



Universal pressure transmitter / pressure switch  
for general industrial applications

Technical information TI09.18

### In brief

<b>up to 20 bar pressure</b>	<b>process temperature 125°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 50 mbar up to 20 bar
- Wide variety of process connections
- Robust ceramic front-flush or internal diaphragm
- Precise dry capacitive sensor
- Process temperature range -40°C to +125°C
- Fully welded robust steel enclosure
- High protection class IP69K/IP67
- Highest accuracy to ≤ 0,05%
- 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 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.

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.

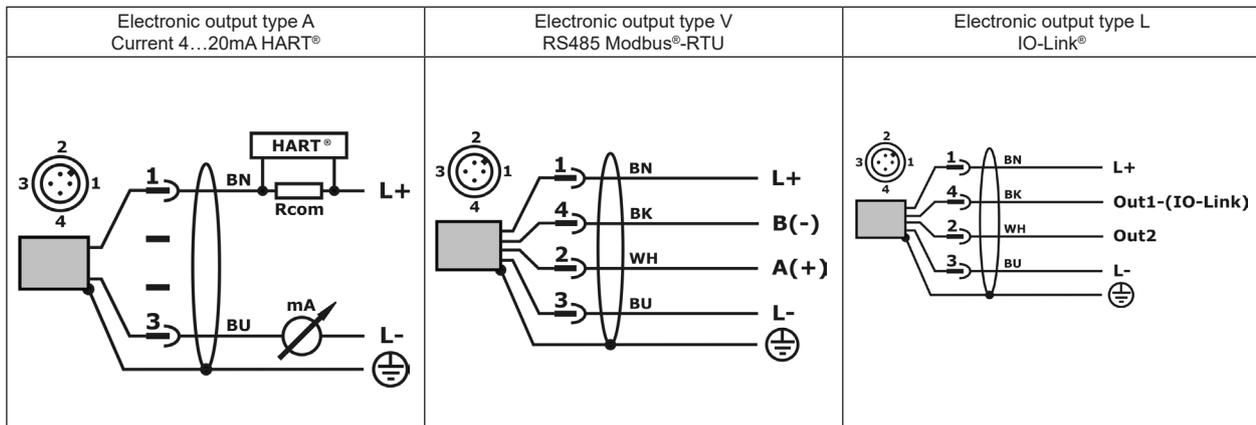
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

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	-0,1...0bar / -0,1...0,1bar / -1...0bar / -1...1bar / 0...0,05bar to 0...20bar
<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	$\leq \pm 0,05\% / \pm 0,1\% / \pm 0,2\%$ FSO
Long term drift	$\leq \pm 0,15\%$ FSO/year
Temperature deviation	Tk Zero $\leq \pm 0,015\%$ FSO/K, $\leq \pm 0,75\%$ FSO (-20°C...+80°C)
	Tk Span $\leq \pm 0,015\%$ FSO/K $\leq \pm 0,5\%$ FSO (-20°C...+80°C/ $\geq 0,4\text{bar}$ ) / $\leq \pm 0,8\%$ FSO (-20°C...+80°C/ $< 0,4\text{bar}$ )
<b>Process conditions</b>	
Process temperature	Standard: -40°C...+100°C Extended: -40°C...+125°C (+140°C – 1h)
Pressure cycles	$\geq 100$ 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 9 Thread G<math>\frac{1}{2}</math>"A, front-flush</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>

You will find further dimension drawings in the technical information.

Type	Standard		
PU4S			
C	<b>Measuring system – material diaphragm (process wetted) / sensor type</b> Ceramic Al2O3 96%/99,7%/99,9% / capacitive		
	<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 – G¼”A, EN 837 manometer		
1	Thread ISO 228-1 – G½”A, EN 837 manometer		
3	Thread ISO 228-1 – G¼”A, DIN EN ISO 1179-2 E		
4	Thread ISO 228-1 – G¼”I, inner thread		
9	Thread ISO 228-1 – G½”A, front-flush		
8	Thread ISO 228-1 – G¾”A, front-flush		
5	Thread ISO 228-1 – G1”A, front-flush		
R	Dairy coupling DIN 11851 – DN25, PN40		
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		
S	Clamp ISO 2852 – DN25-38 / BS 4825 – 1”-1½” / DIN 32676 – DN25-38, PN40		
T	Clamp ISO 2852 – DN40-51 / BS 4825 – 2” / DIN 32676 – DN50, PN40		
Y	others		
	<b>Material process gaskets (process wetted)</b>		
1	FPM – fluorelastomere (e.g. Viton®)		
3	EPDM – ethylene-propylene-dienmonomere, FDA-listed		
4	FFKM - perfluorelastomere (e.g. Kalrez®)		
6	FFKM hd - perfluorelastomere high density - gas applications		
Y	others		
V	<b>Material process connection (process wetted)</b> CrNi-steel		
C	<b>Material terminal enclosure</b> CrNi-steel		
	<b>Measuring range</b>		
26	0...50 mbar	09	0...6 bar
01	0...100 mbar	10	0...10 bar
02	0...200 mbar	11	0...16 bar
03	0...400 mbar	12	0...20 bar
04	0...600 mbar	15	-100...0 mbar
05	0...1 bar	16	-1...0 bar
06	0...1,6 bar	17	-1...+1 bar
07	0...2,5 bar	18	-100...+100 mbar
08	0...4 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...+125°C, temperature decoupler		
	<b>Pressure type</b>		
R	Gauge pressure		
A	Absolute pressure (FS ≥ 100mbar)		
	<b>Measuring system – accuracy</b>		
1	0,2%		
3	0,1% (FS ≥ 100mbar), linearization protocol		
6	Xcellence – 0,05% (FS ≥ 200mbar), 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 C V C S S