

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
- Test benches
- General industrial applications

Special Features

- PROFIBUS DP-Interface (EN 50 170)
- High accuracy up to 0.1 % temperature drift included
- Intelligent sensor with calibration- and diagnostic services
- Baud rate up to 12 MBaud
- Pressure ranges: 0 ... 250 mbar up 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-tried RS485 transmission technology.

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

WIKA Precision Sensor

The heart of the PROFIBUS-DP transmitter is a sensor design with integrated dynamic temperature compensation. Within the temperature range of 0 to +50 °C (+32 to +122 °F) it has an accuracy up to 0.1% without any additional temperature error.

Due to the completely welded, in-house manufactured thin-film and piezo sensors there is absolutely no need for extra sealing materials.

The WIKA-made sensors are already well known for their high resistance against load changes, pressure pikes and good repeatability.

Safety

Adequate EMC-procedures in combination with the integrated galvanic separation equipment guarantee a high grade of data security even at transmission rates up to 12 MBaud.

Several diagnosis routines as well as the determination of the media temperature can be carried out via PROFIBUS DP services in compliance with EN 50 170.

Circular connector M 12 x 1 per IEC 60 947-5-2 for the data transmission (5-pins) and power supply (4-pins) up to IP 65 guarantee a simple and secure connection to the bus.

Specifications

Model D-10-7 / D-11-7

Pressure ranges	bar	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16
Over pressure 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
Pressure ranges	bar	25	40	60	100	160	250	400	600	1000 ¹⁾	
Over pressure 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, compound range, absolute pressure are available}											
¹⁾ Only Model D-10-7.											
²⁾ For model D-11-7: the value specified in the table applies only when sealing is realised with the sealing ring underneath the hex. Otherwise max. 1500 bar applies.											
Materials		(other materials see WIKA diaphragm seal program)									
■ Wetted parts		Stainless steel (pressure ranges > 25 bar additional Elgiloy®)									
> Model D-10-7		Stainless steel {Hastelloy C4}; O-ring: NBR {FPM/FKM or EPDM}									
> Model D-11-7		Stainless steel									
■ Case		Synthetic oil {Halocarbon oil for oxygen applications}									
Internal transmission fluid ³⁾		{Listed by FDA for Food & Beverage}									
³⁾ Not for D-10-7 with pressure ranges > 25 bar											
Power supply U _B	DC V	10 ... 30									
Power input	W	≤ 1.7									
Signal output		PROFIBUS DP protocol in compliance with EN 50 170 / DIN 19 245									
Sensor services		2-byte error coding for error of sensor or failure of electronics,									
Termination	Ω	Internal termination can be activated via integrated DIP-switch									
Internal measuring rate	Hz	100									
Warm-up time	min	< 10									
Accuracy ⁴⁾	% of span	≤ 0.25 {0.10} in the range 0 ... +50 °C / +32 ... +122 °F									
⁴⁾ Including non-linearity, hysteresis, non-repeatability, zero point and full scale error (corresponds to error of measurement per IEC 61298-2). Adjusted in vertical mounting position with lower pressure connection.											
Non-linearity	% of span	≤ 0.04 (BFSL) according to IEC 61298-2									
1-year stability	% of span	≤ 0.10 (under reference conditions)									
Permissible temperature of											
■ Medium ^{*)}		-20 ... +80 °C					-4 ... +176 °F				
■ Ambience		-20 ... +80 °C					-4 ... +176 °F				
■ Storage		-40 ... +85 °C					-40 ... +185 °F				
Compensated temperature range		-20 ... +80 °C					-4 ... +176 °F				
Temperature coefficients in compensated temperature range											
■ Mean TC of zero	% of span	≤ 0.20 / 10 K {0.10}									
■ Mean TC of range	% of span	≤ 0.20 / 10 K {0.10}									
(The temperature related deviations in the range 0 ... +50 °C / +32 ... +122 °F are already included in the accuracy)											
CE - conformity		89/336/EWG interference emission and immunity see EN 61 326 97/23/EG Pressure equipment directive (Module H)									
Shock resistance	g	< 100 according to IEC 60068-2-27 (mechanical shock)									
Vibration resistance	g	< 5 according to IEC 60068-2-6 (vibration under resonance)									
Wiring protection		Protected against reverse polarity and short circuiting, galvanic isolation on the instrument side									
Mass	kg	Approx. 0.4									
Detailed information about interface services as well as about input and output data are given in the manual.											

^{*)} In an oxygen version model D-11-7 is not available. In an oxygen version model D-10-7 is only available with media temperatures between -20 ... +60 °C / -4 ... +140 °F.

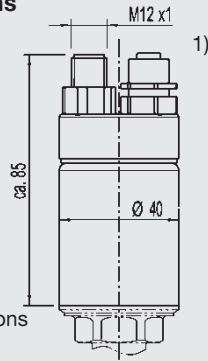
{ } Items in curved brackets are optional extras for additional price.

