

# JUMO DELOS S02

Pressure transmitter with display



 Bluetooth®  IO-Link

Operating Manual



40505611T90Z001K000

V3.00/EN/30053013/2026-07-20



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# 1 About this documentation

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## 1.1 Applicable documentation

| Product group | Document type   |
|---------------|-----------------|
| 405056        | Security Manual |

## 1.2 Purpose

This documentation is part of the device and includes all information to ensure that it is used safely and as intended across all phases of the product lifecycle.

If you do not follow the documentation and safety information, this may result in risk to life and damage to property due to improper use.

- Read and follow the documentation and the safety information and warnings.
- Store the document in its entirety, in an easily accessible location, and so that it can be read in full at all times.
- Contact the manufacturer if you have any questions about the device and documentation.

## 1.3 Target group

This documentation is intended to be used by personnel for plant mechanical systems for sanitary, heating and air-conditioning technology, electrical engineering or mechanical and plant engineering throughout all phases of the product life cycle.

## 1.4 Definition of terms

| Use in the documentation   | Definition                                                                                                                                                   |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device, product            | Pressure transmitter                                                                                                                                         |
| End device                 | Smartphone, tablet, laptop, PC etc.                                                                                                                          |
| Sensor                     | Pressure sensor, pressure measuring cell                                                                                                                     |
| Medium, measurement medium | Gases, vapors, liquids                                                                                                                                       |
| Product lifecycle          | Overall consideration of Product identification, acceptance of the goods, storage, mounting, connection, operation, troubleshooting, maintenance to disposal |

## 1.5 Trademark information

All trademarks and trade and company names used are the property of their rightful owners or authors.

## 1.6 Symbols



### NOTE!

This symbol is used in tables and indicates that further information is provided after the table.

---



### REFERENCE!

This symbol refers to further information in other sections, chapters, or other manuals.

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### 2.1 Intended use

The pressure transmitter with display measures the absolute or relative pressure of liquid, vaporous, and gaseous media.

The device is suitable for mounting in pipes and containers in various applications. It is mounted using individual process connections.

The documentation is part of the device. The device is only intended for use according to this documentation.

### 2.2 Qualification of personnel

The personnel deployed must meet the following requirements in all phases of the product lifecycle:

- Trained electrical, mechanical, and plant engineering personnel.
- Members of personnel are familiar with this documentation and the safety information and warnings it contains.

### 2.3 Hot surfaces

Hot device surfaces pose a risk of injury. Hot device surfaces can be caused by the use of hot media in applications.

- If required, install contact protection.

When working on the device:

- Allow the device and plant to cool down.
- Wear suitable protective equipment.

### 2.4 Hazardous materials

Using hazardous materials as a medium may result in abrasive and corrosive damage to components of the product that come into contact with the medium. The medium may leak and present a fire hazard and a risk to health.

Carry out a risk assessment taking into consideration the safety data sheet for the relevant hazardous substance for mounting, operation, maintenance, cleaning, and disposal:

- Comparison and systematic checking of the durability of the components of the product that come into contact with the medium and the admissible environmental influences.
- Assessment of the risk to people and the environment.
- Assessment of the fire hazard due to the product materials, the admissible environmental influences, and the voltage supply.

### 2.5 Mechanical loads

Mechanical load on the device and process connections can lead to leaks.

- Do not place the device and the process connections under mechanical strain.
- Systematically check that the process connections are leak-tight.

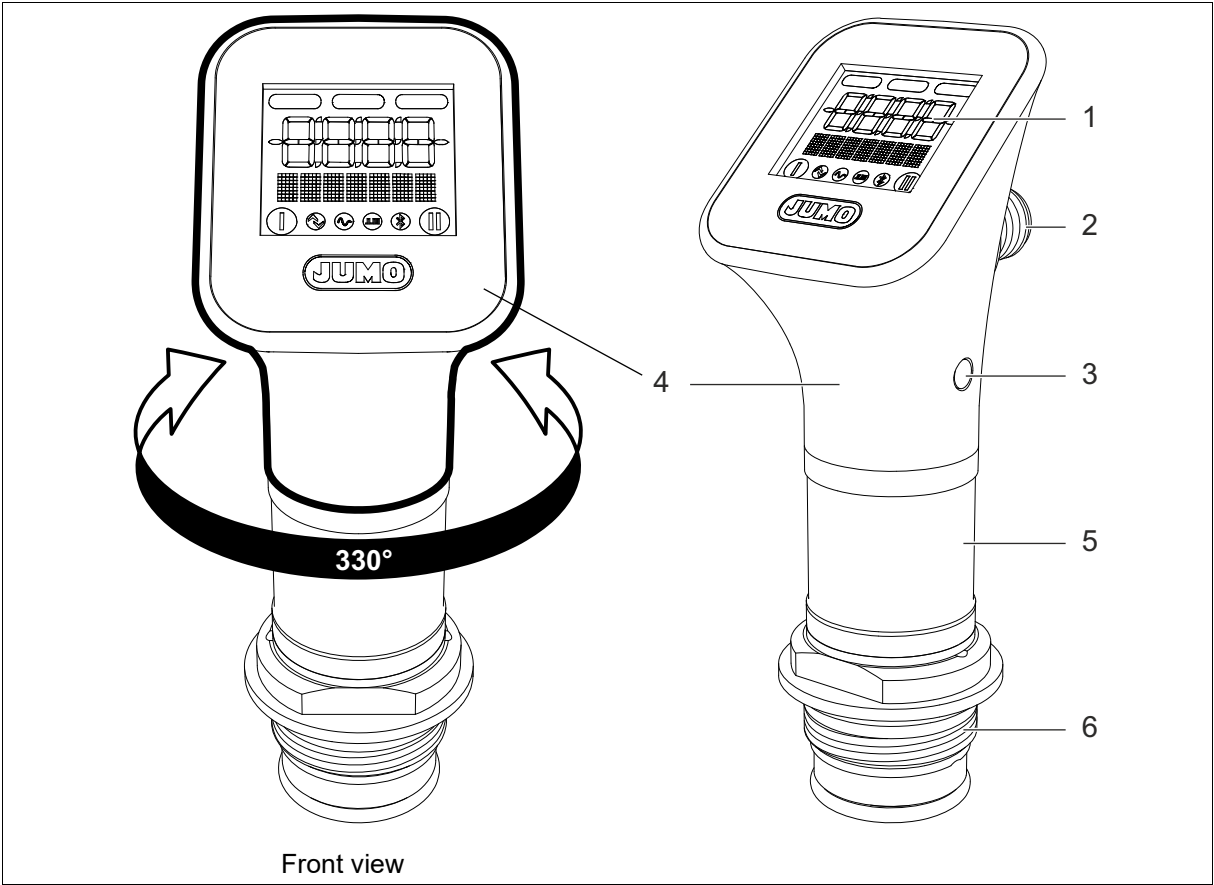
### 2.6 Transport and storage damage

The device can be damaged if it is insufficiently protected during transport and/or improperly stored.

- Transport the device protected from moisture and dirt in shockproof packaging.
- Protect all electrical and mechanical connections from damage.
- Observe the admissible storage temperature of the device.
- Store the device in a dry and dust-free environment.

# 3 Description

## 3.1 Structure



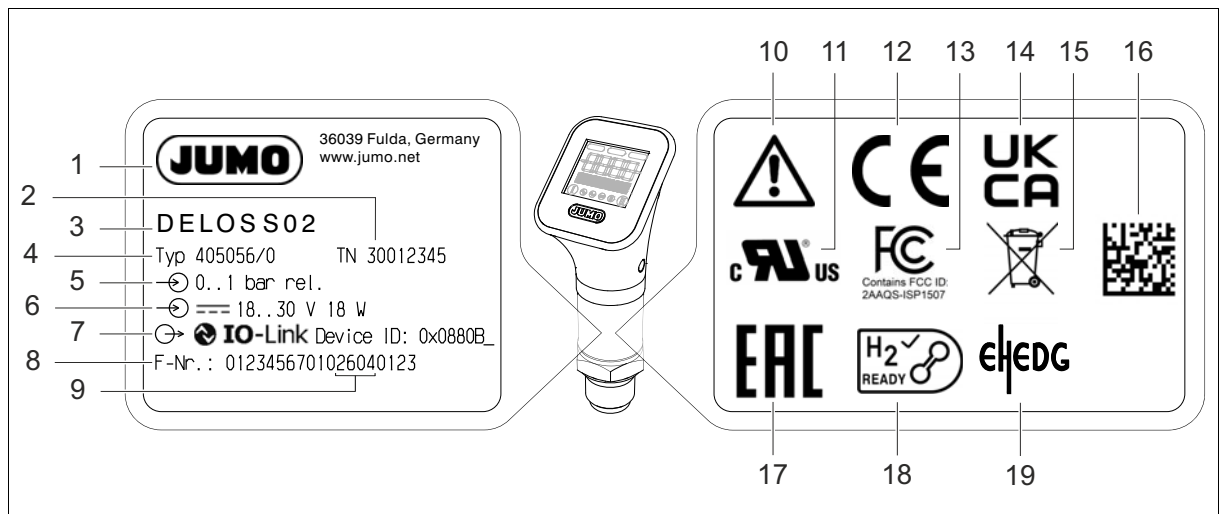
- |   |                                                                     |   |                                       |
|---|---------------------------------------------------------------------|---|---------------------------------------|
| 1 | Display                                                             | 4 | Top section of the housing (rotating) |
| 2 | M12 plug connector                                                  | 5 | Case bottom section                   |
| 3 | Pressure compensation element<br>(only in relative pressure sensor) | 6 | Process connection with sensor        |

## 3.2 Functions

The device measures the absolute or relative process pressure. In this process, the process pressure acts on a pressure measuring cell (sensor) via a membrane. The sensor sends an output signal to the transmitter. The transmitter converts the output signal into the process value. The process value can be read on the display and output to higher-level systems via the interfaces or outputs.

| Measurand         | Measuring principle                 |
|-------------------|-------------------------------------|
| Absolute pressure | Piezoresistive pressure measurement |
| Relative pressure |                                     |

## 3.3 Nameplate



|   |                                       |    |                                             |
|---|---------------------------------------|----|---------------------------------------------|
| 1 | Manufacturer and address              | 10 | Observe device documentation!               |
| 2 | Part no.                              | 11 | UL identification marking                   |
| 3 | Device designation                    | 12 | CE identification marking                   |
| 4 | Order code                            | 13 | FCC identification marking                  |
| 5 | Measuring range                       | 14 | UKCA identification marking                 |
| 6 | Voltage supply (DC)                   | 15 | Disposal                                    |
| 7 | IO-Link device identifier (Device ID) | 16 | Data matrix code                            |
| 8 | Fabrication number                    | 17 | EAC identification marking                  |
| 9 | Date of manufacture (YYww)            | 18 | H <sub>2</sub> ready identification marking |
|   |                                       | 19 | EHEDG identification marking                |

## 3.4 Approval marks and certificates



Certificates for approved device versions are available for download on the manufacturer's website.  
 Russian documentation upon request.  
 H<sub>2</sub> ready is provided as an extra code in the order details.

**Submitted:**



EHEDG conformity only in conjunction with EHEDG-approved process connections, ⇒ page 24.

### Radio Equipment Directive (RED)

JUMO GmbH & Co. KG hereby states that the DELOS S02 device complies with the Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available at the following web address:  
[qr-405056-en.jumo.info](http://qr-405056-en.jumo.info).

## 3 Description

### Radio Equipment Regulations 2017

JUMO GmbH & Co. KG hereby states that the DELOS S02 device complies with the radio equipment regulations UK S.I. 2017 No. 1206. The full text of the UK Declaration of Conformity is available at the following web address: [qr-405056-en.jumo.info](http://qr-405056-en.jumo.info).

### Federal Communications Commission (FCC)

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions.

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

Caution: Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## 3.5 Device ID

The device ID is shown on the nameplate and identifies the device version. A device description file (IODD) is assigned to each device ID which is used for communication via the IO-Link interface, ⇨ Page 35.

### Relative pressure

| Device ID | Device version                     | IODD              |
|-----------|------------------------------------|-------------------|
| 0×088031  | 0 to 0.4 bar relative pressure     | JUMO-088031-*.xml |
| 0×0880B1  | 0 to 1 bar relative pressure       | JUMO-0880B1-*.xml |
| 0×088131  | 0 to 4 bar relative pressure       | JUMO-088131-*.xml |
| 0×0881B1  | 0 to 10 bar relative pressure      | JUMO-0881B1-*.xml |
| 0×088231  | 0 to 25 bar relative pressure      | JUMO-088231-*.xml |
| 0×0882B1  | 0 to 60 bar relative pressure      | JUMO-0882B1-*.xml |
| 0×088331  | 0 to 100 bar relative pressure     | JUMO-088331-*.xml |
| 0×0883B1  | -0.1 to +0.1 bar relative pressure | JUMO-0883B1-*.xml |
| 0×088431  | -0.4 to +0.4 bar relative pressure | JUMO-088431-*.xml |
| 0×0884B1  | -1 to +1 bar relative pressure     | JUMO-0884B1-*.xml |
| 0×088531  | -1 to +3 bar relative pressure     | JUMO-088531-*.xml |
| 0×0885B1  | -1 to +9 bar relative pressure     | JUMO-0885B1-*.xml |
| 0×088631  | -1 to +24 bar relative pressure    | JUMO-088631-*.xml |

### Absolute pressure

| Device ID | Device version                 | IODD              |
|-----------|--------------------------------|-------------------|
| 0×0886B1  | 0 to 0.4 bar absolute pressure | JUMO-0886B1-*.xml |
| 0×088731  | 0 to 1 bar absolute pressure   | JUMO-088731-*.xml |
| 0×0887B1  | 0 to 4 bar absolute pressure   | JUMO-0887B1-*.xml |
| 0×088831  | 0 to 10 bar absolute pressure  | JUMO-088831-*.xml |
| 0×0888B1  | 0 to 25 bar absolute pressure  | JUMO-0888B1-*.xml |
| 0×088931  | 0 to 60 bar absolute pressure  | JUMO-088931-*.xml |

3.6 Scope of delivery

|                               |
|-------------------------------|
| Device in the ordered version |
| Operating manual              |

3.7 Further information and downloads

|                                                       |                                                                                                                                                           |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| JUMO DELOS S02 –<br>Pressure transmitter with display | <br><a href="http://qr-405056-en.jumo.info">qr-405056-en.jumo.info</a> |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|

## 4 Technical data

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### 4.1 Electrical safety

|              |                                                                                                                                          |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Requirements | DIN EN 61010-1:2020<br>The device must be equipped with an electrical circuit that meets the requirements for "Limited-energy circuits". |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------|

### 4.2 Electrical data

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| Voltage supply                  | DC 18 to 30 V, PELV                              |
| Current consumption             |                                                  |
| IO-Link operation               | ≤ 100 mA                                         |
| Operation with switching output | ≤ 600 mA                                         |
| Power consumption               |                                                  |
| IO-Link operation               | ≤ 1.8 W                                          |
| Operation with switching output | ≤ 18 W                                           |
| Overvoltage category            | II                                               |
| Pollution degree                | 2                                                |
| Protection rating               | DIN EN 61140, Class III (protective low voltage) |
| Electrical connection           |                                                  |
| Connection elements             |                                                  |
| Device                          | M12 plug connector                               |
| Connecting cable                | M12 plug connector                               |
| M12 plug connector              | IEC 61076-2-101                                  |
| Version                         | 4-pole                                           |
| Connecting cable                |                                                  |
| Conductor cross section         |                                                  |
| IO-Link operation               | ≥ AWG 22                                         |
| Operation with switching output | ≥ AWG 21                                         |
| Version                         | 4-core, copper                                   |
| Line length                     | ≤ 20 m                                           |
| Temperature resistance          | ≥ 80 °C                                          |
| For UL application              |                                                  |
| Approved cables <sup>a</sup>    | CYJV2/8, CYJV/7, PVVA2/8, PVVA/7                 |

<sup>a</sup> The cables must be suitable for the voltage, current and temperature used.

