

JUMO dTRANS p20

Process pressure transmitter
Type 403025



B 403025.0
Operating Instructions



**Danger:**

Failure of the pressure transmitter or an instrument attached to it could possibly lead to dangerous malfunctions! Suitable preventive measures must be in place to prevent this from happening.

**Note:**

Please read these Operating Instructions before placing the instrument in operation. Keep the Operating Instructions in a place which is accessible to all users at all times.

All necessary settings are described in this manual. If any difficulties should nevertheless arise during start-up, please do not manipulate the unit in any way. You could endanger your rights under the instrument warranty!

Please contact the nearest subsidiary or the head office in such a case.

For technical questions**Service hotline:**

Phone: +49-6 61-60 03-3 00 or +49-6 61-60 03-6 53

Fax: +49-6 61-60 03-88 13 00 or +49-6 61- 60 03-88 16 53

E-mail: service@jumo.net

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1.1 Warning signs



Danger

Failure to follow these instructions or failure to follow them precisely may result in **injury!**



Caution

Failure to follow these instructions or failure to follow them precisely may result in **damage to instruments or data!**

1.2 Reference signs



Note

This is used to draw **special attention** to something.

abc¹

Footnote

Footnotes are remarks that **refer to specific points** in the text. Footnotes consist of two parts:

Marking in the text and the footnote text.

The markers in the text are arranged as sequential superscript numbers.

*

Action instruction

This sign indicates that an **action to be performed** is described.

The individual steps are marked by this asterisk.

Example:

* Loosen Phillips-head screws.

* Press key.

2 General information

2.1 Scope of application

General information

The JUMO dTRANS p20 pressure transmitter measures the pressure of non-corrosive and corrosive gases, vapors and liquids. The output signal is an impressed DC current (4 to 20 mA) which is proportional to the input pressure.

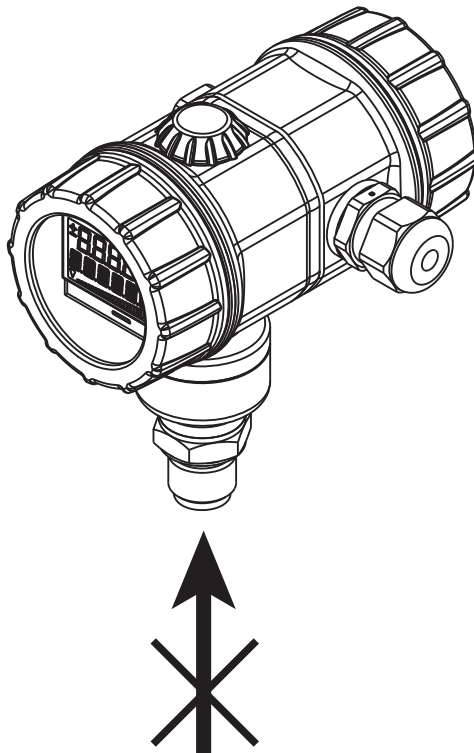
Use in "Ex areas"

The pressure transmitter in the **Ex ia** version is approved for use in "Ex areas" if the nameplate on the instrument so indicates.




Caution

The diaphragms of the process connection must not be damaged!
Do not insert any objects into the hole of the pressure connections!



2.2 Scope of delivery

Installation Instructions B 403025.0	These Operating Instructions describe the assembly, the installation and the operation of the JUMO dTRANS p20 pressure transmitter.
Calibration certificate	<p>The pressure transmitter comes with a calibration certificate and a SETUP printout. These documents contain information about the set parameters or measured parameters for the relevant pressure transmitter.</p> <p>If the calibration certificate is lost, or if you need another copy, it can be ordered from JUMO. Please indicate the F number of the pressure transmitter (manufacturing number, see the nameplate).</p> <p>Your supplier's address can be found on the back of the manual.</p>
Setup program	<p>The setup program is available as an accessory: Sales No. 40/00537577.</p> <p>The setup program provides a convenient way to check and adjust all parameters of the pressure transmitter. It also includes additional functions such as:</p> <ul style="list-style-type: none">- Recording of measurements- Graphical presentation of temperature and pressure- Extensive diagnostic messages- Display of complete order code and instrument configuration (for reordering). <p>The setup program accesses the pressure transmitter via</p> <ul style="list-style-type: none">- the JUMO interface (standard)- or HART[®] interface (optional)
	<hr/> <p> Danger</p> <p>The JUMO interface must not be used for instruments with ATEX Ex ia explosion protection!</p> <p>These instruments must only be operated with the rotary knob or via the HART[®] interface!</p> <hr/>
PC interface cable	<p>Available as an accessory: PC interface cable including USB/TTL converter and two adapters (USB connecting cable) 40/00456352.</p> <p>The PC interface cable can be used to connect the pressure transmitter to the USB interface of a PC via the JUMO interface.</p>
HART[®] modem	<p>Available as an accessory: HART[®] modem for USB, sales No.: 40/00443447.</p> <p>The HART[®] modem can be used to connect the pressure transmitter with the USB[®] interface of a PC via the HART[®] interface.</p>
Supply isolator	<p>Available as an accessory: Supply isolator for Ex applications, HART[®]-enabled, sales No. 40/00389710.</p> <p>Pressure transmitter with ATEX Ex ia explosion must be connected for use in Ex areas by means of a supply isolator!</p>

2 General information

Remote seals

Available as an accessory: See data sheets 409770 to 409786.

Remote seals are used for adaptation to special applications, when conventional pressure connections cannot be used.



Caution

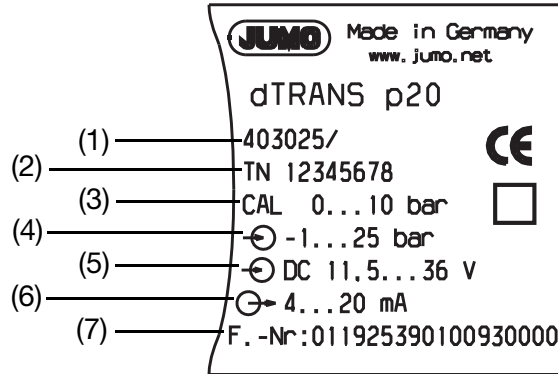
Remote seals are installed in the factory and must not be separated from the pressure transmitter!

3 Instrument identification

3.1 Nameplate

Non-Ex, Enclosure

Identification on the enclosure of a pressure transmitter that is **not** suitable for use in hazardous (Ex) areas.



- | | |
|---|--------------------------|
| (1) Type | (5) Power supply |
| (2) Part number | (6) Output signal |
| (3) Factory setting for measurement range | (7) Manufacturing number |
| (4) Nominal measuring range | |

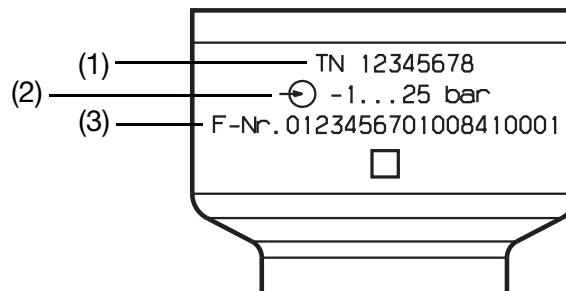
Date of manufacture

The date of manufacture (year and calendar week) of the instrument is encoded in the manufacturing number.

The numbers 12 to 15 identify the year of manufacture (here 09 for 2009) and the calendar week (here 30).

Sensor

Identification on the sensor of a pressure transmitter.

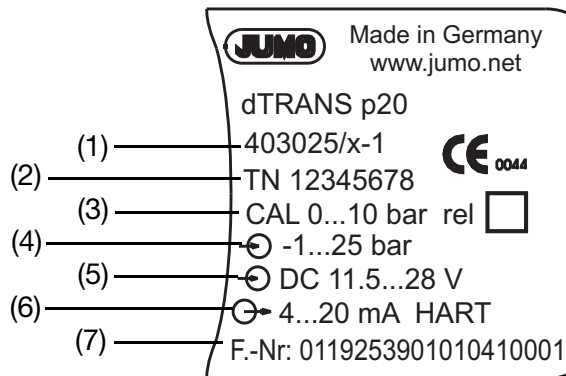


- | |
|-----------------------------|
| (1) Part number |
| (2) Nominal measuring range |
| (3) Manufacturing number |

3 Instrument identification

**Ex,
Enclosure 1**

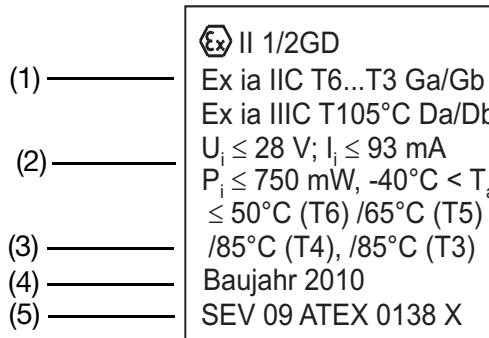
First identification on the enclosure of a pressure transmitter that is suitable for use in hazardous (Ex) areas.



- | | |
|---|--------------------------|
| (1) Type | (5) Power supply |
| (2) Part number | (6) Output signal |
| (3) Factory setting for measurement range | (7) Manufacturing number |
| (4) Nominal measuring range | |

**Date of
manufacture**

The date of manufacture (year and calendar week) of the instrument is encoded in the manufacturing number. Digits 12 to 15 identify the year of manufacture (here 10 for 2010) and the calendar week (here 41).



- | | |
|--------------------------|--------------------------|
| (1) Ex protection | (4) Year of construction |
| (2) Power supply | (5) Test number |
| (3) Ambient temperatures | |

3.2 Type description

	(1) Basic type
403025	dTRANS p20 process pressure transmitter
	(2) Basic type extension
0	None
9	Special design
	(3) Explosion protection
0	None
1	ATEX Ex ia
	(4) Enclosure
1	Short, stainless steel, with M12 connection
2	Long, stainless steel, with cable gland
3	Precision casting, with cable gland
	(5) Electrical connection
36	Round plug, M12x1
82	Cable gland, plastic ¹
93	Cable gland, metal
	(6) Cover material
20	Stainless steel
85	Plastic ¹
	(7) Display
0	Without display
1	With display
	(8) Operation
0	Without control knob
1	With control knob
	(9) Nominal measuring range of input
450	-600 to +600 mbar relative pressure
513	-1 to +4 bar relative pressure
514	-1 to +25 bar relative pressure
515	-1 to +100 bar relative pressure
487	0 to +0.6 bar absolute pressure
491	0 to +4 bar absolute pressure
495	0 to +25 bar absolute pressure
507	0 to +100 bar absolute pressure
	(10) Output
405	4 to 20mA, two wires
410	4 to 20mA, 2 wires with HART®
	(11) Process connection
504	G 1/2 to EN 837
512	1/2 - 14 NPT to DIN 837
564	1/2- 14 NPT internal
571	G 3/4 front-flush to DIN 837 ²
604	Tapered adapter with groove union nut DN25 to DIN 11 851 ²

3 Instrument identification

- 606 Tapered adapter with groove union nut DN40 to DIN 11 851 ²
- 613 Clamp DN25 to DIN 32 676 ²
- 616 Clamp DN50 to DIN 32 676 ²
- 997 JUMO PEKA ³
- 998 Suitable for connecting to a diaphragm seal

