

Pressure transmitter with Profibus® DP interface

Model D-10-7, standard version

Model D-11-7, flush diaphragm

WIKA data sheet PE 81.30



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



Fig. left: Pressure transmitter D-10-7
Fig. right: Pressure transmitter D-11-7

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-trying 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. WIKAs 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.

Specifications		Models D-10-7, D-11-7									
Measuring ranges	bar	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16
Overpressure safety	bar	2	2	4	5	10	10	17	35	35	80
Burst pressure	bar	2.4	2.4	4.8	6	12	12	20.5	42	42	96
Measuring ranges	bar	25	40	60	100	160	250	400	600	1000 ¹⁾	
Overpressure safety	bar	50	80	120	200	320	500	800	1200	1500	
Burst pressure	bar	96	400	800	800	1000	1200	1700 ²⁾	2400 ²⁾	3000	
{Vacuum, gauge pressure, +/-, and absolute pressure are available}											
Material		(for other materials see WIKA diaphragm seals product range)									
■ Wetted parts		Stainless steel (with measuring range > 25 bar additionally Elgiloy®)									
- Model D-10-7		Stainless steel {Hastelloy}; O-ring: NBR {FPM/FKM or EPDM}									
- Model D-11-7		Stainless steel									
■ Case		Stainless steel									
Internal transmission fluid ³⁾		Synthetic oil {halocarbon oil for oxygen versions} {listed by FDA for food industry}									
Supply voltage U _B	DC	10 V < U _B ≤ 30 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	≤ 100									
Warming-up period	min	< 10									
Insulation voltage	DC	500 V									
Accuracy ⁴⁾	% of span	≤ 0.25 {0.10} in the range 32 ... 122 °F (0 ... +50 °C)									
Non-linearity	% of span	≤ 0.04 (BFSL) per IEC 61298-2									
Long-term stability	% of span	≤ 0.10 / year (at reference conditions)									
Permissible temperature ranges											
■ Medium ^{5) 6)}		-4 ... 176 °F (-20 ... +80 °C)									
■ Ambient ⁵⁾		-4 ... 176 °F (-20 ... +80 °C)									
■ Storage ⁵⁾		-40 ... 185 °F (-40 ... +85 °C)									
Compensated temperature range		-4 ... 176 °F (-20 ... +80 °C)									
Temperature coefficients in the compensated temperature range		(The temperature errors in the range 32 ... 122 °F (0 ... +50 °C) are already included in the accuracy)									
■ Mean TC of zero	% of span	≤ 0.20 / 10 K {≤ 0.10 / 10 K}									
■ Mean TC of span	% of span	≤ 0.20 / 10 K {≤ 0.10 / 10 K}									
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+} 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.

{ } Items in curved brackets are optional extras for an additional price.

1) Applies only to model D-10-7.

2) For model D-11-7: The value specified in the table applies only when sealing is made using a sealing ring below the hexagon. Otherwise max. 1500 bar applies.

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.

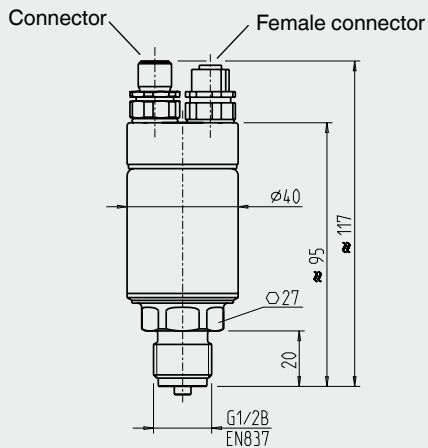
5) Also meets EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3

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 ... +60 °C..

Dimensions in mm

Pressure transmitter

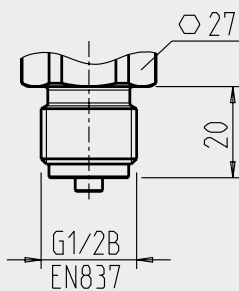
with M12 x 1 circular connector
(mating connector not included in the delivery)



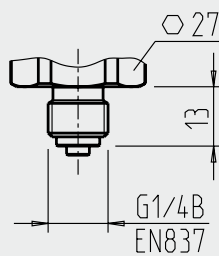
Other electrical connections or IP 67 on request

Process connections

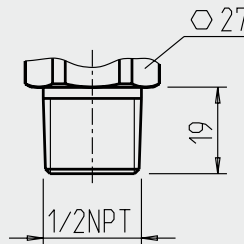
G 1/2
EN 837



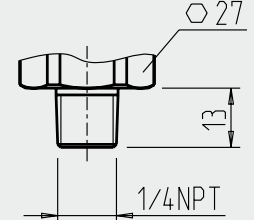
G 1/4
EN 837



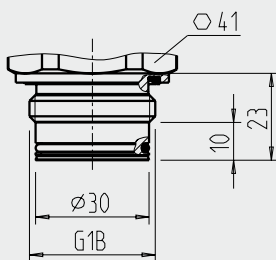
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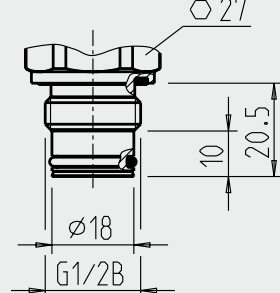
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ANSI/ASME B 1.20.1



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



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




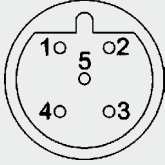
For information on tapped holes and welding sockets, see
Technical Information IN 00.14 at www.wika.de.

Electrical connections

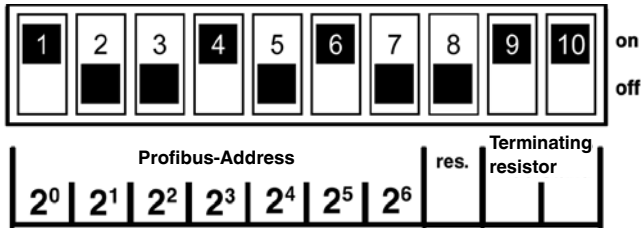
PIN assignment of the connections per PNO recommendation

Circular connector M12 x 1, 5-pin

Female connector, 5-pin per general Profibus® connection technology with inverted, mechanical coding, M12 x 1

Supply voltage		Profibus® connection	
	1 = UB+ 2 = n.c. 3 = UB- 4 = n.c. 5 = n.c.		1 = n.c. 2 = RxD/TxD-N / A-line 3 = n.c. 4 = RxD/TxD-P / B-line 5 = shield

DIP switch configuration



Ordering information

Model / Measuring range / Process connection

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 We reserve the right to make modifications to the specifications and materials.



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