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Programmable Submersible Level Transmitters

PTM/N/RS485

CUSTOMER BENEFITS

- High flexibility due to scalalbe pressure range
- Digital (RS485) and analogue (4-20mA) output signal in one sensor
- Available as multi-parameter sensor (pressure & temperature)
- Fast customization thanks to configurable product design
- Stainless steel and titanium version for use in acidic or otherwise aggressive media
- Available with lightning protection

Release: 10.80.0547.A - 2019.06

Technical Specifications

PRESSURE MEASURING RANGE (MH2O)

	1 ... 5	> 5 ... 20	> 20 ...250
Overpressure	3 bar	3 x FS (≥ 3 bar)	3 x FS
Burst pressure, (1)	> 200 bar	> 200 bar	> 200 bar
Accuracy, (2) (± % FS)	≤ 0.25	≤ 0.1	≤ 0.1
Total error, (3), (4) (± % FS)			
-10...50°C, (typ./max.)	≤ 0.15 / 0.3 (≤ 200 mbar: 0.3 / 0.6)	≤ 0.15 / 0.3	≤ 0.15 / 0.3
-25...85°C, (typ./max.)	≤ 0.65 / 0.7 (≤ 200 mbar: 0.65 / 0.8)	≤ 0.65 / 0.7	≤ 0.55 / 0.7
Long term stability, (5)	≤ 0.5% FS/< 4 mbar	≤ 0.2% FS/< 4 mbar	≤ 0.1% FS/< 0.2% FS

(1) Transducer
(2) Zero based accuracy according to DIN 16086, incl. hysteresis and repeatability at ambient temperature
(3) Total error including accuracy and temperature influences at maximum signal span (16 mA)
(4) Active compensated
(5) 1 year (typ. / max.), the long term stability can be improved by ageing (burn-in) the sensor

TEMPERATURE MEASURING RANGE

Standard, (1), (2)	-10...50 °C
Lower end of range (2)	-25 °C
Upper end of range (2)	85 °C
Accuracy	≤ ± 2 °C

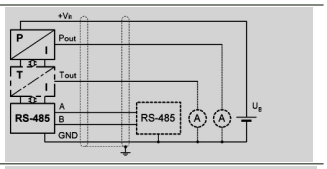
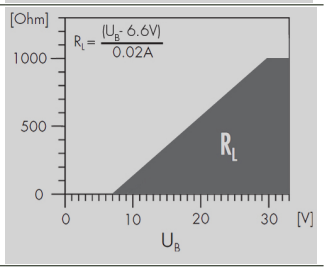
(1) Available active compensated only
(2) Depending on temperature range of the active compensation

TEMPERATURE RANGE

Operating temperature	-5...80 °C (1)
Process temperature	-5...80 °C (1)
Storage temperature	-10...80 °C

(1) For operating temperature > 50°C, PE or FEP cable must be used

ELECTRICAL SPECIFICATIONS

Output	
Digital	RS485
Protocol	Modbus RTU
Analog	4...20 mA
Resolution	
Digital output	0.01% FS
Analog output	0.025% FS
Output adjustable	
4 mA	-5% FS...105% FS
20 mA	-5% FS...105% FS
Span	25% FS...110% FS (≥ 0.1 mH2O)
Low pass filter	0.1 / 1 / 10 / 30 Hz (standard: 30 Hz)
Power supply	9...30 V DC
Supply influence	< 0.1% FS
Circuit diagram	
Load resistance	
Load influence	< 0.1% FS
Cable length	max. 300 m

QUALIFICATIONS

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

(1) Only with optional surge (lightning) protection

PHYSICAL SPECIFICATIONS

Materials	Stainless steel (316L / 1.4435), titanium (Gr. 2), (1)
Transducer	Stainless steel (316L / 1.4435), titanium (Gr. 2), (1)
Housing	Stainless steel (316L / 1.4404), titanium (Gr. 2)
Seals	Viton (Standard), EPDM, Kalrez, NBR
Cable	PUR, FEP, PE
Weight (2)	157 g

(1) Hastelloy (C-276) on request
(2) Specification for a PTM/N/RS485, closed, without cable

Equipment

OVERVIEW

10.00.0091	Accessories overview

INTERFACE

101138	PTM - Interface

SOFTWARE

101224	PC Software V1.50

Additional documents

MANUALS

	Article number	Description
10.00.0079	DEB003	Configuration software
10.00.0089	DEB005	User manual

