

IOLG2EC-03208R01 – EtherCAT®

IO-Link Master

EN



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1 General information

1.1 Information on the operating instructions

These operating instructions supplement the supplied QuickStart guide and include additional information and more detailed descriptions of working with the IOLG2EC-03208R01 EtherCAT® IO-Link Master.

These operating instructions are intended for qualified personnel and electrical specialists and must be read before starting any work.

1.2 Explanation of symbols

Physical damage

Warnings in these operating instructions are labeled with symbols.

These warnings must be observed at all times and care must be taken to avoid physical damage.



WARNING!

... indicates a possible hazardous situation which may lead to physical damage if it is not avoided.

Tips and recommendations



NOTE!

... highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

1.3 Registered trademark

EtherCAT®

EtherCAT® is a registered trademark and patented technology licensed by Beckhoff Automation GmbH, Germany

General information

1.4 Abbreviations

Abbreviation	Description
DID	Device ID
ECT	EtherCAT®
EMC	Electromagnetic compatibility
FE	Functional grounding
I	Standard input port
O	Standard output port
VID	Vendor ID

Table 1: Abbreviations

1.5 Limitation of liability

Applicable standards and regulations, the latest state of technological development, and many years of knowledge and experience have all been taken into account when assembling the data and information contained in these operating instructions.

The manufacturer accepts no liability for damage caused by:

- Failing to observe the operating instructions
- Incorrect use
- Use by untrained personnel
- Opening the housing
- Unauthorized conversions
- Technical modifications
- Use of defective devices
- Use of unauthorized spare parts/consumable parts.

With special variants, where optional extras have been ordered, or owing to the latest technical changes, the actual scope of delivery may vary from the features and illustrations shown here.

1.6 Scope of delivery

Included with delivery:

- EtherCAT® IO-Link Master IOLG2EC-03208R01
- 4 M12 blind plugs for sealing unused IO-Link ports
- M4 ground strap with M4 x 6 screw
- 20 labels

Supplied documentation:

- QuickStart

1.7 Customer service

If you require any technical information, our customer service department will be happy to help.

See the back page for your representative office.



NOTE!

In order to allow us to deal with the matter quickly, please note down the type designation and order number before calling. This information can be found on the side of the IO-Link Master.

1.8 EU declaration of conformity

→ You can download the EU declaration of conformity via the Internet from “www.sick.com”.

Safety

2 Safety

2.1 Correct use

The IOLG2EC-03208R01 IO-Link Master is a remote IO-Link input and output module for integration into an EtherCAT® network.

The IOLG2EC-03208R01 IO-Link Master may only be used in applications in which the safety of personnel does **not** depend on the device function.

SICK AG assumes no liability for losses or damage arising from the use of the product, either directly or indirectly. This applies in particular to use of the product that does not conform to its intended purpose and is neither described nor mentioned in this documentation.

2.2 Incorrect use

The IOLG2EC-03208R01 IO-Link Master must not be used in explosive environments.

Any other use that is not described as a correct use is prohibited.

No accessories may be connected which have not been explicitly stipulated, in terms of quantity and properties, and approved by SICK AG.

2.3 Requirements for qualified personnel



WARNING!

Damage to the device in the event of improper handling!

Improper handling may lead to physical damage.

For this reason:

- All work must only ever be carried out by the stipulated persons.

The operating instructions state the following qualification requirements for the various areas of work:

- **Qualified personnel**
are able to carry out the work assigned to them and independently recognize potential risks due to their specialist training, knowledge, and experience, as well as knowledge of the relevant regulations.
- **Electrical specialists**
are able to carry out work on electrical systems and independently recognize potential risks due to their specialist training, knowledge, and experience, as well as knowledge of the relevant standards and regulations.
In Germany, electrical specialists must meet the specifications of the BGV A3 Work Safety Regulations (e.g., Master Electrician). Other relevant regulations applicable in other countries must be observed.

Setup and function

3 Setup and function

3.1 Setup

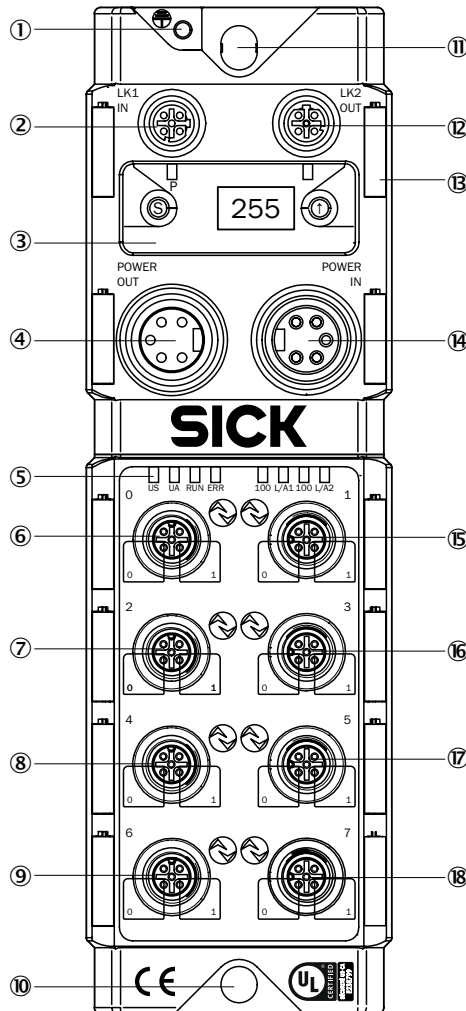


Fig. 1: EtherCAT® IO-Link Master setup IOLG2EC-03208R01

- | | |
|---------------------------------------------------------|----------------------------------|
| ① Functional grounding connection | ⑩ Mounting hole |
| ② EtherCAT® port 1 IN | ⑪ EtherCAT® port 2 OUT |
| ③ Display with operating buttons and two display LEDs | ⑫ Label |
| ④ Output supply voltage | ⑬ Input supply voltage |
| ⑤ Status LED: IO-Link Master/
Ethernet communication | ⑭ Port 1 (IO-Link, standard I/O) |
| ⑥ Port 0 (IO-Link, standard I/O) | ⑮ Pin/port LEDs: Signal status |
| ⑦ Port 2 (IO-Link, standard I/O) | ⑯ Port 3 (IO-Link, standard I/O) |
| ⑧ Port 4 (IO-Link, standard I/O) | ⑰ Port 5 (IO-Link, standard I/O) |
| ⑨ Port 6 (IO-Link, standard I/O) | ⑱ Port 7 (IO-Link, standard I/O) |

3.2 Function

The IOLG2EC-03208R01 IO-Link Master is a remote IO-Link input and output module for integration into an EtherCAT® network.

The eight ports can be configured and used independently of one another. They can either be configured as IO-Link ports or standard I/O ports.

The IO-Link Master is integrated and configured using project planning software. It can also be operated via the display or the web server.

3.3 Status indicators and operating elements

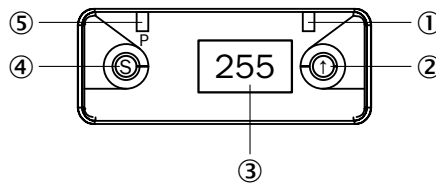


Fig. 2: Status indicators and operating buttons

- ① Display LED (configurable)
- ② Arrow pushbutton
- ③ Display
- ④ Set pushbutton
- ⑤ Display LED (configurable)

Pushbuttons



Pushbutton	Description
	<ul style="list-style-type: none"> • Select menu. • Scroll through the menu.
	<ul style="list-style-type: none"> • Scroll through the main menu.

Table 2: Pushbuttons

Setup and function

Function indicators (LEDs)

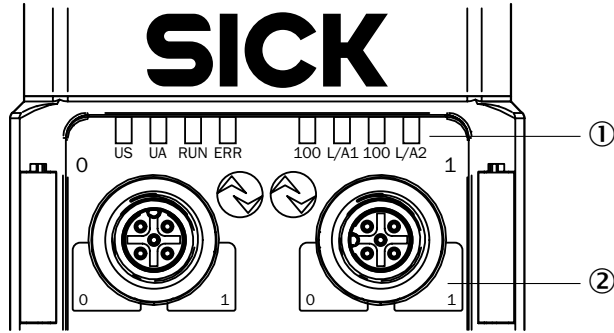


Fig. 3: Function indicators (LEDs)

- ① Status LEDs: IO-Link Master/communication
- ② Pin/port LEDs: Signal status

Pin/port LEDs: Pin 2 and pin 4 assignment

Port configured as	Right LED	Left LED
IO-Link port	Pin 4 signal status	Pin 2 signal status
Standard I/O port	Pin 2 signal status	Pin 4 signal status

Table 3: Pin/port LEDs: Assignment

Status LEDs: IO-Link Master

Function indicator	Description
US	<ul style="list-style-type: none"> • LED lights up green: Sensor supply OK. • LED flashes red: Sensor supply < 18 V
UA	<ul style="list-style-type: none"> • LED lights up green: Actuator voltage OK. • LED flashes red: Actuator voltage < 18 V • LED lights up red: No actuator voltage
RUN	Current status of the IO-Link Master <ul style="list-style-type: none"> • LED off: INIT • LED flashes green: PRE-OPERATIONAL. • LED single flashing green: SAFE-OPERATIONAL • LED lights up green: OPERATIONAL
ERR	<ul style="list-style-type: none"> • LED off: No error • LED flashes red: Invalid configuration • LED single flashing red: Local error • LED double flashing red: Application watchdog time exceeded • LED red: Error in the application

