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**JUMO Instrument Co. Ltd.**

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# Pressure transmitter with analog actual value display

## Brief description

The pressure transmitter is available with measuring ranges from -1 to +400 bar. The device is an ideal combination of an analog on-site display and an analog standard output signal for remote transmission the measurement.

Constructed from high-grade stainless steel, this device can be used in virtually all media, even under harsh conditions. The design gives optimum safety from escaping process medium.

## Application

- Chemical and process engineering

## Special features

- Welded measuring system without seals
- Parts in contact with medium made of stainless steel
- Pressure gauge functionality even during voltage supply failure



Type 404312/...

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## Technical data

### General Information

Reference conditions	Per DIN 16086 and DIN EN 60770
Sensor	
Material	Silicon sensor with stainless steel separating diaphragm
Pressure transfer medium	Synthetic oil
Location	
Mounting location	Any
Calibration location	Device standing vertically, process connection on bottom

### Input

Relative pressure								
Measuring range (bar)	0 to 0.6	0 to 1	0 to 1.6	0 to 2.5	0 to 4	0 to 6	0 to 10	0 to 16
Range of use during steady load (bar) <sup>a</sup>	0.6	1	1.6	2.5	4	6	10	16
Range of use during alternating load (bar) <sup>b</sup>	0.54	0.9	1.44	2.25	3.6	5.4	0.9	14.4
Measuring range (bar)	0 to 25	0 to 40	0 to 60	0 to 100	0 to 160	0 to 250	0 to 400	
Range of use during steady load (bar) <sup>a</sup>	25	40	60	100	160	250	400	
Range of use during alternating load (bar) <sup>b</sup>	22.5	36	54	90	144	225	360	
Measuring range (bar)	-1 to 0	-1 to +0.6	-1 to +1.5	-1 to +3	-1 to +5	-1 to +9	-1 to +15	-1 to +24
Range of use during steady load (bar) <sup>a</sup>	0	0.6	1.5	3	5	9	15	24
Range of use during alternating load (bar) <sup>b</sup>	0	0.54	1.35	2.7	4.5	8.1	13.5	21.6

<sup>a</sup> 100 % of end of scale

<sup>b</sup> 90 % of end of scale

### Analog output

Output signal	
Current	
Output 402	0 to 20 mA, three-wire
Output 405	4 to 20 mA, two-wire
Output 406	4 to 20 mA, three-wire
Voltage	
Output 415	0 to 10 V, three-wire
Step response	
t <sub>90</sub>	≤ 5 ms
Burden	
0 to 20 mA, three-wire	R <sub>i</sub> ≤ (U <sub>B</sub> -10 V) ÷ 0.02 A
4 to 20 mA, two-wire	R <sub>i</sub> ≤ (U <sub>B</sub> -10 V) ÷ 0.02 A
4 to 20 mA, three-wire	R <sub>i</sub> ≤ (U <sub>B</sub> -10 V) ÷ 0.02 A
0 to 10 V, three-wire	≥ 10 kΩ

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## Measurement deviation

Accuracy <sup>a, b</sup>	Class 1.0
Characteristic curve deviation	≤ 0.5 % MSP (measuring span)
Hysteresis	≤ 0.1 % MSP
Repeatability	≤ 0.5 % MSP
Response time	≤ 3 ms

<sup>a</sup> According to EN 837-1

<sup>b</sup> Under an EMC-load larger deviations in the electrical signal can occur.

## Mechanical features

Materials	
Process connection	Stainless steel 316
Seal	The measuring system is welded with no seals.
Sensor	Stainless steel 316 L
Measuring system	Stainless steel 316
Case	Stainless steel 304 L
Connector	PA (polyamide)
Weight	
Device with process connection 504 (G 1/2)	550 g

## Environmental conditions

Permissible temperatures	
Measuring material	-20 to +60 °C
Environment	-20 to +60 °C
Storage	-20 to +60 °C
Permissible relative humidity	
Operation	100 % rel. humidity, incl. condensation on the outer sleeve of the device
Storage	90 % rel. Feuchte, no condensation
Electromagnetic compatibility <sup>a</sup>	
Interference emission	Class B
Interference immunity	To industrial requirements
Protection type <sup>b</sup>	
As standard	IP54
For extra code 473	IP65

<sup>a</sup> According to EN 61326

<sup>b</sup> According to EN 60529/ICE 529

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**Voltage supply**

Auxiliary power	
Terminal assignment	See connection diagram
Voltage supply $U_B$	
For output 402 (0 to 20 mA)	DC 11.5 to 30 V, nominal voltage DC 24 V
For output 405 (4 to 20 mA)	DC 10 to 30 V, nominal voltage DC 24 V
For output 406 (4 to 20 mA)	DC 11.5 to 30 V, nominal voltage DC 24 V
For output 415 (0 to 10 V)	DC 11.5 to 30 V, nominal voltage DC 24 V
Residual ripple	Peak voltages must not exceed or fall below the values specified for the voltage supply.
Reverse polarity protection	Yes
Power consumption	$\leq 25$ mA
Electrical connection 65 (terminal box)	DIN 175301 form A <sup>a</sup>

<sup>a</sup> Conductor cross-section  $\leq 1.5$  mm<sup>2</sup>

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## Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection only use the installation instructions or the operating manual. The knowledge and the correct technical execution of the safety information/instructions contained in these documents are mandatory for installation, electrical connection, startup, and for safety during operation.

