OPERATING INSTRUCTIONS

IOLG2EI-03208R01 – EtherNet/IP™

IO-Link Master

EN

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Contents

1 General information 5
1.1 Information on the operating instructions 5
1.2 Explanation of symbols 5
1.3 Abbreviations 5
1.4 Limitation of liability 6
1.5 Scope of delivery 6
1.6 Customer service 6
1.7 EU declaration of conformity 7
2 Safety 8
2.1 Intended use 8
2.2 Incorrect use 8
2.3 Requirements for qualified personnel 9
3 Setup and function 10
3.1 Setup 10
3.2 Function 11
3.3 Status indicators and operating elements 11
4 Mounting 15
4.1 Mounting the IO-Link Master 15
5 Electrical connection 15
5.1 Safety 15
5.2 IO-Link Master electrical connection 16
5.3 Connection diagrams 17
5.3.1 Connection diagram for “POWER OUT” and “POWER IN” supply voltage 17
5.3.2 “EtherNet/IP™” connection diagram 18
5.3.3 “IO-Link port” connection diagram 18
6 System integration and configuration 19
6.1 Integrating the IO-Link Master into the system 19
6.2 Configuring the IO-Link Master 23
6.2.1 Data configuration 23
6.2.2 Configuration data 23
6.2.3 Module configuration 24
6.2.4 IO-Link port configuration 24

Contents

6.2.5 Input data ... 25
6.2.6 Process data outputs ... 28
6.3 IO-Link object class code: 0x96 (CIP generic) ... 29
7 Operation on the IO-Link Master ... 32
7.1 Status indicators and operating buttons ... 32
7.1.1 Operating buttons ... 32
7.1.2 Configuring display LEDs ... 33
7.2 Modes and displays ... 33
7.2.1 Operating mode ... 33
7.2.2 Edit mode and fast-scroll mode ... 33
7.2.3 Ping mode ... 33
7.3 Locking and unlocking edit mode for display ... 34
7.4 Commissioning ... 34
7.5 Main menu ... 35
7.6 “IP CONFIG” menu and changing address ... 35
7.7 “IP SETUP” menu ... 37
7.8 “MODULE INFO” menu – information about the IO-Link Master ... 37
8 Operation via the web server ... 38
8.1 General information ... 38
8.2 Views ... 38
9 Cleaning and maintenance ... 46
10 Disposal ... 46
11 Technical data ... 47
11.1 Dimensions ... 47
11.2 Supply ... 48
11.3 EtherNet ... 48
11.4 Operating conditions ... 48
11.5 Constructional design ... 48
Index ... 49

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 IOLG2EI-03208R01 EtherNet/IP™ 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 Abbreviations

Abbreviation	Description
DID	Device ID
EIP	EtherNet/IP™
EMC	Electromagnetic compatibility
FE	Functional grounding
I	Standard input port
ISDU	Index Service Data Unit (IO-Link service data parameters)
O	Standard output port
VID	Vendor ID

Table 1: Abbreviations

1.4 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.

1.5 Scope of delivery

Included with delivery:

- IOLG2EI-03208R01 EtherNet/IP™ IO-Link Master
- 4 M12 blind plugs for sealing unused IO-Link ports
- M4 ground strap with M4 x 6 screw
- 20 labels

Supplied documentation:

- QuickStart

1.6 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.

1.7 EU declaration of conformity

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

2 Safety

2.1 Intended use

The IOLG2EI-03208R01 IO-Link Master is a remote IO-Link input and output module for integration into an EtherNet/IP™ network.

The IOLG2EI-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 IOLG2EI-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.

3 Setup and function

3.1 Setup

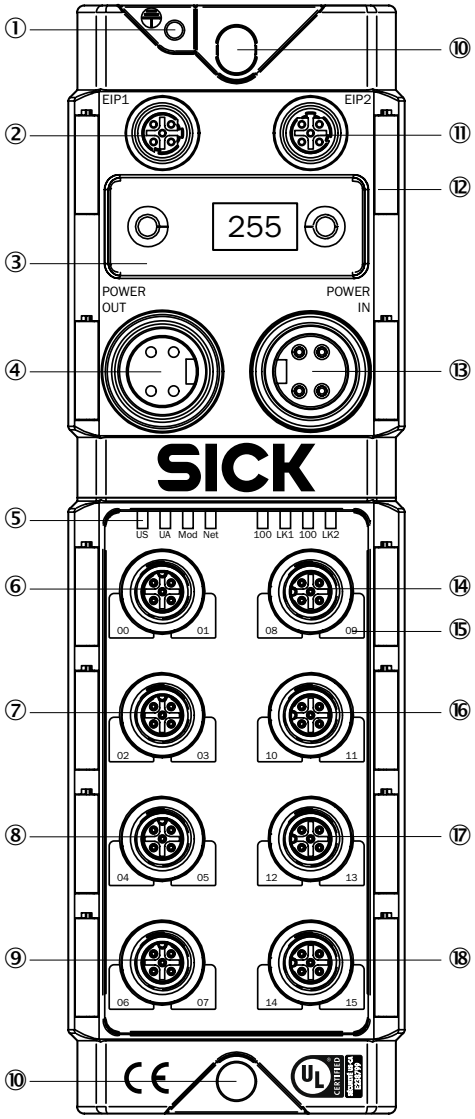


Fig. 1: IOLG2EI-03208R01 EtherNet/IP™ IO-Link Master setup

① *Functional grounding connection*
② *EtherNet/IP port 1*
③ *Display with operating buttons and two display LEDs*
④ *Output supply voltage*
⑤ *Status LED: IO-Link Master/ EtherNet communication*
⑥ *Port 00 / 01*
⑦ *Port 02 / 03*
⑧ *Port 04 / 05*
⑨ *Port 06 / 07*
⑩ *Mounting hole*
⑪ *EtherNet/IP port 2*
⑫ *Label*
⑬ *Input supply voltage*
⑭ *Port 08 / 09*
⑮ *Pin/port LEDs: Signal status*
⑯ *Port 10 / 11*
⑰ *Port 12 / 13*
⑱ *Port 14 / 15*

Port mapping

Port	Labelling IO-Link Master
Port 0	Port 00 / 01
Port 1	Port 02 / 03
Port 2	Port 04 / 05
Port 3	Port 06 / 07
Port 4	Port 08 / 09
Port 5	Port 10 / 11
Port 6	Port 12 / 13
Port 7	Port 14 / 15

Table 2: Port assignment

3.2 Function

The IOLG2EI-03208R01 IO-Link Master is a remote IO-Link input and output module for integration into an EtherNet/IP™ 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

Overview

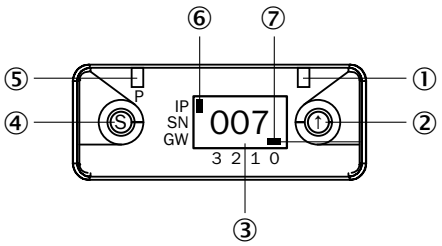


Fig. 2: Status indicators and operating buttons

① *Display LED (configurable)*
② *Arrow pushbutton*
③ *Display*
④ *Set pushbutton*
⑤ *Display LED (configurable)*
⑥ *Cursor for selecting the address type*
⑦ *Cursor for selecting the octet*

IP IP address
SN Subnet address
GW Gateway address
0 Fourth octet
1 Third octet
2 Second octet
3 First octet

Operating buttons

Pushbutton	Description
↑	• Select menu. • Scroll through the menu. • In edit mode: Change value. • Activate fast-scroll mode: Press and hold pushbutton in edit mode.
S	• Scroll through the main menu: Press pushbutton briefly. • Activate edit mode: Press the pushbutton for longer than 3 seconds. • In edit mode: Save value and scroll to the next value. • In ping mode: Exit ping mode.

Table 3: Functions of the operating buttons

Function indicators (LEDs)

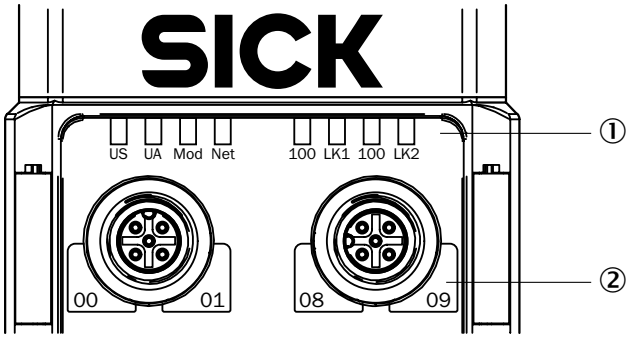


Fig. 3: Function indicators (LEDs)

① *Status LEDs: IO-Link Master/EtherNet 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 4: Pin/port LEDs: Assignment

Status LEDs: IO-Link Master

Function indicator	Description
US	• LED lights up green: Sensor supply OK. • LED flashes red: Sensor supply < 18 V
UA	• LED lights up green: Actuator supply OK. • LED flashes red: Actuator supply < 18 V • LED lights up red: No actuator supply
Mod	• LED flashes green: IO-Link Master incorrectly configured or not configured • LED green: IO-Link Master is operating • LED flashes red: Fixed bus clock is not possible • LED flashes red/green: Initial sequence
Net	• LED off: – IO-Link Master is off/not supplied with power or – IO-Link Master is on but not configured with an IP address – The IO-Link Master was started but there is no EIP connection, e.g., network cable is not plugged in • LED flashes green: IO-Link Master incorrectly configured or not configured • LED green: Connection established • LED flashes red: Connection timeout • LED flashes red/green: Initial sequence

Table 5: Status LEDs: IO-Link Master

Status LEDs: EtherNet communication

Function indicator	Description
100	• LED off: Bus clock 10 Mbit/s • LED lights up yellow: Bus clock 100 Mbit/s
L/A1 and L/A2	• LED green: Data transfer

Table 6: Status LEDs: EtherNet communication

Pin/port LEDs: Standard I/O port

LED display	Description
Off	The I/O state of the relevant input or output pin is “0”
Yellow	The I/O state 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 7: Pin/port LEDs: Standard I/O port

Pin/port LEDs: IO-Link port

LED display	Description
Green	IO-Link communication running
Flashing green	No IO-Link communication
Green, fast flashing	IO-Link port in preoperate mode
Red, fast flashing	Data storage or validation failed.
Red	IO-Link short-circuit between pin 3 and pin 4

Table 8: Pin/port LEDs: IO-Link port

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 fault

WARNING!