### 4.3 Inputs

#### 4.3.1 Measurands

##### Reference conditions

|                       |                                                  |
|-----------------------|--------------------------------------------------|
| Basic principles      | EN 61298-1, DIN 16086, DIN EN 60770              |
| Installation position | Any                                              |
| Calibration position  | Device upright, process connection at the bottom |

##### Relative pressure

| Measuring range<br>bar    | Linearity <sup>a</sup><br>% MSP <sup>e</sup> | Accuracy with               |                                     | Long-term<br>stability<br>% MSP<br>per year | Overload<br>capability <sup>b</sup><br>bar | Burst<br>pressure<br>bar |
|---------------------------|----------------------------------------------|-----------------------------|-------------------------------------|---------------------------------------------|--------------------------------------------|--------------------------|
|                           |                                              | 20 °C <sup>c</sup><br>% MSP | -20 to +75 °C <sup>d</sup><br>% MSP |                                             |                                            |                          |
| 0 to 0.4 <sup>f</sup>     | 0.15                                         | 0.40                        | 1.00                                | ≤ 0.15                                      | 10                                         | 20                       |
| 0 to 1 <sup>f</sup>       | 0.15                                         | 0.30                        | 1.00                                | ≤ 0.15                                      | 10                                         | 20                       |
| 0 to 4                    | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 25                                         | 50                       |
| 0 to 10                   | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 50                                         | 60                       |
| 0 to 25                   | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 120                                        | 200                      |
| 0 to 60                   | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 300                                        | 400                      |
| 0 to 100                  | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 300                                        | 400                      |
| -0.1 to +0.1 <sup>f</sup> | 0.20                                         | 0.50                        | 1.00                                | ≤ 0.20                                      | 6                                          | 10                       |
| -0.4 to +0.4 <sup>f</sup> | 0.15                                         | 0.40                        | 1.00                                | ≤ 0.20                                      | 10                                         | 20                       |
| -1 to +1 <sup>f</sup>     | 0.15                                         | 0.30                        | 1.00                                | ≤ 0.15                                      | 10                                         | 20                       |
| -1 to +3                  | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 25                                         | 50                       |
| -1 to +9                  | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 50                                         | 60                       |
| -1 to +24                 | 0.10                                         | 0.25                        | 0.75                                | ≤ 0.10                                      | 120                                        | 200                      |

<sup>a</sup> According to limit point setting.

<sup>b</sup> All pressure transmitters are vacuum proof.

<sup>c</sup> Includes: linearity, hysteresis, repeatability, deviation of measuring range start value and measuring range end value.

<sup>d</sup> Includes: linearity, hysteresis, repeatability, deviation of measuring range start value and measuring range end value, thermal effect on measuring range start and measuring span.

<sup>e</sup> MSP = measuring span.

<sup>f</sup> Not for increased medium temperature.

## 4 Technical data

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### Absolute pressure

| Measuring range       | Linearity <sup>a</sup> | Accuracy with               |                                     | Long-term stability | Overload capability <sup>b</sup> | Burst pressure |
|-----------------------|------------------------|-----------------------------|-------------------------------------|---------------------|----------------------------------|----------------|
| bar                   | % MSP <sup>e</sup>     | 20 °C <sup>c</sup><br>% MSP | -20 to +75 °C <sup>d</sup><br>% MSP | % MSP per year      | bar                              | bar            |
| 0 to 0.4 <sup>f</sup> | 0.15                   | 0.40                        | 1.00                                | ≤ 0.15              | 10                               | 20             |
| 0 to 1 <sup>f</sup>   | 0.15                   | 0.30                        | 1.00                                | ≤ 0.15              | 10                               | 20             |
| 0 to 4                | 0.10                   | 0.25                        | 0.75                                | ≤ 0.10              | 25                               | 50             |
| 0 to 10               | 0.10                   | 0.25                        | 0.75                                | ≤ 0.10              | 50                               | 60             |
| 0 to 25               | 0.10                   | 0.25                        | 0.75                                | ≤ 0.10              | 120                              | 200            |
| 0 to 60               | 0.10                   | 0.25                        | 0.75                                | ≤ 0.10              | 200                              | 300            |

<sup>a</sup> According to limit point setting.

<sup>b</sup> All pressure transmitters are vacuum proof.

<sup>c</sup> Includes: linearity, hysteresis, repeatability, deviation of measuring range start value and measuring range end value.

<sup>d</sup> Includes: linearity, hysteresis, repeatability, deviation of measuring range start value and measuring range end value, thermal effect on measuring range start and measuring span.

<sup>e</sup> MSP = measuring span.

<sup>f</sup> Not for increased medium temperature.

### 4.4 Outputs

|                                     |        |
|-------------------------------------|--------|
| Measuring range scaling (turn down) | 1:4    |
| Warm-up time                        | 75 s   |
| Step response time $T_{90}$         | 150 ms |

#### 4.4.1 Analog outputs

|                       |                                                                     |
|-----------------------|---------------------------------------------------------------------|
| Current output        |                                                                     |
| Function              | Output of the process value, output of a signal for error messaging |
| Signal range          | 4.0 to 20 mA                                                        |
| Signal limits         | 3.4 to 22 mA                                                        |
| Accuracy              | $\pm 0.1\%$ of 16 mA                                                |
| Temperature influence | 75 ppm/K                                                            |
| Burden                | $\leq 500\ \Omega$                                                  |
| Burden influence      | $\pm 0.02\%$ per 100 $\Omega$                                       |
| Voltage output        |                                                                     |
| Function              | Output of the process value, output of a signal for error messaging |
| Signal range          | DC 0 to 10 V                                                        |
| Signal limits         | DC 0 to 11 V                                                        |
| Accuracy              | $\pm 0.1\%$ of 10 V                                                 |
| Temperature influence | 75 ppm/K                                                            |
| Load                  | $\geq 2000\ \Omega$                                                 |
| Load influence        | $\leq 15\text{ mV}$                                                 |

#### 4.4.2 Digital outputs

|                                |                                                                            |
|--------------------------------|----------------------------------------------------------------------------|
| Type                           | Switching output                                                           |
| Protection                     | Against short circuiting and overload, protected against polarity reversal |
| Output signal                  | Push-pull, PNP, NPN                                                        |
| Ampacity                       | $\leq 200\text{ mA}$                                                       |
| Voltage drop                   | $\leq 3.5\text{ V}$                                                        |
| Switching output               |                                                                            |
| Function                       | Limit value monitoring function                                            |
| Input signal                   | Pressure                                                                   |
| Output signal                  | 2 limit value monitoring functions, device error                           |
| Switch-on and switch-off delay | 0 to 100 s                                                                 |
| Limit value function           | Hysteresis mode, window mode, two-point mode                               |
| Switching points               | Configurable                                                               |

## 4 Technical data

---

### 4.5 Interfaces

#### 4.5.1 Bluetooth

|                                                                              |                                                                                  |
|------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Function                                                                     | Transfer of configuration data and device information, display of process values |
| Communication                                                                | Via end device with JUMO smartCONNECT app                                        |
| Authentication                                                               | Via Bluetooth® radio module and NFC tag                                          |
| Connection status (configurable)<br>Permanently<br>Temporarily               | Active<br>Restricted (via NFC)                                                   |
| Range                                                                        | 10 m under reference conditions                                                  |
| Radio frequency<br>Bluetooth® radio module<br>NFC tag                        | 2.4 GHz<br>13.56 MHz                                                             |
| Max. transmission power<br>Bluetooth® radio module<br>NFC tag                | 0 dBm<br>–                                                                       |
| JUMO smartCONNECT app<br>System requirements<br>iOS device<br>Android device | iPhone 7 or later (recommended) with iOS 14<br>Android 12 or later               |

#### 4.5.2 IO-Link

|                                |                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------|
| Function                       | Transfer of process data, configuration data and device information, displaying of process values |
| Communication                  | Via end device with IO-Link master and device description file (IODD)                             |
| Communication interface        | IO-Link device V 1.1                                                                              |
| Data transfer rate (baud rate) | COM 3 (230.4 kBaud)                                                                               |
| Cycle time                     | ≥ 5 ms                                                                                            |
| Profile                        | Common Profile, Smart Sensor Profile                                                              |

### 4.6 Display

|                                                  |                                      |
|--------------------------------------------------|--------------------------------------|
| Type                                             | LCD                                  |
| Display range                                    | 22.5 × 26.0 mm                       |
| Resolution<br>Process value display<br>Text line | 4 × 18-segment<br>7 × 5×8 Dot-Matrix |
| Brightness                                       | 11 levels (configurable)             |
| Alignment                                        | 0°, 180°                             |

### 4.7 Environmental influences

The product is UL-approved. The approval stipulates that the product may be used indoors only.

|                                             |                                                                                        |
|---------------------------------------------|----------------------------------------------------------------------------------------|
| Admissible temperatures                     | DIN 60068-2-1, DIN 60068-2-2                                                           |
| Medium                                      |                                                                                        |
| Standard, H <sub>2</sub> ready <sup>a</sup> | -25 to +100 °C (CIP/SIP processes: max. 135 °C for <1 h/d and T <sub>amb</sub> <60 °C) |
| Increased                                   | -25 to +200 °C                                                                         |
| Ambient                                     | -25 to +75 °C                                                                          |
| Storage                                     | -40 to +85 °C                                                                          |
| Climatic conditions                         | DIN EN 60721-3-3                                                                       |
| Climate class                               | 3K6                                                                                    |
| Air temperature                             | -25 to +55 °C                                                                          |
| Relative humidity                           |                                                                                        |
| Storage                                     | ≤ 90 %                                                                                 |
| Operation                                   | ≤ 100 % – condensation on device outer shell                                           |
| Protection type                             | DIN EN 60529<br>IP65, IP67                                                             |
| Electromagnetic compatibility (EMC)         | DIN EN 61326-2-3:2022                                                                  |
| Interference emission                       | Class B <sup>b</sup>                                                                   |
| Interference immunity                       | Industrial requirements                                                                |
| Vibration resistance                        | DIN EN 60068-2-6<br>20 g at 58,1 to 2000 Hz                                            |
| Shock resistance                            | DIN EN 60068-2-27<br>50 g for 11 ms, 100 g for 1 ms                                    |
| Site altitude                               | ≤ 2000 m above sea level                                                               |

<sup>a</sup> Suitable for mobile hydrogen applications in accordance to CSA/ANSI HGV 3.1.

<sup>b</sup> The product is suitable for industrial use as well as for households and small businesses.

## 4 Technical data

---

### 4.8 Mechanical features

#### 4.8.1 Materials

|                             |                                                             |
|-----------------------------|-------------------------------------------------------------|
| Housing                     |                                                             |
| Top section of the housing  |                                                             |
| Plastic                     | PBT-GF30, 1.4301 (304)                                      |
| Stainless steel             | 1.4404 (316L)                                               |
| Case bottom section         | 1.4301 (304), PBT-GF30                                      |
| Seal                        | EPDM                                                        |
| Display                     | PMMA                                                        |
| Sensor                      | Silicon                                                     |
| Membrane                    | 1.4435 (316L)                                               |
| Filling oil                 | Silicone oil, FDA-compliant oil                             |
| Process connection          |                                                             |
| Without EHEDG certification | 1.4571 (316Ti)                                              |
| With EHEDG certification    | 1.4404 (316L)                                               |
| Welding ring                | 1.4404 (316L)                                               |
| O-ring, sealing ring        | FPM, others available as an optional extra (e.g. EPDM, VMQ) |

#### 4.8.2 Surface finish

##### Wetted parts

|                                                                          |                                     |
|--------------------------------------------------------------------------|-------------------------------------|
| Process connection                                                       |                                     |
| Front-flush                                                              |                                     |
| Taper socket with union nut<br>DN 25, DIN 11851                          | Ra ≤ 0,8 µm, Ra ≤ 0,4 µm on request |
| Taper socket with union nut<br>DN 40, DIN 11851                          | Ra ≤ 0,8 µm, Ra ≤ 0,4 µm on request |
| Tank connection<br>with grooved union nut DN 25<br>round thread 52 × 1/6 | Ra ≤ 0,8 µm                         |
| Front-flush, with EHEDG certification                                    |                                     |
| Clamping socket (clamp)<br>DN 10/15/20, DIN 32676,<br>1" ISO 2852        | Ra ≤ 0,8 µm, Ra ≤ 0,4 µm on request |
| Clamping socket (clamp)<br>DN 25/32/40, DIN 32676,<br>1 1/2" ISO 2852    | Ra ≤ 0,8 µm, Ra ≤ 0,4 µm on request |
| Clamping socket (clamp)<br>DN 50, DIN 32676,<br>2" ISO 2852              | Ra ≤ 0,8 µm, Ra ≤ 0,4 µm on request |
| JUMO PEKA<br>Hygienic process connection                                 | Ra ≤ 0,8 µm                         |

### 4.8.3 Device

|                                                                                                                |                                |
|----------------------------------------------------------------------------------------------------------------|--------------------------------|
| Weight <sup>a</sup><br>Device version standard, with<br>process connection G 1/2<br>Plastic<br>Stainless steel | <br><br><br>~ 160 g<br>~ 240 g |
| Alignment<br>Top section of the housing                                                                        | Can be rotated by 330°         |

<sup>a</sup> Depends on version and DN.

### 4.8.4 Sensor

|                         |                                                                     |
|-------------------------|---------------------------------------------------------------------|
| Measuring principle     | Piezoresistive (absolute pressure sensor, relative pressure sensor) |
| Admissible load changes | > 10 million                                                        |

### 4.8.5 Process connections

Temperature range depends on pressure range and sealing material.

#### Front-flush

| Designation                                                              | Max. pressure | Temperature range |
|--------------------------------------------------------------------------|---------------|-------------------|
| G 3/4 front-flush<br>DIN EN ISO 228-1                                    | 25 bar        | -10 to +150 °C    |
|                                                                          | 40 bar        | -10 to +100 °C    |
| G 1/2 front-flush<br>with double seal                                    | 25 bar        | -10 to +150 °C    |
|                                                                          | 40 bar        | -10 to +100 °C    |
| G 3/4 front-flush<br>with double seal                                    | 25 bar        | -10 to +150 °C    |
|                                                                          | 40 bar        | -10 to +100 °C    |
| G 1 front-flush<br>with double seal                                      | 40 bar        | -10 to +100 °C    |
| Taper socket with union nut DN 25<br>DIN 11851                           | 40 bar        | -10 to +140 °C    |
| Taper socket with union nut DN 40<br>DIN 11851                           | 40 bar        | -10 to +140 °C    |
| Tank connection<br>with grooved union nut DN 25<br>round thread 52 × 1/6 | 25 bar        | Up to 150 °C      |
|                                                                          | 40 bar        | Up to 100 °C      |

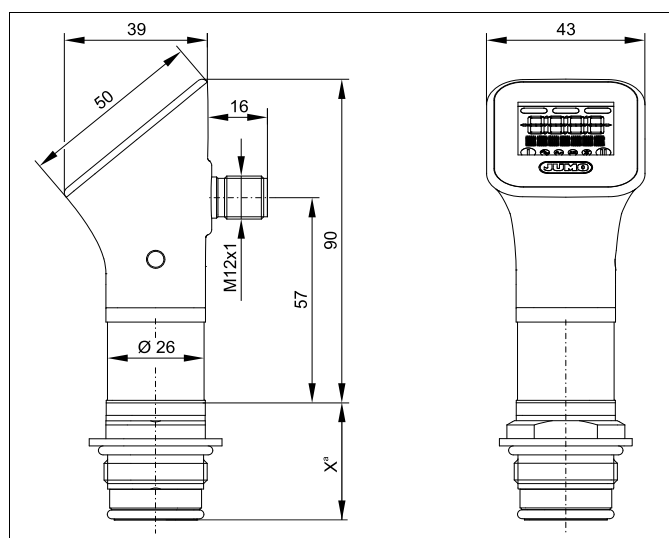
## 4 Technical data

### Front-flush, with EHEDG certification

| Designation                                                          | Max. pressure | Temperature range |
|----------------------------------------------------------------------|---------------|-------------------|
| Clamping socket (clamp)<br>DN 10/15/20<br>DIN 32676, 1" ISO 2852     | 25 bar        | -10 to +140 °C    |
| Clamping socket (clamp)<br>DN 25/32/40<br>DIN 32676, 1 1/2" ISO 2852 | 25 bar        | -10 to +140 °C    |
| Clamping socket (clamp)<br>DN 50<br>DIN 32676, 2" ISO 2852           | 16 bar        | -10 to +140 °C    |
| JUMO PEKA<br>Hygienic process connection                             | 25 bar        | -10 to +200 °C    |
|                                                                      | 40 bar        | -10 to +100 °C    |

