

## Programmable pressure and temperature transmitters

# PTM/RS485

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Version: 28.06.2012

# Technical Specifications

## Pressure measuring range (bar)

	0.1 ... 0.5	> 0.5 ... 2	> 2 ... 25
<b>Overpressure</b>	3 bar	3 x FS ( $\geq 3$ bar)	3 x FS
<b>Burst pressure</b>	> 200 bar	> 200 bar	> 200 bar
<b>Accuracy, (3), (<math>\pm</math> % FS)</b>	$\leq 0.25$	$\leq 0.1$	$\leq 0.1$
<b>Thermal shift, (<math>\pm</math> % FS/<math>^{\circ}</math>C)</b>			
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	$\leq 0.02$	$\leq 0.02$	$\leq 0.02$
<b>Total Error, (4), (5), (<math>\pm</math> % FS)</b>			
-10...50 $^{\circ}$ C, (typ. / max.)	$\leq 0.15 / 0.3$ ( $\leq 200$ mbar: 0.3 / 0.6)	$\leq 0.15 / 0.3$	$\leq 0.15 / 0.3$
-25...85 $^{\circ}$ C, (typ. / max.)	$\leq 0.65 / 0.7$ ( $\leq 200$ mbar: 0.65 / 0.8)	$\leq 0.65 / 0.7$	$\leq 0.55 / 0.7$
<b>Long term stability, (6)</b>	< 0.5% FS / < 4 mbar	< 0.2% FS / < 4 mbar	< 0.1% FS / < 0.2% FS

	> 25 ... 600, (1), (2)	> 600 ... 1000, (1)
<b>Overpressure</b>	3 x FS ( $\leq 850 / \leq 1500$ bar)	1500 bar
<b>Burst pressure</b>	> 850 / $\leq 1500$ bar	> 1500 bar
<b>Accuracy, (3), (<math>\pm</math> % FS)</b>	$\leq 0.1$	$\leq 0.25$
<b>Thermal shift, (<math>\pm</math> % FS/<math>^{\circ}</math>C)</b>		
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	$\leq 0.02$	$\leq 0.02$
<b>Total Error, (4), (5), (<math>\pm</math> % FS)</b>		
-10...50 $^{\circ}$ C, (typ. / max.)	$\leq 0.15 / 0.3$	n.a.
-25...85 $^{\circ}$ C, (typ. / max.)	$\leq 0.55 / 0.7$	n.a.
<b>Long term stability, (6)</b>	< 0.1% FS / < 0.2% FS	< 0.1% FS / < 0.2% FS

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

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

(3) Zero based accuracy according to DIN16086, incl. hysteresis and repeatability at ambient temperature

(4) Total error including accuracy and temperature influences at maximum signal span (16 mA)

(5) Active compensated,  $\leq 100$  bar

(6) 1 year (typ. / max.), the long term stability can be improved by ageing (burn-in) the sensor

## Temperature measuring range

<b>Standard, (1), (2)</b>	-10...50 $^{\circ}$ C
Lower end of range, (2)	-25 $^{\circ}$ C
Upper end of range, (2)	85 $^{\circ}$ C
<b>Accuracy</b>	$\leq \pm 2$ $^{\circ}$ C

(1) Available active compensated only

(2) Depending on temperature range of the active compensation

## Temperature range

<b>Operating temperature</b>	-25...85 °C
<b>Process temperature</b>	-40...150 °C
<b>Storage temperature</b>	-25...85 °C

## Electrical specifications

<b>Output</b>	
Digital	RS485
Protocol	Modbus RTU
Analog	4...20 mA
<b>Resolution</b>	
Digital output	0.01% FS
Analog output	0.025% FS
<b>Output adjustable</b>	
4 mA	-5% FS...105% FS
20 mA	-5% FS...105% FS
Span	25% FS...110% FS (≥ 50 mbar)
Low pass filter	0.1 / 1 / 10 / 30 Hz (standard: 30 Hz)
<b>Power supply</b>	9...30 V DC
Supply influence	< 0.1% FS
<b>Circuit diagram</b>	
<b>Load resistance</b>	
Load influence	< 0.1% FS