Electromagnetic fault!

Electromagnetic fault 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 actuators 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 next page.
3. Connect supply voltage to “POWER IN” using a suitable cable.
4. Connect fieldbus connection via EIP1/EIP2.
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

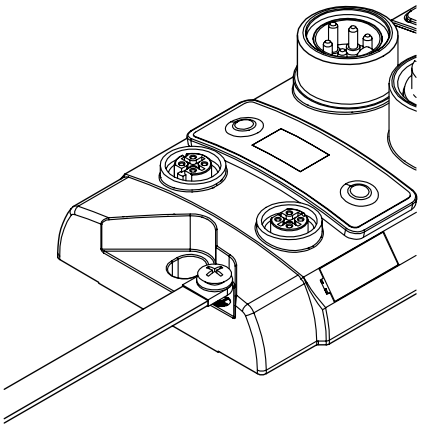


Fig. 4: Ground connection

7. 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.

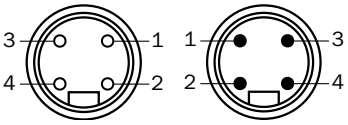


Fig. 5: Supply voltage
Left: Output “POWER OUT” 7/8” female connector, 4-pin
Right: Input “POWER IN” 7/8” male connector, 4-pin

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

Table 9: Description of “POWER OUT” and “POWER IN” supply voltage

5.3.2 “EtherNet/IP™” connection diagram

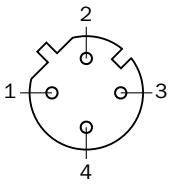


Fig. 6: EtherNet/IP™ connection diagram, M12 female connector, D-coded, 4-pin

Contact	Signal	Description
1	Tx+	Transmitter+
2	Rx+	Receiver+
3	Tx–	Transmitter–
4	Rx–	Receiver

Table 10: EtherNet/IP™ description, M12 female connector, D-coded, 4-pin

5.3.3 “IO-Link port” connection diagram

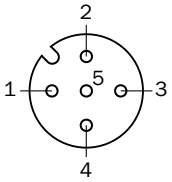


Fig. 7: IO-Link port connection diagram, M12 female connector, A-coded, 5-pin

Port used as I/O port

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

Table 11: 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 and output (max. 2 A)
3	M	GND
4	IO-Link	IO-Link (max. 2 A)
5	Not connected	Not connected

Table 12: IO-Link port description, M12 female connector, A-coded, 5-pin

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

6 System integration and configuration

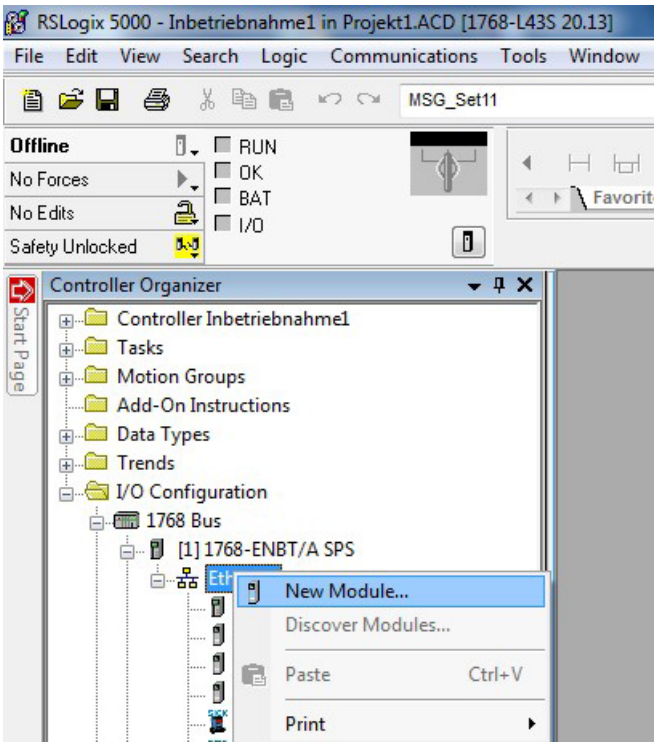
6.1 Integrating the IO-Link Master into the system

You can download the necessary EDS files from “www.sick.com”.

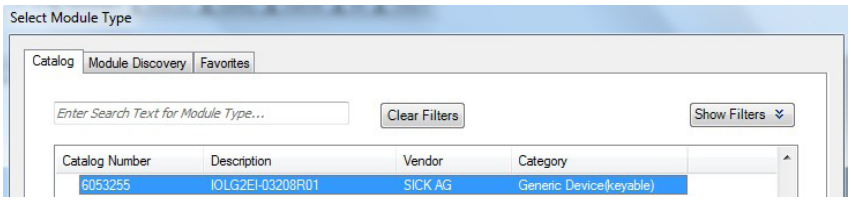
The integration of the IO-Link Master is described using the example of a Rockwell RSLogix 5000.

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

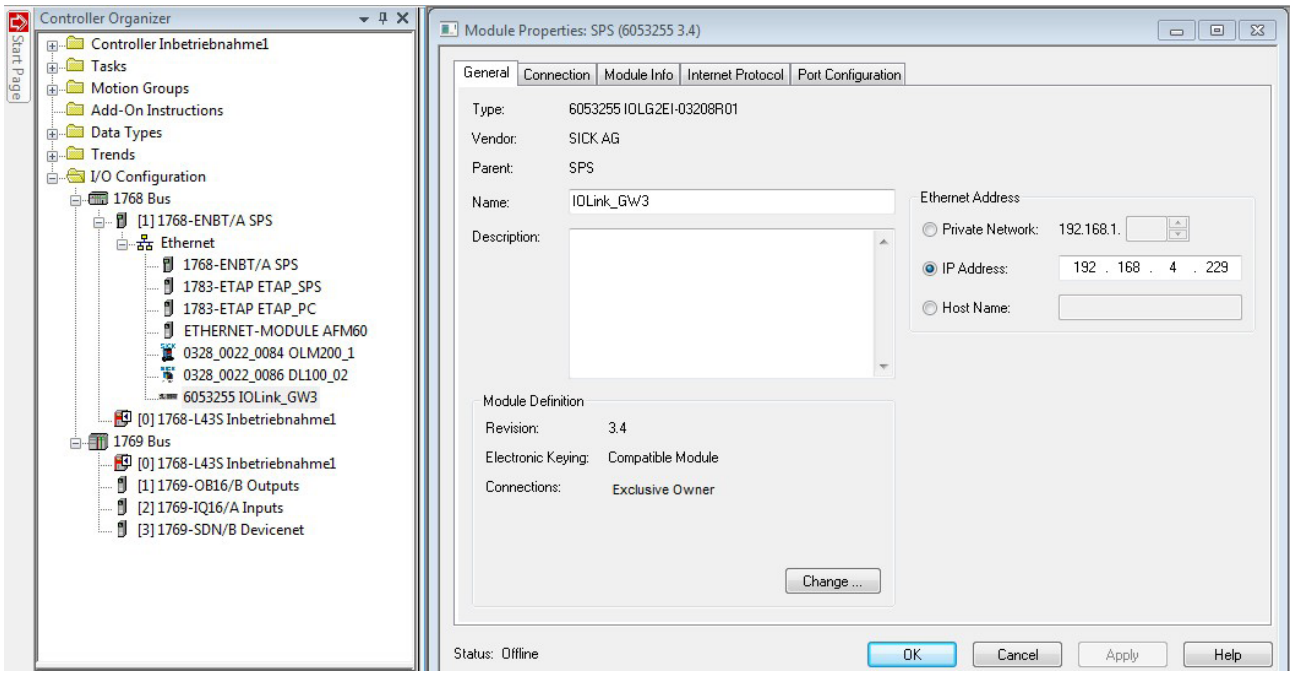
1. Select offline mode.
2. Install the EDS file via the “Tools” menu, menu item “EDS Hardware Installation Tool”.
3. Select “New Module” via the context menu in the “EtherNet” directory.



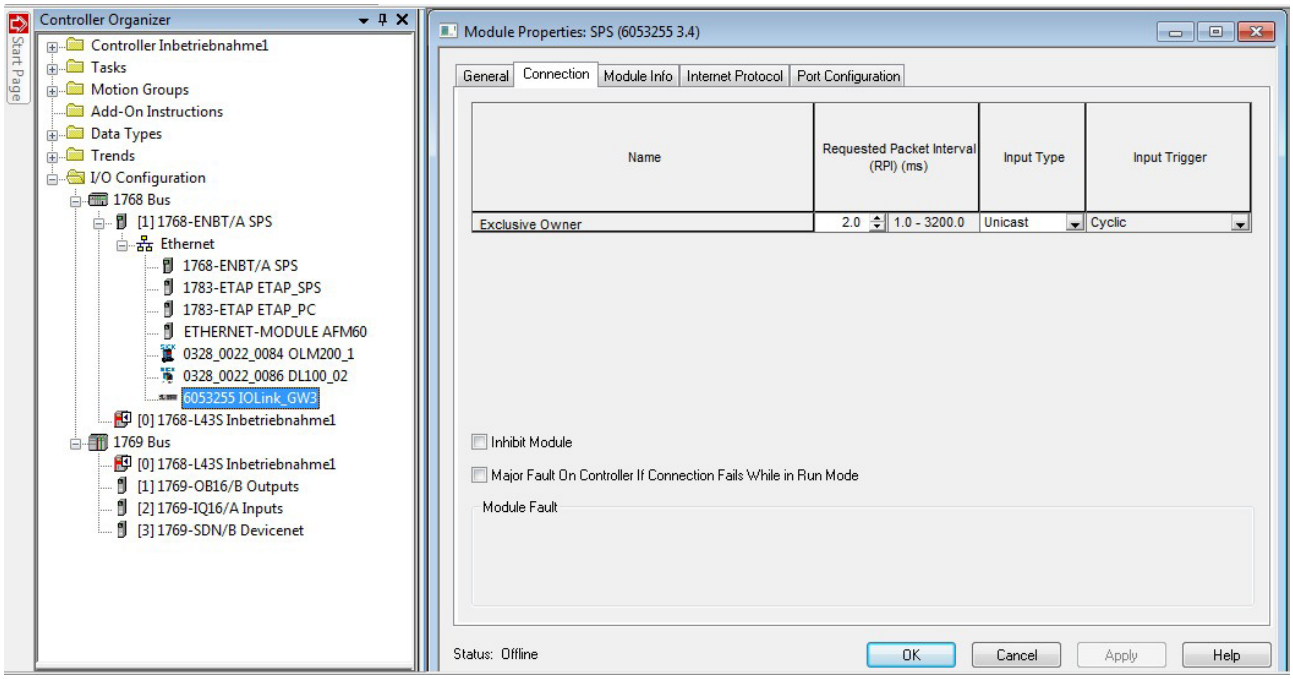
4. Select the IO-Link Master in the “Catalog” tab.
5. Click the “Create” button.



