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**JUMO Process Control, Inc.**  
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# JUMO flowTRANS MAG H20

## Electromagnetic flowmeter for liquids

### Areas of application

- Food and beverage industry
- Auxiliary facilities for additional industries (including cooling water, process water)

### Special features

- Compactly constructed design
- Precise measurement of extremely small volumes
- Single Pair Ethernet interface (SPE)
- Also with Tri-Clamp connection (securely welded)
- Configurable analog outputs for IO-Link variant
- Easy connection to the JUMO Cloud for SPE variant
- Operation via smartphone with the JUMO smartCONNECT app

### Description

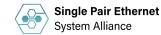
The device measures the volume flow and the temperature of liquids. It is suitable for installation in metallic pipes.

The device communicates via Bluetooth with the JUMO smartCONNECT app. SPE or IO-Link interfaces are also available. The product is delivered from the factory as an IO-Link device. However, the two input and output pins can be configured for different inputs and outputs.

The process values are mapped via the process display, and issued to a higher-level system via the outputs.



Type 406065/...



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## Technical data

### Inputs, measurands

#### Reference conditions

Measurement medium	Water
Medium temperature	23 °C ±5 °C
Ambient temperature	23 °C ±5 °C
Medium pressure	1 to 4 bar
Measuring pipe	Horizontal installation

#### Flow

Maximum measuring range	
DN 6	0.005 to 5.000 l/min
DN 15	0.050 to 35.000 l/min
DN 20	0.100 to 75.000 l/min
DN 25	0.200 to 150.000 l/min
Under reference conditions	
Accuracy	0.5 % of the measured value ±1.5 mm/s
Response time $t_{90}$	≤ 250 ms
Under application conditions	
Accuracy	0.8 % of the measured value ±1.5 mm/s
Reproducibility	±0.2 % of the measured value ±1 mm/s
X = maximum measuring range Y = deviation from measured value	<p>The graph plots deviation Y (%) on the y-axis (0 to 2.5) against maximum measuring range X (%) on the x-axis (0 to 100). The curve shows a sharp initial drop from 2.5% at X=0, reaching about 1.0% at X=10, and then gradually leveling off to approximately 0.5% at X=100.</p>

#### Temperature

Measuring range	-20 to +90 °C
Accuracy	±2.5 K

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## Interfaces

### Bluetooth

Communication	Via mobile end device with the "JUMO smartCONNECT" app
Authentication	Via NFC
Connection status (configurable)	Active Inactive Restricted (can be activated via NFC)
Range	10 m (open space)
Radio frequency	
Bluetooth radio module	2.45 GHz
NFC tag	13.56 MHz
Max. transmission power	
Bluetooth radio module	0 dBm
NFC tag	–
App	
Functions	Transfer of configuration data and device information, display of process values
System requirements	
iOS device	Minimum requirement iPhone 7 with iOS 13
Android device	Minimum requirement Android 8.0

### SPE

Function	Transfer of process data, configuration data, and device information
Voltage supply	IEEE 802.3cg
Input voltage	DC 18 V to 30 V PELV
Current consumption	≤ 100 mA
Power consumption	≤ 1.8 W
Protection rating	DIN EN 61140, Class III (protective low voltage)
Electrical safety	
Requirements	The device must be equipped with an electrical circuit that meets the requirements of DIN EN 61010-1, DIN EN 61010-2-201, and Low Voltage Directive 2014/35/EU with regard to "Limited-energy circuits".
SPE protocol	Modbus TCP/IP, integrated JUMO Cloud connector
Data transfer rate (10BASE-T1L)	10 Mbit/s
PoDL class	Class 11, IEEE 802.3cg
Plug connectors	IEC 63171-5
Version	M12, 2-pole, shielded
Protection rating	IP67
Connection line	IEC 61156-13, IEC 61156-14
Version	2-core, copper, shielded
Bandwidth	≥ 20 MHz
Line length	≤ 500 m (AWG18)
DC loop resistance	< 25 Ω

