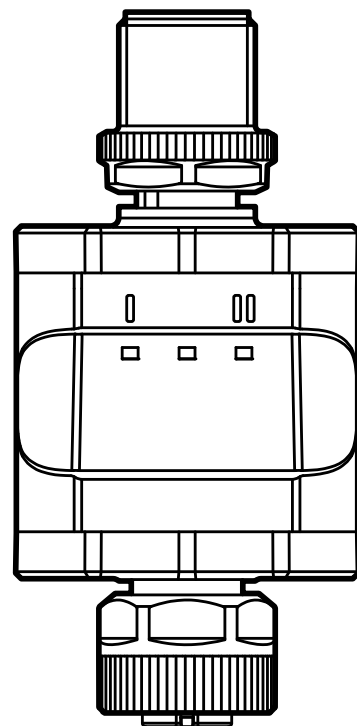


Operating instructions
Converter IO-Link / 2 x 0...10 V

DP1223

UK

80272879 / 00 02 / 2020



Contents

1	Preliminary note.....	4
1.1	Symbols used	4
1.2	Warnings used.....	4
2	Safety instructions	5
3	Functions and features	6
3.1	Block diagram	6
3.2	General application and functionality.....	6
3.3	Application as an IO-Link device	7
3.3.1	General information	7
3.3.2	IO Device Description (IODD)	7
4	Operating and display elements	8
4.1	LEDs.....	8
4.1.1	Visualisation of the voltage value at the output	9
5	Installation.....	9
6	Electrical connection.....	10
6.1	Maximum length of the connection cables	12
7	Operation	12
8	Parameters	12
8.1	Parameters via IO-Link.....	12
8.1.1	Application-specific tag	12
8.1.2	Plant identification code.....	12
8.1.3	Location identification code	12
9	Parameter setting	12
10	Scale drawing	13
11	Technical data	14
11.1	IO-Link device	14
11.2	Approvals/standards	15
12	Troubleshooting	15
13	Maintenance, repair and disposal.....	15

13.1 Maintenance 15
13.2 Cleaning the housing surface 15
13.3 Repair 15
13.4 Disposal 15



1 Preliminary note

Technical data, approvals, accessories and further information at www.ifm.com.

1.1 Symbols used

▶ Instructions

> Reaction, result

[...] Designation of keys, buttons or indications

→ Cross-reference



Important note

Non-compliance may result in malfunction or interference.



Information

Supplementary note.

1.2 Warnings used



WARNING!

Warning of serious personal injury.

Death or serious irreversible injuries may result.



CAUTION!

Warning of personal injury.

Slight reversible injuries may result.

ATTENTION!

