

**JUMO GmbH & Co. KG**

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**JUMO Process Control, Inc.**

6724 Joy Road  
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# JUMO flowTRANS US W01

## Ultrasonic flowmeter for liquids

### Areas of application

- Reverse osmosis
- Desalination of seawater
- Wash water recovery
- Waste water (galvanic, surface treatment)
- Cooling towers

### Special features

- Easy installation
- Corrosion-resistant
- Low-wear
- Easy to clean

### Description

The ultrasonic flowmeter measures the flow of conductive and non-conductive liquid media.  
It is installed in plastic or metal pipes.



Type 406050/...

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## Approval marks and certificates



Certificates for approved device versions are available for download on the manufacturer's website.

## Technical data

### Electrical safety

Requirements	DIN EN 61010-1 The device must be equipped with an electrical circuit that meets the requirements for "Limited-energy circuits".
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### Electrical data

Voltage supply	DC 18 to 30 V SELV, PELV, Class 2
Current consumption	
Analog outputs mode	≤ 50 mA
Digital outputs mode	≤ 300 mA
Power consumption	
Analog outputs mode	≤ 1,5 W
Digital outputs mode	≤ 9 W
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-core, shielded
Protection type	IP67
Connecting cable	
Conductor cross section	≥ AWG 23
Version	4-core, copper, shielded
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.

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## Inputs

### Measurands

Measuring range <sup>a, b</sup> DN 15 (Low-flow calibration) DN 15 DN 20 DN 25 DN 32	0 to 30 l/min (60 l/min <sup>c</sup> ) 0 to 62,5 l/min (80 l/min <sup>c</sup> ) 0 to 105 l/min (210 l/min <sup>c</sup> ) 0 to 160 l/min (320 l/min <sup>c</sup> ) 0 to 260 l/min (520 l/min <sup>c</sup> )
Accuracy <sup>d</sup> Pulse output Current output Voltage output Reproducibility Temperature drift Response time $t_{90}$	$\leq \pm 2.0\%$ of measured value $\pm 0.1\%$ of $flow_{max}$ Like pulse output, additionally $\leq \pm 0.1\%$ of 20 mA Like pulse output, additionally $\leq \pm 0.1\%$ of 10 V $\leq \pm 0.5\%$ of measured value $\pm 0.03\%$ of $flow_{max}$ $\leq \pm 0.15\%$ of measured value per 10 K temperature change (at -20 to +80° C) $\leq 2$ s
Reference conditions Measurement medium Medium temperature Ambient temperature Medium pressure Measuring tube	Water 23 °C (73 °F) $\pm 5$ K 23 °C (73 °F) $\pm 5$ K 1 to 4 bar Horizontal installation, compliance with the required inlet and outlet sections
X = Measuring range <sub>max</sub> (%) Y = Measuring deviation from the measured value $\pm$ (%)	<p>The graph plots measuring deviation (Y-axis, 0 to 10%) against measuring range (X-axis, 0 to 100%). The curve shows a sharp decrease in deviation as the range increases, leveling off at approximately 2% deviation for ranges above 30%.</p>

<sup>a</sup> Low flow cut off: 0.05 % of  $flow_{max}$ .  
<sup>b</sup> Optionally expandable up to  $flow_{max}$ .  
<sup>c</sup>  $Flow_{max}$ .  
<sup>d</sup> Under reference conditions.