Table 4: Status LEDs: IO-Link Master

Status LEDs: Communication

Function indicator	Description
100	<ul style="list-style-type: none"> • LED off: Transfer rate 10 Mbit/s • LED lights up yellow: Transfer rate 100 Mbit/s
L/A1 and L/A2	<ul style="list-style-type: none"> • LED green: Data transfer

Table 5: Status LEDs: Communication

Pin/port LEDs: Standard I/O port

LED display	Description
Off	The I/O status of the relevant input or output pin is “0”
Yellow	The I/O status of the relevant input or output pin is “1”
Flashing red	Short-circuit in sensor supply between pin 1 and pin 3
Red	Short-circuit on relevant output, either between pin 2 and pin 3 and/or between pin 4 and pin 3

Table 6: Pin/port LEDs: Standard I/O port

Pin/port LEDs: IO-Link port

LED display	Description
Green	IO-Link connection active
Flashing green	No IO-Link connection
Green, fast flashing	IO-Link preoperate during data storage
Red, fast flashing	<ul style="list-style-type: none"> • Validation failed • Incorrect configuration of IO-Link data length • Data storage failed • Incorrect device for data storage
Red	IO-Link short-circuit between pin 3 and pin 4

Table 7: Pin/port LEDs: IO-Link port

Mounting

4 Mounting

4.1 Mounting the IO-Link Master

- Mount the IO-Link Master using the 2 mounting holes with M6 screws and washers.

5 Electrical connection

5.1 Safety

Electromagnetic interference

**WARNING!****Electromagnetic interference!**

Electromagnetic interference can cause the device, system, or nearby devices to malfunction! The IO-Link Master meets the requirements of Class A (industrial applications). Operation in other electromagnetic environments may cause faults or malfunctions.

- The operator must take appropriate precautions.
- Only connect the IO-Link Master to approved voltage supplies.
- Only use approved cables.

Working with live parts

**WARNING!****Equipment damage due to working with live parts!**

Working with live parts may result in damage to the equipment.

- Only connect and disconnect cable connections when the power is off.

Incorrect supply voltage

**WARNING!****Equipment damage due to incorrect supply voltage!**

An incorrect supply voltage may result in damage to the equipment.

- Protect the supply voltage with max. 8 A fuses.

Excessive current load



WARNING!

Equipment damage due to excessive current load!

An excessive current load may result in damage to the equipment.

- Do not exceed the maximum permissible total current of 8 A for the IO-Link Master.
- Each output provides a maximum current of 2 A.
- The sensors/bus and the actuator should be powered via separate current sources if possible.

Incorrect functional grounding



WARNING!

Incorrect functional grounding!

An incorrect functional grounding may result in equipment damage or malfunction.

- The grounding between the IO-Link Master and the machine must be a low-impedance system.
- The ground connection must be as short as possible.

5.2 IO-Link Master electrical connection

1. Ensure power supply is not connected.
2. Connect the IO-Link Master to the functional grounding of the system using the supplied ground strap. See following figure.
3. Connect supply voltage to “POWER IN” using a suitable cable.
4. Connect fieldbus connection via LK1/LK2.
5. Connect IO-Link devices or standard devices to the IO-Link ports.
6. If provided, connect the next gateway to “POWER OUT”.

Functional grounding

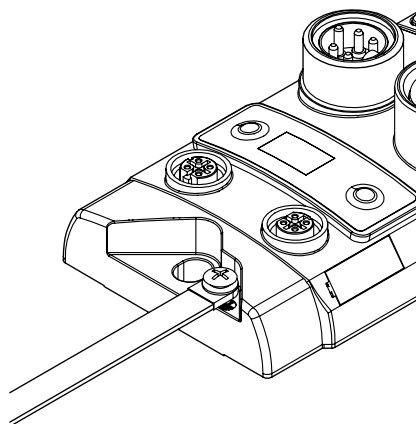


Fig. 4: Ground connection

Electrical connection

- IO-Link ports that are not in use must be sealed with M12 blind plugs to ensure the enclosure rating of IP 67.



NOTE!

Four M12 blind plugs are included in the scope of delivery.

5.3 Connection diagrams

5.3.1 Connection diagram for “POWER OUT” and “POWER IN” supply voltage



NOTE!

Note the pin assignment of the used connecting cables.

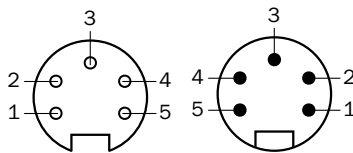


Fig. 5: Supply voltage
 Left: Output “POWER OUT” 7/8” female connector, 5-pin
 Right: Input “POWER IN” 7/8” male connector, 5-pin

Contact	Signal	Description
1	0 V	GND actuator supply
2	0 V	GND IO-Link Master and/or sensor supply
3	FE	Functional grounding
4	24 V DC	IO-Link Master and/or sensor supply
5	24 V DC	Actuator supply

Table 8: Description of “POWER OUT” and “POWER IN” supply voltage

5.3.2 “EtherCAT®” connection diagram

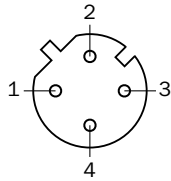


Fig. 6: EtherCAT® connection diagram, M12 female connector, D-coded, 4-pin

Contact	Signal	Description
1	Tx+	Sender+
2	Rx+	Receiver+
3	Tx-	Sender-
4	Rx-	Receiver-

Table 9: EtherCAT® description, M12 female connector, D-coded, 4-pin

5.3.3 “IO-Link port” connection diagram

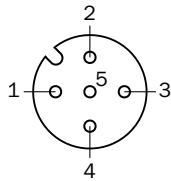


Fig. 7: IO-Link port connection diagram, M12 female connector, A-coded, 5-pin

Port used as I/O port

Contact	Signal	Description
1	L+	24 V DC, 1.6 A
2	I/O	Input or output (max. 2 A)
3	M	GND
4	IO-Link	Input or output (max. 2 A)
5	Not connected	Not connected

Table 10: IO-Link port description, M12 female connector, A-coded, 5-pin

Port used as IO-Link port

Contact	Signal	Description
1	L+	24 V DC, 1.6 A
2	I/O	Input or output (max. 2 A)
3	M	GND
4	IO-Link	IO-Link
5	Not connected	Not connected

Table 11: IO-Link port description, M12 female connector, A-coded, 5-pin

For the digital sensor inputs, see EN 61131-2, type 2.

System integration and configuration

6 System integration and configuration

6.1 EtherCAT® and project planning

Components

Communication between the IO-Link Master and the controlling system takes place via EtherCAT®.

The system consists of the following components:

- Bus master
- Bus modules (slave) such as the IO-Link Master.

The IO-Link Master is mapped as a modular device in the project planning software. The data modules of the inputs/outputs, the IO-Link ports, and any additional modules are presented in the project planning software on the basis of slots. Slots that are not in use can be left empty.

The device data required for project planning is stored in the ESI files. The ESI files provide the possible data modules, such as inputs/outputs, IO-Link ports with a different data width, and other additional modules. These files are used to configure the bus master in a manner appropriate to its type.

6.2 Configuring the IO-Link Master using project planning software and integrating it into the system

The configuration and system integration are described using an example in which the IO-Link Master is connected to a Beckhoff TwinCAT controller with the “TwinCAT® System Manager (Version 2)”.

When using other controllers and project planning software, refer to the relevant documentation.

1. Download the ESI files from “www.sick.com”.
2. Copy the ESI files into the “TwinCAT” directory. Default path:
C:\TwinCAT\Io\EtherCAT
The IO-Link Master will be available the next time the “TwinCAT® System Manager” is started.
3. Make sure that the EtherCAT® system is safe and de-energized.
4. Connect the IO-Link master to the EtherCAT® network.
5. Switch on the supply voltage.
6. Start the “TwinCAT® System Manager” in “Config Mode”.
7. Append the IO-Link Master. You can either append the IO-Link Master manually or you can use automatic scanning.

Appending the IO-Link master using automatic scanning

- Execute the “Scan devices” command via the context menu.

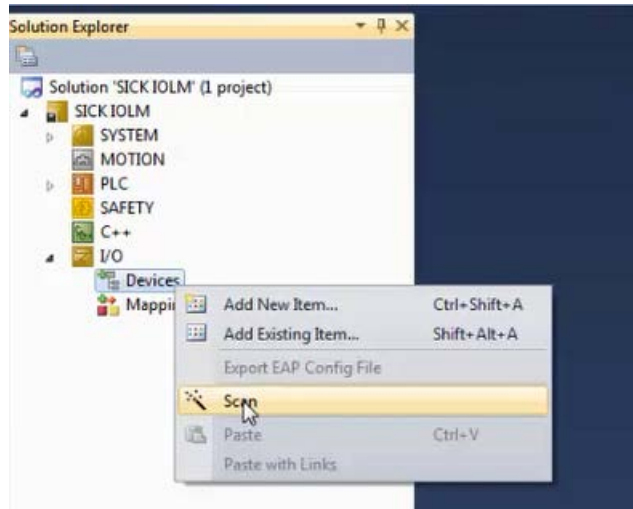


Fig. 8: “Scan devices”

Appending the IO-Link Master manually

- Select the “Append box” command via the context menu.