(12) Temperature of medium

- 1 Up to 120°C ⁴
- 2 Up to 200°C ⁴

(13) Process connection material

- 20 Stainless steel
- 82 Hastelloy® C276, mat. no.: 2.4819
- 99 Special process connection material

(14) Measuring system filling medium

- 0 None
- 1 Silicon oil

(15) Extra codes

- 000 None
- 100 Customized setting ⁶
- 374 Material inspection certificate 3.1
- 452 Parts in contact with the medium are electropolished
- 591 Throttle in pressure channel
- 624 free of oil and grease
- 630 Enlarged pressure channel
- 634 With TAG number (specify TAG no. when ordering)
- 681 extended permissible ambient temperature
- 681 Partially sealed

- ¹ Not for ATEX Ex ia.
- ² Not for nominal measuring range -1 to 100 bar relative pressure.
- ³ For suitable process connection adapters, see data sheet 409711.
- ⁴ Max. 115°C for ATEX Ex ia.
- ⁵ Max. 175°C for ATEX Ex ia.
- ⁶ Please specify required setting in plain text. Factory setting see section 4 "Technical data", page 17.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Order code	<input type="text"/>	/ <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sample order	403025	/ 0	- 0	- 2	- 82	- 85	- 1	- 1	- 514	- 405

(11)	(12)	(13)	(14)	(15)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	/ ...
504	- 1	- 20	- 1	/ 000

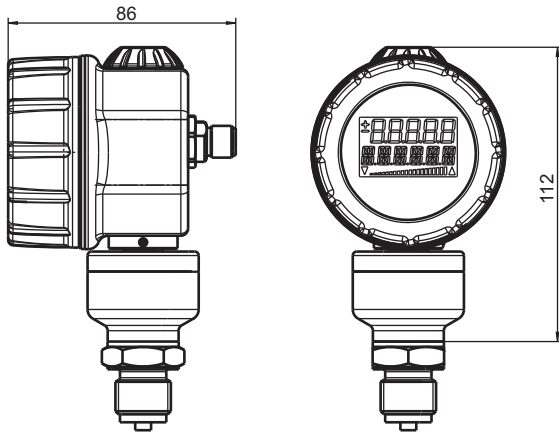
3 Instrument identification

3.3 Accessories

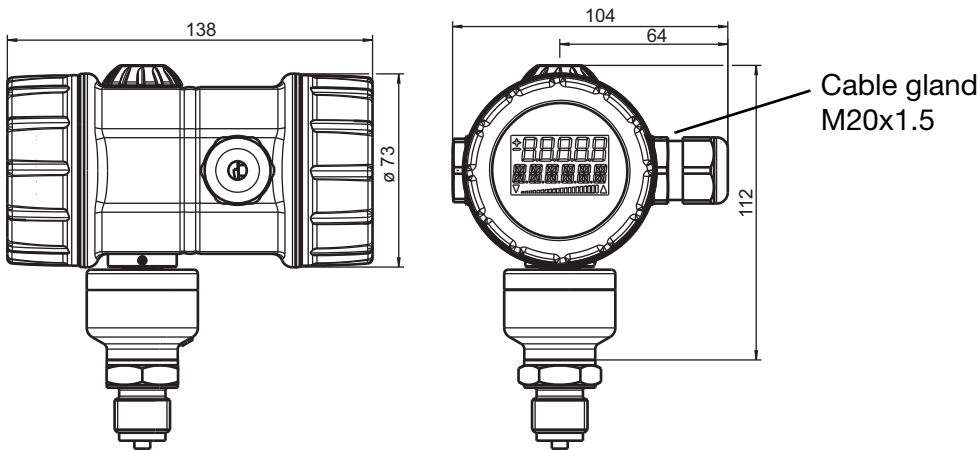
Designation	Sales No.
Setup program for the JUMO dTRANS p20 series	40/00537577
HART [®] modem for USB	40/00443447
PC interface cable including USB/TTL converter and two adapters (USB connecting cable)	40/00456352
Supply isolator for Ex applications, HART [®] -enabled, see data sheet 404757	40/00389710
4-pin cable connector (straight) M12 x 1, with 2-m PVC cable	40/00404585
4-pin angle box M12 x 1, with 2-m PVC cable	40/00409334
5-pin cable connector M 12x1, straight, without cable, for self-assembly	40/00419130
5-pin cable connector M 12x1, angled, without cable, for self-assembly	40/00419133
For 2-way valve block see data sheet 409706	
For remote seal see data sheets 409772 to 409786	

3 Instrument identification

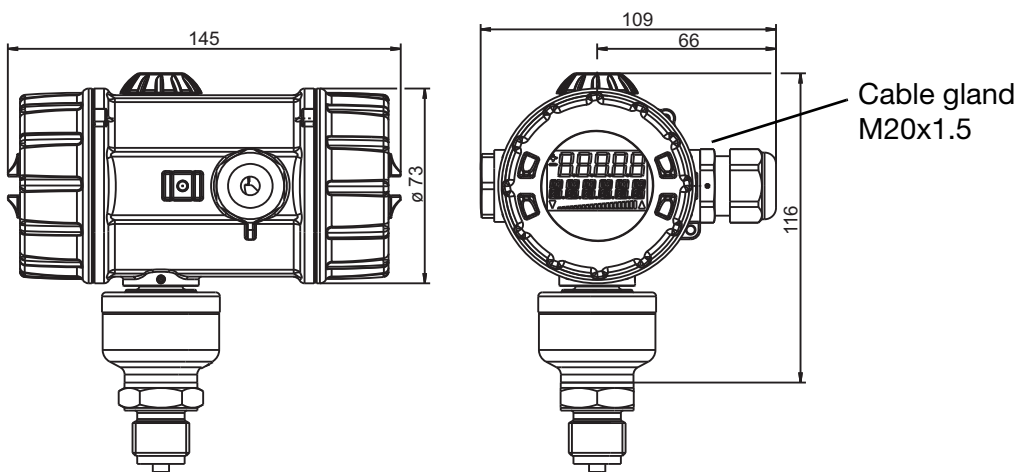
3.4 Dimensions



Type 403025/0-0-1 (short, stainless steel, with M12 connection)



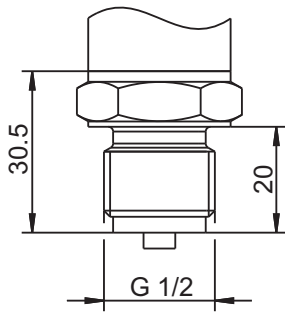
Type 403025/0-0-2 (long, stainless steel, with cable gland)



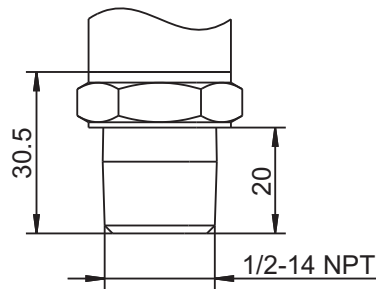
Type 403025/0-0-3 (long, precision casting, with cable gland)

3 Instrument identification

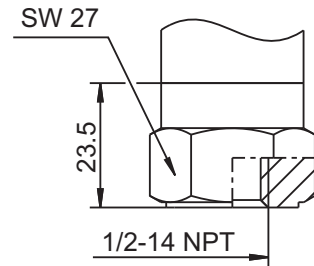
3.5 Dimensions of process connections



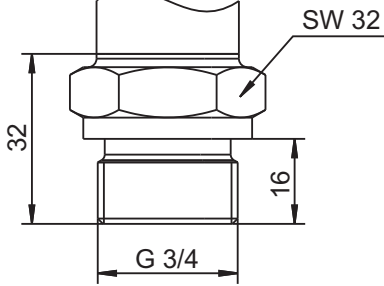
504
G 1/2



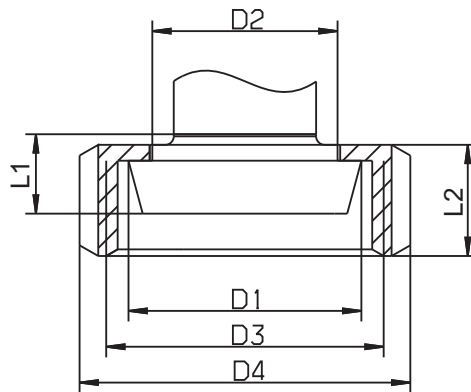
512
1/2-14 NPT



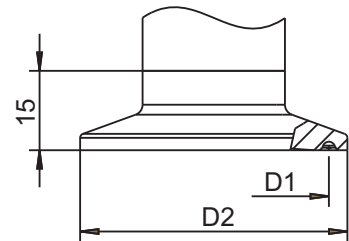
564
1/2-18 NPT internal



571
G 3/4



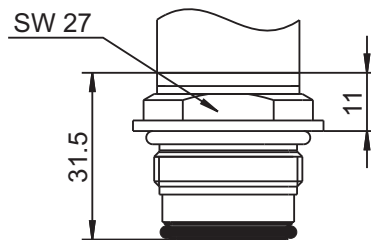
604 and 606
tapered adapter with
groove union nut
to DIN 11 851



613 and 616
Clamp
to DIN 32 676

Conn.	DN	D1	D2	D3	D4	L1	L2
604	25	ø44	ø 35	Rd 52x1/6"	ø63	15	21
606	40	ø56	ø 48	Rd 65x1/6"	ø78		

Conn.	DN	D1	D2
613	25	ø43.5	ø50.5
616	50	ø56.5	ø 64

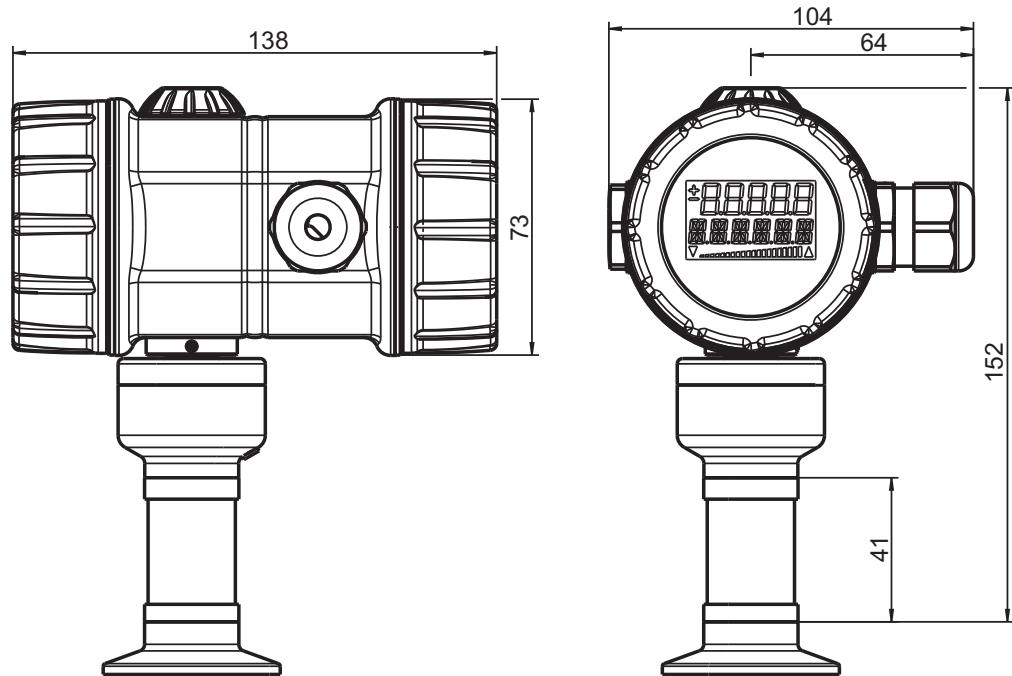


997
JUMO PEKA

3 Instrument identification

3.6 Dimensions for high-temperature versions

In pressure transmitters suitable for medium temperatures up to 200°C (medium temperature 2), the increased temperature is dissipated over an extended shaft. The overall height of all the pressure transmitters in this version increases as in the diagram below, by 41 mm.



