D000085235.0002 - 0C

Operating instructions

IO-Link Master – EtherCAT

IO-Link EtherCAT®

pulses for automation

Table of Contents

1 Document

This is the original Operating instructions, source language German.

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Legal information

1.1 Change information

Index	Chapter	Changes	Date	Name
A		Documentation created	23/06/2025	AvB
C	6.1.1	Screenshot (Fig. 7) corrected	11/11/2025	AvB

2 General Information

Read this document carefully before working with the product.

It guides you or the technical personnel of the machine and plant manufacturer or operator in the safe assembly, installation, commissioning, and operation of the product.

This manual contains all the information required to correctly use the device, including information on required functions, performance, use etc.

It is suitable for programmers and for test/debugging personnel who debug the system themselves and connect it to other units (automation systems, other programming devices), and for service and maintenance personnel who install extensions or carry out error analyses.

Please read this manual carefully before installing and commissioning this device. This manual contains step-by-step installation and commissioning instructions and notes.

This ensures problem-free use of the product. By familiarizing yourself with this manual, you will benefit from the following advantages:

- Ensuring safe operation of this device
- Use of all functions of this device
- Avoiding any errors and downtime as a result of errors
- Reducing the maintenance effort and avoiding unnecessary costs

2.1 Scope

The descriptions in this document apply to the IO-Link Master module products of the EC series (EtherCAT®).

2.2 Preliminary Remark

The following basic safety instructions are intended to prevent personal injury and material damage and relate primarily to the use of the products described here. If you also use other components, also observe their warnings and safety instructions.

2.3 Symbols Used/Classification of Warnings and Safety Instructions

⚠ DANGER	**Classification:** This symbol, in connection with the signal word DANGER, warns of an imminent danger to the life and health of persons. Failure to observe this safety instruction will result in death or serious damage to health.
⚠ WARNING	**Classification:** This symbol, in connection with the signal word **WARNING** warns of a possible danger to the life and health of persons. Failure to observe this safety instruction may result in death or serious damage to health.
⚠ CAUTION	**Classification:** This symbol, in connection with the signal word **CAUTION** warns of a possible danger to the health of persons. Failure to observe this safety instruction may result in minor or slight damage to health.
ATTENTION	**Classification:** Failure to observe the **ATTENTION** note may result in material damage.
NOTICE	**Classification:** Supplementary information on the operation of the product as well as tips and recommendations for efficient and trouble-free operation.

2.4 Target Group / Instruction

Only qualified personnel are allowed to install, operate, maintain and service this device. Qualified personnel are persons who have the skills and knowledge required to construct, install and operate electrical devices and have received safety training in order to recognize and avoid the associated hazards.

Please note that if the device is used in a manner other than the use intended by the manufacturer, the protection provided by the device may be impaired.

2.5 Transportation/Storage

Check the delivery immediately after receipt for possible transport damage. If you do not immediately assemble the product, it is best to leave it in the transport packaging.

The storage must:

- be free of any compressive stress to prevent damage or deformation.

- be dry, dust-free, and in accordance with the technical data. See chapters "Technical Data" and "Applicable documents".

2.6 Foreseeable Misuse

The product is not suited for the following applications:

- Under water
- In publicly accessible areas
- Outside of the product specification.

3 Other Applicable Documents

All documents, for example, the original declarations of conformity and corresponding certificates, can be downloaded from our home page:

www.kuebler.com/docu-finder

4 Technical Data

4.1 IOL4A Technical data

4.1.1 IOL4A Specification

IO-Link Master IP67 IOL4A Order no. 4x Class A	EtherCAT 

Mechanical characteristics	
Housing material	Aluminum alloy
Housing color	black-anodized
Degree of protection	IP67, fully encapsulated with epoxy resin
Pollution level	3
Housing dimensions	155 mm x 31.9 mm x 30 mm Installation holes: 2 x ø 4.5 mm
Weight	208 g
Working temperature range	-25°C to +70°C
Storage temperature range	+40°C to +85°C
Humidity	5% to 95%
Atmospheric pressure	80 kPa to 106 kPa

4.1.2 Interface Definition IOL4A

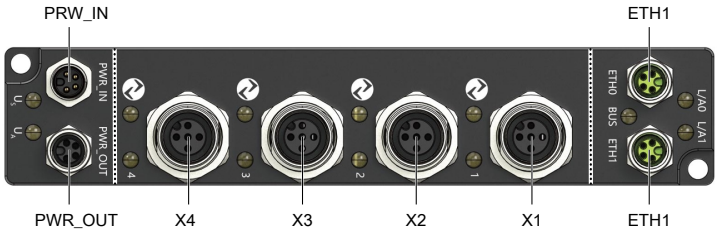


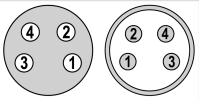
Fig. 1: IOL4A pin assignment

IMG-ID: 409122443

4.1.2.1 IOL4A Connections PWR_IN + PWR_OUT

Electrical characteristics **PWR_IN + PWR_OUT voltage interfaces**	
Connection	1 x M8 connector, pin 1 x M8 connector, socket 4-pin + PE
System supply voltage Us LEDs, controller, PHYs, L+ (C/Q)	18 to 30 V DC (typically 24 V DC)
Output supply voltage Ua Digital output DI/DO	18 to 30 V DC (typically 24 V DC)
Total current Us/Ua	max. 4 A
Static operating current Us	≤ 150 mA
Surge protection	yes
Reverse polarity protection	yes
M8 tightening torque	0.5 Nm

Pin assignment

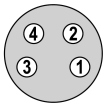
Port	**M8 connector, 4-pin + PE**					
PWR_IN, PWR_OUT power supply	**Signal:**	+V Us	Us +V Ua	0 V Us	0 V Ua	
	Pin:	1	2	3	4	

+V Us : system supply voltage, +24 V DC
+V Ua : output supply voltage, +24 V DC
0 V Us : Ground GND (0 V) supply voltage
0 V Ua : Ground GND (0 V) output supply voltage

4.1.2.2 IOL4A Connections ETH0 + ETH1

Ethernet data transmission, ETH0 + ETH1 connections	
Connection	2 x M8 connector 4-pin + PE, socket
Physical level	Ethernet
Transmission rate	10/100 Mbps, full duplex
Characteristic	In accordance with the protocol
Alarm function	Diagnostic alarm, process alarm
Cycle time, min.	1 ms
M8 tightening torque	0.5 Nm

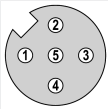
Pin assignment

Port	M8 connector, 4-pin + shield					
ETH0, ETH1 Ethernet transmission	**Signal:**	TxD+	RxD+	TxD-	RxD	
	Pin:	1	2	3	4	

4.1.2.3 IOL4A Connections X1 to X4

IO-Link interfaces, connections X1 to X8	
IO-Link connections	M12 connector, socket 5-pin, A-coded
IO-Link version	1.1
Transmission speed	COM 1 4.8 KBps COM 2 38.4 KBps COM 3 230.4 KBps
Port voltage	typically 24 V DC (depends on Us)
Port current	max. 2 A (depends on Us)
Port class ports X1 to X4	4 x Class A
Maximum data length of the port	32 bytes
Data transmission distance max.	≤ 100 m
IO-Link transmission distance max.	≤ 20 m

Pin assignment

Port	**M8 connector, 4-pin + shield**						
X1 to X4 IO-Link, Class A	**Signal:**	L+	DI/DO	L-	C/Q	PE	
	Pin:	1	2	3	4	5	

L+ : system supply voltage (depends on Us)
L- : system ground GND (0 V)
C/Q : IO-Link communication
DI/DO : digital input/output (PNP/NPN)

4.1.3 IOL4A LED Description

	LED symbol	Status description		Solution
	**ETH0, ETH1** Ethernet Commu-nication		Permanently lit green: connection made. No data is exchanged.	Check the network connection from the IO-Link Master to the control
			Flashing green/yellow: connection made, data exchange active	
			Off: no connection	Check the network connection from the IO-Link master to the control
	Bus (system error)		Permanently lit red: configuration and connection are inconsistent / module error	
			Flashing red: device name, IP address, configuration error	Check the network connection from the IO-Link Master to the control
			Off: normal state	
	DI/DO		Permanently lit green: there is a signal/voltage on pin 2	
			Permanently lit red: short circuit / excessive current	Check the connected device or pins 2, 3
	C/Q (IO-Link commu-nication)		Permanently lit green: port in operation	
			Rapidly flashing green: port is being connected	Check the connection to the IO-Link sensor/ actuator
			Slowly flashing green: connection is being prepared	The port is configured, but no IO-Link sensor/ actuator is connected
			Off: port deactivated	
			Flashing red: short circuit of the power supply	Check pins 1+3
	Us / Ua Power supply		Permanently lit green: normal power supply	
			Permanently lit red: - Us connections reversed - Ua not connected - voltage too low or too high	Check the power supply connections

NOTICE	**Link LED permanently off** If the Link LED remains permanently off and checking the cable and other network participants does not reveal any irregularities, the product is not working properly. For technical advice, please contact the manufacturer. See **Contact** [▶ 46]

4.1.4 IOL4A Dimensions

The device dimensions are 155 mm × 30 mm × 31.9 mm. The two mounting holes of Ø4.5 mm are 20 mm deep.

