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JUMO CANtrans p Ceramic

Pressure Transmitter with CANopen output

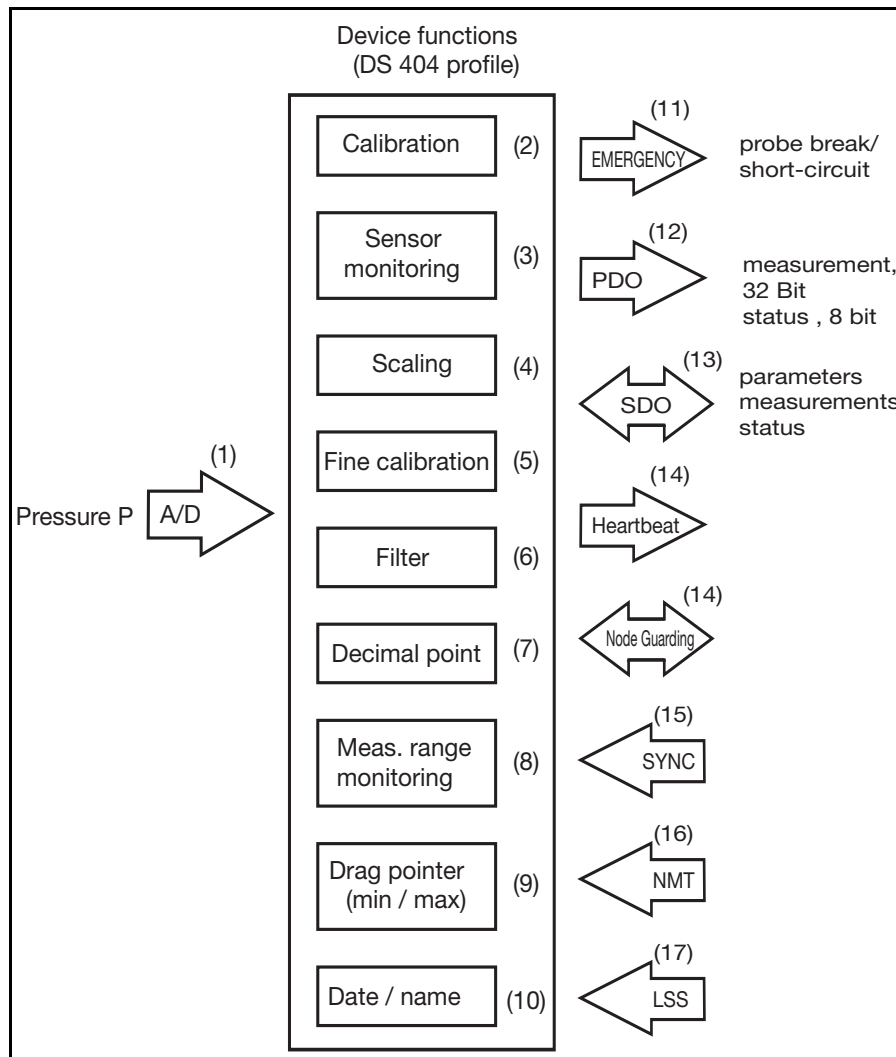
General application

Pressure transmitters are used for measuring relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the thick-film strain gauge measuring principle. An alumina ceramic (Al_2O_3) is used as the base material for the sensing element. The pressure measurement is digitized and made available for further processing via the CANopen serial bus protocol (CAN slave). Several useful extra functions have been 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 402056 and 902910.



Type 402055

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.

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- (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.
- (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, according to choice.

Technical data**Reference conditions**

To DIN 16086 and IEC 770/5.3

Measurement ranges

See order details

Overload limit

Ranges 0 to 1.6 mbar to 0 to 40 bar
3 x MSP¹

Ranges 0 to 60 to 0 to 100 bar
2 x MSP

Bursting pressure

Ranges 0 to 1.6 mbar to 40 bar
4 x MSP

Ranges 0 to 60 to 0 to 100 bar
3 x MSP

Parts in contact with medium

Standard: stainless steel, mat. ref. 1.4305,
(Al₂O₃) 96 %
Seal: FPM or FFPM

Output

CANopen as per CiA DS 301 V4.02
Measurement resolution: 12 bit

Zero offset

≤ 0.3 % MSP

Thermal hysteresis

≤ ± 0.4 % MSP

Ambient temperature effect

Within range -20 to +85 °C
(compensated temperature range)
Zero: ≤ 0.02 %/°C typical,
≤ 0.04 %/°C max.
Span: ≤ 0.02 %/°C typical,
≤ 0.04 %/°C max.

Deviation from characteristic

≤ 0.5 % MSP (limit point adjustment)

Hysteresis

≤ 0.2 % MSP

Repeatability

≤ 0.1 % MSP

Cycle time

1 msec
Optionally 0.5 msec (11 bit)

Stability per year

≤ 1 % MSP

Supply

DC 10 to 30 V
Max. current drawn: approx. 45 mA

Supply voltage error

Reference voltage DC 24 V
≤ 0.0005 % per V

Permissible ambient temperature

-20 to +85 °C

Storage temperature

-40 to +85 °C

Permissible temperature of medium

-20 to +85 °C

Electromagnetic compatibility

DIN EN 61326
Interference emission: Class B²
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 DIN IEC 68-2-6)
20 g max. at 15 to 2000 Hz

Enclosure protection

With connector screwed on:
IP67 to EN 60529

Housing

Stainless steel, mat. ref. 1.4305

Process connection

See order details;
other connections on request

Nominal position

Unrestricted

Weight

95 g with process 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 to 127
setting via LSS or SDO

PDO

0 Rx, 1 Tx

SDO

1 Rx, 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 at www.jumo.net.

Factory setting

See Operating Instructions B 402055.0.
Available free of charge at www.jumo.net.