4.1 General

Reference conditions	DIN 16086, EN 60770 and DIN IEC 770/5.3
Sensor system Pressure transfer medium for measuring system 0 filling medium for measuring system 1 filling medium Permissible load changes	Silicon sensor with stainless steel separating diaphragm Without transfer medium Silicon oil, FDA-compliant > 10 million
Location Mounting location Calibration location Location-dependent zero point offset For measuring material temperature 1 (up to 120°C) For measuring material temperature 2 (up to 200°C)	Any Device standing vertically, process connection on bottom Zero point correction possible locally or via setup ≤ 1 mbar ≤ 10 mbar
Display Alignment Size Color	LCD, two-line with bar graph Display unit can be rotated 90° at a time, enclosure can be rotated ±160° Display field 20 x 35 mm / font size 7 mm / 5 digits Black
Measurement unit display options Input pressure Measurement value Output current Sensor temperature	mH ₂ O, inH ₂ O, inHg, ftH ₂ O, mmH ₂ O, mmHg, psi, bar, mbar, kg/cm ² , kPa, Torr, MPa % or scaled with a freely adjustable measurement unit mA °C, °F
Additional display data	Minimum pressure, maximum pressure, error, overrange, underrange, operating hours, device parameters
Operation Local Setup program	With rotary knob and LCD Via interface
Interface Standard For output 410 (4 to 20 mA with HART®)	JUMO interface ¹ JUMO interface ¹ and HART® interface
Explosion protection for explosion protection 0 (none) for explosion protection 1 (ATEX Ex ia)	The instrument is not approved for use in hazardous (Ex) areas EC type examination certificate SEV 09 ATEX 0138 X II 1/2G Ex ia IIC T6 - T3 Ga/Gb II 1/2D Ex ia IIIC T105°C Da/Db The "special circumstances" can be found in chapter 4.4, 4.6 and 6.6.

¹ The JUMO interface of a pressure transmitter with explosion protection ATEX Ex ia must **not** be used! These instruments must **only** be operated with the rotary knob or via the HART® interface!

4 Technical data

4.2 Input

All measuring ranges can be overloaded to -1 bar (vacuum-proof)

Relative pressure				
Nominal measuring range	-600 to 600 mbar rel.	-1 to 4 bar rel.	-1 to 25 bar rel.	-1 to 100 bar rel.
Overload capacity	6 bar	30 bar	150 bar	300 bar
Bursting pressure	12 bar	60 bar	250 bar	400 bar

Absolute pressure				
Nominal measuring range	0 to 0.6 bar abs.	0 to 4 bar abs.	0 to 25 bar abs.	0 to 100 bar abs.
Overload capacity	6 bar	30 bar	150 bar	300 bar
Bursting pressure	12 bar	60 bar	250 bar	400 bar

4.3 Outputs

Analog output for output 405 for output 410 Step response time T63 Damping	4 to 20 mA, two wires 4 to 20 mA, 2 wires with HART® ≤ 190 ms without damping adjustable, 0 to 100 s
Burden for output 405 (4 to 20 mA) for output 410 (4 to 20 mA with HART®)	Burden ≤ (U _B -11.5 V) / 0.022 A Burden ≤ (U _B -11.5 V) / 0.022 A; also: min. 250 Ω, max. 1100 Ω;

4.4 Power supply

For version Explosion protection 0 (none) Explosion protection 1 (ATEX Ex ia and iaD)	11.5 to 36 V DC 11.5 to 28 V DC The power supply must be intrinsically safe and must not exceed the following maximum values: U _i ≤ 28 V DC I _i ≤ 93 mA P _i ≤ 750 mW
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4.5 Mechanical properties

Process connection Material Surface Process seal for process connections 512 and 571 for process connection 652 for process connection 997 (JUMO PEKA) for all other process connections	Stainless steel 316L Ra ≤ 0.8 μm FPM FPM FDA-compliant, EHEDG-approved materials: FPM, VMQ, EPDM also available, see data sheet 409711 Without seal
--	--

4 Technical data

Measurement diaphragm	
Material	Stainless steel 316L
Surface	Ra ≤ 0.8 μm
Enclosure	
Material	
for enclosure 1 (short, stainless steel)	Stainless steel 1.4404
for enclosure 2 (long, stainless steel)	Stainless steel 1.4404, VMQ
for enclosure 3 (precision casting)	Precision casting 1.4408
for cover material 20 (stainless steel)	Precision casting 1.4408, FPM seal
for cover material 85 (plastic)	PA, FPM seal
for electrical connection 36 (round plug M12x1)	Nickel-plated brass
for electrical connection 82 (cable gland, plastic)	PA
for electrical connection 93 (cable gland, metal)	Nickel-plated brass
for operation 0 (without control knob)	-
for operation 1 (with control knob)	PA
Weight	
Type 403015/0-0-1 (short enclosure)	approx. 550 g
Type 403015/0-0-2 (long enclosure)	approx. 850 g
Type 403015/0-0-3 (precision casting enclosure)	approx. 1600 g

4.6 Ambient conditions

Permissible temperatures					
Operation	Version	Category	Max. medium temperature	Environment temperature ¹	Extended Environment temperature (extra code 681) ^{1, 2}
	Standard		+120 °C	-40 to +85 °C	-50 to +85 °C
	High temperature ³		+200 °C	-40 to +85 °C	-50 to +85 °C
	II 1/2G Ex ia	T6	+60 °C	-40 to +50 °C	-50 to +50 °C
		T5	+70 °C	-40 to +65 °C	-50 to +65 °C
		T4	+115 °C	-40 to +85 °C	-50 to +85 °C
		T3 ³	+175 °C	-40 to +85 °C	-50 to +85 °C
	II 1/2D Ex ia	T105 °C	+100 °C	-40 to +60 °C	-50 to +60 °C
Storage	-40 to +85 °C				

Permissible relative humidity	
Operation	100% incl. condensation on instrument outer sleeve
Storage	90% without condensation
Permissible mechanical loading	
Fatigue strength	2 g, 10 to 2000 Hz to IEC 60068-2-6
Shock resistance	15 g for 6 ms to IEC 60068-2-27

4 Technical data

Electromagnetic compatibility Interference emission Interference immunity	To EN 61326 Class B Industry
Protection Version - Explosion protection 0 (none) - Explosion protection 1 (ATEX Ex ia)	IP67 to DIN 60529 IP66 to DIN 60529

- ¹ Restricted function below -20°C: stationary use, increased danger of broken cable, display does not function.
- ² In the range of -40 to -50°C, the cover with the instrument viewing pane must also be protected against mechanical shock and impact. For details please contact JUMO.
- ³ Only for versions with high temperature (temperature of medium 2).

4.7 Accuracy

Relative pressure				
Nominal measuring range	-600 to 600 mbar rel.	-1 to 4 bar rel.	-1 to 25 bar rel.	-1 to 100 bar rel.
Factory setting for measurement range	0 to 600 mbar	0 to 4 bar	0 to 25 bar	0 to 100 bar
Shortest span	60 mbar	0.1 bar	0.5 bar	5 bar
Turndown ratio (r)	$r \leq 20$	$r \leq 50$	$r \leq 52$	$r \leq 20$
Linearity for a linear characteristic as % of the set span	0.1% for $r \leq 10$	0.05% for $r \leq 10$		0.05% for $r \leq 10$
	$r \times 0.01\%$ for $10 \leq r \leq 20$	$r \times 0.005\%$ for $10 \leq r \leq 50$	$r \times 0.005\%$ for $10 \leq r \leq 52$	$r \times 0.005\%$ for $10 \leq r \leq 20$
Accuracy at 20 as % of the set span	0.2% for $r \leq 10$	0.1% for $r \leq 10$		0.1% for $r \leq 10$
	$r \times 0.02\%$ for $10 \leq r \leq 20$	$r \times 0.01\%$ for $10 \leq r \leq 50$	$r \times 0.01\%$ for $10 \leq r \leq 52$	$r \times 0.01\%$ for $10 \leq r \leq 20$
Accuracy at -40 to +85°C as % of the set span	0.3% for $r \leq 10$ ²	0.2% for $r \leq 10$		0.2% for $r \leq 10$
	$r \times 0.03\%$ for $10 \leq r \leq 20$ ²	$r \times 0.02\%$ for $10 \leq r \leq 50$	$r \times 0.02\%$ for $10 \leq r \leq 52$	$r \times 0.02\%$ for $10 \leq r \leq 20$
Annual long-term stability as % of nominal measuring range	0.1%/year			

- ² Only to -30°C

4 Technical data

Absolute pressure				
Nominal measuring range	0 to 0.6 bar abs.	0 to 4 bar abs.	0 to 25 bar abs.	-1 to 100 bar rel.
Factory setting for measurement range	0 to 600 mbar	0 to 4 bar	0 to 25 bar	0 to 100 bar
Shortest span	60 mbar	0.1 bar	0.5 bar	5 bar
Turndown ratio (r)	$r \leq 10$	$r \leq 40$	$r \leq 50$	$r \leq 20$
Linearity for a linear characteristic as % of the set span	0.1% for $r \leq 5$	0.05% for $r \leq 10$		0.05% for $r \leq 10$
	$r \times 0.02\%$ for $5 \leq r \leq 10$	$r \times 0.005\%$ for $10 \leq r \leq 40$	$r \times 0.005\%$ for $10 \leq r \leq 50$	$r \times 0.005\%$ for $10 \leq r \leq 20$
Accuracy at 20 as % of the set span	0.2% for $r \leq 5$	0.1% for $r \leq 10$		0.1% for $r \leq 10$
	$r \times 0.04\%$ for $5 \leq r \leq 10$	$r \times 0.01\%$ for $10 \leq r \leq 40$	$r \times 0.01\%$ for $10 \leq r \leq 50$	$r \times 0.01\%$ for $10 \leq r \leq 20$
Accuracy at -40 to +85°C as % of the set span	0.3% for $r \leq 5$ ²	0.2% for $r \leq 10$		0.2% for $r \leq 10$
	$r \times 0.06\%$ for $5 \leq r \leq 10$ ²	$r \times 0.02\%$ for $10 \leq r \leq 40$	$r \times 0.02\%$ for $10 \leq r \leq 50$	$r \times 0.02\%$ for $10 \leq r \leq 20$
Annual long-term stability as % of nominal measuring range	0.1%/year			

² Only to -30°C

4.8 Approvals/marks of conformity

Mark of conformity	Testing laboratory	Certificate/certification number	Test basis	Valid for
ATEX	electrosuisse	SEV 09 ATEX 0138 X	Directive 94/9/EG	ATEX Ex ia
EHEDG	TUM MAK	03/2006	Document No.8	Process connection 997 (JUMO PEKA)

5 Mounting

5.1 Before assembly



Danger

The system must be depressurized before assembly of the JUMO dTRANS p20 pressure transmitter!