Screw size: M4; reference tightening torque: 1.5~2 N·m

See **Fig. 2: Scale drawing IOL4A** [▶ 14]

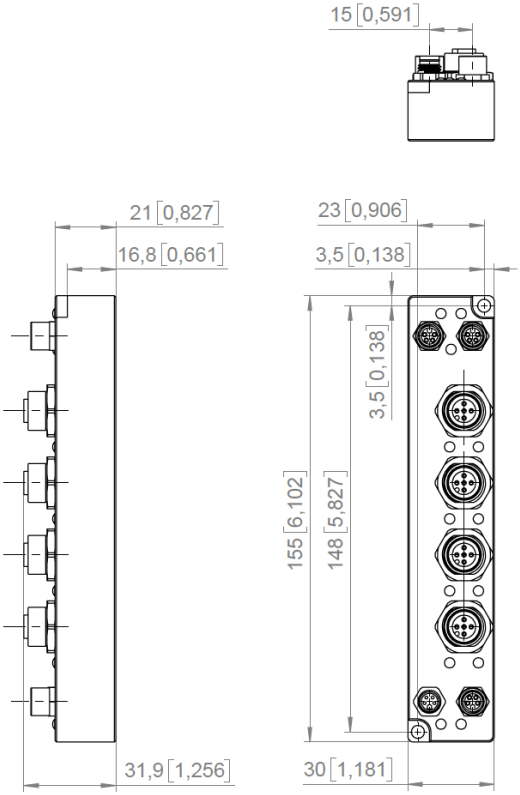
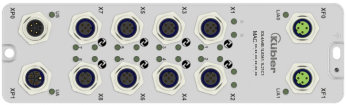


Fig. 2: Scale drawing IOL4A

IMG-ID: 389234315

4.2 Technical Data IOL4A4B

4.2.1 IOL4A4B Specification

IO-Link Master IP67 IOL4A4B Order no. 4x Class A / 4x Class B	EtherCAT 

Mechanical characteristics	
Housing material	Aluminum alloy
Housing color	silver-anodized
Degree of protection	IP67, fully encapsulated with epoxy resin
Pollution level	3
Housing dimensions	205 mm x 60 mm x 34.4 mm Installation holes: 1 x ø 4.5 mm / 1 x Ø5.5 mm
Weight	515 g
Working temperature range	-25°C to +70°C
Storage temperature range	+40°C to +85°C
Humidity	5% to 95%
Atmospheric pressure	80 kPa to 106 kPa

4.2.2 Interface Definition_IOL4A4B

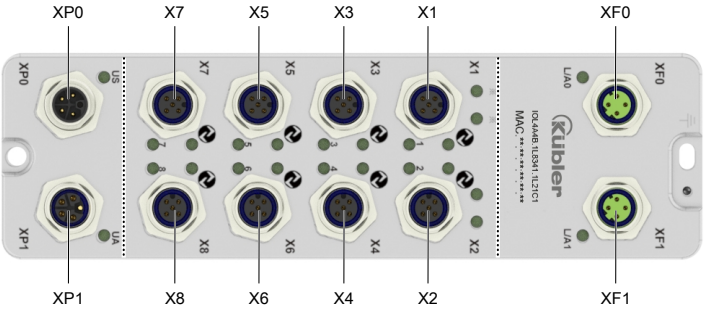


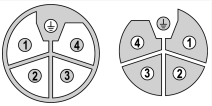
Fig. 3: Pin assignment IOL4A4B

IMG-ID: 409119115

4.2.2.1 IOL4A4B Connections XP0 + XP1

Electrical characteristics voltage interfaces XP0 + XP1	
Connection	1 x M12 connector, pin 1 x M12 connector, socket 5-pin, L-coded
System supply voltage Us LEDs, controller, PHYs, L+ (C/Q)	18 to 30 V DC (typically 24 V DC)
Supply voltage outputs Ua digital output (Class A), L2+ (Class B)	18 to 30 V DC (typically 24 V DC)
Total current Us/Ua	max. 12 A
Static operating current Us	≤ 150 mA
Surge protection	yes
Reverse polarity protection	yes
M12 tightening torque	0.5 Nm

Pin assignment

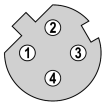
Port	**M8 connector, 4-pin + PE**						
XP0, XP1 Power supply	**Signal:**	+V Us	0 V Us	0 V Ua	+V Ua	PH	
	Pin:	1	2	3	4	5	

+V Us : System supply voltage, +24 V DC
+V Ua : Output supply voltage, +24 V DC
0 V Us : Ground GND (0 V) system supply voltage
0 V Ua : Ground GND (0 V) output supply voltage
PH : Shield

4.2.2.2 IOL4A4B Connections XF0 + XF1

Ethernet data transmission, connections XF0 + XF1	
Connection	2 x M12 connector, socket 4-pin, D-coded
Physical level	Ethernet
Transmission rate	10/100 Mbps, full duplex
Characteristic	according to the protocol
Alarm function	Diagnostic alarm, process alarm
Cycle time, min.	1 ms
M12 tightening torque	0.5 Nm

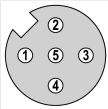
Pin assignment

Port	M8 connector, 4-pin + shield					
XF0, XF1 Ethernet transmission	**Signal:**	TxD+	RxD+	TxD-	RxD	
	Pin:	1	2	3	4	

4.2.2.3 IOL4A4B Connections X1 to X8

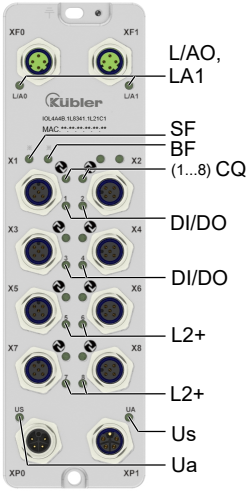
IO-Link interfaces, connections X1 to X4	
IO-Link connections	M12 connector, socket 5-pin, A-coded
IO-Link version	1.1
Transmission speed	COM1 4.8 KBps COM2 38.4 KBps COM3 230.4 KBps
Port voltage	typically 24 V DC (depends on Us)
Port current	max. 2 A (depends on Us)
Port class ports X1 to X4 ports X5 to X8	4 x Class A 4 x Class B
Maximum data length of the port	32 bytes
Data transmission distance max.	≤ 100 m
IO-Link transmission distance max.	≤ 20 m

Pin assignment

Port	M8 connector, 4-pin + shield						
X1 to X4 IO-Link, Class A	**Signal:**	L+	DI/DO	L-	C/Q	PE	
X5 to X8 IO-Link, Class B	**Signal:**	L+	2L+	L-	C/Q	2L-	
	Pin:	1	2	3	4	5	

L+ : System supply voltage (depends on Us)
L- : System ground GND (0 V)
2L+ : Output supply voltage (depends on Ua)
2L- : Output ground GND (0 V)
C/Q : IO-Link communication
DI/DO : Digital input/output (PNP/NPN)

4.2.3 IOL4A4B LED Description

	LED symbol	Status description		Solution
	L/A0, L/A1 Ethernet commu-nication		Permanently lit green: connection made, data is not exchanged.	Check the network connection from the IO-Link Master to the control
			Flashing green/yellow: connection made, data exchange active	
			Off: No connection	Check the network connection from the IO-Link Master to the control
	SF (system error)		Permanently lit green: normal state	
			Permanently lit red: the module is down	Check that the IO-Link Master is connected
			Flashing green: module not configured	Check the configuration in the program and the PLC download status
	BF (bus error)		Permanently lit green: normal condition	
			Flashing red: data interrupted	Check the network connection to the control
			Flashing green: no data connection	Check the network connection to the control
	DI/DO (Class A) 2L+ (Class B)		Permanently lit green: there is a signal / voltage on pin 2	
			Permanently lit red: short circuit / excessive current	Check the connected device or pin 2
	C/Q (IO-Link commu-nication)		Permanently lit green: port in operation	
			Rapidly flashing green: port is being connected	Check the connection to the IO-Link sensor/ actuator
			Slowly flashing green: connection is being prepared	The port is configured, but no IO-Link sensor/ actuator is connected

	LED symbol	Status description		Solution
			Off: port deactivated	
			Flashing red: short circuit of the power supply	Check pins 1+3
	Us / Ua power supply		Permanently lit green: normal power supply	
			Permanently lit red: - Us connections reversed - Ua not connected - voltage too low or too high	Check the power supply connections

NOTICE	**Link LED permanently off**
	If the Link LED remains permanently off and checking the cable and other network participants does not reveal any irregularities, the product is not working properly. For technical advice, please contact the manufacturer. See **Contact** [▷ 46]

4.2.4 IOL4A4B Dimensions

The device dimensions are 205 mm × 60 mm × 34.5 mm. The two Ø4.5 mm and Ø5.5 installation holes are 20 mm deep.