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## Outputs

### Analog outputs

Current output	
Function	Output of the flow rate, output of a signal for error messages and display via device status LED
Signal range	4 to 20 mA
Signal limits	3.8 to 20.5 mA
Error message	3.4 or 22 mA (default settings: 3.4 mA)
Temperature influence	75 ppm/K
Burden	≤ 500 Ω
Burden influence	≤ ±0.02 % per 100 Ω
Voltage output (optionally)	
Function	Output of the flow rate, output of a signal for error messages and display via device status LED
Signal range	DC 0 to 10 V
Signal limits	DC 0 to 10,3 V
Error message	DC 0 or 11 V (default settings: 0 V)
Temperature influence	75 ppm/K
Load	≥ 700 Ω
Load influence	≤ ±15 mV

### Digital outputs

Type	Transistor output as pulse output
Protection	Against polarity reversal, short circuiting and overload
Output signal	Push-pull, PNP, NPN (optionally)
Ampacity	≤ 200 mA
Voltage drop	≤ 2 V
Pulse output	
Function	Output of the flow process value
Pulse frequency	0 to 10 kHz
Duty cycle	50 %
Output value at nominal width	Pulses per Liter (l)
DN 15 (Low-flow calibration)	10000
DN 15	4800
DN 20	2850
DN 25	1875
DN 32	1150

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## Environmental influences

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

Admissible ambient temperature at a medium temperature of ≤ 70 °C at a medium temperature of > 70 °C <sup>a</sup>	DIN 60068-2-1, DIN 60068-2-2 -20 to +70 °C -20 to +45 °C
Climatic conditions Climate class Air temperature Relative humidity	DIN EN 60721-3-1, DIN EN 60721-3-3, DIN EN 60068-2-78 3K6 -20 to +55 °C ≤ 100 % – Condensation on device outer shell
Protection type	DIN EN 60529, EN 50102 IP65, IP67
Electromagnetic compatibility (EMC) Interference emission Interference immunity	DIN EN 61326-2-3:2022 Class B <sup>b</sup> Industrial requirements
Oscillation Amplitude Acceleration	DIN EN 60068-2-6 0,35 mm at 10 to 2000 Hz 5 g at 10 to 2000 Hz
Shock Peak acceleration Shock duration	DIN EN 60068-2-27 20 g 11 ms
Pressure Equipment Directive Group 1 fluids - DN ≤ 25 Group 2 fluids - DN ≤ 32 Group 1 fluids	2014/68/EU Sound engineering practice acc. to Art. 4, para. 3 i. c. w. Art. 4 para. 1c.i Sound engineering practice acc. to Art. 4, para. 3 i. c. w. Art. 4 para. 1c.i Sound engineering practice acc. to Art. 4, para. 3 i. c. w. Art. 4 para. 1c.ii

<sup>a</sup> Without UL approval.

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

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## Mechanical features

### Device

Weight <sup>a</sup> Without screw connection	≥ 215 to ≤ 385 g
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<sup>a</sup> Depends on version and DN.

### Materials

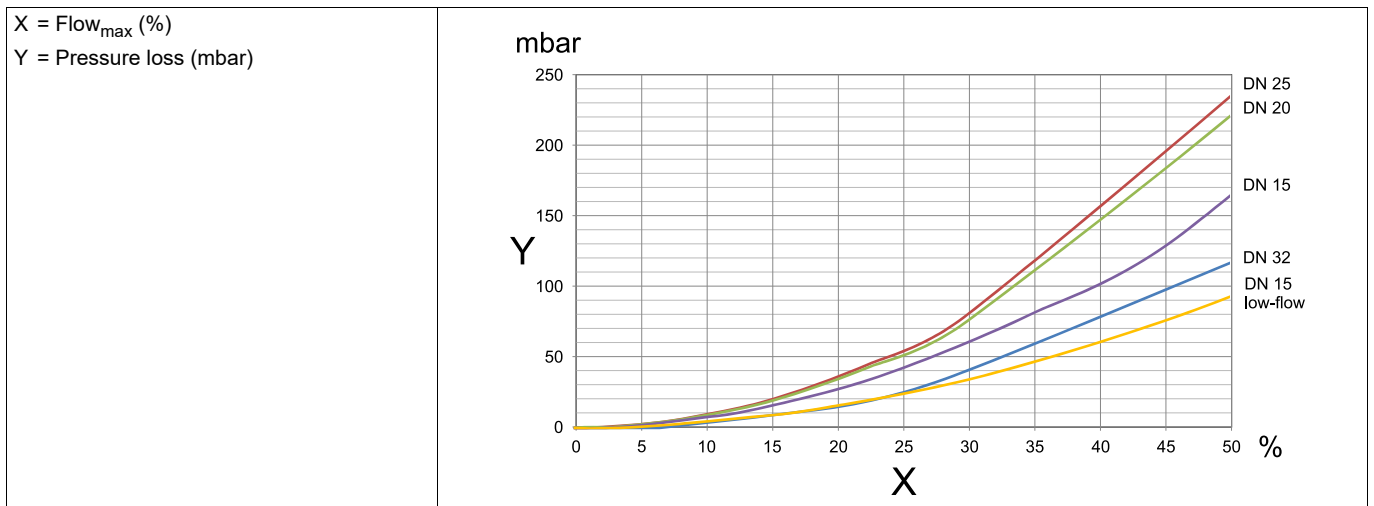
Housing	PA66-GF25
Components in contact with the medium Measuring tube Transducer Seals Process connection, transducer	PPSU PEEK EPDM or FKM (optionally)
Approvals Components in contact with the medium	Drinking water certified materials (when using EPDM seals)

