

Precont® PU4SK

Universal pressure transmitter / pressure switch
for general industrial applications

Technical information TI06.25

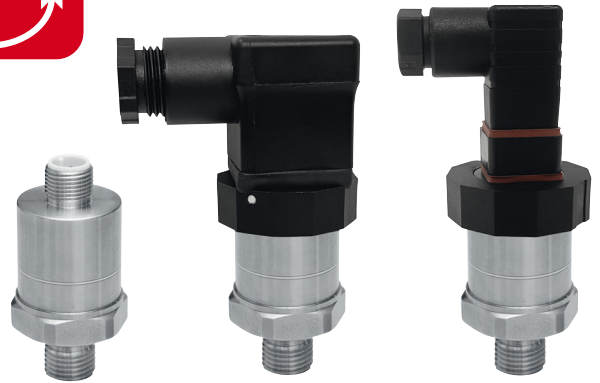


Application

- 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 250 mbar up to 600 bar
- Wide variety of process connections
- Robust ceramic front-flush or internal diaphragm
- Process temperature range -40°C to +135°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® / 0...10V
- Certification ATEX / IECEx: Ex ia IIC Ga / Ex ia IIIC Da
- Electrical connection M12 plug or angled plug



Description

The device is an electronic pressure sensor for monitoring, control and continuous measurement of pressures in gases, vapors, liquids and dusts.

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 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 viscous or also frequently changing media.

The long term stable and robust strain gauge ceramic measuring cell ensures reliable precise measuring values and allows the operation also at demanding environmental conditions, e.g. low temperatures, high shock and vibration loads or at problematic media. 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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Technical Data

Measuring range										
Nom. pressure PN rel.	[bar]	-0,1...0	-0,1...0,1	-1...0	-1...1	0...0,05	0...0,1	0...0,2	0...0,4	0...0,6
Output type A – Current 4...20mA FSK										
Analogue output 4...20mA	3,9...20,5mA, Measuring range [08] = 4...20mA, error ≤ 3,9mA / ≥ 20,5mA									
Time behavior	≤ 5ms (td = 0s)									
Interface	FSK / 1200 Bit/s									
Output type V – RS485 Modbus®-RTU										
Interface	RS485, bidirektional / Modbus-RTU / 4,8...38,4 kBaud									
Input resistance	112kΩ									
Time behavior	≤ 2ms (td = 0s)									
Output type L – IO-Link®										
Interface	IO-Link V1.1 / Port Class A / Com2 (38,4 kBaud), Com3 (230,4 kBaud)									
Analogue output	3,8...20,5mA, measuring range [08] = 4...20mA, error ≤ 3,6mA / ≥ 21mA 0...20,5mA, measuring range [08] = 0...20mA, error ≤ 0,05mA / ≥ 21mA									
Time behavior	≤ 2ms (td = 0s)									
Switch output	2x PP (Push-Pull), switch to +L/-L									
Output type B – 0...10V										
Signal range	0...10,25V, Measuring range [08] = 0...10V, error 0V / ≥ 10,25V									
Time behaviour t90-min	≤ 5ms (td = 0s)									
Auxiliary power										
Supply voltage Us /Input current Is / Ready delay time	Type A – 4...20mA FSK: 9...35VDC reverse polarity protected / Ripple voltage ≤ 2Vpp / ≤ 20,5mA / ≤ 0,1s (td = 0s) Type A – 4...20mA FSK Ex: 9...30VDC / ≤ 2Vpp / ≤ 22mA Type B – 0...10V: 14...35VDC reverse polarity protected / Ripple voltage ≤ 2Vpp / ≤ 25mA (Iuo = 0mA) / ≤ 0,1s (td = 0s) Type V – RS485 Modbus®-RTU: 6...35VDC reverse polarity protected / Ripple voltage ≤ 2Vpp / ≤ 10mA (Co = 0mA) / ≤ 0,1s (td = 0s) Type L – IO-Link® inactive: 9...35VDC reverse polarity protected / Ripple voltage ≤ 2Vpp / ≤ 20mA (Co / So / Io = 0mA) / ≤ 0,1s (td = 0s) Type L – IO-Link® active: 18...30VDC reverse polarity protected / Ripple voltage ≤ 2Vpp / ≤ 20mA (Co / So / Io = 0mA) / ≤ 0,1s (td = 0s)									
Measuring accuracy										
Characteristic deviation	≤ ±0,05%FSI / ±0,1%FSI / ±0,2%FSI									
Long term drift zero	≤ ±0,15%FSI/year									
Influence temperature	Tk ≤ ±0,05%FSI/K									
Process conditions										
Process temperature	Standard: -40...+100°C (-40°F...+212°F) Extended: -40...+135°C (-40°F...+275°F) / +140°C (+284°F) – 1h FKM/FPM: -25...+140°C (-13°F...+284°F) EPDM: -40...+140°C (-40°F...+284°F) ATEX/IECEX: acc. to certificate ATEX/IECEX									
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	4...20mA: 745 years / 0-10V: 610 years / RS485 Modbus®-RTU: 561 years / IO-Link®: 601 years									