Screw size: M4; reference tightening torque: 1.5~2 N·m

See **Fig. 4: Scale drawing IOL4A4B** [▷ 21]

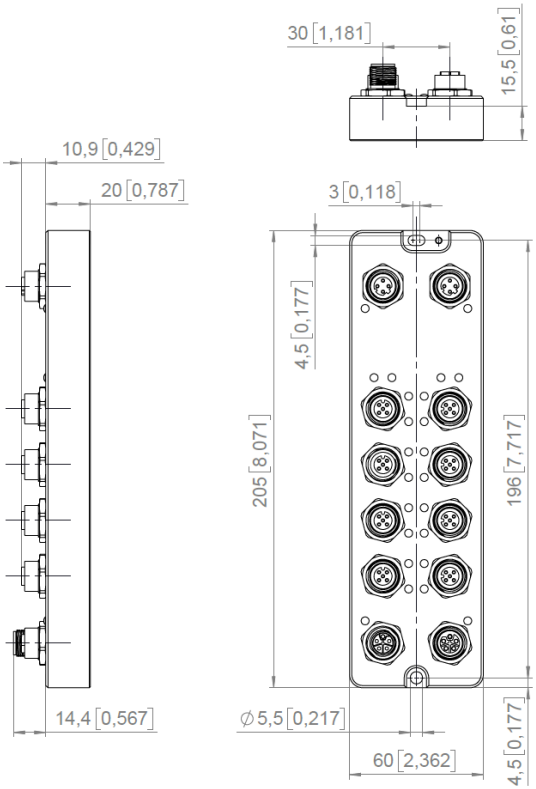


Fig. 4: Scale drawing IOL4A4B

IMG-ID: 389240459

5 Installation

5.1 Precautions to Prepare for Installation

You are advised to observe the following points to avoid product malfunctions, faults or negative effects on performance and equipment.

5.1.1 Installation Location

NOTICE	**Installation near heat sources** Avoid installing the device near devices with a high heat release (heaters, transformers, high-capacity resistors, etc.)
NOTICE	**Electromagnetic interference** Avoid installing the device near devices that can cause strong electromagnetic interference (powerful motors, transformers, transceivers, frequency converters, switching-mode power supplies, etc.).
NOTICE	**Installing several modules** Installing several modules near each other can negatively affect the service life of the modules as they cannot dissipate their heat. Keep a distance of more than 20 mm between two modules.

5.1.2 Application

⚠ **CAUTION**	**No connection to alternating current** Do not use alternating current. Otherwise, there is a risk of a defect that could seriously affect the safety of people and devices.
⚠ **CAUTION**	**Current-limited power source** Use a current-limited power source to operate the device, i.e. the power supply must have overvoltage and overcurrent protection functions.

5.1.3 Use

NOTICE	**Cable bending radius** Do not bend the cable in a radius of <40 mm, otherwise there is a risk that the connection will be interrupted.

5.2 Product Description

The IO-Link Master is the central element in the IO-Link communication. It serves as an interface between the IO-Link devices (sensors and actuators) and the higher-level control system.

The IO-Link Master is necessary to collect the data from the connected IO-Link devices and forward it to the control system.

An IO-Link Master can have several ports to which different devices can be connected.

In principle, at the logical level, only one IO-Link device can be connected per port.

However, at the physical level, several different scenarios are possible for each port:

- One IO-Link device
- One DI/DO device
- One IO-Link device with inline "listener"
- One IO-Link device and one DI/DO device
- One IO-Link hub with several DI/DO devices

This enables several devices to be monitored and controlled simultaneously.

It depends on the Master which scenarios are actually supported. The Master receives and processes the process data and diagnostic data of the devices. The IO-Link Master also enables configuration and parameterization of the connected devices. A special configuration tool can be used for this or this can be done directly on the Ethernet level.

5.3 Operating Modes

There are two operating modes for the IO-Link Master.
The operating mode can be configured individually for each port of the IO-Link Master.

- IO-Link mode: enables IO-Link communication
- Standard I/O mode (SIO): enables digital I/O communication

IO-Link communication is through the switching and communication cable (C/Q) - pin4.
SIO communication is through pin 2.

If the ports are not configured, they act like normal digital inputs/outputs, i.e. the connected devices are operated in SIO mode.

5.4 Connection Types - SIO Mode

Connections X1 to X4 (Class A) as digital inputs/outputs DI/DO

Classical IO-Link communication requires 3 wires, namely for L+, L- and C/Q. These are pins 1, 3 and 4 for a 5-pin connection.

However, if the port of the IO-Link Master is used in SIO mode, different connection scenarios are possible, depending on the device used.

5.4.1 Use as Input for a PNP Digital Sensor Signal

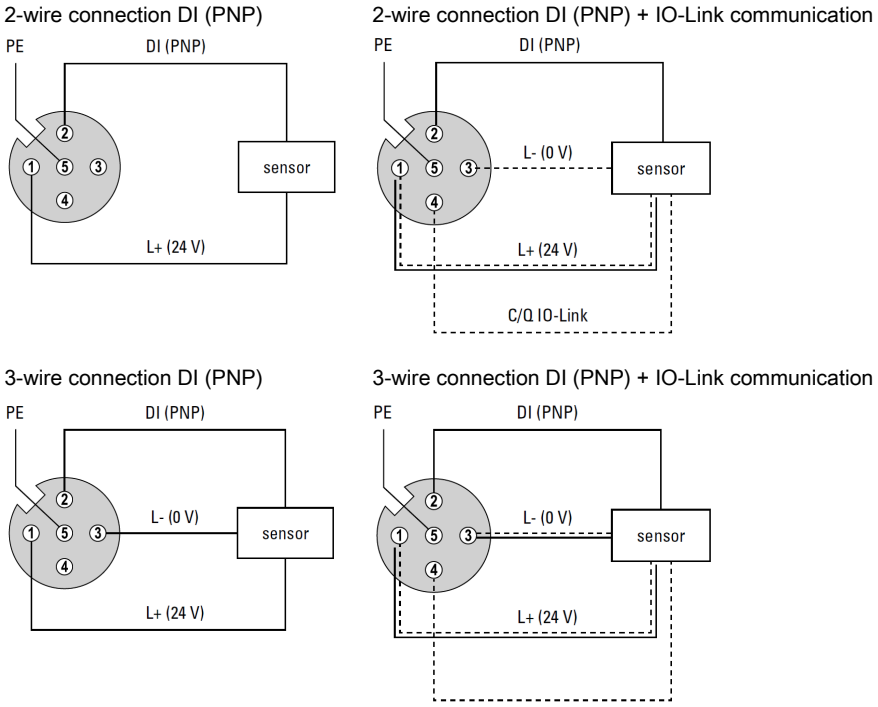


Fig. 5: Input for a PNP digital sensor signal

IMG-ID: 409519627

Input parameters for connections X1 to X4	
Connection class	4 x Class A
Input polarity	PNP
Input signal "0"	LOW 0.3 to 5 V DC
Input signal "1"	HIGH 12 to 30 V DC

5.4.2 Use as Output for a PNP Digital Actuator Signal

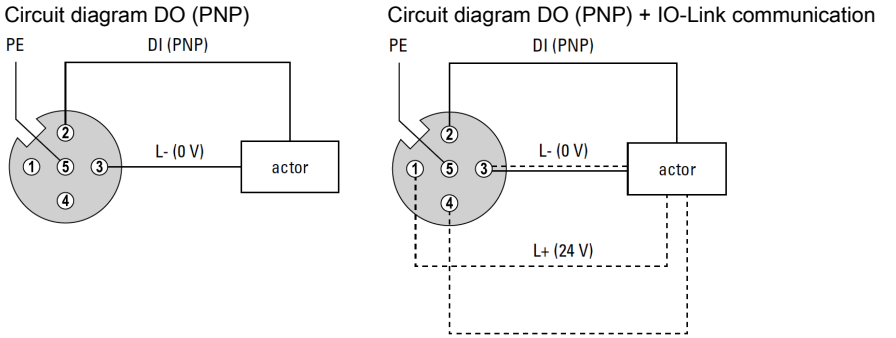


Fig. 6: Output for a PNP digital actuator signal

IMG-ID: 409526539

Output parameters for connections X1 to X4	
Connection class	4 x Class A
Output polarity	PNP
Output current	max. 2 A, per channel
Port protection	Short circuit protection (PIN1, PIN 3), overload protection
Load type	General use and resistor operation, pilot operation

NOTICE	**DI/DO + IO-Link communication** Even if the connected sensor communicates via IO-Link, pin 2 can be used simultaneously for a DI/DO signal.

