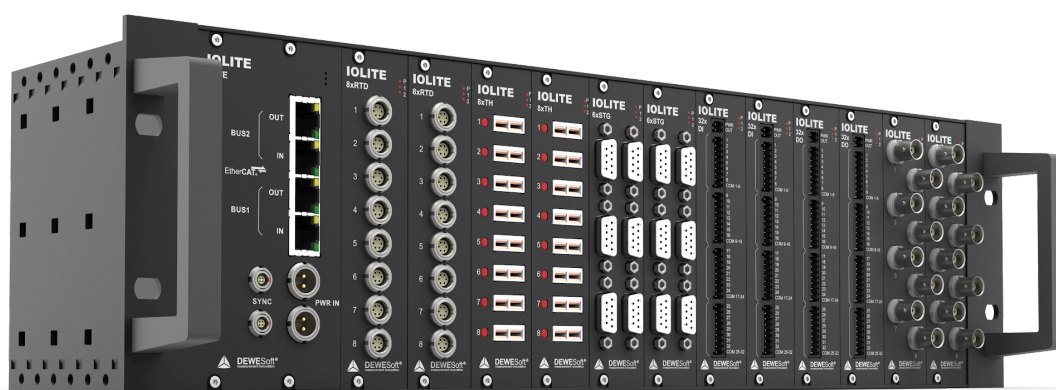


INSTALLATION MANUAL FOR MONITORING APPLICATIONS

V26-1



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2. Introduction

This manual will present the procedures, tools and other important information needed to install the IOLITEc family of devices in a monitoring application where 24/7 operation is required.



Important

It is mandatory to follow the installation manual in detail. Failure to follow the instructions will result in the void of the warranty for the products provided by Dewesoft Monitoring d.o.o.

The instructions in this manual apply to the systems based on IOLITE family of devices including but not limited to:

- IOLITEicw-3xMEMS-ACC-8g and its other variants (40g, -T, -INC, -S etc.)
- IOLITEicw-1xSTG and its other variants (-TB, -FB, etc.)
- IOLITEicw-1xACC and its other variants
- IOLITEicw-4xDI (4xDO, 1xAO)
- IOLITEcw-REPEATER
- IOLITEcw-POWER-INJECTOR
- IOLITE 8xSTGS, 16xLV, 8xRTD and other variants

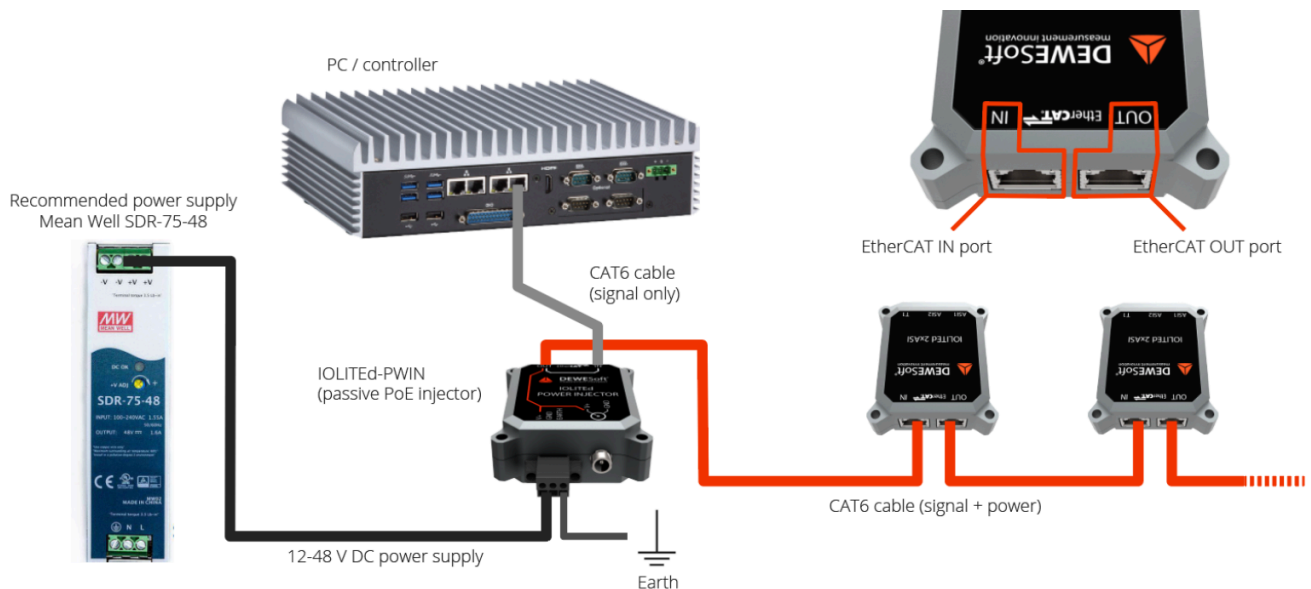
The instructions also include specifications of industrial PCs and software specifications that are required to be met in order to reach the desired long term system stability.

This manual is dedicated to installation and operation of long term monitoring systems. For the basic manual of each specific device there are device-specific manuals available that provide all the specifications and details of each device. The most relevant device manual that should be consulted in relation to this installation manual is the [IOLITE technical reference manual](#).

3. Basic wiring and system requirements

System wiring schematic

The devices should be connected to the industrial PC and powered via the IOLITE POWER INJECTOR or (IOLITE HUB6) as shown in the schematic below.



The required power supply (tested for maximum EMI immunity): Mean Well SDR-75-48

The exact wiring and grounding schematic depends on the environment in which the system is installed. Detailed instructions are provided in the section [Wiring requirements for long chains](#) and must be followed closely.

Industrial PC specifications

The minimum industrial PC requirements are listed below. The values are minimal and assume no mathematics or other plugins running on the PC. In case of additional mathematical channels higher CPU specs might be required.

Required PC specifications (1-10 devices connected):

- CPU: 4 core, 2 GHz per core, Intel i3 minimum
- RAM: 8 GB
- Approved industrial PC type: Axiomtek ICO520 ALD3-A

Required PC specifications (10-20 devices connected):

- CPU: 4 core, 2.5 GHz per core, Intel i5 minimum
- RAM: 16 GB
- Approved industrial PC type: Axiomtek ICO520 ALD5-A

Required PC specifications (20-50 devices connected):

- CPU: 8 core, 3 GHz per core, Intel i7 minimum
- RAM: 16 GB

- Approved industrial PC type: Axiomtek ICO520 ALD7-A

Maximum number of EtherCAT devices that can be connected to the same PC: 100 (if only IOLITEc devices are used) or 64 (if also other IOLITE devices are used like IOLITE 8xSTGS, 16xLV etc.)

Higher number of devices can be connected under certain conditions but the configuration needs to be approved by the Dewesoft Monitoring support team.

EtherCAT network can only be connected to the integrated network cards of the PC. Do not use USB-to-Ethernet or similar adapters for the EtherCAT communication. Even if they appear to be operating well in a short-term test, problems can occur later during operation.

4. Cable type and installation requirements

IOLITE devices require shielded network cables and connectors to operate reliably. The approved cable categories are CAT6, CAT6A or CAT7. Minimum wire diameter is AWG23. Shielding of individual pairs and of the overall cable is needed. The RJ45 connectors must fit the chosen cable type in terms of appropriate overall cable diameter and the wire diameter and type (different connectors are needed if the cable has solid or stranded wires).

Cable types and connectors tested and approved by Dewesoft Monitoring:

Cable: Lapp 2170978 (ETHERLINE LAN Cat.7 S/FTP 4x2AWG23 PE)

RJ45 connector: MHRJC6AR322N

Clamping range of the cable glands on IOLITEc devices: 7 .. 9 mm

Cables must be within this clamping range in order to properly fit inside the cable gland and ensure proper sealing.

Connectors must be assembled (crimped) to the cable in a high-quality manner. The connection between the connector and the cable is vital for the reliable operation of the system.

While all cables must be fully shielded, it is in some cases necessary to break the shield and use a plastic connector on one side of the cable. See detailed requirements on shielding and grounding in the section [Wiring requirements for long chains](#).

5. Instructions for connecting the EtherCAT communication cables to an IOLITEc device

IOLITEc cable glands allow connection of cables that already have the RJ45 connectors assembled on them by the use of a split seal that fits around the cable behind the connector.

The cable glands and gland adapters are lightly screwed on for shipping. You can unscrew them to get access to the RJ45 connectors.



To connect the cable, first screw on the cable gland and gland adapter without the seal and gland nut.



Put the RJ45 cable through the nut gland and into the device. Due to the large hole diameter, the whole RJ45 connector can fit through.



Add the split seal by fitting it around the cable.



Finally, tighten the nut gland.

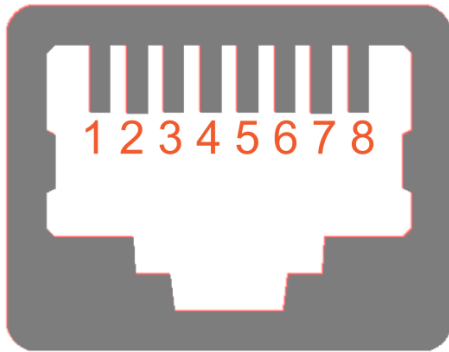


To disconnect the cable, you first need to untighten the gland nut and then unscrew the whole gland assembly to expose the connector. The RJ45 clip is easily accessible.



RJ45 connector pinout

Both IN and OUT ports on the device have the same pinout. The ports carry signal and power.



EtherCAT connector: pin-out (RJ-45 female)

Pin	Name	Description
1	TX_P	Transmission +
2	TX_N	Transmission -
3	RX_P	Reception +
4	DC +	PoE +
5	DC +	PoE +
6	RX_N	Reception -
7	DC -	PoE -
8	DC -	PoE -

Meaning of LEDs

Each device has three LEDs:

IN L/A - blinking indicates link activity - if cable is connected and the LED is off, there is a problem with the link (cable not connected on the other side, cable damaged, device has no power)

RUN - EtherCAT state indicator

INIT - LED is OFF - idle mode (typically after power up when software is not yet connected)

PREOP - continuous even on/off blink - settings mode (DewesoftX settings)

SAFEOP - One flash, then pause, repeating - channel setup mode (DewesoftX channel setup)

OP - Solid light, no blinking - measurement mode (DewesoftX measurement)

OUT L/A - blinking indicates link activity - if cable is connected and the LED is off, there is a problem with the link (cable not connected on the other side, cable damaged, device has no power)

6. Attaching IOLITEc to the measurement object

Devices must always be securely attached to the structure. In case of IOLITEc devices with embedded sensors (3xMEMS-ACC, 2xINC, etc.) the attachment must be especially rigid to fully transmit the vibrations of the measured objects to the device.

A range of mounting brackets can be ordered from Dewesoft. The brackets can be flat or 90 degree. The brackets can have screw mount, magnetic mount or glue mount to the structure.



Note: In case of using the magnetic brackets, it is important that the magnetic field does not interfere with internal electronics of the device. Only the use of Dewesoft supplied magnetic brackets is approved.

If the bracket is glued to the structure, the following bonding compound is recommended:
Loctite EA3450

When attaching the device to its final installation position, make sure to direct the cable downwards from the cable glands first, before bending it back upwards if necessary. This is to prevent water flowing along the cable into the cable glands. The cable glands are IP67 rated, but it's still important to prevent a direct flow of water along the cable into the seals.

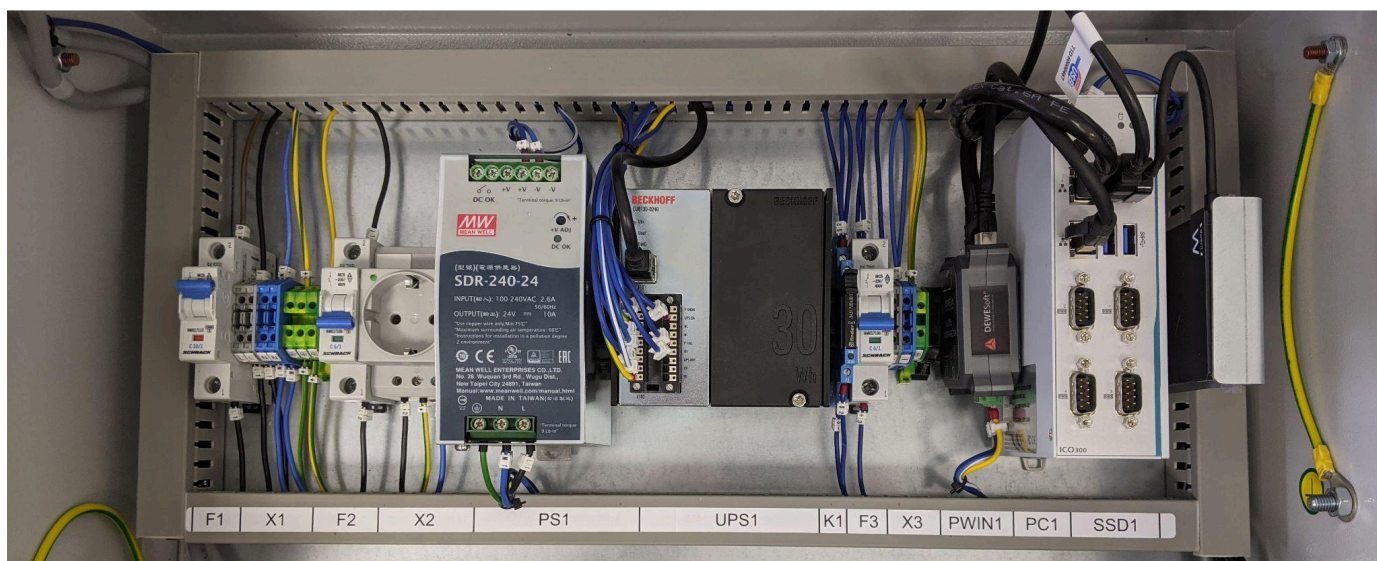
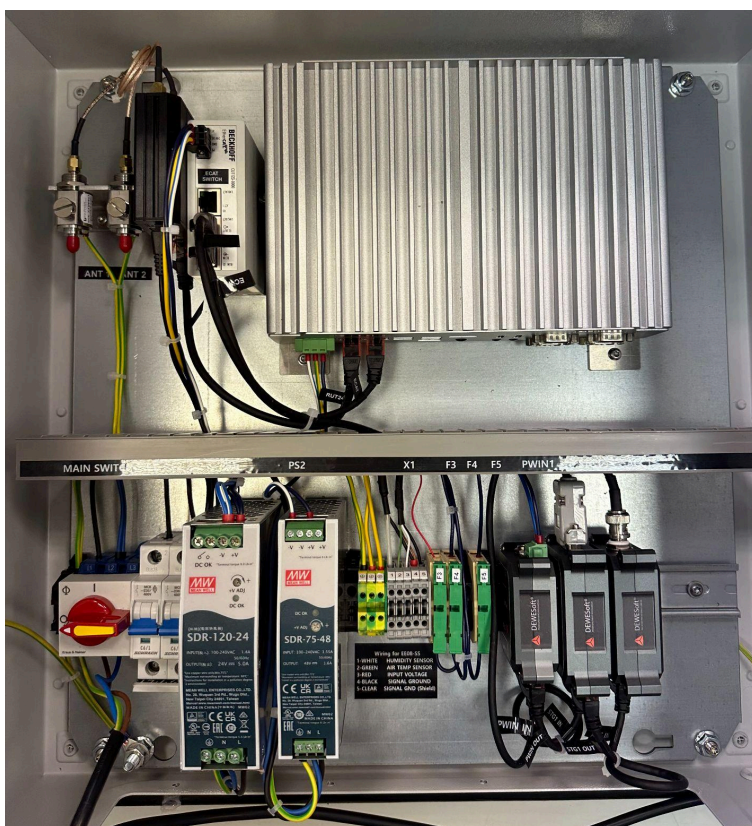
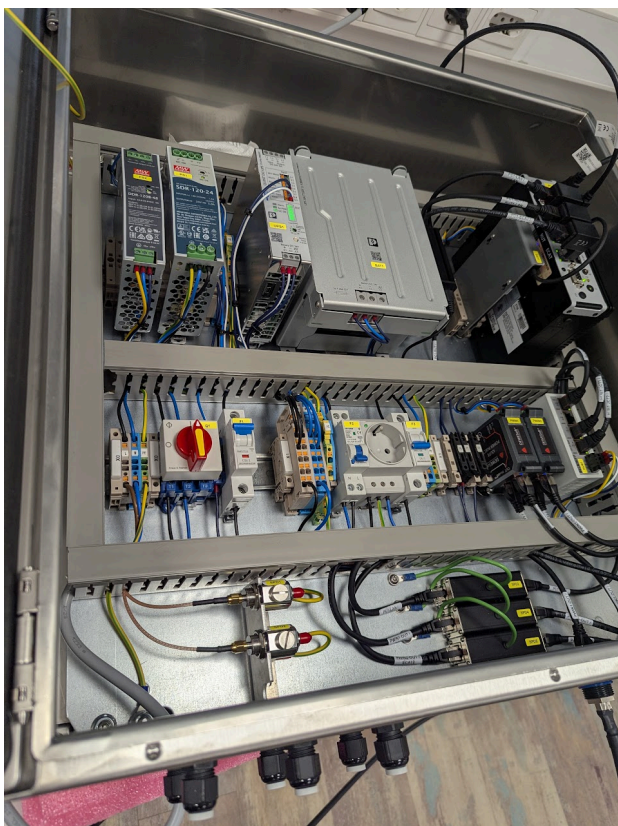


Galvanic corrosion protection

IOLITEc devices are made of non-corrosive materials and can be safely exposed to wet conditions. However, the devices could still experience galvanic corrosion when in contact with certain materials, especially steel. Standard IOLITEc housings are made of anodized aluminium that can be subject to galvanic corrosion when in contact with steel in a wet environment, especially if the environment is also salty. In such cases it is important to prevent direct contact. The contact should also be prevented between stainless steel screws and the aluminium housing by using isolating washers.