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## IO-Link

Voltage supply	
Input voltage	DC 18 to 30 V PELV
Current consumption	≤ 600 mA including switching outputs
Power consumption	≤ 3.2 W
Protection rating	DIN EN 61140, Class III (protective low voltage)
Electrical safety	
Requirements	The device must be equipped with an electrical circuit that meets the requirements of DIN EN 61010-1, DIN EN 61010-2-201, and Low Voltage Directive 2014/35/EU with regard to "Limited-energy circuits".
Communication	Via end device with IO-Link master and device description file (IODD)
Communication interface	IO-Link device V 1.1.3
Data transfer rate (baud rate)	COM 3 (230.4 kbit/s)
Line length	≤ 20 m, unshielded
Cycle time	≥ 5 ms
Function	Transfer of process data, configuration data, and device information

## Digital inputs

Type	Passive
Function	Reset totalizer, start/stop batch, measured value suppression
Switching voltage $V_{DI}$	DC $-30\text{ V} \leq V_{DI} \leq +30\text{ V}$
Protection	Against polarity and voltage peaks
Internal resistance	> 100 k $\Omega$
Switching thresholds	PLC level: logic level 0 < 7 V, logic level 1 > 15 V

## Digital outputs

Type	Switching output, pulse output (active)
Protection	Against short circuiting and overload
Output signal	Push-pull, PNP, NPN
Ampacity	≤ 200 mA
Voltage drop	≤ 3 V

## Switching output

Output signal	Two limit value switches, batch active, batch error, device error
Limit value switch	
Input signals	Flow, temperature
Configuration	One-point mode, two-point mode and window mode
Switching points	
For hysteresis function	Configurable
For window function	Configurable
Switch-on delay	0 to 100 s
Switch-off delay	0 to 100 s

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## Pulse output

Function	Output of the flow process value
Pulse frequency	0 to 10 kHz
Duty cycle	50 %
Accuracy	± 0.1 %
Output value at nominal width	Pulses per unit and duty cycle (configurable)
DN 6	120,000
DN 15	17,100
DN 20	8000
DN 25	4000

## Analog outputs

### Current output

Function	Output of the flow process values and temperature; output of a signal for error message
Signal range	4.0 to 20 mA
Signal limits	3.8 to 20.5 mA
Error message	3.4 or 22 mA (4 to 22 mA configurable)
Accuracy	± 0.1 % of 16 mA
Temperature influence	75 ppm/K
Burden	≤ 500 Ω
Burden influence	±0.02 % per 100 Ω

### Voltage output

Function	Output of the flow process values and temperature; output of a signal for error message
Signal range	DC 0 to 10 V
Signal limits	DC 0 to 11 V
Error message	DC 0 or 11 V (0 to 11 V configurable)
Accuracy	±0.1 % of 10 V
Temperature influence	75 ppm/K
Load	≥ 2000 Ω
Load influence	≤ 15 mV

## Display

Type	TFT display
Size	
Display range	35.04 × 28.03 mm
Screen size (diagonal)	1.77"
Dissolution	128 × 160 (RGB)
Brightness	10 levels (configurable)

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## Environmental influences

Admissible ambient temperature	DIN 60068-2-1, DIN 60068-2-2
At medium temperature ≤ 80 °C	-20 to +60 °C
At medium temperature > 80 °C	-20 to +45 °C
Admissible storage temperature	-20 to +60 °C
Climatic conditions	DIN EN 60721-3-3
Climate class	3K6
Temperature range	-20 to +55 °C
Relative humidity	≤ 100 % – including condensation on device outer shell
Protection type	DIN EN 60529, EN 50102 IP65, IP67, IP69
Electromagnetic compatibility (EMC)	DIN EN 61326-1:2022, DIN EN 61326-2-3:2022
Interference emission	Class B <sup>a</sup>
Interference immunity	Industrial requirements
Vibration resistance <sup>b</sup>	DIN EN 60068-2-6, DIN EN 60068-2-27
Vibration resistance	5 g at 10 Hz to 2000 Hz
Shock resistance	20 g over 11 ms
Pressure Equipment Directive	2014/68/EU
Group 1 fluids - DN ≤ 25	Sound engineering practice according to Art. 4, para. 3 together with Art 4, para. 1c.i
Site altitude	Up to maximum 2000 m above sea level