## Qualifications

	Description	Level	Typical interferences
<b>EN 60068-2-6</b>	Vibration	4g (4...100 Hz / ± 3.2 mmpp)	
<b>EN 60068-2-27</b>	Shock	100g (impulse duration 6 ms)	
<b>EN 55022</b>	Emission, class B	< 30 dBμV/m (0.03...1 GHz)	
<b>EN 61000-4-2</b>	Electrostatic discharge	4 kV contact 8 kV air	
<b>EN 61000-4-3</b>	Irradiated RF	10V/m (0.08...1 GHz)	Radio sets, wireless phones
<b>EN 61000-4-4</b>	Transients (burst)	2 kV	Motors, valves
<b>EN 61000-4-5</b>	Surge	10 kA (8 / 20 μs), (1)	Lightning
<b>EN 61000-4-6</b>	Conducted RF	10 V (0.15...80 MHz)	Frequency converters

(1) Only with optional surge (lightning) protection

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### Physical specifications

<b>Materials</b>	
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

## Equipment

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### Overview

<b>10.00.0091</b>	Accessories overview

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### Interface

<b>101138</b>	PTM - Interface

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### Software

<b>101224</b>	PC Software V1.50

## Additional documents

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### Manuals

	Article number	Description
<b>10.00.0079</b>	DEB003	Configuration software
<b>10.00.0089</b>	DEB005	User manual

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### Operating and safety instructions

	Article number
<b>10.00.0137</b>	DMM009

## Ordering information

		X. XXXX.	XXXX.	XX.	XXX
<b>Type</b>	PTM/RS485	43			
<b>Pressure type</b>	Gauge	1			
	Absolute (vacuum)	2			
	Sealed gauge	3			
<b>Pressure measuring range</b>	Any pressure measuring ranges between 0...100 mbar and 0...1000 bar available, (1), (2)	XX			
<b>Process connection</b>	G 1/4 F, (Fig. 1)	00			
	G 1/4 M, (Fig. 2)	11			
	G 1/4 M, manometer DIN 16288, (Fig. 3)	12			
	G 1/2 M, (Fig. 4)	13			
	G 1/2 M, frontal diaphragm, (Fig. 5)	14			
	G 1/2 M, flush diaphragm, (Fig. 6)	15			
	G 1/2 M, manometer DIN 16288, (Fig. 7)	16			
	1/4 NPT M	10			
	1/2 NPT M, (Fig. 8)	19			
	Customized connection available	XX			
<b>Electrical connection</b>	Binder 723, 7-pin, IP 67, (Fig. 10), (3)		04		
	MIL C26482, 10-6, IP 40, (Fig. 11), (3)		06		
	PE cable, IP 67, (Fig. 12), (4), (5)		13		
	PUR cable, IP 67, (Fig. 12), (4), (6)		15		
	FEP cable, IP 67, (Fig. 12), (4)		21		
	PVC cable, blue, IP 67 (Fig. 12), (9)		14		
	Customized connection available		XX		
<b>Output signal</b>	RS485 / 4...20mA (pressure)		62		
	RS485 / 4...20 mA (pressure) with surge protection		64		
	RS485 / 4...20mA (pressure and temperature)		65		
	RS485 / 4...20mA (pressure and temperature) with surge protection		66		
<b>Accuracy</b>	$\leq \pm 0.25$ % FS ( $\leq 500$ mbar / $> 600$ bar)			1	
	$\leq \pm 0.1$ % FS ( $> 500$ mbar...600 bar)			2	
<b>Temperature range</b>	0...70 °C compensated (allowed process temperature: 0...80 °C)			0	
	-25...85 °C compensated (allowed process temperature: -25...100 °C)			1	
<b>Option 1</b>	Throttle, (7)				A
	Special oil filling: ASEOL Food (for food applications)				G
	Special oil filling: Halocarbon (for oxygen applications), (8), (10)				H
<b>Option 2</b>	Electronics packed in gel: Gauge pressure				C
	Electronics packed in gel: Absolute pressure				D
<b>Option 3</b>	Active compensated ( $\leq 100$ bar)				E
	Version titanium				K