7. Electrical cabinet requirements

The industrial PC, power supplies, power injectors and other auxiliary components (switches, routers, UPS systems etc.) must be installed in a professionally designed and assembled electrical cabinet. The **IEC/EN 61439** standard (or comparable local variation) must be followed. Some examples of well designed and assembled cabinets are provided in the photos below.



8. Software configuration requirements

Operating system

Mandatory operating system: **Windows 10 IoT Enterprise LTSC 2021**

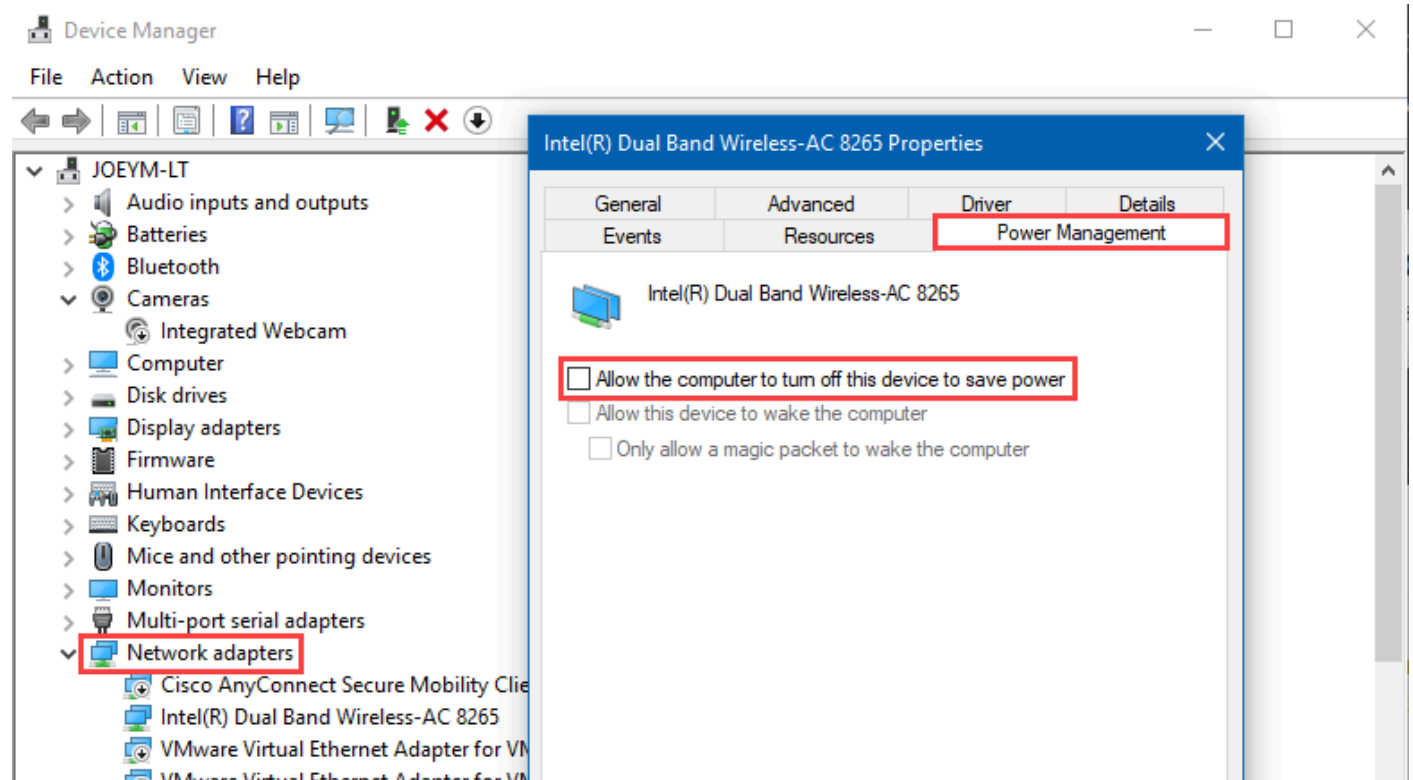
This is not the HOME or PRO version of Windows. It is a special license in use for systems operating unattended and for a long time. Windows 10 IoT Enterprise LTSC is officially supported by Microsoft until January 2032. It is mandatory that this version of Windows is used. Other versions are not approved by Dewesoft Monitoring for stable long term operation.

Windows system settings

Several Windows system settings need to be applied in order to prepare the system for stable long-term operation.

Power mode needs to be set to maximum performance. Any power saving modes, hibernation, sleep, hybrid sleep modes must be disabled.

It's critical to disable power saving mode on network cards and USB ports. Power saving mode, efficient ethernet or similar settings on the network card might kick-in at any time during system operation and unpredictably cause the communication to be interrupted. The "Allow the computer to turn off this device to save power" must be unchecked as shown below.



Windows time service must be enabled and set to automatic start.

Automatic Windows Updates must be disabled in order to prevent unexpected system overloads and restarts. This should be configured in the Group policy editor with the following parameters set:

Configure Automatic Updates: Disabled

Do not include drivers with Windows Updates: Enabled

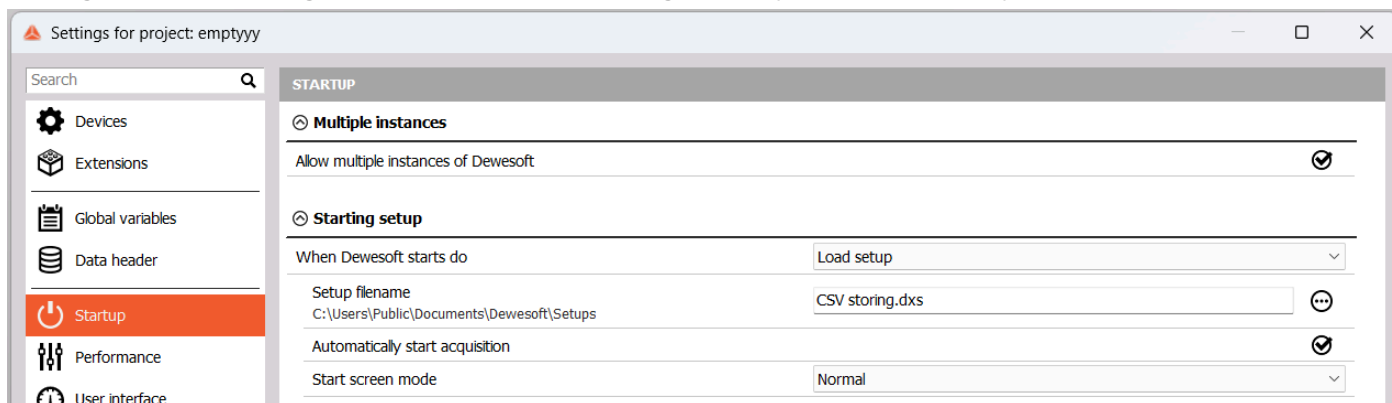
User should manually download and install the updates in a controlled manner in order to prevent unexpected system overloads and reboots. Only security updates should be installed, while the version of the operating system must stay as specified previously in this manual.

DewesoftX software settings

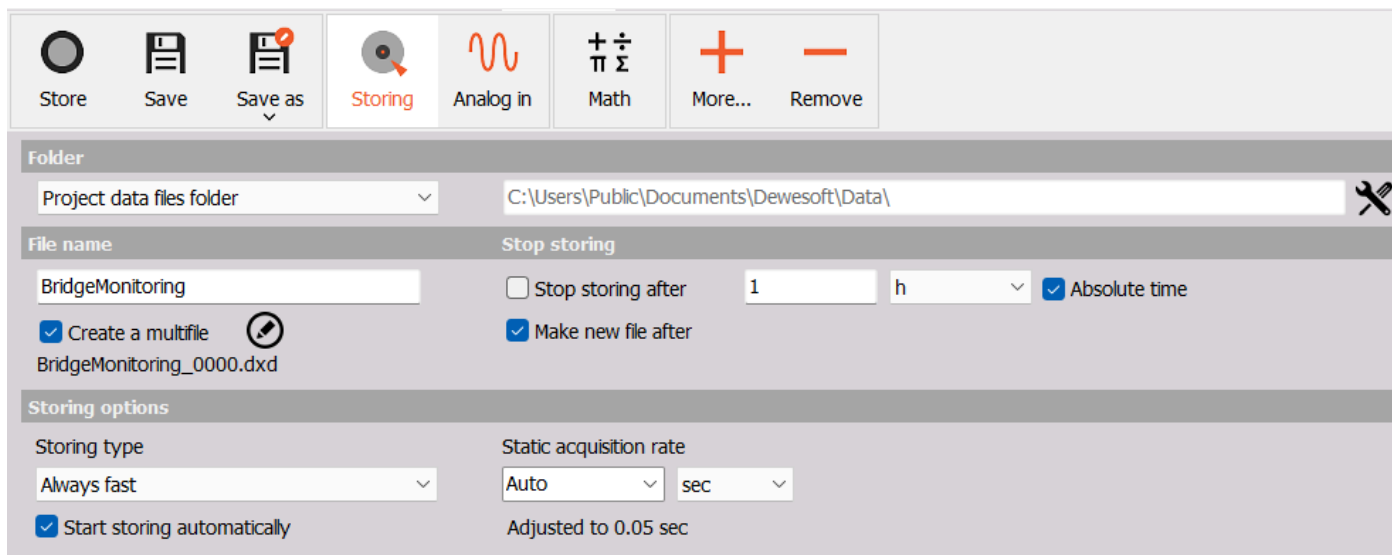
IOLITE systems operate in combination with DewesoftX data acquisition software. It is mandatory to follow the instructions that prepare the DewesoftX software for use as a long-term monitoring software.

Dewesoft X version verified for long-term operation in monitoring systems: **2026.1**

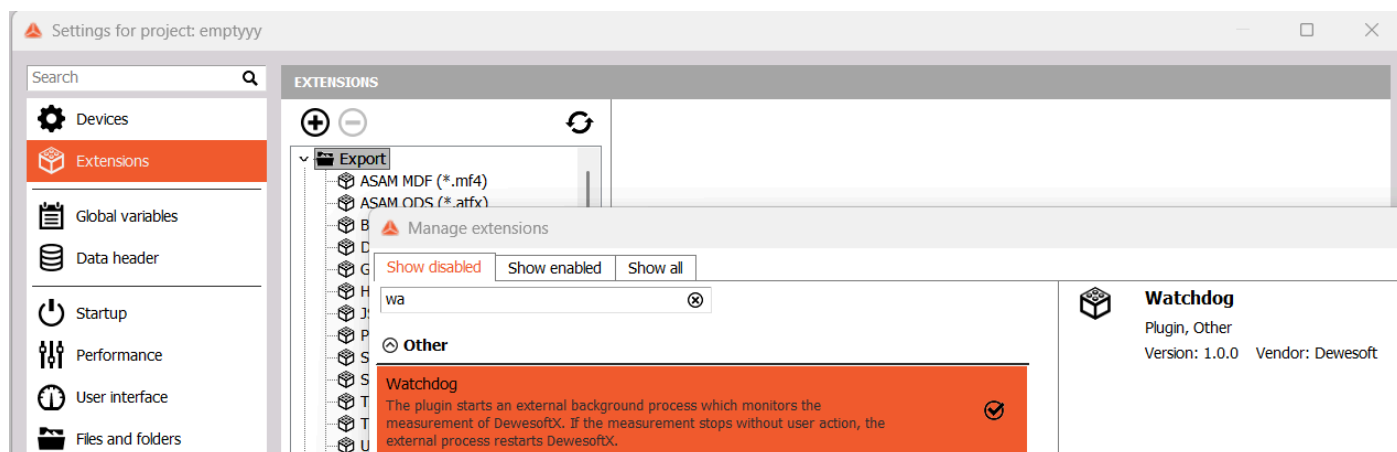
DewesoftX must be set to automatically start on Windows boot. In DewesoftX settings, the startup settings must be configured for automatic loading of setup and start of acquisition as shown below:



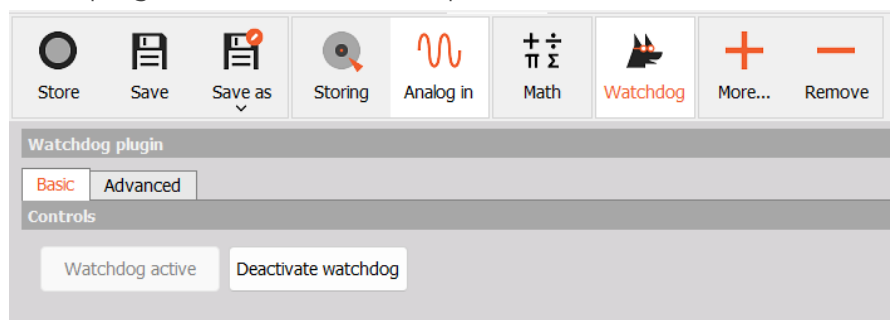
To ensure that data is always stored, the “Start storing automatically” checkbox must be enabled. Storing must be set to multifile. Suggested storing settings are shown below:



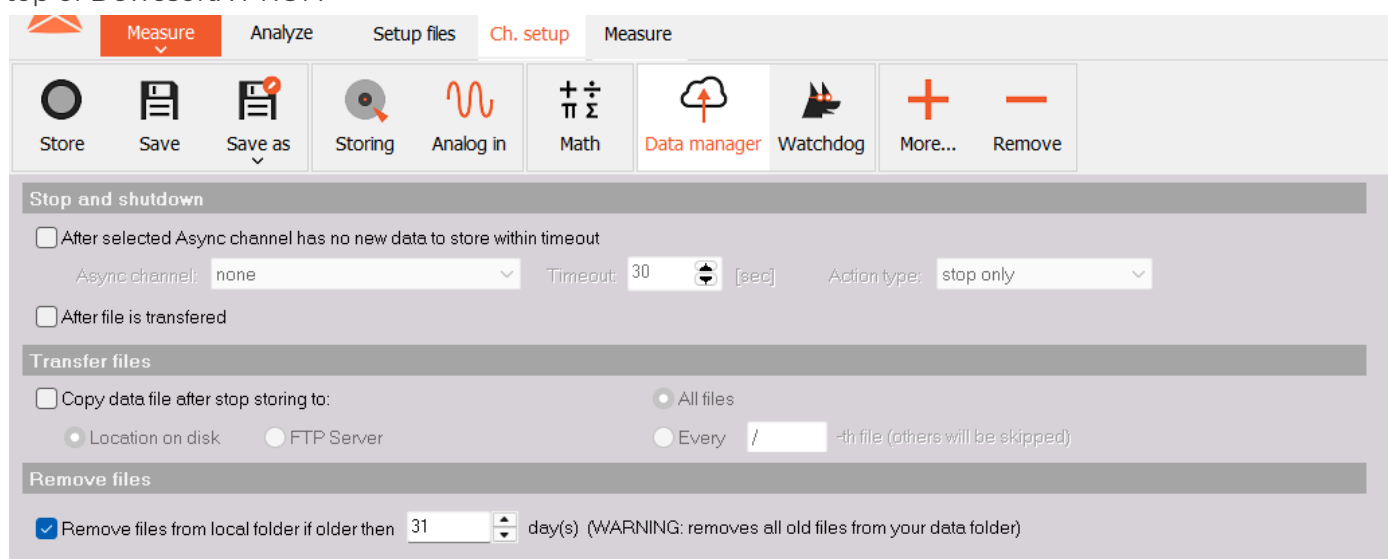
DewesoftX watchdog plugin must be enabled on the system in order to recover the measurement in case of unexpected interruptions. The plugin is installed with DewesoftX and must be enabled in Settings/Extensions:



When enabled, the Watchdog plugin icon appears in channel setup. The watchdog must be set to Active in the plugin screen and the setup must be saved after the Activate button is pressed:



User must ensure there is enough disk space on the system to allow uninterrupted measurement and data storing. Data manager plugin can be enabled in DewesoftX to automatically delete data files older than a defined period or move them to another folder. Data Manager requires an additional license on top of DewesoftX PROF.



9. System testing requirements

Before the monitoring system is installed in the field, a comprehensive test of the whole system must be conducted in an office environment. All components that will be installed must be assembled into a fully working system including sensors, DAQ devices, computers, cables, cabinets and other components.

Software must be configured in the same way (device settings, sample rate, storing strategy, interoperability) as it will be used in the final installation. The system must be running without interruptions for 48 hours to verify that the whole installation and software configuration is correct. The test must be documented with a report including photos and data files.