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

<sup>b</sup> Only guaranteed if the device is fixed properly.

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## Mechanical features

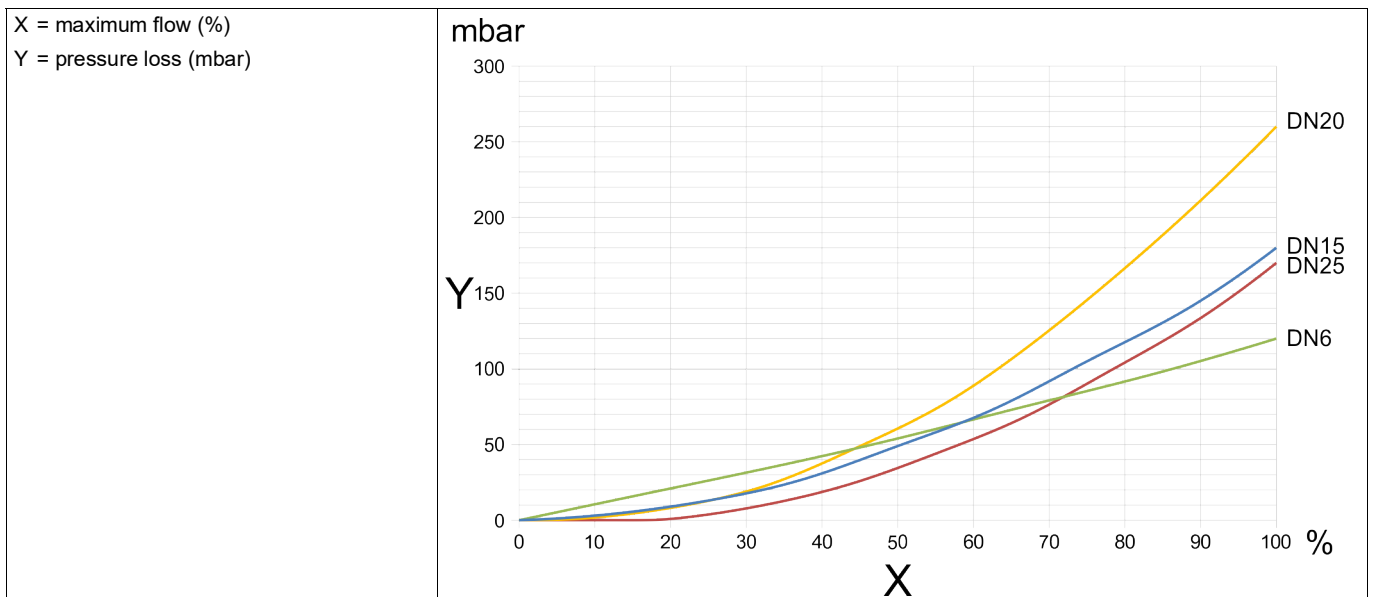
### Materials

Housing	Stainless steel 304
Housing lid	Plastic PA-GF25 (glass fiber reinforced)
Display cover	Acrylic glass
Components in contact with the medium	
Measuring pipe	PEEK
Electrodes	Carbon fiber
Process connection	Stainless steel 316L
Seals	EPDM or FKM

### Nominal pressure

Nominal pressure level	PN 16
------------------------	-------

### Pressure loss diagram



### Measurement media

Medium type	Conductive liquids
Conductivity	≥ 20 μS/cm
Viscosity	≤ 70 mPa·s
Temperature range <sup>a</sup>	-20 °C to +90 °C

<sup>a</sup> Return to the accuracy specifications after cooling down.

