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# Pressure Transmitter with CANopen output JUMO CANtrans p Ceramic Type 402055

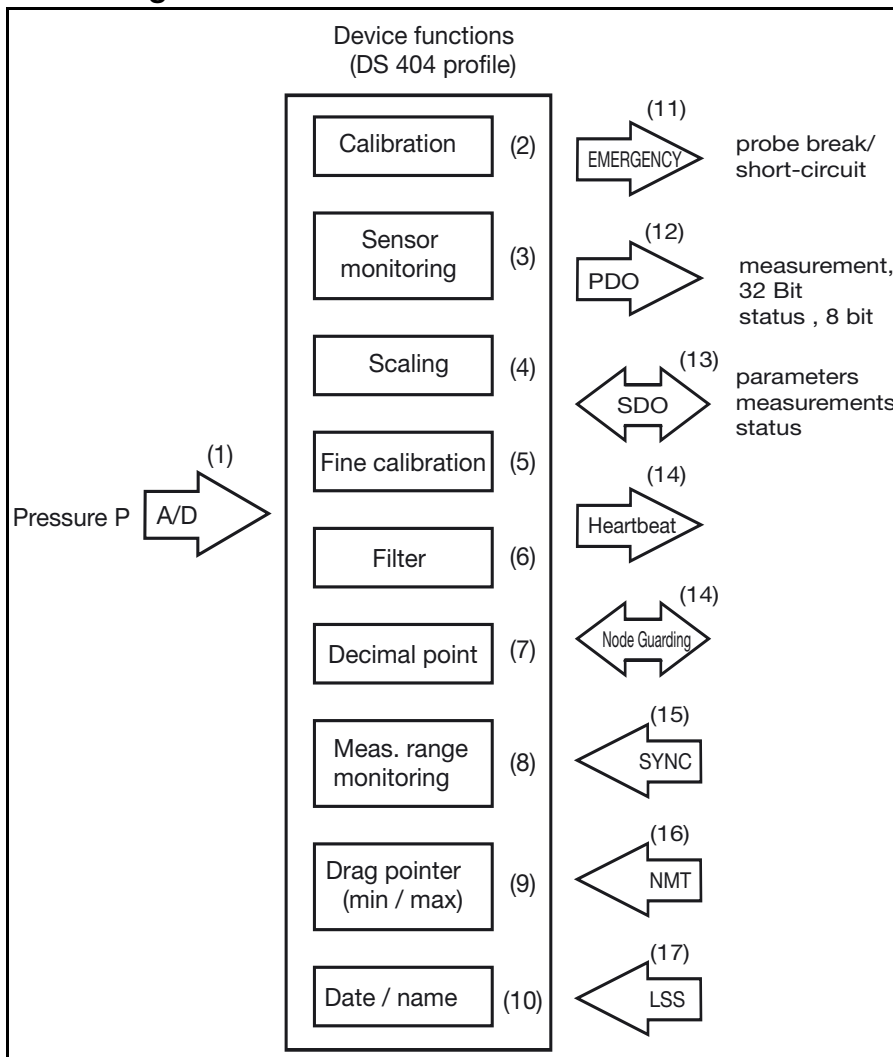
## General application

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<sub>2</sub>O<sub>3</sub>) 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 40.2056 (pressure), 40.2057 (pressure + temperature) and 90.2910 (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.

(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 16 086 and IEC 770/5.3

### Measurement ranges

see order details

### Overload limit

on ranges

0 — 1.6 mbar to 0 — 40 bar

3 x full scale

on ranges

0 — 60 to 0 — 100 bar

2 x full scale

### Bursting pressure

on ranges

0 — 1.6 mbar to 40 bar

4 x full scale

on ranges

0 — 60 to 0 — 100 bar

3 x full scale

### Parts in contact with medium

standard: st. steel, Mat. Ref. 1.4305,  
(Al<sub>2</sub>O<sub>3</sub>) 96%

seal: FPM or  
FFPM

### Output

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

### Zero offset

≤ 0.3% of full scale

### Thermal hysteresis

≤ ± 0.4% of full scale

### Ambient temperature effect

within range -20 to +85°C  
(compensated temperature range)

zero: ≤ 0.02% / °C typical,  
≤ 0.04% / °C max.

span: ≤ 0.02% / typical,  
≤ 0.04% / °C max.