### Nominal pressure

Nominal pressure level DN 15, DN 20, DN 25 DN 32	PN 16 PN 10
--	----------------

### Pressure loss diagram

Created under reference conditions ⇒ Page 3.



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## Measurement media

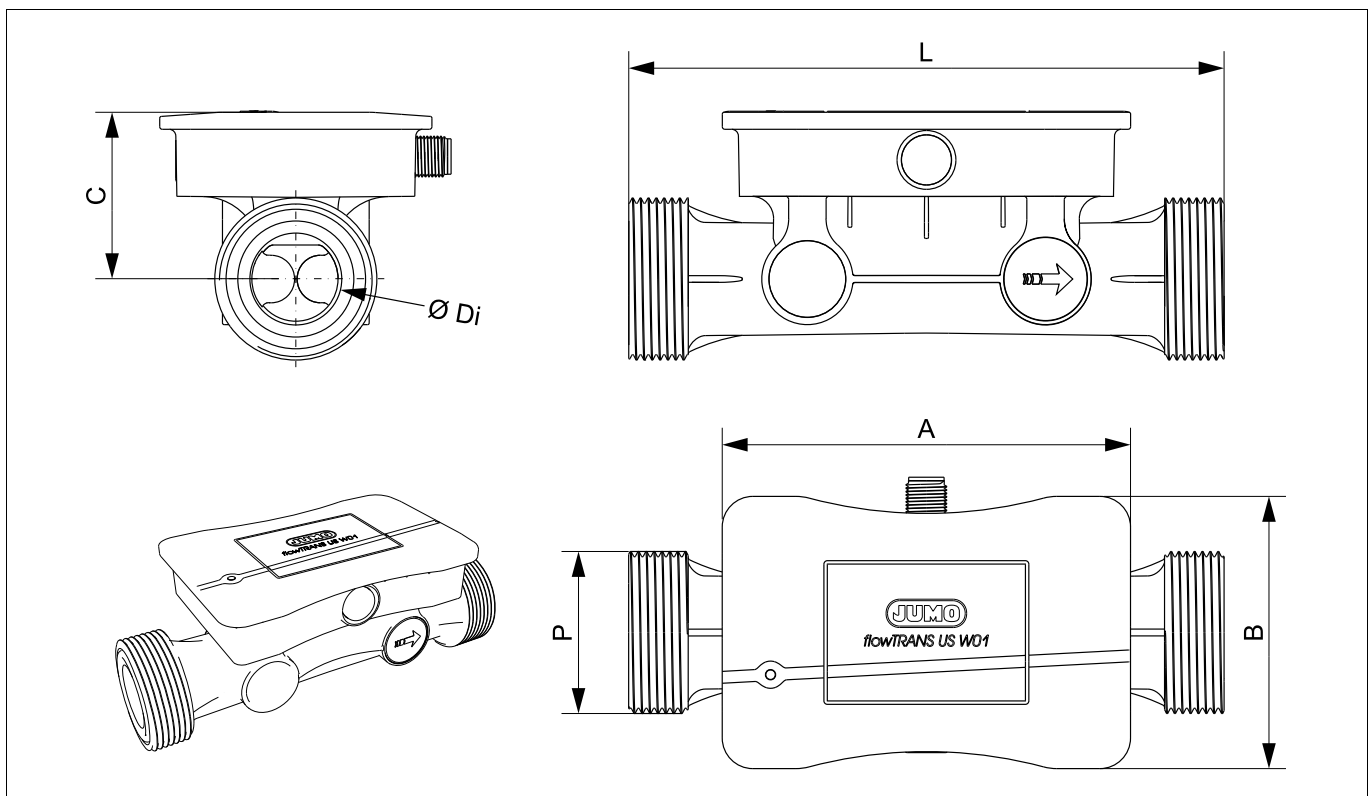
Medium type	Conductive or non-conductive liquids
Viscosity	≤ 100 mPas
Foreign matter content	
Solids	≤ 5 % vol ≤ 1 % vol
Medium temperature	
Temperature range	-20 to +95 °C
Within the accuracy	-20 to +70 °C
Within the accuracy <sup>a</sup>	-20 to +80 °C
Outside of the accuracy <sup>a, b</sup>	> 80 to 95 °C

