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JUMO CANtrans p Ceramic

Pressure Transmitter with CANopen output

Description

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.

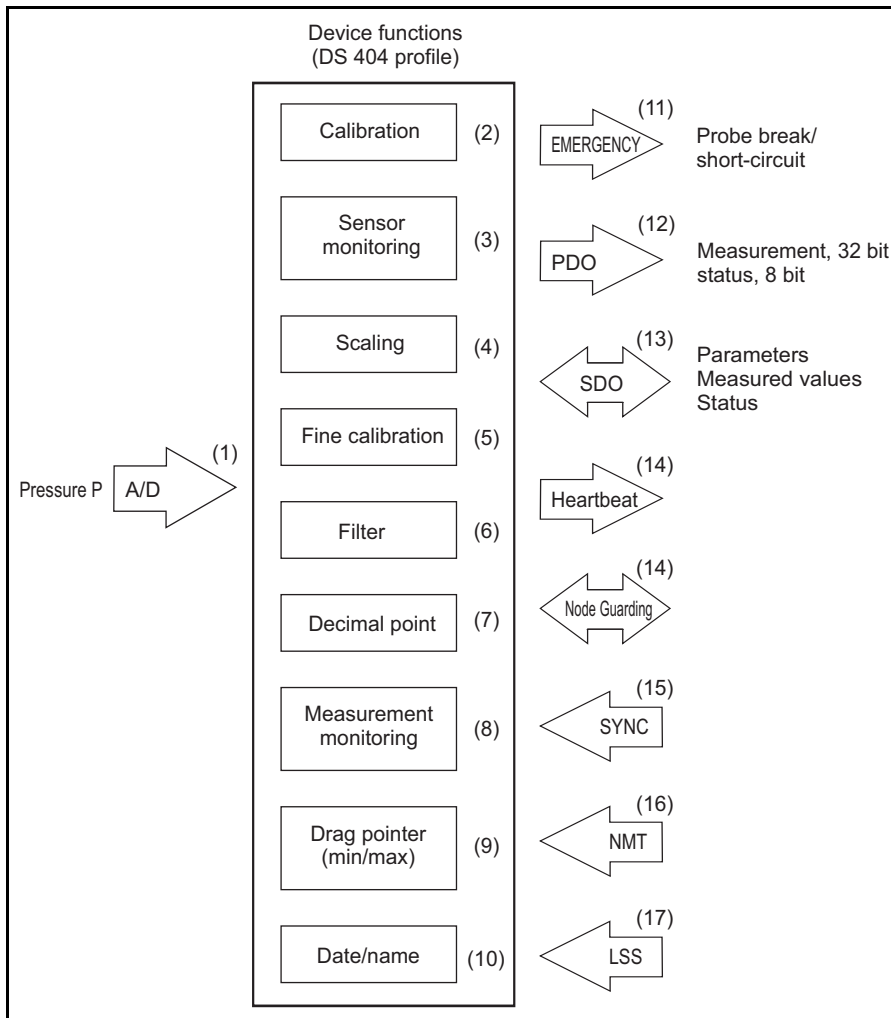
Further transmitters with CANopen output: Data Sheet 402056, Data Sheet 902910.



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.
- (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.

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

DIN 16086, DIN IEC 770/5.3

Measurement ranges

0 to 1.6 bar relative pressure,
0 to 2.5 bar relative pressure,
0 to 4 bar relative pressure,
0 to 6 bar relative pressure,
0 to 10 bar relative pressure,
0 to 16 bar relative pressure,
0 to 25 bar relative pressure,
0 to 40 bar relative pressure,
0 to 60 bar relative pressure,
-1 to +0.6 bar relative pressure,
-1 to +1.5 bar relative pressure,
-1 to +3 bar relative pressure,
-1 to +5 bar relative pressure,
-1 to +9 bar relative pressure,
-1 to +15 bar relative pressure,
-1 to +24 bar relative pressure

Overload limit

For measuring ranges
0 to 1.6 mbar to 0 to 40 bar: 3 times MSP¹
For measuring ranges
0 to 60 bar: 2 times MSP

Bursting pressure

For measuring ranges
0 to 1.6 mbar to 40 bar: 4 times MSP
For measuring ranges
0 to 60 bar: 3 times 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.
Measuring 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

Voltage supply influence

Reference voltage DC 24 V
≤ 0.0005 % per V

Permissible ambient temperature

-20 to +85 °C

Storage temperature

-40 to +85 °C

Permissible medium temperature

-20 to +85 °C

Electromagnetic compatibility (EMC)