Note

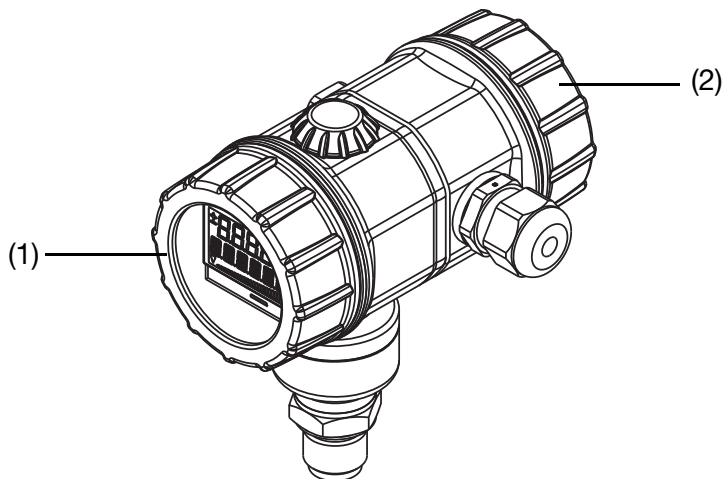
The installation location should be easily accessible, if possible in the vicinity of the measuring point and low in vibration. The permissible ambient temperature must be maintained (not any possible heat radiation).

The JUMO dTRANS p20 pressure transmitter can be installed above or under the pressure tapping point.

5.2 Unscrew the front ring or housing cover

Plastic cover
ring

The front ring (1) and rear housing cover (2) can be unscrewed.



(1) Front ring (plastic)

(2) Housing cover (plastic)

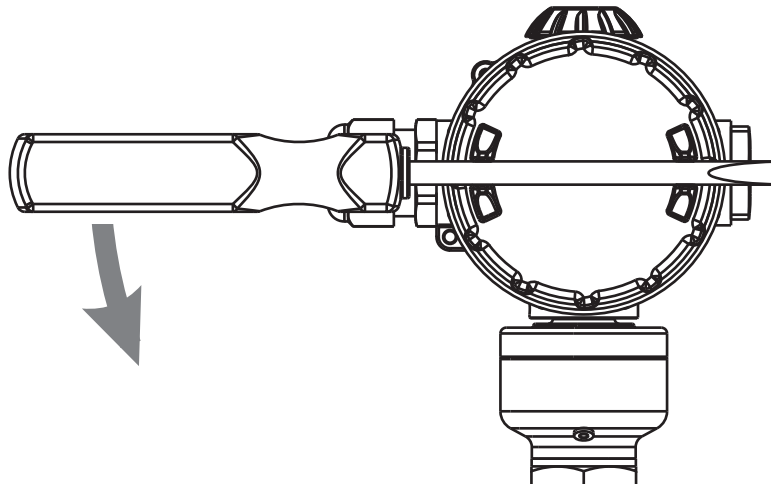
Stainless steel cover

The front ring and the back of the casing cover can be unscrewed with the help of a screwdriver e.g..



Note

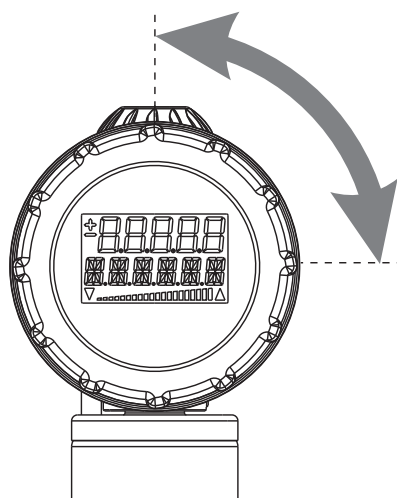
Torque by hand!



5.3 Rotating the LCD (display)

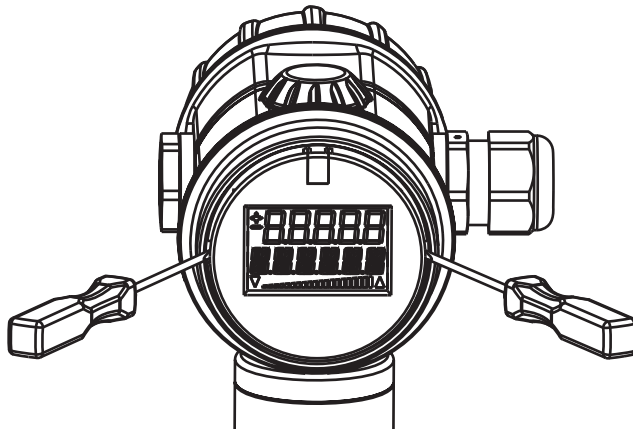
Installation position

The nominal position of the JUMO dTRANS p20 pressure transmitter is standing and vertical.



Depending on the specific features of the measuring point, the pressure transmitter can be installed in any other location. The LCD display can be rotated in 90° increments to reach the preferred installation position.

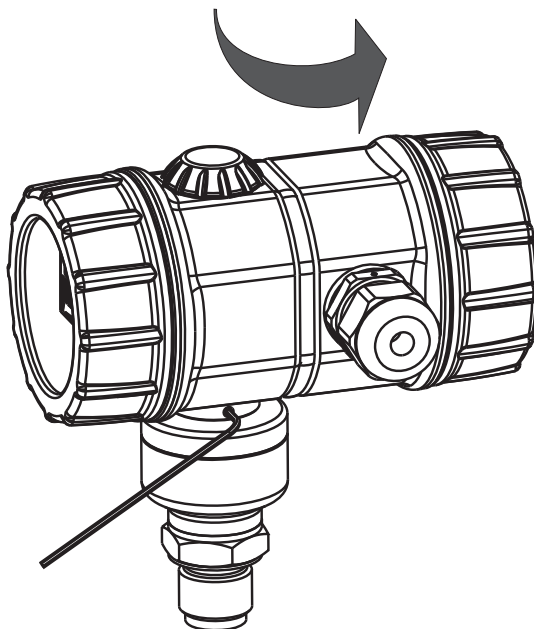
5 Mounting



- * Unscrew the front ring, See section 5.2 "Unscrew the front ring or housing cover", page 22.
 - * Pry out the electronics module with a narrow (small screwdriver).
 - * Rotate the electronics module to the preferred position (in 90° increments) and reinsert it.
 - * Screw on the front ring finger-tight.
-

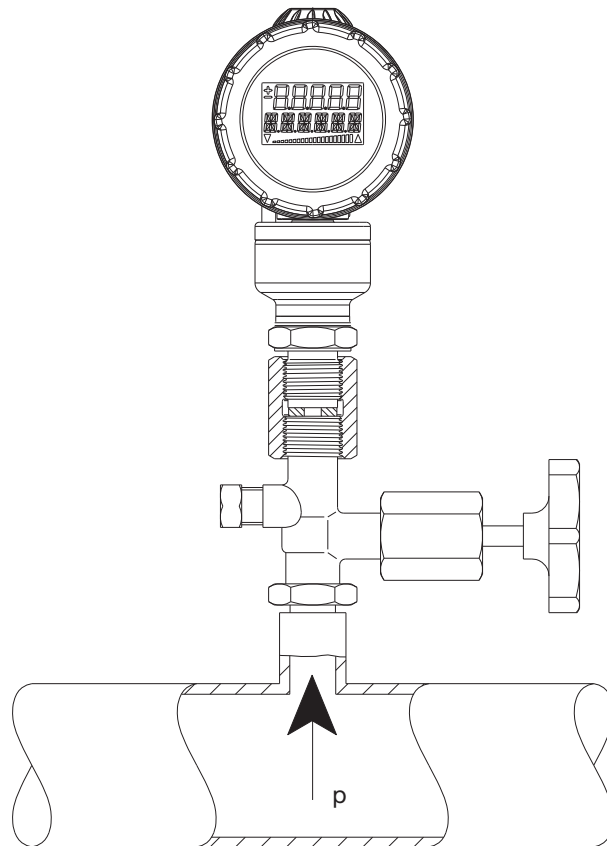
5.4 Rotating the enclosure

The enclosure can be rotated $\pm 160^\circ$



- * Loosen the threaded pin with an Allen wrench 1.5 mm (about 1/2 revolution is sufficient).
 - * Rotate the enclosure to the preferred position.
 - * Retighten the threaded pin **securely**.
-

5.5 Pressure connection



Gaskets

Operating conditions (for example material compatibility) must be considered when selecting the seal.

Tightening torques

Maximum 200 Nm.

The correct tightening torque depends on the size, material and shape of the seal that is used and the pressure connection of the pressure transmitter.

Check for leaks

If the pressure connection is made, it must be checked for leaks.



Danger

Improper operation of shut-off fittings can result in bodily injury and significant material damage!

Follow the specified order for opening and closing valves!

For **use in toxic media** the device must not be vented!

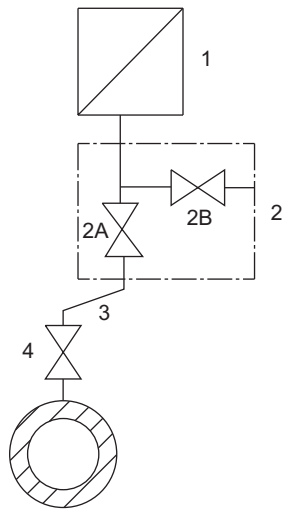


Depending on the system configuration, the following examples must be adapted to meet requirements!

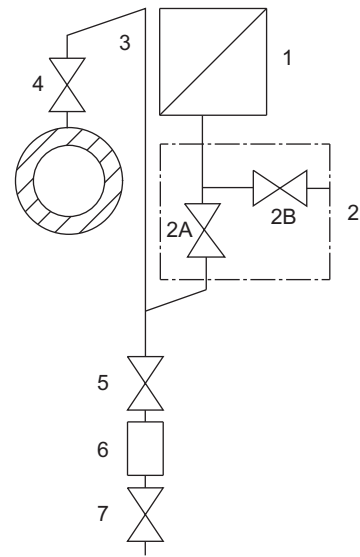
5 Mounting

5.6 Measuring the relative or absolute pressure

Gases



Transmitter **above**
the pressure tapping point
(normal arrangement)



Transmitter **below**
the pressure tapping point
(exception)

- 1 Transmitter
- 2 Shut-off fitting
2A Shut-off valve for the process
2B Shut-off valve for the test connection
- 3 Pressure line
- 4 Shut-off valve
- 5 Shut-off valve (optional)
- 6 Condensation vessel (optional)
- 7 Outlet valve

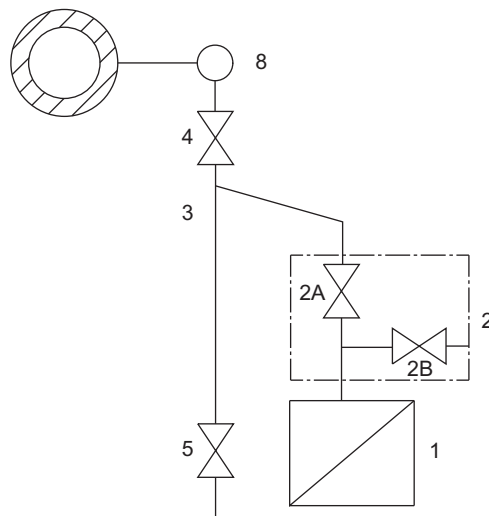
Pressurization

Starting position: All valves closed.