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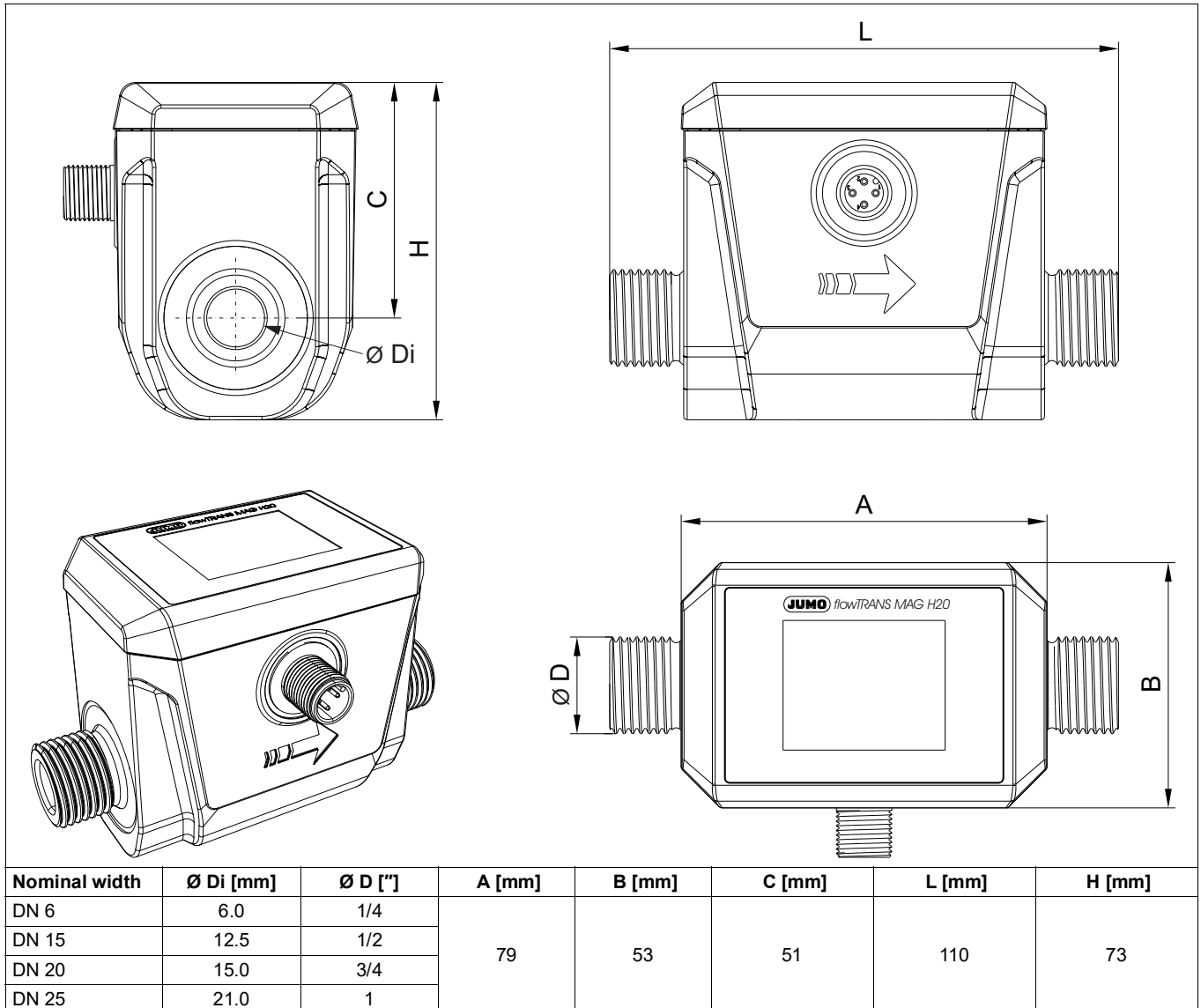
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## Dimensions