### Deviation from characteristic

≤ 0.5% of full scale  
(limit point adjustment)

### Hysteresis

≤ 0.2% of full scale

### Repeatability

≤ 0.1% of full scale

### Cycle time

1 msec  
optionally 0.5 msec (11 bit)

### Stability per year

≤ 1% of full scale

### Supply

10 — 30 V DC

max. current drawn: approx. 45 mA

### Supply voltage error

reference voltage 24 V DC  
≤ 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

EN 61326

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)

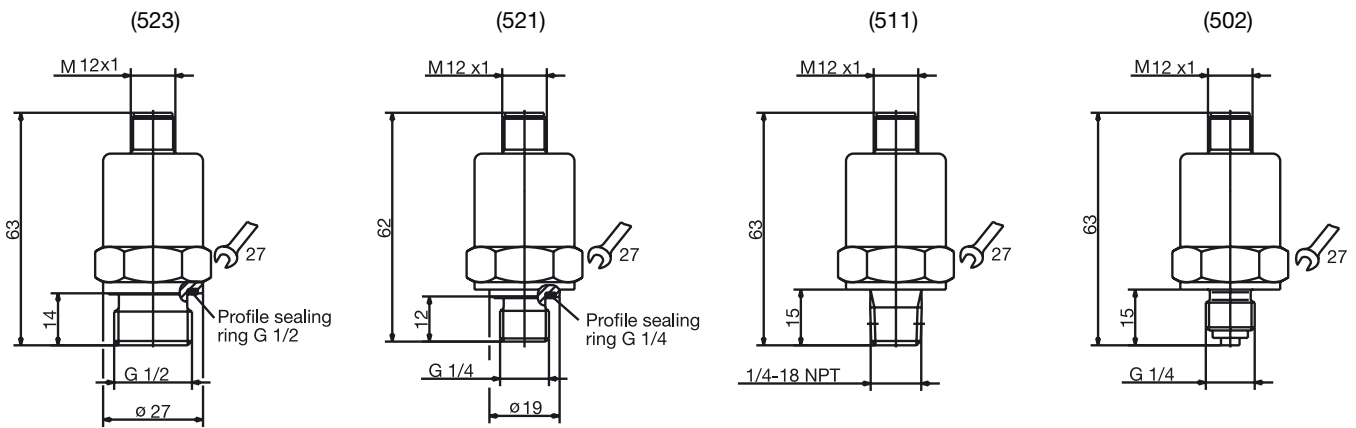
yes

available free of charge as a download file:  
[www.jumo.net](http://www.jumo.net) -> Product information

### Factory setting

see Operating Instructions B40.2055.0  
available free of charge as a download file:  
[www.jumo.net](http://www.jumo.net) -> Product information

### Dimensions



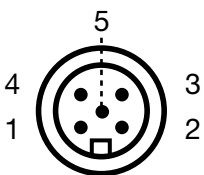
### Electrical connection

Connection		Terminal assignment	
		M12 connector	Terminal box with moulded cable Mat. Ref. 40/00337625
Supply 10 – 30 V DC		V+ 2 V- 3	white blue
Output CANopen		screen 1 CAN_H 4 CAN_L 5	brown black grey

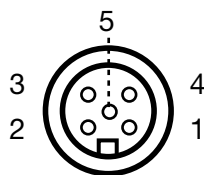
### Circular connector

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

Plug



Socket



### Accessories

Designation	Sales No.
5-pole terminal box M 12x1, straight, with 5m moulded cable	40/00337625
5-pole terminal box M 12x1, angled, with 2m moulded cable	40/00375164
5-pole terminal box M 12x1, straight, no cable, assembly by customer	40/00419130
5-pole terminal box M 12x1, angled, no cable, assembly by customer	40/00419133
Tee	40/00419129
Termination resistor for CAN bus, with plug	40/00461591
Extension cable 2m, 5-pole, M 12x1	40/00461589
PC CAN interface USB	40/00449941
PC configuration software for CANopen	40/00449942
EDS file, for download (www.jumo.net -> Product information)	for download
Operating Instructions, for download (www.jumo.net -> Product information)	for download

## Order details

	<b>(1) Basic type</b>
402055	Pressure transmitter JUMO CANtrans p Ceramic
	<b>(2) Basic type extensions</b>
000	none
999	special version
	<b>(3) Input</b>
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
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
999	special range: gauge pressure
	<b>(4) Output</b>
450	CANopen
	<b>(5) Process connection (not front-flush)</b>
502	G 1/4 to EN 837
511	1/4-18 NPT to DIN 837
521	G1/4 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
999	special process connection
	<b>(6) Material of process connection</b>
20	stainless steel
	<b>(7) Material of seal</b>
601	FPM
604	FFPM <sup>1</sup>
999	special material
	<b>(8) Electrical connection</b>
36	circular connector M 12x1 / 5-pole
	<b>(9) Extra codes</b>
000	none

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>Order code</b>	402055	/ 000	-	450	-	20	-	36	/ 000
<b>Order example</b>	402055	/ 000	-	462	-	502	-	601	- 36 / 000

<sup>1</sup> Product characteristics similar to PTFE.