Activate the shut-off fittings in the following order:

- * Open the shut-off valve (4) on the pressure tapping support.
- * Open the shut-off valve (2A).
- * Check the beginning of the measurement.
- * Close the shut-off valve (2A).
- * Open the shut-off valve (2B).
- * Apply pressure corresponding to the beginning of the measurement via the test connection of the shut-off fitting (2) to the transmitter.
- * Check the initial current at the beginning of the measurement (**P2 mA**) and correct if necessary,
See section 7.3.2 "The parameter level", page 42.
- * Close the shut-off valve (2B).
- * Open the shut-off valve (2A)

Vapor



- 1 Transmitter
- 2 Shut-off fitting
2A Shut-off valve for the process
2B Shut-off valve for the test connection
- 3 Pressure line
- 4 Shut-off valve
- 5 Blow-out valve
- 8 Level container

Pressurization

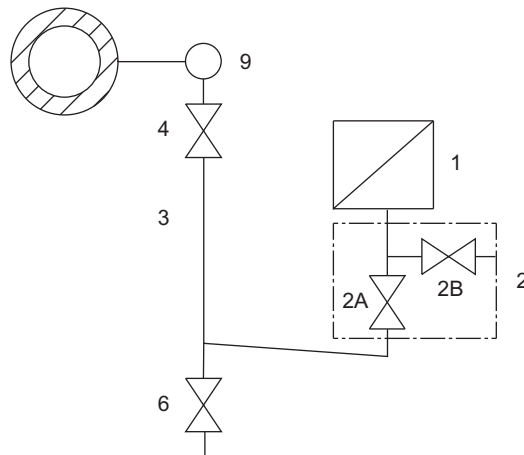
Starting position: All valves closed.

Activate the shut-off fittings in the following order:

- * Open the shut-off valve (4) on the pressure tapping support.
- * Wait until the steam in the pressure line has condensed.
- * Open the shut-off valve (2A).
- * Check the beginning of the measurement.
- * Close the shut-off valve (2A).
- * Open the shut-off valve (2B).
- * Open the outlet valve/venting valve on the transmitter (1) and let out liquid.
- * Close the outlet valve/venting valve on the transmitter (1).
- * Apply pressure corresponding to the beginning of the measurement via the test connection of the shut-off fitting (2) to the transmitter (1).
- * Check the initial current at the beginning of the measurement (**P2 mA**) and correct if necessary,
See section 7.3.2 "The parameter level", page 42.
- * Close the shut-off valve (2B).
- * Open the shut-off valve (2A).

5 Mounting

Liquids



- 1 Transmitter
- 2 Shut-off fitting
2A Shut-off valve for the process
2B Shut-off valve for the test connection
- 3 Pressure line
- 4 Shut-off valve
- 5 Blow-out valve

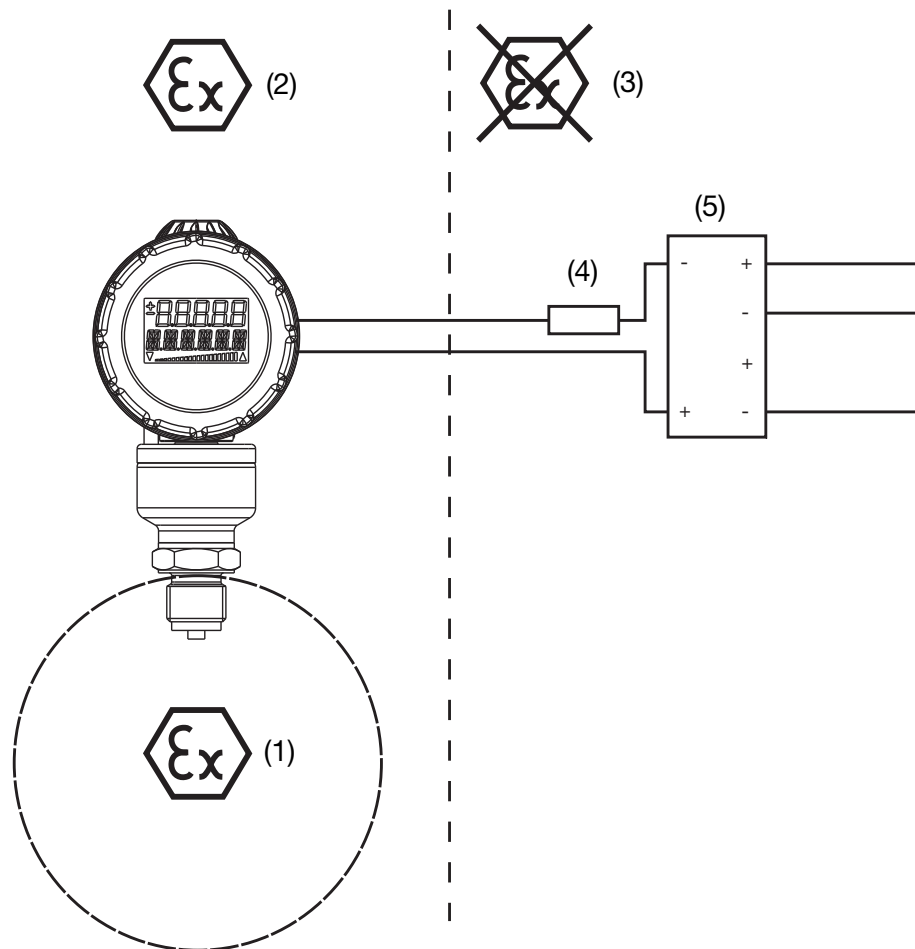
Pressurization

Starting position: All valves closed.

Activate the shut-off fittings in the following order:

- * Open the shut-off valve (4) on the pressure tapping support.
 - * Open the shut-off valve (2A).
 - * Check the beginning of the measurement.
 - * Close the shut-off valve (2A).
 - * Open the shut-off valve (2B).
 - * Open the outlet valve/venting valve on the transmitter (1) and let out liquid.
 - * Close the outlet valve/venting valve on the transmitter (1).
 - * Apply pressure corresponding to the beginning of the measurement via the test connection of the shut-off fitting (2) to the transmitter (1).
 - * Check the initial current at the beginning of the measurement (**P2 mA**) and correct if necessary,
See section 7.3.2 "The parameter level", page 42.
 - * Close the shut-off valve (2B).
 - * Open the shut-off valve (2A).
-

5.7 Assembly in the explosion area



- (1) Hazardous (Ex) area Zone 0 / 20
- (2) Hazardous (Ex) area Zone 1 / 21
- (3) Non-hazardous area
- (4) Burden (optional for HART[®] interface).
- (5) Power supply device with isolating converter for connecting explosion-protected transmitters

6 Installation

6.1 Installation instructions



Danger

The electrical connection must only be performed by qualified personnel!

Ground the instrument!

- If contact with live parts is possible when working on the device, it must be completely disconnected from the electrical supply.
 - Electromagnetic compatibility meets the requirements of EN 61326,
 - For connection to instruments with Ex approval see "Electrical connection in Ex areas", page 36!
 - Apart from faulty installation, incorrect settings on the instrument may also affect the proper functioning of the subsequent process or lead to damage. You should therefore always provide safety equipment that is independent of the instrument and it should only be possible for qualified personnel to make settings.
-

Conductor cross-sections and ferrules

	Permissible cross-section
Without ferrule (for rigid cable only)	0.2 to 1.5 mm ² AWG 24 to 16
With ferrule (for rigid or flexible cable)	0.25 to 0.75 mm ²

6.2 Instrument with cable gland

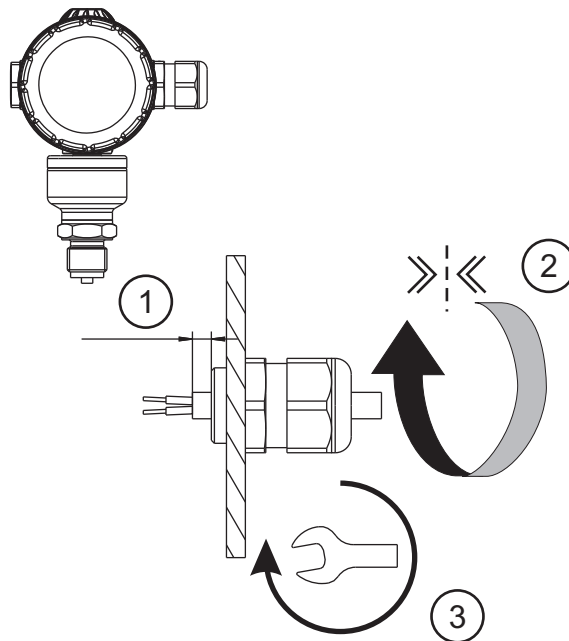
General information



Danger

For connection to instruments in Ex areas see "Electrical connection in Ex areas", page 36!

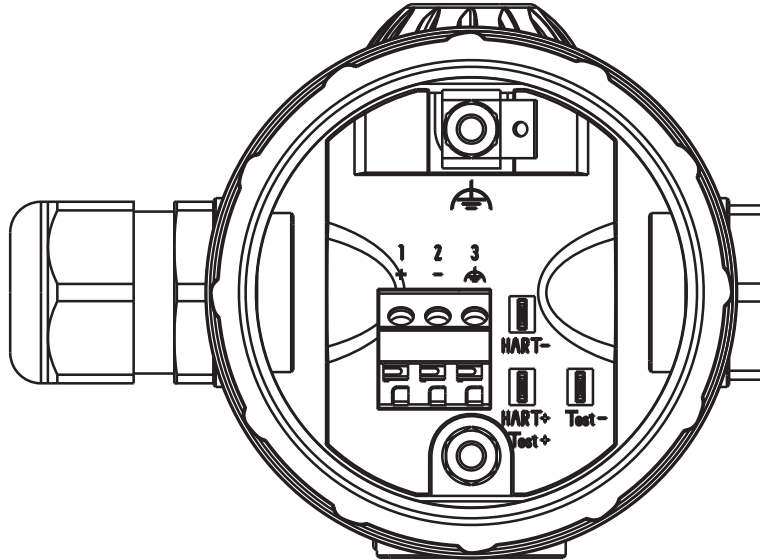
- Permissible cable diameter for instruments with cable gland made of:
Plastic 6 to 12 mm
Metal 9 to 13 mm
- Max. wire cross-section 1.5mm²
- Lay signal lines separate from cables with voltages of > 60 V
- Use a shielded cable with twisted wires
- Avoid the vicinity of large electrical systems
- The full specification as per HART[®] Version 5.1, will only be achieved with a shielded cable.



