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**JUMO Process Control, Inc.**  
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# JUMO CANtrans p Pressure Transmitter with CANopen output

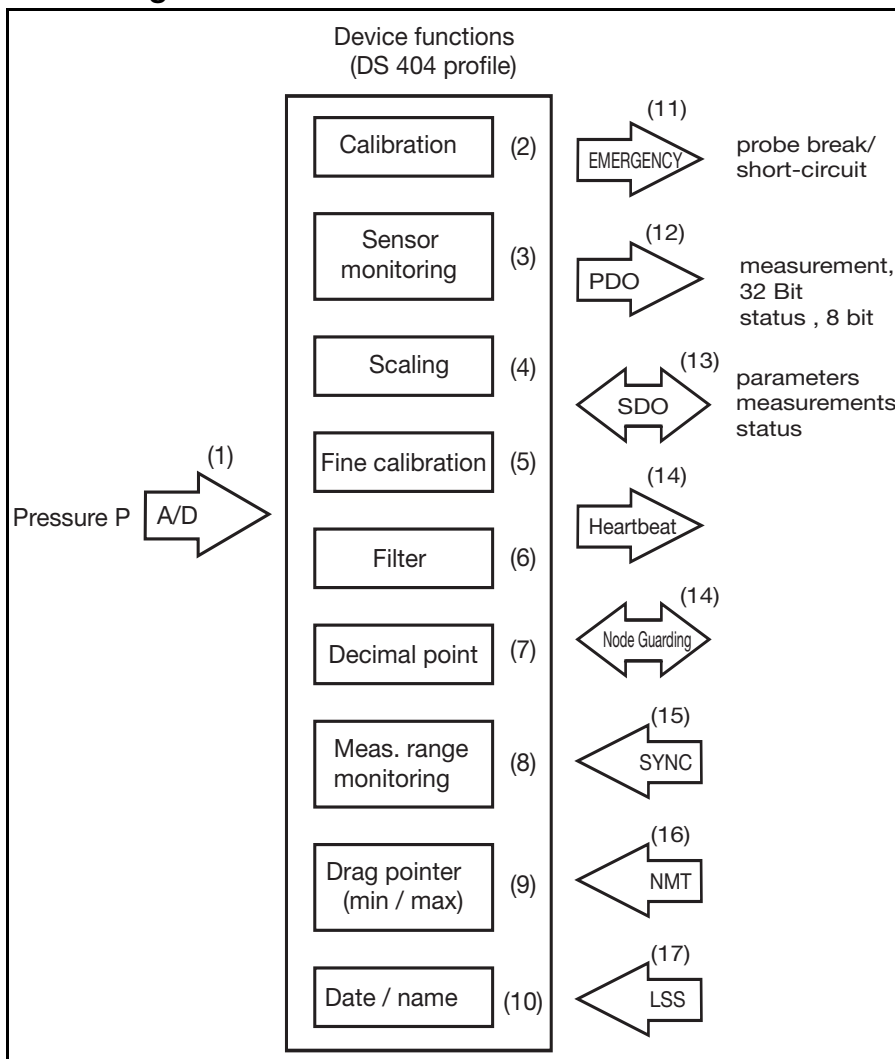
## General application

Pressure transmitters are used for measuring relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the piezoresistive or thin-film strain gauge measuring principle. The pressure measurement is digitized and made available for further processing via the CANopen serial bus protocol (CAN slave). Several useful extra functions are implemented through the DS 404 device profile. All settings can be made using standard CANopen software tools.

Further transmitters with CANopen output: see Data Sheets 402055 (pressure), 402057 (pressure + temperature) and 902910 (temperature).



## Block diagram



## Operation

- (1) The analog signal from the pressure cell is digitized with 12-bit resolution.
- (2) The pressure signal is digitally calibrated at the factory.
- (3) The sensor monitoring facility continuously checks the correct performance of the sensor signal and triggers high-priority emergency telegrams in the event of an error.
- (4) The pressure measurement can be scaled to any dimensional unit (or in % of range).
- (5) Fine calibration features an auto-zeroing function and a freely adjustable shift of the characteristic.
- (6) Undesirable signal fluctuations can be suppressed through the (adjustable) filter constant.
- (7) The measurement is output with a freely selectable decimal place.
- (8) Range monitoring features freely selectable upper and lower limits. The result is output as a status byte with the measurement in the PDO telegram.
- (9) The drag pointer function stores the minimum and maximum pressure measurements.
- (10) Date and name of the last servicing action can be stored.
- (11) An emergency telegram is triggered in the event of a sensor fault.
- (12) The PDO telegram contains the 32-bit measurement and the 8-bit status. The measurement that is output can be controlled by means of different trigger conditions.
- (13) Parameters can be set through SDO telegrams, and measurements and status can be requested.