Dimensions in mm

Ingress Protection IP per IEC 60 529

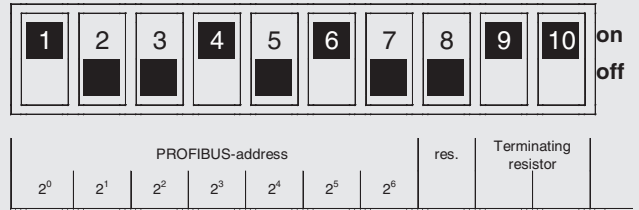
Electrical connections

Circular connector
M 12x1, IP 65
Order code: 8X



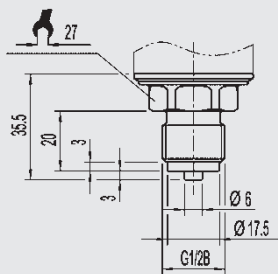
Other electrical connections
on request.

DIP switch configuration

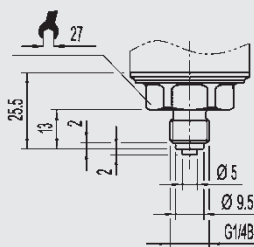


Pressure connections D-10-7

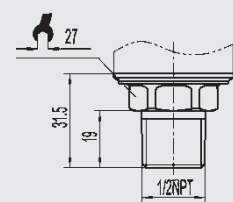
G 1/2 B
EN 837-G 1/2B
Order code: GD



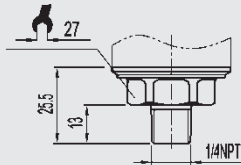
G 1/4 B
Order code: GB



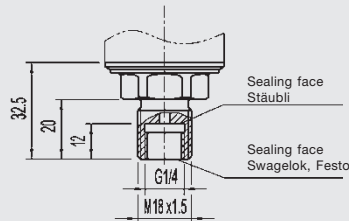
1/2 NPT
per „Nominal size for US standard tapered pipe thread NPT“
Order code: ND



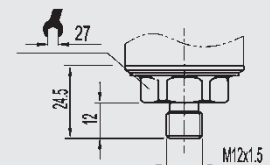
1/4 NPT
per „Nominal size for US standard tapered pipe thread NPT“
Order code: NB



M 18x1.5
Order code: M6



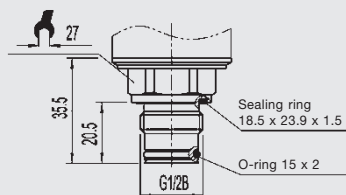
M 12x1.5
Order code: MK



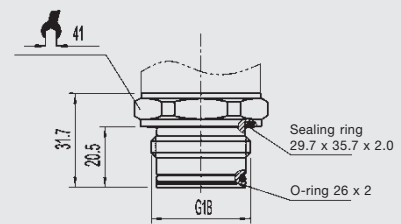
For quick disconnect coupler
Swagelok, Stäubli, Festo

Pressure connection D-11-7, flush diaphragm

G 1/2 B
0 ... 2.5 up to 0 ... 600 bar
Order code: 86



G 1B
0 ... 0.25 up to 0 ... 1.6 bar
Order code: 85




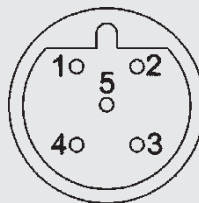
**For installation and safety instructions see the operating instructions for this product.
For tapped holes and welding sockets please see Technical Information IN 00.14 for download at
www.wika.de -Service**

1) Connectors are not included in delivery.

Device profile D-10-7

Description			
#Profibus_DP		MaxTsdr_93.75	= 60
; Unit-Definition-List:		MaxTsdr_187.5	= 60
GSD_Revision	= 1	MaxTsdr_500	= 100
Vendor_Name	= "WIKA"	MaxTsdr_1.5M	= 150
Model_Name	= "D-1*-7"	MaxTsdr_3M	= 250
Revision	= "Rev 0.2"	MaxTsdr_6M	= 450
Ident_Number	= 0x04A5	MaxTsdr_12M	= 800
Protocol_Ident	= 0	24V_Pins	= 0
Station_Type	= 0	Implementation_Type	= "SPC3"
FMS_supp	= 1	Bitmap_Device	= "wika04a5"
Hardware_Release	= "01"	Bitmap_Diag	= "wika04a5"
Software_Release	= "01"	Bitmap_SF	= "wika04a5"
9.6_supp	= 1	Freeze_Mode_supp	= 0
19.2_supp	= 1	Sync_Mode_supp	= 0
93.75_supp	= 1	Auto_Baud_supp	= 1
187.5_supp	= 1	Set_Slave_Add_supp	= 0
500_supp	= 1	Min_Slave_Intervall	= 1
1.5M_supp	= 1	Modular_Station	= 0
3M_supp	= 1	Max_User_Prm_Data_Len	= 0
6M_supp	= 1	Fail_Safe	= 0
12M_supp	= 1	Slave_Family	= 0
MaxTsdr_9.6	= 60	Max_Diag_Data_Len	= 16
MaxTsdr_19.2	= 60	Module	= "8 Byte In, 3 Byte Out" 0x17,0x22
		EndModule	

Wiring details

PIN configuration acc. PNO recommendation			
Circular connector, 5-pin, male M 12x1		Circular connector, female acc. to general PROFIBUS connection with inverted, mechanical coding, M 12x1	
Distribution voltage		Connection PROFIBUS DP	
	1 – U _{B+}		1 – n.c.
	2 – n.c.		2 – RxD/TxD-N / A-Line
	3 – U _{B-}		3 – n.c.
	4 – n.c.		4 – RxD/TxD-P / B-Line
	5 – n.c.		5 – screen- <u> </u>

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.