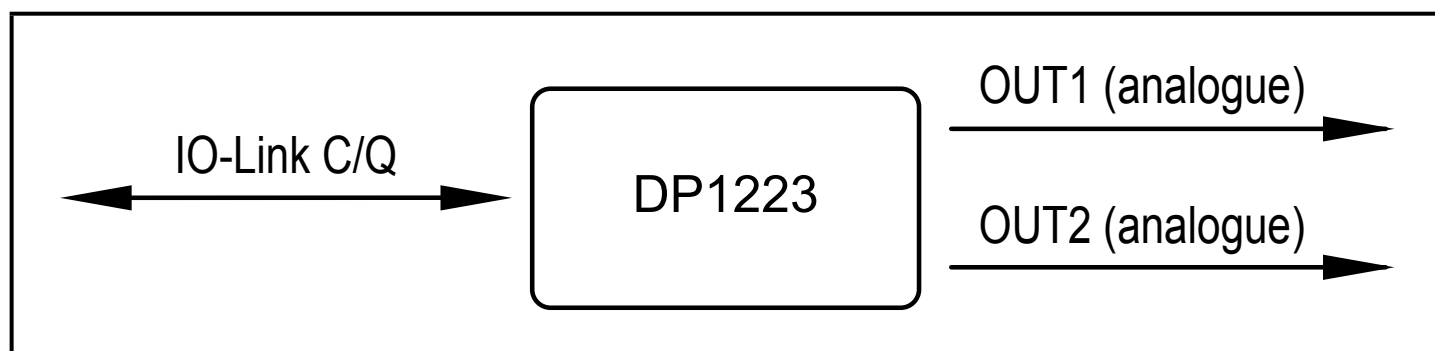
Warning of damage to property

2 Safety instructions

- The device described is a subcomponent for integration into a system. The manufacturer is responsible for the safety of the system. The system manufacturer undertakes to perform a risk assessment and to create a documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the manufacturer of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ 3 Functions and features).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- In case of malfunctions of the unit, please contact the manufacturer. Tampering with the unit is not allowed.
- Installation, electrical connection, set-up, programming, configuration, operation and maintenance of the product must be carried out by personnel qualified and authorised for the respective activity.
- Protect units and cables against damage.

3 Functions and features

3.1 Block diagram



Inputs/outputs of the device

3.2 General application and functionality

The device is used for the control of a connected actuator or another device with analogue input (0...10 V). It is not suited for environments with particular requirements on mechanical stability (e.g. shock/vibration). The device has two analogue voltage outputs.



The device is intended for indoor use only.

Observe the operating conditions (→ 11 Technical data).

The device works as an "IO-Link / analogue converter".



The voltage values to be provided can be set via IO-Link communication using IO-Link tools or a PLC.

3.3 Application as an IO-Link device

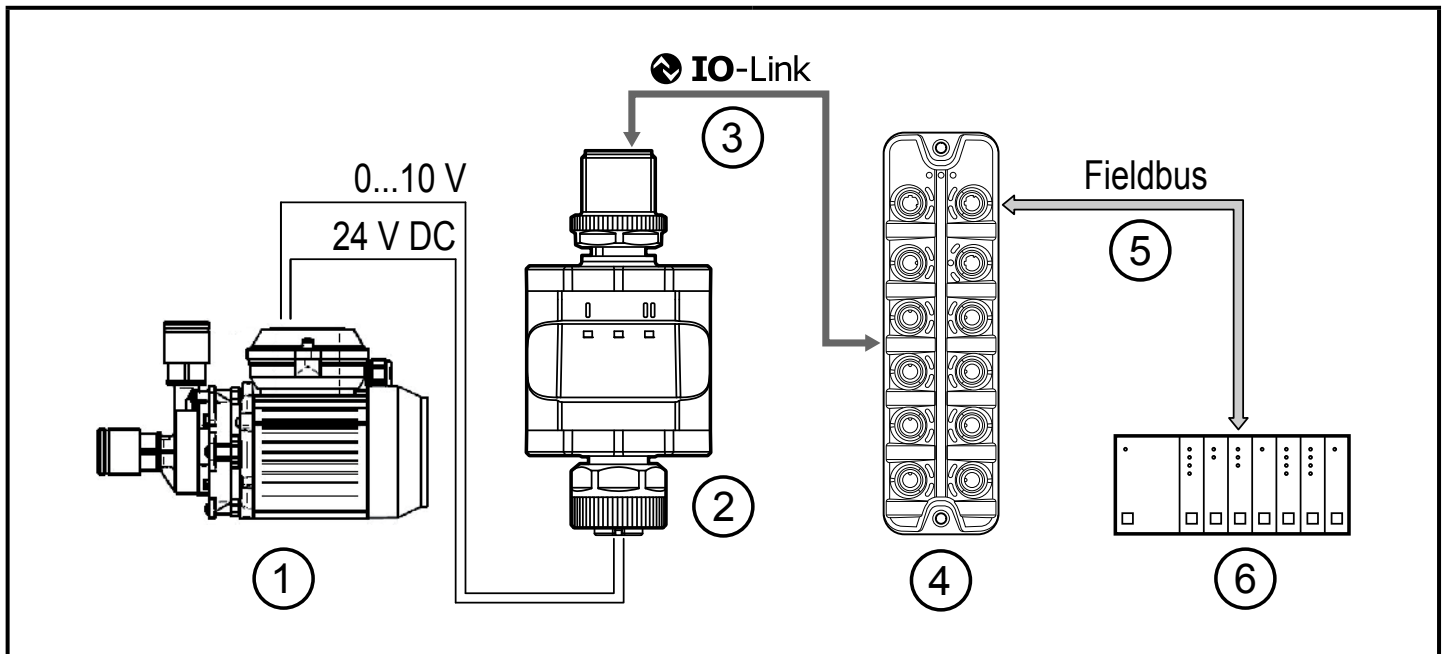
3.3.1 General information

The device has an IO-Link communication interface that requires an IO-Link-capable module (IO-Link master).