5.5 Process and Configuration Data

IOL4A input and output data ranges

4-port IO-Link interface (4 Class A)

EtherCAT protocol process output data									
Function description									
Byte	Description	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0	24 V output to pin 2 0 = off 1 = on	N/C				X4P2	X3P2	X2P2	X1P2
Max. 32	Port X1 process output data								
Max. 32	Port X2 process output data								
Max. 32	Port X3 process output data								
Max. 32	Port X4 process output data								

IMG-ID: 389644555

EtherCAT protocol process input data									
Function description									
Byte	Description	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0	Standard IO input 0 = no signal 1 = signal / 24V output on	N/C				X4P2	X3P2	X2P2	X1P2
1	Port connection status	Port X1 status of the device connection							
2		Port X2 status of the device connection							
3		Port X3 status of the device connection							
4		Port X4 status of the device connection							
Max. 32	Port X1 process input data								
Max. 32	Port X2 process input data								
Max. 32	Port X3 process input data								
Max. 32	Port X4 process input data								

IMG-ID: 389650571

IOL4A4B input and output data ranges

8-port IO-Link interface (4 Class A, 4 Class B)

EtherCAT protocol process output data									
Function description									
Byte	Description	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0	24 V output to pin 2 0 = off 1 = on	N/C				X4P2	X3P2	X2P2	X1P2
Max. 32	Port X1 process output data								
Max. 32	Port X2 process output data								
Max. 32	Port X3 process output data								
Max. 32	Port X4 process output data								
Max. 32	Port X5 process output data								
Max. 32	Port X6 process output data								
Max. 32	Port X7 process output data								
Max. 32	Port X8 process output data								

IMG-ID: 389658123

EtherCAT protocol process input data									
Function description									
Byte	Description	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0	Standard IO input 0 = no signal 1 = signal	N/C				X4P2	X3P2	X2P2	X1P2
1	Short circuit Class B, port 1 = normal value 0 = short circuit Pins 2, 5	N/C				X5	X6	X7	X8
2	Port connection status	Port X2 status of the device connection							
3		Port X3 status of the device connection							
4		Port X4 status of the device connection							
5		Port X5 status of the device connection							
6		Port X6 status of the device connection							
7		Port X7 status of the device connection							
8		Port X8 status of the device connection							
9		Port X9 status of the device connection							
Max. 32	Port X1 process input data								
Max. 32	Port X2 process input data								
Max. 32	Port X3 process input data								
Max. 32	Port X4 process input data								
Max. 32	Port X5 process input data								
Max. 32	Port X6 process input data								
Max. 32	Port X7 process input data								
Max. 32	Port X8 process input data								

IMG-ID: 389664139

Device connection status

Port status:

0x00 = port not configured
0x03 = port configured and connection
0xA4 = port configured but no connection

The port does not need to be configured when operating in SIO mode

When the connection is set to "Inactive", the connection status = 0x00.

6 Startup and Operation

6.1 Beckhoff (TwinCAT) Configuration Manual

6.1.1 Importing the ESI File

Copy the description file from the corresponding folder. The default folder is: `c:\TwinCAT\3.1\Config\Io\EtherCAT`

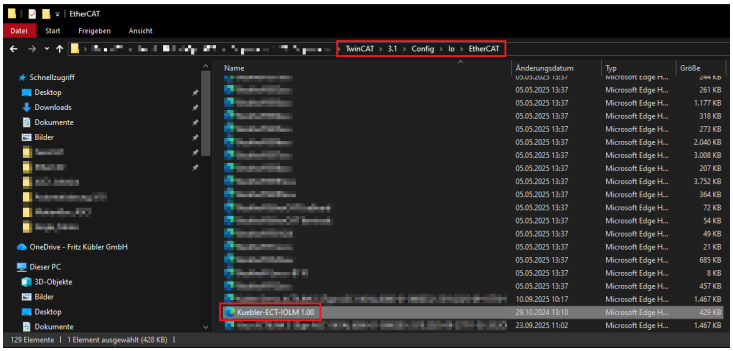


Fig. 7: Import ESI

IMG-ID: 9007199648112907

6.1.2 Network Configuration

If not available, add a new EtherCAT Master.

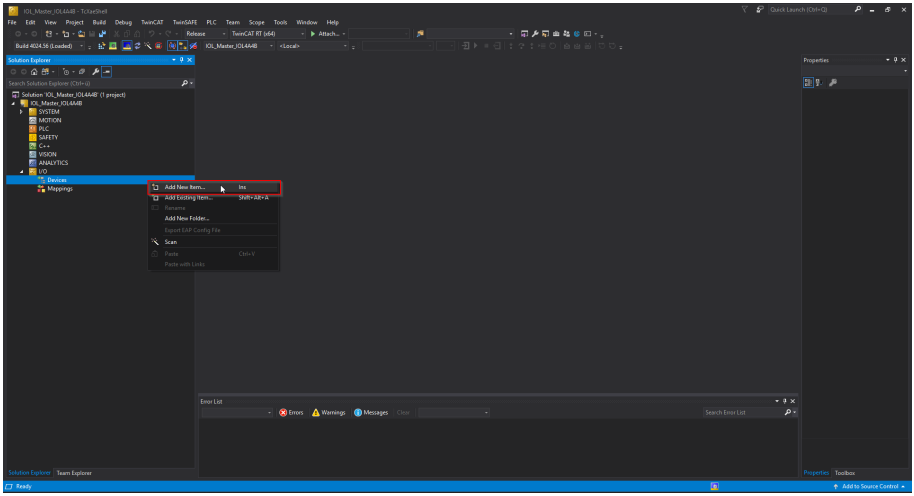


Fig. 8: Network configuration

IMG-ID: 393373835

Select the option shown in the figure.

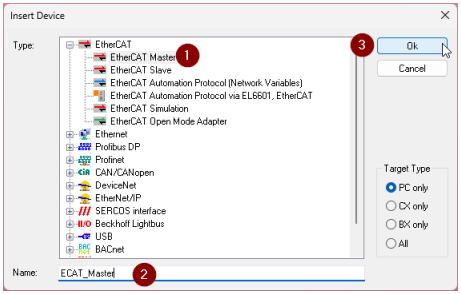


Fig. 9: Network configuration

IMG-ID: 413217803

Select the corresponding network card.

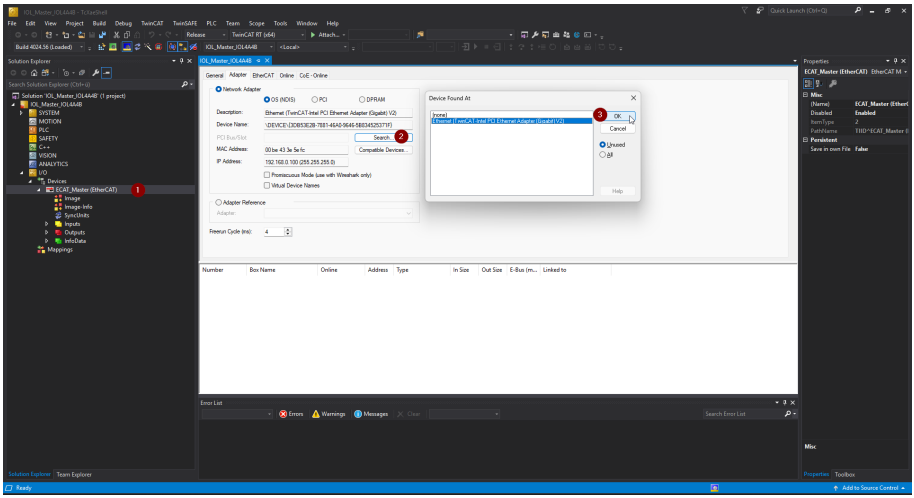


Fig. 10: Network configuration

IMG-ID: 393377675

Right-click the newly created project and select "`Add New Item…`".

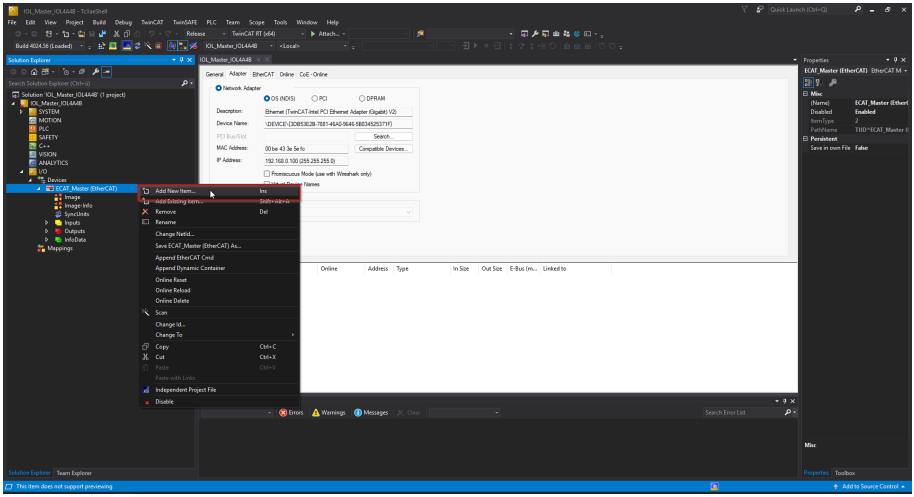


Fig. 11: Network configuration

IMG-ID: 393379595

Search the module model that you would like to add.

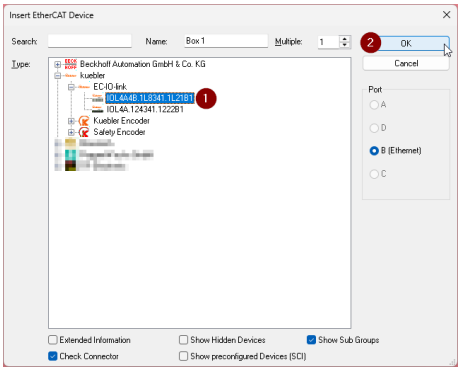


Fig. 12: Network configuration

IMG-ID: 413221259

6.1.3 Port Configuration

Double-click the module that was added.