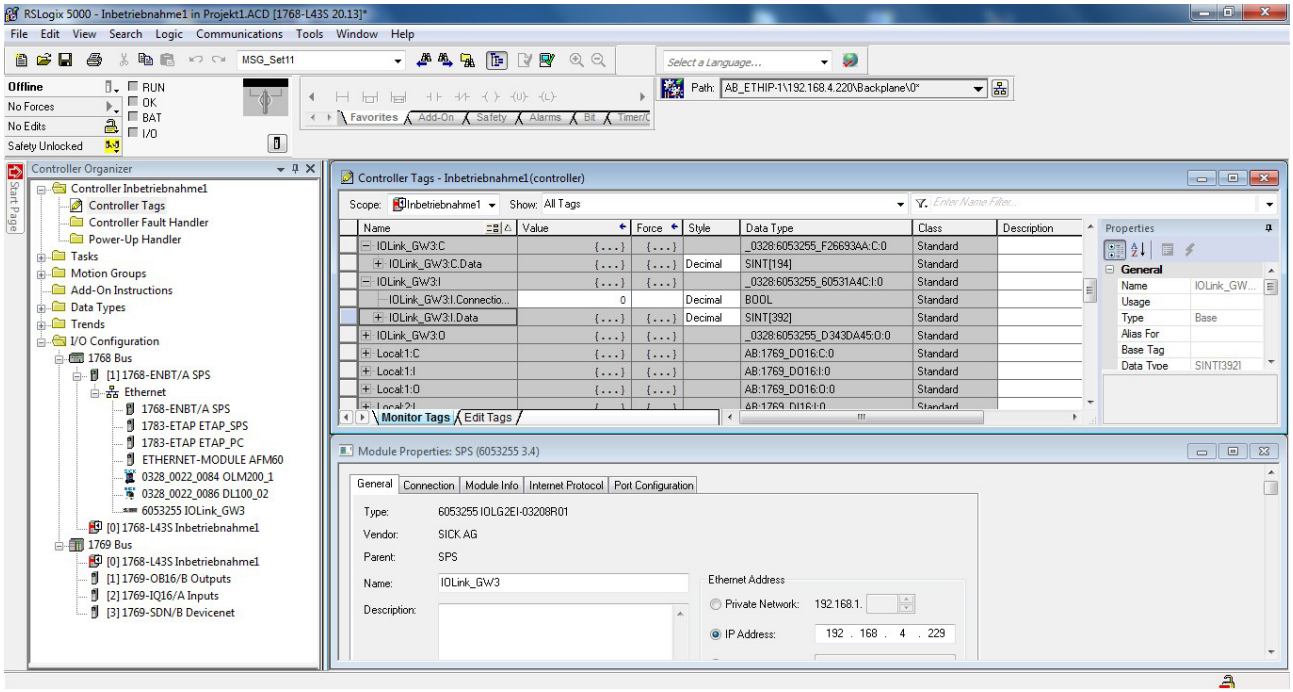
6. Enter the IP address in the “General” tab.



7. Enter the connection parameters in the “Connection” tab.

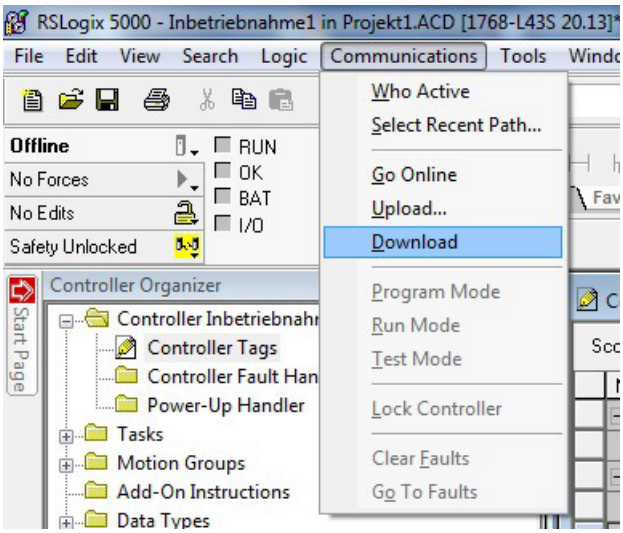


The new module and the corresponding “Controller Tags” are generated automatically.



Alternatively, you can carry out the steps completed so far (system integration) via the “Generic Ethernet Module”. For the assembly configuration, see Page 23, Chapter 6.2.1.

8. Download the configuration using the “Download” command in the “Communication” menu.

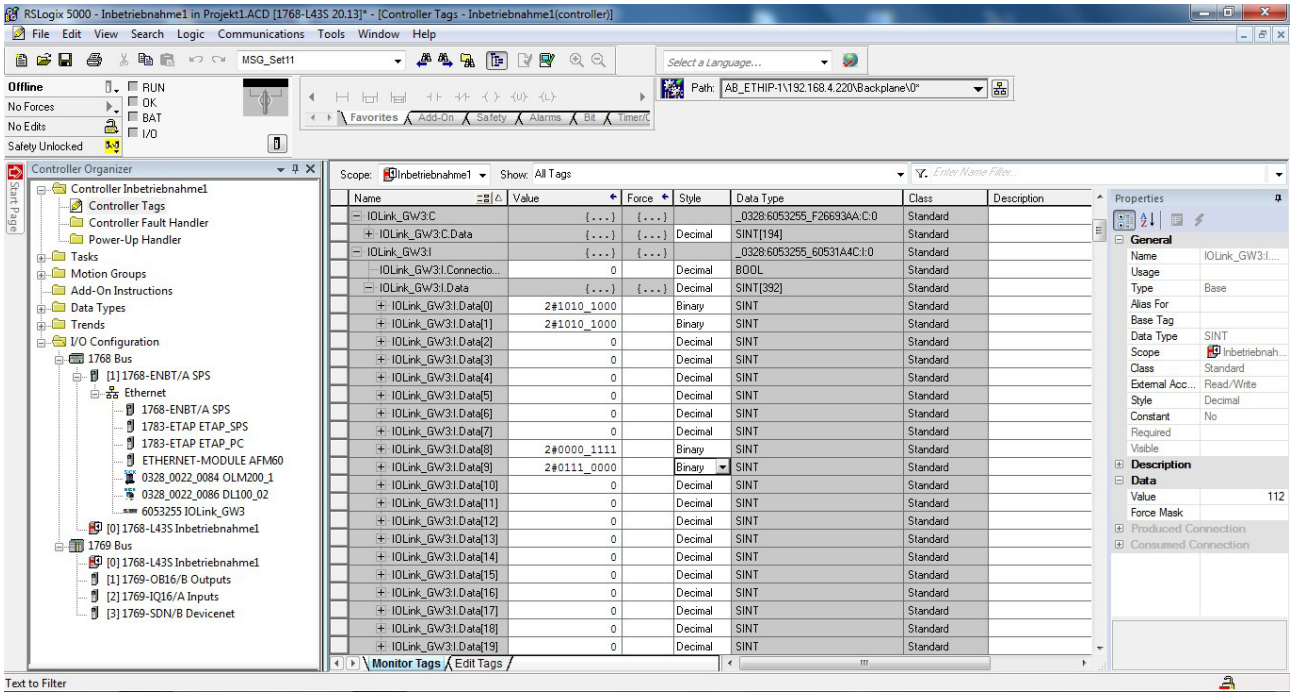


Once the download is complete, you can observe and control the IO-Link Master via the “Controller Tags” directory.

Make sure that you select the right tag name.

For the input data, output data, and configuration data, please refer to the next chapter. You can also use these tags for programming purposes.

Additional information about the input data, output data and configuration data is provided in the next chapter.



6.2 Configuring the IO-Link Master

6.2.1 Data configuration

Enter the following values in the control system if you are using the “Generic Ethernet Module” for integration rather than an EDS file. Comm format: Data-SINT

Data	Instance ID	Data length
INPUT	100	392 bytes
OUTPUT	101	262 bytes
CONFIG	102	194 bytes

Table 13: Data configuration

6.2.2 Configuration data

The following tables show the assignment of the configuration data sequence.

The top four ports (0, 1, 4, and 5) are preset as standard I/O ports and the bottom four ports (2, 3, 6, and 7) are preset as IO-Link ports by default.

If a port has been configured as IO-Link, pin 4 is used for IO-Link communication. Pin 2 can be used in parallel in case the device transfers a digital signal to pin 2.

If a port has been configured as standard I/O, pin 4 is used for the process data signal. Again, pin 2 can be used in parallel.

The input and output functions of the configured standard I/O ports are set via the process data. → See Page 25, Chapter 6.2.5 and Page 28, Chapter 6.2.6.

Byte	Slot	Module part	Description
0 ... 1	1	Module	General configuration for the entire module [1]
2 ... 25	2	IO-Link port 0	Configuration for the IO-Link port 0 [2]
26 ... 49	3	IO-Link port 1	Configuration for the IO-Link port 1 [2]
50 ... 73	4	IO-Link port 2	Configuration for the IO-Link port 2 [2]
74 ... 97	5	IO-Link port 3	Configuration for the IO-Link port 3 [2]
98 ... 121	6	IO-Link port 4	Configuration for the IO-Link port 4 [2]
122 ... 145	7	IO-Link port 5	Configuration for the IO-Link port 5 [2]
146 ... 169	8	IO-Link port 6	Configuration for the IO-Link port 6 [2]
170 ... 193	9	IO-Link port 7	Configuration for the IO-Link port 7 [2]

1) → See Page 24, Table 15.

2) → See Page 24, Table 16.

Table 14: Configuration data

6.2.3 Module configuration

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
0	P3		P2		P1		P0		Port function • 0x00: Standard I/O • 0x01: IO-Link
1	P7		P6		P5		P4		

Table 15: Module configuration

6.2.4 IO-Link port configuration

The following setup is the same for all IO-Link ports, but the relevant byte offset for the chosen port must be noted.
→ See Page 23, Table 14.