The IO-Link interface allows direct access to the process and diagnostic data and enables setting of the parameters of the unit during operation.

You will find further information about IO-Link and all necessary information about the required IO-Link hardware and software at:
www.ifm.com/gb/io-link.

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Application example with IO-Link master

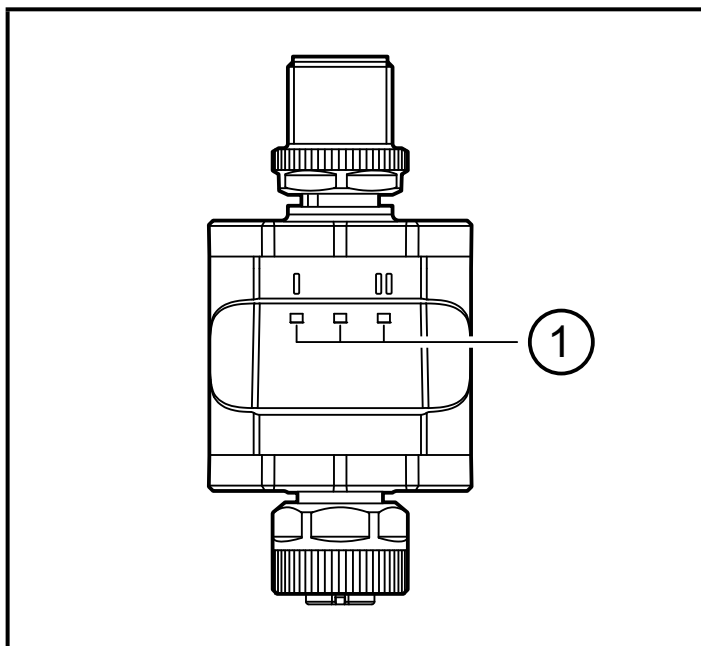
- | | |
|--|--|
| 1: Analogue actuator | 4: IO-Link master |
| 2: Converter IO-Link / 2 x 0...10 V | 5: Fieldbus (e.g. Profibus, Profinet etc.) |
| 3: Fully bidirectional IO-Link communication
- Remote parameter setting: reading and
changing the parameter setting. | 6: PLC |

3.3.2 IO Device Description (IODD)

You will find the IODDs necessary for the configuration of the IO-Link device and detailed information about process data structure, diagnostic information and parameter addresses at:

