

## Programmable pressure and temperature transmitters

# PTM/RS485

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Version: 04.09.2015

# 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, (4), (<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, (5), (6), (<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, (7)</b>	< 0.5% FS / < 4 mbar	< 0.2% FS / < 4 mbar	< 0.1% FS / < 0.2% FS

	> 25 ... 600, (1), (2), (3)	> 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, (4), (<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, (5), (6), (<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, (7)</b>	< 0.1% FS / < 0.2% FS	< 0.1% FS / < 0.2% FS

- (1) Titanium available  $\leq 400$  bar (burst pressure > 550 bar)  
 (2) Process connection frontal and flush diaphragm available  $\leq 600$  bar  
 (3) Overpressure and burst pressure 1500 bar (stainless steel) optional  
 (4) Zero based accuracy according to DIN-16086, incl. hysteresis and repeatability at ambient temperature  
 (5) Total error including accuracy and temperature influences at maximum signal span (16 mA)  
 (6) Active compensated,  $\leq 100$  bar  
 (7) 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 VDC
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 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)	Overvoltage
<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

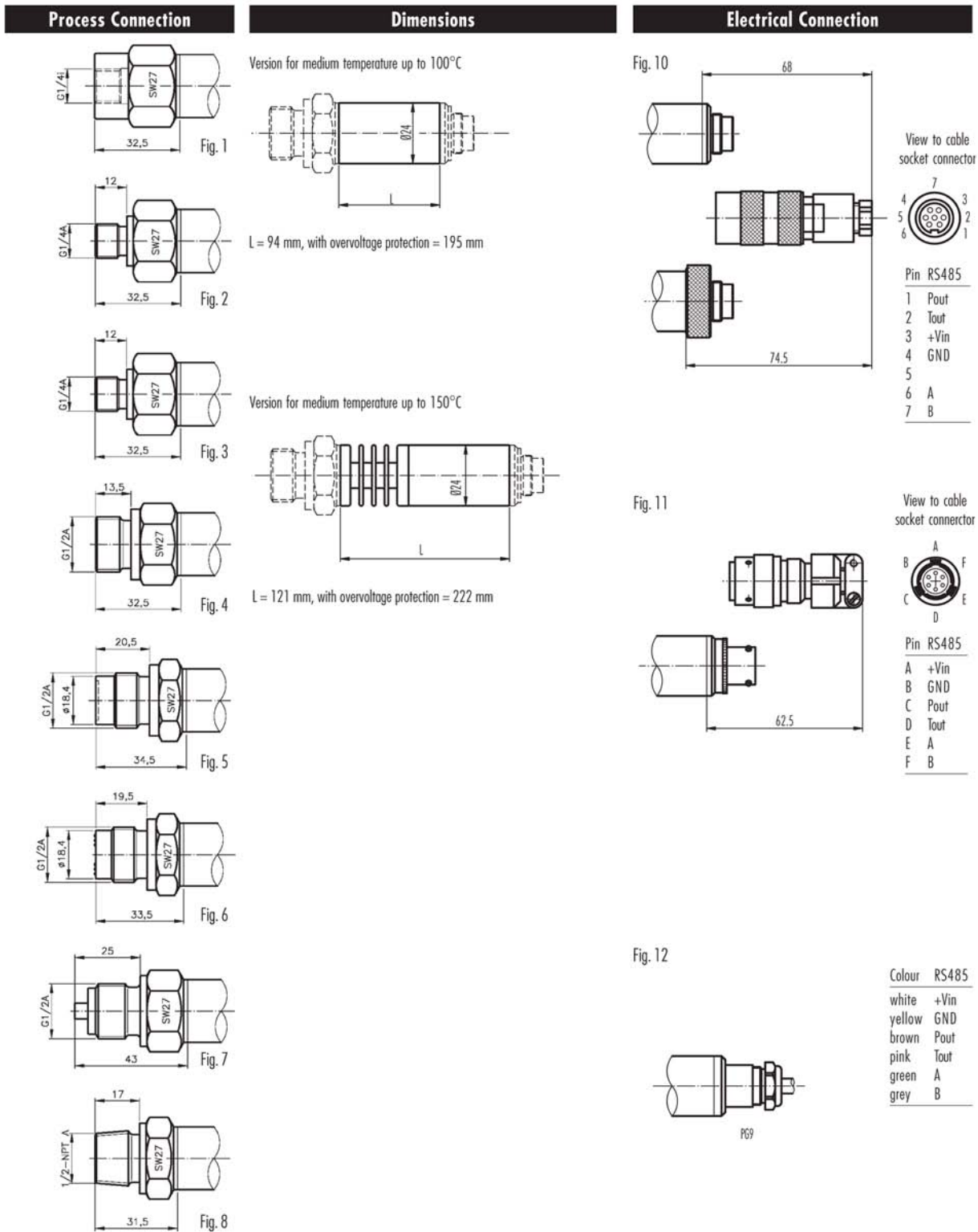
## Ordering information

		X. XXXX.	XXXX.	XX.	XXX
<b>Type</b>					
	PTM/RS485	43			
<b>Pressure type</b>					
	Gauge	1			
	Absolute (vacuum)	2			
	Seald gauge	3			
<b>Pressure measuring range</b>					
	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			
	G 1/4 M (Fig. 2)	11			
	G 1/4 M, manometer DIN 16288 (Fig. 3)	12			
	G 1/4 flush diaphragm (5)	21			
	G 1/2 M (Fig. 4)	13			
	G 1/2 M, with bore Ø14mm	17			
	G 1/2 M, Hastelloy C-276	98			
	G 1/2 M, frontal diaphragm (Fig. 5), (3)	14			
	G 1/2 M, frontal diaphragm in Hastelloy C-276 (4)	37			
	G 1/2 M, flush diaphragm (Fig. 6), (3)	15			
	G 1/2 M, manometer DIN 16288 (Fig. 7)	16			