Connection			Terminal assignment
			65
			Junction box
<b>Devices with three-wire output</b>			
Voltage supply DC 11.5 to 30 V for output 402 (0 to 20 mA) for output (4 to 20 mA) for output (0 to 10 V)		U <sub>B</sub> 0 V	1 L+ 2 L-
Output 402 (0 to 20 mA) Output 406 (4 to 20 mA) Output 415 (0 to 10 V)		S- S+	2 - 3 +
<b>Devices with two-wire output</b>			
Voltage supply DC 10 to 30 V for output 405 (4 to 20 mA)		U <sub>B</sub> 0 V	1 L+ 2 L-
Output 4 to 20 mA, two-wire for output 405 Impressed current 4 to 20 mA in voltage supply		S- S+	1 + 2 -
Functional bonding conductor FB <sup>a</sup>			-

<sup>a</sup> The pressure transmitter has to be connected to the potential equalization system of the plant through the electrical connection or process connection.

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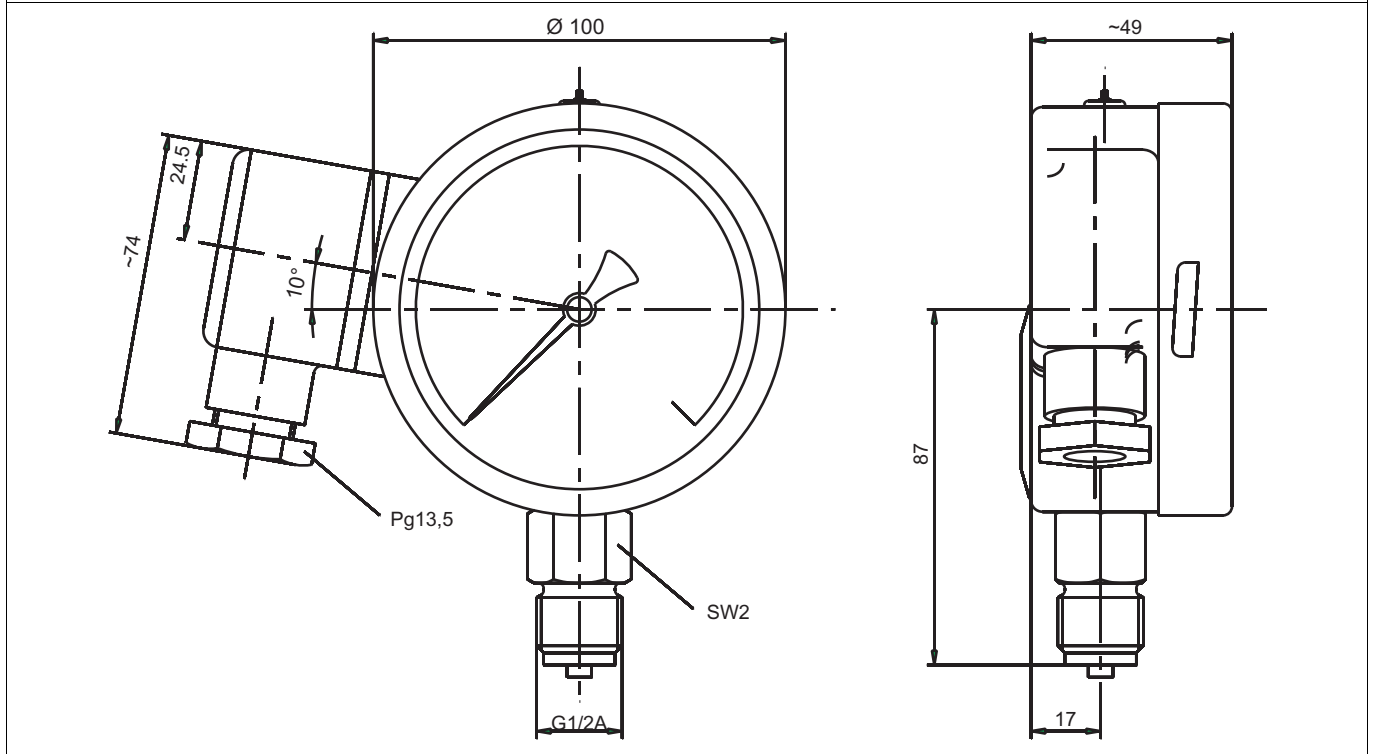
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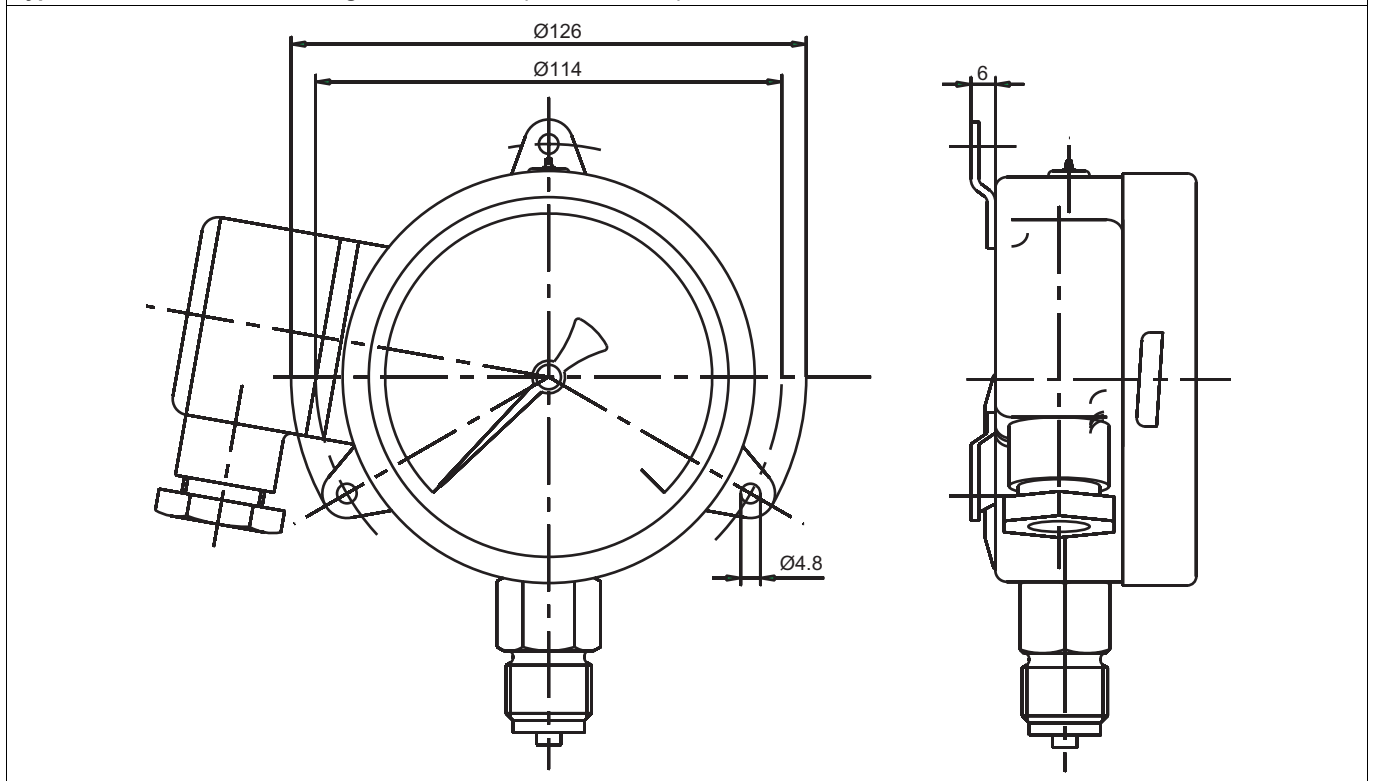


