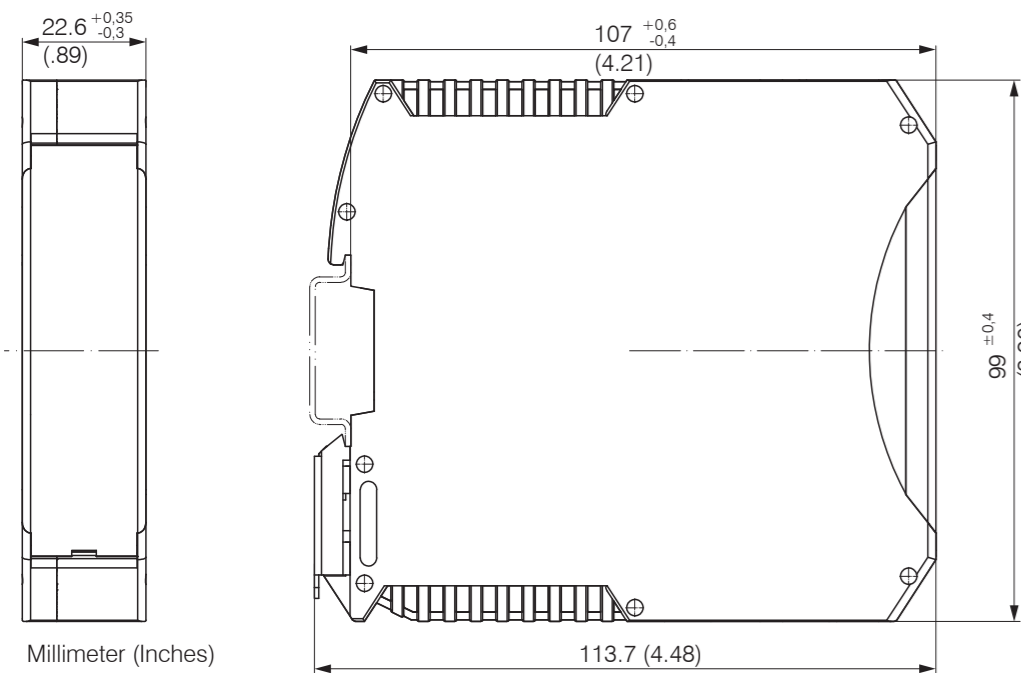
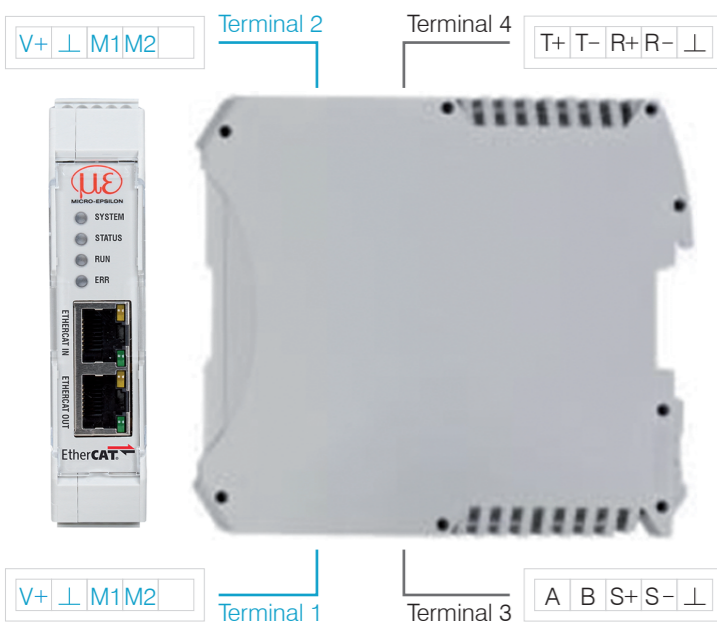


Installation and Assembly

Ensure careful handling during installation and operation.