## 4.9 Dimensions

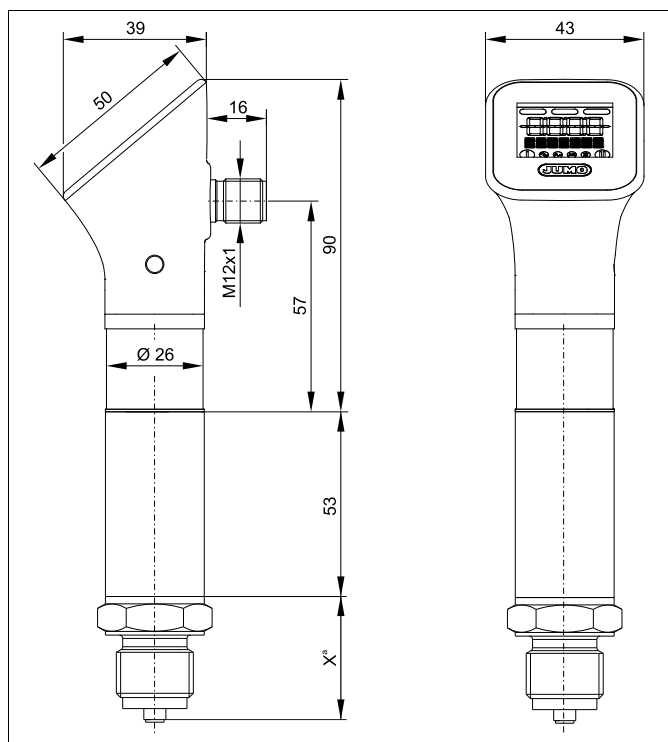
### 4.9.1 Device version standard



<sup>a</sup> Height process connection ⇨ Page 22

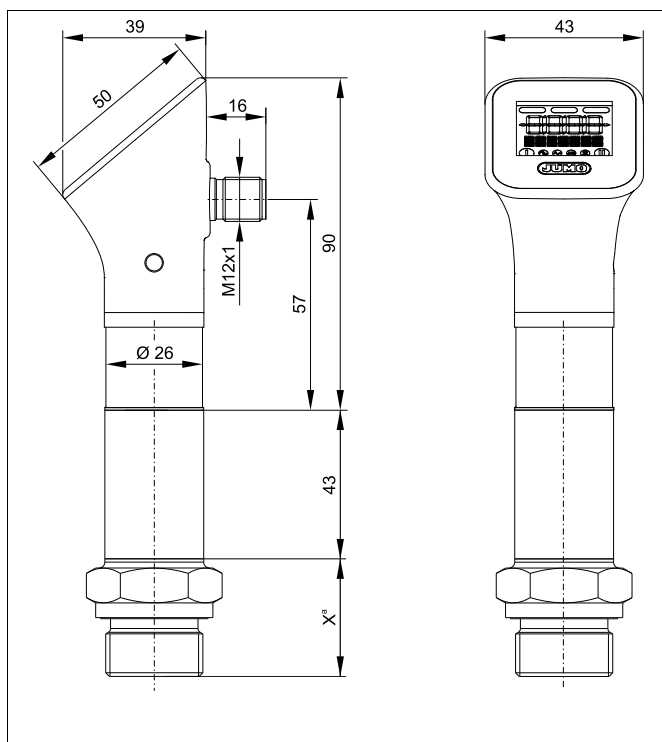
## 4.9.2 Device version with increased medium temperature

Not front-flush



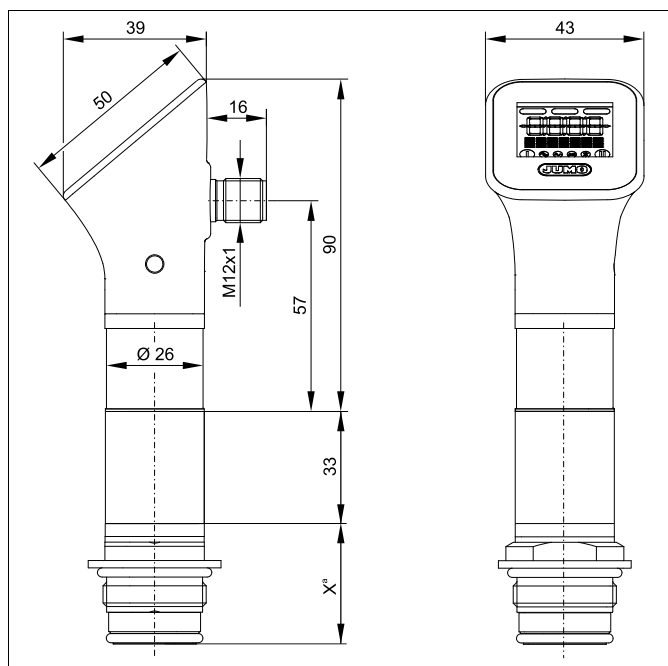
<sup>a</sup> Height process connection ⇒ Page 22

Front-flush



<sup>a</sup> Height process connection ⇒ Page 22

Front-flush, with EHEDG certification



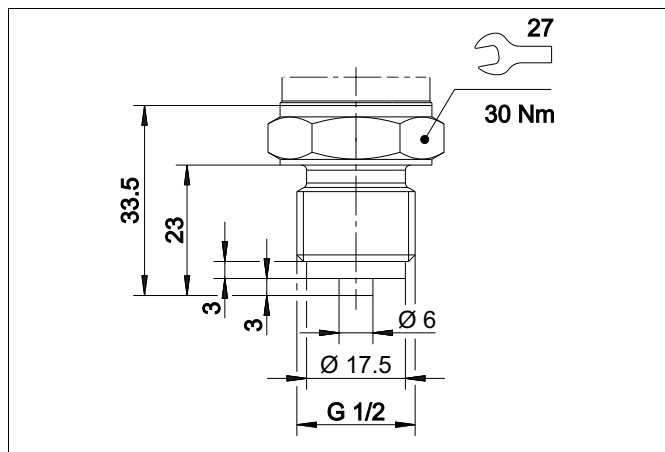
<sup>a</sup> Height process connection ⇒ Page 24

## 4 Technical data

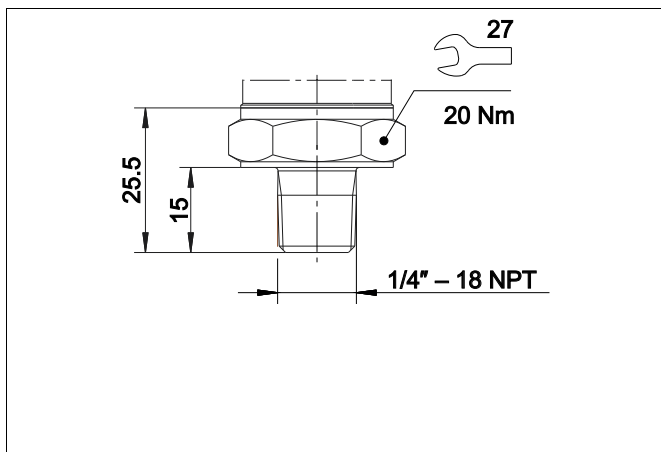
### 4.9.3 Process connections

#### Not front-flush

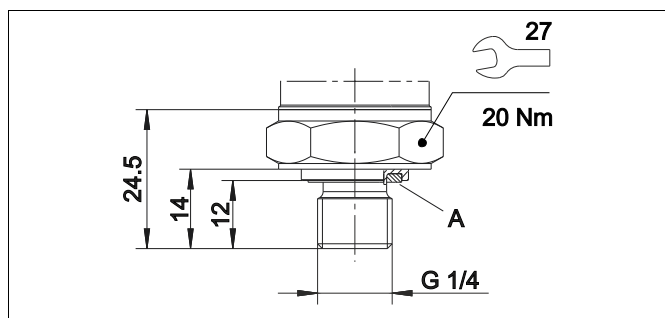
G 1/2 DIN EN 837



1/4" – 18 NPT DIN EN 837

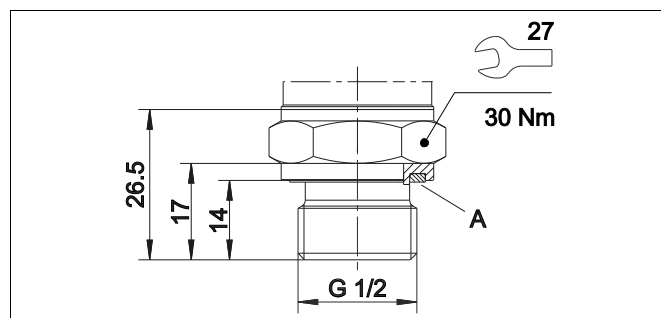


G 1/4 DIN EN 3852-11



A Sealing ring

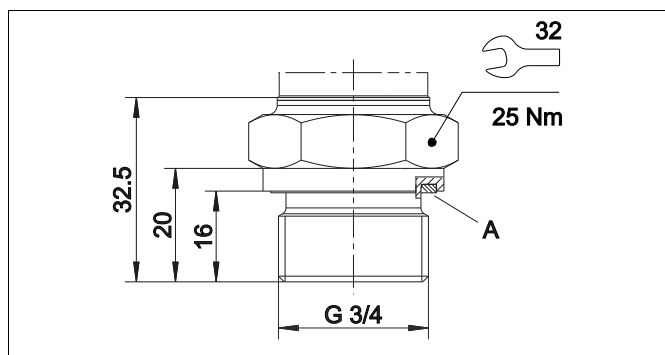
G 1/2 DIN EN 3852-11



A Sealing ring

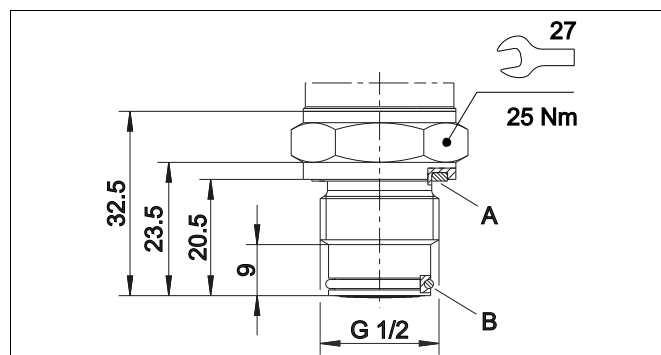
#### Front-flush

G 3/4 front-flush DIN EN ISO 228-1



A Sealing ring

G 1/2 front-flush with double seal

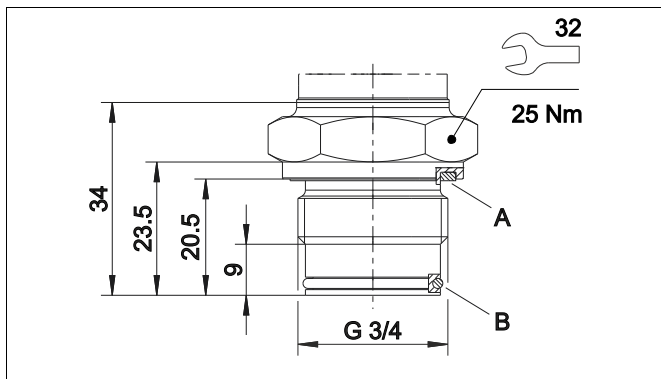


A Sealing ring

B O-ring 15.1 × 1.78

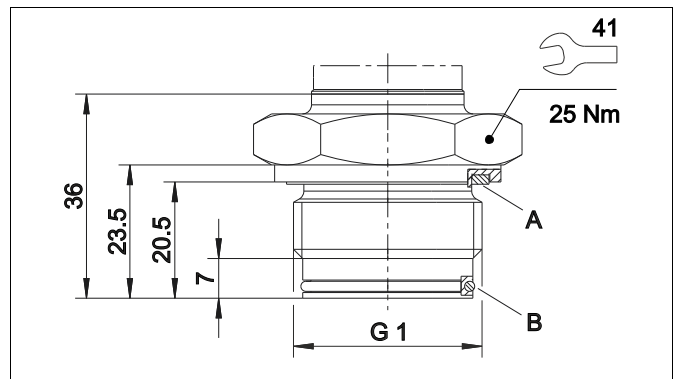
## 4 Technical data

G 3/4 front-flush with double seal



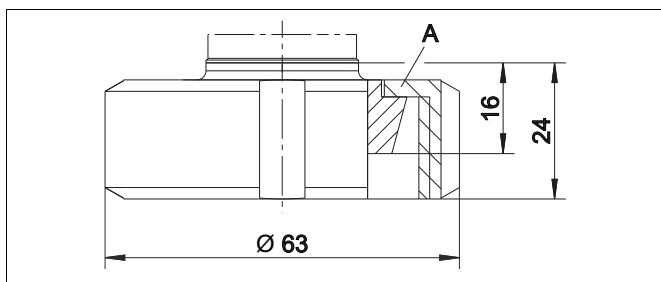
- A Sealing ring
- B O-ring 20.35 × 1.78

G 1 front-flush with double seal



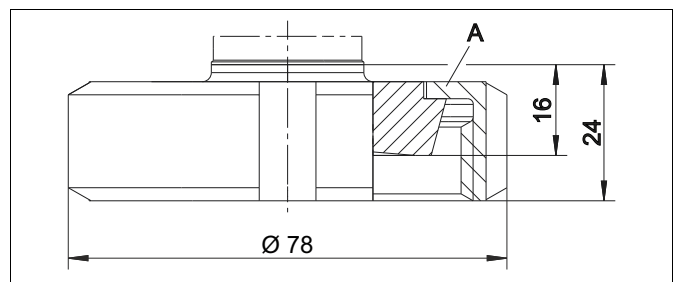
- A Sealing ring
- B O-ring 26.7 × 1.78

Taper socket with union nut DN 25  
DIN 11851



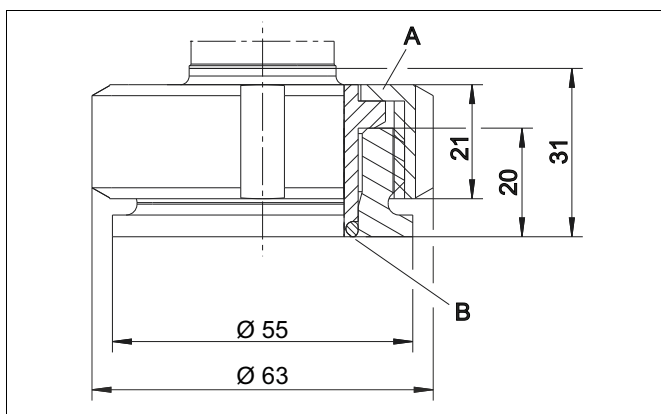
- A Grooved union nut

Taper socket with union nut DN 40  
DIN 11851



- A Grooved union nut

Tank connection with grooved union nut, DN 25  
Round thread 52 × 1/6

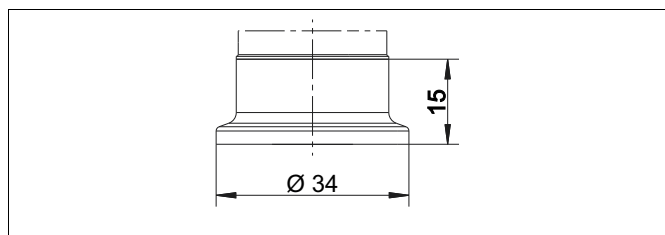


- A Grooved union nut
- B O-ring 29.82 × 2.62

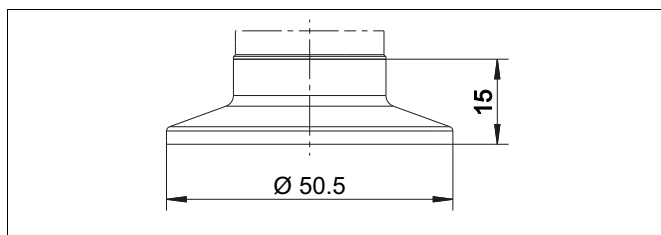
## 4 Technical data

### Front-flush, with EHEDG certification

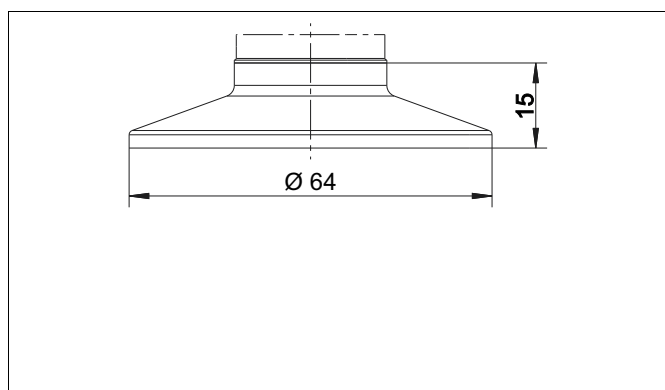
Clamping socket (clamp) DN 10/15/20  
DIN 32676, 1" ISO 2852



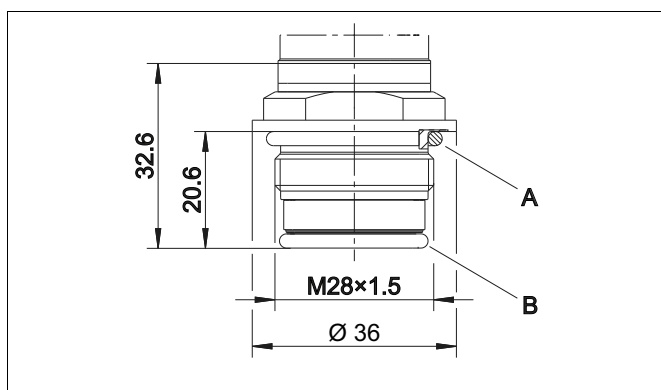
Clamping socket (clamp) DN 25/32/40  
DIN 32676, 1 1/2" ISO 2852



Clamping socket (clamp) DN 50  
DIN 32676, 2" ISO 2852



JUMO PEKA  
Hygienic process connection  
⇒ [Data sheet 409711](#)



- A O-ring 26 × 2.5
- B O-ring 21 × 2.5 FPM (not included in the scope of delivery)

### 5.1 Important information for usage according to EHEDG

The device in combination with one of the following process connections is suitable for use in food production due to its EHEDG approval:

- Clamp connections DN 20, DN 25, DN 32, DN 40, DN 50, DN 100 or 3/4", 1", 1 1/2", 2 1/2", 4" with Tri-Clamp seal Combifit International B.V.
- JUMO PEKA with FKM or EPDM O-ring
- VARINLINE® housing with process connection type N or type G with EPDM O-ring
- VARIVENT® process connections type B, type F, and type N with EPDM O-ring
- Aseptic screw connections DN 25 to DN 50, DIN 11864-1 and DIN 11864-3

The device is suitable for CIP (Cleaning in Place) when installed accordingly.