## Dimensions

Type 404312/000-...



Type 404312/000-... with mounting bracket behind (extra code 421)



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## Order details

	<b>(1) Basic type</b>
404312	Pressure transmitter with analog actual value display
	<b>(2) Basic type extension</b>
000	None
999	Special version
	<b>(3) Input</b>
454	0 to 1 bar relative pressure
455	0 to 1.6 bar relative pressure
456	0 to 2.5 bar relative pressure
457	0 to 4 bar relative pressure
458	0 to 6 bar relative pressure
459	0 to 10 bar relative pressure
460	0 to 16 bar relative pressure
461	0 to 25 bar relative pressure
462	0 to 40 bar relative pressure
463	0 to 60 bar relative pressure
464	0 to 100 bar relative pressure
465	0 to 160 bar relative pressure
466	0 to 250 bar relative pressure
467	0 to 400 bar relative pressure
478	-1 to 0 bar relative pressure
479	-1 to +0.6 bar relative pressure
480	-1 to +1.5 bar relative pressure
481	-1 to +3 bar relative pressure
482	-1 to +5 bar relative pressure
483	-1 to +9 bar relative pressure
484	-1 to +15 bar relative pressure
485	-1 to +24 bar relative pressure
999	Special measuring range relative pressure
	<b>(4) Output</b>
402	0 to 20 mA, three-wire
405	4 to 20 mA, two-wire
406	4 to 20 mA, three-wire
415	0 to 10 V, three-wire
	<b>(5) Process connection (not front-flush)</b>
504	G 1/2 according to DIN EN 837
	<b>(6) Material of process connection</b>
20	CrNi (stainless steel)
	<b>(7) Electrical connection</b>
65	Junction box (general version)
	<b>(8) Extra code</b>
000	None
421	Rear fastening brackets of stainless steel
462	Inverting output signal
473	Case with damping fluid
591	Throttle in pressure channel

Order code                     /  -  -  -  -  -  /   
 Order example                404312 / 000 - 459 - 405 - 504 - 20 - 65 / 000