www.ifm.com

4 Operating and display elements



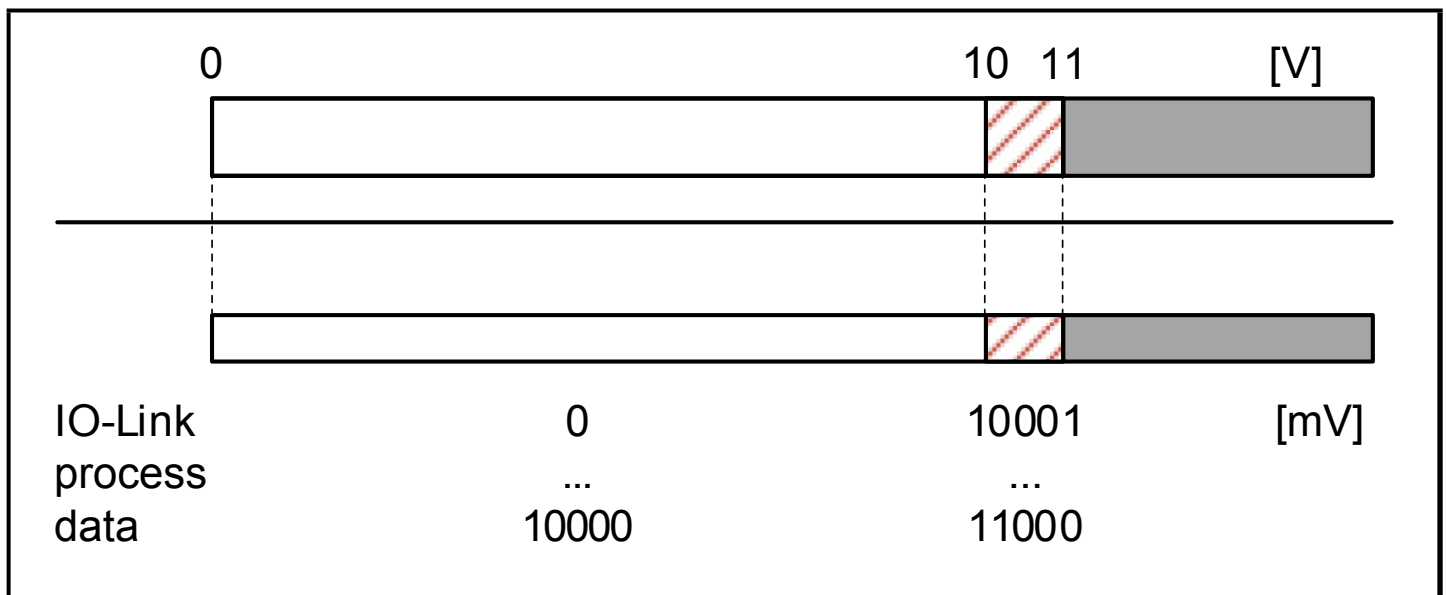
1: LEDs

4.1 LEDs

LED	Colour	Status	Description	
I	OUT1	yellow	on	Analogue value in the standard range: 0...100 % (0...10 V)
		flashing (2 Hz)	Analogue value in the range: 100...110 % (10...11 V)	
		flashing (5 Hz)	Short circuit or overload at the output	
Power	green	on	Voltage supply OK. Device in operating mode.	
		flashing (5 Hz)	Device supply undervoltage	
		off	Voltage supply off.	
II	OUT2	yellow	on	Analogue value in the standard range: 0...100 % (0...10 V)
		flashing (2 Hz)	Analogue value in the range: 100...110 % (10...11 V)	
		flashing (5 Hz)	Short circuit or overload at the output	

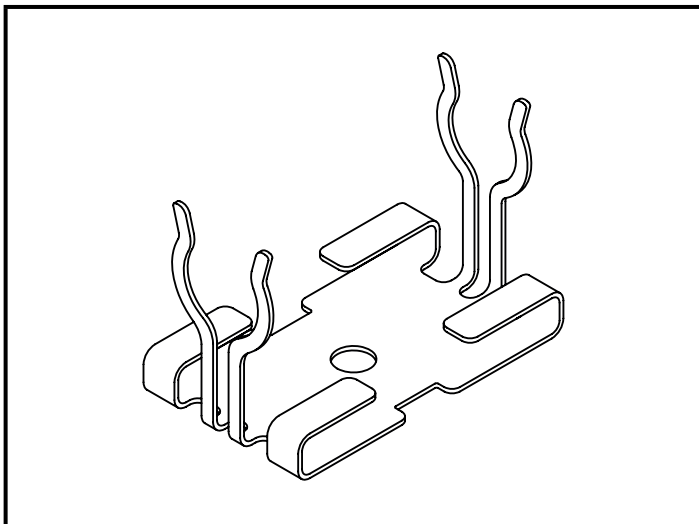
Error signals and diagnostics (→ 12 Troubleshooting)