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(14) The heartbeat signal or Node Guarding can be used to additionally monitor the transmitter function.

(15) The transmission of measurements can additionally be controlled through the Sync command.

(16) NMT telegrams serve to control the operational state of the transmitter.

(17) The CAN module ID and CAN baud rate are set via LSS or SDO, as selected.

**Technical data****Reference conditions**

to DIN 16 086 and IEC 770/5.3

**Measurement ranges**

see order details

**Overload limit**

ranges

0 – 0.25 bar to 0 – 25 bar

3 x full scale

ranges

0 – 40 to 0 – 250 bar

2 x full scale

ranges

0 – 400 to 0 – 600 bar

1.5 x full scale

**Bursting pressure**

ranges

0 – 0.25 bar to 0 – 40 bar

≤ 4 x full scale

ranges

0 – 60 to 0 – 100 bar

8 x full scale

ranges

0 – 160 to 0 – 400 bar

5 x full scale

ranges

0 – 600 bar

3 x full scale

**Parts in contact with medium**

standard: stainless steel,  
Mat. Ref. 1.4571 / 1.4435

for range ≥ 60 bar,

Mat. Ref. 1.4571 / 1.4542

**Output**

CANopen as per CiA DS 301 V4.02

measurement resolution: 12 bit

**Zero offset**

≤ 0.3% of full scale

**Thermal hysteresis**

≤ ± 0.5% of full scale

(within compensated temperature range)

≤ ± 1% for ranges

0 – 250 mbar

0 – 400 mbar

0 – 600 mbar

**Ambient temperature effect**

within range 0 to +100°C

(compensated temperature range)

for ranges 250 and 400 mbar

zero: ≤ 0.03%/°C typical,

≤ 0.05%/°C max.

span: ≤ 0.02%/°C typical,

≤ 0.04%/°C max.

for ranges above 600 mbar

zero: ≤ 0.02%/°C typical,

≤ 0.04%/°C max.

span: ≤ 0.02%/°C typical,

≤ 0.04%/°C max.

**Deviation from characteristic**

≤ 0.5% of full scale

(limit point setting)

**Hysteresis**

≤ 0.1% of full scale

**Repeatability**

≤ 0.05% of full scale

**Cycle time**

1 msec

optionally 0.5 msec (11 bit)

**Stability per year**

≤ 0.5% of full scale

**Supply**

10 – 30 V DC

max. current drawn: approx. 45 mA

**Supply voltage error**

≤ 0.03% per V

**Permissible ambient temperature**

-20 to +85°C

**Storage temperature**

-40 to +85°C

**Permissible temperature of medium**

standard version:

-40 to +125°C

with basic type extension 004:

-40 to +200°C

**Electromagnetic compatibility**

EN 61 326

interference emission: Class B

immunity to interference: to industrial requirements

**Electrical connection**

M12

recommended: screened 5-wire cable

**Mechanical shock**

(to IEC 68-2-27)

100 g/5 msec

**Mechanical vibration**

(to IEC 68-2-6)

20 g max. at 15 – 2000 Hz

**Enclosure protection**

with connector screwed on:

IP67 to EN 60 529

**Housing**

stainless steel, Mat. Ref. 1.4305

**Pressure connection**

see order details;

other connections on request

**Nominal position**

unrestricted

**Weight**

95 gm (with pressure connection G 1/4)

**CANbus****Protocol**

CiA DS 301, V4.02, CANopen slave

**Profile**

CiA DS 404, V1.2

Measuring devices and closed-loop controllers

**Baud rate**

20 kbaud to 1 Mbaud  
setting via LSS or SDO

**Module (node) ID**

1 – 127

setting via LSS or SDO

**PDO**

0 Rx, 1 Tx

**SDO**

1Rx, 1 Tx

**Emergency**

yes

**Heartbeat**

yes

**Node Guarding**

yes

**LSS**

yes

**SYNC**

yes

**Operation and project design**

All parameters are accessible via the CANopen object directory (EDS) and can be set using standard CANopen software tools.