Observe temperature and material resistance.

**Observe EHEDG-compliant integration into the respective systems:**

---

Prefer installation without cavity.

---

Ensure self-draining installation of the connection spigots.

---

Use only EHEDG approved process connections according to the current EHEDG position paper.

---

When used on tanks, the installation must be flush with the front. Cleaning by direct illumination must be ensured. It must be possible to detect cavity.

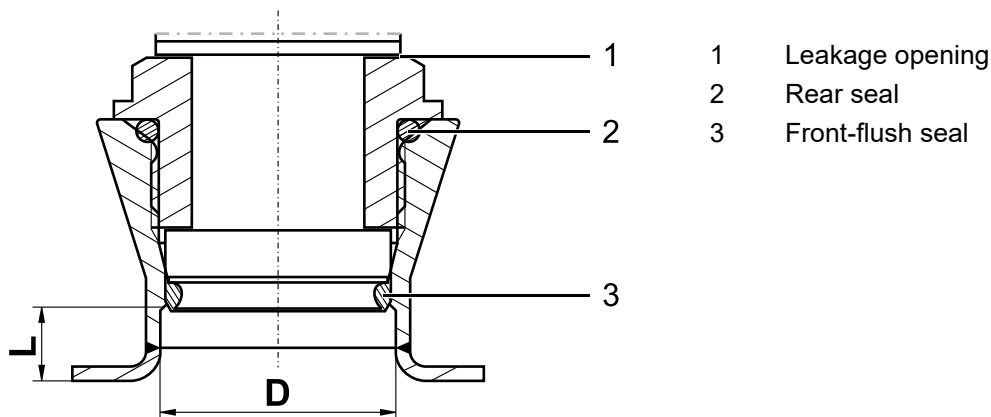
---

Install leakage opening in a clearly visible position. In the case of vertical lines, install pointing downwards.

---

The following drawing shows an installation example.

Observe dimensions to avoid cavity:  $L < D$



# 5 Installation

## 5.2 Preparing for installation

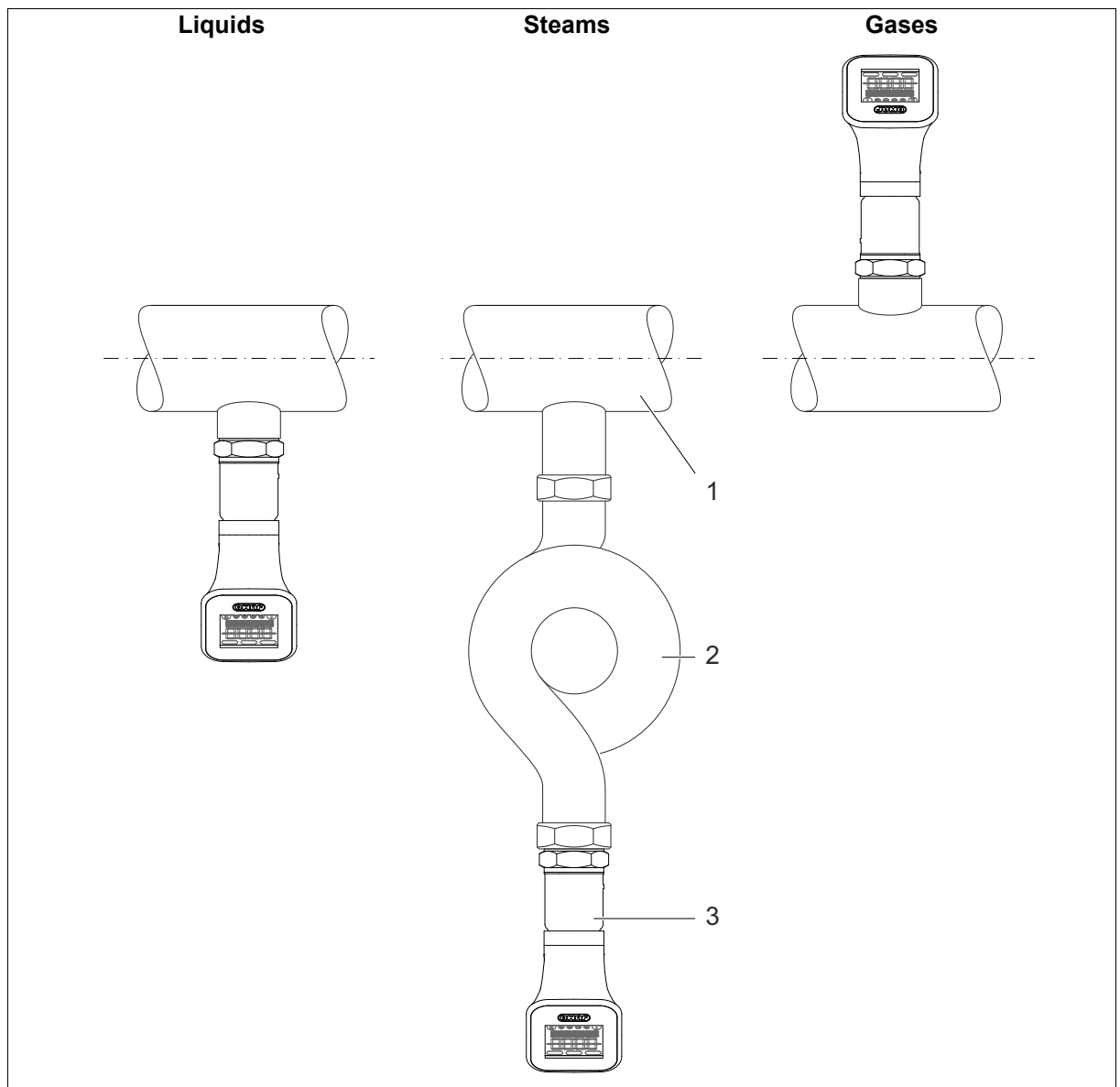
### 5.2.1 Installation site

Requirements:

- The device is protected from UV radiation and weather influences in outdoor applications through structural measures.
- Observe the admissible environmental influences, see ⇨ "Environmental influences ", Page 17.

### 5.2.2 Installation position

The device can be installed in any position within systems and solutions. Depending on the physical condition of the measurement medium, the following installation positions are recommended for pressure measurement:



- 1 Pipe
- 2 Siphon
- 3 Device

### 5.3 Installing the device

Example describes installation of the device version with a G 1/2 process connection DIN EN 837 in a pipe with port. Auxiliary equipment and tightening torques dependent on the selected process connection, ⇒ page 22.

|                     |                                                      |
|---------------------|------------------------------------------------------|
| Auxiliary equipment | Torque wrench with open-ended insert, wrench size 27 |
|---------------------|------------------------------------------------------|

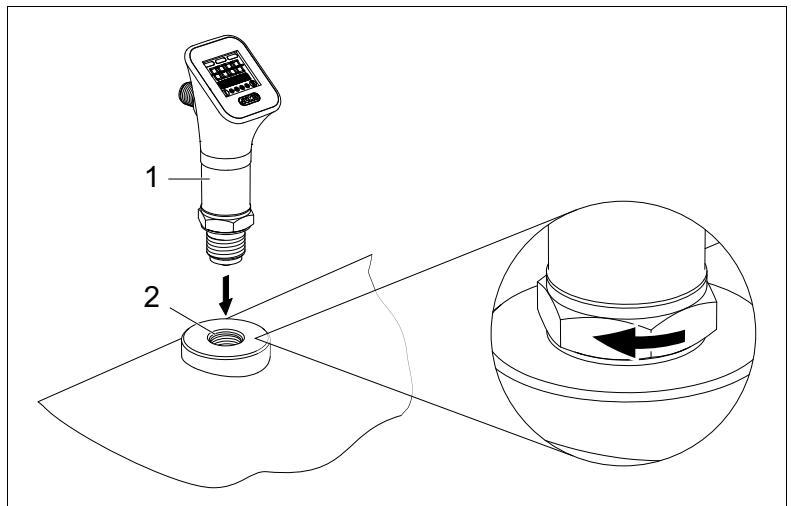
Requirements:

- The system has been de-energized and secured against being switched on again.
- The medium circulation of the plant is stopped.
- The pipe is drained and rinsed.
- Suitable protective equipment has been set up.
- The pipe is prepared for installation.

Procedure:

1. Manually (1) screw the device into the port (2) and tighten with suitable auxiliary equipment.

Tightening torque: 30 Nm

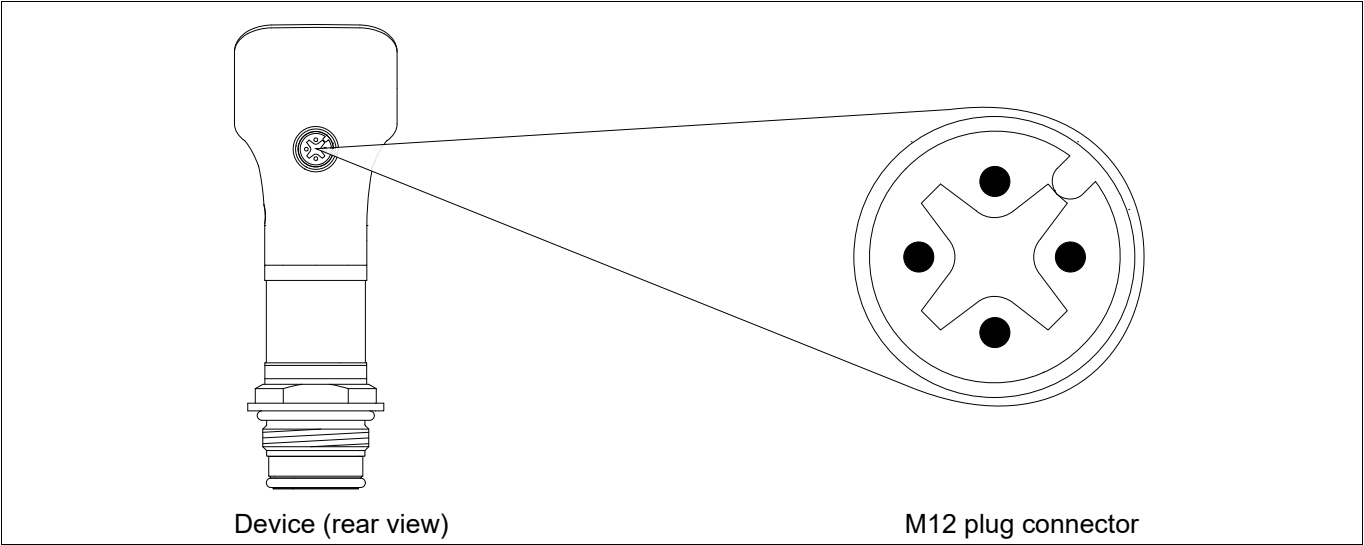


2. Switch on the plant, fill the pipe and check the tightness of the process connections under operating conditions.

The device is now installed in the pipe.

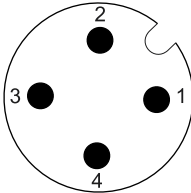
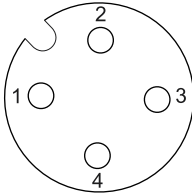
# 6 Electrical connection

## 6.1 Connection elements



### 6.1.1 Terminal assignment

#### M12 plug connection

| Designation | Description                    | Assignment   |                                                                                     |                                                                                      |
|-------------|--------------------------------|--------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| IO-Link     | DC 24 V                        | 1 BN (brown) |  |  |
|             | I/O Pin 2 (DI/DQ) <sup>a</sup> | 2 WH (white) |                                                                                     |                                                                                      |
|             | GND                            | 3 BU (blue)  |                                                                                     |                                                                                      |
|             | I/O Pin 1 (C/Q) <sup>b</sup>   | 4 BK (black) |                                                                                     |                                                                                      |
|             |                                |              | Device                                                                              | Connecting cable                                                                     |

<sup>a</sup> Configurable as: inactive, digital output, analog output.

<sup>b</sup> Configurable as: inactive, IO-Link, digital output.

### 6.2 Connection diagram

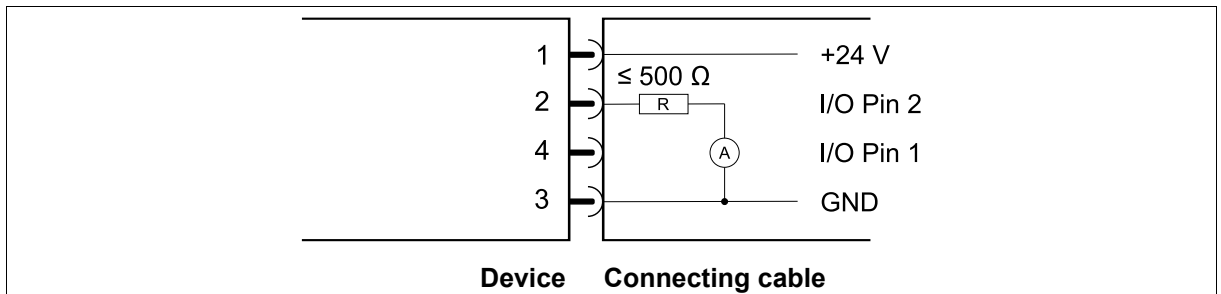
#### Requirements:

- An unused current output is connected to GND.
- An unused voltage output is open.

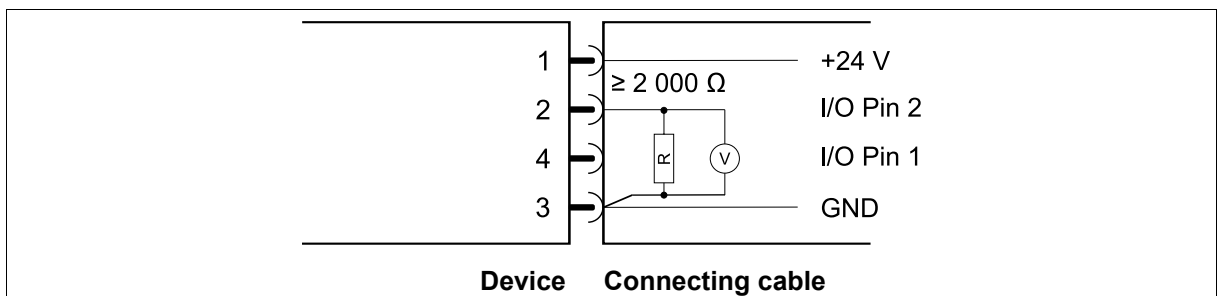
#### 6.2.1 Analog outputs

I/O Pin 2 can be configured as analog output.