4.1.1 Visualisation of the voltage value at the output

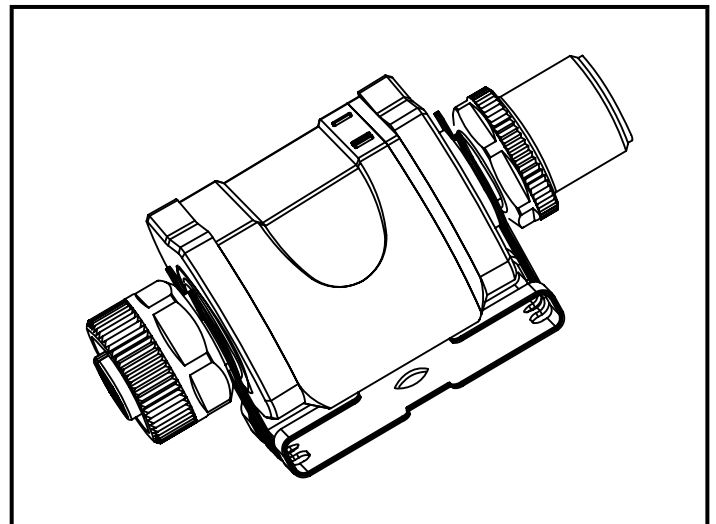


5 Installation

The M12 connecting parts must not be mechanically stressed when in use in the application. Depending on the operating conditions, the device is also to be protected against mechanical stress, e.g. shock or vibration. If required, the device can be fixed with a mounting clip.



Mounting clip (fasten with M4 screw or cable ties)



Mounting clip with display attached

The mounting clip is not supplied with the device.

More information about the available accessories at:

www.ifm.com

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6 Electrical connection



The unit must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

Voltage supply according to SELV, PELV.



▶ Protected circuits

Potential	M12 connector ①	Circuit breaker
L+ / supply voltage	Pin 1	≤ 2 A
C/Q IO-Link (if not protected via IO-Link master)	Pin 4	≤ 2 A

Required tripping characteristic of the fuses:

$T_{\text{fuse}} \leq 120 \text{ s}$ at max. 6.25 A (fire protection)

- ▶ Alternatively supply the device via a limited energy circuit according to IEC 61010-1 or class 2 according to UL1310.



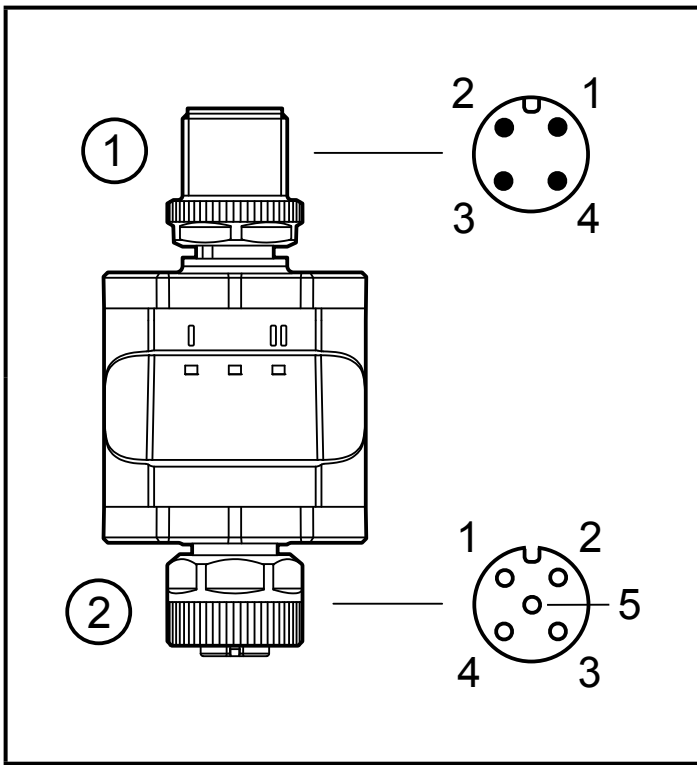
CAUTION!

Input current is not limited.

- > No fire protection
- ▶ Protected circuits

For use in USA and Canada: For connecting the device and the IO-Link devices use UL certificated cables of category CYJV 2/7/8 having suitable ratings.

- ▶ Disconnect power.
- ▶ Connect the device according to the table below.



