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 (Al₂O₃) 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.

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 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 MSP

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**

(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

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1 MSP = measuring span

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

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.

<table>
<thead>
<tr>
<th>Connection</th>
<th>Terminal assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage supply DC 10 to 30 V</td>
<td>M12 connector Terminal box with moulded cable, part no. 00337625</td>
</tr>
<tr>
<td>V+</td>
<td>2</td>
</tr>
<tr>
<td>V-</td>
<td>3</td>
</tr>
<tr>
<td>Output CANopen</td>
<td>Screen CAN_H CAN_L</td>
</tr>
<tr>
<td>1</td>
<td>brown</td>
</tr>
<tr>
<td>4</td>
<td>black</td>
</tr>
<tr>
<td>5</td>
<td>grey</td>
</tr>
</tbody>
</table>

Round plug

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

Connector

Socket
### Order details

<table>
<thead>
<tr>
<th>(1) Basic type</th>
<th>(2) Input</th>
<th>(3) Output</th>
<th>(4) Process connection (not front-flush)</th>
<th>(5) Process connection material</th>
<th>(6) Seal</th>
<th>(7) Electrical connection</th>
<th>(8) Extra code</th>
</tr>
</thead>
<tbody>
<tr>
<td>402055/000 JUMO CANtrans p Ceramic – Pressure transmitter with CANopen output</td>
<td>455 0 to 1.6 bar relative pressure</td>
<td>-</td>
<td>G 1/4 according to DIN EN 837</td>
<td>20 CrNi (stainless steel)</td>
<td>601 FPM</td>
<td>36 Round plug M12 × 1</td>
<td>000 None</td>
</tr>
<tr>
<td>402055/999 JUMO CANtrans p Ceramic – Pressure transmitter with CANopen output, special version</td>
<td>456 0 to 2.5 bar relative pressure</td>
<td>-</td>
<td>1/4-18 NPT according to DIN 837</td>
<td></td>
<td>604 FFPM&lt;sup&gt;a&lt;/sup&gt;</td>
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</table>

**Order code**

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
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<tbody>
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<td>402055/00</td>
<td>462</td>
<td>450</td>
<td>502</td>
<td>20</td>
<td>601</td>
<td>36</td>
<td>000</td>
</tr>
</tbody>
</table>

<sup>a</sup> Product characteristics similar to PTFE.
### Accessories

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

**EDS file**

*for download*

**Operating Instructions**

*for download*