

Precont® PU4SE



Universal pressure transmitter / pressure switch
for general industrial applications

Technical information T104.24



Application

- Machinery and plant engineering
- Air-conditioning and refrigeration plant engineering
- Hydraulic and pneumatic systems
- Process industry
- Environmental technology
- Facility and building automation

Main features

- Measuring ranges from 1 bar up to 100 bar
- Robust ceramic internal diaphragm
- Process temperature range -25°C to +100°C
- Fully welded robust steel enclosure
- High protection class IP69K/IP67
- High accuracy to $\leq 0,5\%$
- Electronic 4...20mA FSK / RS485 Modbus®-RTU / IO-Link®



Description

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures.

A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.

Due to its high accuracy and the digital adjustability by FSK, RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.

The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.

A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.

Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or a factory certificate for drink water suitability.

Customer specific special versions can be realized short-term on request, e.g. special designs for the process connection or other process materials.



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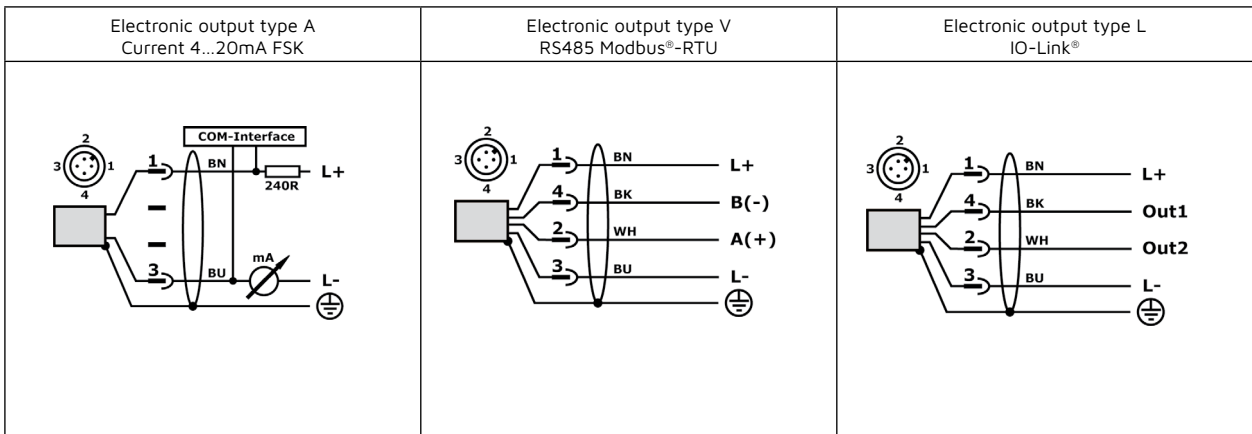
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Technical Data