<sup>a</sup> Without UL approval.

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

## Dimensions

### Device



Nominal width	Ø Di [mm]	P	A [mm]	B [mm]	C [mm]	L [mm]
DN 15	16.5	G 1	120	80	43.5	155
DN 20	21.5	G 1 1/4			46	165
DN 25	27	G 1 1/2			49	175
DN 32	34	G 2			52.5	185

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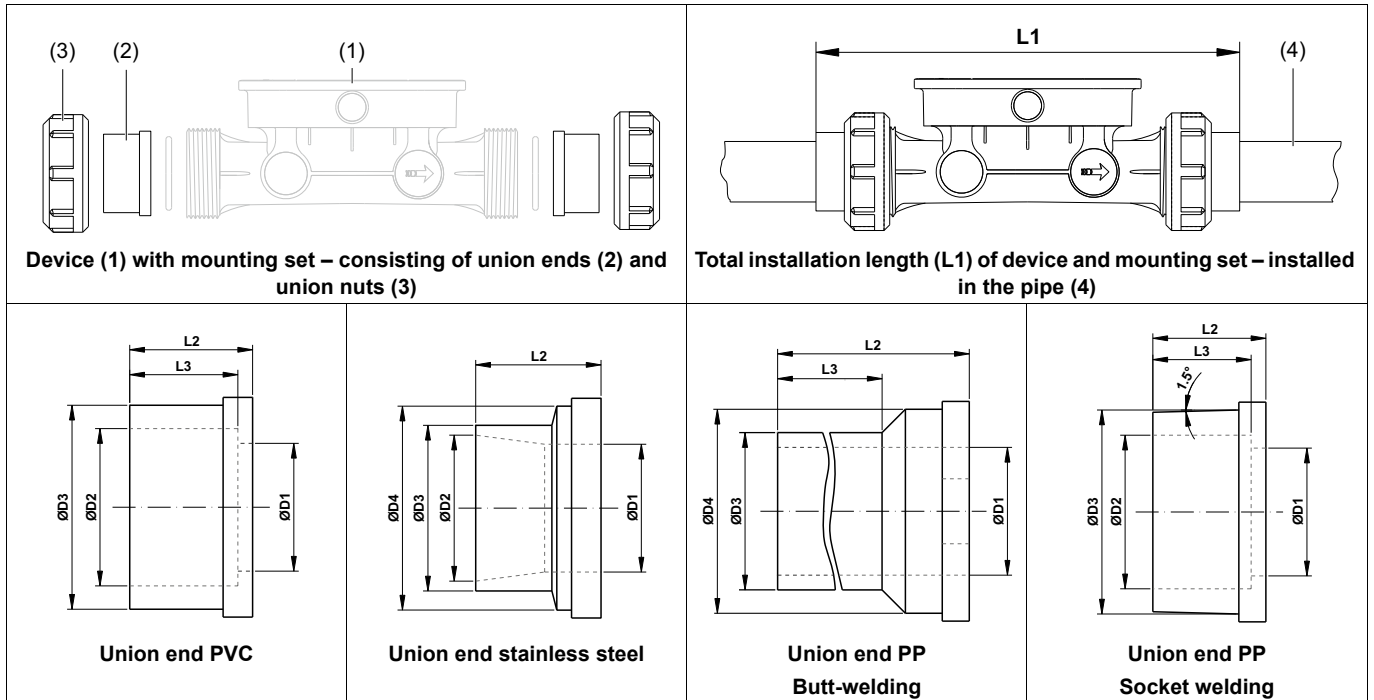
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**Accessories**

