

## Pressure Transmitter

# TM - Passive Transmitter



### CUSTOMER BENEFITS

- Fast customization thanks to modular product design
- Demountable electrical connector option allow adjustment of zero and span setting in the field
- Very short response times suitable for dynamic pressure measurements

# Technical Specifications

## PRESSURE MEASURING RANGE (BAR)

	0.1 ... 0.5, (1)	> 0.5 ... 2	> 2 ... 25
Overpressure	3 bar	3 x FS ( $\geq 3$ bar)	3 x FS
Burst pressure, (5)	> 200 bar	> 200 bar	> 200 bar
Accuracy, (6) ( $\pm$ % FS)	$\leq 0.5$	$\leq 0.5 / \leq 0.25$	$\leq 0.5 / \leq 0.25$
Thermal shift, ( $\pm$ % FS/ $^{\circ}$ C)			
Zero point 0 ... 70 $^{\circ}$ C	$\leq 0.06$	$\leq 0.03$	$\leq 0.015$
Zero point -25 ... 85 $^{\circ}$ C	$\leq 0.08$	$\leq 0.04$	$\leq 0.02$
Span 0 ... 70 $^{\circ}$ C	$\leq 0.015$	$\leq 0.015$	$\leq 0.015$
Span -25 ... 85 $^{\circ}$ C	$\leq 0.02$	$\leq 0.02$	$\leq 0.02$
Response time, (typ.)	< 0.1ms / 10 ... 90% FS	< 0.1ms / 10 ... 90% FS	< 0.1ms / 10 ... 90% FS
Long term stability, (7)	< 0.5% FS / < 4 mbar	< 0.2% FS / < 4 mbar	< 0.1% FS / < 0.2% FS

	> 25 ... 600, (2), (3), (4)	> 600 ... 1000, (2), (3)
Overpressure	3 x FS ( $\leq 850 / \leq 1500$ bar)	1500 bar
Burst pressure, (5)	> 850 / $\leq 1500$ bar	> 1500 bar
Accuracy, (6) ( $\pm$ % FS)	$\leq 0.5 / \leq 0.25$	$\leq 1 / \leq 0.5$
Thermal shift, ( $\pm$ % FS/ $^{\circ}$ C)		
Zero point 0 ... 70 $^{\circ}$ C	$\leq 0.015$	$\leq 0.015$
Zero point -25 ... 85 $^{\circ}$ C	$\leq 0.02$	$\leq 0.02$
Span 0 ... 70 $^{\circ}$ C	$\leq 0.015$	$\leq 0.015$
Span -25 ... 85 $^{\circ}$ C	$\leq 0.02$	$\leq 0.02$
Response time, (typ.)	< 0.1ms / 10 ... 90% FS	< 0.1ms / 10 ... 90% FS
Long term stability, (7)	< 0.1% FS / < 0.2% FS	< 0.1% FS / < 0.2% FS

(1) 50 mbar on request

(2) Titanium available  $\leq 400$  bar (burst pressure > 550 bar)

(3) Process connection frontal and flush diaphragm available  $\leq 600$  bar

(4) Overpressure and burst pressure 1500 bar (stainless steel) optional

(5) Transducer

(6) Zero based accuracy according to DIN-16086, incl. hysteresis and repeatability at ambient temperature

(7) 1 year (typ. / max.), the long term stability can be improved by ageing (burn-in) the sensor

## TEMPERATURE RANGE

Operating temperature	-40 ... 125 $^{\circ}$ C
Process temperatur	-40 ... 150 $^{\circ}$ C
Storage temperatur	-40 ... 125 $^{\circ}$ C

## TYPICAL OUTPUT SIGNAL (BAR)

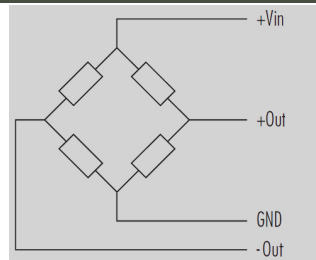
	≤ 0.25	> 0.25 ... 0.6	> 0.6 ... 1
Output signal, (1), (mV)	15	25	35

	> 1 ... 2.5	> 2.5
Output signal, (1), (mV)	50	100

(1) At nominal pressure, 10 V DC

## ELECTRICAL SPECIFICATIONS

Circuit diagram



Input impedance	> 10 kΩ
Bridge resistance, (typ.)	3 kΩ
Supply voltage, >br> (typ./max.)	10 / 15 V DC

## PHYSICAL SPECIFICATIONS

Materials

Transducer	Stainless steel (316L / 1.4435), titanium (Gr. 2), (1)
Housing	Stainless steel (316L / 1.4404), titanium (Gr. 2)
Seals	Viton (Standard), EPDM, Kalrez
Cable	PUR, FEP, PE

(1) Hastelloy (C-276) on request

# Accessories

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## CABLE SOCKET CONNECTOR

HART001	Cable Socket Connector DIN 43650
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## OVERVIEW

10.00.0091	Accessories overview
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# Additional documents

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## OPERATING AND SAFETY INSTRUCTIONS