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
2	Basis		Time						Cycle time Note the following section from the IO-Link specification V1.1.2 (July 2013).
3	Validation type								Validation type: • 0: No validation • 1: Compatible (VID + DID) • 2: Identical (VIS + DID + ser. no.)
4	VID 1 (MSB)								Vendor ID
5	VID 2 (LSB)								
6	DID 1 (MSB)								Device ID
7	DID 2								
8	DID 3 (LSB)								
9 ... 24	Serial number 1 (MSB) ... serial number 16 (LSB)								Serial number
25	Parameter server								Parameter server: • 0x8X: Enable • 0x0X: Disable • 0x40: Clear • 0xX1: Upload enable • 0xX2: Download enable

Table 16: IO-Link port configuration, example using port 0

Extract from the IO-Link specification V1.1.2 (July 2013)

Time base		Multiplier					
Bit 7							Bit 0

Extract from the IO-Link specification V1.1.2 (July 2013)

Bits 0 to 5: Multiplier

These bits contain a 6-bit multiplier for the calculation of MasterCycleTime or MinCycleTime. Permissible values for the multiplier are 0 to 63.

Bits 6 to 7: Time Base

When all bits are zero, (binary code 0x00), the Device has no MinCycleTime. In this case the Master shall use the calculated worst case M-sequence timing, that is with the M-sequence type used by the Device, and the maximum times fort A und t2 (see A.3.4 to A.3.6).

The permissible combinations for time base and multiplier are listed in Table B.3 along with the resulting values for MasterCycleTime or MinCycleTime.

Table B.3 – Possible values of MasterCycleTime and MinCycleTime

Time Base Encoding	Time Base Value	Calculation	Cycle Time
00	0,1 ms	Multiplier x Time Base	0,4 ms to 6,3 ms
01	0,4 ms	6,4 ms + Multiplier x Time Base	6,4 ms to 31,6 ms
10	1,5 ms	32,0 ms + Multiplier x Time Base	32,0 ms to 132,8 ms
11	Reserved	Reserved	Reserved
NOTE: The value 0,4 results from the minimum possible transmission time according to A.3.7			

Table 17: Table B.3 – Possible values of MasterCycleTime and MinCycleTime (Auszug aus der IO-Link-Spezifikation V1.1.2 (Juli 2013))

6.2.5 Input data

The input data has a length of 392 bytes.

Byte	Module part	Description
0 ... 7	Standard I/O ports	Process data inputs on standard inputs [1]
8 ... 55	IO-Link port 0	Process data inputs on IO-Link port 0 [2]
56 ... 103	IO-Link port 1	Process data inputs on IO-Link port 1 [2]
104 ... 151	IO-Link port 2	Process data inputs on IO-Link port 2 [2]
152 ... 199	IO-Link port 3	Process data inputs on IO-Link port 3 [2]
200 ... 247	IO-Link port 4	Process data inputs on IO-Link port 4 [2]
248 ... 295	IO-Link port 5	Process data inputs on IO-Link port 5 [2]
296 ... 343	IO-Link port 6	Process data inputs on IO-Link port 6 [2]
344 ... 391	IO-Link port 7	Process data inputs on IO-Link port 7 [2]

1) → See Page 26, Chapter Table 19.

2) → See Page 27, Chapter Table 20.

Table 18: Input data

Standard input data

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
0	I32	I34	I22	I24	I12	I14	I02	I04	Input data
1	I72	I74	I62	I64	I52	I54	I42	I44	I04: Input on port 0, pin 4 The result for pin 4 = 0 only when the port is configured as an IO-Link port. Pin 2 can be used in parallel.
2	S3		S2		S1		S0		Short-circuit status
3	S7		S6		S5		S4		Short-circuit between pin 1 and 3 on signaled port
4	032	034	022	024	012	014	002	004	Overload status
5	072	074	062	064	052	054	042	044	004: Overload on port 0, pin 4 Only when the port is configured as an output.
6	0	0	0	0	0	NA	PS	PA	Status of the power supply • NA: No actuator supply • PS: Sensor power supply • PA: Actuator power supply
7	0	0	0	0	0	0	0	0	Reserved

Table 19: Standard input data

IO-Link input data

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
8 ... 39									IO-Link port 0 input data
40	0	0	0	0	0	0	DC	IOL	IO-Link status • IOL: Port in IO-Link mode • DC: Device connected • 0: Reserved
41	SC	0	0	0	0	PDI	DF	VF	IO-Link error • VF: Validation failed • SC: IO-Link short-circuit • DF: Data storage validation failed • PDI: Process data invalid
42	VID 1								Vendor ID [1]
43	VID 2								
44	DID 1								Device ID [1]
45	DID 2								
46	DID 3								
47	Event qualifier								Event 1 [1]
48	Additional code								
49	Additional code								
50	Event qualifier								Event 2 [1]
51	Additional code								
52	Additional code								
53	Event qualifier								Event 3 [1]
54	Additional code								
55	Additional code								

1) See documentation for the connected device.

Table 20: IO-Link input data

6.2.6 Process data outputs

The output data has a length of 262 bytes.

Byte	Module	Description
0 ... 5	Standard I/O ports	Process data outputs on standard inputs [1]
6 ... 37	IO-Link port 0	Process data outputs on IO-Link port 0 [2]
38 ... 69	IO-Link port 1	Process data outputs on IO-Link port 1 [2]
70 ... 101	IO-Link port 2	Process data outputs on IO-Link port 2 [2]
102 ... 133	IO-Link port 3	Process data outputs on IO-Link port 3 [2]
134 ... 165	IO-Link port 4	Process data outputs on IO-Link port 4 [2]
166 ... 197	IO-Link port 5	Process data outputs on IO-Link port 5 [2]
198 ... 229	IO-Link port 6	Process data outputs on IO-Link port 6 [2]
230 ... 261	IO-Link port 7	Process data outputs on IO-Link port 7 [2]

1) → See Page 28, Chapter Table 22.

2) → See Page 28, Chapter Table 23.

Table 21: Process data output

Standard output data

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
0	032	034	022	024	012	014	002	004	Output data 004: Output on port 0, pin 4 In order to use this function on an I/O port, the port must be configured as an output. See Page 24, Chapter 6.2.3 “Module configuration”.
1	072	074	062	064	052	054	042	044	
2	R32	R34	R22	R24	R12	R14	R02	R04	Restart Output is restarted after a short-circuit is identified
3	R72	R74	R62	R64	R52	R54	R42	R44	
4	0	0	0	0	0	0	0	0	Reserved
5	0	0	0	0	0	DL	GO	RO	Display control • DL: Display locked, PLC lock • GO: Green display LED lights up • RO: Red display LED lights up

Table 22: Standard output data

IO-Link output data

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
6 ... 37									IO-Link port 1 output data

Table 23: IO-Link output data

6.3 IO-Link object class code: 0x96 (CIP generic)

The following section demonstrates service data communication via CIP generic object, using “read out ISDU 16 vendor name” as an example.

The service data is always requested acyclically.

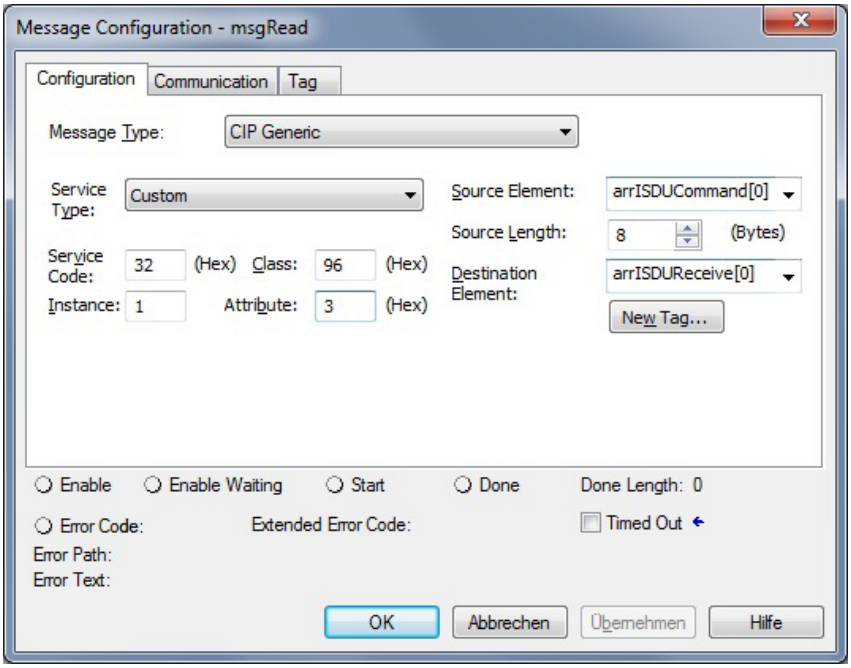


Fig. 8: CIP generic

Request
(continued on next page)

		Value	Description
CIP service code	IO-Link ISDU service	ISDU service code (always 50 dec)	0x32
CIP class ID	IO-Link class ID	Class ID (always 150 dec)	0x96
CIP instance ID	IO-Link port	1 ... 8 Note that the numbering of the IO-Link ports begins with 1 and ends with 8.	
CIP attribute	Request type	2 or 3	• 3: Read ISDU • 2: Write ISDU

Request (continued)

		Value	Description
Source element	Request telegram		
Destination element	Response telegram		
Source length	Determined by the byte length of the source element		

		Value	Description
CIP service data	Index	0 ... 255	
		0 ... 255	
	Subindex	0 ... 255	
	Data 0 ...	0 ... 255	
	Data n	0 ... 255	

Table 24: Request

Name	Value	Force Mask	Style	Data Type	Description
arrISDUCommand	{...}	{...}	Decimal	SINT[232]	
arrISDUCommand[0]	16		Decimal	SINT	ISDU index
arrISDUCommand[1]	0		Decimal	SINT	

Fig. 9: Read request example: Query ISDU 16 (vendor name)

Response
(continued on next page)

		Value	Description
CIP service code	IO-Link ISDU service	ISDU service code (always 50 dec)	0x32
CIP class ID	IO-Link class ID	Class ID (always 150 dec)	0x96
CIP instance ID	IO-Link port	1 ... 8 Note that the numbering of the IO-Link ports begins with 1 and ends with 8.	
CIP attribute		0	

Response (continued)

		Value	Description
Source element	Request telegram		
Destination element	Response telegram		
Source length	Determined by the byte length of the source element		

		Value	Description
CIP service data	Status	0 ... 255	• 0x00: OK • 0x80: Error
	Data 0 ... Data n	0 ... 255 0 ... 255	Data/ Error code

Table 25: Response

Name	Value	Force Mask	Style	Data Type	Description
arrISDUReceive	{...}	{...}	ASCII	SINT[232]	
arrISDUReceive[0]	'$00'		ASCII	SINT	
arrISDUReceive[1]	'S'		ASCII	SINT	
arrISDUReceive[2]	'I'		ASCII	SINT	
arrISDUReceive[3]	'C'		ASCII	SINT	
arrISDUReceive[4]	'K'		ASCII	SINT	
arrISDUReceive[5]	' '		ASCII	SINT	
arrISDUReceive[6]	'A'		ASCII	SINT	
arrISDUReceive[7]	'G'		ASCII	SINT	
arrISDUReceive[8]	'$00'		ASCII	SINT	

Fig. 10: Response (ISDU 16)

7 Operation on the IO-Link Master

You can use the display on the IO-Link Master to carry out the following tasks:

- Call up information such as addressing, hardware, and firmware.
- Change addressing.
- Change IP settings.