Configure the IO-Link port of the Master by selecting the required process data length as input or output under "Slots" as shown.

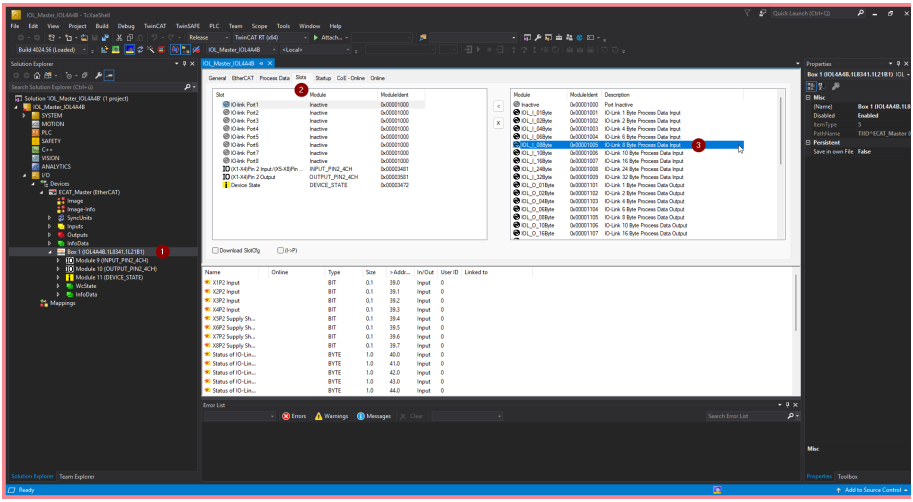


Fig. 13: Port configuration

IMG-ID: 393383435

Click the arrow symbol as shown to assign the desired configuration to the port.

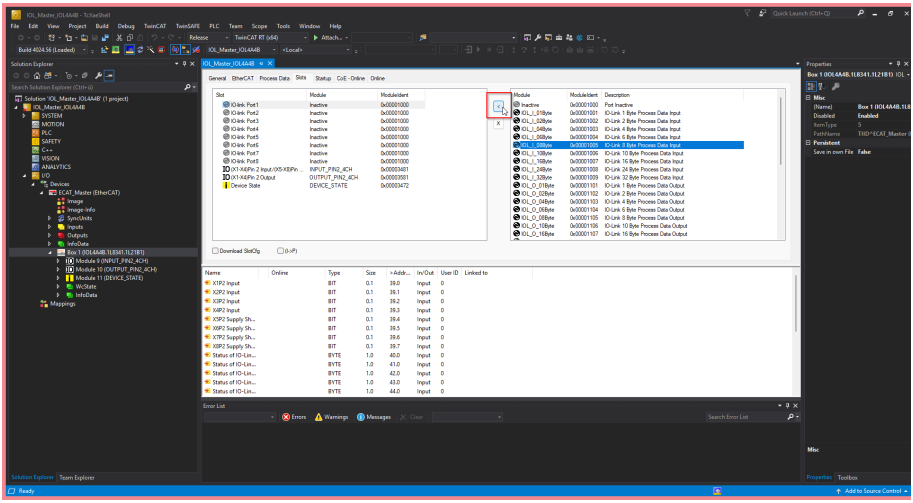


Fig. 14: Port configuration

IMG-ID: 393398155

6.1.4 Creating Variables

To be able to use the data of the IO-Link Master, variables that match the user data of the connected IO-Link devices must first be created.

The data is made available cyclically. Therefore, a task that manages the input and output data must be created first.

Create the task as shown in the figure.

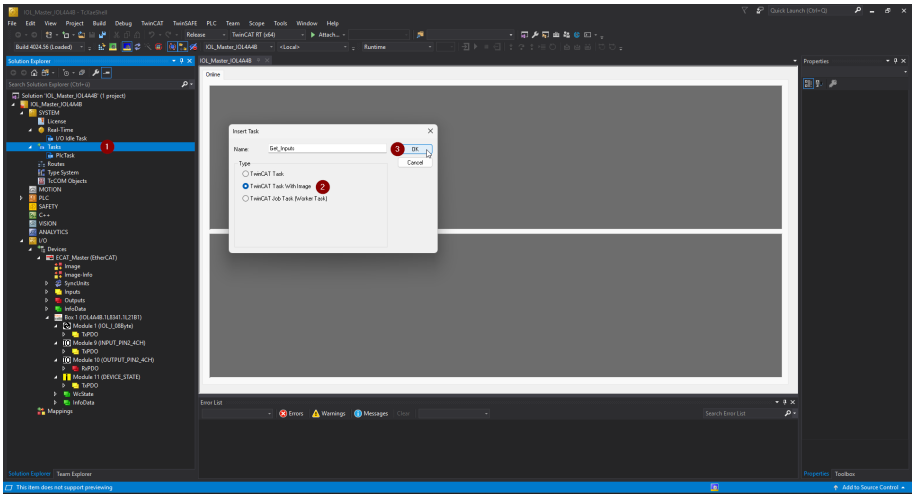


Fig. 15: Creating variables

IMG-ID: 393400075

You can now create variables under "Inputs" or "Outputs" as part of the task

by clicking "Add New Item" under "Get Inputs".

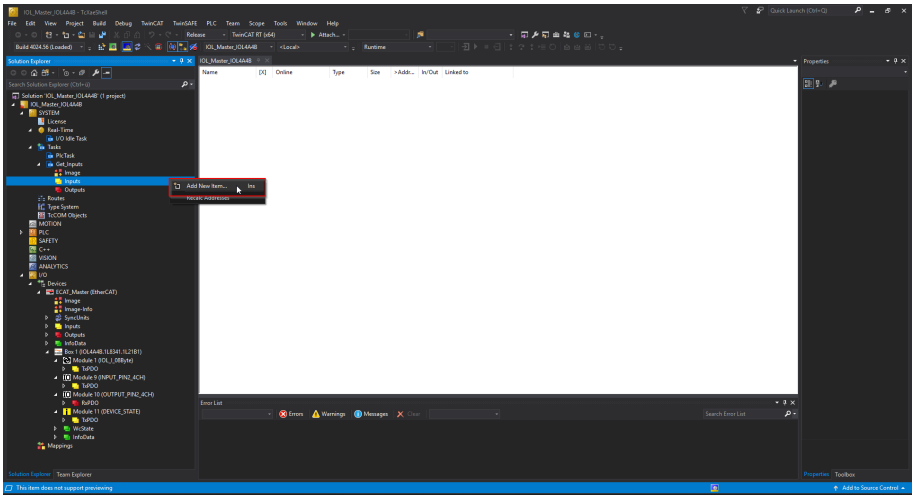


Fig. 16: Creating variables

IMG-ID: 413079691

Define the name (1) and the data type (2) as shown in the figure and press "OK" to confirm.

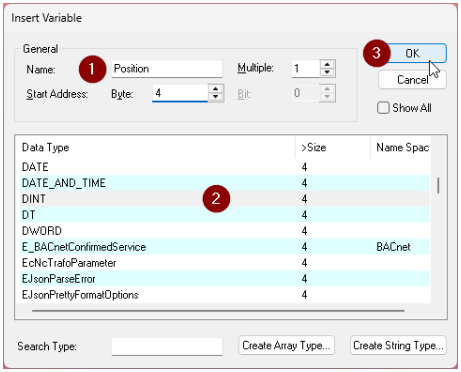


Fig. 17: Creating variables

IMG-ID: 417578891

Finally, the variable that was created must be linked with the data from the respective IO-Link device. You can do this by selecting the port to which the IO-Link device is connected under the device view. In this example, this is port X1, i.e. module 1.

Expand the TxPDO data field and select the bytes that correspond to the process data of the IO-Link device.

Then link these with "Change Multi Link..."

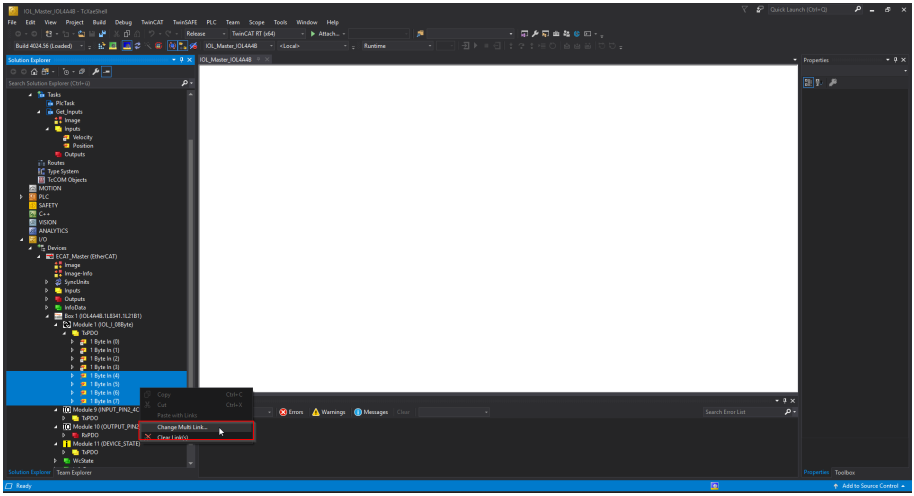


Fig. 18: Creating variables

IMG-ID: 413083531

Then select the previously created variable to which the process data should now be linked and click "OK" to confirm.