Thread connection according to DIN EN ISO 228-1





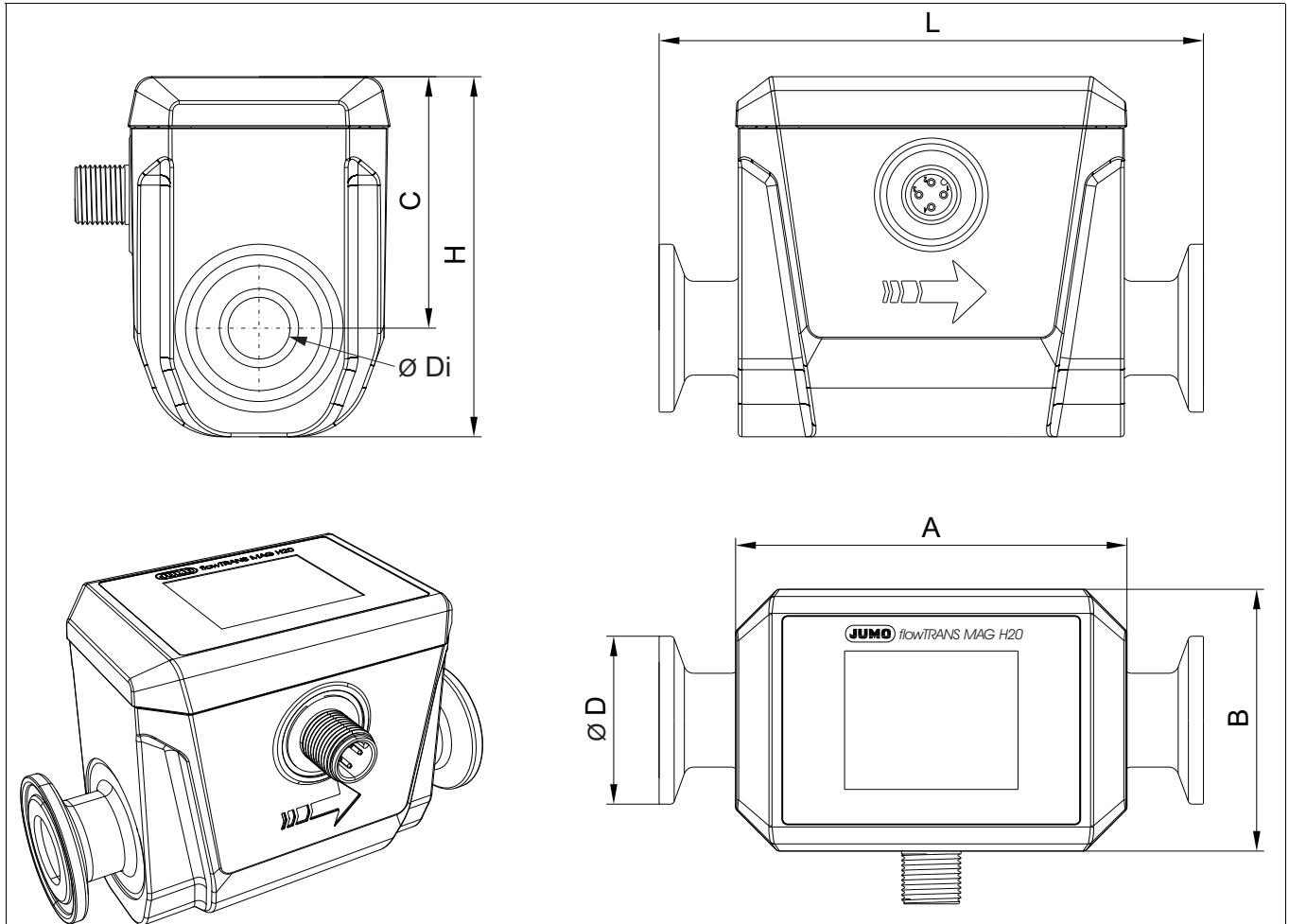
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