7.1 Status indicators and operating buttons

Overview

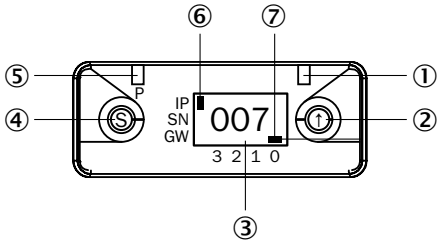


Fig. 11: Status indicators and operating buttons

①	*Display LED (configurable)*	*IP*	*IP address*
②	*Arrow pushbutton*	*SN*	*Subnet address*
③	*Display*	*GW*	*Gateway address*
④	*Set pushbutton*	*0*	*Fourth octet*
⑤	*Display LED (configurable)*	*1*	*Third octet*
⑥	*Cursor for selecting the address type*	*2*	*Second octet*
⑦	*Cursor for selecting the octet*	*3*	*First octet*

7.1.1 Operating buttons

Functions

Pushbutton	Description
“Arrow” pushbutton	• Select menu. • Scroll through the menu. • In edit mode: Change value. • Activate fast-scroll mode: Press and hold pushbutton in edit mode.
“Set” pushbutton	• Scroll through the main menu: Press pushbutton briefly. • Activate edit mode: Press the pushbutton for longer than 3 seconds. • In edit mode: Save value and scroll to the next value. • In ping mode: Exit ping mode.

Table 26: Functions of the operating buttons

7.1.2 Configuring display LEDs

The display LEDs are configured via the process data outputs.
→ See Page 28, Table 22 “Standard output data”.

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 fourth octet of the IP address.

7.2.2 Edit mode and fast-scroll mode

The display flashes in edit mode.

Calling up edit mode

Edit mode is activated by pressing the “Set” pushbutton for at least 3 seconds.

If no pushbuttons are pressed for 10 seconds, the display returns to operating mode. Any changes that have not been saved are lost.

Differences between the new configuration and the current active configuration are indicated by the “not equal” sign (≠). In this case, the display returns to operating mode after 5 seconds.

Fast-scroll mode

To use fast-scroll mode, you must be in edit mode. Fast-scroll mode is activated by pressing and holding the “Arrow” pushbutton. The display flickers in fast-scroll mode.

7.2.3 Ping mode

You can use the ping command to check whether the IO-Link Master is reachable. The ping command is entered via the PC.

Display	Description
ping	The IO-Link Master has received a ping command. “ping” appears on the display for several seconds. It then returns to the previous display. You can exit ping mode immediately by pressing the “S” pushbutton.
Ping	The IO-Link Master has received several ping commands. You can only exit the display by pressing the “S” pushbutton. It returns to the previous display.

Table 27: Display in ping mode

7.3 Locking and unlocking edit mode for display

You can lock and unlock the edit mode for the display using the “plc-lock” function in the process data outputs. If edit mode is locked, you cannot change any values via the display.
→ See Page 28, Table 22 “Standard output data”.

7.4 Commissioning

The following displays appear one after another when the supply voltage is switched on.

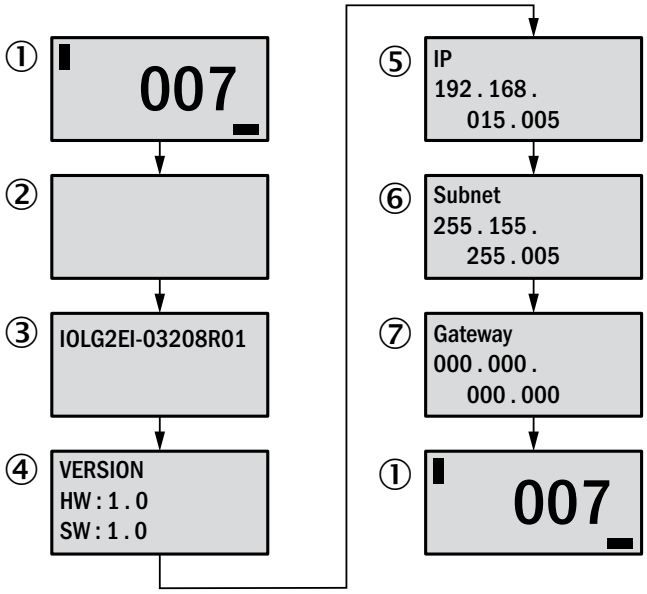


Fig. 12: Commissioning

① *Last octet of the IP address, background lighting off*
② *Background lighting on*
③ *IO-Link Master device designation*
④ *Current hardware and firmware*
⑤ *Current IP address*
⑥ *Current subnet address*
⑦ *Current gateway address*

7.5 Main menu

Main menu

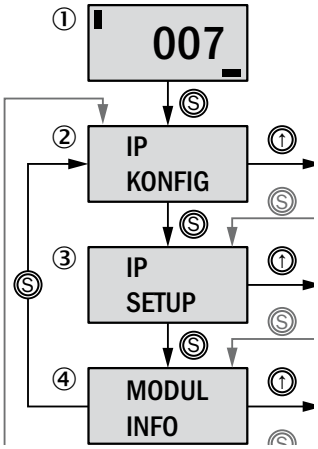


Fig. 13: Main menu

① *Status indicator: Fourth octet of the IP address*
② *Menu for IP configuration*
③ *Menu for IP setup*
④ *Menu for displaying information about the IO-Link Master*

7.6 “IP CONFIG” menu and changing address

Address types

The following address types are possible:

- IP address
- Subnet address
- Gateway address

Each address is made up of 4 octets.

Default settings

- IP address: 192.168.0.100
- Subnet address: 255.255.255.0
- Gateway address: 192.168.0.100

IP CONFIG (IP configuration)

**[How do you get from “gateway” back to the “IP Config” menu?
SL: Not yet clarified]**

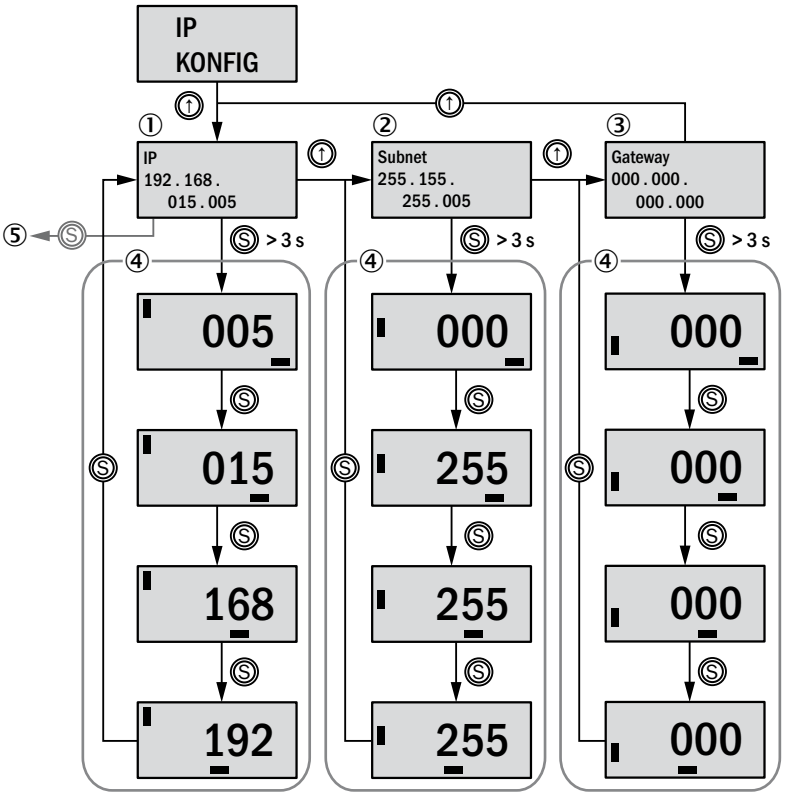


Fig. 14: “IP CONFIG” menu (IP configuration)

① *Current IP address*

② *Current subnet address*

③ *Current gateway address*

④ *Edit mode: Use the “Arrow” pushbutton to change the value for the selected octet.*
Save the value with the “Set” pushbutton and scroll to the next octet.

⑤ *To the menu “IP setup”*

Changing address

1. Select the “IP CONFIG” menu via the main menu.
→ See Page 36, Fig. 13.
2. Select the desired menu: “IP”, “Subnet”, or “Gateway”.
3. Press and hold the “Set” pushbutton for more than 3 seconds to activate edit mode.
   ▶ The fourth octet is displayed.
4. Use the “Arrow” pushbutton to change the value. Press and hold the “Arrow” pushbutton to activate fast-scroll mode.
5. Press the “Set” pushbutton.
   ▶ The value for the fourth octet is saved. The current value for the third octet is displayed.
6. Repeat steps 5 and 6 for the third, second, and first octet.

▶ Once you have changed the first octet and pressed the “Set” pushbutton, the menu is displayed. In order for the new address to be displayed and effective, you must restart the IO-Link Master.

NOTE!

Changing the address via the display automatically changes the IP setup to “static”.

In order for the new configuration to be effective, you must restart the IO-Link Master.