	Article number
10.88.0369	DMM030

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# Ordering information

	X.	XXXX.	XXXX.	XX.	XXX
<b>Type</b>					
	TM	21			
<b>Pressure type</b>					
	Gauge	1			
	Absolute (vacuum)	2			
	Sealed gauge	3			
<b>Pressure measuring range</b>					
	50 mbar ... <100 mbar	XX			
	100 mbar ... 600 bar	XX			
	> 600 bar	XX			
	Negative ranges, offset, special adjustment	99			
<b>Process connection</b>					
	G 1/4 F, (Fig. 1)	00			
	1/4 NPT M, (Fig. 9)	10			
	1/2 NPT M, (Fig. 8)	19			
	G 1/4 M, (Fig. 2)	11			
	G 1/4 flush diaphragm, (4)	21			
	G 1/4 M, manometer DIN 16288, (Fig. 3)	12			
	G 1/2 M, (Fig. 4)	13			
	G 1/2 M Hastelloy C276, (3)	41			
	G 1/2 M, frontal diaphragm, (Fig. 5), (4)	14			
	G 1/2 M, frontal diaphragm in Hastelloy C276, (3)	37			
	G 1/2 M, flush diaphragm, (Fig. 6), (4)	15			
	G 1/2 M, manometer DIN 16288, (Fig. 7)	16			
	G 1/2 with bore Ø 14 mm	17			
	Customized	99			
<b>Electrical connection</b>					
	DIN-43650 with metal threaded part, demountable, IP 65 (Fig. 10) (1)	01			
	M16 (Binder 723), 5-pin, IP 67, (Fig. 11), (1)	03			
	M16 (Binder 723), 5-pin, demountable, IP 67, (Fig. 12), (1)	43			
	MIL C26482, 10-6, IP 40, (Fig. 13), (1)	06			
	PE cable, black, IP 67, (Fig. 14)	13			
	PUR cable, black, IP 67, (Fig. 14)	15			
	FEP cable, black, IP 67, (Fig. 14)	21			
	FEP cable, (high temperature), black, IP 67, (Fig. 14)	11			
	Customized connection available	99			
<b>Output signal</b>					
	0 ... 10 mV	10			
	0 ... 25 mV	11			
	0 ... 35 mV	12			
	0 ... 50 mV	13			
	0 ... 100 mV	14			
	0 ... XXX mV (customized)	99			
<b>Accuracy</b>					
	≤ 600 bar ≤ ± 0.5 % FS			0	
	≤ 600 bar ≤ ± 0.25 % FS (on request)			1	

	> 600bar $\leq \pm 1\%$ FS		5
	> 600bar $\leq \pm 0.5\%$ FS		0
<b>Temperature range</b>			
	0 ... 70°C compensated process temperature: -40 ... 150°C	(allowed	0
	-25 ... 100°C compensated (allowed process temperature: -40 ... 150°C)		7
	-25 ... 85°C compensated (allowed process temperature: -40 ... 150°C)		5
	Customized		9
<b>Option 1</b>			
	Throttle, (5)		A
	Special oil filling: Anderol Food food applications)	(for	G
	Special oil filling: AS100 for media temp. -55 ... 150°C)	(suitable	J
	Special oil filling: PAO4 (silicone free)		Q
	Process connection elastomerfree		N
	Process connection welded		V
<b>Option 2</b>			
	Electronics packed in gel: Gauge pressure		C
	Electronics packed in gel: Absolute pressure		D
<b>Option 3</b>			
	Version titanium		K
	Seals: Viton (Standard)		U
	Seals: EPDM		S
	Seals: Kalrez		T

(1) Cable socket connector not included

(3) Only parts which are in contact with medium

(4) Process connection available  $\leq 600$  bar

(5) Only with process connection Fig. 2, Fig. 3, Fig. 6 and Fig. 7

# Technical drawings

## Pressure Connections

Fig. 1

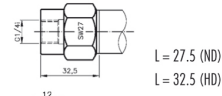


Fig. 2

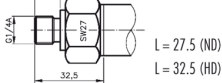


Fig. 3

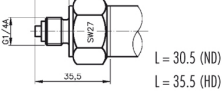


Fig. 4



Fig. 5

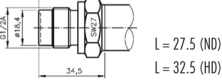


Fig. 6

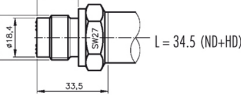


Fig. 7



Fig. 8

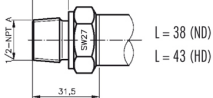
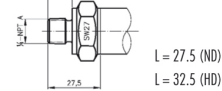
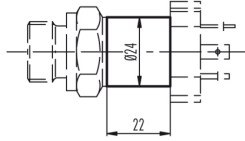


Fig. 9



L = 31.5 (ND)  
L = 36.5 (HD)

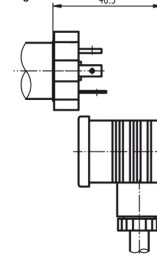
Version for media temperature up to 150°C



## Dimensions

## Electrical Connections

Fig. 10



Pin	TM
1	+Vin
2	+Out
3	GND
Earth	-Out

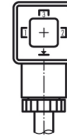


Fig. 11

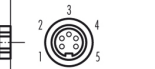
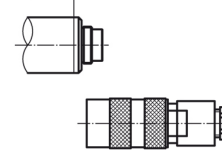
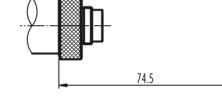
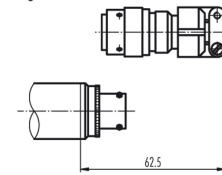


Fig. 12



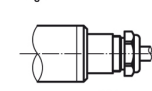
Pin	TM	TM/Ex
1	+Out	+Out
2	-Out	-Out
3	+Vin	+Vin
4	GND	GND
5		EP

Fig. 13



Pin	TM	TM/Ex
A	+Vin	+Vin
B	GND	GND
C	+Out	+Out
D	-Out	-Out
E		EP

Fig. 14



Colour	TM	TM/Ex
white	+Vin	+Vin
yellow	GND	GND
brown	+Out	+Out
green	-Out	-Out
gray		EP

Specifications may change without notice.

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