##### Current output – 4 to 20 mA



##### Voltage output – 0 to 10 V



If the GND line is used for both the voltage supply and the voltage output, an additional measurement error may occur due to voltage drops on the GND line.

The measurement error depends on line length, line resistance, and current consumption.

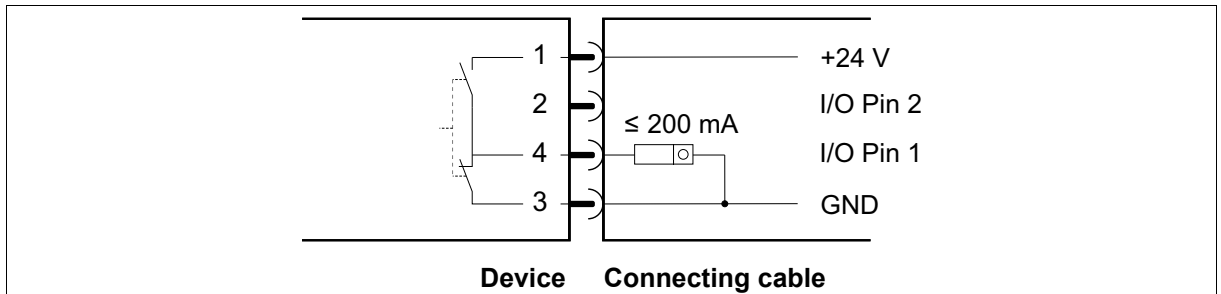
## 6 Electrical connection

### 6.2.2 Digital outputs

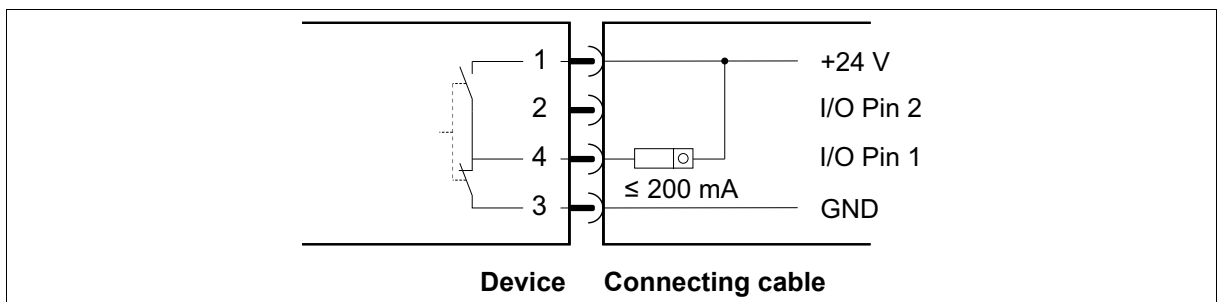
I/O pin 1 and/or I/O pin 2 can be configured as digital outputs with the switching output function.

The connection examples for I/O pin 1 also apply to I/O pin 2.

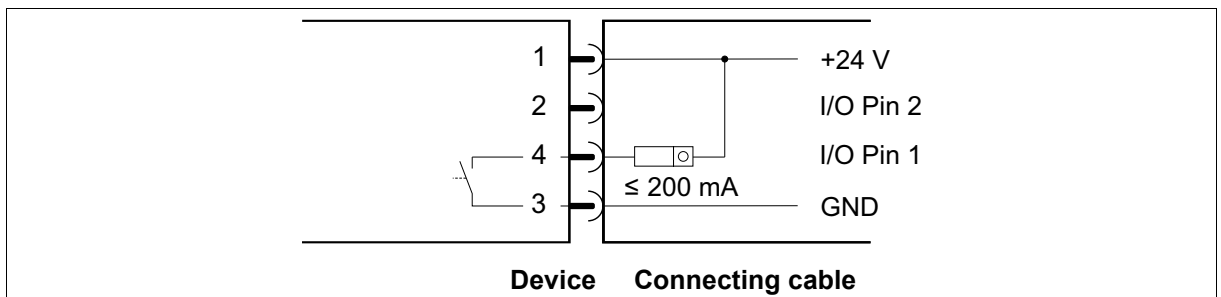
#### Digital output – push-pull (example 1)



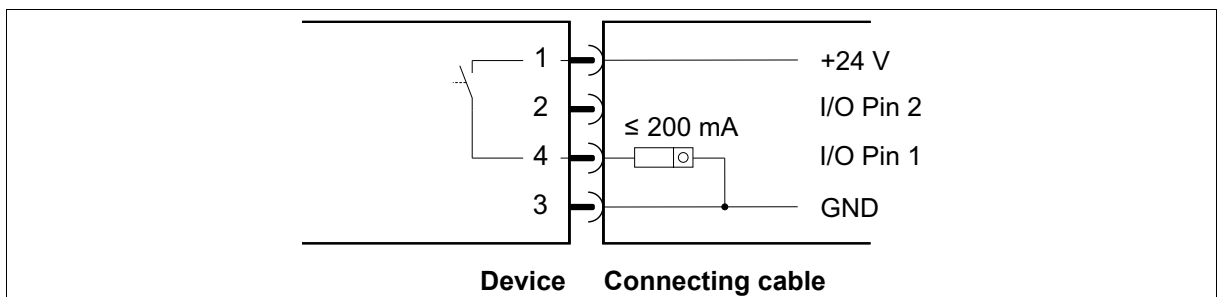
#### Digital output – push-pull (example 2)



#### Digital output – NPN (n-switching)



#### Digital output – PNP (p-switching)



### 6.3 Connecting the device

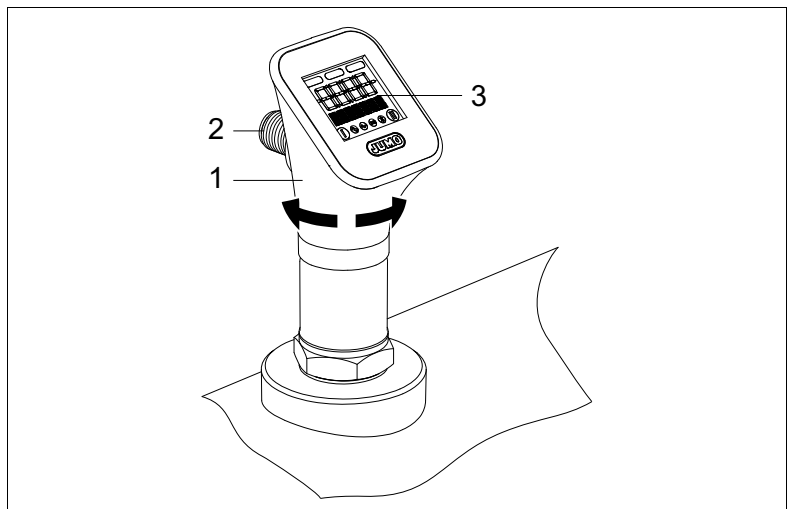
|                     |                                                        |
|---------------------|--------------------------------------------------------|
| Auxiliary equipment | Torque wrench with socket wrench insert, wrench size 5 |
| Material            | Connecting cable for plug connector M12                |

Requirements:

- The system has been de-energized and secured against being switched on again.
- The connections for the voltage supply and signal processing have been correctly prepared.
- The process connection of the device is grounded.
- The connection cable is temperature resistant according to the process.
- The connection cable is installed at a minimum distance of 30 cm from high-voltage or high-frequency cables.

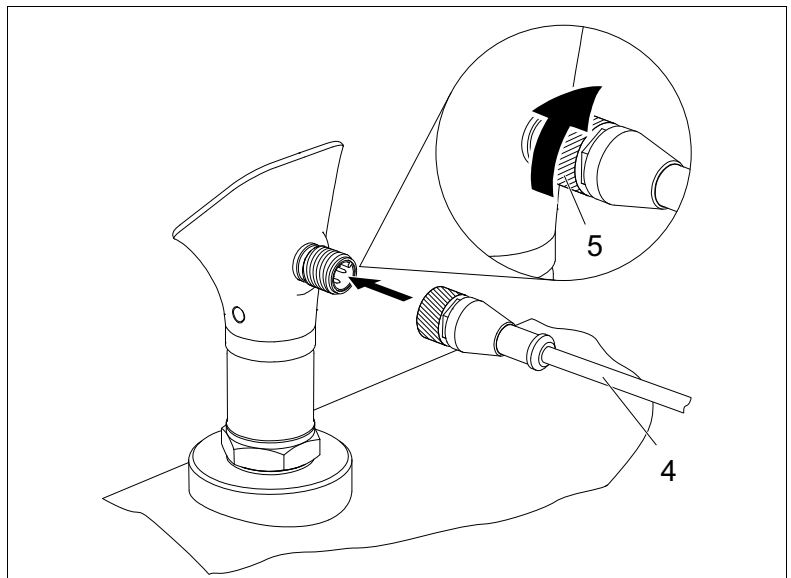
Procedure:

1. Position the top section of the device (1) so that the M12 plug connector (2) is easily accessible and the process display (3) is easy to read.



2. Insert the connecting cable (4) into the M12 plug connector and screw the connecting cable's union nut (5) to the M12 plug connector.

Tightening torque: 0.4 Nm.



3. Connect the connecting cable to the device that is processing the signals and to the voltage supply.
4. Lay the connecting cable so that it is protected from mechanical load.

The device is ready for operation as soon as the voltage supply is established,

⇒ "Startup display ", Page 32.

# 7 Operation

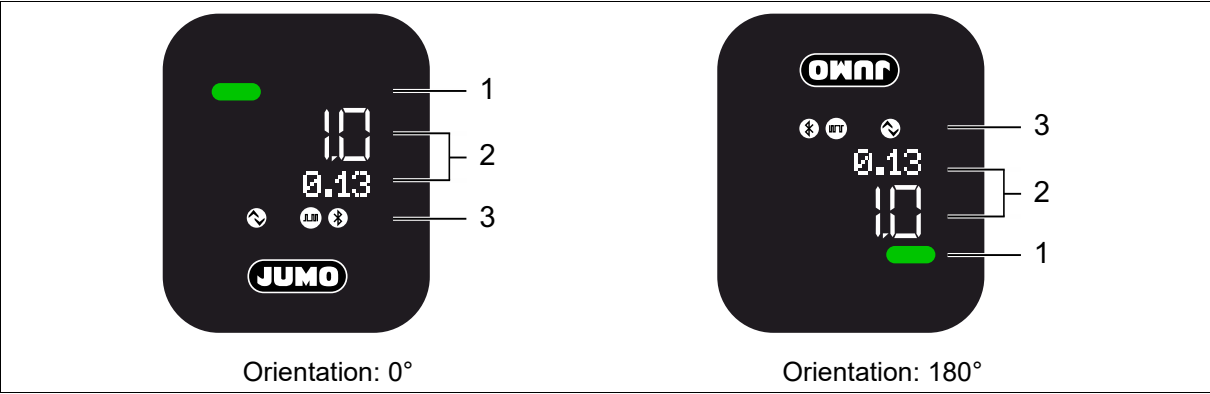
## 7.1 Display elements

### 7.1.1 Startup display

The start-up display shows all of the display segments and switches to the device info display after a few milliseconds.



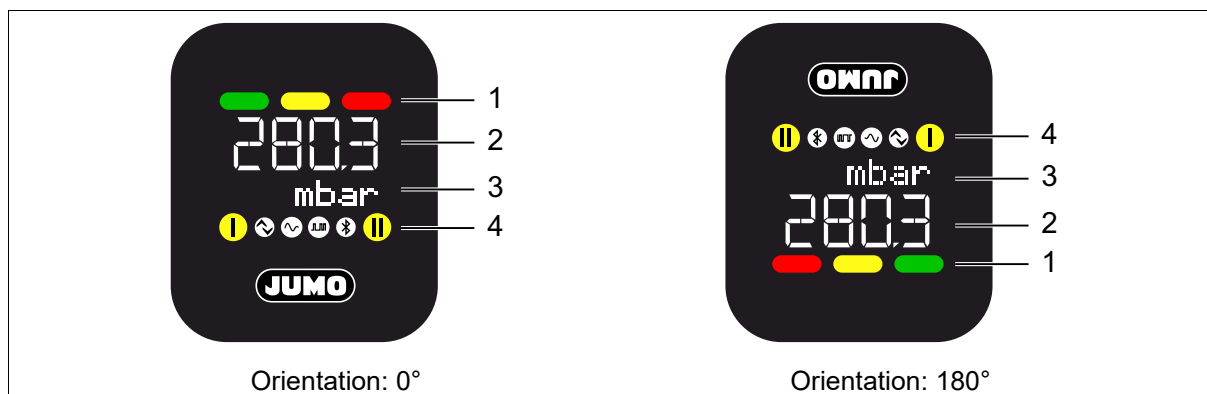
### 7.1.2 Device info display



| Pos. | Designation         | Description                                           |
|------|---------------------|-------------------------------------------------------|
| 1    | Device info display | Shows the device status.                              |
| 2    |                     | Shows the device software version.                    |
| 3    |                     | Shows the configuration and status of the interfaces. |

The device info display switches to the process display after approximately three seconds.

## 7.1.3 Process display

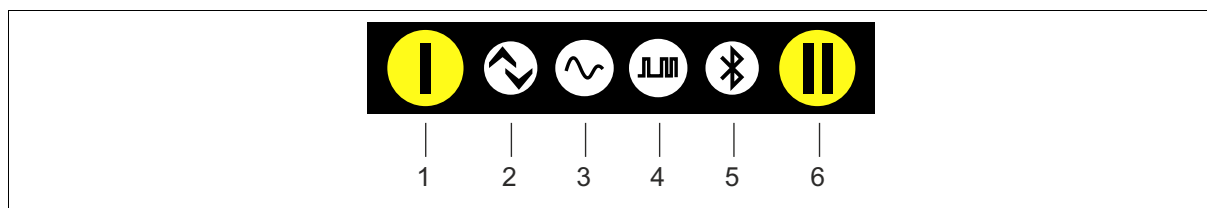


| Pos. | Designation                          | Description                                                                                                                                                                                                                                                                                                                                                               |
|------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | <b>Device status</b><br>Multicolored | Indicates the device status based on the classification according to NAMUR NE 107: <ul style="list-style-type: none"> <li>Steady green = Normal operation</li> <li>Flashing green = Maintenance required (M)</li> <li>Steady yellow<sup>a</sup> = Outside the specification (S)</li> <li>Steady red = Failure (F)</li> <li>Flashing red = Functional check (C)</li> </ul> |
| 2    | <b>Process value</b>                 | Shows: <ul style="list-style-type: none"> <li>The measured process value</li> <li>Error messages ⇒ "Error messages ", Page 34</li> </ul>                                                                                                                                                                                                                                  |
| 3    | <b>Text line</b>                     | Shows: <ul style="list-style-type: none"> <li>The configured unit</li> <li>Error messages and warnings as running text</li> </ul>                                                                                                                                                                                                                                         |
| 4    | <b>Toolbar</b>                       | Shows: <ul style="list-style-type: none"> <li>The configuration and status of I/O pin 1 and I/O pin 2</li> <li>The configuration and status of the interface connections</li> </ul>                                                                                                                                                                                       |

<sup>a</sup> Contrary to classification according to NAMUR NE 107, steady yellow instead of flashing red.