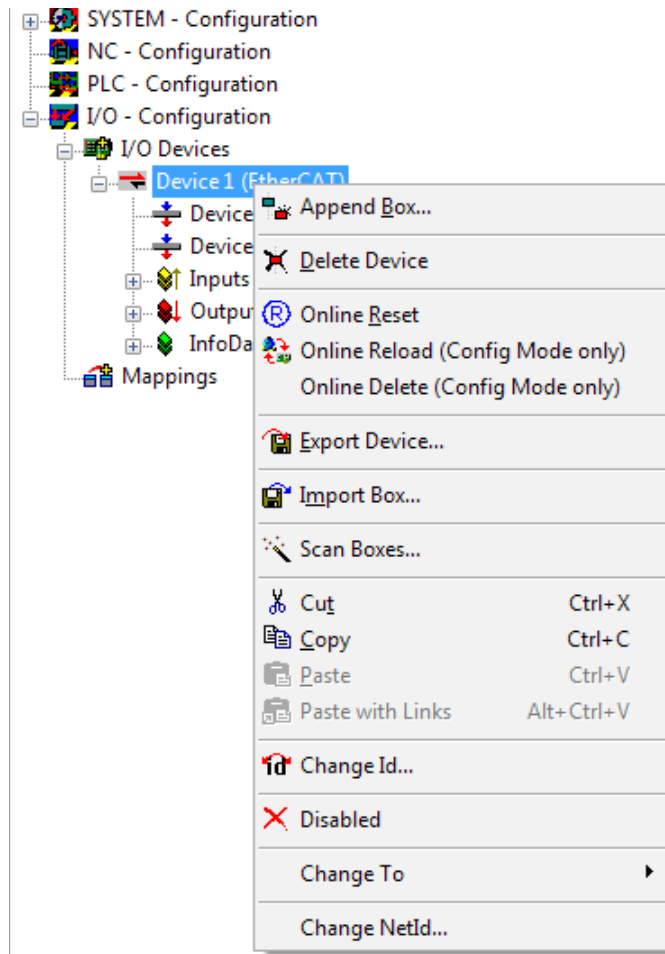


Fig. 9: “Append box”

System integration and configuration

Appending the IO-Link Master manually (continued)

- 8. Select the IO-Link Master in the “Insert EtherCAT® Device” window. You will see the following screen:

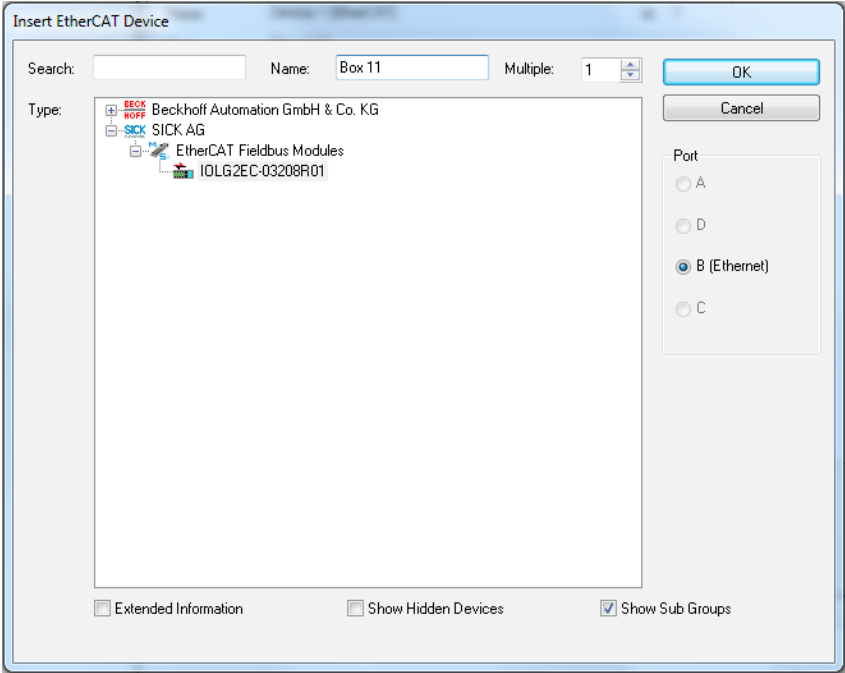


Fig. 10: Insert EtherCAT® Device

- 9. If the IO-Link Master was appended successfully, the tree structure appears.

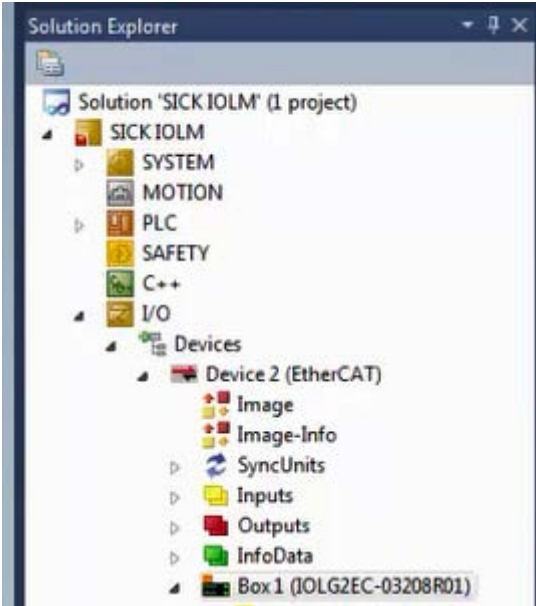


Fig. 11: TwinCAT tree structure

EoE (Ethernet over Ethercat)

10. The IO-Link Master supports EoE (Ethernet over Ethercat). To use this function, enter a valid DNS name and IP address.

“EtherCAT®” tab – Path: Advanced Settings > Mailbox > EoE

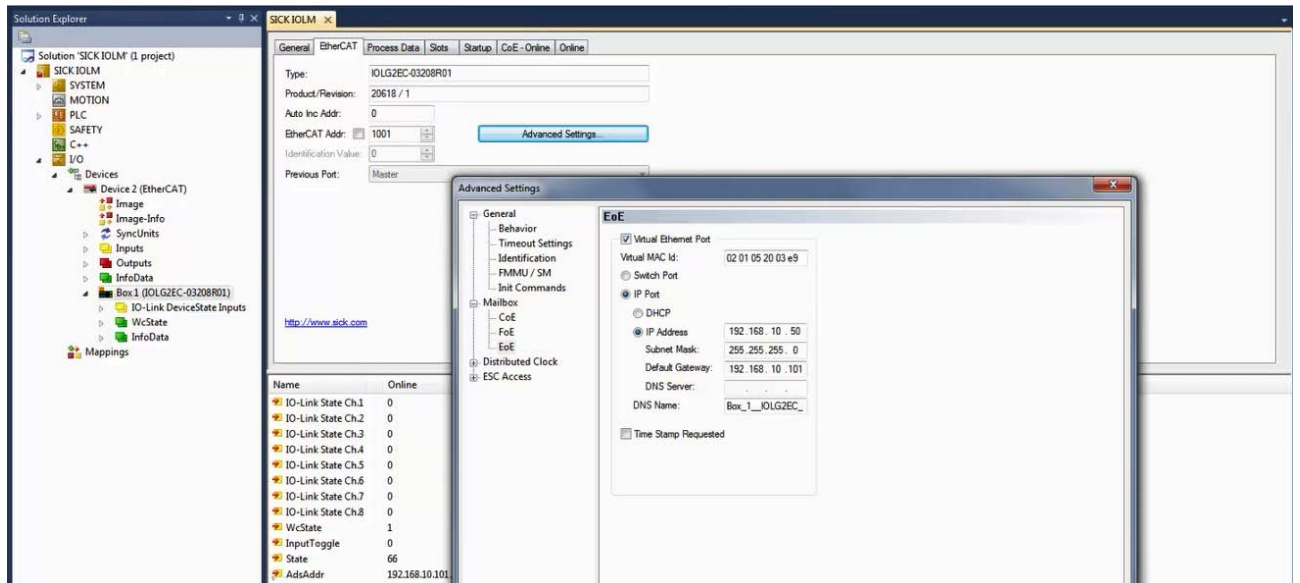


Fig. 12: Insert EtherCAT® Device

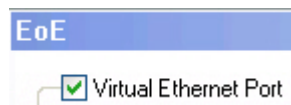


Fig. 13: Activate and deactivate EoE function



NOTE!

The “EoE” function is activated by default. The function is deactivated using the “Virtual Ethernet Port” check box.

System integration and configuration

Station alias

The station alias is used for the EtherCAT function “Hot Connect”.