- (1) The connecting cable must extend at least 5 mm into the enclosure
- (2) Tighten the screw fitting by hand until you encounter resistance
- (3) Tighten the screw connection with a wrench
plastic: 4.5 Nm appr.
metal: 8 Nm appr.

6 Installation

- Connection**
- * Unscrew the housing cover from behind
see chapter 5.2 "Unscrew the front ring or housing cover", page 22.
 - * To connect the connecting cables, see the following illustration.

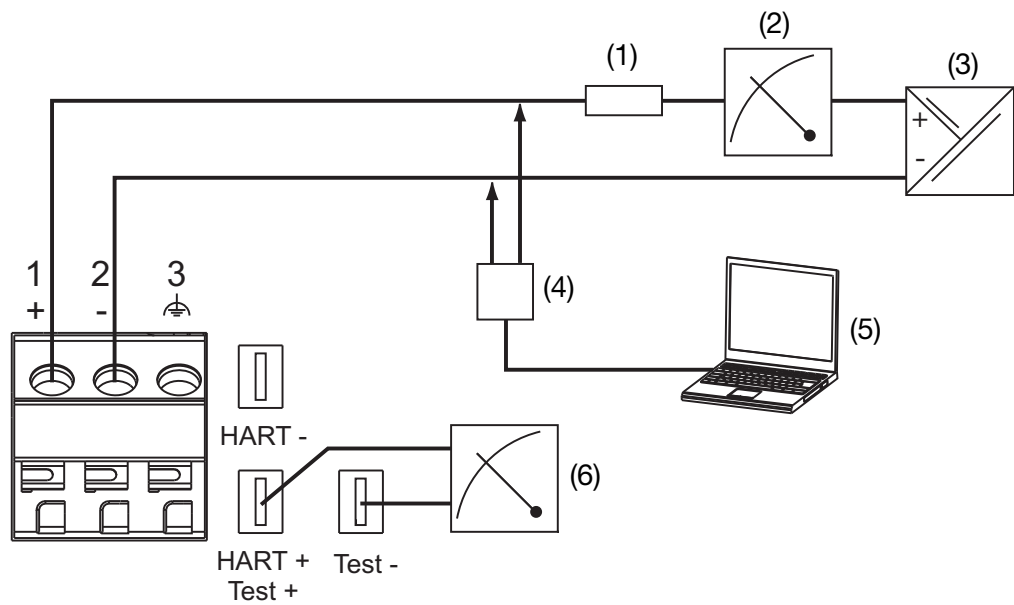


Pin configuration

Connection			Pin configuration
Power supply for non Ex version for Ex version	11.5 to 36 V DC 11.5 to 28 V DC	+ -	1 L+ 2 L-
Output 4 to 20 mA two wire Impressed current 4 to 20 mA in power supply		+ -	1 L+ 2 L-
Current output test connection Inherent resistance of ammeter $\leq 10 \Omega$			TEST + TEST -
HART [®] test connection The burden must be present!			HART + HART -
Functional ground ¹			3

¹ The device can be grounded at terminal 3 of the connector block, or by using the internal ground clamp.

Operation and test



- (1) Total burden: $\text{Burden} \leq (\text{UB} - 11.5 \text{ V}) / 0.022 \text{ A}$;
for HART[®] in addition: min. 250 Ω , max. 1100 Ω
- (2) Display or recording instrument, controller, PLC, etc.
- (3) Power supply:
for **non** Ex version 11.5 to 36 V DC
for Ex version 11.5 to 28 V DC
- (4) HART[®] modem
- (5) PC or Notebook
- (6) Inherent resistance of ammeter $\leq 10 \Omega$

6 Installation

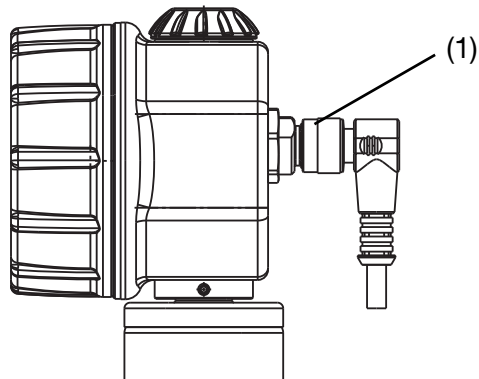
6.3 Instrument with M12 connector



Danger

For connection of the device in an Ex area see "Electrical connection in Ex areas", page 36!

Connect the device to ground using pin 4 of the device connector see "Pin configuration", page 35!



A suitable connection is provided by a

- 4-pin cable socket (straight) M12 x 1 with 2-m PVC cable
Sales No.: 40/00404585 or a
- 4-pin angle box M12 x 1 with 2-m PVC cable
Sales No.: 40/00409334.
- 5-pole terminal box M12 x 1, straight, no cable, assembly by customer
Sales No.: 40/00419130
- 5-pole terminal box M12 x 1, angled, no cable, assembly by customer
Sales No.: 40/00419133


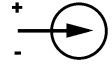


For pin configuration see below.

General information

- Lay signal lines separate from cables with voltages of > 60 V
 - Use a shielded cable with twisted wires
 - Avoid the vicinity of large electrical systems
 - The full specification as per HART[®] Version 5.1, will only be achieved with a shielded cable.
-

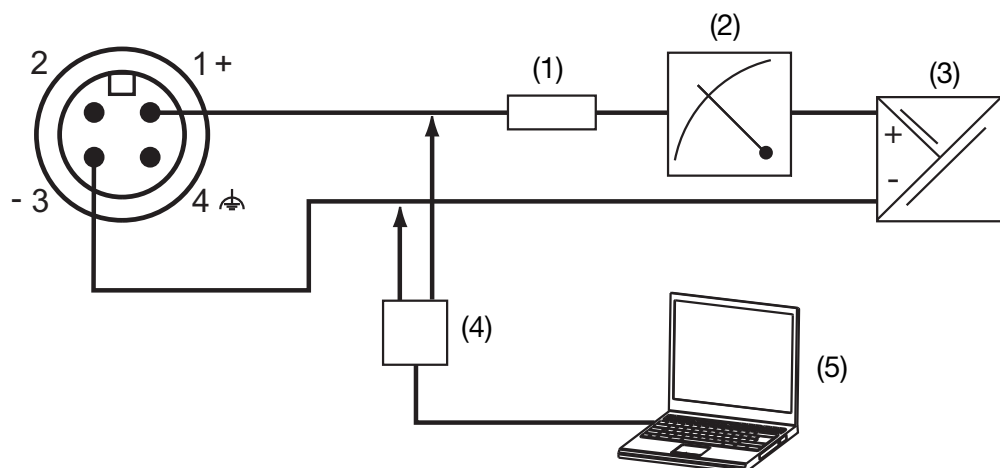
6 Installation

Pin configuration

Connection			Pin configuration	Color assignment ¹
				
Power supply for non Ex version for Ex version	11.5 to 36 V DC 11.5 to 28 V DC		1 L+ 3 L-	Brown Blue
Output 4 to 20 mA two wires Impressed current 4 to 20 mA in power supply			1 + 3 -	Brown Blue
Functional ground			4	Black
NC			2	White

¹ The following color assignment applies only to A-coded standard cables!

Operation



- (1) Total burden $\leq (UB - 11.5 \text{ V}) / 0.022 \text{ A}$;
for HART[®] in addition min. 250 Ω , max. 1100 Ω
- (2) Display or recording instrument, controller, PLC, etc.
- (3) Power supply
for **non** Ex version 11.5 to 36 V DC
for Ex version 11.5 to 28 V DC
- (4) HART[®] modem
- (5) PC or Notebook

6 Installation

6.4 Electrical connection in Ex areas

General information

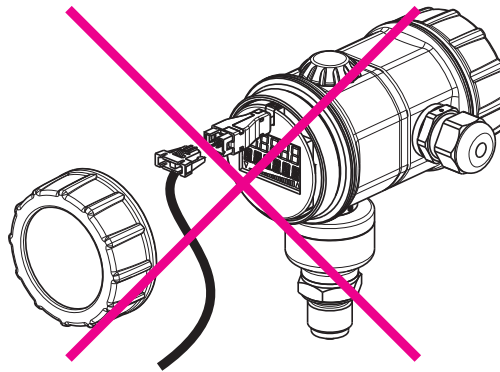
Applicable requirements must be followed for the electrical connection, especially in a potentially explosive atmosphere:

- Regulation concerning electrical systems in areas with an explosion hazard (Ex V)
- Determination for project planning, selecting and setting up electrical systems in areas with an explosion hazard (IEC 60079-14:2007)
- EC type examination certificate
- Only certified measuring instruments may be used in intrinsically safe circuits!
- The intrinsically safe circuit must be limited to overvoltage category II as defined in IEC 60664-1 and the power of the circuit follows only out of a certified and intrinsically safe power source with a safety protection "ia".



Danger

Only the HART[®] modem may be used in explosion-protected areas!
The JUMO interface must **not** be used!



The power supply must be intrinsically safe and must not exceed the following maximum values:

U_i: DC 28 V

I_i: 93 mA

P_i: 750 mW



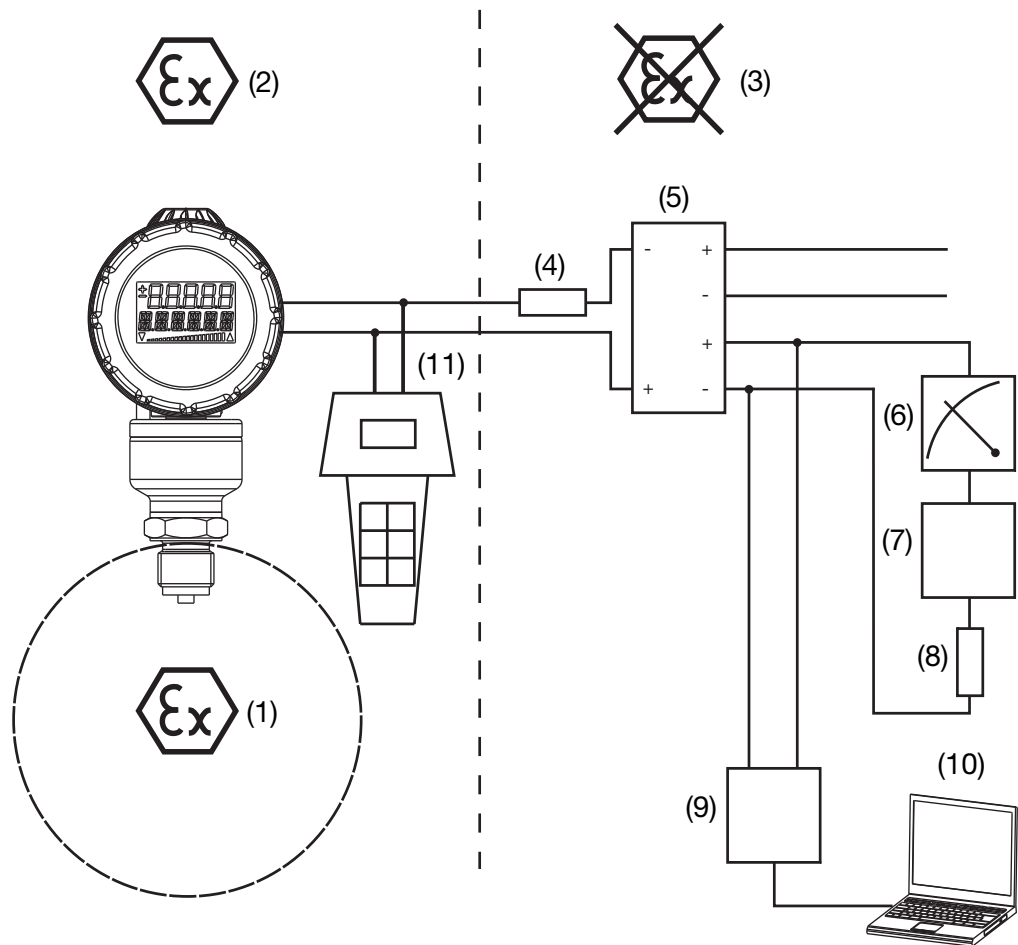
Note

Connecting the HART[®] communicator or HART[®] modem is optional.

