



Universal pressure transmitter / pressure switch  
for general industrial applications

Technical information TI09.18

### In brief

<b>up to 600 bar pressure</b>	<b>process temperature 135°C</b>	<b>CIP SIP capable</b>	<b>Protection IP69K</b>	<b>0,05% highest accuracy</b>	<b>fast response time</b>
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### 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 ≤ 0,15%
- Evaluation electronic 4...20mA HART® / 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 SIP cleaning processes.

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

Due to its high accuracy and the digital adjustability by HART®, 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.

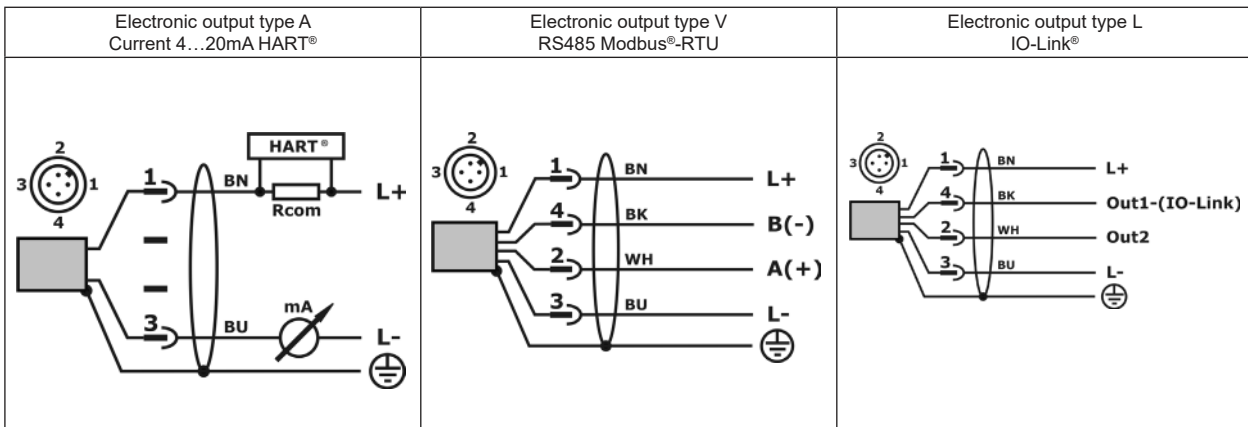
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

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 certifications 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.

<b>Measuring range</b>	
Nominal pressure PN	-1...0bar / -1...1bar / 0...0,25bar to 0...600bar
<b>Output type A – Current 4...20mA HART®</b>	
Analogue output 4...20mA	3,9...20,5mA / $\geq 3,8\text{mA}$ / $\leq 22\text{mA}$ / $dI \leq 1\mu\text{A}$
Time behavior	T90 $\leq 8\text{ms}$ / ton $\leq 0,2\text{s}$
Interface	HART®-compliant (7.0) / 1200 Bit/s
<b>Output type V – RS485 Modbus®-RTU</b>	
Interface	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800...38400 Baud)
Time behavior	T90 $\leq 2\text{ms}$ ( $t_d = 0\text{s}$ ) / ton $\leq 0,1\text{s}$ ( $t_d = 0\text{s}$ )
<b>Output type L – IO-Link®</b>	
Interface	IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output	0...20mA: 0...20,5mA / $\leq 0,05\text{mA}$ / $\leq 22\text{mA}$ / $dI \leq 1\mu\text{A}$ 4...20mA: 3,8...20,5mA / $\geq 3,6\text{mA}$ / $\leq 22\text{mA}$ / $dI \leq 1\mu\text{A}$
Switch output	2x PP (Push-Pull), switch to +L/-L
Output	Uout $\leq 0,2\text{V}$ , $\geq U_s - 2\text{V}$ / Iout 0...200mA (current limited $\leq 450\text{mA}$ , short circuit protected)
Time behavior	T90 $\leq 2\text{ms}$ / ton $\leq 0,1\text{s}$
<b>Auxiliary power</b>	
Supply voltage Us polarity protected	Type A – 4...20mA HART®: 9...35VDC / Ex: 9...30VDC Type V – RS485 Modbus®-RTU: 6...35VDC Type L – IO-Link®: 9...35VDC, without IO-Link® / 18...30VDC, with IO-Link®
<b>Measuring accuracy</b>	
Characteristic deviation	$\leq \pm 0,15\% / \pm 0,5\% \text{FSO}$
Long term drift	$\leq \pm 0,2\% \text{FSO/year}$
Temperature deviation	Tk Zero+Span $\leq \pm 0,05\% \text{FSO/K}$
<b>Process conditions</b>	
Process temperature	Standard: -40°C...+100°C Extended: -40°C...+135°C (+140°C – 1h)
Pressure cycles	$\geq 10 \text{ Mio.}$ (1,2xPN)
<b>Environmental conditions</b>	
Environmental temperature	-40°C...+100°C
Protection level	IP69K/IP67 (EN/IEC 60529)
MTTF	463 years