Seals: Viton (standard)					U
Seals: EPDM					S
Seals: Kalrez					T
Seals: NBR					H
Ageing					Z

- (1) Titanium available  $\leq$  400 bar (burst pressure > 550 bar)
- (2) mbar, PSI, kPa etc. available
- (3) Cable socket connector not included
- (4) Please specify the required cable length and medium
- (5) Suitable for drinking water (food approved)
- (6) For operating temperature > 50°C, PE or FEP cable must be used
- (7) Only with pressure connection Fig. 2, Fig. 3, Fig. 4, Fig. 7 and Fig. 8
- (8) Maximum pressure measuring range  $\leq$  270 bar (burst pressure > 400 bar)
- (9) ACS Certification
- (10) min. Medium temperature -25 ° C

# Technical drawings

## Process Connection

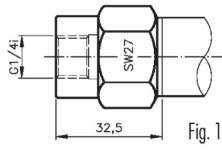


Fig. 1

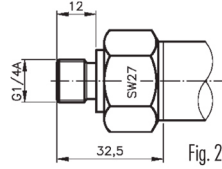


Fig. 2

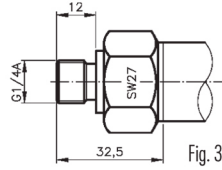


Fig. 3

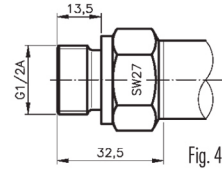


Fig. 4

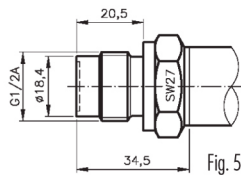


Fig. 5

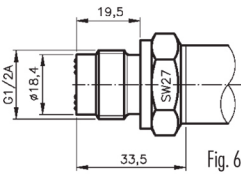


Fig. 6

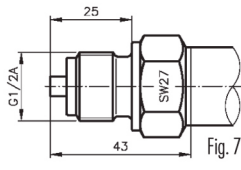


Fig. 7

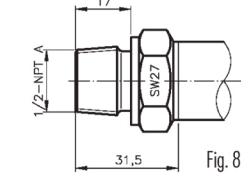
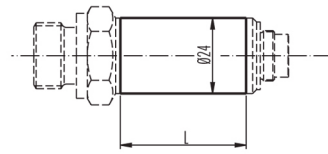


Fig. 8

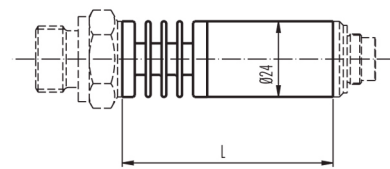
## Dimensions

Version for medium temperature up to 100°C



L = 94 mm, with overvoltage protection = 195 mm

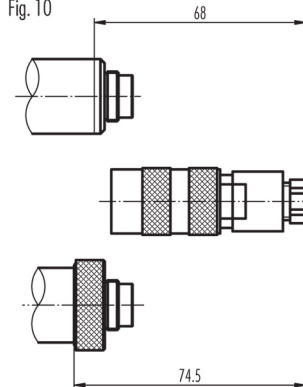
Version for medium temperature up to 150°C



L = 121 mm, with overvoltage protection = 222 mm

## Electrical Connection

Fig. 10



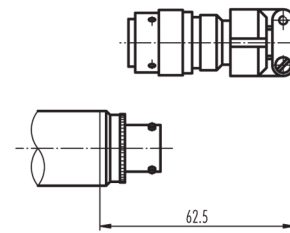
View to cable socket connector



Pin RS485

- 1 Pout
- 2 Tout
- 3 +Vin
- 4 GND
- 5
- 6 A
- 7 B

Fig. 11



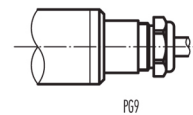
View to cable socket connector



Pin RS485

- A +Vin
- B GND
- C Pout
- D Tout
- E A
- F B

Fig. 12



Colour RS485

- white +Vin
- yellow GND
- brown Pout
- pink Tout
- green A
- grey B

Specifications may change without notice.

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