Electrical connection

Electronic output type A Current 4...20mA FSK Connection plug M12 – FSK interface Device within Ex-free area	Electronic output type V RS485 Modbus®-RTU	Electronic output type L IO-Link®	Electronic output type B Voltage 0...10V

Dimensions (mm)

Plug M12 [14-S]	Plug EN 175-301-803-C [14-C]	Plug EN 175-301-803-A [14-A]
M12x1 10 Ø26 35 [11-0] 57 [11-1] 13 2 G 1/4" A Ø3,5 Ø5 Ø9,5 16,5x11,6x1,5 ISO 1179-2 E 27	28 50 Ø26 35 [11-0] 57 [11-1] 13 2 G 1/4" A Ø3,5 Ø5 Ø9,5 16,5x11,6x1,5 ISO 1179-2 E 27	36 49 Ø26 35 [11-0] 57 [11-1] 13 2 G 1/4" A Ø3,5 Ø5 Ø9,5 16,5x11,6x1,5 ISO 1179-2 E 27

Thread ISO 228-1 – G1/4", EN 837 [04-6]	Thread ISO 228-1 – G1/2", EN 837 [04-1]
Process pressure P_{max} = 600 bar Torque M_{max} = 50Nm M12x1 10 Ø26 35 [11-0] 57 [11-1] 13 2 G 1/4" A Ø3,5 Ø5 Ø9,5 16,5x11,6x1,5 ISO 1179-2 E 27	M12x1 10 Ø26 35 [11-0] 57 [11-1] 17 20 3 G 1/2" A Ø3 Ø6 Ø17,5 23,9x18,5x1,5 ISO 1179-2 E 27

Further terminal assignment and dimensional drawings can be found in the operating instructions or in the technical information.

Order code

Type
PU4S Standard

Measuring system – material diaphragm (process wetted) / sensor type	
K	Ceramic Al2O3 96% / strain gauge
Approval	
S	Standard
X	ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (only Output type – A and Electrical connection – S)
Process connection	
3	Thread ISO 228-1 – G¼"A, ISO 1179-2 E
6	Thread ISO 228-1 – G¼"A, EN 837 (Manometer)
4	Thread ISO 228-1 – G¼"I, internal thread
1	Thread ISO 228-1 – G½"A, EN 837 (Manometer)
2	Thread ISO 228-1 – G½"A, ISO 1179-2 E, internal drill
8	Thread ISO 228-1 – G¼"A, ISO 1179-2 E, front-flush
5	Thread ISO 228-1 – G1"A, ISO 1179-2 E, front-flush
E	Thread ANSI – NPT ¼"
C	Thread ANSI – NPT ½"
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	
02	0...250 mbar
03	0...400 mbar
04	0...600 mbar
05	0...1 bar
06	0...1,6 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
13	0...40 bar
14	0...60 bar
19	0...100 bar
20	0...160 bar
21	0...250 bar
22	0...320 bar
23	0...400 bar
24	0...600 bar
16	-1...0 bar
17	-1...+1 bar
YY	Special measuring range
Electronic – output	
A	Current 4...20mA, FSK, 2-wire
B	Voltage 0-10V, 3-wire (only with Electrical connection – C or A)
V	RS485 Modbus®-RTU, 4-wire (only with Electrical connection – S)
L	IO-Link®, 1x current 0/4...20mA / 2x switch, 4-wire (only with Electrical connection – S)
Electronic – function	
S	Standard
Process temperature	
0	Standard -40°C...+100°C
1	Extended -40°C...+135°C, temperature decoupler
Pressure type	
R	Gauge pressure
A	Absolute pressure, ≥ 1bar ... ≤ 40bar
Measuring system – accuracy	
4	0,5%
8	Xcellence – 0,15%, linearization protocol
Electrical connection	
S	Plug M12x1
C	Plug EN 175-301-803-C (DIN 43650-C)
A	Plug EN 175-301-803-A (DIN 43650-A)
Additional options	
-SF	LABS-free, silicone-free / paint compatible version
-ML	Measurement point designation / TAG – Laser marking
-MZ	Material test certificate – EN10204 3.1
-WT	Factory certification – drink water suitability
-KF	Configuration / Preset
-WK	Factory calibration – calibration certificate

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K V C S