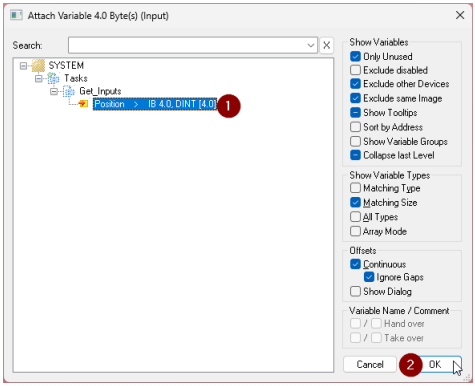


Fig. 19: Creating variables

IMG-ID: 417621515

Repeat this procedure for all variables you wish to create.

To enable communication with field devices in SIO mode, variables are now created that refer to the SIO signals of the SIO signals of the Class A ports.

Add the variable by right-clicking "`Add new Item...`" under "`Inputs`".

Enter the name and the "`BOOL`" file type in the dialog that follows. Then click "`OK`".

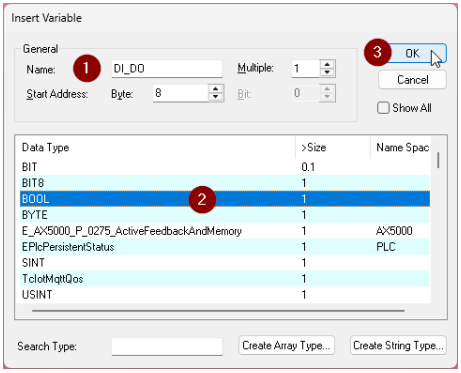


Fig. 20: Creating variables

IMG-ID: 413224715

The variable thus created can then be linked to the relevant input.

Double-click the variable and select "`Linked to...`"

In this example, a binary signal should be received on port 4.

Select "`X4P2 Input`" and click "`OK`" to confirm.

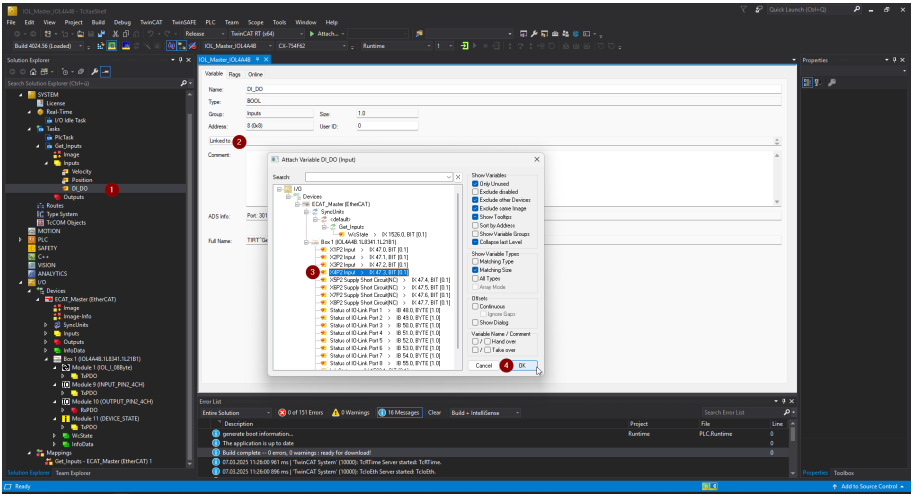


Fig. 21: Creating variables

IMG-ID: 413149835

The IO-Link status can be monitored for each individual port.

Create a new input variable for this.

Add the variable by right-clicking "`Add new Item...`" under `Inputs`. Port 1 must be monitored in this case.

In the dialog that follows, enter "`Status_Port1`" as the name and "`BYTE`" as the file type. Then click "`OK`".

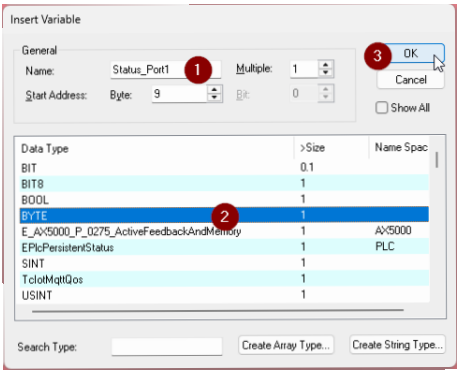


Fig. 22: Creating variables

IMG-ID: 413227403

The variable thus created can now be linked to the relevant input.

Double-click the variable and select "`Linked to...`"

To monitor the port status of port 1, select "`Status of IO-Link Port 1`" and click "`OK`" to confirm.

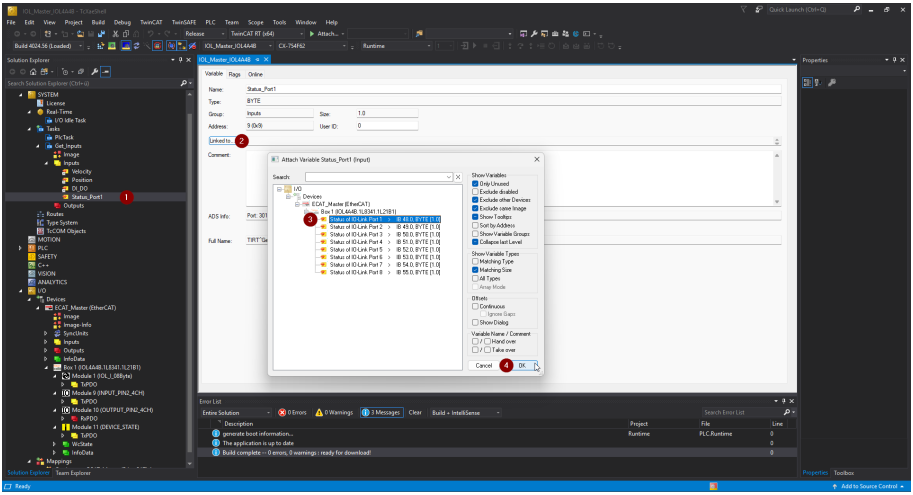


Fig. 23: Creating variables

IMG-ID: 413172235

Follow the same procedure to monitor the port Class B status of pins 2 and 5.

Add the variable by right-clicking "`Add new Item...`" under "`Inputs`".

In the dialog that follows, enter "`Short_Circuit_Port5`" as the name and "`BOOL`" as the file type. Then click "`OK`".

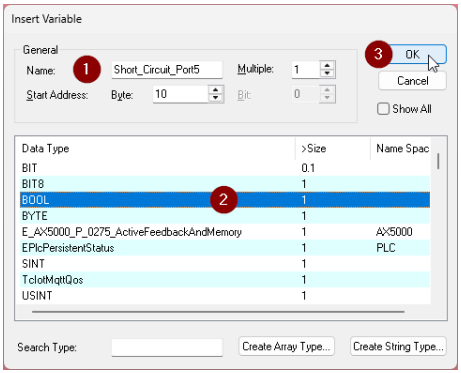


Fig. 24: Creating variables

IMG-ID: 413231115

The variable thus created can now be linked to the relevant input.

Double-click the variable and select "`Linked to...`"

To monitor the port status of port 5, now select "`X5P2 Supply Short Circuit(NC)`" and click "`OK`" to confirm.

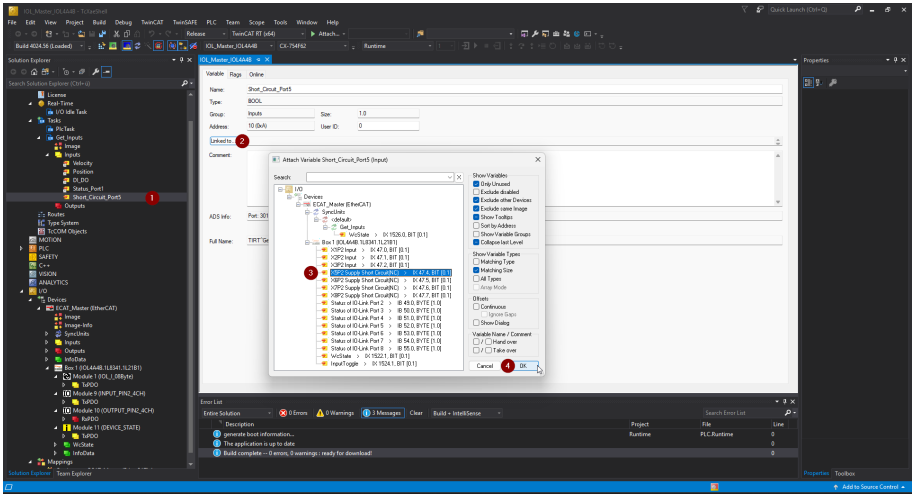


Fig. 25: Creating variables

IMG-ID: 413176075

The following step enables monitoring and activating the power supply for one of the Class A ports via pin 2.

To do this, create a new output variable by right-clicking "`Add new Item...`" under "`Outputs`".

