

Pressure Transmitter



Programmable

Bus connection

Temperature measurement



Pressure Transmitter

Pressure transmitter for level measurement MPA, MPB, MPC, MPG, MPJ

The family of pressure transmitters for level measurement MPA, MPB, MPC, MPG and MPJ is based on proven technology which covers typical requirements in a wide variety of applications.

All of the transmitters use a piezoresistive sensor element that is designed to measure either absolute or relative (gauge) pressure. Based on the accuracy of the sensor required by the customer, signal processing is performed either by analog or digital technology. All units are compensated for temperature variations at the sensor element.

While all units offer the measured pressure or level (psi or ftWC) value as a 4–20 mA analog output, several units out-

put a digital RS-485 signal as well. The range and the damping of the output signal can be freely set by the customer with the aid of a PC and optional software.

The interior circuits of the transmitters can be optionally protected against overvoltage by integrated surge protection. The transmitters are available either as submersible transmitters with vent tube cable or as a transmitter with a 1/2" NPT fitting.

Features

- Piezoresistive sensor
- High accuracy up to $\leq \pm 0.10\%$ FS
- Analog and/or digital interface
- Pressure and temperature output
- Programmable under Windows 9x, ME, NT, 2000, XP
- Programmable Low Pass Filter
- High reliability
- Submersible transmitters with PE-, PUR- or FEP-cable
- Reverse polarity and short circuit protected
- Optional surge (lightning) protection

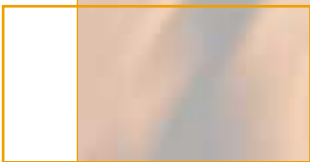
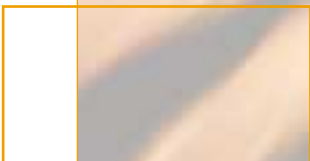
Typical applications

Level measurement in:

- Tanks
- Wells, Piezometers
- Lakes, rivers, reservoirs
- Waste water plants

Indirect flow measurement

Process engineering



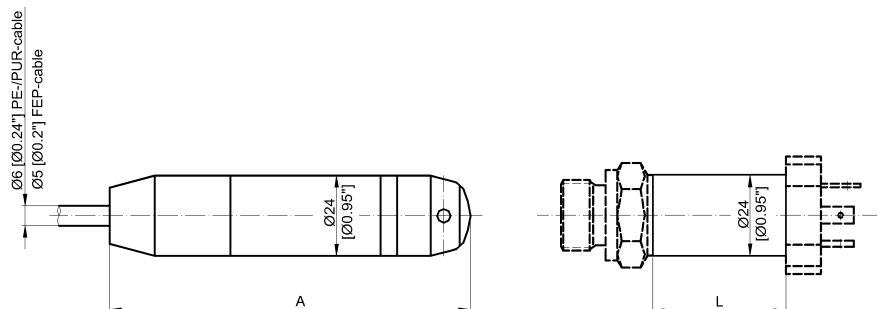
Product Line

The current product line of pressure transmitters offers the following features:

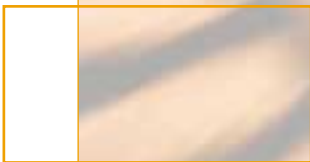
	MPA	MPB	MPG	MPC	MPJ
Pressure ranges 0...0.1 bar to 0...25 bar [0...1.5 to 0...360 psi / 0...3.3 to 0...800 ftWC]	●	●	●	●	●
Submersible transmitter	●	●		●	
Transmitter with 1/2" NPT fitting			●		●
2-wire	●	●	●		
5- / 6-wire				●	●
Analog processing	●				
Digital processing		●	●	●	●
Analog output for pressure	●	●	●	●	●
Analog output for temperature				○	○
Digital output for pressure and temp.				●	●
Programmable		●	●	●	●
Accuracy ±0.5 % FS	●				
Accuracy ±0.25 % FS	○				
Accuracy ±0.1 % FS		●	●	●	●
Compensation within 0 °C...+70 °C	●				
Compensation within -10 °C...+50 °C		●	●	●	●
Compensation within -25 °C...+85 °C	○	○	○	○	○
TK ≤ 600 ppm/°C	●				
TK ≤ 150 ppm/°C		●	●	●	●
Surge (lightning) protection integrated	○	○	○	○	○

● = Standard ○ = Option

Dimensions



	MPA		MPB		MPG		MPC		MPJ	
Surge protection	without	with	without	with	without	with	without	with	without	with
A [mm]	108	157	137	137			157	258		
A ["]	4.25	6.18	5.39	5.39			6.18	10.16		
L [mm]					74	74			94	195
L ["]					2.91	2.91			3.70	7.68



Technical Data (selection)