Pin	4-pole M12 male connector ①
1	L+ / supply voltage
2	not used
3	L- / supply voltage
4	C/Q IO-Link

Pin	5-pole M12 female connector ②
1	L+
2	0...10 V analogue output 2
3	L-
4	0...10 V analogue output 1
5	not used

1: IO-Link side
2: Actuator side



The device must not be externally supplied via the 5-pole M12 output socket ②.



Always use the provided connection cables to connect other devices to the converter.

Also see application examples (→ 3 Functions and features)



Tighten the M12 connectors firmly to ensure the protection rating. Protection rating (→ 11 Technical data).

- ▶ Connect the device as required (arrow shows the position of the coding).
- ▶ Tighten coupling nut.
Tightening torque: min. 0.6 Nm (tightening by hand), max. 1.5 Nm (using a torque wrench)
- ▶ For removal, loosen the coupling nut and simultaneously press the connector against the device.
- ▶ If used in harsh environments, further tighten the coupling nut by another notch using a torque wrench (across the flats 14).

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6.1 Maximum length of the connection cables

With IO-Link communication on the master side: 20 m.



All cables must be provided with a strain relief approx. 200 mm behind the connectors.

7 Operation

The device provides the output signals according to the process data set via IO-Link.

8 Parameters

8.1 Parameters via IO-Link

8.1.1 Application-specific tag

Customer-specific application description, max. 32 characters long.

Value: “ *** ” / can be freely defined by the customer

8.1.2 Plant identification code

Customer-specific plant identification code, max. 32 characters.

Value: “ *** ” / can be freely defined by the customer

8.1.3 Location identification code

Customer-specific location identification code, max. 32 characters.