# 7 Operation

## Toolbar



| Pos. | Symbol, display                                                                     | Description                                                                                                                                                                                                                                                                                                               |
|------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    |    | Configuration: I/O pin 1 = Digital output (switching output) <ul style="list-style-type: none"><li>Lights up when the output is active.</li></ul>                                                                                                                                                                         |
| 2    |    | Interface connection: IO-Link <ul style="list-style-type: none"><li>Lights up when an IO-Link connection is active via I/O pin 1 but no communication is taking place.</li><li>Lights up when an IO-Link connection is active via I/O pin 1 and communication is taking place.</li></ul>                                  |
| 3    |    | Configuration: Analog output <ul style="list-style-type: none"><li>Lights up when I/O pin 2 is configured as an analog output.</li></ul>                                                                                                                                                                                  |
| 4    |   | Configuration: Digital output (switching output) <ul style="list-style-type: none"><li>Lights up when I/O pin 1 and/or I/O pin 2 is configured as a digital output.</li></ul>                                                                                                                                             |
| 5    |  | Interface connection: Bluetooth® <ul style="list-style-type: none"><li>Does not light up if NFC approval is needed for the connection or if Bluetooth® is permanently disabled.</li><li>Flashes when Bluetooth® is ready for a connection.</li><li>Lights up when a Bluetooth® connection has been established.</li></ul> |
| 6    |  | Configuration: I/O pin 2 = Digital output (switching output) <ul style="list-style-type: none"><li>Lights up when the output is active.</li></ul>                                                                                                                                                                         |

## 7.2 Error messages

Error messages and warnings are specified as running text in the text line – alternately with the unit configured for the display. If there are several error messages, only the error message with the highest priority is displayed.

The illuminated fields that display the device status indicate the error category.

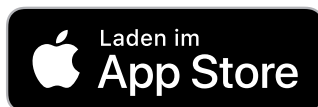
Further information, ⇒ "Troubleshooting ", Page 53.

## 7.3 Interfaces

### 7.3.1 Bluetooth

The JUMO smartCONNECT app allows the device to be configured and its parameters to be set using an end device. Configuration data and device information are transmitted via Bluetooth. The Bluetooth radio module of the device is permanently active during initial startup.

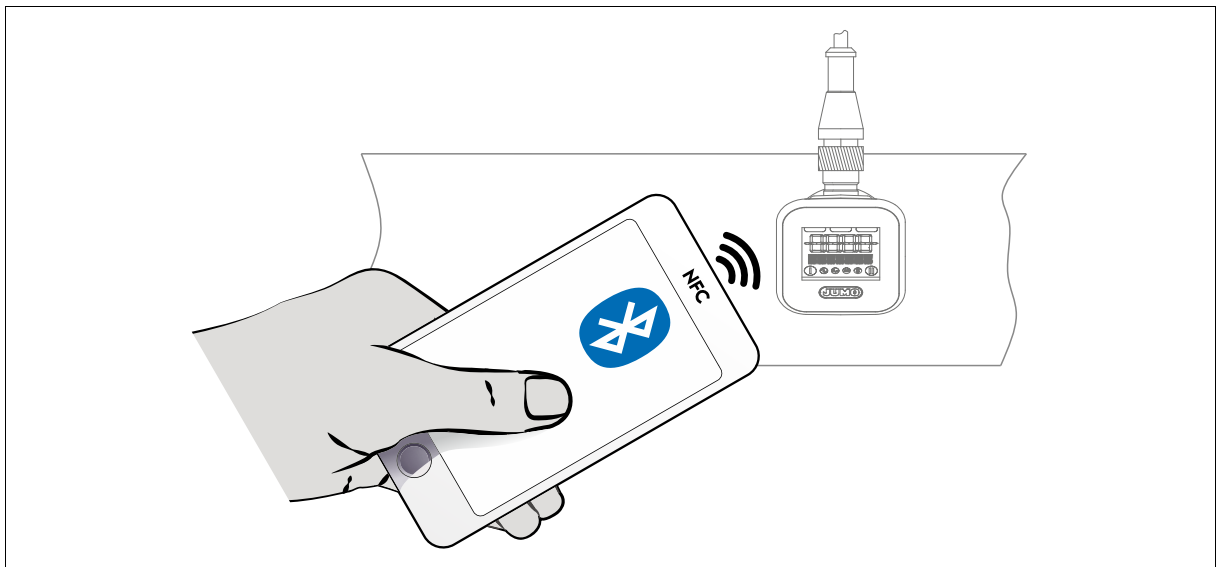
The app is available for free download from the [manufacturer's websites](#) or alternatively using the QR code:



**Active:** The Bluetooth® radio module is permanently active. The device is detected by the smartCONNECT app as soon as it is within range of the Bluetooth® radio module.

**Restricted (via NFC):** The Bluetooth® radio module is inactive and can be temporarily activated via an NFC tag in the device. To establish a connection between the NFC tag and the end device, this device must be NFC-capable and held close to the device display.

**Inactive:** The Bluetooth® radio module can disabled and enabled via IO-Link.



### 7.3.2 IO-Link

IO-Link enables the device to be configured and parameterized using an end device. Process data, configuration data and device information are transmitted using a standard IO-Link master.

The user software of the IO-Link master requires a device description file (IODD) for this, which is assigned to the device ID, ⇒ Page 10.

The device IODD collection is available to download for free from the [manufacturer website](#) or alternatively directly via <http://ioddfinder.io-link.com>.

## 8 Functional descriptions

The default settings are shown in **bold** in the following tables.

### 8.1 Limit value monitoring

| Parameter           | Value                                                                  | Description                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function            | <b>Inactive</b><br>Single Point Mode<br>Windows Mode<br>Two Point Mode | <b>Inactive:</b> Limit value monitoring function inactive<br><b>Single Point Mode:</b> Hysteresis mode ("Switching point SP1" and "Hysteresis")<br><b>Windows Mode:</b> Window mode ("Switching point SP1", "Release point SP2" and "Hysteresis")<br><b>Two Point Mode:</b> Two-point mode ("Switching point SP1" and "Release point SP2") |
| Logic               | <b>High-active</b><br>Low-active                                       | The limit value logic can be inverted.<br><b>High-active:</b> An active limit value monitoring function corresponds to the High signal (logic level 1).<br><b>Low-active:</b> An active limit value monitoring function corresponds to the Low signal (logic level 0).                                                                     |
| Switching point SP1 | -1 to +100 bar<br>( <b>0</b> )                                         | –                                                                                                                                                                                                                                                                                                                                          |
| Switching point SP2 | -1 to +100 bar<br>( <b>0</b> )                                         | Only when "Switching function" = "Windows Mode" and "Two Point Mode"                                                                                                                                                                                                                                                                       |
| Hysteresis          | 0 to 100 bar<br>( <b>0</b> )                                           | Only when "Switching function" = "Single Point Mode" and "Windows Mode"                                                                                                                                                                                                                                                                    |
| Switch-on delay     | 0 to 100 s<br>( <b>0</b> )                                             | State is not given to the limit value monitoring function output until after the time has elapsed.                                                                                                                                                                                                                                         |
| Switch-off delay    | 0 to 100 s<br>( <b>0</b> )                                             | State is not given to the limit value monitoring function output until after the time has elapsed.                                                                                                                                                                                                                                         |
| Error behavior      | <b>Inactive</b><br>Active<br>Frozen                                    | Behavior of the limit value monitoring function output signal when there is a process value error.<br><b>Inactive:</b> Inactive signal (logic level 0)<br><b>Active:</b> Active signal (logic level 1)<br><b>Frozen:</b> Last valid value                                                                                                  |

Two limit value monitoring functions are available for each measurand. All limit value monitoring functions can be configured independently of each other.

Different switching modes are selectable, all of which can be inverted. In addition, the limit value monitoring functions have a switching delay.

#### Switching delay

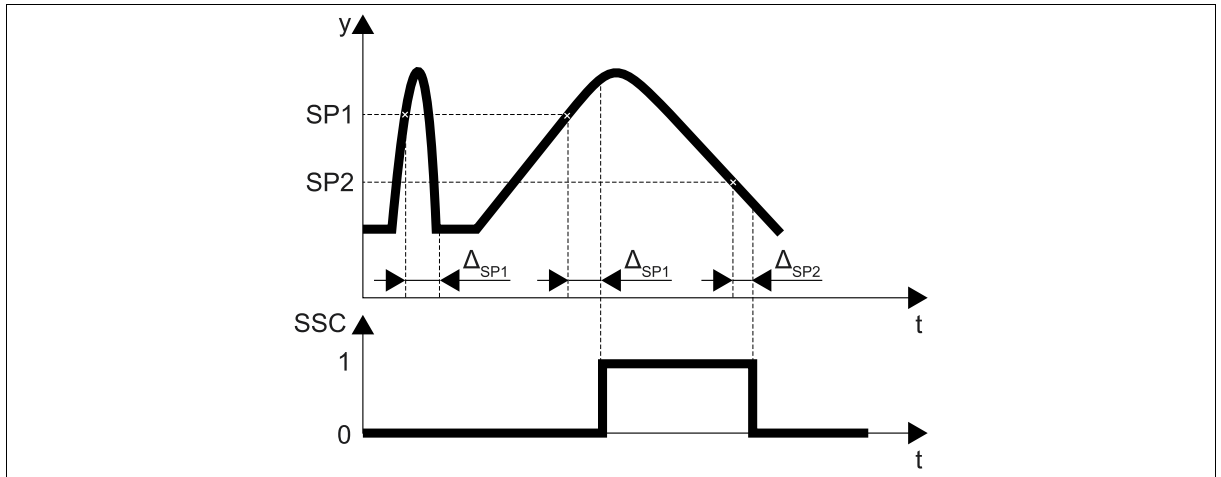
A switching delay for switching on and / or switching off can be configured.

If the switching condition is fulfilled, the set timer for the switch-on delay ( $\Delta_{SP1}$ ) starts to elapse. The state is only output after the time has elapsed. If the switching condition is no longer fulfilled before the time has elapsed, the timer is restarted.

The switch-off delay ( $\Delta_{SP2}$ ) works analogously.

The delay times prevent the output from being switched by measured value peaks or by measured value dips.

## 8 Functional descriptions



( $\Delta_{SP1}$ ) Switch-on delay

(SP2) Release point

( $\Delta_{SP2}$ ) Switch-off delay

(t) Time

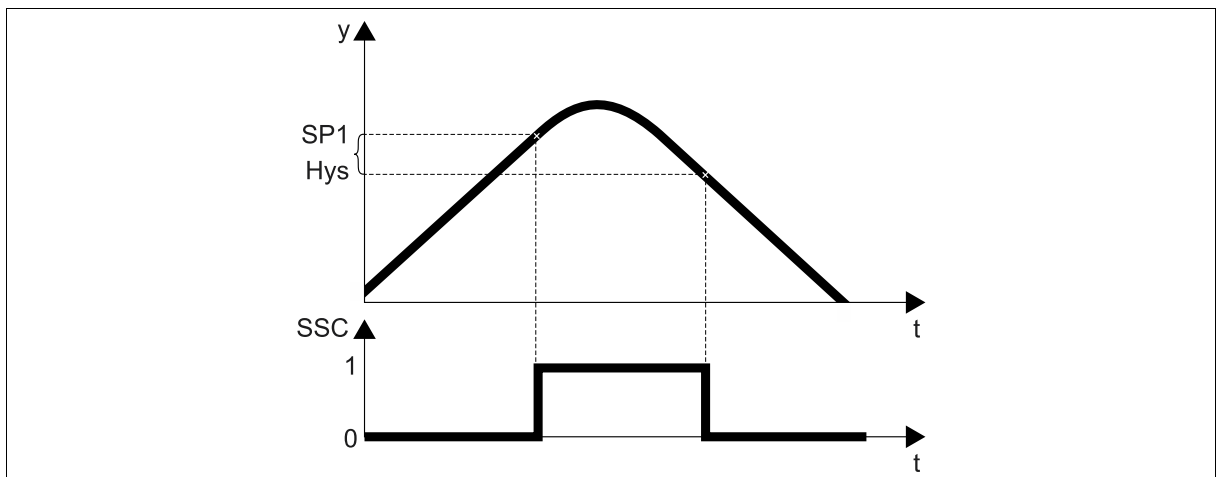
(SSC) Limit value monitoring function output signal

(y) Measured value

(SP1) Switching point

### Hysteresis mode

If the process value exceeds the switching point SP1, the output of the limit value monitoring function becomes active. If the switching point SP1 reduced by the amount of the hysteresis is undershot again, the output of the limit value monitoring function becomes inactive again.



(SSC) Limit value monitoring function output signal

(t) Time

(Hys) Hysteresis

(y) Measured value

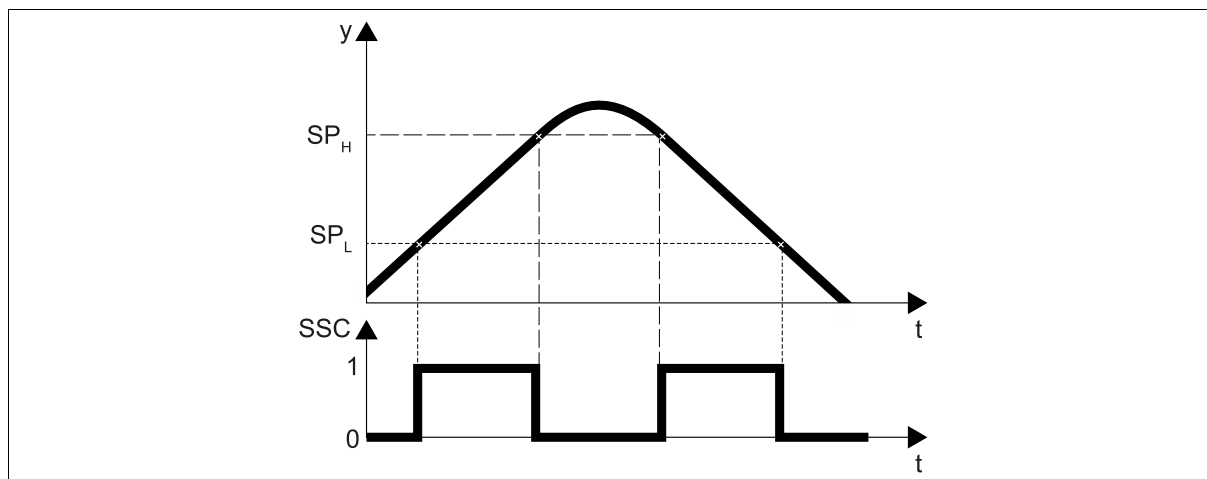
(SP1) Switching point

### Window mode

Window mode checks whether the process value is within a certain range.  $SP_L$  is defined as the smaller value of switching points SP1 and SP2.  $SP_H$  is defined as the larger value of switching point SP1 and SP2.

The hysteresis of the switching points is adjustable.

## 8 Functional descriptions



(SSC) Limit value monitoring function output signal

(t) Time

( $SP_H$ ) High switching point

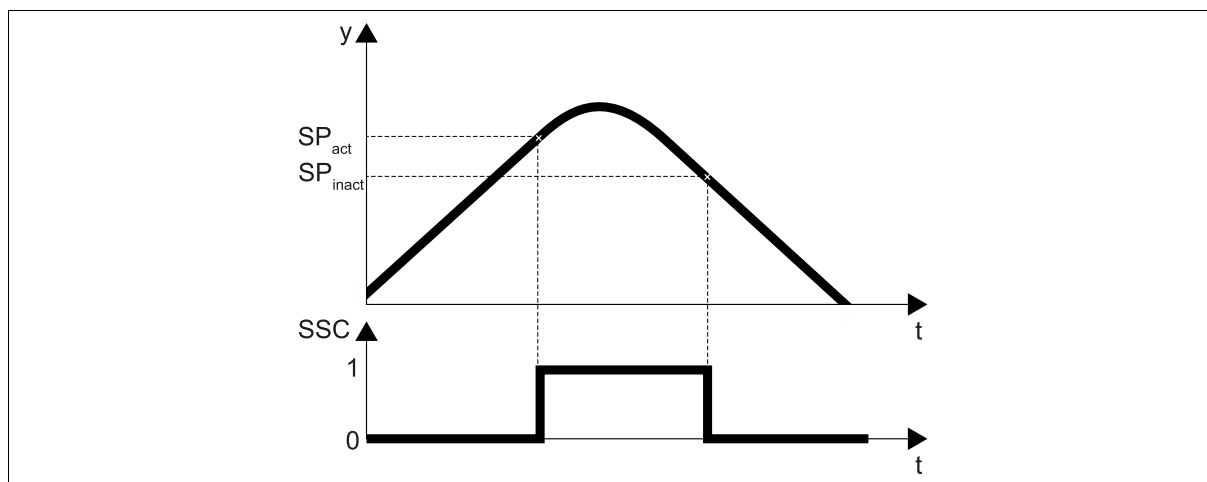
(y) Measured value

( $SP_L$ ) Low switching point

### Two-point mode

In two-point mode, two switching points are defined. If the process value exceeds the  $SP_{act}$  switching point, the limit value monitoring function output becomes active. If the process value falls below the  $SP_{inact}$  switching point, the output becomes inactive.