**Mounting sets**



Nominal width	ØD1 [mm]	ØD2 [mm]	ØD3 [mm]	ØD4 [mm]	L1 [mm]	L2 [mm]	L3 [mm]
<b>Union end PVC</b>							
DN 15 to DN 10	10.5	16	23.5	27.5	203	24	16
DN 15	15	20	27.5	-	198	19	16
DN 20	22	25	36	-	209	22	19
DN 25	26	32	41.5	-	225	25	22
DN 32	33	40	53	-	243	29	26
<b>Union end stainless steel</b>							
DN 15 to DN 10	10.5	16	23.5	27.5	203	24	16
DN 15	15	17.3	21.3	27.5	203	21.5	-
DN 20	22	22.9	26.9	36	210	22.5	-
DN 25	26	29.7	33.7	41.5	226	25.5	-
DN 32	33	38.4	42.4	53	236	25.5	-
<b>Union end PP butt-welding</b>							
DN 15	15/16.2	-	20	27.5	266	53	37.75
DN 20	19.8	-	25	36	277.8	56.4	38.6
DN 25	26	-	32	41.5	293	59	41.25
DN 32	32.6	-	40	53	310.6	62.8	41.8
<b>Union end PP socket-welding</b>							
DN 15	17	19.35	27.5	-	198	19	16
DN 20	21	24.3	36	-	207	21	18
DN 25	26	31.25	41.5	-	221	23	20
DN 32	33	39.2	53	-	235	25	22



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## Installation notes

The installation instructions in the data sheet provide preliminary information on installing the device.

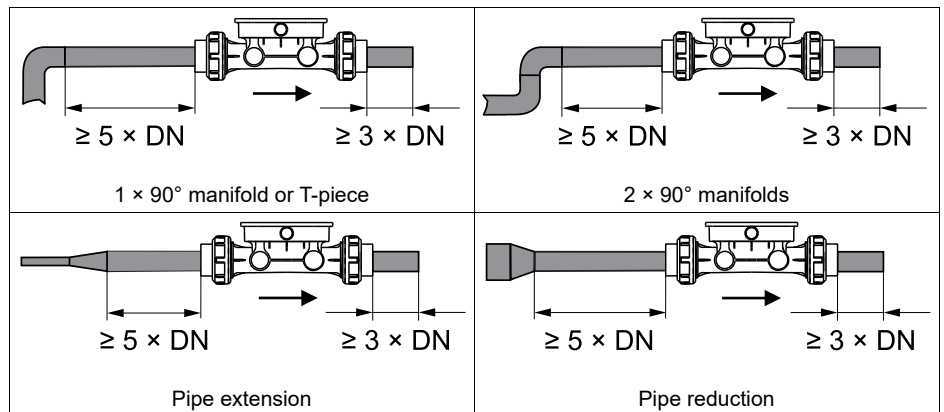
**For the mechanical connection, only use the installation instructions or the operating manual.**

### Inlet and outlet sections

To ensure measurement accuracy, longer inlet and outlet distances may be required depending on the application.