DIN EN 61326-1:2013,
DIN EN 61326-2-3:2013
Interference emission: Class B²
Immunity to interference: Industrial require-
ments

Electrical connection

M12 plug connector
Recommended: Screened 5-wire cable

Mechanical shock

DIN IEC 68-2-27
100 g/5 msec

Mechanical vibration

DIN IEC 68-2-6
20 g max. at 15 to 2000 Hz

Enclosure protection

DIN EN 60529
IP 67 with connector screwed on

Housing

Stainless steel, mat. ref. 1.4305

Process connection

G 1/4" according to DIN EN 837,
1/4-18 NPT according to DIN 837,
G 1/4" according to DIN 3852-11,
G 1/2" according to DIN 3852-11,
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 for download at www.jumo.net.

Factory setting

Operating Instructions B 402055.0.
Available for download at www.jumo.net.

¹ MSP = measuring span

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

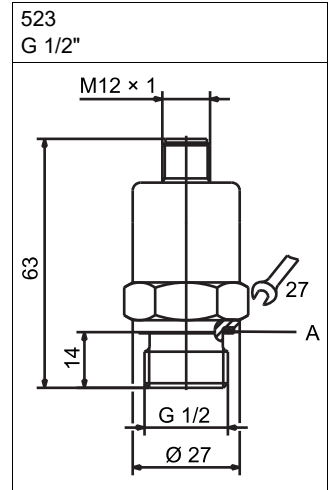
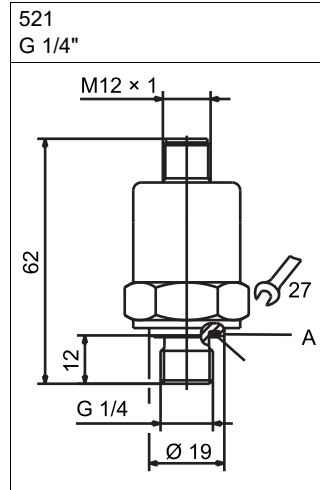
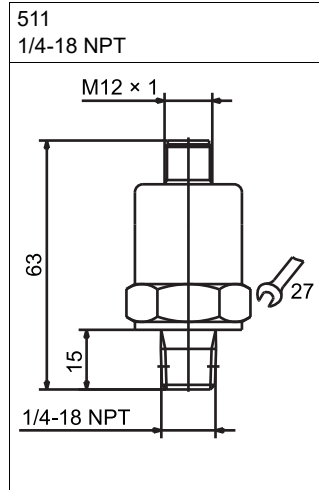
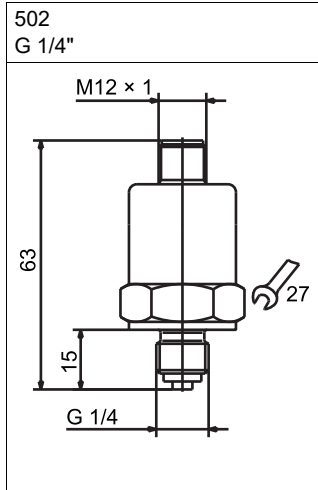
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Dimensions



A Profile seal ring G 1/4"

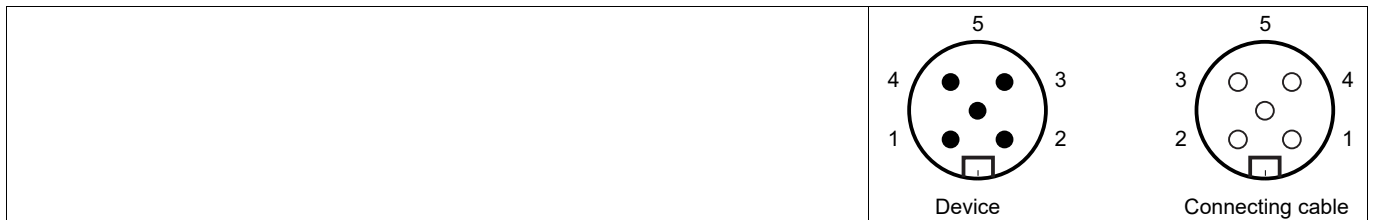
A Profile seal ring G 1/2"

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!

M12 plug connector



Terminal assignment

Designation	Description	Assignment
Voltage supply DC 10 to 30 V	V+	2
	V-	3
Output CANopen	Screen	1
	CAN_H	4
	CAN_L	5

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**Accessories**

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