## Electrical connection



<p>Terminal enclosure</p>		<p>Temperature decoupler Extended temperature range</p>
<p>Process connection type 6 Thread G<math>\frac{1}{4}</math>"A, EN 837</p>	<p>Process connection type 1 Thread G<math>\frac{1}{2}</math>"A, EN 837</p>	<p>Process connection type 3 Thread G<math>\frac{1}{4}</math>"A, DIN EN ISO 1179-2 E</p>
<p>Process connection type 4 Thread G<math>\frac{1}{4}</math>"I, inner thread</p>		
<p>Process connection type 2 Thread G<math>\frac{1}{2}</math>"A, DIN EN ISO 1179-2 E</p>	<p>Process connection type 8 Thread G<math>\frac{3}{4}</math>"A, front-flush</p>	<p>Process connection type 5 Thread G1"A, front-flush</p>

Type	Standard
PU4S	
<b>Measuring system – material diaphragm (process wetted) / sensor type</b>	
K	Ceramic Al <sub>2</sub> O <sub>3</sub> 96% / strain gauge
<b>Approval</b>	
S	Standard
X	ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (Output type – A)
<b>Process connection</b>	
6	Thread ISO 228-1 – G $\frac{1}{4}$ "A, EN 837 manometer
1	Thread ISO 228-1 – G $\frac{1}{2}$ "A, EN 837 manometer
3	Thread ISO 228-1 – G $\frac{1}{4}$ "A, DIN EN ISO 1179-2 E
4	Thread ISO 228-1 – G $\frac{1}{4}$ "I, inner thread
2	Thread ISO 228-1 – G $\frac{1}{2}$ "A, DIN EN ISO 1179-2 E, inner bore
8	Thread ISO 228-1 – G $\frac{1}{4}$ "A, front-flush, $\leq$ 10 bar
5	Thread ISO 228-1 – G $\frac{1}{4}$ "A, front-flush, $\leq$ 1 bar
Y	others
<b>Material process gaskets (process wetted)</b>	
1	FPM – fluorelastomere (e.g. Viton®)
3	EPDM – ethylene-propylene-dienmonomere, FDA-listed
Y	others
<b>Material process connection (process wetted)</b>	
V	CrNi-steel
<b>Material terminal enclosure</b>	
C	CrNi-steel
<b>Measuring range</b>	
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
<b>Electronic – output</b>	
A	Current 4...20mA, HART®-compliant, 2-wire
V	RS485 Modbus®-RTU, 4-wire
L	IO-Link®, 1x current 0/4...20mA / 2x switch, 4-wire
<b>Electronic – function</b>	
S	Standard
<b>Process temperature</b>	
0	Standard –40°C...+100°C
1	Extended –40°C...+135°C, temperature decoupler
<b>Pressure type</b>	
R	Gauge pressure
A	Absolute pressure, $\geq$ 1bar ... $\leq$ 40bar
<b>Measuring system – accuracy</b>	
4	0,5%
8	Xcellence – 0,15%, linearization protocol
<b>Electrical connection</b>	
S	Plug M12x1
<b>Additional options</b>	
-SF	LABS-free, silicone-free / paint compatible version
-ML	Measurement point designation / TAG – Laser marking
-KL	Customer label on device – Laser marking
-TN	Type label neutral
-MZ	Material test certificate – EN10204 3.1
-WT	Factory certification – drink water suitability
-KF	Configuration / Preset
-WK	Factory calibration – calibration certificate

Precont® PU4S K V C S S