11. Enter a value for “Station Alias”. The new value will only apply after a reset.

“EtherCAT®” tab – Path: Advanced Settings > ESC Access > E²PROM > Configured Station Alias

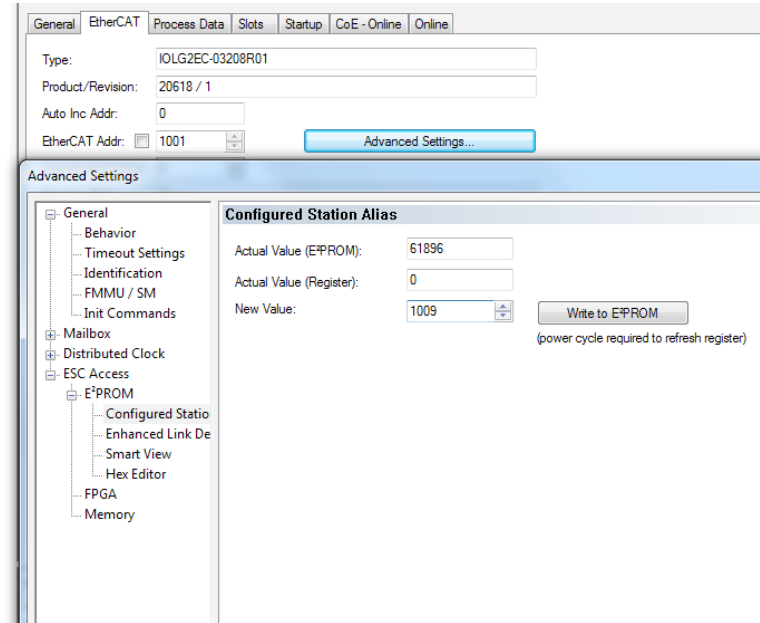
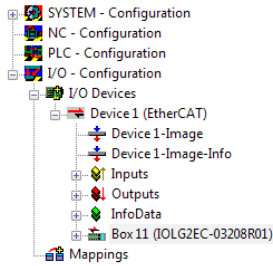


Fig. 14: Setting a station alias

6.3 Configuring the IO-Link Master

Slot structure of the IO-Link Master

The IO-Link Master is a modular device with the following slot structure:

Slot number	Description
1 to 8	IO-Link ports
9 to 16	Unused slots, reserved for future extensions
17	Input pin 2
18	Short-circuit pin 2
19	Short-circuit pin 4
20	Sensor short-circuit
21	IO-Link state (module status)
22 to 32	Unused slots, reserved for future extensions
33	Output pin 2
34	Restart pin 2
35	Restart pin 4
36	Display LEDs

Table 12: Slot structure of the IO-Link Master

You can assign a certain amount of process data (buffer size) to the slots.

The connected device specifies the length of the process data at a port. Select the right module according to the connected device.

The slots for future extensions are not used.

→ For a detailed description of the slots, see page 26, chapter 6.3.1.

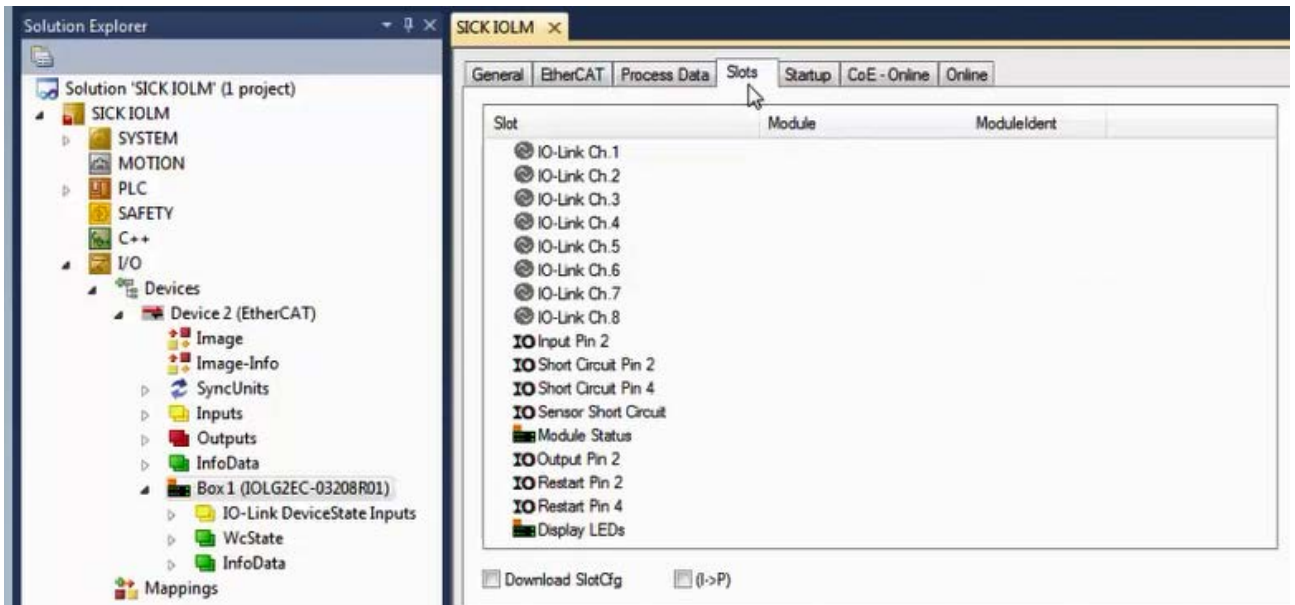


Fig. 15: "Slots" tab for the IO-Link Master

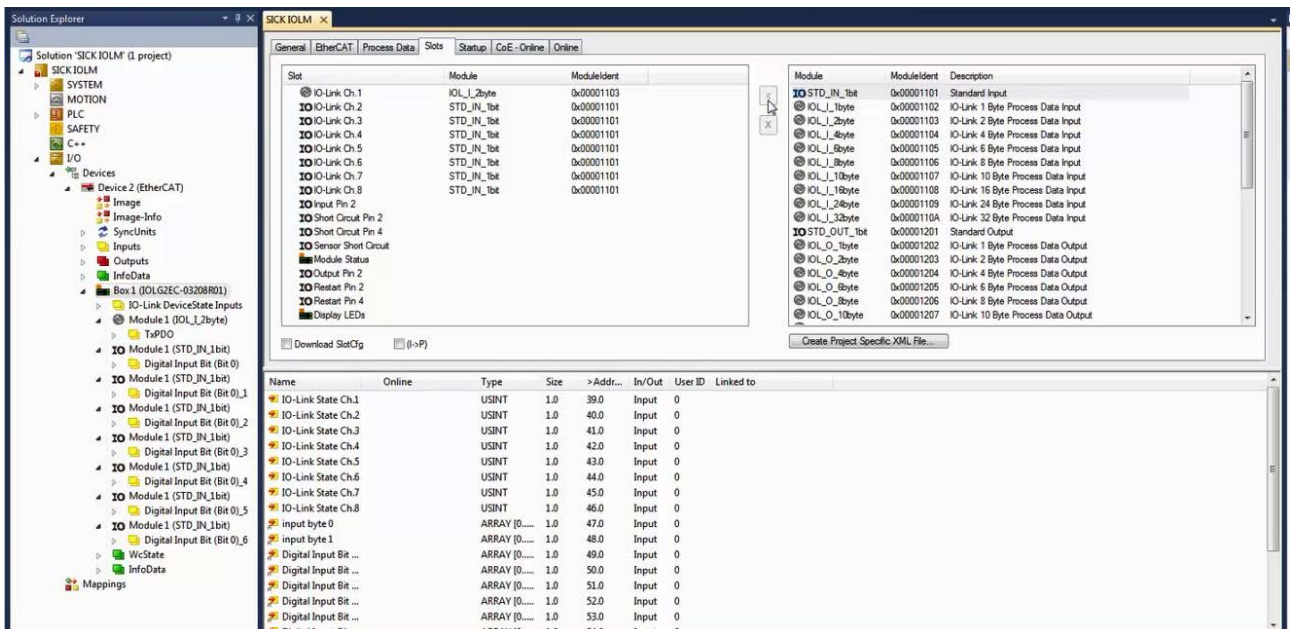


Fig. 16: Example module configuration

System integration and configuration

6.3.1 Bit mapping and functions of the modules

Inputs pin 4
Inputs pin 2
Outputs pin 4
Outputs pin 2

The slots mentioned in table 12 are described in detail below.

Signals from configured inputs and outputs are mapped in modules as follows:

Module	Inputs/outputs
STD_IN_1bit	Inputs pin 4
Input pin 2	Inputs pin 2
STD_OUT_1bit	Outputs pin 4
Output pin 2	Outputs pin 2

Table 13: Modules for the input and output signals

IO-Link module schema

IO-Link modules are structured according to the following schema:

- IOL_I/O_x/xBytes

	Description
I/O	<ul style="list-style-type: none"> • I: Input data • O: Output data • I/O: Input and output data
x/xBytes	Amount of process data used. The amount should be equal to or greater than the process data length of the IO-Link device.

Table 14: IO-Link module schema

Short-circuit pin 2 or short circuit pin 4

This module indicates whether there is a short-circuit between a set output and ground on a port.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Restart pin 2 or restart pin 4

This module enables you to configure the startup behavior after an actuator short-circuit.

- Bit set: Automatic restart
- Bit not set: No automatic restart; restart must be triggered manually.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

IO-Link state (module status)

This module indicates the current status of each port.

