



Universal pressure transmitter / pressure switch  
for general industrial applications

Technical information TI09.18

### In brief

- up to **600 bar** pressure
- process temperature **135°C**
- CIP SIP** capable
- Protection **IP69K**
- 0,05%** highest accuracy
- fast response time**



### 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.

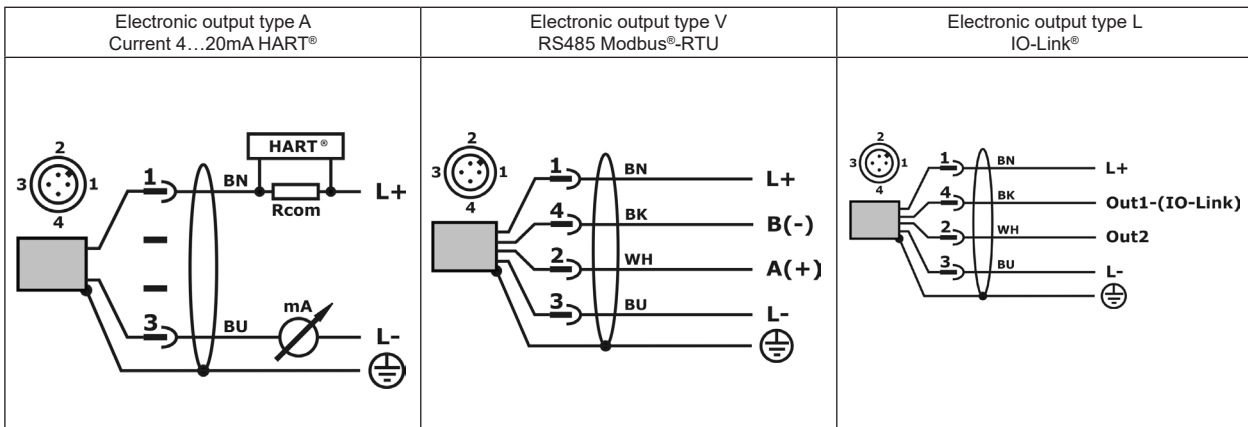
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

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>

PU4S	Type	Standard
K	Measuring system – material diaphragm (process wetted) / sensor type	Ceramic Al2O3 96% / strain gauge
S	Approval	Standard
X	Approval	ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (Output type – A)
6	Process connection	Thread ISO 228-1 – G¼”A, EN 837 manometer
1	Process connection	Thread ISO 228-1 – G½”A, EN 837 manometer
3	Process connection	Thread ISO 228-1 – G¼”A, DIN EN ISO 1179-2 E
4	Process connection	Thread ISO 228-1 – G¼”I, inner thread
2	Process connection	Thread ISO 228-1 – G½”A, DIN EN ISO 1179-2 E, inner bore
8	Process connection	Thread ISO 228-1 – G¾”A, front-flush, ≤ 10 bar
5	Process connection	Thread ISO 228-1 – G1”A, front-flush, ≤ 1 bar
Y	Process connection	others
1	Material process gaskets (process wetted)	FPM – fluorelastomere (e.g. Viton®)
3	Material process gaskets (process wetted)	EPDM – ethylene-propylene-dienmonomere, FDA-listed
Y	Material process gaskets (process wetted)	others
V	Material process connection (process wetted)	CrNi-steel
C	Material terminal enclosure	CrNi-steel
02	Measuring range	0...250 mbar
03	Measuring range	0...400 mbar
04	Measuring range	0...600 mbar
05	Measuring range	0...1 bar
06	Measuring range	0...1,6 bar
07	Measuring range	0...2,5 bar
08	Measuring range	0...4 bar
09	Measuring range	0...6 bar
10	Measuring range	0...10 bar
11	Measuring range	0...16 bar
12	Measuring range	0...25 bar
13	Measuring range	0...40 bar
14	Measuring range	0...60 bar
19	Measuring range	0...100 bar
20	Measuring range	0...160 bar
21	Measuring range	0...250 bar
22	Measuring range	0...320 bar
23	Measuring range	0...400 bar
24	Measuring range	0...600 bar
16	Measuring range	-1...0 bar
17	Measuring range	-1...+1 bar
YY	Measuring range	Special measuring range
A	Electronic – output	Current 4...20mA, HART®-compliant, 2-wire
V	Electronic – output	RS485 Modbus®-RTU, 4-wire
L	Electronic – output	IO-Link®, 1x current 0/4...20mA / 2x switch, 4-wire
S	Electronic – function	Standard
0	Process temperature	Standard –40°C...+100°C
1	Process temperature	Extended –40°C...+135°C, temperature decoupler
R	Pressure type	Gauge pressure
A	Pressure type	Absolute pressure, ≥ 1bar ... ≤ 40bar
4	Measuring system – accuracy	0,5%
8	Measuring system – accuracy	Xcellence – 0,15%, linearization protocol
S	Electrical connection	Plug M12x1
-SF	Additional options	LABS-free, silicone-free / paint compatible version
-ML	Additional options	Measurement point designation / TAG – Laser marking
-KL	Additional options	Customer label on device – Laser marking
-TN	Additional options	Type label neutral
-MZ	Additional options	Material test certificate – EN10204 3.1
-WT	Additional options	Factory certification – drink water suitability
-KF	Additional options	Configuration / Preset
-WK	Additional options	Factory calibration – calibration certificate

Precont® PU4S K V C S S