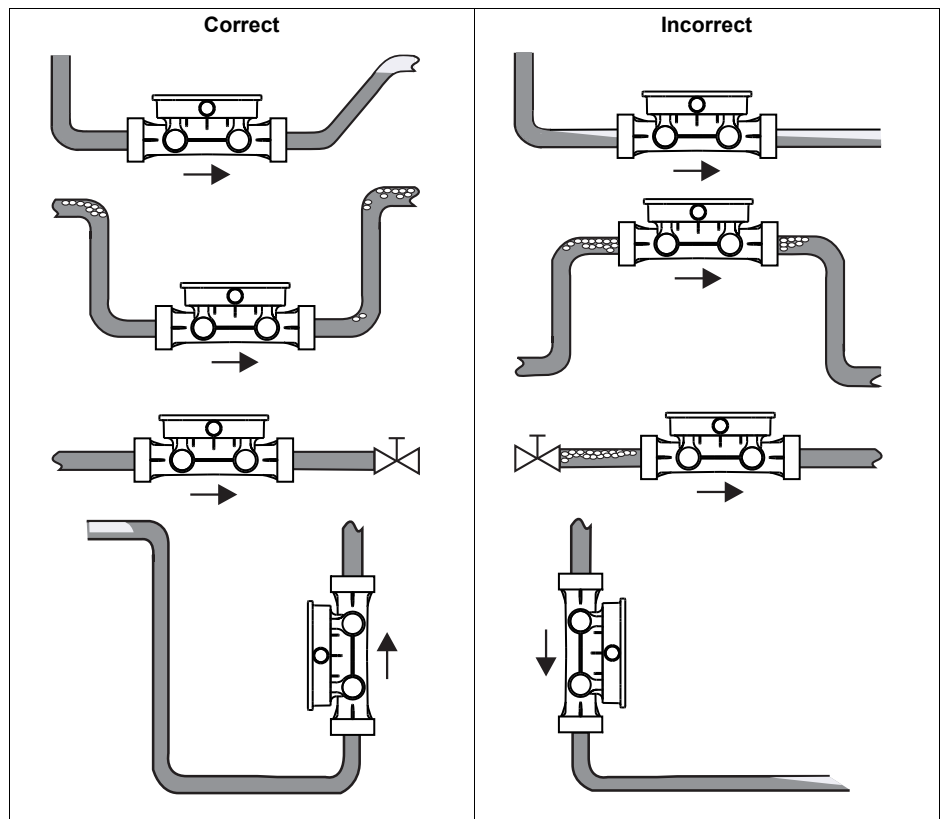
DN = Nominal pipe width

→ = Flow direction



### Installation position

→ = Flow direction



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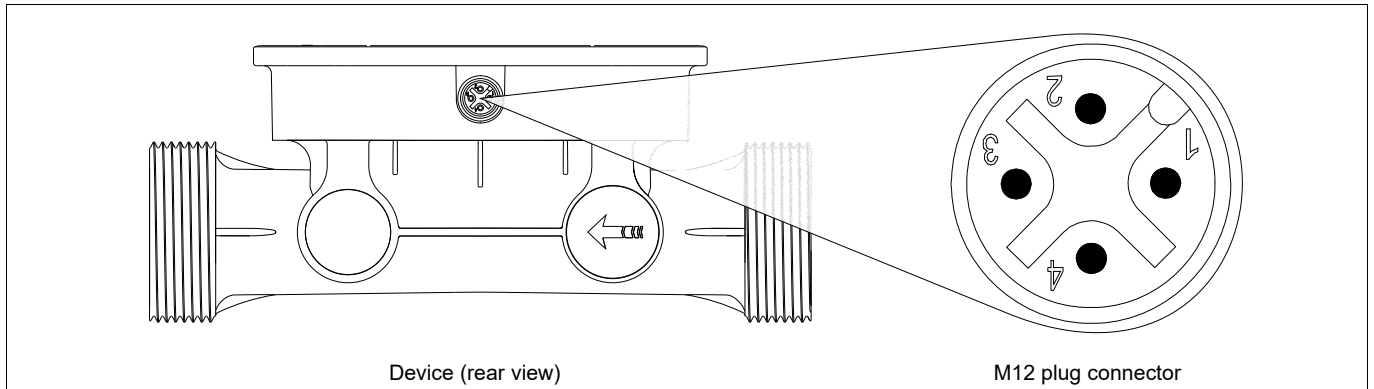
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## Connection elements

The connection elements in the data sheet provide information on product selection.

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



## Terminal assignment

### M12 plug connection

Designation	Description	Assignment		
Analog output, digital output	DC 24 V	1 BN (Brown)		
	Analog output	2 WH (White)		
	GND	3 BU (Blue)		
	Digital output	4 BK (Black)		

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## Order details

	<b>(1) Basic type</b>
406050	JUMO flowTRANS US W01
	<b>(2) Basic type extension</b>
000	None
	<b>(3) Nominal width</b>
0012	DN 15 (1/2") with Low-flow-calibration
0015	DN 15 (1/2")
0020	DN 20 (3/4")
0025	DN 25 (1")
0032	DN 32 (1 1/4")
	<b>(4) Material sensor</b>
121	PPSU
	<b>(5) Process connection</b>
32	External thread ISO 228
	<b>(6) Mat. seals sensor</b>
58	EPDM
	<b>(7) Signal inputs and outputs</b>
12	Pulse, 4 to 20 mA
	<b>(8) Extra codes</b>
000	None
100	Customer-specific configuration (specifications in plain text)

Order code                    **(1)**                    **(2)**                    **(3)**                    **(4)**                    **(5)**                    **(6)**                    **(7)**                    **(8)**  