Value: “ *** ” / can be freely defined by the customer

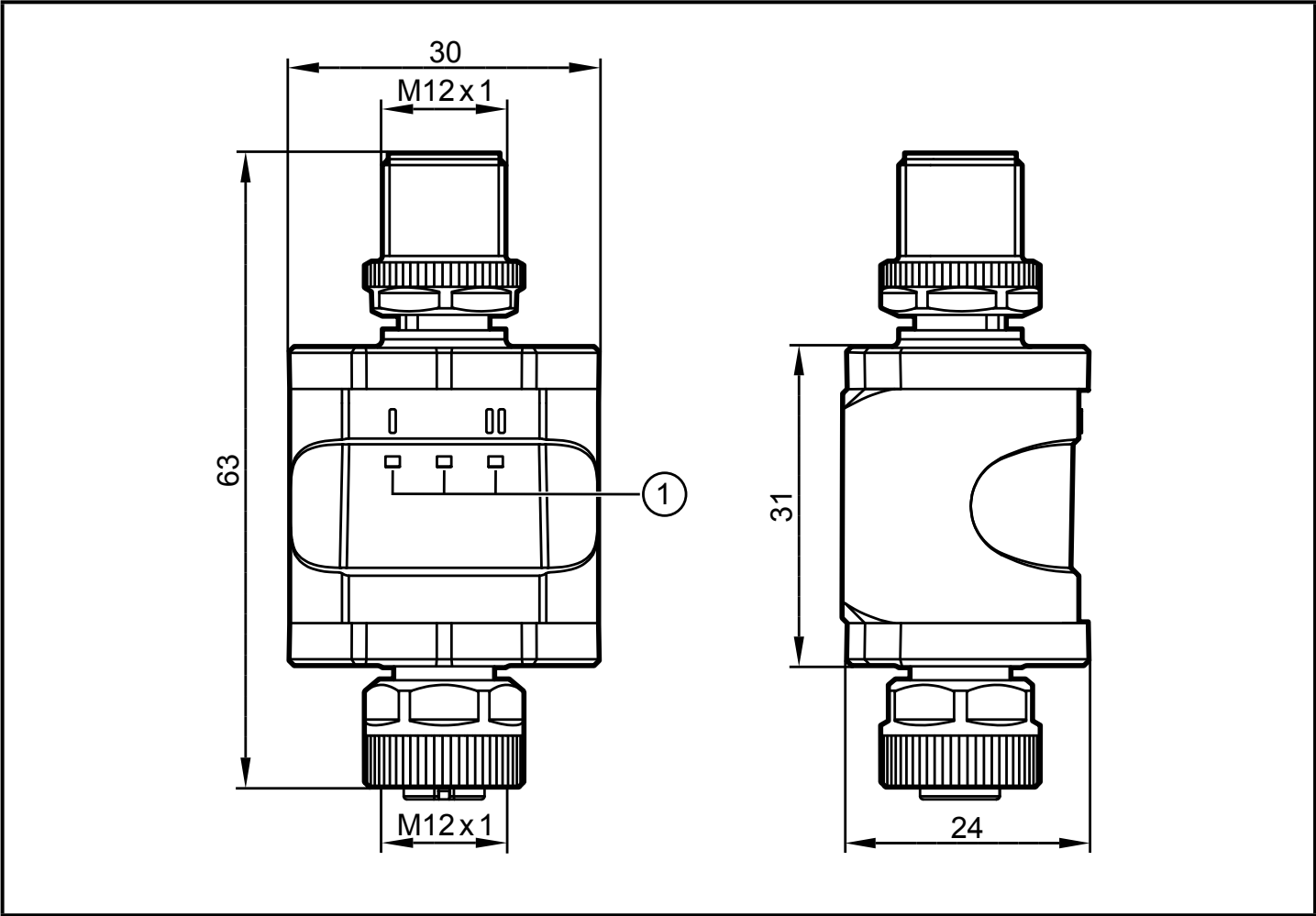
9 Parameter setting



During parameter setting, the device remains in the operating mode.

It continues its monitoring functions with the existing parameters until the parameter setting has been completed.

10 Scale drawing



Dimensions [mm]

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11 Technical data

Operating voltage DC	[V]	18...30
Nominal voltage DC	[V]	24
Current consumption	[mA]	300
Number of analogue outputs		2
Analogue output (voltage)	[V]	0...10
Extended voltage range	[V]	0...11
Min. load resistor	[Ω]	2000
Accuracy	[% FS]	0.25
Protection rating		IP 67*
Degree of soiling		2
Ambient temperature	[°C]	-25...70
Storage temperature	[°C]	-25...70
Max. perm. relative humidity	[%]	90 (31 °C) linearly decreasing to 50 (40 °C) non condensing
Maximum operating altitude	[m]	4000 above sea level
Connectors		M12 connector, 4-pole M12 socket, 5-pole

*) With threaded M12 connectors tightened as described
 (→ 6 Electrical connection)
 IP class was not evaluated by UL.

11.1 IO-Link device

Transmission type		COM2 (38.4 kbaud)
IO-Link revision		1.1
SDCI standard		IEC 61131-9
IO-Link device ID		614 d / 00 02 66 h
SIO mode		no
Required master port type		A/B
Process data analogue		OUT: 2
Process data binary		0
Min. process cycle time	[ms]	3.6

11.2 Approvals/standards

EU declarations of conformity, approvals etc. can be downloaded at:
www.ifm.com

12 Troubleshooting

LED	Status	Error	Troubleshooting
I	flashing (5 Hz)	Short circuit or overload at the output	Check/correct connection cables and connections at the output (→ 6).
Power	flashing (5 Hz)	Supply voltage too low.	Check/correct the supply voltage (→ 6) and (→ 11).
	off	No supply voltage	Check/correct the supply voltage (→ 6) and (→ 11).
II	flashing (5 Hz)	Short circuit or overload at the output	Check/correct connection cables and connections at the output (→ 6).

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13 Maintenance, repair and disposal

13.1 Maintenance

The unit is maintenance-free.

13.2 Cleaning the housing surface

- ▶ Disconnect the device.
- ▶ Clean the device from dirt using a soft, chemically untreated and dry cloth.



Micro-fibre cloths without chemical additives are recommended.

13.3 Repair

The device must only be repaired by the manufacturer.

- ▶ Observe the safety instructions.

13.4 Disposal

- ▶ Dispose of the device in accordance with the national environmental regulations.