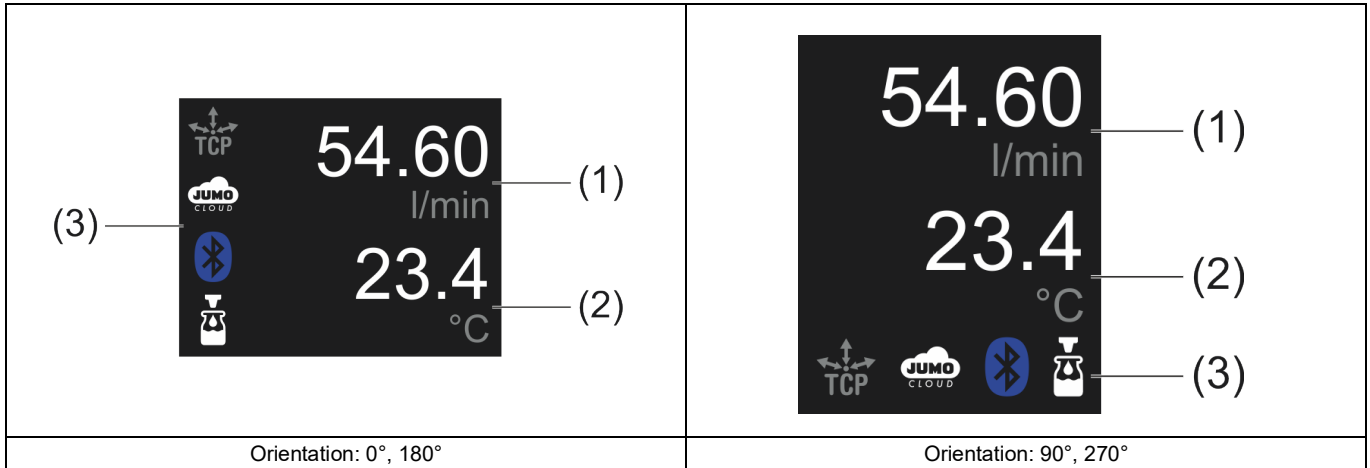
**Tri-Clamp connection according to DIN 32676, Series A**