 Order example                406050                /                000                -                0015                -                121                -                32                -                58                -                12                /                000

## Scope of delivery

Device in the ordered version
Calibration certificate
Operating manual
2 O-rings (seal for the process connection) in the ordered version

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## Accessories

### Without UL approval

Designation	Part no.
Mounting set PVC, DN 10 with PP nut	00750869
Mounting set PVC, DN 15 with PP nut	00750871
Mounting set PVC, DN 20 with PP nut	00750872
Mounting set PVC, DN 25 with PP nut	00750874
Mounting set PVC, DN 32 with PP nut	00750876
Mounting set PP, socket welding DN 15	00750888
Mounting set PP, socket welding DN 20	00750890
Mounting set PP, socket welding DN 25	00750927
Mounting set PP, socket welding DN 32	00750926
Mounting set PP, butt welding DN 15	00750878
Mounting set PP, butt welding DN 20	00750881
Mounting set PP, butt welding DN 25	00750884
Mounting set PP, butt welding DN 32	00750887
Mounting set stainless steel, DN 10 with PP nut	00750924
Mounting set stainless steel, DN 15 with PP nut	00750923
Mounting set stainless steel, DN 20 with PP nut	00750920
Mounting set stainless steel, DN 25 with PP nut	00750919
Mounting set stainless steel, DN 32 with PP nut	00750918
Line socket, 4-pole, M12 × 1, straight, length 2 m	00404585
Line socket, 4-pole, M12 × 1, angled, length 2 m	00409334

### Further information and downloads



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