$SP_{act}$  is defined as the larger value of switching points  $SP_1$  and  $SP_2$ ,  $SP_{inact}$  is correspondingly the smaller of the two values.



(SSC) Limit value monitoring function output signal

(t) Time

( $SP_{act}$ ) Active switching point

(y) Measured value

( $SP_{inact}$ ) Inactive switching point

## 9 Configuration via Bluetooth

The parameter lists are based on the JUMO smartCONNECT app operating menu. The table headings locate the respective parameters in the app operating menu..

The default settings are shown in **bold** in the following tables.

### 9.1 Device

#### System data

| Parameter                    | Value                                       | Description                                                      |
|------------------------------|---------------------------------------------|------------------------------------------------------------------|
| Language                     | Deutsch, <b>English</b> , Français, Español | National language for the error messages of the process display. |
| Application-specific marking | <b>DELOS S02</b>                            | TAG designation (text entry with max. 19 characters possible).   |

#### System units

| Parameter | Value                                 | Description               |
|-----------|---------------------------------------|---------------------------|
| Pressure  | mbar, psi, <b>bar</b> , hPa, kPa, MPa | System unit for pressure. |

### 9.2 Display

#### Appearance

| Parameter   | Value                | Description                |
|-------------|----------------------|----------------------------|
| Brightness  | 0 to 10 ( <b>5</b> ) | Brightness of the display. |
| Orientation | <b>0°</b> , 180°     | Alignment of the display.  |

#### Process value display > Value 1

| Parameter      | Value               | Description                                     |
|----------------|---------------------|-------------------------------------------------|
| –              | <b>No selection</b> | Process value is hidden.                        |
| Process values | <b>Pressure</b>     | Display and configuration of the process value. |

#### Process value display > Value 1 > Process values

| Parameter                     | Value                      | Description |
|-------------------------------|----------------------------|-------------|
| Measurands                    | <b>Pressure</b>            | –           |
| Input scaling as a percentage | <b>Pressure in percent</b> |             |

### 9.3 Bluetooth

| Parameter | Value                               | Description                                    |
|-----------|-------------------------------------|------------------------------------------------|
| Function  | Restricted (via NFC), <b>active</b> | Status of the Bluetooth® connection, ⇒ Page35. |

## 9 Configuration via Bluetooth

### 9.4 Measurands

#### Pressure

| Parameter | Value                                               | Description                                  |
|-----------|-----------------------------------------------------|----------------------------------------------|
| Offset    | Input range:<br>-999.00 to 999.00 bar <b>(0.00)</b> | Offset correction for zero point adjustment. |

#### Pressure > Simulation

| Parameter | Value                                             | Description                     |
|-----------|---------------------------------------------------|---------------------------------|
| Value     | Input range:<br>-1.11 to 110.00 bar <b>(0.00)</b> | Input value for the simulation. |
| Function  | <b>Inactive</b> , active                          | Parameter function.             |

#### Pressure > Filter

| Parameter     | Value                                       | Description                                                                                                                                       |
|---------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Time constant | Input range:<br>0.0 to 100.0 s <b>(0.0)</b> | Optimization of measured value updating.<br><br>The larger the filter time constant value, the slower the change in measured value at the output. |

### 9.5 Limit value monitoring

#### Pressure (teach channel 1 (2))

| Parameter                                                                                             | Value                                                            | Description                                                                                                                   |
|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Switching point SP1                                                                                   | Input range:<br>-1.00 to 100.00 bar <b>(0.00)</b>                | Process value of the limit value monitoring function signal.<br><br>Delivery condition:<br>40% of the nominal measuring range |
| Switching point SP2                                                                                   | Input range:<br>-1.00 to 100.00 bar <b>(0.00)</b>                | Process value of the limit value monitoring function signal.<br><br>Delivery condition:<br>50% of the nominal measuring range |
| Logic                                                                                                 | <b>High-active</b> , Low-active                                  | Delivery condition:<br>High-active                                                                                            |
| Function                                                                                              | <b>Inactive</b> , Single Point Mode, Window Mode, Two Point Mode | Delivery condition:<br>Single Point Mode                                                                                      |
| Hysteresis                                                                                            | Input range:<br>0.000 to 100.000 bar <b>(0.000)</b>              | Delivery condition:<br>1% of the nominal measuring range                                                                      |
| Error behavior<br> | <b>Inactive</b> , active, frozen                                 | Behavior of the output signal in case of a malfunction.                                                                       |
| Switch-on delay                                                                                       | Input range:<br>0.0 to 100.0 s <b>(0.0)</b>                      | —                                                                                                                             |
| Switch-off delay                                                                                      | Input range:<br>0.0 to 100.0 s <b>(0.0)</b>                      |                                                                                                                               |

## 9 Configuration via Bluetooth

### Error behavior

**Inactive** value: If the **function** parameter of digital output 1 is configured as a **switching output** value, a process value error sets the **switching output** value to **inactive**.

**Frozen** value: If the **function** parameter of digital output 1 is configured as a **switching output** value, a process value error does not have any influence on the configuration of the **switching output** value.

### Teach

| Parameter | Value                               | Description                                                                                                                                                                                                                                                                  |
|-----------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channel   | Input range:<br>0 to 2 ( <b>1</b> ) | Selection of the channel that will be addressed by the teach functions.<br><br>The teach functions are triggered by 2 buttons within the JUMO smartCONNECT app. With the teach functions, the current process value is adopted in the respective switching point (SP1, SP2). |

## 9.6 Analog output

### Analog output 1

| Parameter         | Value                                                                | Description                                                                                                                                                                  |
|-------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output signal     | 0 to 10 V, <b>4 to 20 mA</b>                                         | Parameter output signal.                                                                                                                                                     |
| Scale start       | Input range:<br>-99999999.00 to<br>99999999.00 bar ( <b>0.00</b> )   | Process value for the current output (4 mA) or the voltage output (0 V).                                                                                                     |
| Scale end         | Input range:<br>-99999999.00 to<br>99999999.00 bar ( <b>100.00</b> ) | Process value for the current output (20 mA) or the voltage output (10 V).                                                                                                   |
| Error behavior    | <b>Replacement value</b> , low, high                                 | Output signal in the event of a malfunction:<br><br>Replacement value: Parameter input value for <b>replacement value</b> .<br><br>Low: 3.4 mA or 0 V<br>High: 22 mA or 11 V |
| Replacement value | Input range:<br>3.400 to 22.000 ( <b>3.400</b> )                     | <b>Error behavior</b> parameter must be configured as a <b>replacement value</b> .<br><br>Input range:<br>3.4 to 22 mA (current output)<br>0 to 11 V (voltage output)        |

## 9 Configuration via Bluetooth

### 9.7 Digital output

#### Digital output 1 (2)

| Parameter          | Value                                       | Description                |
|--------------------|---------------------------------------------|----------------------------|
| Output signal      |                                             | –                          |
| Inversion          | <b>Off</b> , On                             | Inverts the output signal. |
| Output signal type | <b>Push-pull</b> , n-switching, p-switching | Parameter function.        |

#### Digital output 1 (2) > Output signal

| Parameter      | Value | Description |
|----------------|-------|-------------|
| Process values |       | –           |

#### Digital output 1 (2) > Output signal > Process values

| Parameter                       | Value | Description |
|---------------------------------|-------|-------------|
| Alarm overview                  |       | –           |
| Limit value monitoring function |       |             |

#### Digital output 1 (2) > Output signal > Process values > Alarm overview

| Parameter        | Value                 | Description |
|------------------|-----------------------|-------------|
| Collective alarm | <b>Device failure</b> | –           |

#### Digital output 1 (2) > Output signal > Process values > Limit value monitoring function

| Parameter                  | Value         | Description |
|----------------------------|---------------|-------------|
| Pressure (teach channel 1) | <b>Output</b> | –           |
| Pressure (teach channel 2) | <b>Output</b> |             |

### 9.8 IO-Link

#### I/O pin 1 (C/Q)

| Parameter | Value                                     | Description         |
|-----------|-------------------------------------------|---------------------|
| Function  | Inactive, <b>IO-Link</b> , digital output | Parameter function. |

#### I/O pin 2 (DI/DQ)

| Parameter | Value                                           | Description         |
|-----------|-------------------------------------------------|---------------------|
| Function  | Inactive, <b>digital output</b> , analog output | Parameter function. |

#### Identification

| Parameter                    | Value | Description                                                    |
|------------------------------|-------|----------------------------------------------------------------|
| Plant identification code    | ***   | TAG designation (text entry with max. 32 characters possible). |
| Location identification code | ***   |                                                                |

The default settings are shown in **bold** in the following tables.

Transmission

All data types are transmitted in big-endian format according to Modbus standard.

Access types

- RO = Read-Only (read-only access)
- RW = Read/Write (read and write access)
- WO = Write-Only (write-only access)

Limited write cycles

- The numbers of write cycles of memory modules (e.g. EEPROM, flash memory) are limited.
- Do not send write operations to save or commit actions on a non-cyclical basis.

10.1 Device

System data

| Parameter                    | Value                                       | Description                                                      | Index | Sub-index | Data type | Access right |
|------------------------------|---------------------------------------------|------------------------------------------------------------------|-------|-----------|-----------|--------------|
| Language                     | Deutsch, <b>English</b> , Français, Español | National language for the error messages of the process display. | 500   | 1         | UInt8     | RW           |
| Application-specific marking | <b>DELOS S02</b>                            | TAG designation (text entry with max. 19 characters possible).   | 24    | 0         | String    | RW           |

System units

| Parameter | Value                                 | Description               | Index | Sub-index | Data type | Access right |
|-----------|---------------------------------------|---------------------------|-------|-----------|-----------|--------------|
| Pressure  | mbar, psi, <b>bar</b> , hPa, kPa, MPa | System unit for pressure. | 500   | 2         | UInt8     | RW           |

10.2 Display

Appearance

| Parameter   | Value       | Description                | Index | Sub-index | Data type | Access right |
|-------------|-------------|----------------------------|-------|-----------|-----------|--------------|
| Brightness  | 0 to 10 (5) | Brightness of the display. | 540   | 1         | Uint32    | RW           |
| Orientation | 0°, 180°    | Alignment of the display.  | 540   | 2         | Uint8     | RW           |

Process value display > Value 1 > Process values

| Parameter                                   | Value               | Description | Index | Sub-index | Data type | Access right |
|---------------------------------------------|---------------------|-------------|-------|-----------|-----------|--------------|
| Measurands<br>Input scaling as a percentage | No selection        | –           | 540   | 3         | Uint8     | RW           |
|                                             | Pressure            |             |       |           |           |              |
|                                             | Pressure in percent |             |       |           |           |              |

10.3 Bluetooth

| Parameter | Value                        | Description                                       | Index | Sub-index | Data type | Access right |
|-----------|------------------------------|---------------------------------------------------|-------|-----------|-----------|--------------|
| Function  | Restricted (via NFC), active | Status of the Bluetooth® connection,<br>⇒ Page35. | 560   | 0         | Uint8     | RW           |

10.4 Measurands

Pressure

| Parameter | Value                                        | Description                                  | Index | Sub-index | Data type | Access right |
|-----------|----------------------------------------------|----------------------------------------------|-------|-----------|-----------|--------------|
| Offset    | Input range:<br>-999.00 to 999.00 bar (0.00) | Offset correction for zero point adjustment. | 100   | 1         | Float     | RW           |

Pressure > Simulation

| Parameter | Value                                      | Description                                                                          | Index | Sub-index | Data type | Access right |
|-----------|--------------------------------------------|--------------------------------------------------------------------------------------|-------|-----------|-----------|--------------|
| Value     | Input range:<br>-1.11 to 110.00 bar (0.00) | Input value for the simulation.                                                      | 100   | 3         | Float     | RW           |
| Function  | Inactive, active                           | Parameter function.<br>After a device restart, the default setting is always active. | 580   | 0         | Uint8     | WO           |

Pressure > Filter

| Parameter     | Value                                | Description                                                                                                                                   | Index | Sub-index | Data type | Access right |
|---------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----------|--------------|
| Time constant | Input range:<br>0.0 to 100.0 s (0.0) | Optimization of measured value updating.<br>The larger the filter time constant value, the slower the change in measured value at the output. | 100   | 2         | Float     | RW           |

# 10 IO-Link address tables

## 10.5 Limit value monitoring

### Pressure (teach channel 1)

| Parameter                                                                                          | Value                                                            | Description                                                                                                               | Index | Sub-index | Data type | Access right |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----------|--------------|
| Switching point SP1                                                                                | Input range:<br>-1.00 to 100.00 bar ( <b>0.00</b> )              | Process value of the limit value monitoring function signal.<br>Delivery condition:<br>40% of the nominal measuring range | 60    | 1         | Float     | RW           |
| Switching point SP2                                                                                | Input range:<br>-1.00 to 100.00 bar ( <b>0.00</b> )              | Process value of the limit value monitoring function signal.<br>Delivery condition:<br>50% of the nominal measuring range | 60    | 2         | Float     | RW           |
| Logic                                                                                              | <b>High-active</b> , Low-active                                  | Delivery condition:<br>High-active                                                                                        | 61    | 1         | UInt8     | RW           |
| Function                                                                                           | <b>Inactive</b> , Single Point Mode, Window Mode, Two Point Mode | Delivery condition:<br>Single Point Mode                                                                                  | 61    | 2         | UInt8     | RW           |
| Hysteresis                                                                                         | Input range:<br>0.000 to 100.000 bar ( <b>0.000</b> )            | Delivery condition:<br>1% of the nominal measuring range                                                                  | 61    | 3         | Float     | RW           |
| Error behavior  | <b>Inactive</b> , active, frozen                                 | Behavior of the output signal in case of a malfunction.                                                                   | 77    | 1         | UInt8     | RW           |
| Switch-on delay                                                                                    | Input range:<br>0.0 to 100.0 s ( <b>0.0</b> )                    | –                                                                                                                         | 77    | 2         | Float     | RW           |
| Switch-off delay                                                                                   | Input range:<br>0.0 to 100.0 s ( <b>0.0</b> )                    |                                                                                                                           | 77    | 3         | Float     | RW           |

### Error behavior

**Inactive** value: If the **function** parameter of digital output 1 is configured as a **switching output** value, a process value error sets the **switching output** value to **inactive**.

**Frozen** value: If the **function** parameter of digital output 1 is configured as a **switching output** value, a process value error does not have any influence on the configuration of the **switching output** value.

## Pressure (teach channel 2)

| Parameter                                                                                          | Value                                                            | Description                                                                                                               | Index | Sub-index | Data type | Access right |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----------|--------------|
| Switching point SP1                                                                                | Input range:<br>-1.00 to 100.00 bar ( <b>0.00</b> )              | Process value of the limit value monitoring function signal.<br>Delivery condition:<br>40% of the nominal measuring range | 62    | 1         | Float     | RW           |
| Switching point SP2                                                                                | Input range:<br>-1.00 to 100.00 bar ( <b>0.00</b> )              | Process value of the limit value monitoring function signal.<br>Delivery condition:<br>50% of the nominal measuring range | 62    | 2         | Float     | RW           |
| Logic                                                                                              | <b>High-active</b> , Low-active                                  | Delivery condition:<br>High-active                                                                                        | 63    | 1         | UInt8     | RW           |
| Function                                                                                           | <b>Inactive</b> , Single Point Mode, Window Mode, Two Point Mode | Delivery condition:<br>Single Point Mode                                                                                  | 63    | 2         | UInt8     | RW           |
| Hysteresis                                                                                         | Input range:<br>0.000 to 100.000 bar ( <b>0.000</b> )            | Delivery condition:<br>1% of the nominal measuring range                                                                  | 63    | 3         | Float     | RW           |
| Error behavior  | <b>Inactive</b> , active, frozen                                 | Behavior of the output signal in case of a malfunction.                                                                   | 79    | 1         | UInt8     | RW           |
| Switch-on delay                                                                                    | Input range:<br>0.0 to 100.0 s ( <b>0.0</b> )                    | –                                                                                                                         | 79    | 2         | Float     | RW           |
| Switch-off delay                                                                                   | Input range:<br>0.0 to 100.0 s ( <b>0.0</b> )                    |                                                                                                                           | 79    | 3         | Float     | RW           |

### Error behavior

**Inactive** value: If the **function** parameter of digital output 1 is configured as a **switching output** value, a process value error sets the **switching output** value to **inactive**.

