

JUMO CANtrans p

Pressure Transmitter with CANopen output

Short description

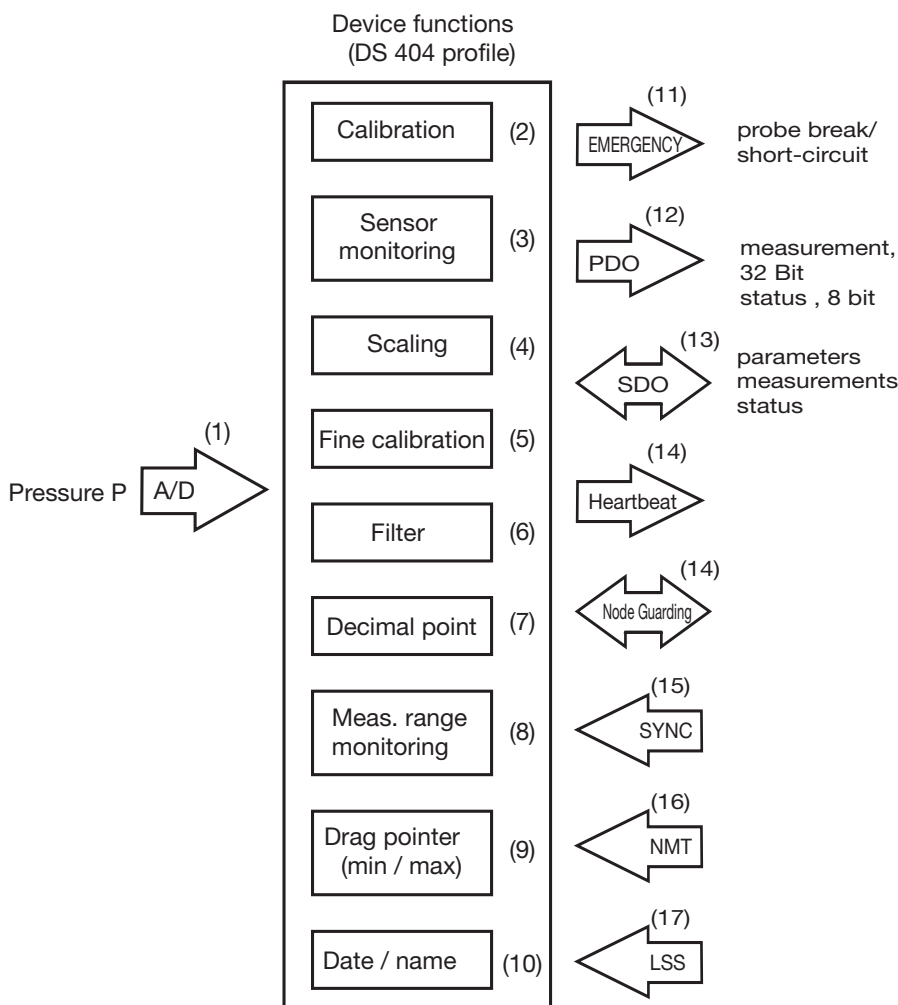
Pressure transmitters are used for measuring relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the piezoresistive or thin-film strain gauge measuring principle. The pressure measurement is digitized and made available for further processing via the CANopen 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).



Type 402056

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 measu-

rement 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, as selected.

Technical data

Reference conditions

to DIN 16086 and IEC 770/5.3

Measurement ranges

see order details

Overload limit

ranges 0 to 0.25 bar to 0 to 25 bar
3 x MSP¹

ranges 0 to 40 to 0 to 250 bar
2 x MSP

ranges 0 to 400 to 0 to 600 bar
1.5 x MSP

Bursting pressure

ranges 0 to 0.25 bar to 0 to 40 bar
≤ 4 x MSP

ranges 0 to 60 to 0 to 100 bar
8 x MSP

ranges 0 to 160 to 0 to 400 bar
5 x MSP

ranges 0 to 600 bar
3 x MSP

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 % MSP

Thermal hysteresis

≤ ± 0.5 % MSP
(within compensated temperature range)
≤ ± 1 % for ranges
0 to 250 mbar
0 to 400 mbar
0 to 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 % MSP (limit point setting)

Hysteresis

≤ 0.1 % MSP

Repeatability

≤ 0.05 % MSP

Cycle time

1 msec
optionally 0.5 msec (11 bit)

Stability per year

≤ 0.5 % MSP

Supply

DC 10 to 30 V
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

Electromagnetic compatibility

EN 61 326
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 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

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 to 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

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

¹ MSP = Measuring span

Dimensions

	Basic type extension	Dimension „L“
	000	48

Process connections

502 G 1/4 DIN EN 837	504 G 1/2 DIN EN 837	511 1/4-18NPT DIN EN 837	512 1/2-14NPT DIN EN 837


523 G 1/2 DIN 3852-11	562 7/16-20UNF	571 G 3/4 front-flush DIN EN ISO 228-1	575 G 3/4 front-flush with double gasket

(1) Profile seal G 1/2

(1) Profile seal G 3/4

(1) Profile seal G 3/4
(2) O-ring

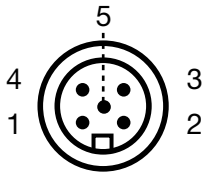
Electrical connection

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

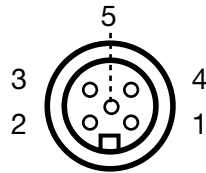
Round plug

M12 × 1; 5-pole to IEC 60947-5-2

Plug



Socket





Order details

(1) Basic type	
402056/000	JUMO CANtrans p - Pressure transmitter with CANopen output
402056/99	JUMO CANtrans p - Pressure transmitter with CANopen output, special version
(2) 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 measuring range absolute pressure
999	Special measuring range gauge pressure
(3) Output	
450	CANopen
(4) Process connections (not front-flush)	
502	G 1/4 to EN 837
504	G 1/2 to EN 837
511	1/4-18NPT to DIN 837
512	1/2-14NPT to DIN 837
523	G 1/2 to DIN 3852-11
562	7/16-20UNF



571	G 3/4 front-flush DIN EN ISO 228-1 ^a
575	G 3/4 front-flush with double gasket ^a
998	Connection for pressure separator
(5) Process connection material	
20	CrNi (stainless steel)
(6) Electrical connection	
36	Round plug M12 × 1
(7) Extra code	
000	None

^a Front-flush process connections are only available for measuring spans up to 25 bars.

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

Accessories

Designation	Part no.
Configuration software for CANopen	00449942
CAN-interface for USB-interface	00449941
BUS termination resistor CAN-Bus/digiLine M12 × 1	00461591
CON coupling socket series 763	00337625
CON receptacle 5-pole series 763	00375164
5-pin cable socket M12 × 1, straight, without connecting cable to be patched by the customer	00419130
5-pin cable socket M12 × 1, angled, without connecting cable to be patched by the customer	00419133
KCND cable RST5-RKT5-228 2000lg cable	00461589
T-connecting piece M12-5pole K-K-S	00419129