Pin assignment

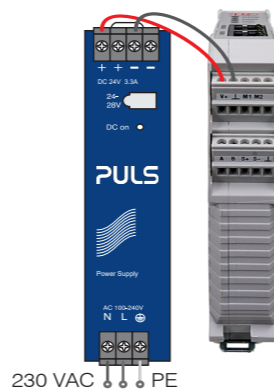


Supply Voltage

The supply voltage is daisy-chained from the supply port (terminal 1) to the sensor port (terminal 2), i.e., the supply voltage must match that of the sensor. Positive voltage must be between 9 V and 36 V.

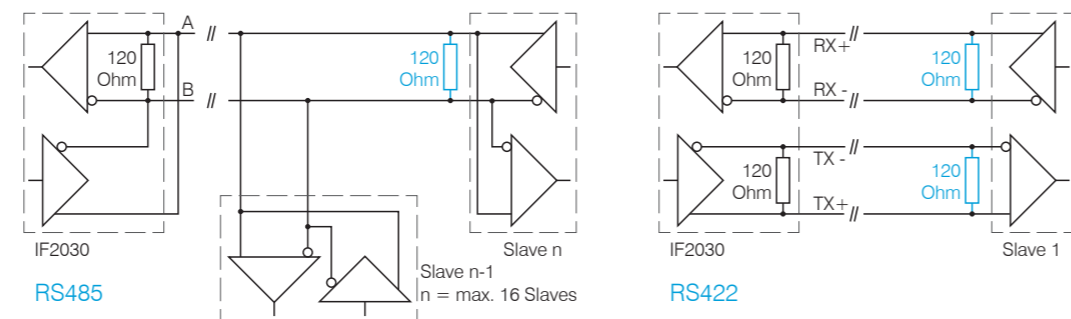
➔ Connect the inputs V+ and ⊥ to terminal 1 with a voltage supply. Maximum cable length 3 m.

MICRO-EPSILON recommends using an optional available power supply unit PS2020.



Cable Termination at Interface

Ensure correct cable termination for an RS485 bus or RS422 bus! IF2035-EtherCAT works as a master for both interfaces; internally, a 120 ohm terminating resistor has already been permanently incorporated. The IF2035-EtherCAT should be at the bus start.



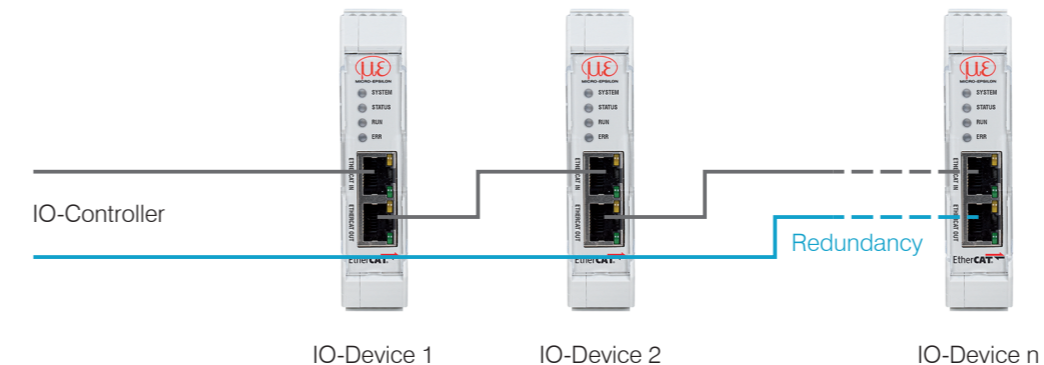
Connection Options

Sensor/Controller	Cable	RS485	RS422	Cable	Sensor/Controller
ACC5703	PCx/8-M12	[Image of IF2035-EtherCAT]	[Image of IF2035-EtherCAT]	CAB-M9-5P-St-ge; xm-PVC-RS422	ACS7000
DT6120	SCAC3/6			SC2471-x/RS422/OE	IFC24x1, IFC242x
INC5701	PCx/8-M12			Direct or PCF1420-x/I/U	ILD1x20
				PC1700-x/OE	ILD1750
		PC1900-x/OE	ILD1900		
		PC2300-x/OE	ILD2300		
		PC2250-x	ILR2250		
		CAB-M12-8P-St-ge-x	MFA-xx		
		PC/SC2520-x	ODC2520		
MSC7602	MSC7602 Connector kit				