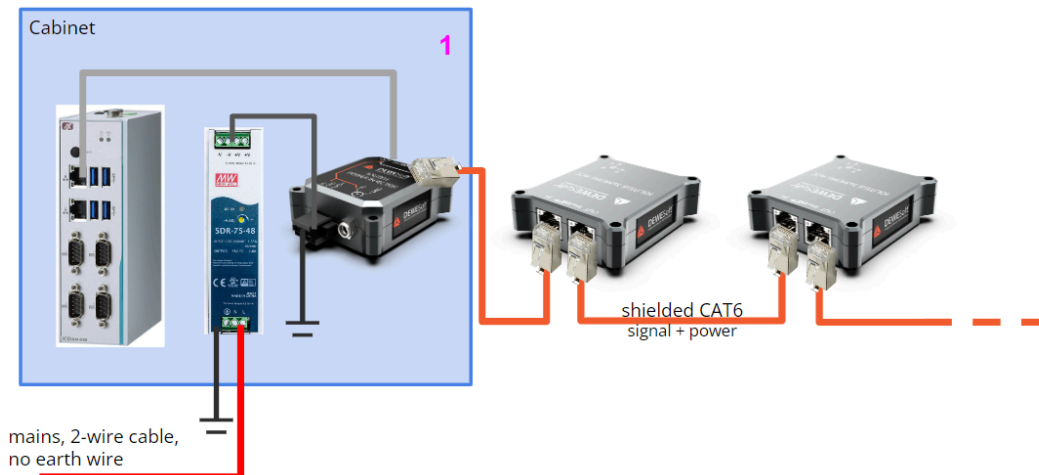
Photos below show an example of a well prepared and fully assembled system ready for a factory acceptance test.



10. Wiring requirements for long chains

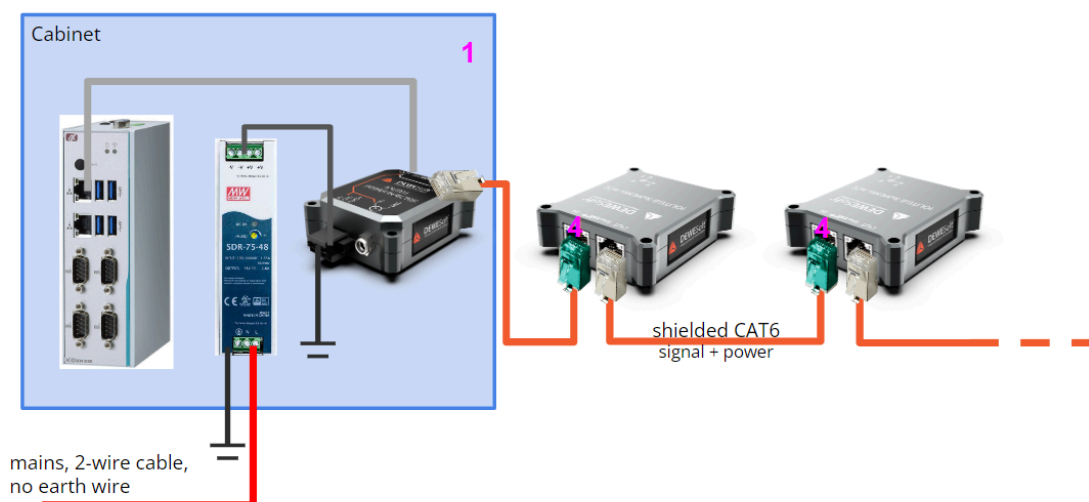
The exact wiring of the chain depends on the local conditions such as the overall length of the chain, conductivity of the structure, type of power supply, existence of additional power injectors along the chain, availability of local earth connections etc. The most common configurations are presented here.

10.1 Single power injector, non-conductive structure (i.e. concrete bridge)



The power supply and power injector should be installed in an electrical cabinet. A single network cable connects the devices outside of the cabinet. The cable shield may be connected at each end of the cables, effectively forming a continuous shield connection along the chain. This is only allowed if the structure to which the devices are mounted is not conductive (i.e. concrete bridge).

10.2 Single power injector, conductive structure (i.e. steel bridge)



In this case, especially in case of long cables, there is a risk of ground loop formed by the cable shield, device housing and the structure itself. It is therefore necessary to either break the shield at each IN port by using a non-conductive plastic RJ45 connector (4). Using non-shielded cables is not a viable solution as the cables themselves always need to be shielded. In this case it is also important to ensure the conductivity of the device housing to the conductive structure by using tooth washers to cut into the anodization layer of the device housing.



Note: since tooth washers purposefully damage the anodization protection layer and increase the risk of galvanic corrosion, it is preferable to isolate the device housing from the conductive structure (via a non-conductive mounting plate) and therefore follow the wiring for a non-conductive structure, especially in marine or humid environments.

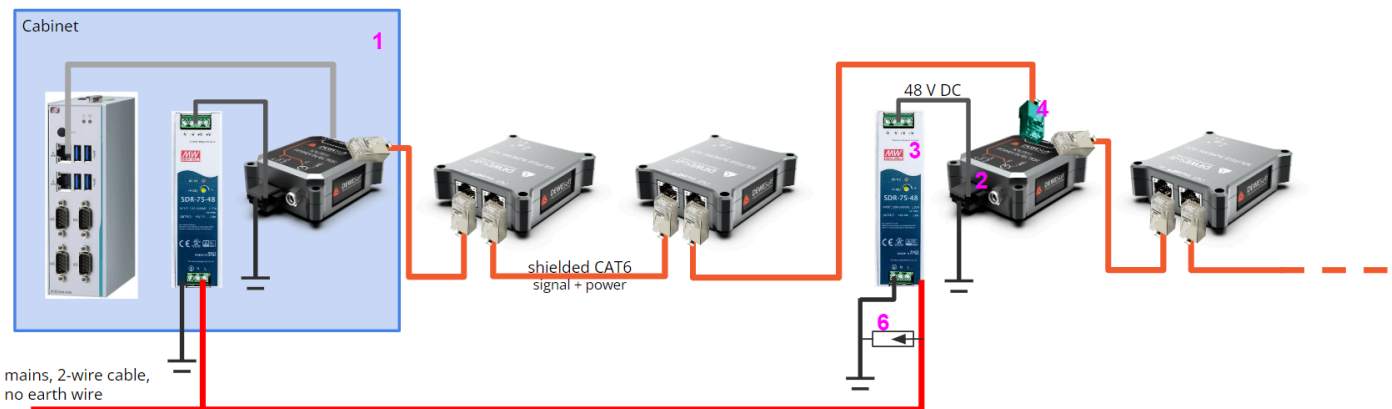
Additional information: Power injector internal wiring schematics can be found in [Appendix](#).

10.3 Multiple power injectors

The following configurations include an external power injector which is necessary due to voltage drop in case of long chains. The configurations are presented in the order from the most recommended to the least recommended in terms of EMI immunity.

The internal schematic of the IOLITE POWER-INJECTOR is available in Appendix 1.

10.4 Multiple power injectors, non-conductive structure (i.e. concrete bridge), AC line to external power supply, local earth available



This schematic shows the most recommended wiring in case external power injectors need to be used. The industrial PC, Ethercat power supply and power injector are typically inside the main electrical cabinet (1), together with appropriate surge protection for the power supply system used on installation site (TN or TT).

If an additional external power injector (2) is needed (due to voltage drop in a long chain), it is recommended that it is powered by a local power supply (3) which means the main AC line needs to be wired to it. This is the most robust wiring against EMI disturbances.

The external power injector and power supply must both have the EARTH pins connected locally. It is necessary to perform resistance measurement between the EARTH terminals and local earthing point according to EN-60364 to ensure functionality (i.e. <0.1 ohm resistance at 10 A test current).

To avoid a ground loop, it is important to break the daisy chained network cable shield by placing an unshielded RJ45 connector (4) at the IN port of the external power injector.

To protect external power supplies from lightning strike, it is recommended that surge protection (6) is added to each external power supply.

Note on conductive structures (i.e. steel bridge): if the chain is long, the structure is conductive and device housings cannot be isolated from the conductive structure (i.e. by a non-conductive mounting plate), the shield needs to be broken at every device's IN port and tooth washers should be used for attaching the device to the structure as explained in the initial section (see the section on "[Single power injector, conductive structure](#)").

10.5 Multiple power injectors, non-conductive structure (i.e. concrete bridge), AC line to external power supply, no local earth

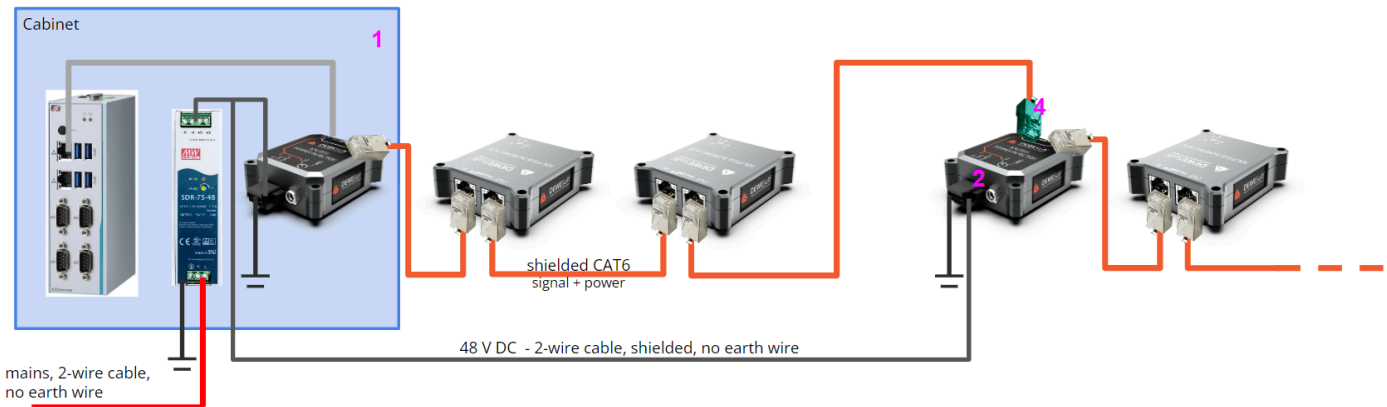


If it is not possible to connect the external power supply and power injector EARTH pins to local earth, there must be an isolation transformer (**7**) in the MAINS line to the external power supply to protect against electric shock.

In this wiring it is recommended that the RJ45 connector (**4**) at the power injector IN port is shielded as there is no ground loop created by earthing, therefore it is desirable to continue the shield connection along the full chain.

Note on conductive structures (i.e. steel bridge): if the chain is long, the structure is conductive and device housings cannot be isolated from the conductive structure (i.e. by a non-conductive mounting plate), the shield needs to be broken at every device's IN port and tooth washers should be used for attaching the device to the structure as explained in the initial section (see the section on "[Single power injector, conductive structure](#)").

10.6 Multiple power injectors, non-conductive structure (i.e. concrete bridge), DC line to external power supply, local earth available



This schematic shows the wiring in case it is not possible to install an external power supply and therefore a 48 V DC power cable is wired to the external power injector.

It is important that the DC cable is shielded for immunity against EMI disturbances.

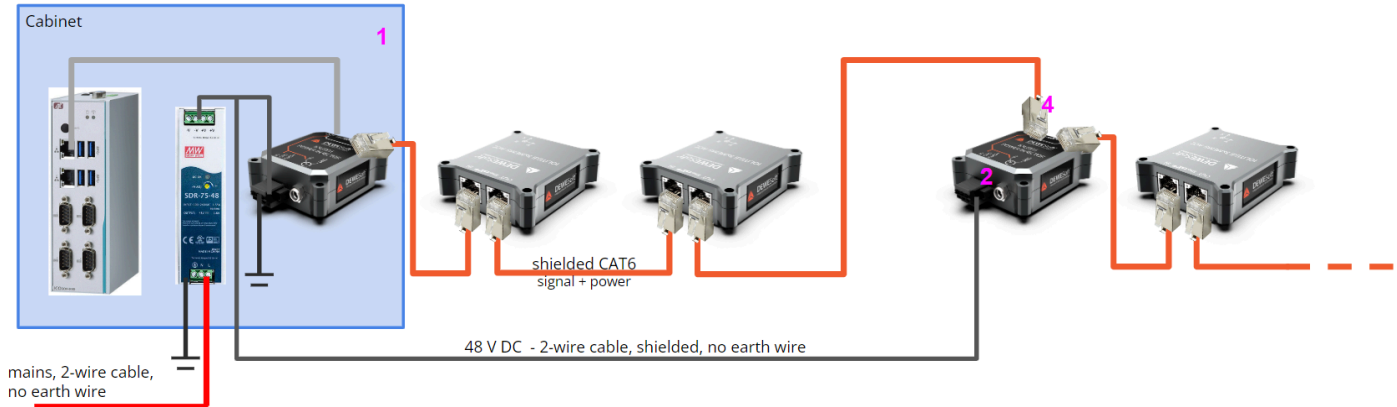
The external power injector must have the EARTH pins connected locally. It is necessary to perform resistance measurement between the EARTH terminal and local earthing point according to EN-60364 to ensure functionality (i.e. <0.1 ohm resistance at 10 A test current).

To avoid a ground loop, it is important to break the daisy chained network cable shield by placing an unshielded RJ45 connector (4) at the IN port of the external power injector.

Please note: the maximum wire diameter of the power injector input DC cable is 1 mm² (18 AWG) in order to fit the input connector including the ferrule. Therefore the voltage drop might be significant if the length of the DC cable is more than 100 m.

Note on conductive structures (i.e. steel bridge): if the chain is long, the structure is conductive and device housings cannot be isolated from the conductive structure (i.e. by a non-conductive mounting plate), the shield needs to be broken at every device's IN port and tooth washers should be used for attaching the device to the structure as explained in the initial section (see the section on [Single power injector, conductive structure](#)).

10.7 Multiple power injectors, non-conductive structure (i.e. concrete bridge), DC line to external power supply, no local earth



This schematic shows the wiring in case it is not possible to install an external power supply and therefore a 48 V DC power cable is wired to the external power injector.

It is important that the DC cable is shielded for immunity against EMI disturbances.

If it is not possible to connect the external power injector to local earth, it is recommended that the RJ45 connector (4) at the power injector IN port is shielded as there is no ground loop created by earthing, therefore it is desirable to continue the shield connection along the full chain.

Please note: the maximum wire diameter of the power injector input DC cable is 1 mm² (18 AWG) in order to fit the input connector including the ferrule. Therefore the voltage drop might be significant if the length of the DC cable is more than 100 m.

Note on conductive structures (i.e. steel bridge): if the chain is long, the structure is conductive and device housings cannot be isolated from the conductive structure (i.e. by a non-conductive mounting plate), the shield needs to be broken at every device's IN port and tooth washers should be used for attaching the device to the structure as explained in the initial section (see the section on "[Single power injector, conductive structure](#)").

11. Troubleshooting guide

11.1 Mandatory Troubleshooting Preparation



Before troubleshooting begins, **the customer, as the system owner or maintainer, is responsible for creating, verifying, securely storing, and restoring all required backups if needed. Having these backups available is mandatory before troubleshooting begins.**

The following folders must be backed up and stored in a protected repository where they cannot be modified:

- **C:\ProgramData\DewesoftX\bin64**
- **C:\Users\Public\Documents\Dewesoft**

The **data** folder inside **C:\Users\Public\Documents\Dewesoft** may be excluded only if a verified backup of the measurement data already exists. Otherwise, the **data** folder must also be backed up.

A current system schematic must also be available. It should show the complete EtherCAT connection topology up to the connected PC and identify all devices by their exact names, including third-party devices such as EtherCAT hubs.



Before troubleshooting, verify that the network adapter and operating system settings, including power-saving settings, match the requirements defined in the installation section of this manual. **Do not start troubleshooting until these settings are correctly configured**, as incorrect settings can lead to unnecessary diagnostic work.

11.2 Before Requesting Operational Support

Before requesting operational support, follow the applicable troubleshooting procedures in this manual and prepare a report containing the result of **each diagnostic procedure performed**. This helps avoid repeating the same diagnostic steps and reduces the time required to identify the problem.

Before the support session, it is recommended to install **Notepad++** and prepare all available information about the system. This should include the system schematic and topology, connected devices, device quantities, firmware versions, the DewesoftX version, versions of any other Dewesoft software in use, and any additional information, screenshots, or photos that may help describe the problem. A complete device and firmware list should be provided from **Options/Settings**, clearly showing which devices are connected and which firmware versions they are using. For disconnection issues, also provide a list of all devices that should be connected and their position in the system topology.