To ensure error-free communication, a minimum burden must be present on the signal circuit; see preceding pages.

When supply isolators are used, the burden is usually already integrated.

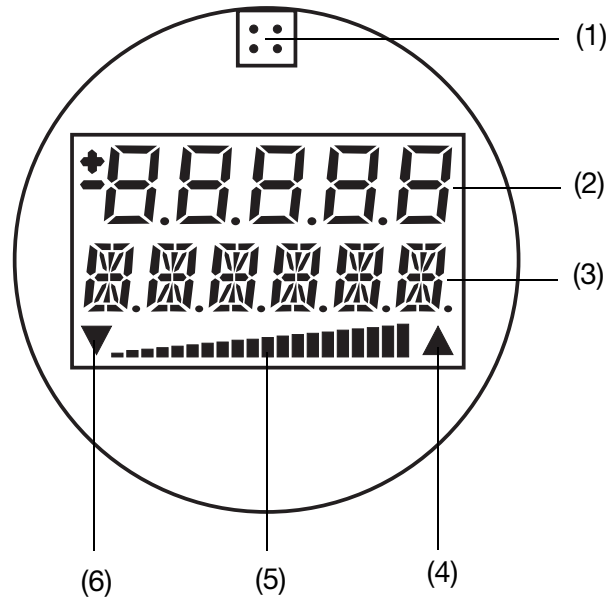
6.4.1 Connection diagram "EX"



- (1) Area with explosion hazard Zone 0 / 20
- (2) Hazardous (Ex) area Zone 1 / 21
- (3) Non-hazardous area
- (4) Burden for HART[®] $\leq (UB - 11.5 \text{ V}) / 0.022 \text{ A}$ in addition
min. 250 Ω , max. 1100 Ω .
The current limiting resistor integrated into the power supply device must be included in the calculations in this case.
- (5) Power supply device with isolating converter for connecting explosion-protected transmitters
- (6) Display or recording instrument, controller, PLC, etc.
- (7) Additional instruments
- (8) Burden for HART[®] min. 250 Ω , max. 1100 Ω .
The current limiting resistor integrated into the power supply device must be included in the calculations in this case.
- (9) HART[®] modem
- (10) PC or Notebook
- (11) HART[®] communicator intrinsically safe

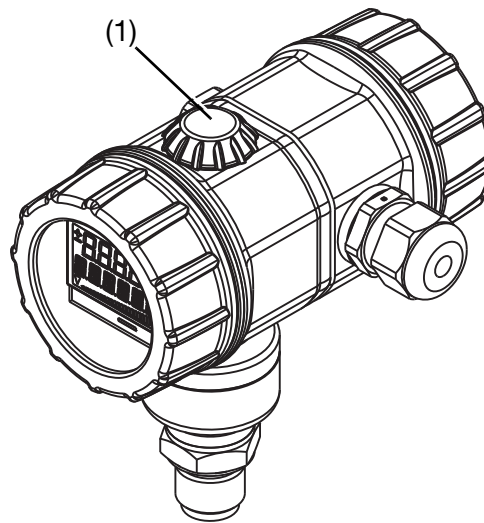
7 Operation

7.1 Display



- (1) Socket for JUMO setup interface (behind a cap)
- (2) Measurement value
- (3) Unit of measure
- (4) Overrange
- (5) Output current (4 to 20 mA)
- (6) Underrange

7.2 Operation with rotary knob or with setup program



The instrument can be

- operated with the rotary knob (1)
- or with the optional setup program.



Note

Instead of operation by keyboard, all actual values and parameters can be displayed or set very easily with the setup program. In addition, the setup program offers a series of useful additional functions such as:


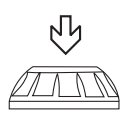
- Recording of measurements
- Graphical presentation of temperature and pressure
- Extensive diagnostic messages
- Display of complete order code and instrument configuration (can be printed out, for example for project documents or reordering).

The setup program can optionally access the instrument through the following interfaces:

- JUMO setup interface.
The PC interface cable with USB/TTL converter (USB connecting cable) is required to connect the PC with the instrument:
Sales No.: 70/00456352.
 - HART[®] interface.
A HART[®] modem is required to connect the PC with the instrument: Sales No.: 40/00443447.
-

7 Operation

Rotate and press

	Rotate Select parameters or adjust values.
	Press Confirm parameters or values.

7.3 The level concept

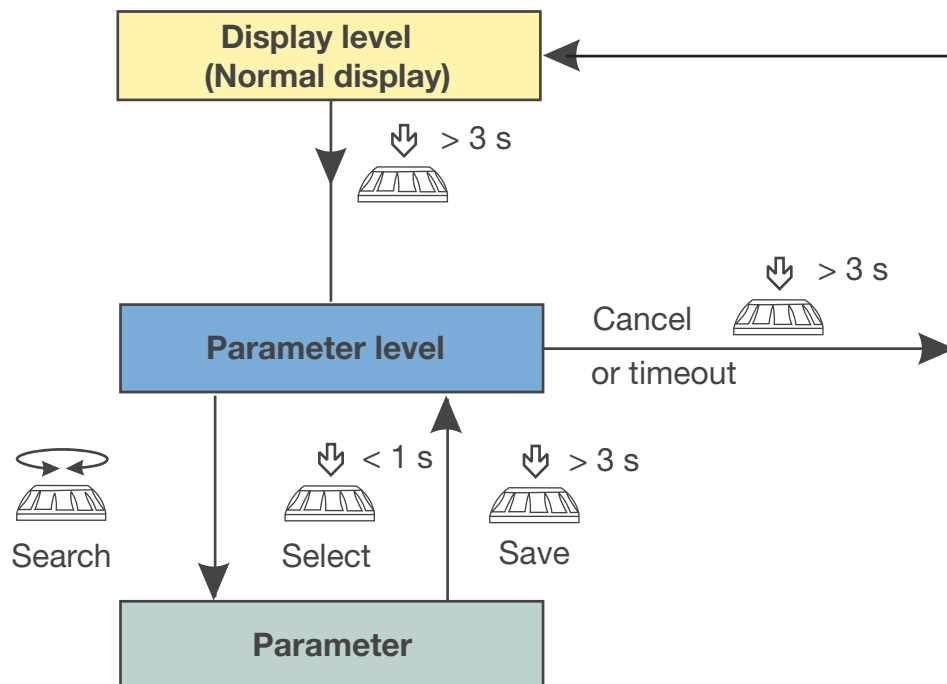
Two levels

Operation is on two levels:





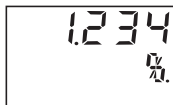
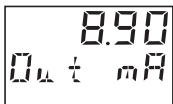
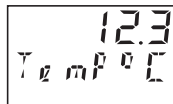



Note

After the instrument is turned on, it is on the display level. You can go to the parameter level through the following operation.



7.3.1 The display level




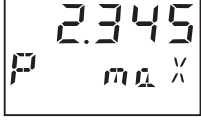


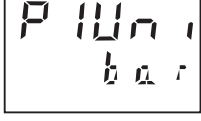
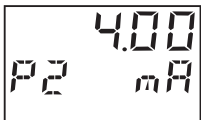



The measured pressure and other parameters are shown on the display level. The output current is shown as a percentage in a bar diagram on the third line. It is not possible to change parameters on the display level!

Action	Display (example)	Explanation
		Display of pressure with unit of measure.
		Display of measured value as a % or Measured value scaled with a freely selectable unit of measure.
		Display of output current in mA.
		Display of sensor temperature in °C or °F.
		Display of the saved minimum pressure in the selected unit of measure.
		Display of the saved maximum pressure.
		Display of the pressure value and sensor temperature in the selected unit of measure.

7 Operation










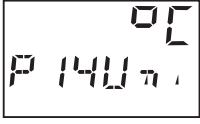
7.3.2 The parameter level

Instrument parameters can be displayed and changed on the parameter level.

Action	Display (example)	Explanation	Selection ¹
		P min Saved minimum pressure	Reset by  > 3 seconds
		P max Saved maximum pressure	Reset by  > 3 seconds
		P0 Den "Density" density correction	0.01 to 1.00 to 99.99
		P1 Uni "Unit" unit of measure for pressure	inH2O inHG ftH2O mmH2O mmHG PSI bar mbar kg/cm2 kPa TORR MPa mH2O
		P2 mA Current at beginning of measurement	4.00 to 20.00 mA
		P3 mA Current at end of measurement	4.00 to 20.00 mA
		P4 sec Damping	0.0 to 100.0 s
		P5 RS "Range start" beginning of measurement	Nominal measuring range






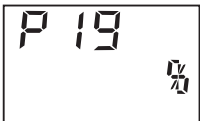

¹ Factory setting is shown in **bold**.

7 Operation

Action	Display (example)	Explanation	Selection ¹
		P6 RE "Range end" end of measurement	Nominal measuring range
		P7 Zero Zero-point adjustment	Current pressure
		P8 mA Current sensor	3.60 to 4.00 to 21.60 mA
		P9 Err Current in case of error	ErLo = 3.6 mA ErHi = 21.6 mA LAST = Last value
		P10 Key Keyboard lock	O = No lock LA = All, interface free LO = All, without beginning of measurement LS = All, without beginning or end LALL = All, incl. interface
		P11 Chr "Characteristic" curve	Lin = Linear SLin = Linear until start of root extraction SoFF = Off until start of root extraction
		P12 % Point at which root extraction begins	5.0 to 9.4 to 15.0% of nominal measuring range
		P13 SWV Software version	Editing not possible
	P14 Uni Unit of measure for temperature	°C / °F	



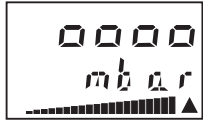

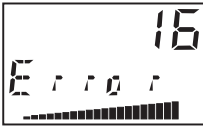
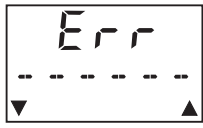
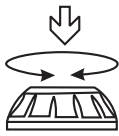
¹ Factory setting is shown in **bold**.