Nominal width	Ø Di [mm]	Ø D [mm]	A [mm]	B [mm]	C [mm]	L [mm]	H [mm]
DN 6	6.0	25.0	79	53	51	110	73
DN 15	12.5	34.0					
DN 20	15.0	34.0					
DN 25	26.0	50.5				130	



## Display elements



Pos.	Designation	Description
1	Process value display 1	Show the following values and messages:
2	Process value display 2	<ul style="list-style-type: none"> <li>The two configured process values</li> <li>The system unit of the relevant process values</li> <li>The totalizer for the totalizer function</li> <li>The fill volume or residual volume for the batch function</li> <li>Error messages</li> </ul>
3	Toolbar	Shows: <ul style="list-style-type: none"> <li>The configuration of input/output 1 for the IO-Link variant or the connection status of Modbus TCP for the SPE variant</li> <li>The configuration of input/output 1 for the IO-Link variant or the connection status of JUMO Cloud for the SPE variant</li> <li>The status of the Bluetooth connection</li> <li>The status of the batch function</li> </ul>

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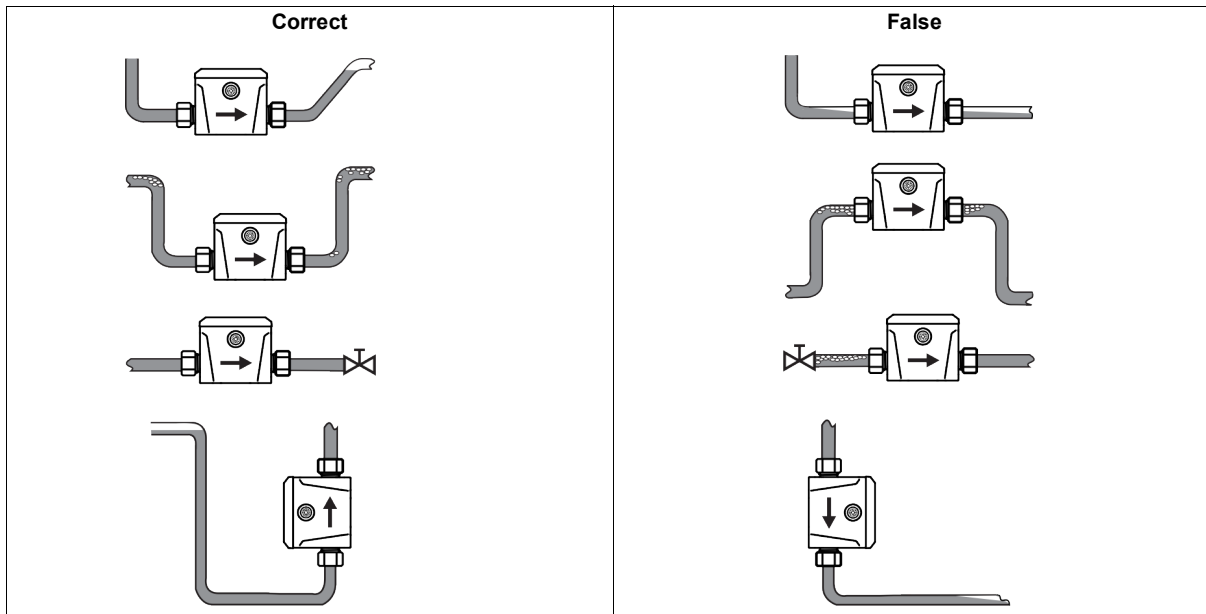
## Installation notes

Die Installationshinweise im Typenblatt liefern Informationen zur Produktauswahl.

**For the mechanical connection, only use the installation instructions or the operating manual.**

### Installation position

→ Flow direction



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## Connection elements

### Terminal assignment, M12 connector, IO-Link

	Device	M12 connecting cable
Terminal assignment and color coding <sup>a</sup>		
Voltage supply V+ (DC 24 V) I/O Pin 2 <sup>b</sup> GND I/O Pin 1 <sup>c</sup>	(1) (2) (3) (4)	(1) – BN (brown) (2) – WH (white) (3) – BU (blue) (4) – BK (black)
Connection type	Plug connector M12	Plug connector M12 with screw locking

<sup>a</sup> The color coding is only valid for A-coded standard cables.

<sup>b</sup> I/O Pin 2 is configurable as: OFF, switching output (NPN, PNP, push-pull), analog output, digital input.

<sup>c</sup> I/O Pin 1 is configurable as: OFF; IO-Link, switching output (NPN, PNP, push-pull), pulse output, analog output.

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## Terminal assignment, M12 connector, SPE

	Device	M12 connecting cable
Terminal assignment and color coding		
RxTx+/PoDL+	(1)	(1) – WH (white)
RxTx-/PoDL-	(2)	(2) – BU (blue)
Connection type	Plug connector M12 according to IEC 63171-5	Plug connector M12 with screw locking

## Accessories

Designation	Part no.
Line socket, 4-pole, M12 × 1, straight, length 2 m	00404585
Line socket, 4-pole, M12 × 1, angled, length 2 m	00409334
USB IO-Link master, 1-channel	00694070

### Further information and downloads



[qr-406065-en.jumo.info](http://qr-406065-en.jumo.info)