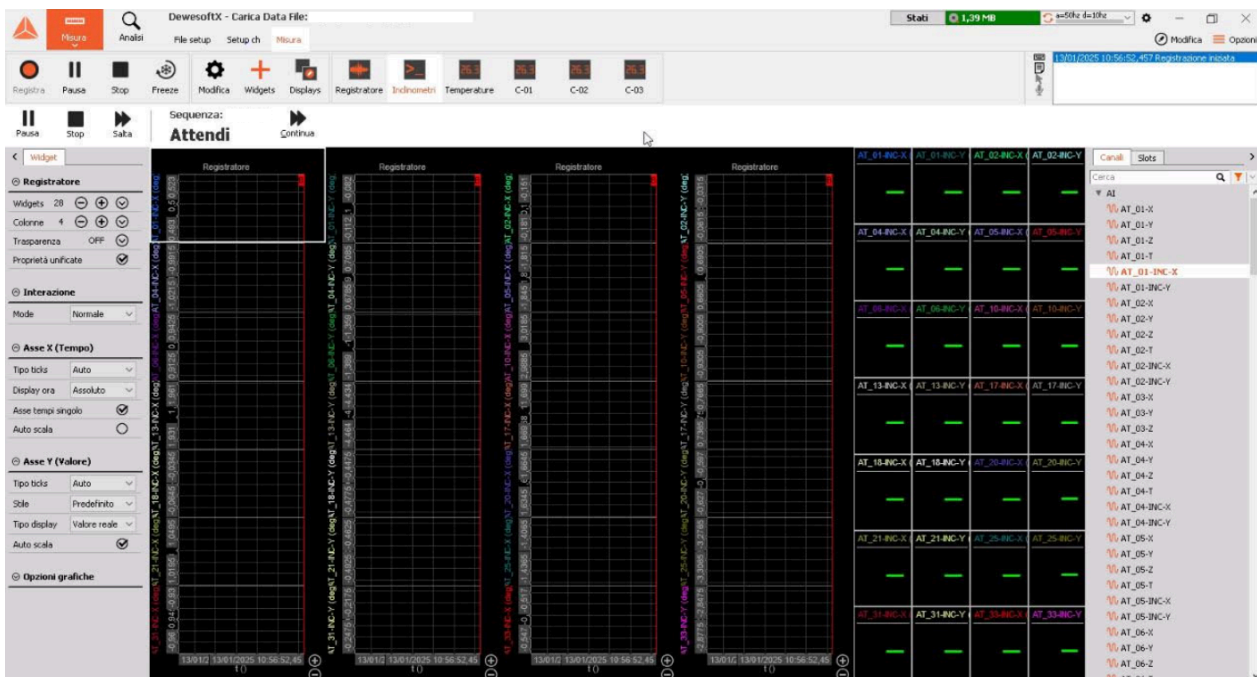
When requesting operational support, **direct remote access to the system must be provided to Dewesoft**. Dewesoft QuickSupport TeamViewer can be used for this purpose and is available here: <https://downloads.dewesoft.com/other-software/teamviewerqs.exe>

11.3 Common issues

This section lists the most common issues that can appear on the monitoring system and lists potential troubleshooting procedures.

11.3.1 Measurement Does Not Start in Measure Mode

When entering **Measure mode**, all recorders may remain stopped and the measurement time does not start as shown in image below. Before troubleshooting, make sure the network card settings are configured as described in the **Operating System** section above. If a **SYNC JUNCTION** is the first device in the chain, the warning “**Start pulse not detected**” may also appear.



Follow the procedures under **Diagnostic Procedures → Software and System Diagnostics** in this order:

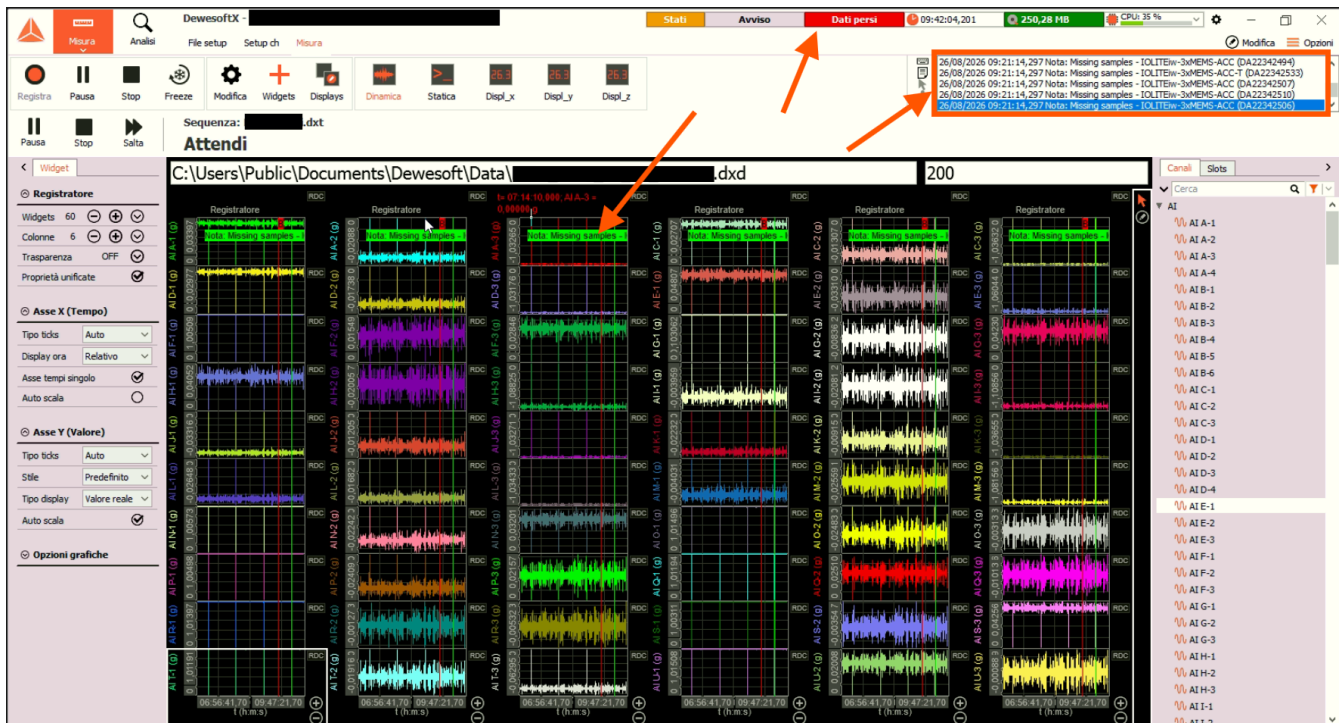
1. **Time Source Synchronization Lost**
2. If the system contains only a small number of devices, follow **Channel Isolation and Device Identification**. For larger systems with many devices, follow **EtherCAT Log Analysis for Device Startup Failure**.
3. If the issue is still not identified, follow **EtherCAT Log Analysis for Faulty Device Identification**.

For on-site troubleshooting, follow the procedures under **Diagnostic Procedures → Physical Hardware Diagnostics** after completing the software diagnostics. Perform the procedures in this order:

1. **Cabinet Power and Hardware Visual Verification**
2. **Cabinet EtherCAT Interface and Chain Verification**
3. **Chain Walkdown and Device Inspection**
4. **Device Isolation and EtherCAT Cable and Connector Verification** — perform these together while physically at the affected device
5. **Final System Verification**

11.3.2 Missing samples occur during measurement

If a **Missing samples** notice is raised during the measurement as shown below, follow the procedures under **Diagnostic Procedures → Software and System Diagnostics** in this order:



Follow the procedures under **Diagnostic Procedures → Software and System Diagnostics** in this order:

1. **Determine the Cause of .lost() Files**
2. For smaller systems, follow **Retransmitted and Lost Samples**.
3. For larger systems with many devices, follow **EtherCAT Log Analysis for Lost and Retransmitted Sample Source Identification**.
4. Continue with **EtherCAT Log Analysis for Faulty Device Identification**.

For on-site troubleshooting, follow the procedures under **Diagnostic Procedures → Physical Hardware Diagnostics** after completing the software diagnostics. Perform the procedures in this order:

1. If possible perform **Observe performance under dynamic conditions**
2. **Cabinet Power and Hardware Visual Verification**
3. **Cabinet EtherCAT Interface and Chain Verification**
4. **Chain Walkdown and Device Inspection**
5. **Device Isolation and EtherCAT Cable and Connector Verification** — perform these together while physically at the affected device
6. **Final System Verification**

11.3.3 Measurement starts but stops after an extended period

The measurement starts normally and the system records data, but after some time the measurement stops unexpectedly. If the watchdog is enabled, this issue may also cause repeated software restarts, resulting in a large number of **.pag** files being created.

If this occurs, follow the procedures under **Diagnostic Procedures → Software and System Diagnostics** in the following order:

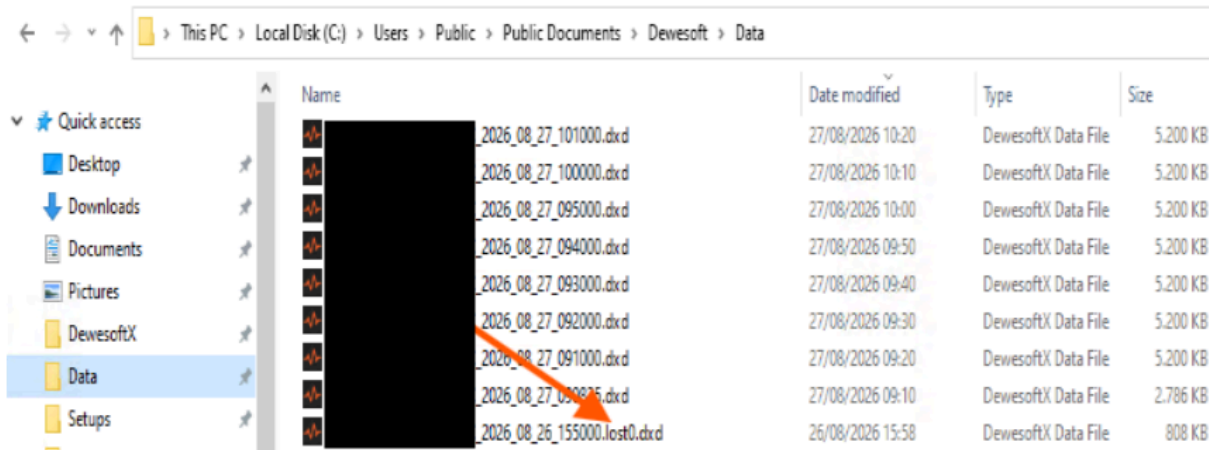
1. **EtherCAT Log Analysis for Faulty Device Identification**
2. For smaller systems, follow **Retransmitted and Lost Samples**. For larger systems with many devices, follow **EtherCAT Log Analysis for Lost and Retransmitted Sample Source Identification**.
3. If the **Watchdog plugin** is installed, also follow **Watchdog Plugin restart_log.log Analysis**.

For on-site troubleshooting, follow the procedures under **Diagnostic Procedures → Physical Hardware Diagnostics** after completing the software diagnostics. Perform the procedures in this order:

1. **Cabinet Power and Hardware Visual Verification**
2. **Cabinet EtherCAT Interface and Chain Verification**
3. **Chain Walkdown and Device Inspection**
4. **Device Isolation and EtherCAT Cable and Connector Verification** — perform these together while physically at the affected device
5. **Final System Verification**

11.3.4 .lost() files continuously present in the system data folder

When checking the configured data folder, **.dxd files with the .lost() suffix** may be present as shown below. Check how frequently these files are created and when they appear.



If **.lost()** files are created frequently or within a few minutes to a few hours after connecting to the system, follow the procedures under **Diagnostic Procedures → Software and System Diagnostics** in this order:

1. **Determine the Cause of .lost() Files**
2. Follow **Retransmitted and Lost Samples** first to check whether missing or retransmitted samples are present before proceeding.
3. **EtherCAT Log Analysis for Lost and Retransmitted Sample Source Identification.**
4. Continue with **EtherCAT Log Analysis for Faulty Device Identification.**

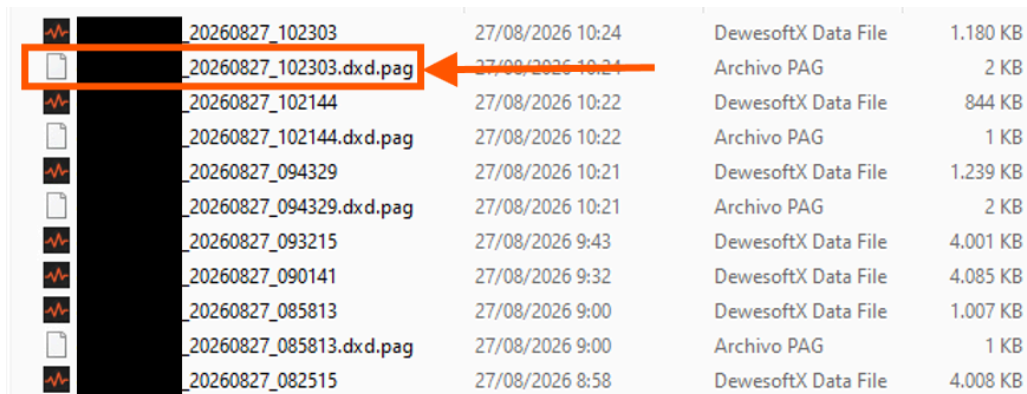
If they occur only rarely, for example a few files per day, follow the procedures above but exclude **EtherCAT Log Analysis for Lost and Retransmitted Sample Source Identification**, as the most common cause in this case is a physical device disconnection.

For on-site troubleshooting, follow the procedures under **Diagnostic Procedures → Physical Hardware Diagnostics** after completing the software diagnostics. Perform the procedures in this order:

1. If possible perform **Observe performance under dynamic conditions**
2. **Cabinet Power and Hardware Visual Verification**
3. **Cabinet EtherCAT Interface and Chain Verification**
4. **Chain Walkdown and Device Inspection**
5. **Device Isolation and EtherCAT Cable and Connector Verification** — perform these together while physically at the affected device
6. **Final System Verification**

11.3.5 Multiple .pag files continuously present in the system data folder

.pag files are temporary DewesoftX files created while data is being stored. They contain metadata that allows the data file to be opened and accessed during an active measurement. Under normal operation, the .pag file is present only while storing is active and disappears when storing stops. When checking the data folder, ignore the .pag file associated with the currently active data file, as this is expected. If a .pag file remains for an older data file as shown below, it indicates that the storing process did not close correctly, usually due to a **DewesoftX crash** or a **watchdog restart of DewesoftX**.



	_20260827_102303	27/08/2026 10:24	DewesoftX Data File	1.180 KB
	_20260827_102303.dxd.pag	27/08/2026 10:21	Archivo PAG	2 KB
	_20260827_102144	27/08/2026 10:22	DewesoftX Data File	844 KB
	_20260827_102144.dxd.pag	27/08/2026 10:22	Archivo PAG	1 KB
	_20260827_094329	27/08/2026 10:21	DewesoftX Data File	1.239 KB
	_20260827_094329.dxd.pag	27/08/2026 10:21	Archivo PAG	2 KB
	_20260827_093215	27/08/2026 9:43	DewesoftX Data File	4.001 KB
	_20260827_090141	27/08/2026 9:32	DewesoftX Data File	4.085 KB
	_20260827_085813	27/08/2026 9:00	DewesoftX Data File	1.007 KB
	_20260827_085813.dxd.pag	27/08/2026 9:00	Archivo PAG	1 KB
	_20260827_082515	27/08/2026 8:58	DewesoftX Data File	4.008 KB

To troubleshoot this issue, follow the procedures under **Diagnostic Procedures → Software and System Diagnostics** in this order:

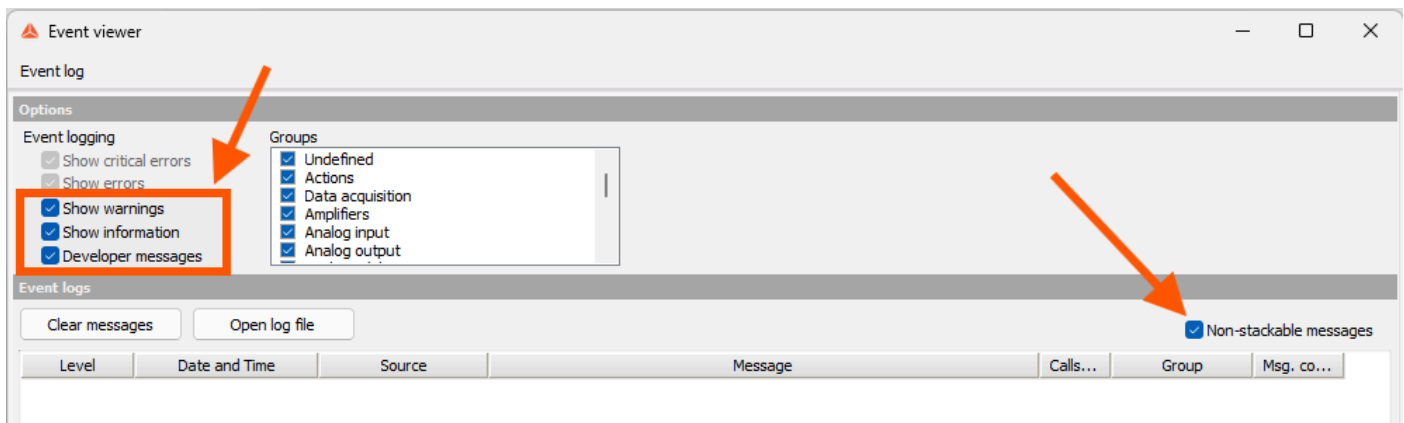
1. **Watchdog Plugin restart_log.log Analysis**
2. The restart_log.log usually provides enough information to identify the cause of the restart. If more detail is required, continue with **Watchdog Plugin watchdog_log.log Analysis**.
3. **Fine-Tuning the Watchdog Channel Task**
4. If the issue is not resolved, use **Retransmitted and Lost Samples** for smaller systems. For larger systems with many devices, continue with **EtherCAT Log Analysis for Lost and Retransmitted Sample Source Identification**.
5. If retransmitted samples are found, continue with **EtherCAT Log Analysis for Faulty Device Identification**.

11.4 Diagnostic procedures

Diagnostic procedures are split into **Software and system diagnostics**, covering all diagnostic actions that can be performed through the software and system, and **Physical hardware diagnostics**, covering procedures that require direct physical access to the hardware.

11.4.1 Software and system diagnostics

After the backup is complete, install a fresh copy of **DewesoftX 26.3** downloaded from the official Dewesoft website. Then configure DewesoftX to log the required messages by opening **Options → Tools → Event Viewer** and enabling **Show information** and **Developer messages**. Also enable **non-stackable messages** under **Ease of use**, so repeated events are logged individually as.



It is recommended to install **Notepad++** before troubleshooting, as it makes reviewing and searching DewesoftX log files easier.

11.4.1.1 Channel Isolation and Device Identification

In Measure mode, open **Analog In** and set all channels to **Unused**. Enable one channel from one device and start the measurement. If the measurement time remains stopped, repeat the test at least three times, each time using a channel from a different device. If the measurement starts normally, enable approximately half of all channels and test again. If the measurement stops, continue testing only the enabled channels. If it runs normally, disable those channels and test the remaining channels instead. Continue dividing the affected set of channels in half and testing each smaller set until the device or channel causing the issue is identified. More than one device may be affected. After identifying a faulty device, set its channels to **Unused** and all remaining channels to **Used**. If the measurement still does not start, repeat the procedure to identify additional faulty devices.

11.4.1.2 Retransmitted and lost samples identification

A faulty device or cable connection can cause samples to be **lost** or **retransmitted** over the etherCAT chain because communication could not be completed correctly in real time. When samples are lost, DewesoftX usually marks the recorded **.dxd** file with the **.lost()** suffix.

To inspect this enable **System Monitor** and for each connected device, enable the **Retransmitted samples**, **Lost samples**, and optionally, **Total samples** channels. Start the measurement and display these channels on digital displays. During normal operation, **Retransmitted samples** and **Lost samples** should remain at **0**. For devices that acquire data, **Total samples** should continuously increase while the measurement is running. If **Retransmitted samples** or **Lost samples** increase, the EtherCAT chain requires further investigation. In some cases, only the affected device shows errors. In other cases, the same error values may propagate through several devices, including devices that are operating correctly, and may also indicate a problem with an EtherCAT HUB or the network card. For this reason, this method is mainly used to initially confirm that the problem is related to the EtherCAT chain and to provide an indication of where the fault may be.

Retransmitted samples					Lost samples				
EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples
0	0	0	0	0	0	0	0	0	0
EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples
0	0	0	0	0	0	0	0	0	0
EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples
0	0	0	0	0	0	0	0	0	0
EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples
0	0	0	0	0	0	0	0	0	0
EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples
0	0	0	0	0	0	0	0	0	0
EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples	EtherCAT SPT (DA2000100)Retransmitted Samples
0	0	0	0	0	0	0	0	0	0

11.4.1.3 EtherCAT Log Analysis for Faulty Device Identification

DewesoftX logs EtherCAT diagnostic registers for each device, counting communication errors on the device's EtherCAT ports, such as the IN and OUT connections, as shown below. Each number represents the error count for one port, where **0** means no errors were detected; for example, **LostLink=0,1,0,0** means that a lost-link error was detected on **Port 1**. These values are logged even while DewesoftX is in **Settings**, so they can still be used for diagnostics if **Channel Setup** or **Measure** cannot be opened. During normal operation, the error counters should remain stable. **If a counter increases during operation, this indicates a possible problem on that port.** A faulty cable will often cause errors on the two ports connected by that cable. If both ports show errors and the cable has been verified, move one of the connected devices to another position in the EtherCAT chain, if possible. Monitor the counters again to determine whether the error follows the device or remains at the original connection.

Shell

```

001 #Information: [2026-08-21 06:57:32.474]
Ethercat: {SOEM_DLL}
[NIC:4B6D4F23-8F90-4222-8C89-574FCBCEA4C3 Slave:8 'CU1128-B' ID:6837298 SN:2007 Severity:60]
[HW_DIAG_REG] LostLink=0,1,0,0 FrameErr=0,0,0,0 PhyErr=0,0,0,0

001 #Information: [2026-08-21 06:57:32.474]
Ethercat: {SOEM_DLL}
[NIC:4B6D4F23-8F90-4222-8C89-574FCBCEA4C3 Slave:9 'IOLITEi-3xMEMS-ACC' ID:162 SN:DA25006417
Severity:60] [HW_DIAG_REG] LostLink=0,0,0,0 FrameErr=0,0,0,0 PhyErr=0,0,0,0

```

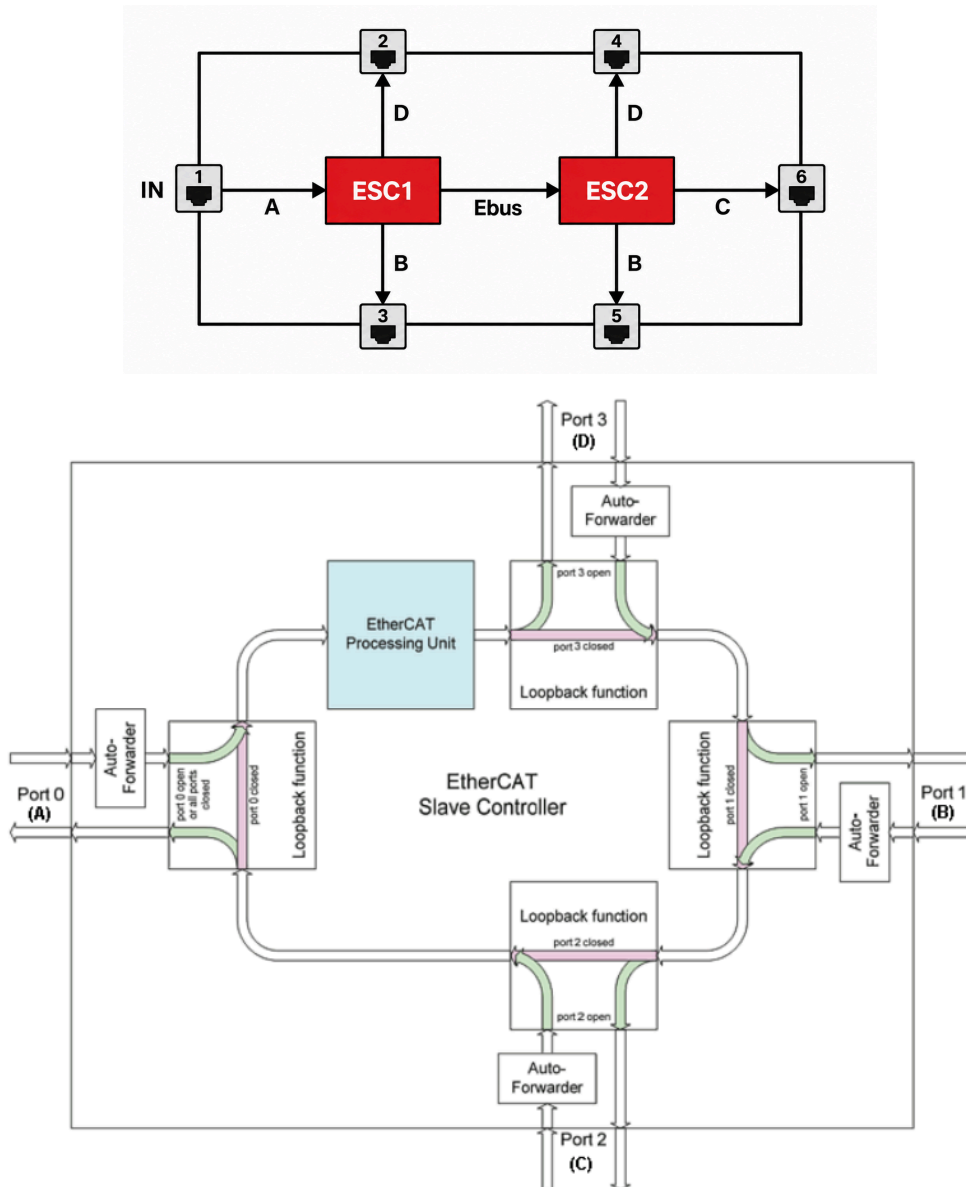
Physical IN port Physical OUT port Internal

Parameter	Example	Description
NIC GUID	NIC:4B6D4F23...	Unique ID of the PC network interface card used for EtherCAT.
Slave	Slave:9	Position of the device in the EtherCAT chain.
Device Model	HUB6	Product name of the EtherCAT device.
Product ID	ID:162	Internal manufacturer code or Product ID.
Serial Number	SN:DA25006417	Unique serial number of the device.
Severity	Severity:60	Severity level assigned to the logged message.
LostLink	LostLink=0,1,0,0	Counts how many times the physical EtherCAT link was lost on each port. Possible causes include a disconnected or damaged cable, a loose connector, or another interruption of the physical link. The counter remains until the device is power-cycled.
FrameErr	FrameErr=0,1,0,0	Counts corrupted or invalid EtherCAT frames received on each port. Possible causes include electrical interference or poor signal quality. The counter is reset when acquisition is started or stopped.
PhyErr	PhyErr=0,0,1,0	Indicates degradation or instability in the physical electrical signal. Possible causes include excessively long cable runs, low-quality cabling, damaged or dirty connector pins, or poor soldering. The counter is reset when acquisition is started or stopped.

The **LostLink**, **FrameErr**, and **PhyErr** values contain four numbers, one for each logical EtherCAT port **[Port 0]**, **[Port 1]**, **[Port 2]**, **[Port 3]**. For a typical device in a linear EtherCAT chain:

- **Port 0** – usually the IN connection from the previous device or EtherCAT master. Errors here indicate a problem on the incoming connection.
- **Port 1** – usually the OUT connection to the next device. Errors here indicate a problem on the outgoing connection.
- **Ports 2 and 3** – typically unused or internal, depending on the device. Under normal operation, these values will remain at 0.

When using the Dewesoft HUB6 or a third-party EtherCAT hub, the hub usually appears as several EtherCAT slaves in the topology because it contains multiple internal EtherCAT Slave Controllers (ESCs). The Dewesoft HUB6 contains two internal ESCs (ET1100) connected in series and therefore appears as two EtherCAT slaves. The relationship between the internal ESC ports and the external HUB6 RJ45 connectors (1–6) is shown in the schematic below.



11.4.1.4 EtherCAT Log Analysis for Lost and Retransmitted Sample Source Identification

Besides being shown in **System Monitor** as retransmitted or lost samples, these events are also recorded in the DewesoftX log files. The relevant log messages are shown below:

Shell

```
001 #Developer: [2026-08-21 06:57:27.696]
```

```
Ethercat: {SOEM_DLL}
```

```
[NIC:4B6D4F23-8F90-4222-8C89-574FCBCEA4C3 Slave:-1 Severity:70] [INDEX_TRACE][packet_lost]
index: 20019 history(count=10): 20005,20006,20007,20018,20022,20023,20024,20025,20026,20027
```

```
001 #Developer: [2026-08-21 06:57:27.756]
```

```
Ethercat: {SOEM_DLL}
```

```
[NIC:4B6D4F23-8F90-4222-8C89-574FCBCEA4C3 Slave:-1 Severity:70] [INDEX_TRACE][packet_lost]
index: 20197 history(count=10): 20193,20194,20195,20196,20212,20213,20214,20215,20216,20217
```

If **[packet_lost]** messages occur together with increasing **FrameErr** or **PhyErr** values, as shown below, the problem is likely in the EtherCAT chain rather than the PC network card, because these errors are reported only by the EtherCAT devices.

Shell

```
LostLink=0,0,0,0 FrameErr=0,1,0,0 PhyErr=0,0,0,0
```

```
[packet_lost] index: 20197 history(count=10): 20193,20194,20195,20196,20212...
```

```
LostLink=0,0,0,0 FrameErr=0,2,0,0 PhyErr=0,0,0,0
```

```
[packet_lost] index: 20397 history(count=10): 20393,20394,20395,20396....
```

If **[packet_lost]** messages occur while **FrameErr** and **PhyErr** remain unchanged, as shown below, the problem is more likely related to the PC network card or its configuration, because the EtherCAT devices are not reporting any physical-layer errors. In this case, check whether the PC has another network card of a different type that meets the requirements defined in the installation section of this manual, and physically connect the EtherCAT chain to it to see whether the behavior improves. Also make sure no USB-to-RJ45 network adapter is used in the EtherCAT connection. If possible, test the complete EtherCAT chain with another PC equipped with a suitable network card.

Shell

```
[packet_lost] index: 19600 history(count=10):19596,19597,19598,19599,19615...
```

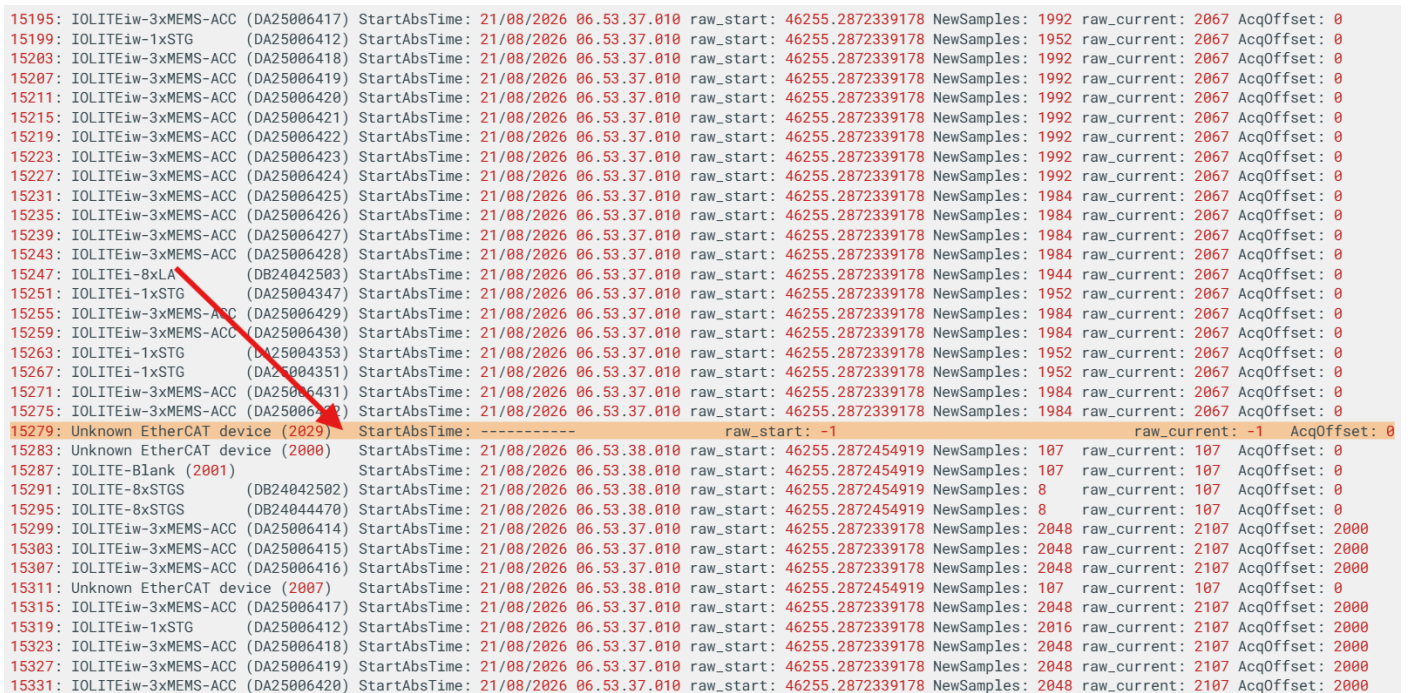
```
[packet_lost] index: 19735 history(count=10):,19732,19733,19734,19751,19752...
```

```
[packet_lost] index: 19882 history(count=10): 19867,19868,19869,19881,19886...
```

11.4.1.5 Log Analysis for Device Startup Failure

When EtherCAT devices are connected, DewesoftX acts as the EtherCAT master and manages communication with the devices in the chain. When a measurement is started, the acquisition devices must also start providing data. The DewesoftX log records this startup information for each device, which can be used to identify a device that has not started correctly.

Search the log for StartAbsTime to display these entries, as shown below.



```

15195: IOLITEiw-3xMEMS-ACC (DA25006417) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15199: IOLITEiw-1xSTG (DA25006412) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1952 raw_current: 2067 AcqOffset: 0
15203: IOLITEiw-3xMEMS-ACC (DA25006418) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15207: IOLITEiw-3xMEMS-ACC (DA25006419) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15211: IOLITEiw-3xMEMS-ACC (DA25006420) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15215: IOLITEiw-3xMEMS-ACC (DA25006421) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15219: IOLITEiw-3xMEMS-ACC (DA25006422) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15223: IOLITEiw-3xMEMS-ACC (DA25006423) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15227: IOLITEiw-3xMEMS-ACC (DA25006424) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1992 raw_current: 2067 AcqOffset: 0
15231: IOLITEiw-3xMEMS-ACC (DA25006425) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15235: IOLITEiw-3xMEMS-ACC (DA25006426) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15239: IOLITEiw-3xMEMS-ACC (DA25006427) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15243: IOLITEiw-3xMEMS-ACC (DA25006428) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15247: IOLITEi-8xLA (DB24042503) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1944 raw_current: 2067 AcqOffset: 0
15251: IOLITEi-1xSTG (DA25004347) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1952 raw_current: 2067 AcqOffset: 0
15255: IOLITEiw-3xMEMS-ACC (DA25006429) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15259: IOLITEiw-3xMEMS-ACC (DA25006430) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15263: IOLITEi-1xSTG (DA25004353) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1952 raw_current: 2067 AcqOffset: 0
15267: IOLITEi-1xSTG (DA25004351) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1952 raw_current: 2067 AcqOffset: 0
15271: IOLITEiw-3xMEMS-ACC (DA25006431) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15275: IOLITEiw-3xMEMS-ACC (DA25006432) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 1984 raw_current: 2067 AcqOffset: 0
15279: Unknown EtherCAT device (2029) StartAbsTime: ----- raw_start: -1 raw_current: -1 AcqOffset: 0
15283: Unknown EtherCAT device (2000) StartAbsTime: 21/08/2026 06.53.38.010 raw_start: 46255.2872454919 NewSamples: 107 raw_current: 107 AcqOffset: 0
15287: IOLITE-Blank (2001) StartAbsTime: 21/08/2026 06.53.38.010 raw_start: 46255.2872454919 NewSamples: 107 raw_current: 107 AcqOffset: 0
15291: IOLITE-8xSTGS (DB24042502) StartAbsTime: 21/08/2026 06.53.38.010 raw_start: 46255.2872454919 NewSamples: 8 raw_current: 107 AcqOffset: 0
15295: IOLITE-8xSTGS (DB24044470) StartAbsTime: 21/08/2026 06.53.38.010 raw_start: 46255.2872454919 NewSamples: 8 raw_current: 107 AcqOffset: 0
15299: IOLITEiw-3xMEMS-ACC (DA25006414) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2048 raw_current: 2107 AcqOffset: 2000
15303: IOLITEiw-3xMEMS-ACC (DA25006415) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2048 raw_current: 2107 AcqOffset: 2000
15307: IOLITEiw-3xMEMS-ACC (DA25006416) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2048 raw_current: 2107 AcqOffset: 2000
15311: Unknown EtherCAT device (2007) StartAbsTime: 21/08/2026 06.53.38.010 raw_start: 46255.2872454919 NewSamples: 107 raw_current: 107 AcqOffset: 0
15315: IOLITEiw-3xMEMS-ACC (DA25006417) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2048 raw_current: 2107 AcqOffset: 2000
15319: IOLITEiw-1xSTG (DA25006412) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2016 raw_current: 2107 AcqOffset: 2000
15323: IOLITEiw-3xMEMS-ACC (DA25006418) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2048 raw_current: 2107 AcqOffset: 2000
15327: IOLITEiw-3xMEMS-ACC (DA25006419) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2048 raw_current: 2107 AcqOffset: 2000
15331: IOLITEiw-3xMEMS-ACC (DA25006420) StartAbsTime: 21/08/2026 06.53.37.010 raw_start: 46255.2872339178 NewSamples: 2048 raw_current: 2107 AcqOffset: 2000

```

Compare the **StartAbsTime** values between the devices. A device showing:

StartAbsTime: -----, raw_start: -1, and raw_current: -1

while the other devices have valid values, they have not started acquiring data. If all other devices start and one device remains in this state, that device is a likely cause of the measurement not starting. Set its channels to **Unused** and start the measurement again to verify whether it is causing the problem.

11.4.1.6 Time Source Synchronization Lost

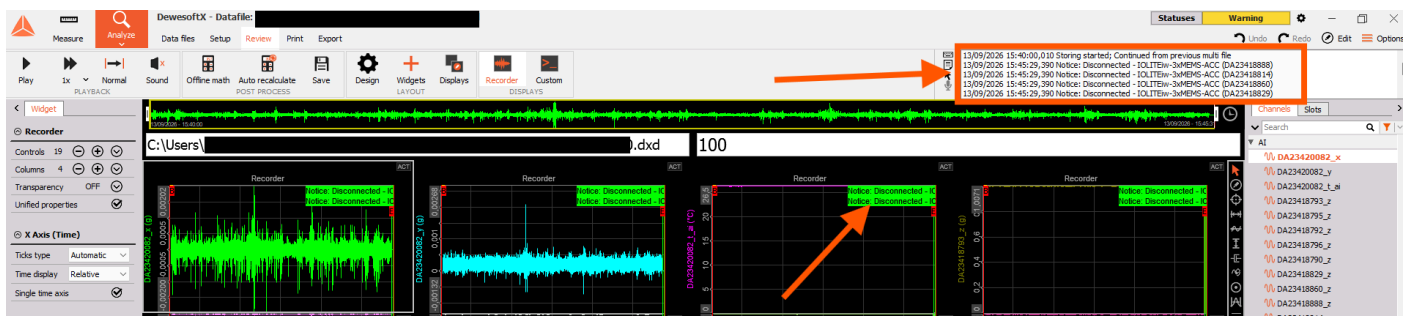
In some cases, DewesoftX may display a warning before entering measurement mode, such as "Start pulse not detected." If synchronization is configured through an NTP server or GPS via a Sync Junction, open Options/Settings and verify that the selected synchronization source is correctly configured and available. An unavailable NTP server or GPS synchronization source can prevent the measurement from starting. Temporarily change the synchronization source to Dewesoft DAQ Devices and try entering measurement mode again. If the measurement starts normally, the external synchronization source or its configuration is likely causing the issue.

11.4.1.7 Determine the cause for .lost() files

.lost files are usually created when Dewesoft detects **missing samples**, meaning expected EtherCAT data was not received at a specific point in time. Dewesoft inserts **0.0** as a placeholder to keep the data time-aligned, but the original measurement data for that sample is lost. Usually there are 2 files with the same name created when lost data occurs as shown below, where one contains also a suffix .lost() as shown below.

	_2026_09_13_154000.dxd	13/09/2026 15:45	DewesoftX Data File	7.857 KB
	_2026_09_13_154000.lost0.dxd	13/09/2026 15:50	DewesoftX Data File	6.375 KB

In this case, inspect both files and look for events such as **“Disconnected”** or **“Missing samples”**, as shown below. A **“Disconnected”** message usually indicates a physical interruption, such as a disconnected device or cable, although the network card can also cause this behavior. A **“Missing samples”** message more often points to a faulty device or an intermittent EtherCAT connection, where the connection is only marginally established. This type of issue is less common. It is also important to observe how frequently these messages occur.



11.4.1.8 Watchdog plugin restart_log.log analysis

The **Watchdog plugin** monitors whether a DewesoftX measurement is still running and can automatically restart DewesoftX, reload the last setup, and start the measurement again if an unexpected stop is detected, as described in the [DewesoftX Watchdog Plugin documentation](#). Each time a watchdog restart is triggered, the reason for the restart is logged in **C:\Users\Public\Documents\Dewesoft\System\Logs\restart_log.log**, as shown below.

```
2026-09-03 09:22:33,042 - Restart_Logger - ERROR - Restart due to Dewesoft time diff error
2026-09-09 07:46:19,985 - Restart_Logger - ERROR - Restart due to Dewesoft not available raise error
2026-09-09 07:48:39,217 - Restart_Logger - ERROR - Restart due to dxd task error
2026-09-16 20:25:33,654 - Restart_Logger - ERROR - Restart due to watchdog channel raise error
```

If entries are present in **restart_log.log**, the Watchdog has restarted the measurement. To determine what triggered the restart, compare the logged message with the descriptions in the table below.

Log	Description
Restart due to Dewesoft time diff error	Triggered when the difference between the DewesoftX measurement time and the system time exceeds the configured limit of 3 hours .
Restart due to Dewesoft not available raise error	Triggered when the Watchdog background process can no longer access DewesoftX as expected.
Restart due to dxd task error	Triggered by the Data file task when time-based multifile storing is enabled. The Watchdog checks whether a new .dxd file is created within each configured time period. If the expected file is not created after the configured number of checks, the restart procedure is started.
Restart due to watchdog channel raise error	Triggered by the Channel task , which creates a watchdog channel in DewesoftX whose value continuously changes while the measurement is running. If the channel value does not change for the configured number of checks, the measurement is considered frozen and the restart procedure is started.

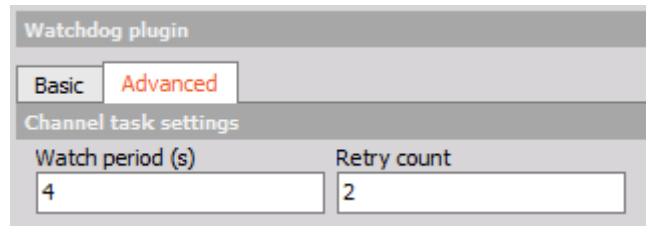
11.4.1.9 Watchdog plugin watchdog_log.log analysis

When additional information about a restart is required, inspect **watchdog_log.log**. This file contains a more detailed sequence of the Watchdog activity leading up to the restart, including individual task checks, failed checks and retries, DewesoftX availability, watchdog channel status, data-file monitoring, time checks, and the restart actions that were executed. It can therefore help determine what happened immediately before the restart and which check first started to fail. Some of the most relevant log messages to watch for are shown in the table below.

Log message	Description
Failed to start measurement: ...	DewesoftX was opened, but the Watchdog could not start the measurement.
Failed to restart DEWESoft.exe.	The automatic DewesoftX restart procedure failed.
DEWESoft currently not running.	The Watchdog detected that DewesoftX is not running. Repeated detections can trigger a restart.
Dewesoft is not running can't access COM object.	DewesoftX is not running, so the Watchdog cannot access its software interface.
Checking data in channel ...	The Watchdog is checking whether the Watchdog channel value is changing.
... Prev Value: ...	Shows the Watchdog channel value from the previous check.
... Value: ..., Index: ...	Shows the current Watchdog channel value.
Watchdog decrease retry counter	The Watchdog channel value did not change or the channel check failed.
No data available in channel ...	The Watchdog channel exists, but no data is available from it.
Watchdog channel not available.	The configured Watchdog channel could not be found in DewesoftX.
DXD file write check. Retrying value .../...	Shows the remaining checks for the data-file monitoring task before a restart is triggered.
Same file is running.	A new data file was not created within the expected time period. Repeated occurrences can trigger a restart.
Storing is not running correctly.	DewesoftX storing is stopped or paused.
Storing is not running or provided store folder not correct.	No DewesoftX data files were found in the configured data folder.
Error in dxd task: ...	An error occurred while checking DewesoftX data-file storing.
Diff in systems and measurement time: ...	Shows the calculated difference between the DewesoftX measurement time and the system time.
Restart system, there is problem with time.	The difference between the DewesoftX measurement time and system time exceeded the configured 3-hour limit.
Restarting everything	The Watchdog has started the DewesoftX restart procedure.

11.4.1.10 Fine-tuning watchdog channel task

The **Channel task** is the primary Watchdog restart criterion and should be enabled on every long-term monitoring system. The Watchdog plugin creates a channel in DewesoftX whose value continuously changes while the measurement is operating normally. **Watch period** defines how often this channel is checked, while **Retry count** defines how many consecutive checks may detect an unchanged value before a restart is triggered. Both settings are shown below. Together, they determine how long the measurement may remain unresponsive before the Watchdog restarts DewesoftX.



The screenshot shows the 'Watchdog plugin' settings window. It has two tabs: 'Basic' and 'Advanced', with 'Advanced' selected. Under the 'Channel task settings' section, there are two input fields: 'Watch period (s)' with the value '4' and 'Retry count' with the value '2'.

These settings should be adjusted according to the performance of the PC and the complexity of the measurement system. Systems with lower-performance processors, high CPU load, many devices, or many different device types may occasionally experience short delays or temporary freezes that recover on their own. These should not immediately trigger a restart. If the Watchdog settings are too strict, such temporary behavior may be interpreted as a fault. For PC performance, check the processor type and monitor CPU utilization. If CPU usage regularly exceeds approximately **70%**, more tolerance should generally be allowed. System complexity should be considered separately, as even a capable PC may require more margin when handling a large or diverse EtherCAT system. Configure the Watchdog to allow approximately **one minute** of unchanged channel data before restarting DewesoftX. Set **Watch period to 15 s** and **Retry count to 4**. Increase these values only if the system requires additional tolerance for temporary delays or short freezes. The goal is to balance fast recovery with avoiding unnecessary restarts. Short temporary freezes should be tolerated, while faults that keep the system frozen for longer should trigger a restart and require further investigation.

11.4.2 Physical hardware diagnostics

11.4.2.1 Tools and equipment

Before performing on-site troubleshooting, ensure the following tools and equipment are available:

- Several **B2B adapters**
- **Multimeter**
- Fully charged laptop with **DewesoftX installed**, equipped with an RJ45 port or a known-good Ethernet adapter
- several **new RJ45/EtherCAT cable**, preferably 2–3 m long
- **Fluke meter**
- **Keyboard and mouse**
- **Monitor**
- Relevant system and device **documentation**
- **Allen key set** for opening device covers or preferably a **torque screwdriver**
- **Bright flashlight**, preferably a **headlamp**
- Tools required for **dismounting devices**, such as appropriate wrenches
- **Power injector** and, if available, a known-good spare device
- **Screwdriver kit, utility knife, side cutters and several zip ties**
- **Portable battery/power bank with USB output**
- **USB-to-jack adapter**
- **In-line power injector with jack power IN connector**
- **USB drive**

11.4.2.2 Documentation of the site

During on-site troubleshooting, document the system and all observations as thoroughly as possible. Take photographs of the cabinets from several angles so that all device connections and cable routing are clearly visible. Document the installation location, the contact surface between the device and its mounting point, and the way cables are installed or routed, including conduits and cable supports. **When photographing devices, make sure the device serial number is clearly visible.** Record all relevant information collected during troubleshooting, including measured device voltages, visible defects, unusual behavior, and the results of isolation tests performed with a personal laptop running DewesoftX.



This documentation should be included when requesting operational support, as it provides important context and helps shorten the diagnostic process.

11.4.2.3 Required DewesoftX Setup

Before making any hardware changes, open and use the **debug setup created during the Software and System Diagnostics**. If a new setup is used, enable **System Monitor**, set all channels to **Used** and **Store**, and display **Retransmitted Samples**, **Lost Samples**, and device voltage for each device using Digital Displays. Record the current system state and use it as the baseline for comparison after each rescan, connection change, bypass, or component replacement.

11.4.2.4 Cabinet power and hardware visual verification

Visually inspect the PC, power supplies, UPS, EtherCAT HUBs, network connections, and other relevant equipment. Verify that all devices expected to be powered are operating and that no warning or fault indicators are present. If a device inside the cabinet is not powered, verify the corresponding fuse and measure the relevant supply voltage. For **HUB6 devices**, check the e-fuse status indicator. Under normal operation, the indicator is **blue**. A **red** indicator means that the e-fuse has been triggered as shown below, which indicates a short in the corresponding chain. The power-cycle of HUB6 is necessary to reset the e-fuse. Confirm that no USB-to-RJ45 adapter or other unexpected network interface is used in the EtherCAT connection. While the measurement is running, gently move the RJ45 cables at each EtherCAT HUB branch, at the cabinet wall RJ45 connections, and along the connection between the PC, HUBs, and power injectors. Monitor DewesoftX during this test. Cable movement must not cause measurement interruptions or retransmitted samples. If an interruption occurs, inspect the affected cable, connector, or connection point further. Document the cabinet condition and take photographs showing the complete cabinet, device connections, and cable routing.



11.4.2.5 Cabinet EtherCAT interface and chain verification

If multiple EtherCAT chains are connected to the HUB, disconnect the known-working chains **one at a time** and rescan the system after each change. Check whether the behavior of the suspected chain changes as each working chain is removed. If a specific chain is suspected, connect a known-good spare device using a known-good cable at the cabinet-side connection/B2B point of that chain and rescan the system. If the device is not detected, repeat the test directly from the corresponding HUB port. This helps determine whether the fault is in the cabinet wiring or further along the field installation. Connect a known-working chain to the HUB port currently used by the faulty chain and connect the faulty chain to another known-working port. If the behavior follows the EtherCAT chain, continue troubleshooting the field installation. If the issue remains with the HUB port, investigate the HUB or cabinet-side connection. If the issue is related to retransmitted samples, move the HUB IN connection to another Ethernet port on the PC and repeat the measurement. If the issue is resolved, suspect the original PC network interface. If the issue remains, connect the HUB to a separate laptop and test again. If the same behavior persists, the HUB is the likely fault source. After each connection change, rescan the EtherCAT devices and verify the result in DewesoftX.

11.4.2.6 EtherCAT Chain Fault Localization

If the EtherCAT chain is missing from a specific point onward, start at the **last working device**. Disconnect the cable from its **OUT** port to isolate the downstream section. Test this outgoing cable with a **Fluke cable tester**, then reconnect it and check whether the next device shows the expected indicator activity. If necessary, measure the supply voltage on this cable. If the outgoing cable is verified as good, connect a **known-good spare device** directly to the cable coming from the **OUT port of the last working device** and rescan the system. If the spare device is detected, continue troubleshooting the next device or downstream section. If it is not detected, the fault is likely in the outgoing cable, connection, or power path. Continue this process device by device until the faulty cable, device, or chain section is identified. After every disconnection, bypass, replacement, or reconnection, rescan the EtherCAT system and check whether additional downstream devices reappear.

11.4.2.7 Chain walkdown and device inspection

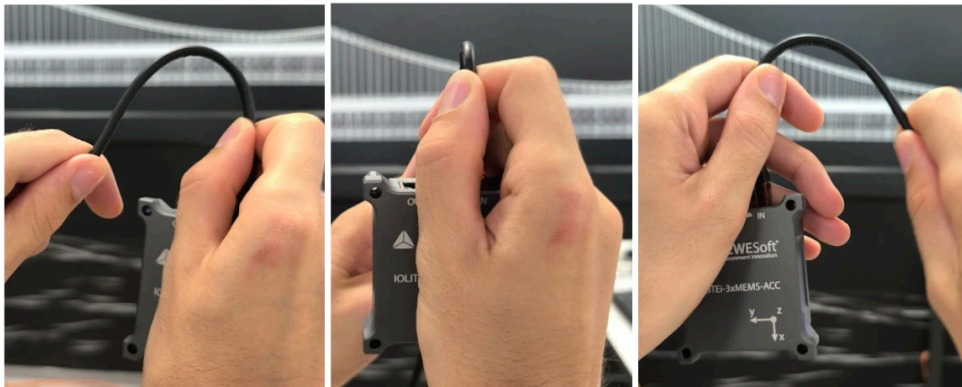
Follow the EtherCAT cable path toward the suspected location using the list of missing devices identified during software diagnostics. If the entire chain is missing, start at the first device in the chain. If only part of the chain is missing, go to the first device that is no longer detected. While moving through the chain, visually inspect the accessible cable route for mechanical damage, unsupported sections, excessive bending, damaged conduits, or other abnormalities, and observe the device status indicators for unexpected changes. At each device, verify the serial number, inspect the housing, cable glands, cables, and connectors, and confirm that the EtherCAT ports are connected in the correct direction, with the **OUT** port of one device connected to the **IN** port of the next device. Take photographs of the complete installation and close-up images of the RJ45 connectors from several angles. Check for dirt, moisture, corrosion, burn marks, or mechanical damage before moving to the next node. For **IOLITEicw devices**, observe the **L/A IN**, **L/A OUT**, and **RUN** indicators and compare the RUN state with the table below.

RUN indicator	State	Description
Off	INIT	No EtherCAT master is active.
Fast blinking	PRE-OP	Device is in Pre-Operational state, typically during setup loading or configuration.
Single short blink	SAFE-OP	The device is in Safe-Operational state, typically during channel configuration.
Steady on	OP	The device is Operational and measurement is running.



11.4.2.8 EtherCAT cable and connector verification

With the device fully connected and the measurement running, start by twisting each EtherCAT cable **at the point where it exits the cable gland** by at least **90° in both directions**, as shown below, while monitoring DewesoftX for communication interruptions, errors, or relevant log entries. EtherCAT cables should tolerate this movement without causing communication interruptions. If an interruption or error occurs, the cable or connection should be considered faulty and further inspected or replaced. If no issue is observed, remove the cable gland while keeping the cable connected and gently move or shake the cable at the connector while continuing to monitor DewesoftX. Do not disconnect or disassemble the connector during this test. Any issue triggered by cable movement indicates a possible fault in the cable, the cable-side RJ45 connector, or the device-side RJ45 connector. Next, disconnect the suspected cables and test them with a **Fluke cable tester** for interruptions, connection faults, and shield continuity. The cable shielding must comply with the installation requirements in the manual, and the tester should confirm continuity of the shield. Note also the cable length reported by the Fluke tester. **Always test the cables connected before and after a suspected device, even if the device itself appears faulty.** Document the results and take screenshots or photographs of the Fluke cable tester results.



The EtherCAT cable voltage can be tested between pin 4 and 8 as shown below. At least 24V must be measured on open end of rj45 connector.

RJ-45			
	Nr. de pin	Identif.	Color
	1	Tx+	
	2	Tx -	
	3	Rx+	
	4	PoE -	
	5	PoE -	
	6	Rx -	
	7	PoE +	
	8	PoE +	

11.4.2.9 Device inspection and isolation

After verifying the surrounding cables, disconnect the suspected device. For **IOLITEicw devices**, the **top lid** may be opened for internal inspection. Check the visible internal area for signs of burning, overheating, corrosion, or water ingress, and photograph the connector area before closing the lid. When resealing the device, ensure the gasket is correctly positioned in its groove and tighten the lid screws to **1.6 Nm**. Test the device in isolation using a **known-good cable**, a power bank, an inline power injector, a USB-to-jack adapter, and a separate PC running DewesoftX. If the device operates correctly in isolation, the original cable, connector, or installation should be considered the likely source of the issue. If the issue remains in isolation with known-good equipment, the device is the likely fault source. Document all results, including photographs of the device and installation, close-up photographs of the relevant RJ45 connectors, and any observed DewesoftX errors or behavior. Only after the fault has been confirmed should the affected component be replaced.

11.4.2.10 Component replacement and verification

Replace a faulty device with a spare device, or use a **B2B connector** if the distance between the previous and next device is less than 100 m. After replacement, repeat the relevant software diagnostic procedure to confirm that the issue has been resolved or that system behavior has improved.

11.4.2.11 Observe performance under dynamic conditions

When possible, observe the measurement during **dynamic events** that may affect the installation, such as trains passing over a railway bridge, heavy trucks crossing a bridge, or other significant structural loads or vibrations. Monitor the system behavior during these events and note whether communication errors, measurement interruptions, or other issues occur under these conditions. Record the event and any corresponding system behavior as part of the troubleshooting documentation.

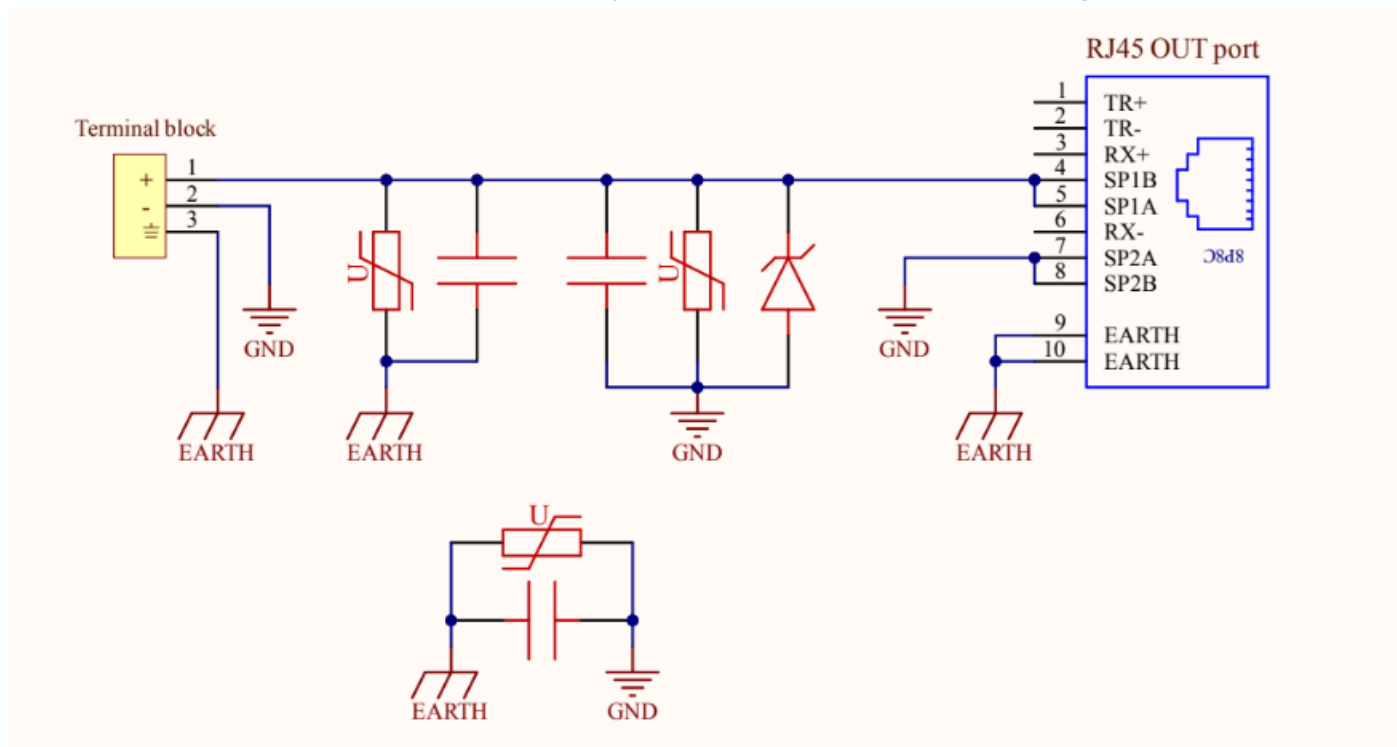
11.4.2.12 Final System Verification

After completing the on-site troubleshooting, perform a **full power cycle of the entire system, including the cabinet**, to reset the EtherCAT diagnostic counters on all devices and fully reinitialize the system. After restart, rescan all EtherCAT devices and verify that all expected devices are detected. Document the final system state. Record a short data file with **all measurement channels and all System Monitor channels enabled and stored**, and save a screenshot or photograph showing all devices detected after the final rescan. The final documentation must include the outcome of every performed diagnostic procedure, all relevant measurements, photographs, tester results, and observed system behavior. Any replaced component or temporary modification must be clearly documented. If a **B2B connector** or spare device was installed, record its exact location in the EtherCAT chain.

12. Appendix A: IOLITE-POWER-INJECTOR internal GND / EARTH schematic

The figure below shows a simplified internal schematic of the power injector in order to provide insight in case different installation configurations need to be designed by the user.

Note: EARTH in the schematic below is directly connected to the external housing of the device.



13. Appendix B: Installation instructions for IOLITEw devices (legacy)

13.1 Instructions for connecting the EtherCAT communication cables to the device - quick method

The cover of the sensor needs to be removed in order to make the RJ45 ports accessible. The cable glands and bend relieves need to be tightened onto the sensor and finally the cover is put back in place.



Important

Only the cables approved by Dewesoft should be used in order to ensure the IP67 rating of the cable glands. If different cables are used, the user should perform a test to ensure that the cable glands will properly grip the cable and achieve the IP67 rating. Clamping range: 6 .. 9 mm

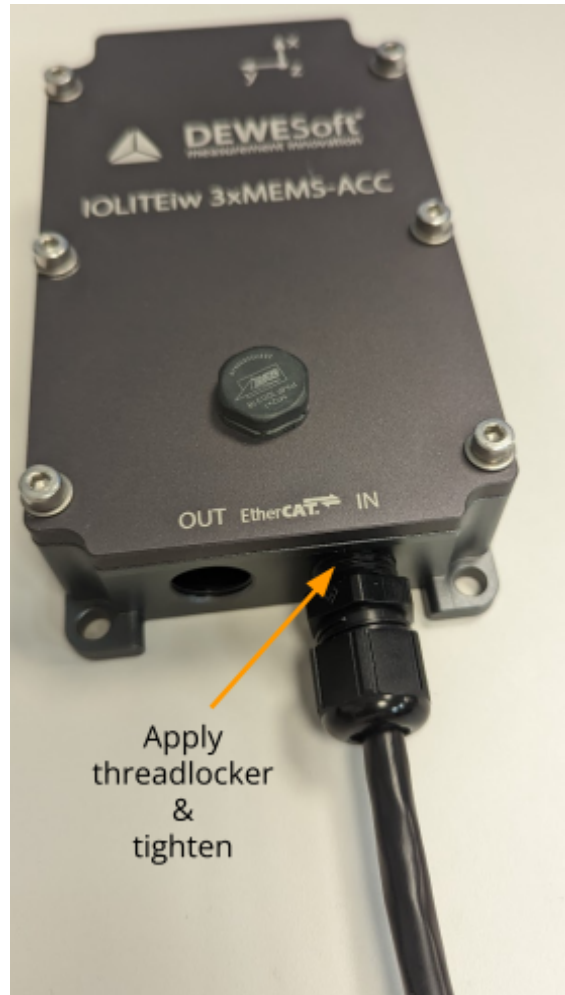
If the cables already come with the M16 cable glands preinstalled (like seen in the picture below), it is possible to connect the cables to the device without opening the top cover. In that case the cable gland is already pre-mounted on the cable, therefore the device does not have the cable gland installed yet.



1. Slide the RJ45 connector into the threaded hole of the device. Make sure that the RJ45 clip is facing downwards as seen in the pictures below.



2. Insert the RJ45 into the connector inside the device. It cannot be seen, but with little practice the insertion should be easily achievable. Make sure to hear a click of the RJ45 clip.
3. Screw the mounting thread of the cable gland into the device and tighten it with a 19 mm wrench. Since in this method we cannot install the counter nut on the inside of the housing, it is advisable to apply some threadlocker on the mounting thread of the cable gland.



4. Before tightening of the squeeze nut make sure to push the cable firmly inside the device. Then tighten the squeezing nut of the cable gland to ensure the cable is tightly gripped and the connection is waterproof.



5. Repeat the same for the second cable.

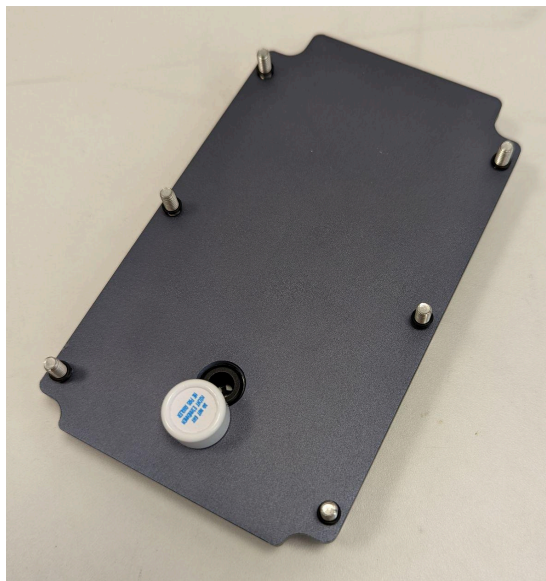
The above procedure is especially useful and fast for planned long-term installations. In case the cable needs to be disconnected, the top cover of the device needs to be opened. The next section describes the longer procedure of connecting the cables by opening the top cover of the device.

13.2 Step-by-step instructions for connecting the EtherCAT communication cables to the device

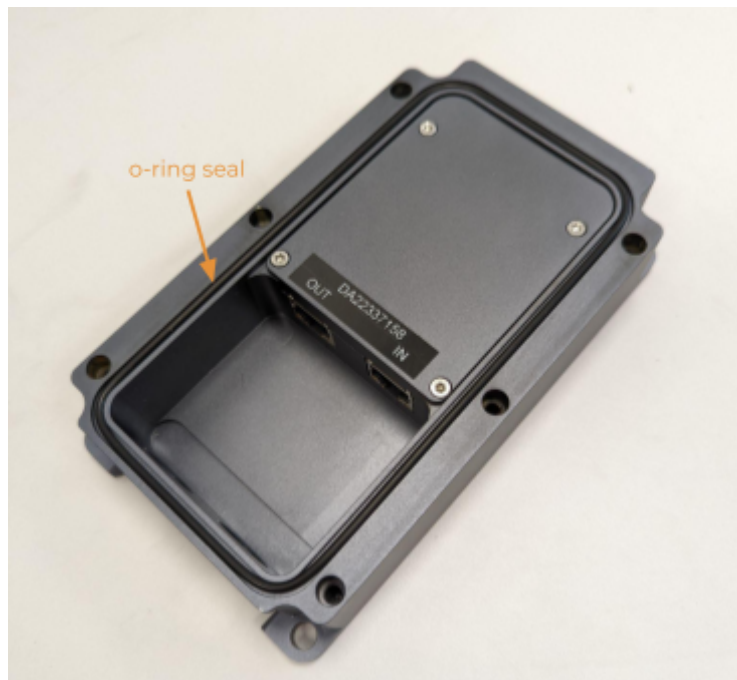
1. The first step is to unscrew the 6 cylindrical head screws (tool needed: Allen/imbus key 3 mm), denoted with orange arrows. The screws are only lightly attached with the rubber washers not yet squeezed. Untightening the screws will detach the cover plate.



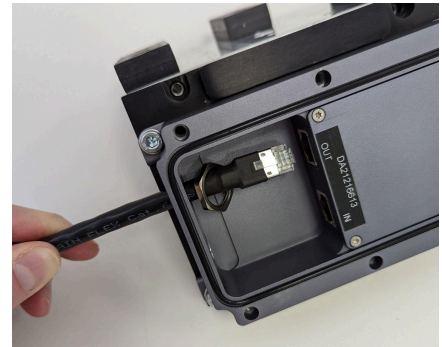
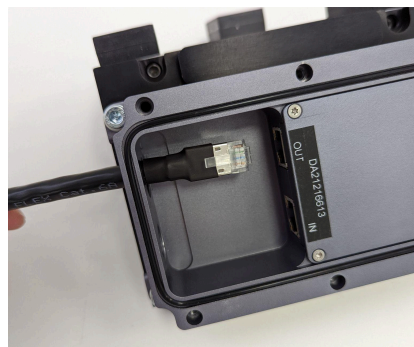
2. There are retaining rings on the screws (see the figure below), so that the screws don't fall out of the holes. However, care still needs to be taken in order not to detach the retaining rings as well. Silica gel capsule is glued to the cover.



3. After removing the cover plate, care needs to be taken for the o-ring seal not to fall out of the groove. If it does fall out, it needs to be put back in place before placing the cover plate back again at the end of the procedure.

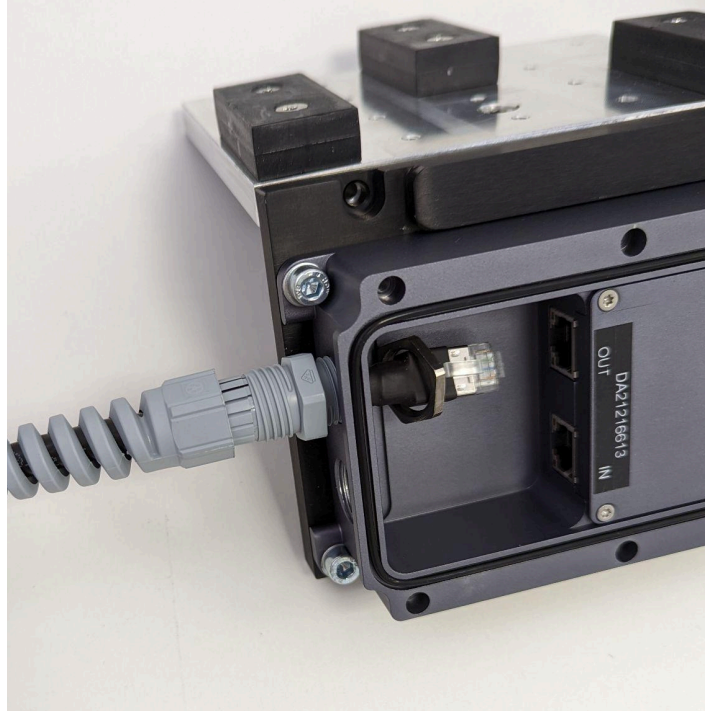


4. Cable glands might be already placed on the device or might be supplied separately. If cable glands are mounted on the device, they need to be removed to follow the procedure below.
5. Carefully place the RJ45 connector through the threaded hole and through the counter nut as shown below.