Status	Description
0x_0	Port disabled
0x_1	Port in std dig in
0x_2	Port in std dig out
0x_3	Port in communication OP
0x_4	Port in communication COMSTOP
0x1_	Watchdog detected
0x2_	Internal error
0x3_	Invalid device ID
0x4_	Invalid vendor ID
0x5_	Invalid IO-Link version
0x6_	Invalid frame capability
0x7_	Invalid cycle time
0x8_	Invalid PD in length
0x9_	Invalid PD out length
0xA_	No device detected

Table 15: "IO-Link state" module

Sensor short-circuit

This module indicates whether there is a short-circuit in the sensor supply on a port.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Display LED

This module enables you to control the display LEDs.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
						Green LED	Red LED

System integration and configuration

6.4 Startup

You can preconfigure the IO-Link ports and the outputs in the “Startup” tab. You can edit the entry by selecting it and then calling up the context menu. The entries are transferred when the configuration is overwritten.

You also have the option of activating the validation for an IO-Link port. This allows you to check whether a particular device is connected.

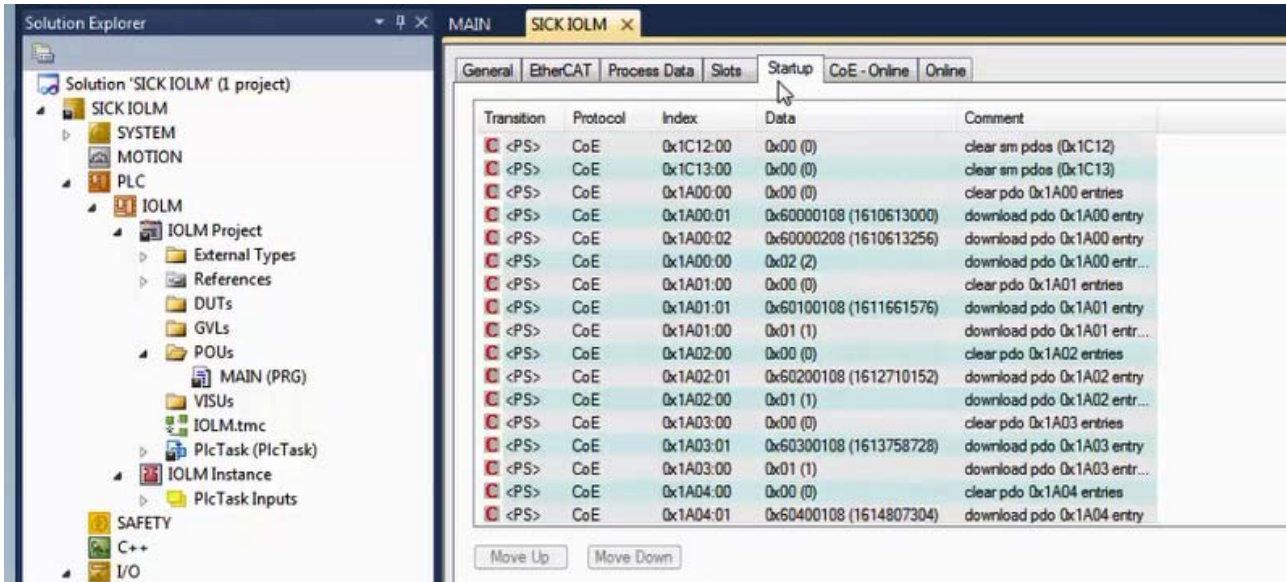


Fig. 17: “Startup” tab

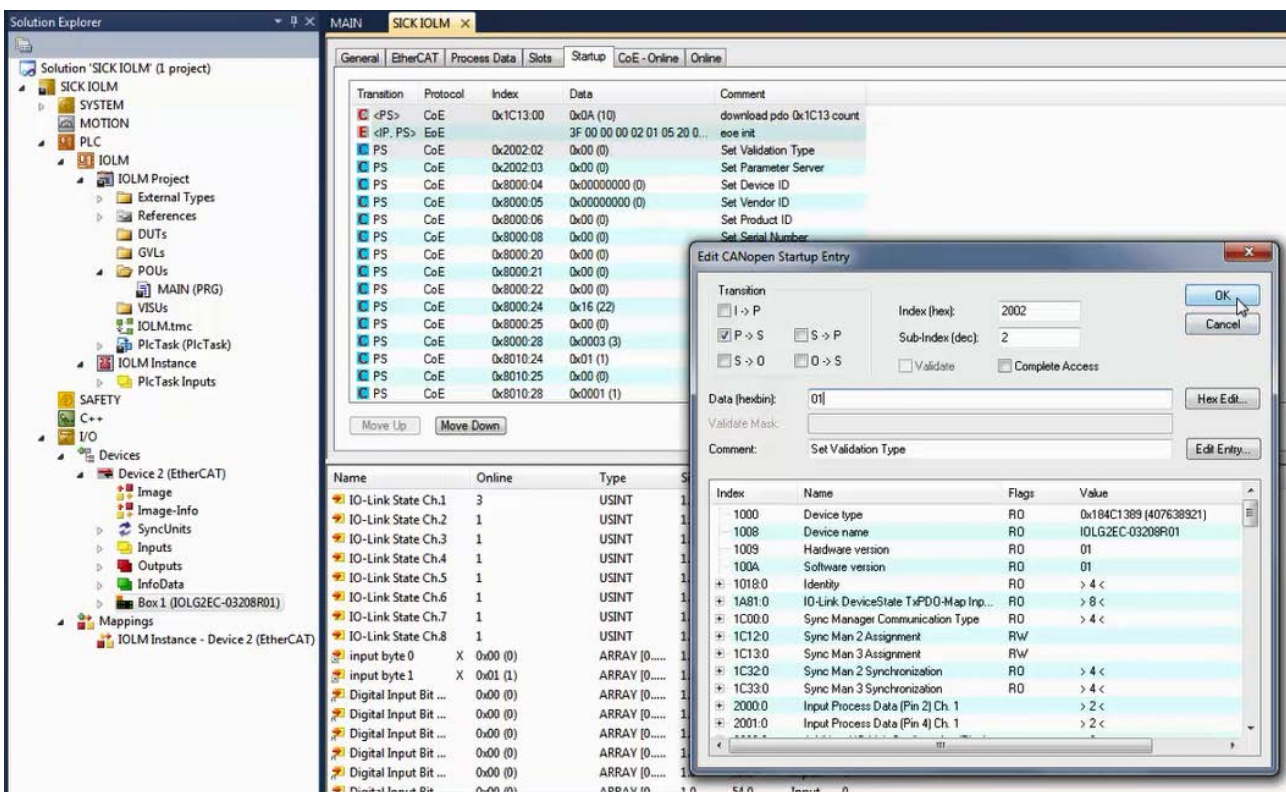


Fig. 18: Edit entry

Validation

The following options are available for validation:

Option	Description
0 = No validation	Validation is deactivated. Every IO-Link device is accepted.
1: Compatibility (VID + DID)	Manufacturer ID and device ID are compared with the module data. IO-Link communication only starts if they match.
2: Identity (VID + DID + SN)	Manufacturer ID, device ID, and serial number are compared with the module data. IO-Link communication only starts if they match.

Table 16: Validation

Parameter server

The following options are available for the parameter server:

Option	Description
0x8X Switch on	The data storage functions are active. Parameter data and identification data of the IO-Link devices are residually saved.
0x0X Switch off	The data storage functions are deactivated. The saved data is retained.
0x40 Delete	The data storage functions are deactivated. The saved data is deleted.
0xX1 Enable or block upload	Enable or block the parameter data upload into the IO-Link Master port data storage. <ul style="list-style-type: none"> • Enable upload: The IO-Link Master starts to upload the parameter data as soon as an IO-Link device requests an upload (upload flag set) or if there is no data stored in the master port, e.g., after the data has been deleted or before the first data upload • Block upload: The data is not uploaded. If an IO-Link device sends an upload request, a download starts if there are different parameter sets since an upload cannot take place. The download must be enabled.
0xX2 Enable or block download	Enable or block the parameter data download to the IO-Link device. <ul style="list-style-type: none"> • Enable download: As soon as the saved parameter data in the parameter server of the port differs from a connected IO-Link device and there is no upload request from the IO-Link device, a download is performed. • Block download: If the download is blocked, the parameter data is uploaded. The upload flag for the IO-Link device does not need to be set in this case. The upload must be enabled.
Block upload and download	If both upload and download are blocked, the parameter data is not exchanged. However, the IO-Link device still communicates with the IO-Link port.

Table 17: Parameter server

System integration and configuration



NOTE!

After the parameter data upload, the vendor ID and device ID are retained until the data sets of the connected IO-Link device are deleted.

A validation takes place when the connected IO-Link device starts up. This means that only one IO-Link device of the same type can be used for data storage. In order to use an IO-Link device of a different type, you must delete the content of the parameter server.

IO-Link device upload flag

You set the function individually for each port via the object “0x20n2” and “0x20n3”. “n” in this case stands for the relevant port number – 0 to 7. → See page 31, chapter 6.5.3 and page 31, chapter 6.5.4.

