

Precont® PU4LM

Universal pressure transmitter / pressure switch
for hygienic and aseptic applications

Technical information TI04.24



Application

- Food and beverage industry
- Pharmaceutical industry
- Biotechnology
- Sterile process engineering

Main features

- Measuring ranges from 100 mbar up to 25 bar
- Various hygienic and aseptic process connections
- Metallic front-flush EHEDG compliant diaphragm
- Process temperature range -20°C to +150°C
- Fully welded robust steel enclosure
- High protection class IP69K/IP67
- Highest accuracy to $\leq 0,15\%$
- Electronic 4...20mA FSK / RS485 Modbus®-RTU / IO-Link®
- Certification ATEX / IECEx: Ex ia IIC Ga / Ex ia IIIC Da



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.

The front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process, also by CIP/SIP cleaning processes.

Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with viscose or also frequently changing media.

The front-flush diaphragm is completely welded with the process connection and supplied with a positive seal. A reliable, dead-space free sealing is thus assured.

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 factory certifications for drink water resp. food suitability.



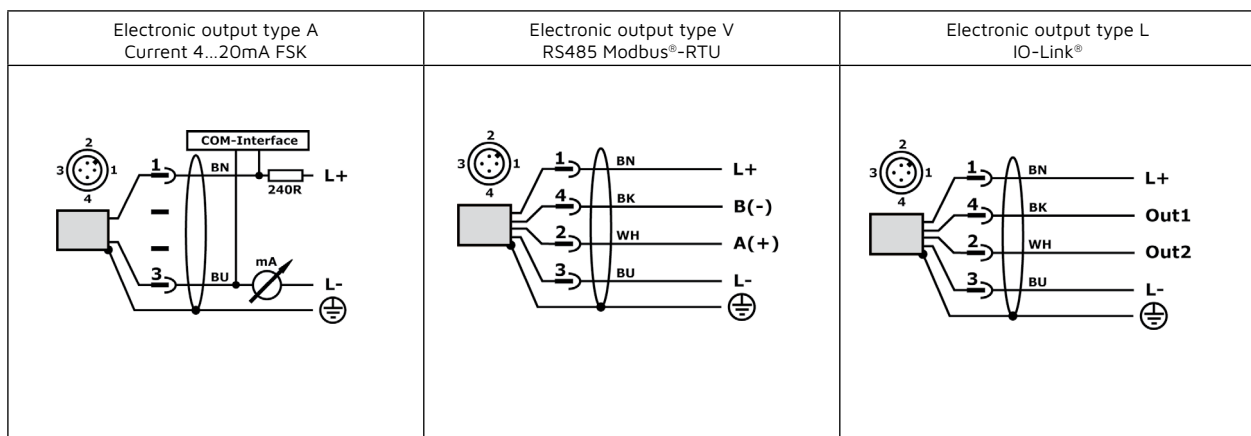
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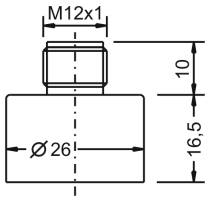
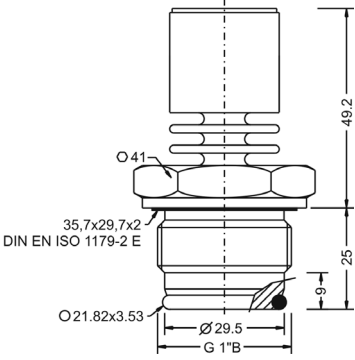
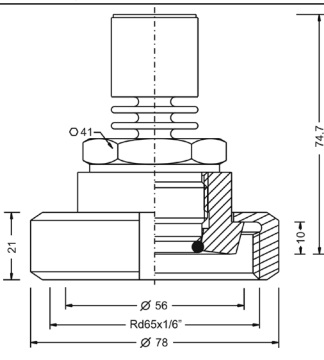
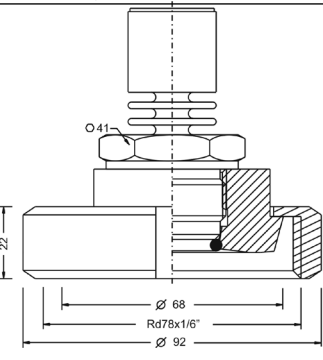
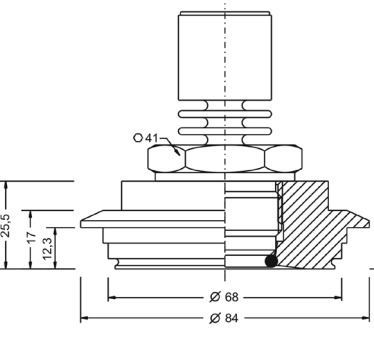
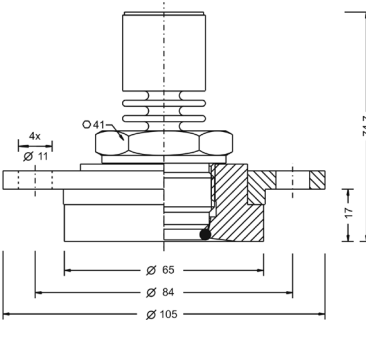
Technical Data