**EDS (electronic data sheet)**

yes

available free of charge as a download file:  
www.jumo.net -> Product information

**Factory setting**

see Operating Instructions B402055.0

available free of charge as a download file:  
www.jumo.net -> Product information

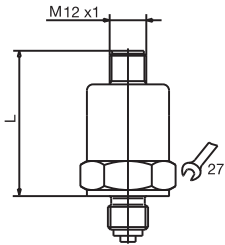
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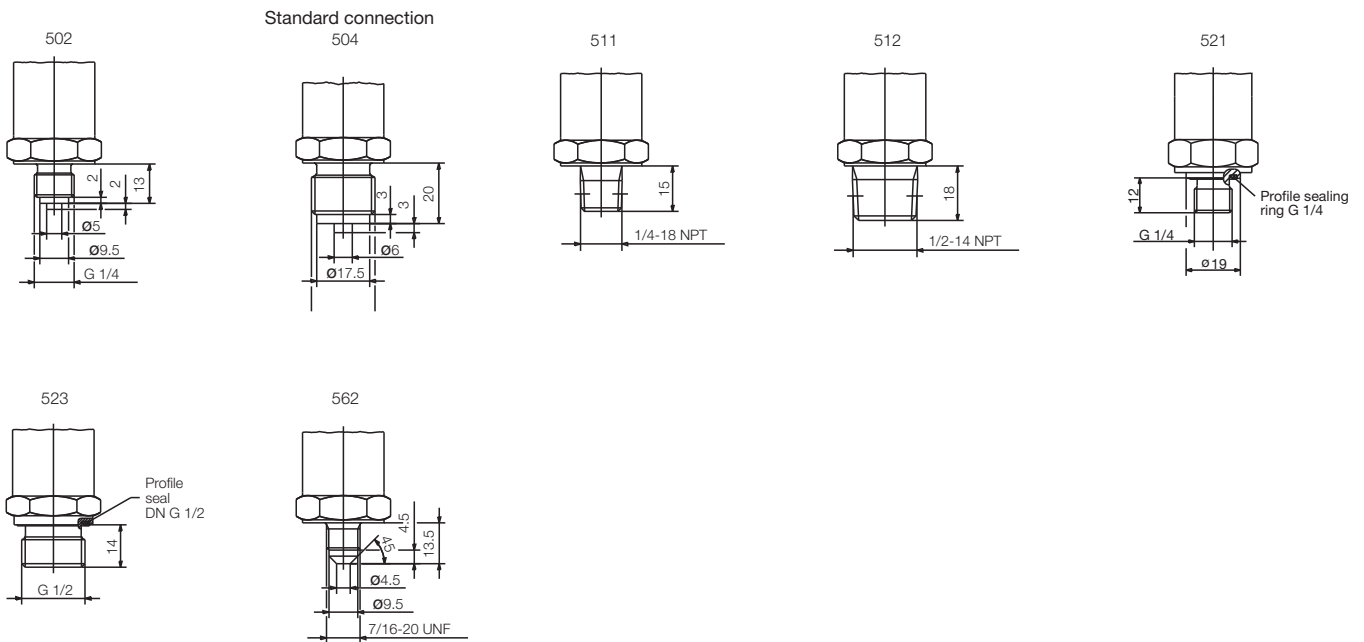


**Dimension**

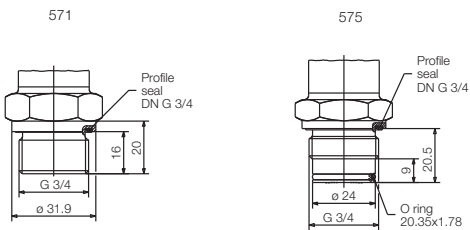


Basic type extension	Dim. "L"
000	48
004	xx
023	48
024	48

**Connections, not front-flush**



**Connections, front-flush**



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## Electrical connection

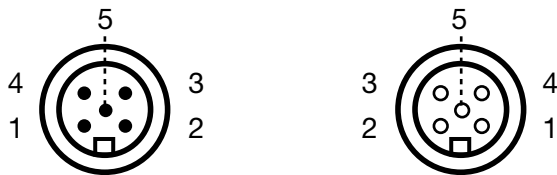
Connection		Terminal assignment	
		M12 connector	Terminal box with moulded cable Part no.: 00337625
Supply 10 – 30 V DC		V+ V-	2 3 white blue
Output CANopen		screen CAN_H CAN_L	1 4 5 brown black grey