7 Operation

Action	Display (example)	Explanation	Selection ¹
		P15 OFF Offset of pressure value (zero point offset)	Nominal measuring range
		P16 SCS Scaling start	-9999 to 0 to 9999
		P17 SCE Scaling end	-9999 to 100 to 9999
		P18 SCD Scaling decimal point	Auto = Automatic 0 = No places behind decimal point 1 = 1 place behind decimal point 2 = 2 places behind decimal point 3 = 3 places behind decimal point
		P19 % Unit for scaling	% (factory setting) kg/sec kg/min kg/h t/min t/h l/sec l/min l/h m3/sec m3/min m3/h L m3 UsrTXT
		P20 h Operating hours	Editing not possible

¹ Factory setting is shown in **bold**.

8.1 Eliminating errors and faults

Error/fault	Possible cause	Remedy	
Display: None	No power supply	Turn on the power supply	
	Instrument faulty	Send the instrument to the supplier for repairs	
Display: 	Overrange, overpressure	Bring the pressure back into the measuring range or adjust the measuring range	
Display: 	Underrange, unterpressure		
Display: 	Pressure can no longer be displayed, overpressure	Adjust scaling or unit of measure	
Display: 	Pressure can no longer be displayed, underpressure		
Display: 	An error was discovered in the electronics during the self test	Send the instrument to the supplier for repairs	
Display: 	Temperature sensor faulty	Send the instrument to the supplier for repairs	
The rotary knob is not responding		Keyboard lock	Override keyboard lock
		Instrument faulty	Send the instrument to the supplier for repairs

9 Appendix

9.1 EC-Type Examination Certificate

SEV Verband für Elektro-, Energie- und Informationstechnik

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(1) EC-Type Examination Certificate

- (2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 94/9/EC**
- (3) Examination certificate number: **SEV 09 ATEX 0138 X**
- (4) Equipment: Process pressure transmitter
JUMO dTRANS p20 type 403025 or
JUMO dTRANS p20 Delta type 403022
- (5) Manufacturer: JUMO GmbH & Co. KG
- (6) Address: Moritz-Juchheim-Strasse 1, DE-36039 Fulda
- (7) The equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) Electrosuisse SEV, notified body No. 1258 in accordance with article 9 of the Council Directive of the European Communities of 23 March 1994 (94/9/EC), certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment or protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The results of the examination are recorded in confidential report no 09-IK-0103.01 including extension 1.
- (9) Compliance with the essential health and safety requirements has been assured by compliance with:
EN 1127-1:07 **EN 60079-0:09** **EN 60079-11:07**
EN 60079-26:07 **EN 61241-11:06**
- (10) If the sign «X» is placed after the certificate number, it indicates that the equipment or protective system is subjected to special conditions for safe use specified in the schedule to this certificate.
- (11) This examination certificate relates only to design and construction of the specified equipment in accordance with the directive 94/9/EC. Further requirements of this directive apply to the manufacturing process and the placing on the market of the equipment.
- (12) The marking of the equipment shall include the following:

 see Appendix page 5: (19) Marking

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Notified Body ATEX

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Product Certification



Fehraltorf, 2011-08-05

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(13)

Appendix

(14)

EC-Type Examination Certificate

(15) Description of the equipment

The process pressure transmitter JUMO dTRANS p20 type 403025 or JUMO dTRANS p20 DELTA type 403022 serves for converting a physical measured quantity (pressure) into a standard electrical signal (4...20 mA). The device is intended for use within potentially explosive atmospheres. The stainless steel enclosure of the pressure transmitter has the type of protection IP 66 according to IEC 60529. The pressure transmitter can be housed in three different types of enclosure.

The process pressure transmitter JUMO dTRANS p20 type 403025 or JUMO dTRANS p20 DELTA type 403022 is attached to tanks or pipes by means of a process connection. The pressure measuring cell serves for zone separation and is made of stainless steel, Hastelloy®, Monel or titanium. This zone separation takes place by means of the diaphragm and subsequent flashback safe gap or the flashback safe gaps can also be integrated directly in the process connection upstream of the pressure measuring cell/pressure sensor.

Ratings

Input and supply circuits

with type of protection intrinsic safety

Ex ia IIC

only for connection to certified intrinsically safe circuits.

Maximum values:

$U_i \leq$	28	V	
$I_i \leq$	93	mA	
$P_i \leq$	750	mW	
$C_i =$	6	nF	(effective internal capacitance)
$L_i =$	105	μ H	(effective internal inductance)

or

Input and supply circuits

with type of protection intrinsic safety

Ex ia IIIC

only for connection to certified intrinsically safe circuits.

Maximum values:

$U_i \leq$	28	V	
$I_i \leq$	93	mA	
$P_i \leq$	750	mW	
$C_i =$	6	nF	(effective internal capacitance)
$L_i =$	105	μ H	(effective internal inductance)

9 Appendix

SEV Verband für Elektro-, Energie- und Informationstechnik

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(16) Test Report 09-IK-0103.01 including extension 1

(17) Special conditions for safe use

1. The intrinsically safe circuit must be limited to overvoltage category I as defined in IEC 60664-1 and the circuits must be supplied exclusively from a certified intrinsically safe power source with the protection level "ia".
2. Assignment between the maximum permissible ambient temperature in the electronics enclosure, measuring temperature and temperature class for the JUMO dTRANS p20 type 403025 process pressure transmitter is shown in the following table:

Temperature class	T6	T5	T4	T3
Maximum permissible ambient temperature in top part of enclosure with electronics (°C)	-50 ... +50	-50 ... +65	-50 ... +85	-50 ... +85
Maximum permissible measuring temperature (°C)	+60	+70	+115	+175

3. Assignment between the maximum permissible ambient temperature in the electronics enclosure, measuring temperature and temperature class for the JUMO dTRANS p20 DELTA type 403022 process pressure transmitter is shown in the following table:

Temperature class	T4
Maximum permissible ambient temperature in top part of enclosure with electronics (°C)	-50 ... +60
Maximum permissible measuring temperature (°C)	+100

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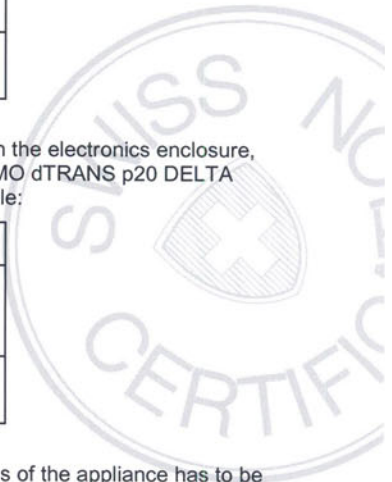
4. Assignment between the maximum permissible ambient temperature in the electronics enclosure, measuring temperature and maximum surface temperature for the JUMO dTRANS p20 type 403025 process pressure transmitter is shown in the following table:

Surface temperature (°C)	T105
Maximum permissible ambient temperature in top part of enclosure with electronics (°C)	-50 ... +60
Maximum permissible measuring temperature (°C)	+100

5. Assignment between the maximum permissible ambient temperature in the electronics enclosure, measuring temperature and maximum surface temperature for the JUMO dTRANS p20 DELTA type 403022 process pressure transmitter is shown in the following table:

Surface temperature (°C)	T105
Maximum permissible ambient temperature in top part of enclosure with electronics (°C)	-50 ... +60
Maximum permissible measuring temperature (°C)	+100

6. In the temperature range of -40°C ... -50°C the lid with inspection glass of the appliance has to be additionally protected against mechanical impact- respectively collision effect.



9 Appendix

SEV Verband für Elektro-, Energie- und Informationstechnik

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(18) Fundamental essential health and safety requirements

Fulfilled by the standards applied

(19) The marking of the equipment shall include the following:

For JUMO dTRANS p20 type 403025:



II 1/2G Ex ia IIC T6 ... T3 Ga/Gb
II 1/2D Ex ia IIIC T105°C Da/Db

or

For JUMO dTRANS p20 DELTA type 403022:



II 1G Ex ia IIC T4 Ga
II 1D Ex ia IIIC T105°C Da



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Product Certification



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9.2 EC Declaration of Conformity

JUMO GmbH & Co. KG
Moritz-Juchheim-Straße 1
36039 Fulda, Germany

Telefon: +49 661 6003 - 0
E-Mail: mail@jumo.net
Internet: www.jumo.net



EG Konformitätserklärung

EC Declaration of Conformity / Déclaration CE de conformité

Dokument-Nr. <i>Document No. / Document n°</i>	CE 442	
Hersteller <i>Manufacturer / Etabli par</i>	JUMO GmbH & Co. KG	
Anschrift <i>Address / Adresse</i>	Moritz-Juchheim-Straße 1, 36039 Fulda	
Produkt <i>Product / Produit</i>	Beschreibung Typ/ Serie Typenblatt-Nr.	Druckmessumformer dTRANS p20 40.3025

Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Schutzanforderungen der Europäischen Richtlinien erfüllt.
We hereby declare in sole responsibility that the designated product fulfills the safety requirements of the European directives.
Nous déclarons sous notre seule responsabilité que le produit remplit les directives européennes.

Richtlinie <i>Directive / Directive</i>		Datum der Erstanbringung des CE-Zeichens auf dem Produkt <i>Date of first application of the CE mark to the product</i> <i>Date de 1ère application du sigle CE sur le produit</i>
2004/108/EG	[EMV-Richtlinie]	10
94/9/EG	[Explosionsschutz-Richtlinie-ATEX]	11

EG-Baumusterprüfbescheinigung

Type examination / Tests échantillon

SEV 09 ATEX 0138 X

Angewendete Normen

Standards applied / Normes appliquées

DIN EN 61326-2-3	Ausgabe: 05.2007	EN 61241-11	Ausgabe: 2006
EN 1127-1	Ausgabe: 2007		
EN 60079-0	Ausgabe: 2009		
EN 60 079-11	Ausgabe: 2007		
EN 60 079-26	Ausgabe: 2007		

Anerkannte Qualitätssicherungssysteme der Produktion

Recognized quality assurance systems used in production / Organisme notifié agréé

nach Richtlinie 94/9/EG Modul D / *Directive 94/9/EC Module D / Directive européenne 94/9/CE module D*
TÜV NORD CERT GmbH, Am TÜV 1, D 30519 Hannover, Germany
Kennnummer 0044, Mitteilungsnummer TÜV 99 ATEX 1454 Q.
Identification No. 0044, Notification No. TÜV 99 ATEX 1454 Q / N° d'identification 0044, N° de signification TÜV 99 ATEX 1454 Q

nach Richtlinie 97/23/EG Modul D / *Directive 97/23/EC Module D / Directive européenne 97/23/CE module D*
TÜV SÜD Industrie Service GmbH, Dudenstraße 28, 68167 Mannheim, Germany
Kennnummer 0036, Zertifikat-Nr. DGR-0036-QS-179-02
Identification No. 0036, Certificate No. DGR-0036-QS-179-02 / N° d'identification 0036, N° de certificat DGR-0036-QS-179-02

Aussteller:
Issued by / Etabli par:

Firma / *Company / Société*
JUMO GmbH & Co. KG, Fulda

Ort, Datum:
Place, date: / Lieu, date:

Fulda, 2011-02-17

Rechtsverbindliche Unterschrift
Legally binding signature
Signature juridiquement valable

Geschäftsbereichsleitung Verkauf und Produktion
Head of Division Sales and Production
Direction du département Ventes et Production

ppa. Wolfgang Vogl



JUMO GmbH & Co. KG

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