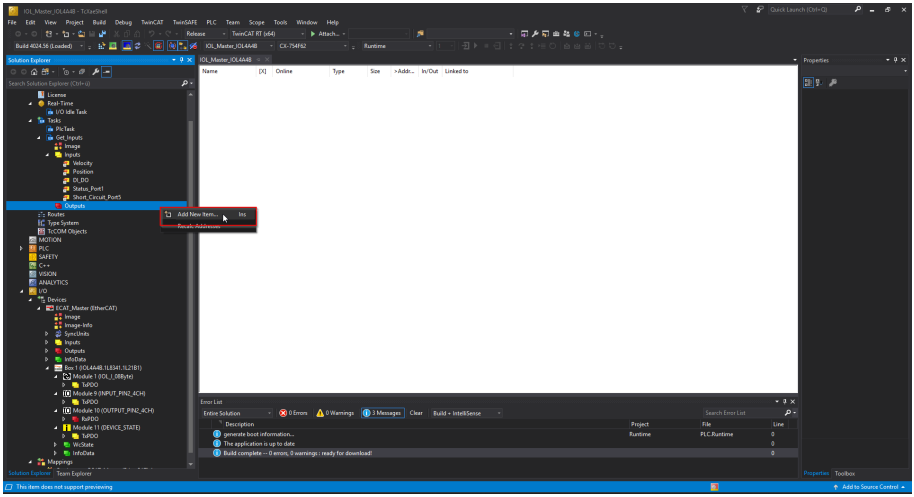


Fig. 26: Creating variables

IMG-ID: 413164555

Enter the name and the "`BOOL`" file type in the dialog that follows. Then click "`OK`".

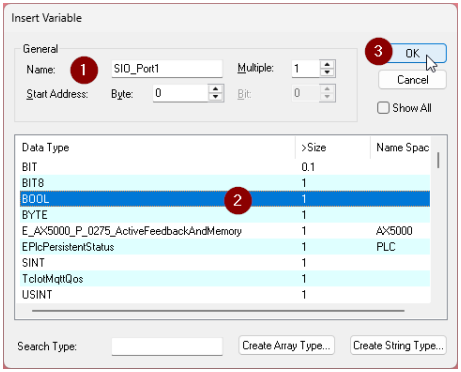


Fig. 27: Creating variables

IMG-ID: 413233931

The variable thus created can then be linked to the relevant output.

Double-click the variable and select "`Linked to...`"

The voltage output is to be switched to port 1 in this example.

Select "`X1P2 Input`" and click "`OK`" to confirm.

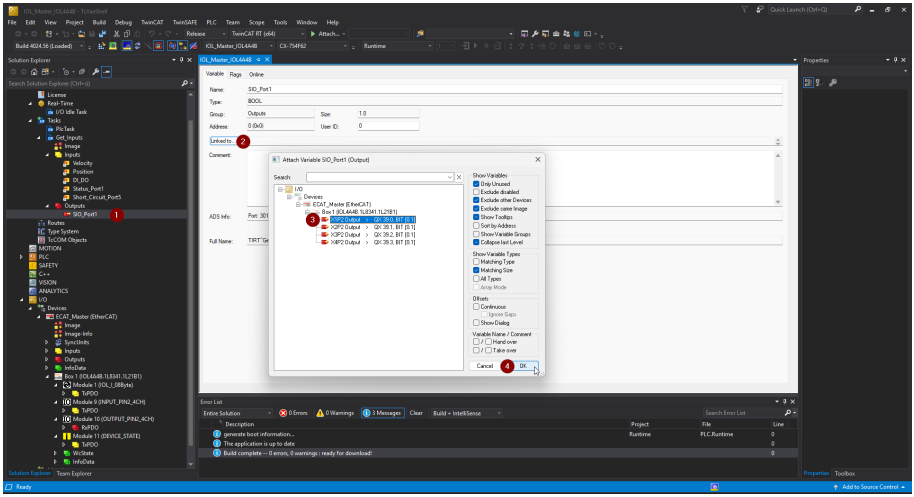


Fig. 28: Creating variables

IMG-ID: 413168395

Select the connected PLC to activate the configuration.

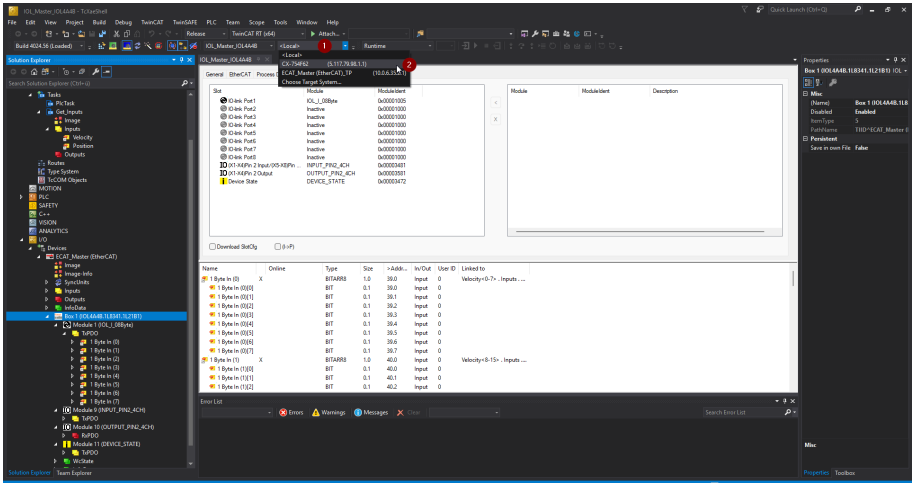


Fig. 29: Creating variables

IMG-ID: 393409675

Transfer the configuration to the PLC by means of "`Activate Configuration`"

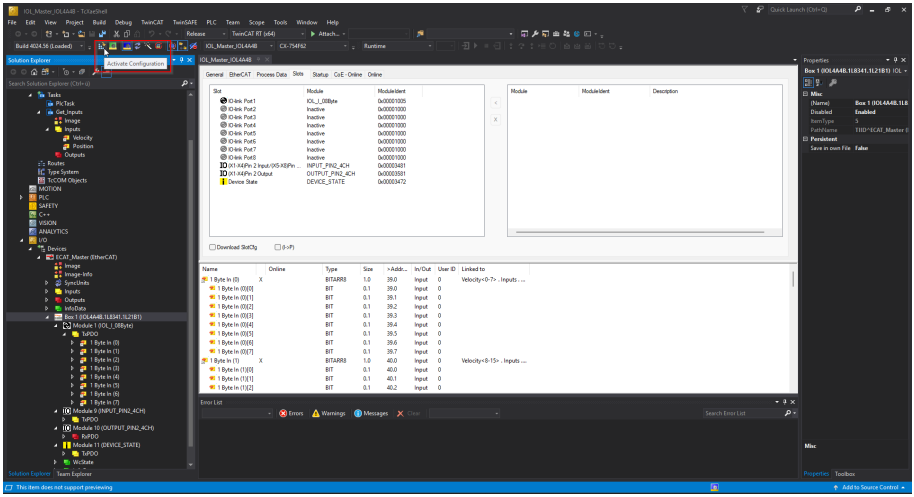


Fig. 30: Creating variables

IMG-ID: 413100171

6.1.5 Online Settings

After activating the configuration, you can check the live values online.

Click on the process data that were created under "`Inputs`".

Select "`Position`" and then the "`Online`" tab.

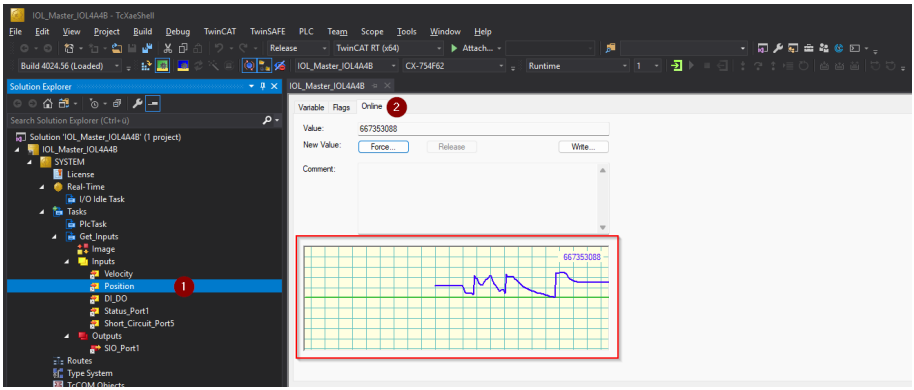


Fig. 31: Online settings

IMG-ID: 413106059

The position value of the connected IO-Link encoder can be monitored in the time graph.

To check the binary signals, select "`DI_DO`" followed by the "`Online`" tab.