	MPA	MPB	MPG	MPC	MPJ
Type	2-wire submersible transmitter	2-wire submersible transmitter	2-wire transmitter with screw pressure connection	5(6)-wire submersible transmitter	5(6)-wire transmitter with screw pressure connection
Measuring ranges pressure	0 ... 0.1 bar to 0 ... 25 bar [0 ... 1.5 psi to 0 ... 363 psi 0 ... 3.3 to 0 ... 840 ftWC]	0 ... 0.1 bar to 0 ... 25 bar [0 ... 1.5 psi to 0 ... 363 psi 0 ... 3.3 ftWC to 0 ... 840 ftWC]	0 ... 0.1 bar to 0 ... 25 bar [0 ... 1.5 psi to 0 ... 363 psi 0 ... 3.3 ftWC to 0 ... 840 ftWC]	0 ... 0.1 bar to 0 ... 25 bar [0 ... 1.5 psi to 0 ... 363 psi 0 ... 3.3 ftWC to 0 ... 840 ftWC]	0 ... 0.1 bar to 0 ... 25 bar [0 ... 1.5 psi to 0 ... 363 psi 0 ... 3.3 ftWC to 0 ... 840 ftWC]
Output signal pressure	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA and digital	4 ... 20 mA and digital
Resolution	NA	NA	12 bit	12 bit	12 bit
Adjustability					
Zero	NA	-5 % ... +105 % of original FS	-5 % ... +105 % of original FS	-5 % ... +105 % of original FS	-5 % ... +105 % of original FS
Span	NA	±(25 % ... +105 %) of original FS, ≥ 50 mbar	±(25 % ... +105 %) of original FS, ≥ 50 mbar	±(25 % ... +105 %) of original FS, ≥ 50 mbar	±(25 % ... +105 %) of original FS, ≥ 50 mbar
Digital interface	NA	proprietary	proprietary	MODBUS RTU (RS-485)	MODBUS RTU (RS-485)
Measuring range temperature	NA	NA	NA	equal to operating temperature range	equal to operating temperature range
Output signal temperature	NA	NA	NA	4 ... 20 mA (option) and digital	4 ... 20 mA (option) and digital
Supply voltage	DC 9 ... 33 V	DC 9 ... 33 V	DC 9 ... 33 V	DC 9 ... 30 V	DC 9 ... 30 V
Supply voltage influence	< 0.1 % FS	< 0.1 % FS	< 0.1 % FS	< 0.1 % FS	< 0.1 % FS
Protection class	IP 68 [NEMA 4X]	IP 68 [NEMA 4X]	IP 65 [NEMA 4X]	IP 68 [NEMA 4X]	IP 65 [NEMA 4X]
Operating temperature range	0°C ... +80°C stand. -25°C ... + 85°C opt.	-10°C ... +50°C standard -25°C ... + 85°C option	-10°C ... +50°C standard -25°C ... + 85°C option	-10°C ... +50°C standard -25°C ... + 85°C option	-10°C ... +50°C standard -25°C ... + 85°C option
Weight					
(without / with surge protection)	approx. 160 g / 210 g	approx. 160 g / 170 g	approx. 160 g / 170 g	approx. 190 g / 270 g	approx. 190 g / 270 g
Connection	cable	cable	connector	cable	connector
	PE / PUR / FEP	PE / PUR / FEP	PE / PUR / FEP	PE / PUR / FEP	PE / PUR / FEP
Overload	3 x FS (min. 3 bar [44 psi])	3 x FS (min. 3 bar [44 psi])	3 x FS (min. 3 bar [44 psi])	3 x FS (min. 3 bar [44 psi])	3 x FS (min. 3 bar [44 psi])
Rupture pressure	> 200 bar [2900 psi]	> 200 bar [2900 psi]	> 200 bar [2900 psi]	> 200 bar [2900 psi]	> 200 bar [2900 psi]
Accuracy pressure *	≤ ±0.5 % FS	FS ≤ 0.1 bar [1.45 psi]: ≤ ±0.2 % FS	FS ≤ 0.1 bar [1.45 psi]: ≤ ±0.2 % FS	FS ≤ 0.1 bar [1.45 psi]: ≤ ±0.2 % FS	FS ≤ 0.1 bar [1.45 psi]: ≤ ±0.2 % FS
(Options *)	(≤ ±0.25 / 0.1 % FS)	FS > 0.1 bar [1.45 psi]: ≤ ±0.1 % FS	FS > 0.1 bar [1.45 psi]: ≤ ±0.1 % FS	FS > 0.1 bar [1.45 psi]: ≤ ±0.1 % FS	FS > 0.1 bar [1.45 psi]: ≤ ±0.1 % FS
Thermal shift					
Zero or span	0 ... +70°C:	-10°C ... +50°C:	-10°C ... +50°C:	-10°C ... +50°C:	-10°C ... +50°C:
typ. [max.]	±0.06 ... ±0.015 % FS/°C	FS ≤ 0.1 bar [1.45 psi]: ±100 [±150] ppm/°C	FS ≤ 0.1 bar [1.45 psi]: ±100 [±150] ppm/°C	FS ≤ 0.1 bar [1.45 psi]: ±100 [±150] ppm/°C	FS ≤ 0.1 bar [1.45 psi]: ±100 [±150] ppm/°C
	**	FS > 0.1 bar [1.45 psi]: ±60 [±100] ppm/°C	FS > 0.1 bar [1.45 psi]: ±60 [±100] ppm/°C	FS > 0.1 bar [1.45 psi]: ±60 [±100] ppm/°C	FS > 0.1 bar [1.45 psi]: ±60 [±100] ppm/°C
Long term stability (1 yr)	< 4 mbar / ≤ 0.2 % FS	< 4 mbar [0.058 psi]	< 4 mbar [0.058 psi]	< 4 mbar [0.058 psi]	< 4 mbar [0.058 psi]
Accuracy temperature	NA	NA	NA	≤ ± 1°C	≤ ± 1°C

Subject to change

NA = Not available

* = Zero based non-conformity according to DIN 16086, including hysteresis and repeatability.

** = Varies according to measurement range and is different for zero and span. See data sheet.

Quality tests



The transmitters comply with the EMC directive 89/336/EEC.

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