The maximum cable length between IF2035-EtherCAT and sensor/controller is 10 m. With the ACC5703 and INC5701 sensors, sensor supply is only possible via the IF2035-EtherCAT because of the PCx/8-M12 cable.

Standard Cabling

During cabling, channel 0 of the IO controller is connected to the input port of the first IO device (slave device). The output port of the first slave device is connected to the input port of the next slave device, etc. The output port of the last slave device and channel 1 of the master device remain unused.



You achieve greater failsafe network performance if you implement an additional redundant connection (MRP = Media Redundancy Protocol) between the output port of the last slave device and channel 1 of the IO controller. IF2035-EtherCAT can participate in an MRP ring as a client; however, it cannot manage the ring. To achieve ring functionality, all participants must be configured as ring participants.

Intended Use

The IF2035-EtherCAT interface module is designed for use in industrial and laboratory applications. It is used to convert the internal MICRO-EPSILON sensor protocol (RS485, RS422) to EtherCAT.

The interface module must only be operated within the limits specified in the technical data. The interface module must be used in such a way that no persons are endangered or machines and other material goods are damaged in the event of malfunction or total failure of the sensor/controller. Take additional precautions for safety and damage prevention in case of safety-related applications.

Warnings

Connect the power supply and the display/output device according to the safety regulations for electrical equipment.

- > Risk of injury
- > Damage to or destruction of the interface module

The supply voltage must not exceed the specified limits.

- > Damage to or destruction of the interface module
- > Damage to or destruction of the interface module

Proper Environment

- Protection class: IP 20
- Operating temperature: 0 ... +50 °C
- Storage temperature: -20 ... +70 °C
- Humidity: 5 - 95 % (non-condensing)
- Ambient pressure: Atmospheric pressure

Terminal 2	
V+	Supply voltage ²
⊥	Ground for supply voltage
M1	Multifunction input 1
M2	Multifunction input 2
Terminal 1 connections daisy-chained	

Terminal 4	
T+	RS422 Tx+
T-	RS422 Tx-
R+	RS422 Rx+
R-	RS422 Rx-
⊥	Ground 1 e.g., for RS422 shield connection

Terminal 1	
V+	Supply voltage
⊥	Ground for supply voltage
M1	Multifunction input 1
M2	Multifunction input 2
Terminal 2 connections daisy-chained	

Terminal 3	
A	RS485 A
B	RS485 B
S+	Synchronization output +
S-	Synchronization output -
⊥	Ground 1 e.g., for RS485 shield connection

1) Internally connected to supply ground

2) If the distance between IF2035-EtherCAT and the sensor/controller is long, a separate supply for the sensor/controller may be advisable.

Quick Guide

Configuring the Sensor Interface

Only sensors (controllers) that support the ME sensor protocol can be connected via RS485/RS422. Micro-Epsilon recommends selecting the corresponding sensor interface via the web interface of the sensor (controller).

Baudrate

There is no automatic baud rate matching between IF2035-EtherCAT and the connected sensor (controller). MICRO-EPSILON recommends selecting the corresponding baud rate via the web interface of the sensor (controller).

Data format

All configuration parameters and data are transmitted in Little Endian format.

Sensors/controllers with RS485: cyclical data are transmitted via the fieldbus without change, i.e., as a binary block as described and supplied by the sensor.

Sensors/controllers with RS422: the cyclic data is decoded, i.e. a 4th byte is added to the 3 bytes and then transmitted.

EtherCAT Configuration with the Beckhoff TwinCAT® Manager

As EtherCAT master on the PC, e.g. the TCXAEShell software from Beckhoff can be used.

This section requires that

- the TwinCAT XAE Shell software is installed on your PC,
- a sensor is connected to the PC via LAN,
- no TwinCAT project has been created.

The device description file (EtherCAT® slave information) IF2035_EtherCAT.xml is available online at <https://www.micro-epsilon.de/download/software>.

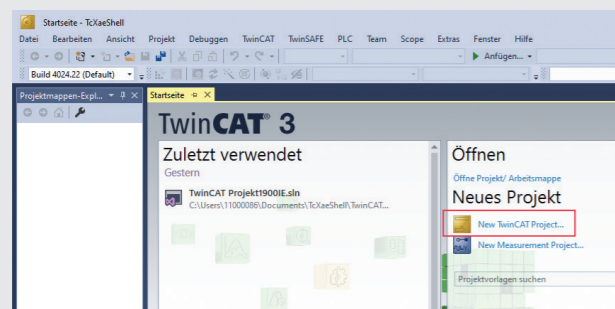
➔ Copy the device description file to the directory C:\TwinCAT\3.1\Config\Io\EtherCAT before the measuring device can be configured via EtherCAT®.

➔ Delete any existing older files.

EtherCAT®-Slave information files are XML files, which specify the characteristics of the Slave device for the EtherCAT® Master and contain information on the supported communication objects.

➔ Start the TwinCAT XAE Shell program.

➔ Create a new project by clicking the New TwinCAT Project button.



➔ Assign a name for the project and choose a suitable location.

➔ Confirm with OK.

Searching for a device:

➔ Switch to the Solution Explorer window. In the I/O tab, right-click on the Devices entry, and then Scan.

➔ Confirm with OK.

➔ Select a network card at which EtherCAT® slaves are to be searched for.

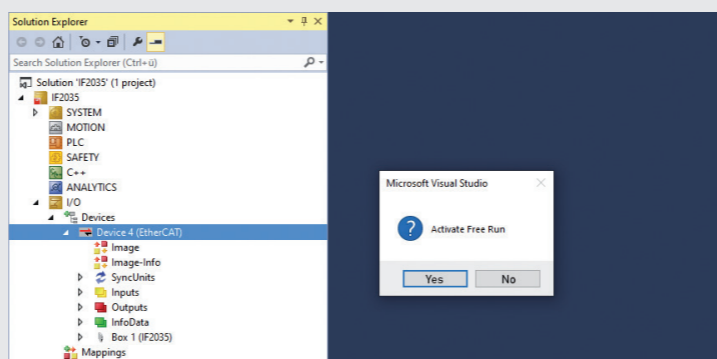
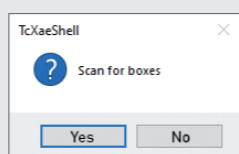
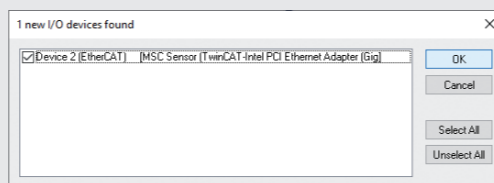
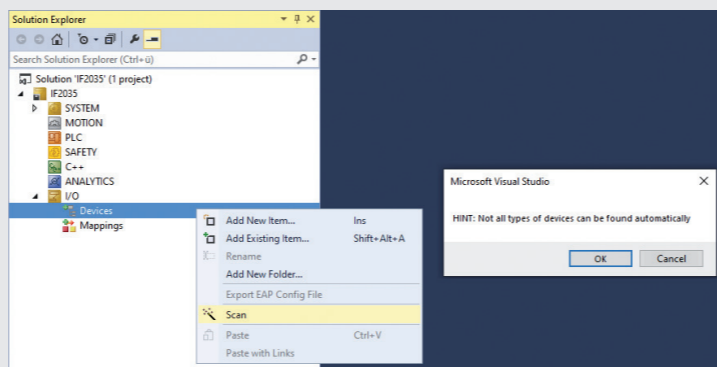
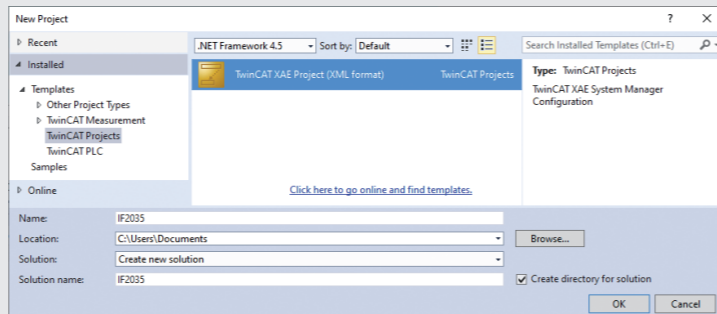
➔ Confirm with OK.

The "Scan for boxes" window appears (EtherCAT® slaves).

➔ Confirm with Yes.

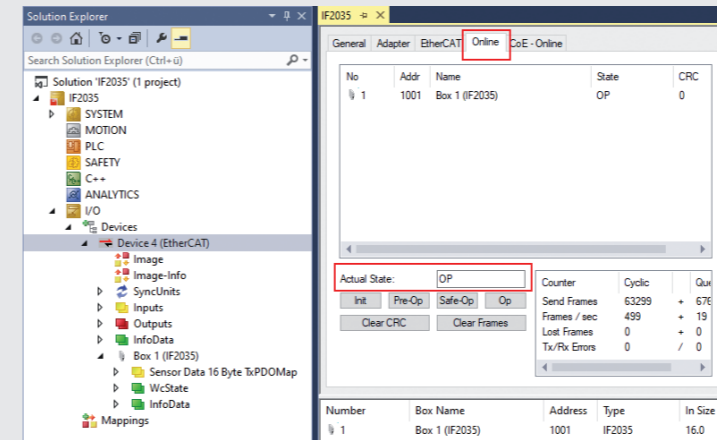
The sensor is now listed in the device list, see Solution Explorer window.

➔ Now confirm the Activate Free Run window with Yes.

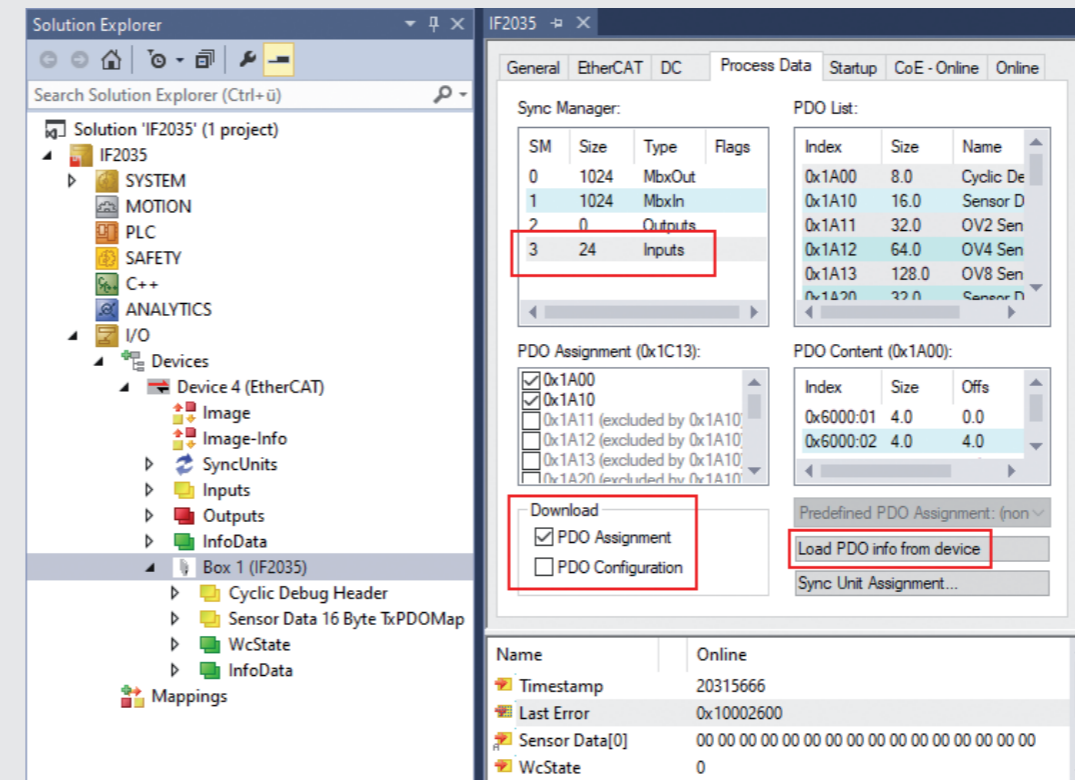


The current status should be at least PREOP, SAFEOP or OP on the Online page.

If ERR PREOP is displayed in Actual State, the cause is described in the message window. The cause of the error could be a discrepancy between the PDO mapping in the controller and the settings in the IF2035_EtherCAT.xml device description file.