7.7 “IP SETUP” menu

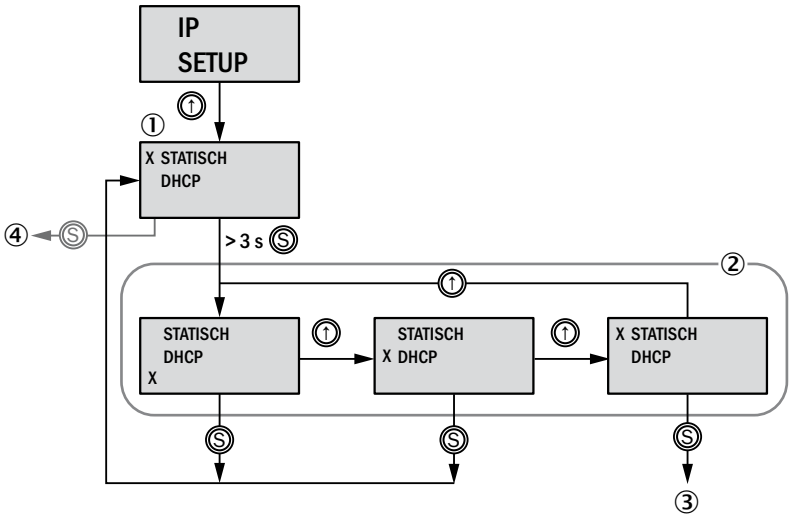


Fig. 15: “IP SETUP” menu

① *Current setting*

② *Edit mode: Select value using the “Arrow” pushbutton*

③ *IP edit mode*

④ *To the menu “MODUL INFO”*

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

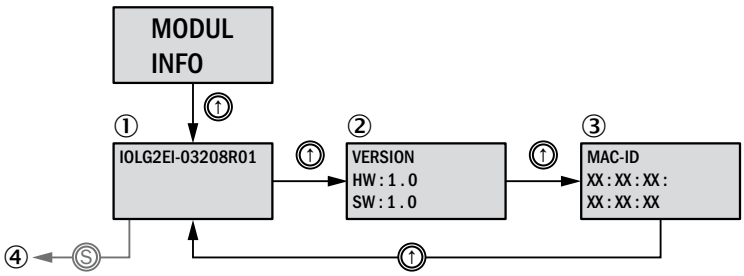


Fig. 16: “MODULE INFO” menu
Displays information about the IO-Link Master

① *IO-Link Master device designation*

② *Current hardware and firmware*

③ *MAC ID*

④ *To the menu “IP KONFIG”*

8 Operation via the web server

8.1 General information

The IO-Link Master includes an internal 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.
- Configure module addresses.
- 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 Views

The web server comprises the following views:

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

Welcome page

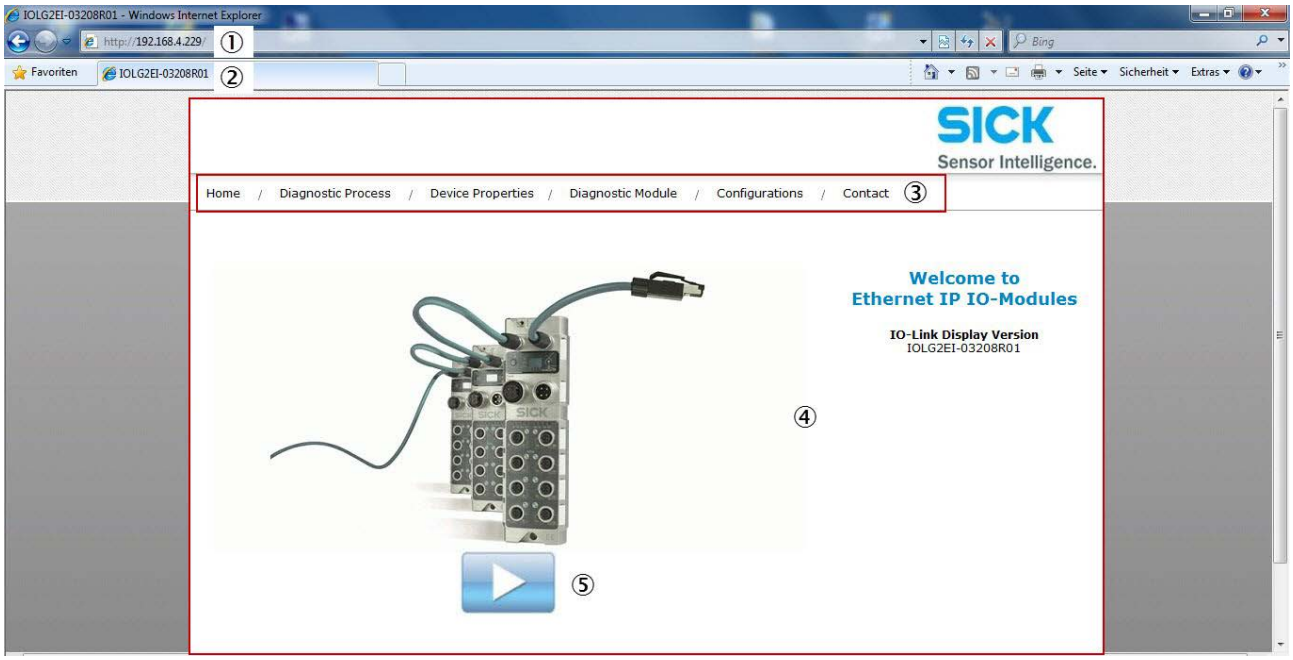


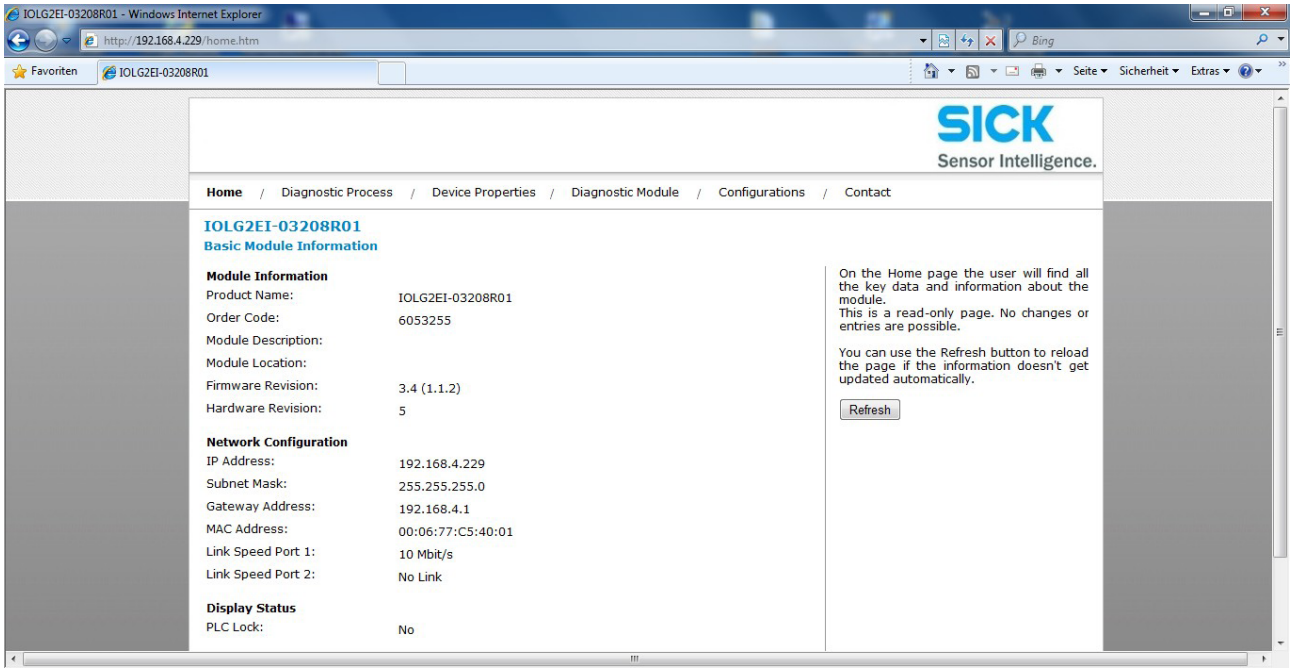
Fig. 17: Welcome page of the web server

① *IP address of the IO-Link Master in the address bar of the browser*
② *Device designation, in this case IOLG2EI-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



“Diagnostic process” view

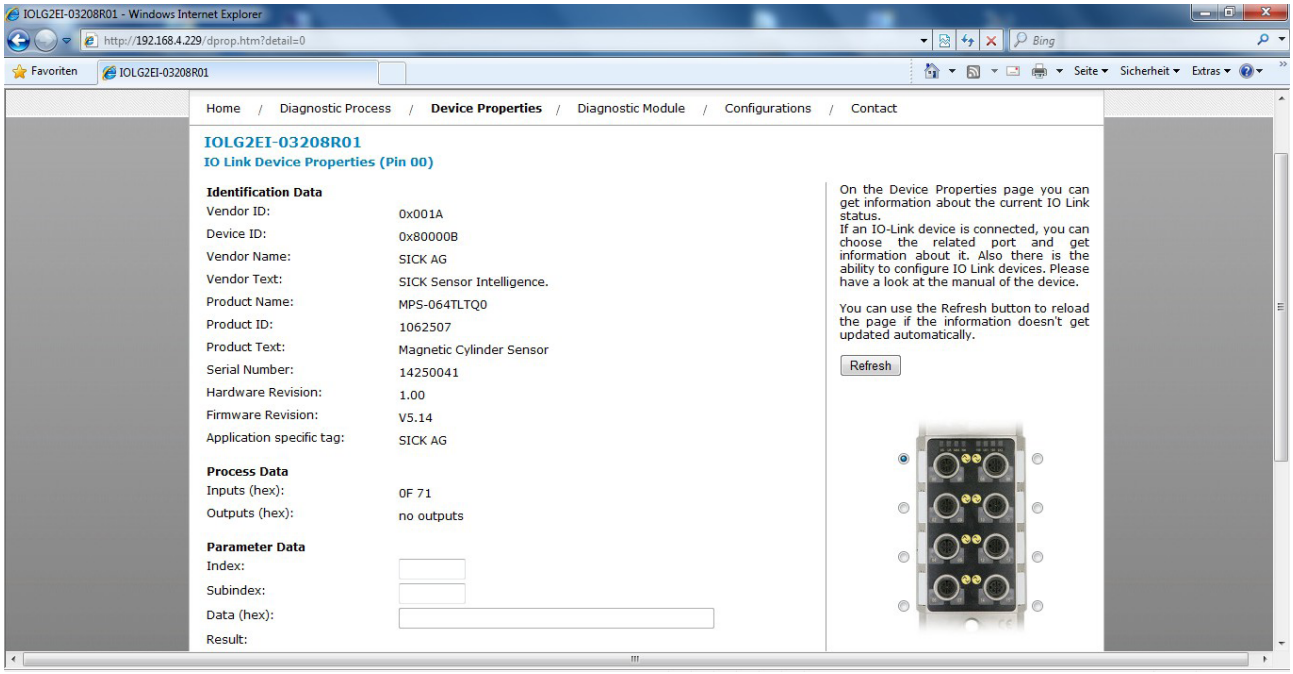
- Displays current process data via LEDs
- Displays the port status via LEDs
- Displays data for connected IO-Link devices

