unauthorised changing or rebuilding the system is prohibited due to safety and permission reasons (CE).
- Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough to get a perilous electric shock by touching the wiring.
- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not be covered!
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- Prevent using bare metal wires! Risk of short circuit and fire hazard!
- DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy over-voltage). An advanced range of applications under certain conditions is allowed with designed products only. For details, please refer to the specifications.
- Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
- Avoid operation near high magnetic or electromagnetic fields, transmitting antennas or high-frequency generators. For exact values, please refer to the enclosed specifications.
- Use measurement leads or measurement accessories aligned with the specification of the system only. Fire hazard in case of overload!
- Do not switch on the system after transporting it from a cold room into a warm room and vice versa. The thereby created condensation may damage your system. Acclimate the system unpowered to room temperature.
- Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even if the system has been removed from the power supply.
- The electrical installations and equipment in industrial facilities must comply with the security regulations and insurance institutions.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- The measuring systems are not designed for use on humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already lower level may damage your system.
- Please also consider the detailed technical reference manual as well as the security advice of the connected systems.

- This product has left the factory in safety-related flawlessness and proper condition. To maintain this condition and guarantee safe use, the user has to consider the security advice and warnings in this manual.

EN 61326-3-1:2008

IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1.

Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511, which are considered as “operationally well-tried”, are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for the protection of buildings, are excluded from the scope of IEC 61326-3-1.

8. Documentation Version

Doc-Version	Date [dd.mm.yyyy]	Notes
V22-0	1.03.2022	Draft
V22-1	14.3.2022	Initial release
V22-2	5.5.2022	Minor changes to pictures, data table correction, SoftSinc value update, IpConfigTool instructions.
V23-1	17.02.2023	Preview and settings chapter update with longer descriptions
V23-2	01.03.2023	Troubleshooting manual driver install
V23-3	07.11.2023	Added 4.4.1. LED Signalling blinking code 6.3 Updated trigger requirement explanation
V25-1	23.04.2025	Added DS-CAM-PoE-SPLITTER Upgrade with DS-CAM-165c-POE
V26-1	26.01.2026	Data table correction, SoftSinc value update, operating temperature update Optimizing system and preventing data loss troubleshooting

9. NOTES

A table for data entry when you are setting up larger systems.

No	CAM Type	IP	MAC	Notes
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