**Frozen** value: If the **function** parameter of digital output 1 is configured as a **switching output** value, a process value error does not have any influence on the configuration of the **switching output** value.

## 10 IO-Link address tables

### Teach

| Parameter      | Value                      | Description                                                                                                                                                                                                                                                                  | Index | Sub-index | Data type | Access right |
|----------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----------|--------------|
| Channel        | Input range:<br>0 to 2 (1) | Selection of the channel that will be addressed by the teach functions.<br><br>The teach functions are triggered by 2 buttons within the JUMO smartCONNECT app. With the teach functions, the current process value is adopted in the respective switching point (SP1, SP2). | 58    | 0         | UInt8     | RW           |
| System command | 65                         | Teach SP1                                                                                                                                                                                                                                                                    | 2     | 0         | UInt8     | WO           |
|                | 66                         | Teach SP2                                                                                                                                                                                                                                                                    | 2     | 0         | UInt8     | WO           |
| Teach Result   | 0<br>1<br>2<br>5<br>7      | Idle<br>Success Teach SP1<br>Success Teach SP2<br>Busy<br>Error                                                                                                                                                                                                              | 59    | 0         | Bool      | RO           |

## 10.6 Analog output

### Analog output 1

| Parameter         | Value                                                       | Description                                                                                                                                                          | Index | Sub-index | Data type | Access right |
|-------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----------|--------------|
| Output signal     | 0 to 10 V, 4 to 20 mA                                       | Parameter output signal.                                                                                                                                             | 260   | 1         | UInt8     | RW           |
| Scale start       | Input range:<br>-99999999.00 to 99999999.00 bar<br>(0.00)   | Process value for the current output (4 mA) or the voltage output (0 V).                                                                                             | 260   | 3         | Float     | RW           |
| Scale end         | Input range:<br>-99999999.00 to 99999999.00 bar<br>(100.00) | Process value for the current output (20 mA) or the voltage output (10 V).                                                                                           | 260   | 4         | Float     | RW           |
| Error behavior    | <b>Replacement value</b> , low, high                        | Output signal in the event of a malfunction:<br>Replacement value: Parameter input value for <b>replacement value</b> .<br>Low: 3.4 mA or 0 V<br>High: 22 mA or 11 V | 260   | 5         | UInt8     | RW           |
| Replacement value | Input range:<br>3.400 to 22.000 (3.400)                     | <b>Error behavior</b> parameter must be configured as a <b>replacement value</b> .<br>Input range:<br>3.4 to 22 mA (current output)<br>0 to 11 V (voltage output)    | 260   | 6         | Float     | RW           |

# 10 IO-Link address tables

## 10.7 Digital output

### Digital output 1

| Parameter          | Value                                                                            | Description                | Index | Sub-index | Data type | Access right |
|--------------------|----------------------------------------------------------------------------------|----------------------------|-------|-----------|-----------|--------------|
| Output signal      | Collective alarm, <b>pressure (teach channel 1)</b> , pressure (teach channel 2) | –                          | 200   | 1         | UInt8     | RW           |
| Inversion          | <b>Off</b> , On                                                                  | Inverts the output signal. | 200   | 2         | UInt8     | RW           |
| Output signal type | <b>Push-pull</b> , n-switching, p-switching                                      | Parameter function.        | 200   | 3         | UInt8     | RW           |

### Digital output 2

| Parameter          | Value                                                                           | Description                | Index | Sub-index | Data type | Access right |
|--------------------|---------------------------------------------------------------------------------|----------------------------|-------|-----------|-----------|--------------|
| Output signal      | Collective alarm, pressure (teach channel 1), <b>pressure (teach channel 2)</b> | –                          | 220   | 1         | UInt8     | RW           |
| Inversion          | <b>Off</b> , On                                                                 | Inverts the output signal. | 220   | 2         | UInt8     | RW           |
| Output signal type | <b>Push-pull</b> , n-switching, p-switching                                     | Parameter function.        | 220   | 3         | UInt8     | RW           |

10.8 IO-Link

I/O pin 1 (C/Q)

| Parameter | Value                             | Description         | Index | Sub-index | Data type | Access right |
|-----------|-----------------------------------|---------------------|-------|-----------|-----------|--------------|
| Function  | Inactive, IO-Link, digital output | Parameter function. | 520   | 0         | UInt8     | RW           |

I/O pin 2 (DI/DQ)

| Parameter | Value                                   | Description         | Index | Sub-index | Data type | Access right |
|-----------|-----------------------------------------|---------------------|-------|-----------|-----------|--------------|
| Function  | Inactive, digital output, analog output | Parameter function. | 521   | 0         | UInt8     | RW           |

Identification

| Parameter                    | Value | Description                                                    | Index | Sub-index | Data type | Access right |
|------------------------------|-------|----------------------------------------------------------------|-------|-----------|-----------|--------------|
| Plant identification code    | ***   | TAG designation (text entry with max. 32 characters possible). | 25    | 0         | String    | RW           |
| Location identification code | ***   |                                                                | 26    | 0         | String    | RW           |

# 11 Cyclic data transfer via IO-Link

The data is transferred in a cycle via the IO-Link interface to the IO-Link master (PDI = Process Data Input). The entire process data can be extracted via index 40 and subindex 0.

| Bit offset | 16                           | 2                                                                                                               | 1                    | 0                    |
|------------|------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------|----------------------|
| Data type  | Float32T                     | Integer14T                                                                                                      | Bool                 | Bool                 |
| Parameter  | MDC <sup>a</sup> 1: Pressure | Bit offset 2: Invalid pressure<br>Bit offset 3: Invalid configuration<br>Bit offset 4: Invalid calibration data | SSC <sup>b</sup> 1.2 | SSC <sup>b</sup> 1.1 |

<sup>a</sup> Measuring Data Channel: Function class for measured values with a fixed set of attributes that define the measurement and precise description of the values within the process data.

<sup>b</sup> Switching Signal Channel, ⇨ Page 36.

### 12.1 Process value error

Process value errors are displayed instead of the process value.

| Appearance | Cause                                                                                           | Remedy                                               |
|------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------|
| ----       | The input value is invalid. The sensor is defective or communication to the sensor is impaired. | Contact the manufacturer.                            |
|            | There is an internal device error.                                                              | Contact the manufacturer.                            |
| <<<<       | The measuring range was undershot.                                                              | Operate the device within the device specifications. |
| >>>>       | The measuring range was exceeded.                                                               | Operate the device within the device specifications. |

# 12 Troubleshooting

## 12.2 Error messages

| Classification according to NAMUR NE 107                                                          |                                                                                          |                                                      |                              |            |            |  |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|------------|------------|--|
| Symbol                                                                                            | Error/failure                                                                            |                                                      |                              |            |            |  |
| <br>Steady red |                                                                                          |                                                      |                              |            |            |  |
| Error message                                                                                     | Cause                                                                                    | Remedy                                               | Bit offset for status in PDI | Event code | Event type |  |
| Configuration faulty                                                                              | The checksum of the configuration data is faulty.                                        | Transfer the configuration data to the device again. | 3                            | 0x6320     | Error      |  |
| Calibration data faulty                                                                           | The checksum of the calibration data is faulty.                                          | Contact the manufacturer.                            | 4                            | 0x5000     | Error      |  |
| Device not calibrated                                                                             | There is no calibration data.                                                            | Contact the manufacturer.                            | 4                            | 0x5000     | Error      |  |
| Pressure faulty                                                                                   | The measuring range has been fallen below or exceeded or the pressure sensor has failed. | Operate the device within the device specifications. | 2                            | 0x8C20     | Error      |  |

| Classification according to NAMUR NE 107                                                            |                            |                                                            |                              |            |            |  |
|-----------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------|------------------------------|------------|------------|--|
| Symbol                                                                                              | Functional check           |                                                            |                              |            |            |  |
| <br>Flashing red |                            |                                                            |                              |            |            |  |
| Error message                                                                                       | Cause                      | Remedy                                                     | Bit offset for status in PDI | Event code | Event type |  |
| Simulation active                                                                                   | Simulation mode is active. | Deactivate simulation mode. Alternatively: Restart device. | –                            | 0x8C01     | Warning    |  |

| Classification according to NAMUR NE 107                                                                  |                                                                 |                                                                   |                              |            |            |  |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------|------------------------------|------------|------------|--|
| <div><div></div></div> <div>Flashing green</div>                                                          | Maintenance required                                            |                                                                   |                              |            |            |  |
|                                                                                                           |                                                                 |                                                                   |                              |            |            |  |
| Error message                                                                                             | Cause                                                           | Remedy                                                            | Bit offset for status in PDI | Event code | Event type |  |
| Restart the device                                                                                        | The device must be restarted due to a configuration change.     | Restart the device.                                               | –                            | –          | –          |  |
|                                                                                                           |                                                                 |                                                                   |                              |            |            |  |
| Classification according to NAMUR NE 107                                                                  |                                                                 |                                                                   |                              |            |            |  |
| <div><div></div></div> <div>Steady yellow<sup>a</sup></div>                                               | Outside the specification                                       |                                                                   |                              |            |            |  |
| <sup>a</sup> Contrary to classification according to NAMUR NE 107, steady yellow instead of flashing red. |                                                                 |                                                                   |                              |            |            |  |
| Error message                                                                                             | Cause                                                           | Remedy                                                            | Bit offset for status in PDI | Event code | Event type |  |
| Undervoltage                                                                                              | The voltage supply to the device is insufficient.               | Check the voltage supply to the device.                           | –                            | 0x5111     | Warning    |  |
| Device operating conditions                                                                               | The device is being operated outside the device specifications. | Operate the device within the device specifications.              | –                            | 0x8C10     | Warning    |  |
| Analog output error                                                                                       | The burden at the analog output (current output) is too high.   | Observe the specified values for the burden of the analog output. | –                            | –          | –          |  |
| Overload at C/Q or DO                                                                                     | There is a short circuit at the digital output.                 | Contact the manufacturer.                                         | –                            | –          | –          |  |

# 13 Maintenance and cleaning

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## 13.1 Maintenance

The device is maintenance-free.

## 13.2 Cleaning device housing

The device housing can be cleaned when the device has been installed.

Clean the device with a cloth dampened with water.

## 13.3 Decontamination

Use:

- When the medium is changed in the plant.
- Before replacing sealing rings/O-rings.
- Before returning the device.
- Before disposing of the device.

Requirements:

- The device is uninstalled, ⇒ Page 58.
- If the medium is a hazardous substance: The information in the safety data sheet is taken into account.
- Suitable protective equipment has been set up.
- Ein geeignetes Reinigungsmittel ist einsatzbereit.
- Ein Reinigungsplatz zum Spülen und Neutralisieren aller medienberührten Teile ist vorbereitet.

Procedure:

1. **CAUTION!** Do not damage the sealing ring grooves when removing the sealing rings/O-rings.  
Remove the sealing rings/O-rings from the sealing ring grooves.
2. **CAUTION!** Use only cleaning agents that are compatible with the materials used to make the device.  
Thoroughly flush and neutralize all parts that come into contact with the medium using a suitable cleaning agent.
3. When disposing the device: ⇒ Page 58.
4. When continuing to use the device: ⇒ Page 56.

## 13.4 Replacing sealing rings/O-rings

Requirements:

- All components in contact with the medium are decontaminated, ⇒ Page 56.

Proceeding:

1. Check the sealing rings/O-rings previously used for damage and replace them if necessary.
2. Install the device, ⇒ Page 27.

## 13.5 Firmware update

### JUMO smartCONNECT app

Requirements:

- The latest firmware was downloaded from the manufacturer's website and extracted (Product page > Downloads > Software).
- The JUMO smartCONNECT app is installed and open, ⇨ "Bluetooth ", Page 35.

Procedure:

1. Open the menu by tapping the icon .
2. Select **Firmware update**.
3. Use **Select file** to open the file **xxx.x.x.x.x.bin**.
4. Select **Start transfer**.
5. Connect the device.
  - a) If Bluetooth is set to **Active** connect the device via **Nearby**.
  - b) If the Bluetooth setting is set to **Restricted** connect the device using **Add new device** via NFC.
6. Confirm the transfer by clicking **Start transfer**.
7. Confirm the message with **Start transfer**.

**CAUTION!** The device's display remains off during the transfer.  
*The transfer progress is displayed as a percentage. The transfer takes approximately 5 minutes.*
8. After the transfer is complete, select **Close**.

*The device will restart automatically.*
9. Check that the device is functioning properly.

*The firmware update is complete and the device is ready for use.*

Troubleshooting:

If a firmware update fails, the device enters bootloader mode. The device's display remains off in this state.

Run the firmware update again. The device to be connected is displayed with the designation "Bootloader".

# 14 Shutdown

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## 14.1 Uninstallation

Requirements:

- The plant has been de-pressurized, de-energized and secured against being switched on again.
- The medium circulation of the plant is stopped.
- The pipe is drained and rinsed.
- The device has cooled down.
- A clean and dry storage location has been prepared.

Procedure:

1. Manually loosen the union nut of the connecting cable from the M12 plug connection on the device.
2. Pull the connecting cable out of the M12 plug connection and remove from the working range.
3. Use suitable auxiliary equipment to detach the device.
4. **CAUTION!** Make sure that the seals remain in the sealing ring grooves of the process connections of the device.

Carefully remove the device from the plant and put in a clean and dry place.

## 14.2 Returns

Requirements:

- Clean the device housing ⇒ Page 56.
- Clean the parts that come into contact with the medium ⇒ Page 56.

Procedure:

1. The [supplementary sheet for product returns](#) must first be completed correctly and signed. Then enclose it with the shipping documents and attach it to the packaging, ideally on the outside.
2. Use the original packaging or a suitably secure container for sending the device.

## 14.3 Disposal

Requirements:

- Clean the device housing ⇒ Page 56.
- Clean the parts that come into contact with the medium ⇒ Page 56.



- Do not dispose of the device or replaced parts in the trash after use.
- Delete programs and data stored on the device.
- Remove batteries, if any, if this can be done without damaging the device.
- Dispose of the device and the packaging material in a responsible and environmentally friendly manner.
- Observe the country-specific laws and regulations for waste treatment and disposal.

In accordance with Directive 2012/19/EU on Waste from Electrical and Electronic Equipment, manufacturers are obliged to offer the option of returning waste equipment. Request the return from the manufacturer.

## Without UL approval

| Designation                                                                                    | Part no. |
|------------------------------------------------------------------------------------------------|----------|
| Connection line M8/voltage supply, length 2 m, IO-Link master, 4 channel                       | 00767913 |
| Connection line M8/Ethernet, length 2 m, IO-Link master, 4 channel                             | 00767923 |
| Connection line M12/voltage supply, length 2 m, IO-Link master, 8 channel                      | 00767914 |
| Connection line M12/Ethernet, length 2 m, IO-Link master, 8 channel                            | 00767927 |
| IO-Link master, 1-channel (TMG Device Tool), including mini USB cable for use with Windows® PC | 00694070 |
|                                                                                                |          |
| Line socket, 4-pole, M12 × 1, straight, length 2 m                                             | 00404585 |
| Line socket, 4-pole, M12 × 1, angled, length 2 m                                               | 00409334 |
|                                                                                                |          |
| Service deployment                                                                             | 00427970 |
| Preconfiguration (Service)                                                                     | 00427968 |
| JUMO smartCONNECT (App)                                                                        | 00770436 |

## With UL approval

| Designation                                    | Part no. |
|------------------------------------------------|----------|
| IO-Link master, 4-channel – TURCK TBEN-S2-4IOL | 00759867 |
| IO-Link master, 8-channel – TURCK TBEN-LL-8IOL | 00759875 |
|                                                |          |
| Cable PUR, 4 × 0.34, black, length 2 m         | 00776248 |
| Cable PUR, 4 × 0.34, black, length 5 m         | 00776250 |
| Cable PUR, 4 × 0.34, black, length 10 m        | 00776252 |

## 16 Open-source software

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The device software and/or device components were developed using open-source software.

Insofar as the respectively applicable license terms justify a claim on the provision of source code or other information, JUMO GmbH & Co. KG will provide the source code and the license texts on a conventional data carrier at the cost incurred for the provision of the data carrier.

This offer is valid for three years after the software is made available. This offer is valid beyond that time to the extent specified in the license terms.

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