For more information about configuration, please refer to the IO-Link service data on the next page.

If the upload flag is set, data that is already saved in the parameter server can be overwritten with new parameter data for the same IO-Link device.

Safe state

This function is an extension of an output configuration of the relevant port pin. For each port pin, you can predefine a safe state which should be assumed if bus communication is lost.

The following options are possible:

- 0x00: 0
- 0x01: 1
- 0x02: Last state

6.5 Object directory

IO-Link configuration

IO-Link ISDU parameters can be read or written from the IO-Link device via the “0x4000 (IO-Link service data Ch. X)” object.

To do this, you must enter the corresponding index and subindex. To write the parameters, you must also enter the corresponding length and the data.

The read or write task is started via the “control object”. The result is displayed in the “status object”.

6.5.1 Input process data (pin 2) Ch. x (0x2000 – 0x2FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x20n0	0x01	Input pin 2	BOOLEAN	R0	–
n = 0 ... 7	0x02	Actor short-circuit pin 2	BOOLEAN	R0	–

6.5.2 Input process data (pin 4) Ch. x (0x2000 – 0x2FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x20n1 n = 0 ... 7	0x01	Actor short-circuit pin 4	BOOLEAN	RO	-
	0x02	Sensor supply short-circuit	BOOLEAN	RO	A potential short circuit on a port is indicated as follows: Bit 7: Port 7 Bit 6: Port 6 Bit 5: Port 5 Bit 4: Port 4 Bit 3: Port 3 Bit 2: Port 2 Bit 1: Port 1 Bit 0: Port 0

6.5.3 Additional IO-Link configuration data (pin 4) Ch. x (0x2000 – 0x2FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x20n2 n = 0 ... 7	0x01	Safe state	UINT8	RW	0x00: 0 0x01: 1 0x02: Last state
	0x02	Validation type	UINT8	RW	0: No validation 1: Compatibility (VID + DID) 2: Identity (VID + DID + SN) → See page 29, table 16.
	0x03	Parameter server	UINT8	RW	→ See page 29, table 17.

6.5.4 Additional IO configuration data (pin 2) Ch. x (0x2000 – 0x2FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x20n3 n = 0 ... 7	0x01	Safe state	UINT8	RW	• 0x00: 0 • 0x01: 1 • 0x02: Last state

6.5.5 Display LEDs (0x2A01)

Index	Subindex	Name	Data type	Access	Description/Value
0x2A01	0x01	LED red	BOOLEAN	RO	Bit 1: Green LED
	0x02	LED green	BOOLEAN	RO	Bit 0: Red LED

System integration and configuration

6.5.6 Module status (0x2A02)

Index	Subindex	Name	Data type	Access	Description/Value
0x2A02	0x01	UA low	BOOLEAN	RO	–
	0x02	US low	BOOLEAN	RO	–
	0x03	no UA	BOOLEAN	RO	–

6.5.7 Output process data Ch. x (0x3000 – 0x3FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x30n0	0x01	Output pin 2	BOOLEAN	RO	–
	0x02	Restart pin 2	BOOLEAN	RO	–
0x30n1 n = 0 ... 7	0x01	Restart pin 4	BOOLEAN	RO	–

6.5.8 IO-Link service data Ch. x (0x4000 – 0x4FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x40n0 n = 0 ... 7	0x01	Control	UINT8	RW	<ul style="list-style-type: none"> • 0: no control action • 3: read • 2: write
	0x02	Status	UINT8	RO	<ul style="list-style-type: none"> • 0: no activity • 1: busy • 2: success • 4: error • 0xFF: failure
	0x03	Index	UINT16	RW	–
	0x04	Subindex	UINT8	RW	–
	0x05	Length	UINT8	RW	–
	0x06	Data	UINT232	RW	–
	0x07	Error code	UINT16	RO	–

6.5.9 IO-Link configuration data Ch. x (0x8000 – 0x8FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x80n0 n = 0 ... 7	0x04	Device ID	UINT32	RW	–
	0x05	Vendor ID	UINT32	RW	–
	0x06	Product ID	UINT32	RW	–
	0x08	Serial number	UINT32	RW	–
	0x20	IO-Link revision	UINT8	RW	–
	0x21	Frame capability	UINT8	RW	–
	0x22	Min cycle time	UINT8	RW	–
	0x24	Process data in length	UINT8	RW	–
	0x25	Process data out length	UINT8	RW	–
0x28	Master control	UINT16	RW	–	

6.5.10 IO-Link information data Ch. x (0x9000 – 0x9FFF)

Index	Subindex	Name	Data type	Access	Description/Value
0x90n0 n = 0 ... 7	0x04	Device ID	UINT32	RO	–
	0x05	Vendor ID	UINT32	RO	–
	0x06	Product ID	UINT32	RO	–
	0x08	Serial number	UINT32	RO	–
	0x20	IO-Link revision	UINT8	RO	–
	0x21	Frame capability	UINT8	RO	–
	0x22	Min cycle time	UINT8	RO	–
	0x24	Process data in length	UINT8	RO	–
	0x25	Process data out length	UINT8	RO	–

6.5.11 IO-Link diagnosis data Ch. x (0xA000 – 0xAFFF)

Index	Subindex	Name	Data type	Access	Description/Value
0xA0n0 n = 0 ... 7	0x01	IO-Link state	UINT8	RO	–
	0x02	Lost frames	UINT8	RO	–

6.5.12 IO-Link status data Ch. x (0xF100)

Index	Subindex	Name	Data type	Access	Description/Value
0xF100	0x01	IO-Link state port 0	UINT8	RO	–
	0x02	IO-Link state port 1	UINT8	RO	–
	0x03	IO-Link state port 2	UINT8	RO	–
	0x04	IO-Link state port 3	UINT8	RO	–
	0x05	IO-Link state port 4	UINT8	RO	–
	0x06	IO-Link state port 5	UINT8	RO	–
	0x07	IO-Link state port 6	UINT8	RO	–
	0x08	IO-Link state port 7	UINT8	RO	–

Operation on the IO-Link Master

7 Operation on the IO-Link Master

You can use the display on the IO-Link Master to call up the following information:

- Station alias
- Hardware and firmware version.

7.1 Status indicators and operating buttons

Overview

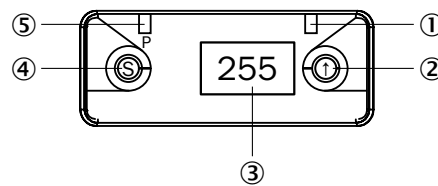


Fig. 19: Status indicators and operating buttons

- ① Display LED (configurable)
- ② Arrow pushbutton
- ③ Display
- ④ Set pushbutton
- ⑤ Display LED (configurable)

7.1.1 Operating buttons

Functions



Pushbutton	Description
 “Arrow” pushbutton	<ul style="list-style-type: none"> • Select menu. • Scroll through the menu.
 “Set” pushbutton	<ul style="list-style-type: none"> • Scroll through the main menu: Press pushbutton briefly.

Table 18: Functions of the operating buttons

7.1.2 Configuring display LEDs

The display LEDs are configured via the “Display LED” function.
→ See “Display LED” on page 27.

7.2 Modes and displays

7.2.1 Operating mode

The IO-Link Master is in operation when in operating mode. The display shows the station alias.

7.2.2 Display mode

Display mode allows you to call up information.

If no pushbuttons are pressed for 10 seconds, the display returns to operating mode.

7.3 Commissioning

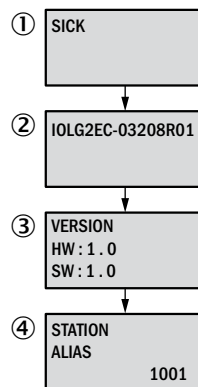


Fig. 20: Commissioning

- ① SICK
- ② IO-Link Master device designation
- ③ Current hardware and firmware
- ④ Current station alias

Operation on the IO-Link Master

7.4 Main menu

Main menu

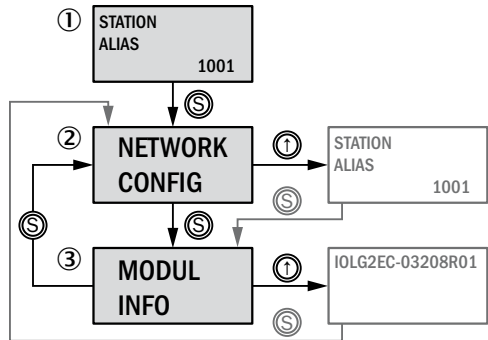


Fig. 21: Main menu

- ① Status indicator: Station alias
- ② Menu for network configuration
- ③ Menu for displaying information about the IO-Link Master

7.5 “NETWORK CONFIG” menu

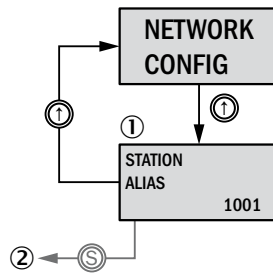


Fig. 22: “NETWORK CONFIG” menu

- ① Current station alias
- ② To “MODULE INFO” menu

7.6 “MODULE INFO” menu – information about the IO-Link Master

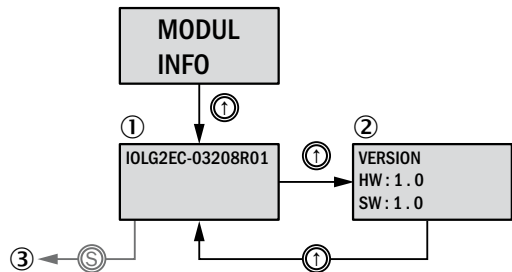


Fig. 23: “MODULE INFO” menu
Displays information about the IO-Link Master

- ① IO-Link Master device designation
- ② Current hardware and firmware version
- ③ To “NETWORK CONFIG” menu

8 Operation via the web server

8.1 General information

The IO-Link Master has an integrated interface for a web server.

You can use the web server to carry out the following tasks:

- Call up detailed information on the current status of the IO-Link Master.
- Call up information about connected IO-Link devices.
- Configure connected IO-Link devices.

Make sure that the device is correctly integrated into the network. To set up a connection with the web server, enter the IP address of the IO-Link Master into the address bar in the browser. A welcome page appears.

Use the current version of Internet Explorer and deactivate the proxy server.

8.2 Configuring access to the web server

In order to access the web server of the IO-Link Master, you must configure the system as follows:

- Enter a valid DNS name, a valid IP address, and the IP address of the network card of the EtherCAT® strand as the default gateway in the “TwinCAT System Manager” project planning software.
“EtherCAT®” tab – Path: Advanced Settings > Mailbox > EoE

8.3 Views

The web server comprises the following views:

- Welcome page
- Home
- Diagnostic process
- Device properties
- Diagnostic module
- Configuration
- Contact

Operation via the web server

Welcome page

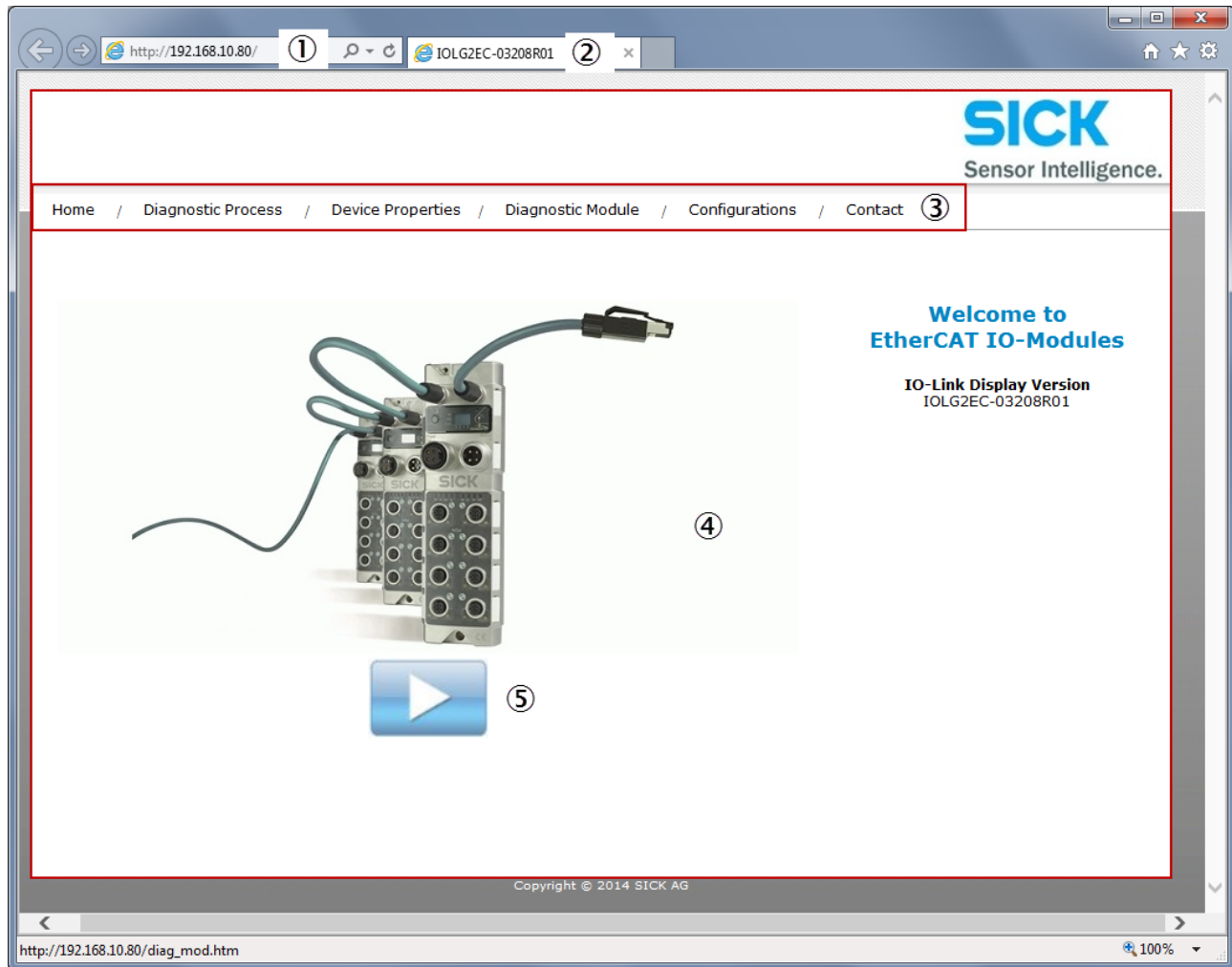


Fig. 24: Welcome page of the web server

- ① IP address of the IO-Link Master in the address bar of the browser
- ② Device designation, in this case IOLG2EC-03208R01
- ③ Navigation bar for switching between the views
- ④ View, in this case “Welcome page” view
- ⑤ “Play” button

➤ Click the “Play” button to switch to the “Home” view.

“Home” view

- Displays information about the IO-Link Master
- Displays the network activity of the IO-Link Master

The screenshot shows the SICK web server interface. At the top right is the SICK logo and 'Sensor Intelligence.' Below it is a navigation menu with links: Home / Diagnostic Process / Device Properties / Diagnostic Module / Configurations / Contact. The main content area is titled 'IOLG2EC-03208R01 Basic Module Information'. It is divided into two sections: 'Module Information' and 'Network Configuration'. The 'Module Information' section lists: Product Name: IOLG2EC-03208R01, Order Code: 6053254, Module Description: (empty), Module Location: (empty), Firmware Revision: 1.2 (1.1.2), and Hardware Revision: 5. The 'Network Configuration' section lists: Station alias: 1009, Link Speed Port 1: 100 Mbit/s FULL, and Link Speed Port 2: No Link. To the right of these sections is a text box explaining that the page is read-only and contains a 'Refresh' button. The footer of the page reads 'Copyright © 2014 SICK AG'.

Module Information	
Product Name:	IOLG2EC-03208R01
Order Code:	6053254
Module Description:	
Module Location:	
Firmware Revision:	1.2 (1.1.2)
Hardware Revision:	5

Network Configuration	
Station alias:	1009
Link Speed Port 1:	100 Mbit/s FULL
Link Speed Port 2:	No Link

Operation via the web server

“Diagnostic process” view

- Displays current process data via LEDs
- Displays the port status via LEDs
- Displays data for connected IO-Link devices

The screenshot shows the 'Diagnostic Process' view for the IOLG2EC-03208R01 module. The page title is 'IOLG2EC-03208R01' with a subtitle 'Information about current process states'. The main content area displays a grid of 8 IO-Link ports, each with a status indicator (LED) and a device name. The ports are numbered 0-7. The status indicators show various colors (green, yellow, red) indicating different process states. A 'Refresh' button is visible. An 'LED functions overview' section explains the color coding for input, output, and IO-Link characteristics.

LED functions overview:

Input characteristic	
0	1 short circuit

Output characteristic	
0	1 > I _{max}

IO-Link characteristic	
n.c.	IO-Link
wrong device	short circuit



NOTE!

You cannot use the web server to configure the IO-Link Master. This requires a suitable controller with the relevant project planning software.

“Device properties” view

- Displays the process data for the relevant IO-Link device

The screenshot shows the SICK web server interface for the 'IO Link Device Properties (Port 0)' of device IOLG2EC-03208R01. The page is divided into several sections:

- Identification Data:** Vendor ID: 0x001A, Device ID: 0x80000B, Vendor Name: SICK AG, Vendor Text: SICK Sensor Intelligence, Product Name: MPS-064TLTQ0, Product ID: 1062507, Product Text: Magnetic Cylinder Sensor, Serial Number: 14250041, Hardware Revision: 1.00, Firmware Revision: V5.14, Application specific tag: SICK AG.
- Process Data:** Inputs (hex): 0D FD, Outputs (hex): no outputs.
- Parameter Data:** Index: [input field], Subindex: [input field], Data (hex): [input field], Result: [input field]. Radio buttons for 'Read' (selected) and 'Write', and 'Apply' and 'Clear' buttons.
- Events:** Current Event: no Event.
- Parameter server content:** Vendor ID: 00 00, Device ID: 00 00 00, Checksum: 00 00 00 00, Content: (none).

