# DACINTERNATIONAL



## Pressure transmitter **HPT 1400 for series applications**

**CAN** interface **CANopen Safety** Enhanced functional safety

Relative pressure

**Device temperature** 

Accuracy 0.5 %





#### **Features**

- CAN interface
- Robust
- Very compact design
- Functional Safety according to EN 61508 SIL 2 ISO 13849 PL d
- Functionally safe structure according to category 2 (ISO 13849) available

#### Description

This version of the pressure transmitter series HPT 1400 has been specially developed for use in safety circuits / safety functions as part of the functional safety of machinery and equipment up to SIL 2 (IEC 61508) or PL d (ISO 13849).

HPT 1400 with CAN interface is a compact pressure transmitter which is used to measure relative pressures in hydraulics and pneumatics. The measured pressure value is digitized and made available to the CAN field bus system via the CANopen protocol. The instrument parameters can be viewed and configured by the user using standard CAN software.

This pressure transmitter, which is based on the HPT 1400 dimensions, has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

Due to their outstanding temperature and EMC characteristics, together with their compact dimensions, these instruments can be used in a wide range of applications in the mobile and industrial sectors.

#### **Application fields**

Wide range of applications in safety-related systems such as

- Hydraulics
- Pneumatics
- Cooling power units
- Compressors
- and much more

## **Technical details**

| Input data  |                | 1  | 1-   | 1                                       | 1          | 1.  | 1-   | 1    |      |  |  |
|---|----------------|--|--|---|------------|-----|------|------|------|--|--|
| Measuring ranges  | bar            | 16   | 25   | 40                                      | 60         | 100 | 250  | 400  | 600  |  |  |
| Overload pressures  | bar            | 32   | 50   | 80                                      | 120        | 200 | 500  | 800  | 1000 |  |  |
| Burst pressure  | bar            | 125  | 125  | 200                                     | 300        | 500 | 1250 | 2000 | 2000 |  |  |
| Mechanical connection                                     |                | G 1/4 A  | ISO 117  | 9-2, plug                               |            |     |      |      |      |  |  |
| Tightening torque, recommended                            |                | 20 Nm  |  |   |            |     |      |      |      |  |  |
| Parts in contact with the fluid                           |                |  | Mech. connection: stainless steel<br>Seal: FKM       |   |            |     |      |      |      |  |  |
| Output data   |                |  |  |   |            |     |      |      |      |  |  |
| Output signal   |                | CANope   | en Safety  | /                                       |            |     |      |      |      |  |  |
| Accuracy acc. to DIN 16086, terminal based                | DIN 16086,     |  | ≤ ± 0.5 % FS typ.<br>≤ ± 1.0 % FS max.               |   |            |     |      |      |      |  |  |
| Accuracy at minimum value setting (B.F.S.L)               |                |  |  | ≤ ± 0.25 % FS typ.<br>≤ ± 0.5 % FS max. |            |     |      |      |      |  |  |
| Temperature compensation, zero point                      |                |  | ≤ ± 0.015 % FS / °C typ.<br>≤ ± 0.025 % FS / °C max. |   |            |     |      |      |      |  |  |
| Temperature compensation, over range                      |                |  | ≤ ± 0.015 % FS / °C typ.<br>≤ ± 0.025 % FS / °C max. |   |            |     |      |      |      |  |  |
| Non-linearity acc. to DIN 16086, terminal based           |                | ≤ ± 0.3 °  | % FS ma  | ıx.                                     |            |     |      |      |      |  |  |
| Hysteresis  |                | ≤ ± 0.4 °  | % FS ma  | IX.                                     |            |     |      |      |      |  |  |
| Repeatability   |                | ≤±0.1 % FS   |  |   |            |     |      |      |      |  |  |
| Rise time   |                | ≤ 3 ms p   | ≤ 3 ms plus cycle time from the CAN bus              |   |            |     |      |      |      |  |  |
| Long-term drift   | ong-term drift |  |  | ≤±0.3 % FS typ. / year                  |            |     |      |      |      |  |  |
| Environmental conditions                                  |                |  |  | -                                       |            |     |      |      |      |  |  |
| Compensated temperature range                             |                | -25 +8   | 85 °C  |   |            |     |      |      |      |  |  |
| Operating temperature range 1)                            |                | -40 +100 °C / -25 +100 °C                            |  |   |            |     |      |      |      |  |  |
| Storage temperature range                                 |                | -40 +100 °C  |  |   |            |     |      |      |      |  |  |
| iluid temperature range 1)                                |                | -40 +125 °C / -25 +125 °C                            |  |   |            |     |      |      |      |  |  |
| € mark  |                | EN 61000-6-1 / -2 / -3 / -4                          |  |   |            |     |      |      |      |  |  |
| ibration resistance acc. to DIN EN 60068-2-6 at 10 500 Hz |                | ≤ 25q  |  |   |            |     |      |      |      |  |  |
| nock resistance acc. to DIN EN 60068-2-27                 |                | 100 g / 6 ms / half-sine<br>500 g / 1 ms / half-sine |  |   |            |     |      |      |      |  |  |
| Protection class acc. to DIN EN 60529 2)                  |                |  | IP 67  |   |            |     |      |      |      |  |  |
| Safety-related data                                       |                |  |  |   |            |     |      |      |      |  |  |
| Performance Level   |                |  |  |   |            |     |      |      |      |  |  |
| Based on  |                | DIN FN   | ISO 138  | 49-1:2016                               | 5-06       |     |      |      |      |  |  |
| -PL   |                |  |  | d                                       |            |     |      |      |      |  |  |
| Architecture  |                |  | Category 2   |   |            |     |      |      |      |  |  |
| Safety Integrity Level                                    |                | Catogor  | , _  |   |            |     |      |      |      |  |  |
| Based on  |                | DIN FN   | 61508:2  | 011-02                                  |            |     |      |      |      |  |  |
| SIL   |                |  |  | 2                                       |            |     |      |      |      |  |  |
| CANopen Safety  |                |  |  |   |            |     |      |      |      |  |  |
| Communication profile                                     |                | CiA DS   | 301 V4 3   | 2.0                                     |            |     |      |      |      |  |  |
| Device profile  |                |  | CiA DS 301 V4.2.0 CiA DSP 404 V2.1.0                 |   |            |     |      |      |      |  |  |
| Safety-relevant communication                             |                |  | EN 50325-5   |   |            |     |      |      |      |  |  |
| Trasmission services SRDO                                 |                |  | Measured values 16/32 bit, status cyclical           |   |            |     |      |      |      |  |  |
| Baud rates  |                |  | acc. to DS   |   | •          |     |      |      |      |  |  |
| Other data  |                | TO ROIL.   | . I WIDIL  | 200. IO DO                              | ,505 V 5.C | ,   |      |      |      |  |  |
|   |                | 0 25 \   | / DC   |   |            |     |      |      |      |  |  |
| Supply voltage  |                |  | 9 35 V DC<br>≤ 5 %                                   |   |            |     |      |      |      |  |  |
|   |                |  |  |   |            |     |      |      |      |  |  |
| Residual ripple of supply voltage                         |                | < 25 m 1   |  |   |            |     |      |      |      |  |  |
|   |                | ≤ 25 mA  |  | cycles (0                               | 100.0/     | EC) |      |      |      |  |  |