Measuring range										
Nom. pressure PN rel.	[bar]	-1...0	-1...1	0...0,1	0...0,25	0...0,4	0...0,6	0...1	0...2,5	0...4
Output type A – Current 4...20mA FSK										
Analogue output 4...20mA	3,9...20,5mA / $\geq 3,8\text{mA}$ / $\leq 22\text{mA}$ / $dl \leq 1\mu\text{A}$									
Time behavior	T90 $\leq 8\text{ms}$ ($t_d = 0\text{s}$) / $ton \leq 0,2\text{s}$ ($t_d = 0\text{s}$)									
Interface	FSK / 1200 Bit/s									
Output type V – RS485 Modbus®-RTU										
Interface	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800...38400 Baud)									
Input resistance	112k Ω									
Time behavior	T90 $\leq 2\text{ms}$ ($t_d = 0\text{s}$) / $ton \leq 0,1\text{s}$ ($t_d = 0\text{s}$)									
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 / $\geq 3,6\text{mA}$ / $\leq 22\text{mA}$ / $dl \leq 1\mu\text{A}$									
Switch output	2x PP (Push-Pull), switch to +L/-L									
Time behavior	T90 $\leq 2\text{ms}$ ($t_d = 0\text{s}$) / $ton \leq 0,1\text{s}$ ($t_d = 0\text{s}$) / $trise < 30\mu\text{s}$ (RL < 3kR / IOut > 4,5mA)									
Auxiliary power										
Supply voltage Us polarity protected Residual ripple voltage Supply current	Type A – 4...20mA FSK 9...35VDC / $\leq 2\text{Vpp}$ / $\leq 22\text{mA}$ Type A – 4...20mA FSK Ex: 9...30VDC / $\leq 2\text{Vpp}$ / $\leq 22\text{mA}$ 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										
Characteristic deviation	$\leq \pm 0,15\% / \pm 0,5\% \text{FSO}$ (TD=1)									
Long term drift	$\leq \pm 0,2\% \text{FSO/year}$ (TD=1)									
Temperature deviation	Tk Zero (TD=1) $\leq 250\text{mbar}$: $\leq \pm 0,04\% \text{FSO/K}$ (0°C...+80°C) / $\leq \pm 0,06\% \text{FSO/K}$ (-20...0°C / +80...+150°C) $\geq 400\text{mbar}$: $\leq \pm 0,02\% \text{FSO/K}$ (0°C...+80°C) / $\leq \pm 0,03\% \text{FSO/K}$ (-20...0°C / +80...+150°C) Tk Span (TD=1) $\leq \pm 0,02\% \text{FSO/K}$ (0°C...+80°C) / $\leq \pm 0,03\% \text{FSO/K}$ (-20...0°C / +80...+150°C)									
Process conditions										
Process temperature	-20°C...+150°C / ATEX/IECEx: see certificate Gasket FPM: max. -20°C...+150°C Gasket EPDM: max. -20°C...+140°C									
Pressure cycles	≥ 100 Mio. (1,2xPN)									
Environmental conditions										
Environmental temperature	-40°C...+100°C / ATEX/IECEx: see certificate									
Protection level	IP69K/IP67 (EN/IEC 60529)									
MTTF	463 years									

Electrical connection



Dimensions (mm)

<p>Terminal enclosure</p> 		
<p>Process connection type 5 Thread G1" B, front-flush</p> 		
<p>Process connection type N Dairy coupling DIN 11851 – DN40, PN40</p> 	<p>Process connection type M Dairy coupling DIN 11851 – DN50, PN25</p> 	
<p>Process connection type P Varivent® – Typ N / Ø68mm, PN40</p> 	<p>Process connection type L DRD – DN50 / Ø65mm, PN25</p> 	

Order code

Type
PU4L Hygienic applications

M **Measuring system – material diaphragm (process wetted) / sensor type**
CrNi-steel / strain gauge

Approval
S Standard
X ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIC Da (Output type – A)

Process connection
5 Thread ISO 228-1 – G1”B, front-flush, O-ring gasket, EHEDG compliant, for welding socket BEFVE10
N Dairy coupling DIN 11851 – DN40, PN40
M Dairy coupling DIN 11851 – DN50, PN25
P Varivent® – Type N / Ø68mm / tube DN40-162 / 1½”-6”, PN40
L DRD – DN50 / Ø65mm, PN25
Y others

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®)
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed
Y others

Material process connection (process wetted)
V CrNi-steel

Material terminal enclosure
C CrNi-steel

Measuring range
01 0...100 mbar
02 0...250 mbar
03 0...400 mbar
04 0...600 mbar
05 0...1 bar
07 0...2,5 bar
08 0...4 bar
09 0...6 bar
10 0...10 bar
11 0...16 bar
12 0...25 bar
16 -1...0 bar
17 -1...+1 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
O Standard -20°C...+150°C

Pressure type
R Gauge pressure
A Absolute pressure

Measuring system – accuracy
1 0,5%
8 Xcellence – 0,15%, linearization protocol

Electrical connection
S Plug M12x1

Additional options
-SF LABS-free, silicone-free / paint compatible version
-ML Measurement point designation / TAG – Laser marking
-WT Factory certification – drink water suitability
-KF Configuration / Preset
-WK Factory calibration – calibration certificate

Precont® PU4L

M

V

C

S

O

S