	1/4 NPT M	10			
	1/2 NPT M (Fig. 8)	19			
	Customized	99			
<b>Electrical connection</b>					
	Binder 723, 7 pins, IP 67 (Fig.10), (4)		04		
	Binder 723, 5 pins, IP 67		03		
	MIL C2682, 10-6, IP 40 (Fig. 11), (4)		06		
	PE cable, black, IP 67 (Fig. 12), (5), (6)		13		
	PUR-cable, black, IP 67		15		
	FEP cable, black, IP 67(Fig. 12), (5)		21		
	Customized		99		
<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>					
	≤ ± 0.25 % FS (> 500 mbar / > 600 bar)			1	
	≤ ± 0.1 % FS (≤ 500 mbar ... 600 bar)			2	
<b>Temperature range</b>					
	0 ... 70°C compensated (allowed process temperature: -25 ... 100°C)			0	
	25 ... 100°C compensated (allowed process temperature: -25 ... 100°C)			7	
	-25 ... 85°C compensated (allowed process temperature: -25 ... 150°C) with cooling fins			1	
	20 ... 100°C compensated (allowed process temperature: -25 ... 100°C) with coolin fins			2	
	Customized			6	

<b>Option 1</b>					
	Throttle, (8)				A
	Special oil filling: Anderol Food (for food applications)				G
	Special oil filling: AS 100 (suitable for media temperature -55 ... 150 °C)				J
	Special oil filling: PAO4 (silicone free)				Q
<b>Option 2</b>					
	Electronics packed in gel: Gauge pressure				C
	Electronics packed in gel: Absolute pressure				D
<b>Option 3</b>					
	Active compensated ( $\geq 100$ mbar $\leq 100$ bar)				E
	Version titanium				K
	Seals: Viton (standard)				U
	Seals: EPDM				S
	Seals: Kalrez				T
	Seals: NBR (ACS) (9)				H

- (1) Titanium available  $\leq 400$  bar (burst pressure  $> 550$  bar)
- (2) mbar, PSI, kPa etc. available
- (3) Process connection available  $\leq 600$  bar
- (4) Cable socket connector not included
- (5) Please specify the required cable length and medium
- (6) Suitable for drinking water (food approved)
- (7) For operating temperature  $> 50^{\circ}\text{C}$ , PE or FEP cable must be used
- (8) Only with pressure connection Fig. 2, Fig. 3, Fig. 4, Fig. 7 and Fig. 8
- (10) ACS Certification

# Technical drawings



Specifications may change without notice.

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