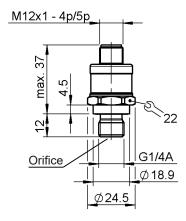
FS (Full Scale) = relative to complete measuring range

B.F.S.L.= Best Fit Straight Line

 $^{\mbox{\tiny 1)}}$  In the standard up to -25°C with FKM seal, -40 °C on request

<sup>2)</sup> With mounted mating connector in corresponding protection type

## **Dimensions**



## Pin connections

| M12x1, 5 pole                           | Pin | Output signal: F1X |                        |  |  |  |
|---|-----|--------------------|------------------------|--|--|--|
|   |     | Signal             | Description            |  |  |  |
|   | 1   | Housing            | Shield/housing         |  |  |  |
| 6 4 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | 2   | +U <sub>B</sub>    | Supply +               |  |  |  |
|   | 3   | 0 V                | Supply -               |  |  |  |
|   | 4   | CAN_H              | Bus line dominant high |  |  |  |
|   | 5   | CAN_L              | Bus line dominant low  |  |  |  |

## **Order details OEM**

Pressure transmitter HPT 1000 Functional Safety has been specially developed for OEM customers and is available for minimum order quantities of 500 pcs. per type.

For detailed specification, please do not hesitate to contact our HYDAC ELECTRONIC Sales department.

## **Note**

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

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