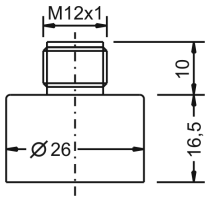
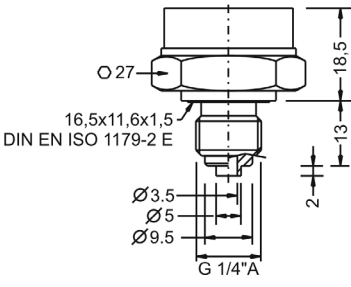
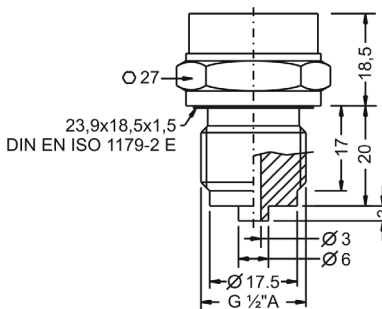
Measuring range										
Nom. pressure PN	[bar]	0...1	0...4	0...10	0...40	0...100	-	-	-	-
Under-/Overload press.	[bar]	-1/4	-1/12,5	-1/25	-1/125	-1/200	-	-	-	-
Burst pressure	[bar]	4	12,5	25	125	200	-	-	-	-
Output type A – Current 4...20mA FSK										
Analogue output 4...20mA	3,9...20,5mA / $\geq 3,8\text{mA}$ / $\leq 22\text{mA}$ / $dl \leq 1\mu\text{A}$									
Permitted load	$RL \leq (U_s - 9\text{V}) / 22\text{mA}$									
Time behavior	$T_{90} \leq 5\text{ms}$ ($t_d = 0\text{s}$) / $\text{ton} \leq 0,2\text{s}$ ($t_d = 0\text{s}$)									
Interface	FSK / 1200 Bit/s									
Communication resistor	$\geq 250\Omega$, external									
Output type V – RS485 Modbus®-RTU										
Interface	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800...38400 Baud)									
Input resistance	112k Ω									
Time behavior	$T_{90} \leq 2\text{ms}$ ($t_d = 0\text{s}$) / $\text{ton} \leq 0,1\text{s}$ ($t_d = 0\text{s}$)									
Output type L – IO-Link®										
Interface	IO-Link® V1.1 / Com2 (38400 Baud)									
Cycle time	$\geq 2,3\text{ms}$									
Analogue output	0...20mA: 0...20,5mA / $\leq 0,05\text{mA}$ / $\leq 22\text{mA}$ / $dl \leq 1\mu\text{A}$ 4...20mA: 3,8...20,5mA / $\geq 3,6\text{mA}$ / $\leq 22\text{mA}$ / $dl \leq 1\mu\text{A}$									
Permitted load	$RL \leq (U_s - 8\text{V}) / 22\text{mA}$									
Time behavior	$T_{90} \leq 2\text{ms}$ ($t_d = 0\text{s}$) / $\text{ton} \leq 0,1\text{s}$ ($t_d = 0\text{s}$)									
Switch output	2x PP (Push-Pull), switch to +L/-L									
Output	$U_{out} \leq 0,2\text{V}$, $\geq U_s - 2\text{V}$ / $I_{out} 0...200\text{mA}$ (current limited $\leq 450\text{mA}$, short circuit protected)									
Time behavior	$T_{90} \leq 2\text{ms}$ ($t_d = 0\text{s}$) / $\text{ton} \leq 0,1\text{s}$ ($t_d = 0\text{s}$) / $\text{trise} < 30\mu\text{s}$ ($RL < 3\text{k}\Omega$ / $I_{out} > 4,5\text{mA}$)									
Switch cycles	$\geq 100.000.000$									
Auxiliary power										
Supply voltage U_s polarity protected Residual ripple voltage Supply current	Type A – 4...20mA FSK: 9...35VDC / $\leq 2\text{Vpp}$ / $\leq 22\text{mA}$ Type V – RS485 Modbus®-RTU: 6...35VDC / $\leq 2\text{Vpp}$ / $\leq 10\text{mA}$ (no load) Type L – IO-Link®: 9...35VDC, without IO-Link® / $\leq 2\text{Vpp}$ / $\leq 20\text{mA}$ (no load) Type L – IO-Link®: 18...30VDC, with IO-Link® / $\leq 2\text{Vpp}$ / $\leq 20\text{mA}$ (no load)									
Measuring accuracy										
Reference conditions	EN/IEC 60770-1: Characteristic deviation – Limit value adjustment 15...25°C / 860...1060kPa / 45...75%r.F. / $\text{ton}240\text{s}$ / 24VDC $\pm 0,1\text{V}$ / vertical, sensor downside									
	Characteristic deviation = Nonlinearity + Hysteresis + Reproducibility FSO = Full Scale Output = Nominal measuring range Tk = Temperature coefficient TD (Turn-Down) = FSO / adjusted measuring range Higher deviations possible for special adjustment									
Resolution measuring input	FSO ≥ 16 Bit									
Characteristic deviation	$\leq \pm 0,5\% \text{FSO}$ (TD=1)									
Nonlinearity+Hysteresis	$\leq \pm 0,4\% \text{FSO}$ (TD=1)									
Reproducibility	$\leq \pm 0,1\% \text{FSO}$ (TD=1)									
Influence of auxiliary power	$\leq \pm 0,002\% \text{FSO/V}$									
Load influence I_{out}	Type L – IO-Link®: $\leq \pm 0,01\% \text{FSO}/100\text{R}$									
Long term drift	$\leq \pm 0,2\% \text{FSO}/\text{year}$ (TD=1)									
Temperature deviation	Tk Zero+Span (TD=1) $\leq \pm 0,05\% \text{FSO/K}$									
Mounting position	negligible									
Process conditions										
Process temperature	-25°C...+100°C									
Pressure cycles	≥ 10 Mio. (1,2xPN)									

Environmental conditions	
Environmental temperature	-25°C...+100°C
Protection level	IP69K/IP67 (EN/IEC 60529)
Climatic classification	4K4H (EN/IEC 60721-3-4)
Shock classification	50g [11ms] (EN/IEC 60068-2-27)
Vibration classification	20g [10...2000 Hz] (EN/IEC 60068-2-6)
EM compatibility	Operation device class B / Industrial range (EN/IEC 61326)
Insulation voltage	500Vac
MTTF	463 years
Tightening torque	≤ 50Nm
Weight	0,2-0,5kg
Materials	
Process wetted	Ceramic Al ₂ O ₃ - 96% Steel 1.4404/316L, Steel 1.4571/316Ti, FPM
Not process wetted	CrNi-steel, PUR, Acrylic copolymer, FPM

Electrical connection



Dimensions (mm)

<p>Terminal enclosure</p> 		
<p>Process connection type 6 Thread G 1/4" A, EN 837</p> 	<p>Process connection type 1 Thread G 1/2" A, EN 837</p> 	

Order code

Type
PU4S Standard

Measuring system – material diaphragm (process wetted) / sensor type
E Ceramic Al2O3 96% / strain gauge

Approval
S Standard

Process connection
6 Thread ISO 228-1 – G¼"A, EN 837 manometer
1 Thread ISO 228-1 – G½"A, EN 837 manometer
Y others

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®)
Y others

Material process connection (process wetted)
V CrNi-steel

Material terminal enclosure
C CrNi-steel

Measuring range
05 0...1 bar
08 0...4 bar
10 0...10 bar
13 0...40 bar
19 0...100 bar
YY Special measuring range

Electronic – output
A Current 4...20mA, FSK, 2-wire
V RS485 Modbus®-RTU, 4-wire
L IO-Link®, 1x current 0/4...20mA / 2x switch, 4-wire

Electronic – function
S Standard

Process temperature
0 Standard –25°C...+100°C

Pressure type
R Gauge pressure

Measuring system – accuracy
4 0,5%

Electrical connection
S Plug M12x1

Additional options
-SF LABS-free, silicone-free / paint compatible version
-ML Measurement point designation / TAG – Laser marking
-MZ Material test certificate – EN10204 3.1
-KF Configuration / Preset
-WK Factory calibration – calibration certificate

Precont® PU4S

E S V C S O R 4 S



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