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



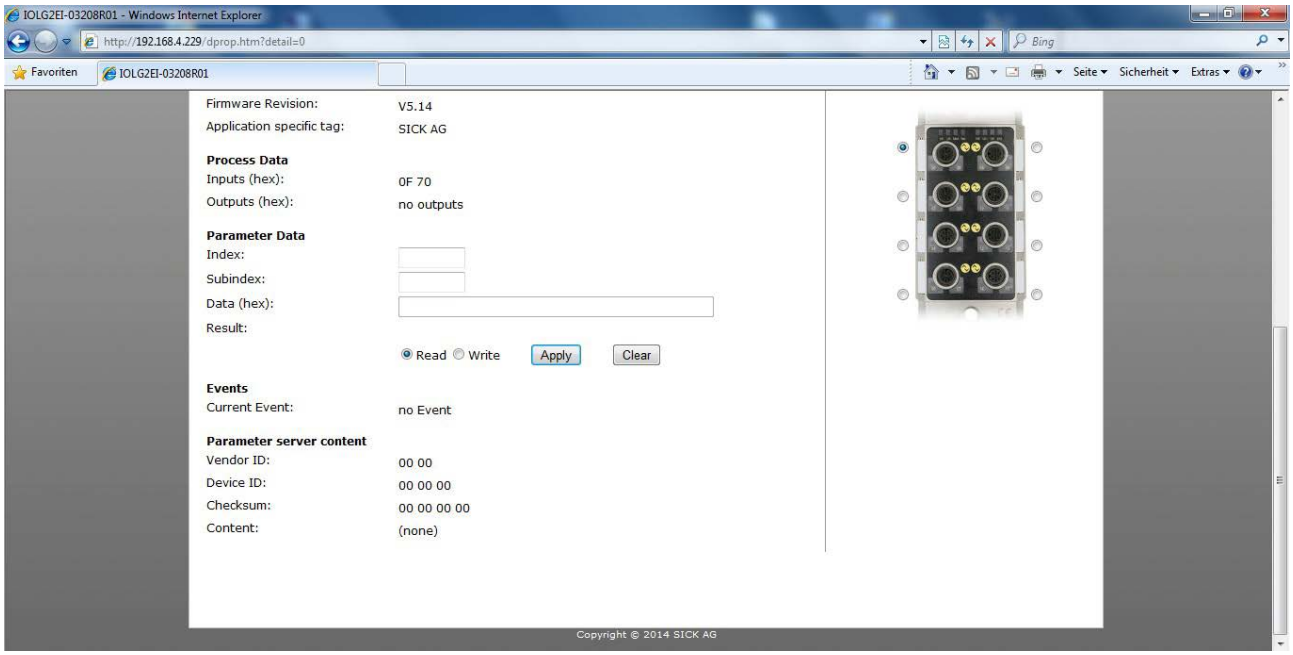
➢ To display the information and configuration for the right IO-Link device, select the corresponding port in the figure on the right-hand side.

NOTE!

You cannot use the web server to set output data for the IO-Link device. This requires a suitable controller with the relevant project planning software.

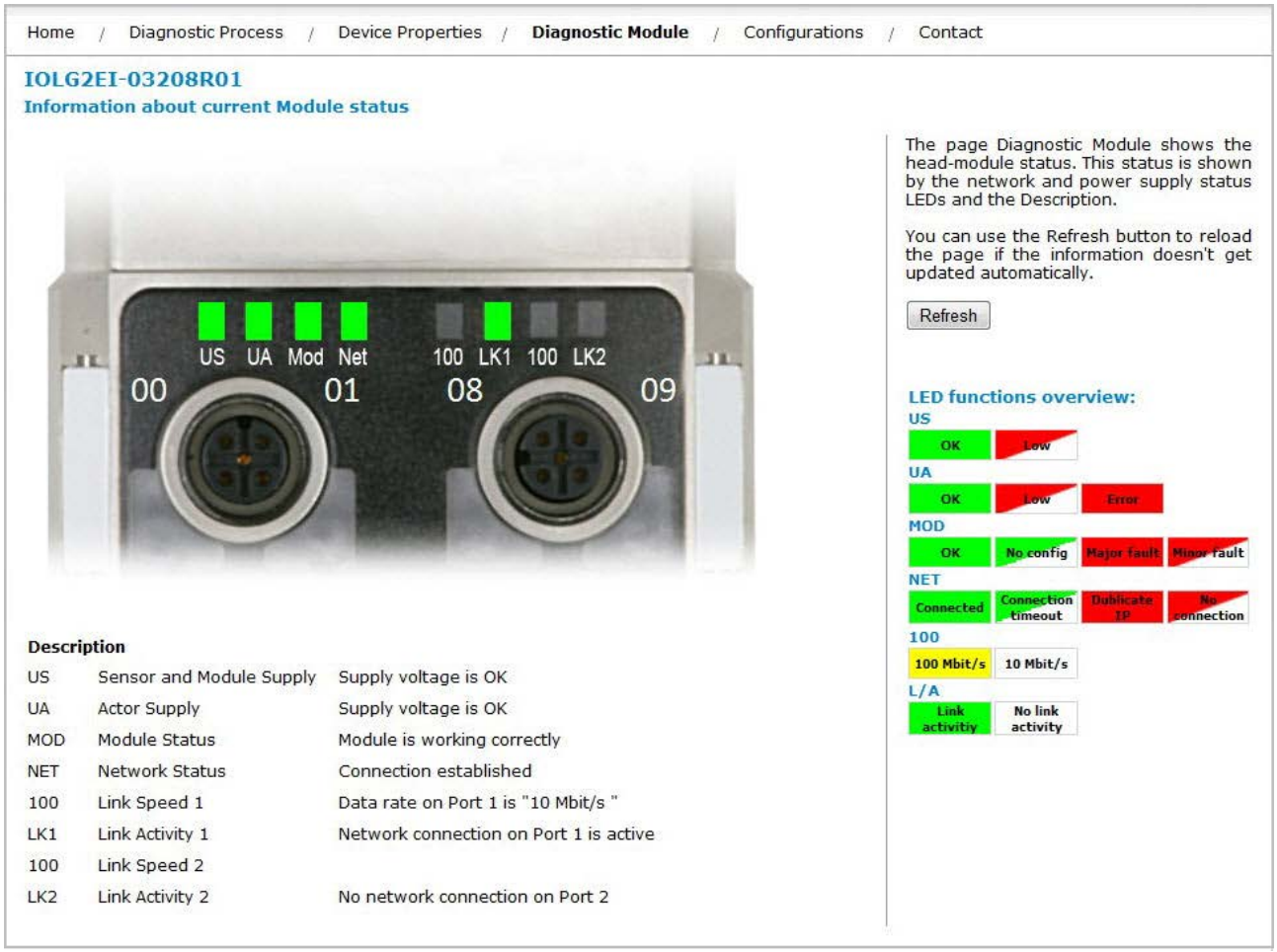
“Device properties” view – port for the desired IO-Link device selected

- 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

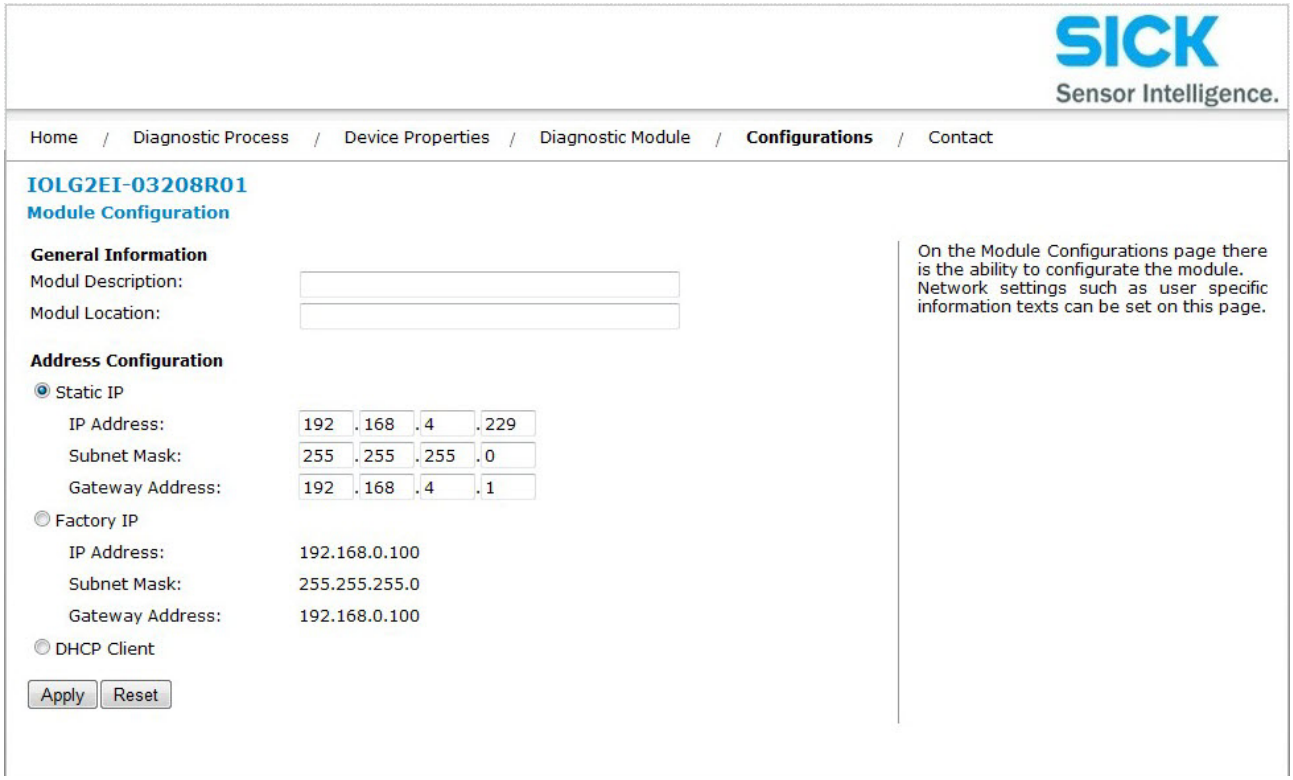
- Displays the current status of the IO-Link Master
- Displays the current status of the network



“Configuration” view

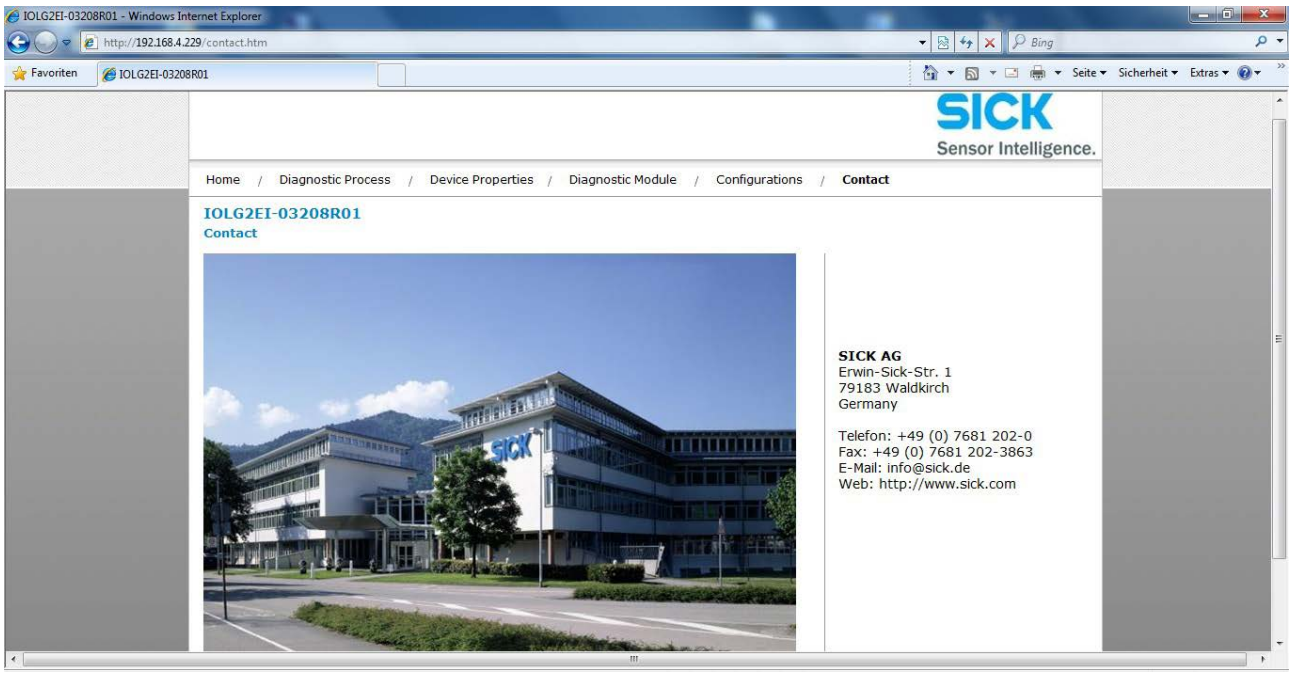
You can use this view to change the description and address configuration for the IO-Link Master. To change the data, enter the following user name and password:

- User name: sick
- Password: IOLG2



“Contact” view

- Contact information for SICK AG



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 online data sheet with technical data, dimensions, and connection diagrams for the IO-Link Master online at "www.sick.de".
Enter the order number „6053255" for the IO-Link Master IOLG2EI-03208R01 on the website.

11.1 Dimensions

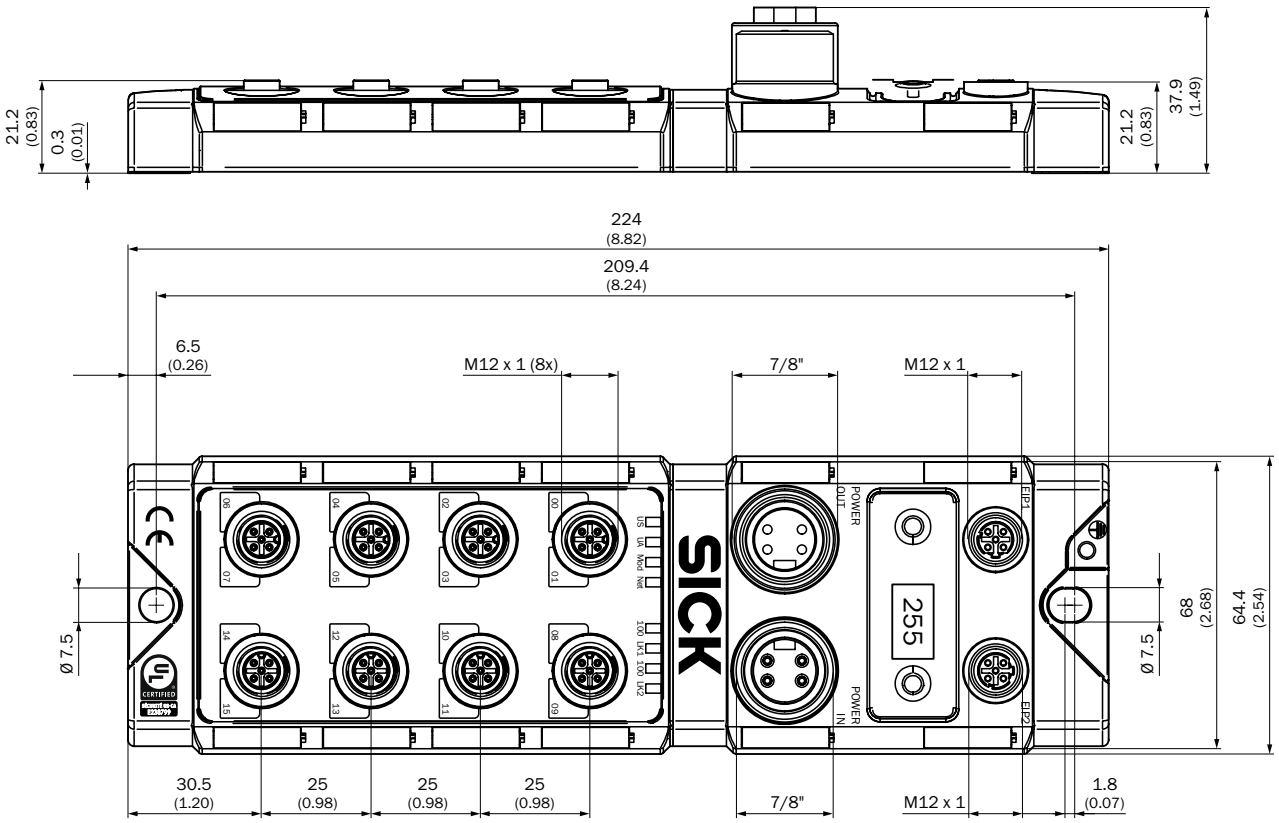


Fig. 18: Dimensions of the IOLG2EI-03208R01 EtherNet/IP™ IO-Link Master Dimensions in mm (inch)

11.2 Supply

Supply voltage	DC 18 V ... 30.2 V
Connection	7/8” male connector, 4-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 28: Supply

11.3 EtherNet

EtherNet/IP port	2 x 10Base-/100Base-Tx
EtherNet 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	Half duplex / full duplex (IEEE 802.33x-Pause)

Table 29: EtherNet

11.4 Operating conditions

Mark of conformity	CE
EMC	EN 61000-6-2 EN 61000-6-4
Ambient temperature range	• 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 30: Ambient conditions

11.5 Constructional design

Dimensions	→ See Page 47, Chapter 11.1.
Housing material	Zinc die cast, matt nickel-plated
Weight	Approx. 670 g
Mounting	2 mounting holes for M6 screws

Table 31: Structural design

Index

A

Ambient conditions 46

C

Cleaning 44
Configuration 22, 43
Configuration data 22
Connection diagram
  EtherNet/IP 17
  IO-Link port 17
  “POWER IN” supply voltage 16
  “POWER OUT” supply voltage 16
Correct use 8
Customer service 6

D

Data configuration 22
Device properties 40
Diagnostic module 42
Diagnostic process 39
Dimensions 45
Display LEDs
  Configuration 31
Disposal 44

E

Edit mode 31
  Lock 32
  Unlock 32
Electrical connection 14, 16
Electrical specialists
  Requirement 9
EtherNet
  Technical data 46
EtherNet/IP
  Connection diagram 17
EU declaration of conformity 7
Explanation of symbols 5

F

Fast-scroll mode 31
Function 11
Functional grounding 15
Function indicators 12

H

Home 38

I

Incorrect use 8
Input data 24
IO-Link input data 25
IO-Link Master
  Configuration 22
  Electrical connection 15
  Integrating into the system 18
IO-Link output data 26
IO-Link port
  Connection diagram 17
IP CONFIG 33
“IP CONFIG” menu 33
IP SETUP 35
“IP SETUP” menu 35

L

Limitation of liability 6

M

Main menu 33
Maintenance 44
MODULE INFO 35
“MODULE INFO” menu 35
Mounting 14

O

O-Link port configuration 23
Operating buttons 11
Operating elements 11
Operating instructions 5
Operating mode 31
Operation
  On the IO-Link Master 30
  Via web server 36
Output data 26

P

ping 31
Ping 31
Ping mode 31
Pin/port LEDs
  IO-Link port 13
  Standard I/O port 13
POWER IN 16
POWER OUT 16
Process data input 24
Process data output 26

Q

Qualified personnel 9
  Requirements 9

S

Safety 8
  Electrical connection 14

Index

Scope of delivery 6
Setup 10
Standard input data 24
Standard output data 26
Status indicators 11
Status LEDs
  EtherNet communication 12
  IO-Link Master 12
Structural design 46
Supply 46
System integration 18

T

Technical data 45

W

Welcome page 37

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