¹ MSP = measuring span

² The product is suitable for industrial use as well as for households and small businesses.

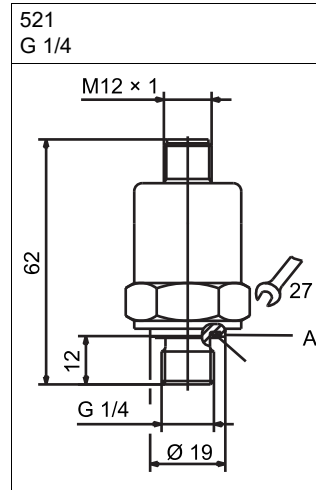
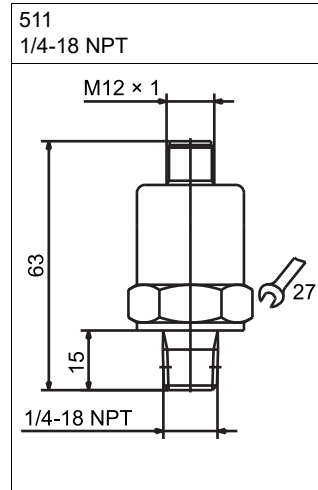
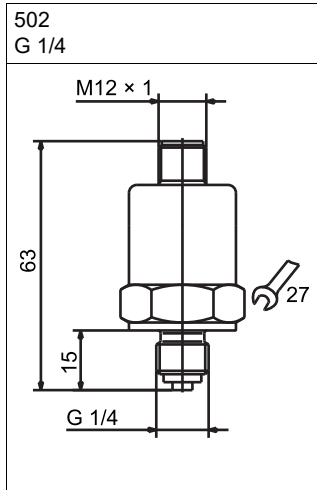
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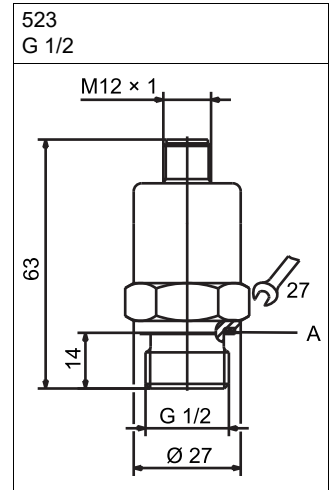
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Dimensions



A Profile seal ring G 1/4



A Profile seal ring G 1/2

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.

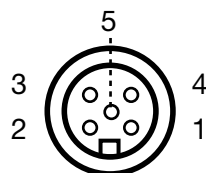
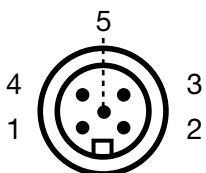
Connection		Terminal assignment		
		M12 connector		Terminal box with moulded cable, part no. 00337625
Voltage supply DC 10 to 30 V		V+	2	white
		V-	3	blue
Output CANopen		Screen	1	brown
		CAN_H	4	black
		CAN_L	5	grey

Round plug

M12 x 1; 5-pole according to DIN IEC 60947-5-2

Connector

Socket



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Order details

(1)	Basic type
402055/000	JUMO CANtrans p Ceramic – Pressure transmitter with CANopen output
402055/999	JUMO CANtrans p Ceramic – Pressure transmitter with CANopen output, special version
(2)	Input
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
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
(3)	Output
450	CANopen
(4)	Process connection (not front-flush)
502	G 1/4 according to DIN EN 837
511	1/4-18 NPT according to DIN 837
521	G 1/4 according to DIN 3852-11
523	G 1/2 according to DIN 3852-11
562	7/16-20 UNF
(5)	Process connection material
20	CrNi (stainless steel)
(6)	Seal
601	FPM
604	FFPM ^a
999	Special material
(7)	Electrical connection
36	Round plug M12 × 1
(8)	Extra code
000	None

^a Product characteristics similar to PTFE.

Order code	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Order example	402055/00	- 462	- 450	- 502	- 20	- 601	- 36	/ 000

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**Accessories**

Designation	Part No.
PC CAN interface for USB interface (configuration software included)	00449941
Termination resistor for CAN bus/digiLine, M12 × 1	00461591
Terminal box, straight, 5-pole, M12 × 1, with moulded cable, length 5 m	00337625
Terminal box, angled, 5-pole, M12 × 1, with moulded cable, length 2 m	00375164
Terminal box, straight, 5-pole, M12 × 1, no cable, assembly by customer	00419130
Terminal box, angled, 5-pole, M12 × 1, no cable, assembly by customer	00419133
Extension cable, length 2 m, 5-pole, with connector and plug M12 × 1	00461589
Tee-piece, 5-pole, M12 × 1	00419129
EDS file	for download
Operating Instructions	for download