You can select other data in the Process Data tab.

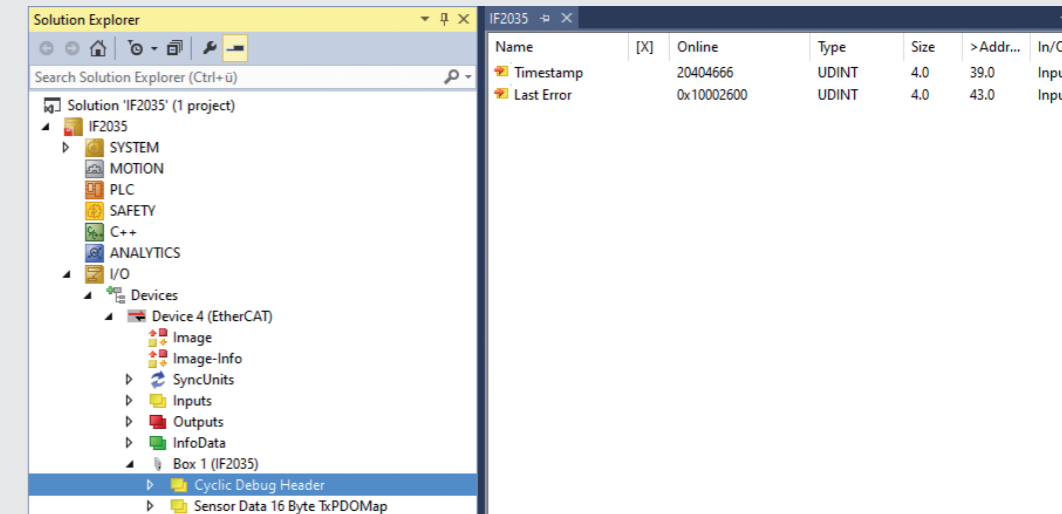


The scope of the provided process data and the assignment of the SyncManager may be viewed now.

➔ Go to the TwinCAT menu and select the Restart TwinCAT (Config Mode) entry.

The configuration is now complete.

In SAFEOP and OP status, the selected measurement values are transferred as process data.



You can find more information about the sensor in the operating instructions. They are available online at:

www.micro-epsilon.de/download/manuals/man--IF2035-EtherCAT--en.pdf