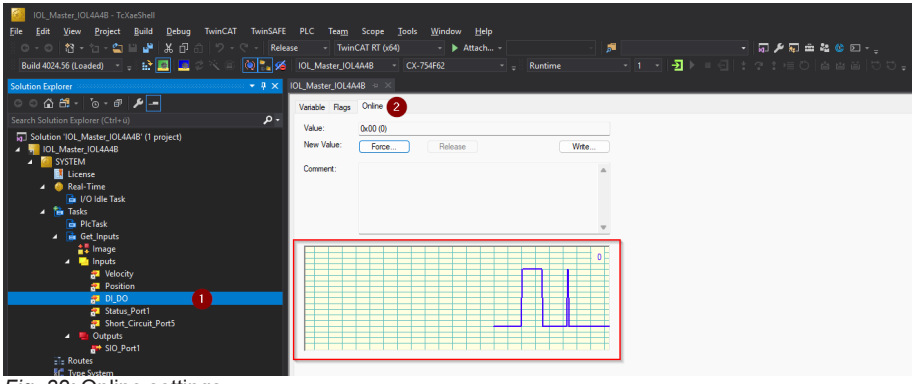


Fig. 32: Online settings

IMG-ID: 413107979

The binary signal of the connected sensor can be monitored in the time graph.

The port status for each connected IO-Link device can also be monitored

To check the status, select "`Status_Port1`" and then the "`Online`" tab.

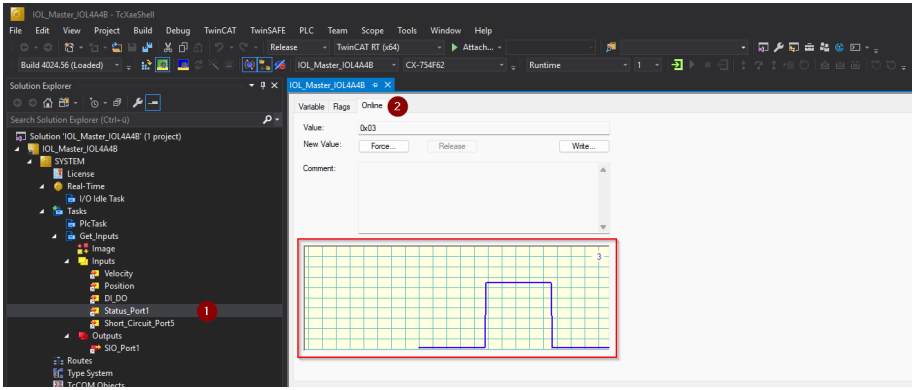


Fig. 33: Online settings

IMG-ID: 413109899

The current status value for port 1 is displayed. This can be traced back in time in the graph.

The status of each Class B port can also be checked for each connected IO-Link device.

To check the status, select "`Short_Circuit_Port5`" and then the "`Online`" tab.

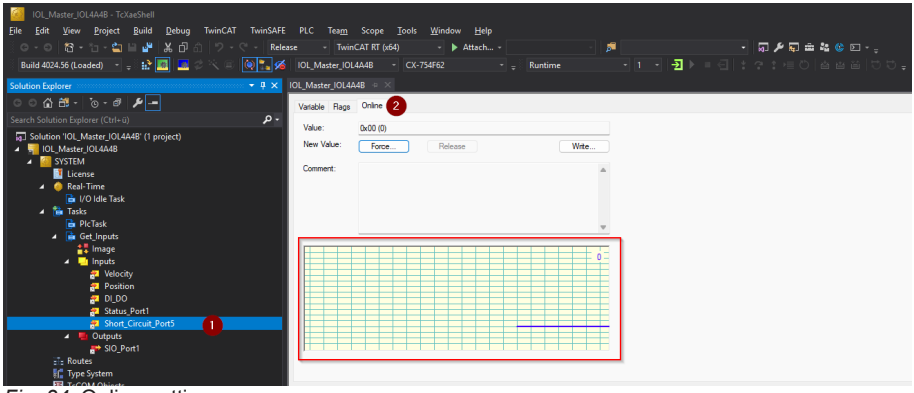


Fig. 34: Online settings

IMG-ID: 413111819

The current status value for Class B port 5 is displayed. This can be traced back in time in the graph.

To activate the voltage signal of the Class A ports, select "`SIO_Port1`" and then the "`Online`" tab.
The current status is displayed.

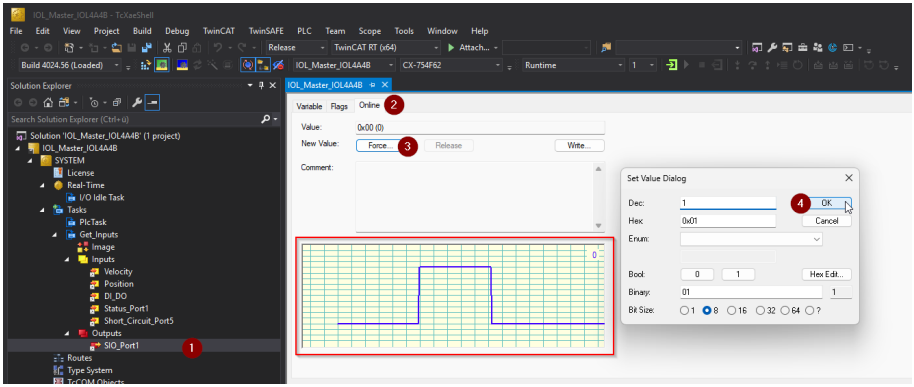


Fig. 35: Online settings

IMG-ID: 413139339

Click "`Force`" to set the desired target value.

Press "`OK`" to confirm.

The value you have set is applied immediately.

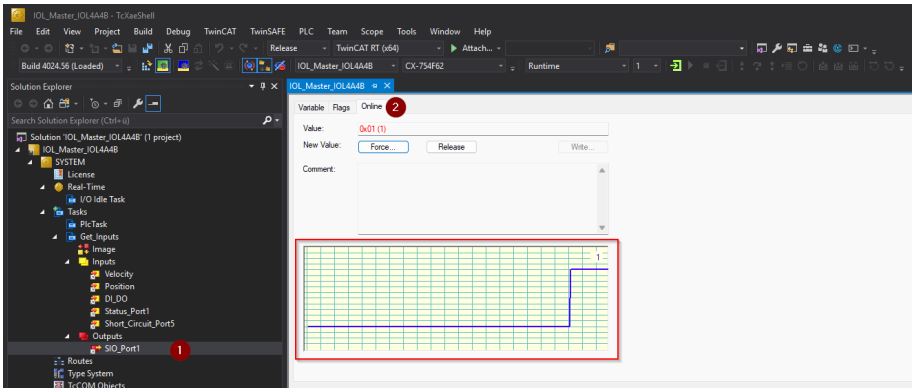


Fig. 36: Online settings

IMG-ID: 413141259

7 Malfunction

If there is a serious malfunction, stop using the device. Prevent accidental operation of the device. If repairs are required, you should return the device to the seller.

Compliance with the locally applicable safety regulations is the operating company's responsibility.

⚠ CAUTION 	**Modification / Repair** Modifications and/or repairs by the user are dangerous and will result in the warranty being invalidated and the manufacturer being released from any liability.

⚠ CAUTION 	**Maintenance / Opening** Only our personnel are allowed to maintain the product. Unauthorized opening and improper maintenance of the product may result in serious damage to the appliance or possibly in injury to the user.

Glossary

COM

COM port (serial interface) – in computer technology, COM refers to a serial interface (RS-232) that is used to transfer data between devices such as computers, microcontrollers or industrial systems. Example: COM1, COM2, COM3 are typical names for serial ports.

DI/DO

DI/DO is short for digital input and digital output. DI – Digital Input ➡ Receives digital signals from sensors or switches. DO – Digital Output ➡ Controls actuators or other devices with digital signals

PLC

PLC is short for Programmable Logic Controller. This concerns an industrial computer developed specifically for machine and process control and automation.

PNP

Positive switching, the sensor switches positive potential to its output.

RMA

Engl: Return Material Authorization, authorization to return materials, e.g. in the event of complaints

SIO Mode

SIO mode is short for Standard Input/ Output Mode and is often used in automation technology, especially in case of IO-Link-capable sensors and actuators.

8 Disposal

Always dispose of unusable or irreparable products in an environmentally friendly manner in accordance with country-specific requirements and valid waste disposal regulations. We are happy to help you with the disposal of the products.

See chapter **Contact** [▶ 46].

NOTICE	**Environmental damage due to incorrect disposal**
	Electrical waste, electronic components, lubricants, and other auxiliary materials are subject to hazardous waste disposal regulations. Hazardous materials may only be disposed of by authorized specialists.

Dispose of disassembled product parts as follows:

- Metal components to metal scrap
- Electronic components to electrical scrap
- Plastic parts to a recycling center.
- Sort and dispose of other components based on material consistency.

9 Contact

If you want to get in touch with us:

Technical advice

For technical advice, analysis or support during installation, Kübler is available directly on site with its global application team.

Support International (English-speaking)

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Kübler France +33 3 89 53 45 45
Kübler India +91 8600 147 280
Kübler Italy +39 0 26 42 33 45
Kübler Austria +43 3322 43723 12
Kübler Poland +48 6 18 49 99 02
Kübler Turkey +90 216 999 9791
Kübler USA +1 855 583 2537

Repair Service/RMA Form

For returns, please pack the product adequately and enclose the completed "Returns Form".

www.kuebler.com/rma

Send your return to the following address, stating the RMA reference.

Kübler Group
Fritz Kübler GmbH

Schubertstraße 47
D-78054 Villingen-Schwenningen
Deutschland

Phone +49 7720 3903 0
Fax +49 7720 21564

info@kuebler.com
www.kuebler.com

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