## Circular connector

M12 x 1; 5-pole to IEC 60 947-5-2

Plug

Socket



## Accessories

Designation	Part no.
5-pole terminal box M 12x1, straight, with 5 m moulded cable	00337625
5-pole terminal box M 12x1, angled, with 2m moulded cable	00375164
5-pole terminal box M 12x1, straight, no cable, assembly by customer	00419130
5-pole cable box M 12x1, angled, no cable, assembly by customer	00419133
Tee	00419129
Termination resistor for CAN bus, with plug	00461591
Extension cable 2m, 5-pole, M 12x1	00461589
PC CAN interface USB	00449941
PC configuration software for CANopen	00449942
EDS file, for download (www.jumo.net -> Product information)	for download
Operating Instructions, for download (www.jumo.net -> Product information)	for download

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**Order details****(1) Basic type**

402056 Pressure transmitter JUMO CANtrans p

**(2) Basic type extension**

000 none  
004 for elevated media temperatures up to 200°C<sup>1</sup>  
999 special version

**(3) Input**

451 0 to 0.25 bar gauge pressure  
452 0 to 0.4 bar gauge pressure  
453 0 to 0.6 bar gauge pressure  
454 0 to 1.0 bar gauge pressure  
455 0 to 1.6 bar gauge pressure  
456 0 to 2.5 bar gauge pressure  
457 0 to 4 bar gauge pressure  
458 0 to 6 bar gauge pressure  
459 0 to 10 bar gauge pressure  
460 0 to 16 bar gauge pressure  
461 0 to 25 bar gauge pressure  
462 0 to 40 bar gauge pressure  
463 0 to 60 bar gauge pressure  
464 0 to 100 bar gauge pressure  
465 0 to 160 bar gauge pressure  
466 0 to 250 bar gauge pressure  
467 0 to 400 bar gauge pressure  
468 0 to 600 bar gauge pressure  
478 -1 to 0 bar gauge pressure  
479 -1 to 0.6 bar gauge pressure  
480 -1 to 1.5 bar gauge pressure  
481 -1 to 3 bar gauge pressure  
482 -1 to 5 bar gauge pressure  
483 -1 to 9 bar gauge pressure  
484 -1 to 15 bar gauge pressure  
485 -1 to 24 bar gauge pressure  
487 0 to 0.6 bar absolute pressure  
488 0 to 1.0 bar absolute pressure  
489 0 to 1.6 bar absolute pressure  
490 0 to 2.5 bar absolute pressure  
491 0 to 4 bar absolute pressure  
492 0 to 6 bar absolute pressure  
493 0 to 10 bar absolute pressure  
494 0 to 16 bar absolute pressure  
495 0 to 25 bar absolute pressure  
998 special range: absolute pressure  
999 special range: gauge pressure

**(4) Output**

450 CANopen

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**(5) Process connection (not front-flush)**

502	G 1/4 to EN 837
504	G 1/2 to EN 837 (standard connection)
511	1/4-18 NPT to DIN 837
512	1/2-14 NPT to DIN 837
521	1/4 to DIN 3852 T11 (with soft seal located at rear)
523	G 1/2 to DIN 3852 T11 (with soft seal located at rear)
562	7/16-20 UNF
998	suitable for connection to chemical seals

**(5) Process connection (front-flush)**

571	G <sup>3/4</sup> <sup>2</sup>
575	G <sup>3/4</sup> front seal <sup>2</sup>

**(6) Material of process connection**

20	stainless steel
----	-----------------

**(7) Electrical connection**

36	circular connector M 12x1 / 5-pole
----	------------------------------------

**(8) Extra code**

000	none
-----	------

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)							
<b>Order code</b>	<input type="text"/>	/ <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	- <input type="text"/>	/ <input type="text"/>							
<b>Order example</b>	402056	/	000	-	462	-	450	-	502	-	20	-	36	/	000

<sup>1</sup> only for ranges from 1 to 400 bar.

<sup>2</sup> only for ranges up to 25 bar.