On the right side, there is a 'Refresh' button and an image of the IO-Link device with numbered ports (1-8) indicated by blue circles. A text box explains that on this page, users can get information about the current IO Link status, choose the related port, and get information about it. It also mentions the ability to configure IO Link devices and refers to the manual. A note states that the Refresh button can be used to reload the page if the information doesn't get updated automatically.

- To display the information and configuration for the right IO-Link device, select the corresponding port in the figure on the right-hand side.



NOTE!

You cannot use the web server to set Process values for the IO-Link device.

Operation via the web server

“Device properties” view – port for the desired IO-Link device selected

- Configuration of the relevant IO-Link device
- Parameter data: Read and write IO-Link parameter data. For the indices and subindices, please refer to the operating instructions for the relevant IO-Link device.
- Events: Displays the current events for the IO-Link device
- Parameter server content: Displays the content of the parameter server

“Diagnostic module” view

- Displays the current status of the IO-Link Master
- Displays the current status of the network

For a description, see Page 14, Table 4 and Page 14, Table 5.

The screenshot shows the SICK web server interface for the diagnostic module. At the top right is the SICK logo and 'Sensor Intelligence.' Below it is a navigation bar with links: Home / Diagnostic Process / Device Properties / **Diagnostic Module** / Configurations / Contact. The main heading is 'IOLG2EC-03208R01' with a sub-heading 'Information about current Module status'. A photograph of the device's front panel shows several LEDs labeled US, UA, RUN, ERR, 100, L/A1, 100, L/A2. Below the photo is a 'Description' table. To the right of the photo is a text block explaining the diagnostic module status and a 'Refresh' button. Below that is an 'LED functions overview' section with a legend for each LED's status.

Description		
US	Sensor and Module Supply	Supply voltage is OK
UA	Actor Supply	Supply voltage is OK
RUN	Network Run	Operational
ERR	Network Error	No error
100	Link Speed 1	Data rate on Port 1 is "100 Mbit/s FULL"
L/A 1	Link Activity 1	Network connection on Port 1 is active
100	Link Speed 2	
L/A 2	Link Activity 2	No network connection on Port 2

LED functions overview:

- US**: OK (Green), Low (Red)
- UA**: OK (Green), Low (Red), Error (Red)
- RUN**: Operational (Green), Dis-operational (Red)
- ERR**: Application failure (Red), Invalid config (Red), No Error (White)
- 100**: 100 Mbit/s (Yellow), 10 Mbit/s (White)
- L/A**: Link activity (Green), No link activity (White)

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“Configuration” view

You can use this view to change the description and position for the IO-Link Master. To change the data, enter the following user name and password:

- User name: sick
- Password: IOLG2

SICK
Sensor Intelligence.

Home / Diagnostic Process / Device Properties / Diagnostic Module / **Configurations** / Contact

IOLG2EC-03208R01
Module Configuration

General Information

Modul Description:

Modul Location:

On the Module Configurations page there is the ability to configurate the module. Network settings such as user specific information texts can be set on this page.

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Cleaning and maintenance


“Contact” view

- Contact information for SICK AG

SICK
Sensor Intelligence.

Home / Diagnostic Process / Device Properties / Diagnostic Module / Configurations / **Contact**

IOLG2EC-03208R01
Contact



SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch
Germany

Telefon: +49 (0) 7681 202-0
Fax: +49 (0) 7681 202-3863
E-Mail: info@sick.de
Web: <http://www.sick.com>

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9 Cleaning and maintenance

SICK devices are maintenance-free. We do recommend checking the screw and male/female connections and cleaning the device at regular intervals.

10 Disposal

Please observe the following when disposing of the device:

- Do not dispose of the device in domestic refuse.
- Dispose of the device according to the relevant country-specific regulations.

11 Technical data



NOTE!

You can download, save, and print the relevant on-line data sheet with technical data, dimensions, and connection diagrams for the IO-Link Master online at “www.sick.de”. Enter the order number “6053254” for the IOLG2EC-03208R01 IO-Link Master on the web page.

11.1 Dimensions

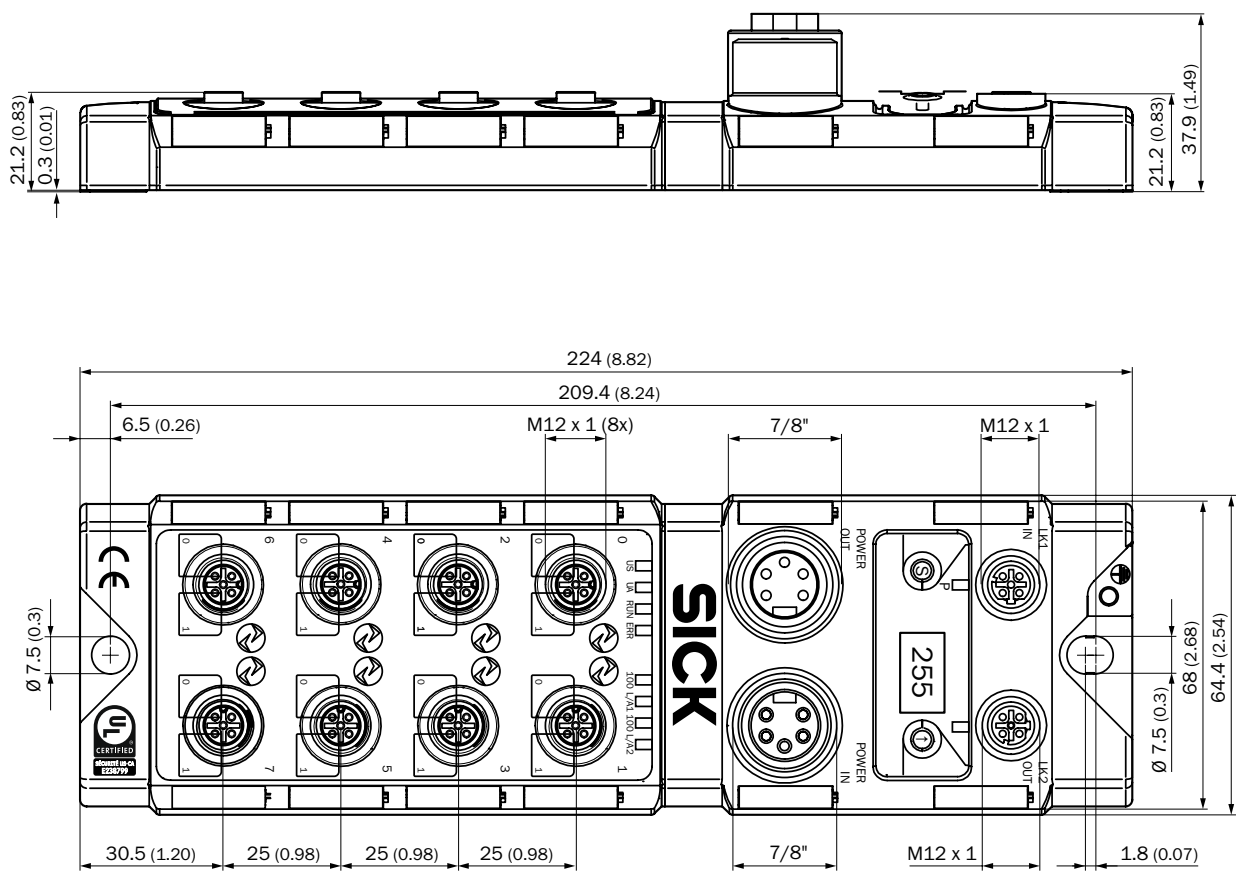


Fig. 25: Dimensions of the IOLG2EC-03208R01 EtherCAT® IO-Link Master
Dimensions in mm (inch)

Technical data

11.2 Supply

Supply voltage	DC 18 V ... 30.2 V
Connection	7/8" male connector, 5-pin
Functional grounding	1 FE connection for M4 ground strap
Current consumption at 24 V DC	130 mA
Residual ripple	< 1%
Input ports/output ports	8 x M12 female connector, 5-pin, A-coded

Table 19: Supply

11.3 EtherCAT®

EtherCAT® port	2 x 100Base-Tx
EtherCAT® port connection	2 x M12 female connector, 4-pin, D-coded
Data transmission rate	10 / 100 Mbit/s
Suitable cable types in accordance with IEEE 802.3	Screened, twisted cable pair, at least STP CAT5 or STP CAT5e
Max. cable length	100 m
Flow control	Full duplex (IEEE 802.33x-Pause)

Table 20: EtherCAT®

11.4 Ambient conditions

Mark of conformity	CE
EMC	EN 61000-6-2 EN 61000-6-4
Ambient temperature range	<ul style="list-style-type: none"> • Operation: -5 °C ... +70 °C • Storage: -25 °C ... +70 °C
Enclosure rating (IEC 60529)	IP 67 when plugged in and screwed together
Shock resistance	EN 60068-2-27
Vibration resistance	EN 60068-2-6, EN 60068-2-64

Table 21: Ambient conditions

11.5 Structural design

Dimensions	→ See Page 45, Chapter 11.1.
Housing material	Zinc die cast, matt nickel-plated
Weight	Approx. 670 g
Mounting	2 mounting holes for M6 screws

Table 22: Structural design

Technical data

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