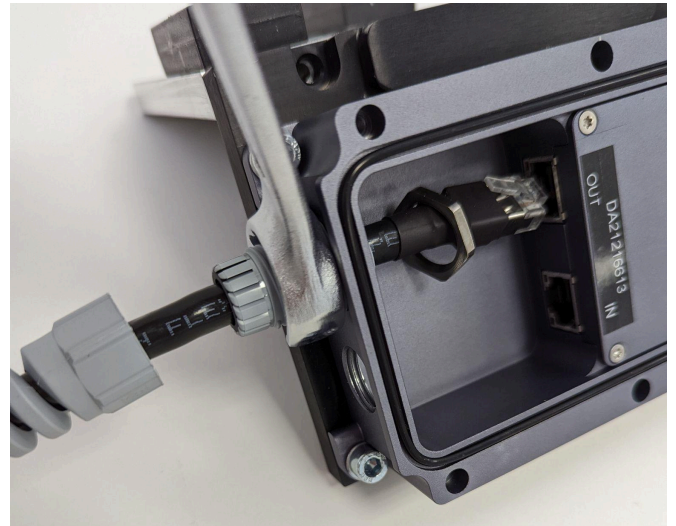
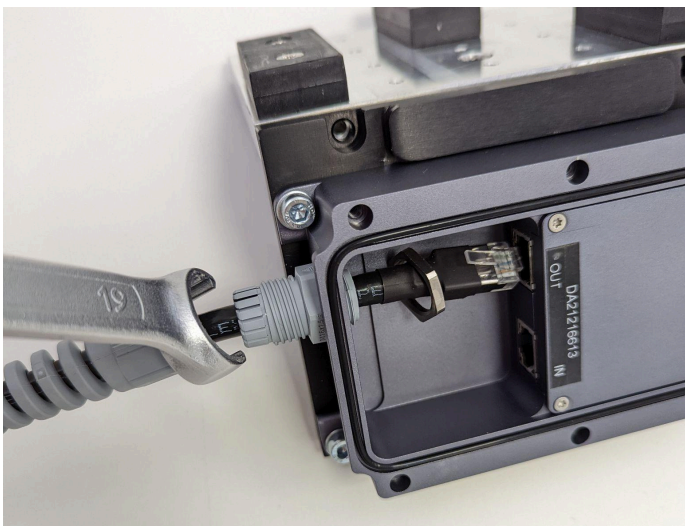


6. The cable gland should be already placed on the cable behind the RJ45 connector. It consists of two parts: the seal part and the tightening part which could also be a bend relief. For easier installation you can separate them by unscrewing the tightening part / bend relief from the seal part.

Screw the gland into the thread hole of the sensor as shown below.



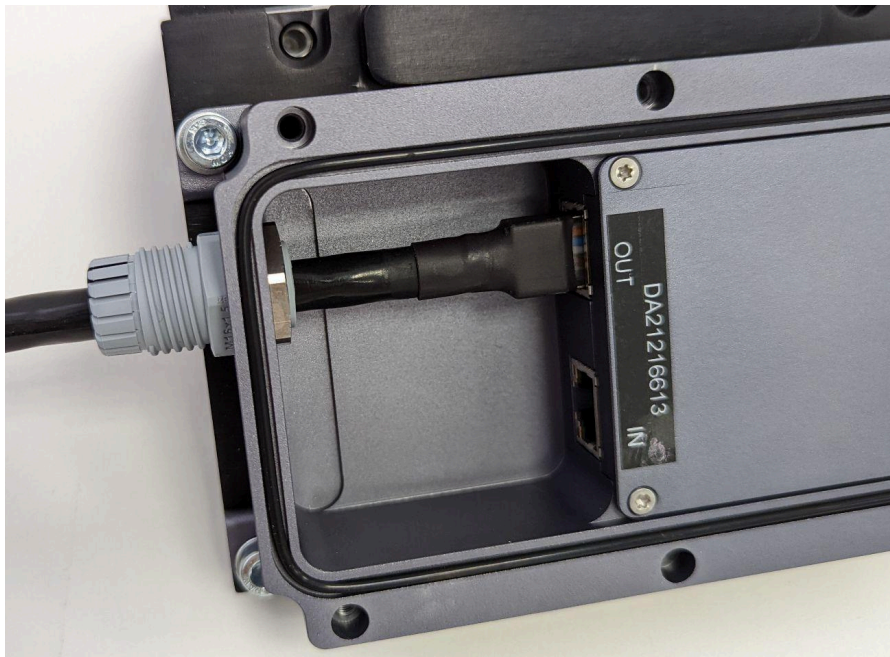
7. Tighten the gland by gripping the nut with a 19 mm wrench. For easier manipulation a specially cut 19 mm wrench should be used.



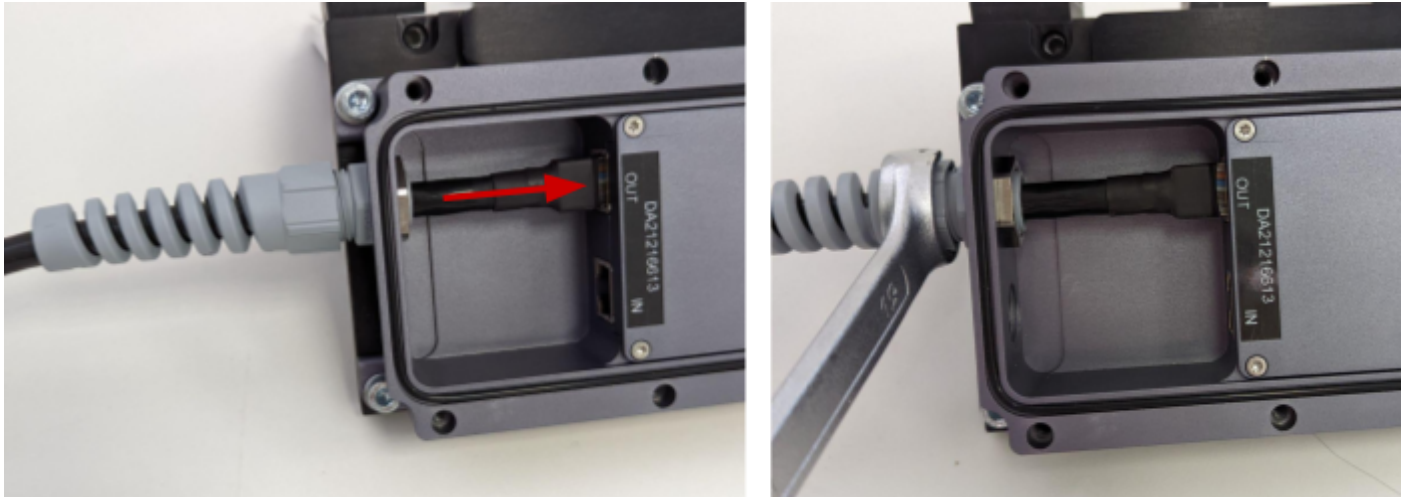
8. Tighten the counter nut on the inside of the device, again using the special 19 mm wrench.



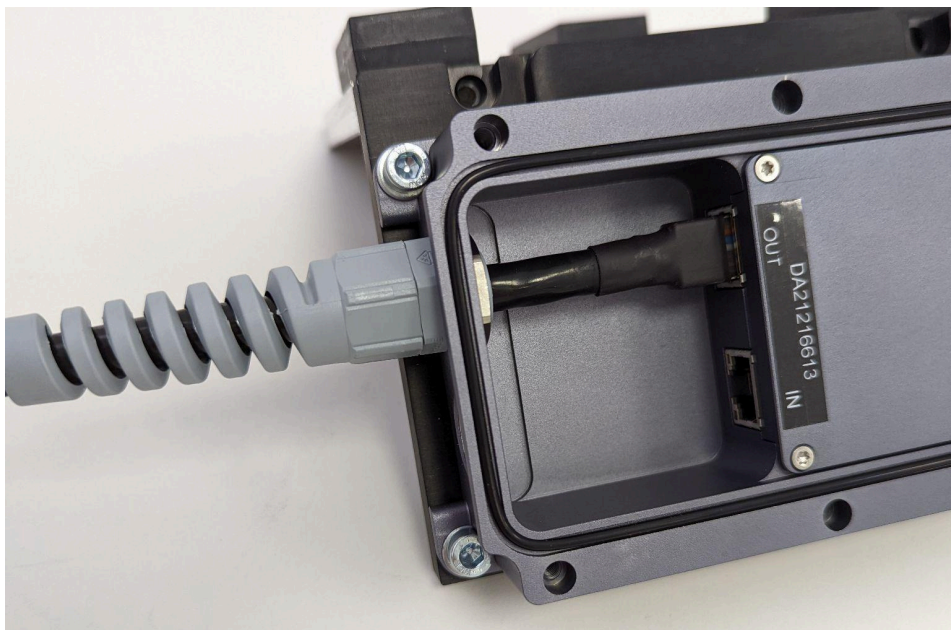
9. Plug the RJ45 connector into the RJ45 port of the sensor.



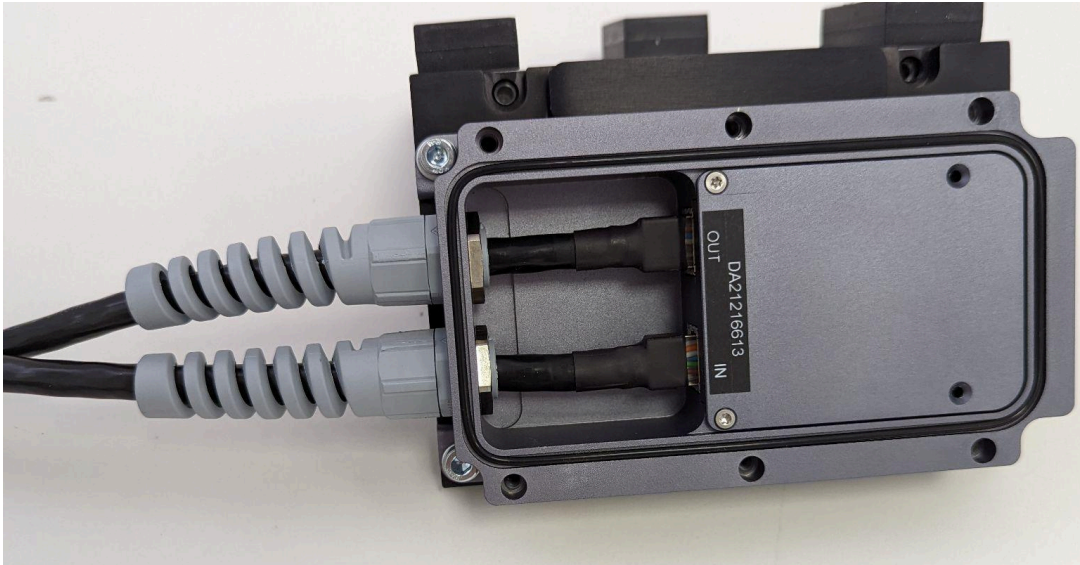
- 10.** Screw the bend relief on the cable gland and make sure to fully insert the cable into the sensor as shown with the red arrow on the figure below. Before tightening the gland, the connector must be fully pushed inside the port! Tighten the bend relief with the special 19 mm wrench.



- 11.** A tightened cable gland is shown below.



12. If the sensor needs to have both cables connected, repeat the same procedure to mount the other cable as well.



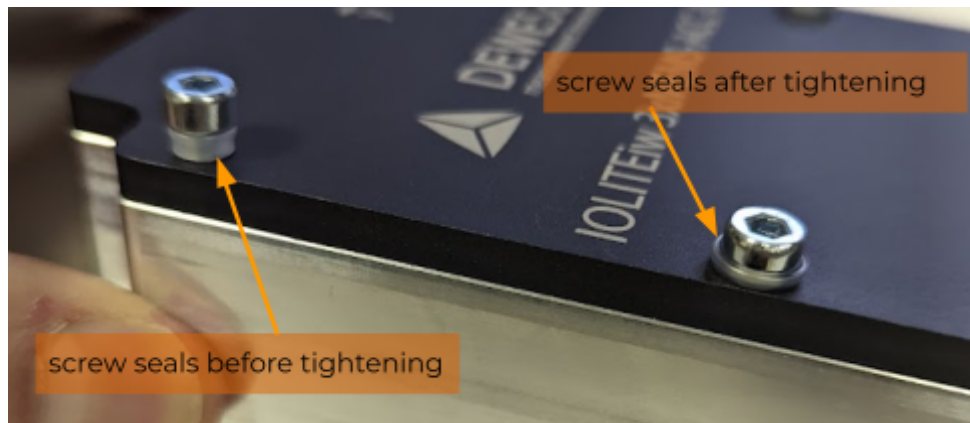
Note: An alternative procedure is possible in which the cable gland is only untightened (to the maximum clamping range) but not removed. In that case the cable can be inserted through the cable gland and the connector is crimped after the cable is already passing through the device housing.

- 13.** Attach the cover plate back onto the sensor by applying the threadlocking compound to the screws and tightening them with a 3 mm Allen/imbus key.

Important: Tightening torque for the M4 screws: **1.5 Nm** (higher torque might damage the thread in the sensor housing while lower torque might not press the main O-ring seal enough)

Note: there are also individual seals mounted around the M4 screws which get squeezed into a washer-shape when the 1.5 Nm is applied. Those seals are used for galvanically isolating the stainless steel screws from the aluminum housing.

Alternatively the seals can be applied directly to the screw head (green coating).



Tip: if for whatever reason you want to unplug the RJ45 connector from the RJ45 port, you can easily release it by using the 3 mm imbus key wrench as seen on the figures below.



- 14.** The cables must be firmly attached to the measured structure in close proximity of the device in order to prevent any loads on the cables pulling them in either direction with respect to the cable glands.
- 15.** The cables must also be routed in downward direction immediately after exiting the device before being turned upwards if necessary. This is to prevent water flowing along the cable into the cable glands.



13.3 Attaching the device to the measured object

The device needs to be firmly attached to the measured object in order to correctly detect its vibrations. Four 6 mm diameter holes are available for mounting the device with M5 Allen/imbus screws. All four holes should be used. The length of the screws will depend on the mounting surface, but they should be at least 12 mm long. Material of the screws should be stainless steel A4 (316 / 1.4401).



13.4 Tools needed

- 1.) 3 mm Allen/imbus key wrench
- 2.) 4mm Allen/imbus key wrench



- 3.) 19 mm wrench with an open circular end



4.) Threadlocking compound, example: Loctite 243

14. About this document

This is the installation manual for IOLITEiw-3xMEMS-ACC device family.

14.1 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

Gives you an example of a specific subject.

15. 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>.

15.1 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.

15.2 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)

15.3 Service/repair

The team of Dewesoft also performs any kinds 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>.

15.4 Restricted Rights

Use Slovenian law for duplication or disclosure. Dewesoft d.o.o. Gabrsko 11a, 1420 Trbovlje, Slovenia / Europe.

15.5 Printing History

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15.6 Copyright

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16. Safety instructions

Your safety is our primary concern! Please be safe!

16.1 Safety symbols in the 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 possibly cause damage to equipment or permanent loss of data.

16.2 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.

16.2.1 Environmental Considerations

Information about the environmental impact of the product.

16.2.2 Product End-of-Life Handling

Observe the following guidelines when recycling a Dewesoft system:

16.2.3 System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at its end of life! Please recycle this product in an appropriate way to avoid unnecessary pollution of the environment and to keep natural resources.



This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further information about recycling on the Dewesoft web site www.dewesoft.com

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment and is outside the scope of the 2002/95/EC RoHS Directive. However, we take care of our environment and the product is lead-free.

16.2.4 General safety and hazard warnings for all Dewesoft systems

Safety of the operator and the unit depend 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 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 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 on 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 category 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 equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorized 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 it is possible that the safety protection features built into this product 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 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 obviously 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 caused by disregarding this manual. For consequential damages, NO liability will be assumed!
- Warranty void if damage to property or persons caused by improper use or disregarding the safety instructions.
- Unauthorized 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 in order 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 metal bare 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 application under certain conditions is allowed with therefore 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 in the immediate vicinity of high magnetic or electromagnetic fields, transmitting antennas or high-frequency generators, for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned with the specification of the system only. Fire hazard in case of overload!

- Lithium ion batteries are classified as not hazardous when used according to the recommendations of the manufacturer described in Battery Safety Data Sheet, which is available for download from [this link](#).
- Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise 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 be observed by 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 in 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 in proper condition. In order to maintain this condition and guarantee safety 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 in 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.

16.3 Documentation version history

Version	Date	Notes
V26-1	2026-07-15	Initial version