OPERATING AND SAFETY INSTRUCTIONS

	Article number
10.00.0137	DMM009

Ordering information

			X.	XXXX.	XXXX.	XX.	XXX
Type							
	PTM/N/RS485	44					
Pressure type							
	Gauge		1				
	Absolute (vacuum)		2				
Pressure measuring range							
	Any pressure measuring ranges between 0...1 mH2O and 0...250 mH2O available			XX			
	Offset, special adjustment			99			
Process connection							
	Closed (Fig. 1)			55			
	Closed, 1.4435 (7) (8), (Fig. 1)			59			
	Open, (Fig. 2)			56			
	G 1/4 M (Fig. 3)			11			
	G 1/2 M (Fig. 3)			13			
	Custmized			99			
Electrical connection							
	PE cable, IP 68 (2), (3)				13		
	PUR cable, black, IP 68 (2), (4)				15		
	FEP cable, black, IP 68 (2)				21		
	PVC cablel, blue, IP 68 (2), (7)				14		
	Customized				99		
Output signal							
	RS485 / 4...20mA (pressure)				62		
	RS485 / 4...20 mA (pressure) with surge protection				64		
	RS485 / 4...20mA (pressure and temperature) (6)				65		
	RS485 / 4...20mA (pressure and temperature) with surge protection (6)				66		
Accuracy							
	≤ ± 0.25 % FS (≤ 5 mH2O)					1	
	≤ ± 0.1 % FS (> 5 mH2O)					2	
Temperature range							
	-5...50 °C compensated (allowed process temperature: -5...50 °C)					4	
	-5...80 °C compensated (allowed process temperature: -5...80 °C)					5	
Option 1							
	Cutting ring connection G1/2 M						G
	Strain relief						
	Special oil filling: Anderol Food						
Option 2							
	Electronics packed in gel: Gauge pressure						C
	Electronics packed in gel: Absolute pressure						D
Option 3							
	Ballast weight 1.4435						B
	Active compensated						E
	Version titanium (without ballast weight)						K
	Seals: Viton (standard)						U

	Seals: EPDM				S
	Seals: Kalrez (Level)				T
	Seals: NBR (ACS)				H
	Humidity filter element for gauge versions (only for PUR and PE cable)				Z

(2) Please specify the required cable length and medium

(3) Suitable for drinking water (food approved)

(4) For operating temperature > 50°C, PE or FEP cable must be used

(6) Temperature output only with option "active compensated" available

(7) Recommended for drinking water applications

(8) With stainless steel cap

Dimensions

Fig. 1: Closed version

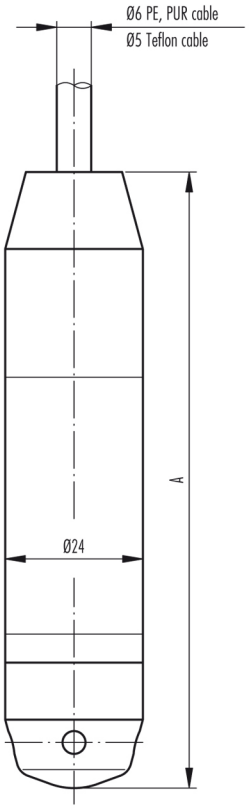


Fig. 2: Open version

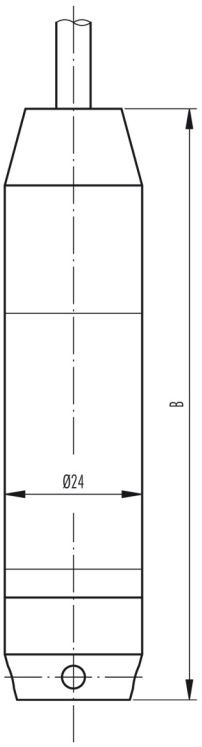
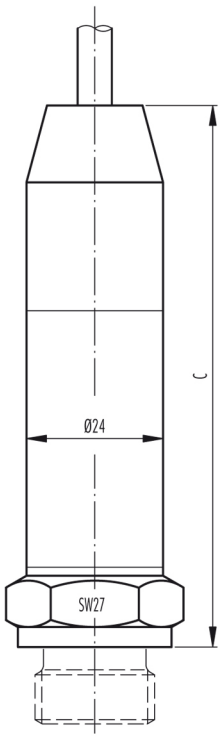


Fig. 3: with process connection



Standard

	A [mm]	B [mm]	C [mm]	D [mm]	Weight [g]
without ballast weight	157	153	on request*	on request*	approx. 200
with ballast weight	244	240	on request*	on request*	approx. 460

*C: Depending on process connection

*D: Depending on process connection or version

Colour	RS485
white	+Vin
yellow	GND
brown	Pout
pink	Tout
green	A
gray	B

Version with surge (lightning) protection

	A [mm]	B [mm]	C [mm]	D [mm]	Weight [g]
without ballast weight	258	254	on request*	on request*	approx. 280
with ballast weight	345	341	on request*	on request*	approx. 540

*C: Depending on process connection

*D: Depending on process connection or version

Scheme: