Pressure transmitter with Profibus® DP interface
Model D-10-7, standard version
Model D-11-7, flush diaphragm

Applications
- Automation engineering
- Test bench construction
- General industrial applications

Special features
- Profibus® DP interface (EN 501730)
- High accuracy up to 0.1 % incl. temperature error
- Intelligent sensors with calibration and diagnostic functions
- Transmission rate up to 12 MBaud
- Measuring ranges: 0 ... 250 mbar to 0 ... 1000 bar

Description

Bus technology
Profibus® DP (Decentralized Peripherals) stands for easy, quick, cyclical and determined process data exchange between a bus master and the assigned slave instruments. This process is based on the well-tried RS485 transmission technology.

In the background of every Profibus® PA system is a Profibus® DP network behind the segment coupler. Based on its quick and cost-effective transmission technology, Profibus® DP is the best choice for applications in areas which are not intrinsically safe (non Ex).

WIKA precision sensors
The model D-10-7 transmitter is based around a sensor design with integrated dynamic temperature compensation. It offers the user an accuracy up to 0.1 %, without any additional temperature error, within the temperature range of 32 ... 122 °F (0 ... +50 °C).

Fully-welded and with in-house manufactured thin-film and piezo sensors, there is absolutely no need for additional sealing materials. WIKA’s sensors are already known for their high load cycle stability, resistance against pressure spikes and low non-repeatability.

Safety
Through coordinated EMC measures, in combination with the integrated galvanic isolation within the instrument, a high level of data security is guaranteed, even at transmission rates of up to 12 MBaud.

Comprehensive diagnostics routines, as well as the determination of the medium temperature, are available via Profibus® DP services in accordance with EN 50170. The electrical connections are achieved using M12 x 1 circular connectors per IEC 60947-5-2 for the data transmission and power supply. Thus an ingress protection of up to IP 65 is achieved and a simple and secure connection to the bus is ensured.

Data sheets showing similar products:
Pressure transmitter with CANopen interface, class 0.5 % or 1 %; model D-2X-9; see data sheet PE 81.39
Pressure transmitter for precision measurement with analogue output signals; model P-1X; see data sheet PE 81.32
Pressure transmitter with digital output RS 232; model D-1X; see data sheet PE 81.33
Specifications

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(Vacuum, gauge pressure, +/-, and absolute pressure are available)

Material

- Wetted parts
  - Model D-10-7: Stainless steel (with measuring range > 25 bar additionally Elgiloy®)
  - Model D-11-7: Stainless steel (Hastelloy); O-ring: NBR (FPM/FKM or EPDM)
- Case
  - Stainless steel

Internal transmission fluid

- Synthetic oil (halocarbon oil for oxygen versions)
  - (listed by FDA for food industry)

Supply voltage $U_B$ DC $10 \text{ V} < U_B \leq 30 \text{ V}$

Output signal

- Profibus® DP protocol per EN 50170 / DIN 19245

Power consumption $W$ 1.7

Sensor services

- 2-byte error coding for sensor error or failure of electronics, Min./max. value upper deviation temperature + pressure

Terminating resistor

- Internal terminating resistor can be activated via integrated DIP switch

Internal measuring rate Hz $\leq 100$

Warming-up period min $\leq 10$

Insulation voltage DC 500 V

Accuracy $^4$ % of span $\leq 0.25 \ (0.10)$ in the range $32 \ldots 122 \, ^\circ \text{F} (0 \ldots +50 \, ^\circ \text{C})$

Non-linearity $^4$ % of span $\leq 0.04$ (BFSL) per IEC 61298-2

Long-term stability % of span $\leq 0.10 / \text{year}$ (at reference conditions)

Permissible temperature ranges

- Medium $^5, ^6$
  - $-4 \ldots 176 \, ^\circ \text{F} (-20 \ldots +80 \, ^\circ \text{C})$
- Ambient $^5$
  - $-4 \ldots 176 \, ^\circ \text{F} (-20 \ldots +80 \, ^\circ \text{C})$
- Storage $^5$
  - $-40 \ldots 185 \, ^\circ \text{F} (-40 \ldots +85 \, ^\circ \text{C})$

Compensated temperature range

- $-4 \ldots 176 \, ^\circ \text{F} (-20 \ldots +80 \, ^\circ \text{C})$

Temperature coefficients in the compensated temperature range

- (The temperature errors in the range $32 \ldots 122 \, ^\circ \text{F} (0 \ldots +50 \, ^\circ \text{C})$ are already included in the accuracy)
  - Mean TC of zero % of span $\leq 0.20 / 10 \, ^\circ \text{K}$ (at reference conditions)
  - Mean TC of span % of span $\leq 0.20 / 10 \, ^\circ \text{K}$ (at reference conditions)

CE conformity

- Pressure equipment directive 97/23/EC
- EMC directive 2004/108/EC
- EN 61326 emission (group 1, class B) and interference immunity (industrial application)

Shock resistance $g$ $< 100$ per IEC 60068-2-27 (mechanical shock)

Vibration resistance $g$ $< 5$ per IEC 60068-2-6 (vibration under resonance)

Reverse polarity protection $U_B^+ \text{vs.} U_B^-$

Weight kg approx. 0.4

Detailed information about interface services and also about input and output data are given in the operating instructions.

1) Items in curved brackets are optional extras for an additional price.
2) Applies only to model D-10-7.
3) Not with model D-10-7 for measuring ranges > 25 bar.
4) Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2). Calibrated in vertical mounting position with process connection facing downwards.
5) Also meets EN 50018, tab. 7, (operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3
6) D-11-7 is not available in an oxygen version. In an oxygen version model D-10-7 is only available with medium temperatures between $-20 \ldots +60 \, ^\circ \text{C}$.
Dimensions in mm

Pressure transmitter

with M12 x 1 circular connector
(mating connector not included in the delivery)

Other electrical connections or IP 67 on request

Process connections

G 1/2
EN 837

G 1/4
EN 837

1/2 NPT
ANSI/ASME B 1.20.1

1/2 NPT
ANSI/ASME B 1.20.1

G 1 B
0 ... 0.25 to 0 ... 1.6 bar

G 1/2 B
0 ... 2.5 to 0 ... 600 bar

For information on tapped holes and welding sockets, see
Technical Information IN 00.14 at www.wika.de.
### Electrical connections

#### PIN assignment of the connections per PNO recommendation

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<th>Female connector, 5-pin per general Profibus® connection technology with inverted, mechanical coding, M12 x 1</th>
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<td>1 = n.c.</td>
</tr>
<tr>
<td>2 = n.c.</td>
<td>2 = RxD/TxD-N / A-line</td>
</tr>
<tr>
<td>3 = U8-</td>
<td>3 = n.c.</td>
</tr>
<tr>
<td>4 = n.c.</td>
<td>4 = RxD/TxD-P / B-line</td>
</tr>
<tr>
<td>5 = n.c.</td>
<td>5 = shield</td>
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#### DIP switch configuration

![DIP switch configuration diagram](image)

#### Ordering information

Model / Measuring range / Process connection

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