Features

- Two Wire technique
- Piezoresistive sensing element
- Output signal 4-20 mA
- Pressure type Gauge, Absolute
- Accuracy ±0.1 % FS
- Calibration in bar / psi / mWC
- Indent for the remaining pressure ranges from 0 - 0.1 up to 25 bar or correspondent pressure ranges in psi (from 0 - 1.5 psi up to 0 - 400 psi)
- Adjustable within 1 : 4 of the nominal pressure range
- Temperature compensated within -10°C ... +50°C [+14°F ... +122°F] or -25°C ... +85°C [-13°F ... +185°F]
- Compact and robust

Picture

Specifications

All specifications, unless otherwise noted, at DC 24 V supply voltage, R_L = 100 Ω, T_{amb} = 25°C [77°F].

Measurement Range Independent Technical Data

Type	Two wire current transmitter
Output signal	4 … 20 mA
Resolution	12 bit (< 0.025 % FS)
Interface for adjustment	HART-like
Output zero adjustability	-5% of original FS ... +100% of original FS
Output span adjustability	≥ 25% of original FS (≥ 50 mbar [0.725 psi = 0.51 mWC]) .... +105% of original FS
Delay adjustability	~30 ms (default), 100 ms, 1 s, 10 s
Supply voltage	DC 9 ... 33 V
Reverse polarity protection	integrated, standard
Surge (lightning) protection	optional
Supply voltage influence	< 0.1 % FS
Dielectric strength case / supply	500 V
Load resistance limitation	R_L [Ω] ≤ (+U_B [V] - 9 [V]) / 0.02 [A]
Load resistance influence	< 0.1 % FS
Protection class	IP68 (NEMA 4X)
Operating media temperature range	-10°C ... +50°C [+14°F ... +122°F] standard -25°C ... +85°C [-13°F ... +185°F] option
Compensated temperature range	= operating temperature range
Storage temperature range	= operating temperature range
Acid resistence	pH5 ... pH9

Weight	approx. 160 g [0.35 pounds] without surge protection approx. 170 g [0.37 pounds] with surge protection
Measuring cell, diaphragm, housing	Stainless steel 1.4435 (316L)
Seals	Viton

Connecting cable by choice PE / PUR / Teflon cable with integrated pressure compensation tube

Outside diameter	6 mm [0.24"] PE / PUR; 5 mm [0.2"] Teflon
Conductor	0.22 mm^2 [AWG 24], Cu-wire 7 x 0.20 tin-plated
Resistance	≤ 82.9 mΩ/m [25.3 mΩ/ft] (one way)
Minimum cable bending radius	100 mm [4"]
Tearforce	> 500 N [112 lbf]
Pressure compensation tube diameter	Ø 1.4 / 0.8 mm [0.055" / 0.03"] PE / PUR; Ø 1.1 / 0.6 mm [0.04" / 0.02"] Teflon
PE-cable	food approved
alowable media temperature	≤ 50°C [+122°F]
Weight	approx. 41 g/m [0.44 oz/ft]
Stretchforce	< 15 N [3.37 lbf]
PUR-cable	mechanical robust
alowable media temperature	≤ 50°C [+122°F]
Weight	approx. 43 g/m [0.46 oz/ft]
Stretchforce	≤ 334 N [75 lbf]
Teflon-cable	
alowable media temperature	≤ 85°C [+185°F]
Weight	approx. 55 g/m [0.59 oz/ft]
Stretchforce	< 15 N [3.37 lbf]

Electromagnetic compability

Emission	
Generic emission standard	EN 50081-1:1992
Emission, class B	EN 55022:1994
Immunity	
Generic immunity	EN 50082-2:1995
Electrostatic discharge	EN 61000-4-2:1995 (4 kV contact, 8 kV air)
Radiated electro-magnetic field	ENV 50140:1993 (10 V/m, 80 ... 100 MHz, 80% AM 1 kHz)
Radiated electro-magnetic field (GSM)	ENV 50204:1995 (10 V/m, 950 MHz, 200 Hz on/off)
Fast transients (burst)	EN 61000-4-4:1995 (2 kV)
Conducted radio-frequency	ENV 50141:1993 (10 V, 0.15 ... 80 MHz, 80% AM 1 kHz)
Surge	EN 61000-4-5:1995 (10 kA 8/20μs) [only with optional surge (lightning) protection]

Quality Tests

CE Complies with the EMC directive 89/336/EEC.

Measurement Range Specific Technical Data

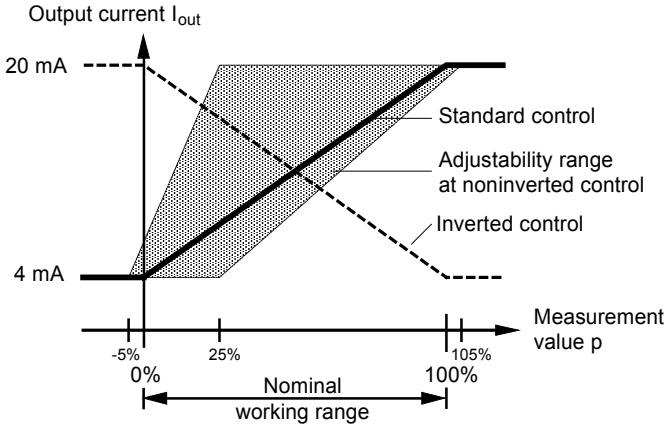
Pressure range	... 0.1 bar [1.45 psi]	> 0.1 ... 25 bar [1.45 psi...362.5 psi]
Overpressure	3 bar [43.5 psi]	3 x FS (at least 3 bar [43.5 psi])
Burst pressure	> 200 bar [2900 psi]	> 200 bar [2900 psi]
Accuracy incl. hysteresis and repeatability		
-10°C ... +50°C [+14°F...+122°F]	≤ ±0.2 % FS	≤ ±0.1 % FS
-25°C ... +85°C [-13°F...+185°F]	≤ ±0.2 % FS	≤ ±0.1 % FS
Thermal shift Zero / Span		
-10°C ... +50°C [+14°F...+122°F]	± 100 ppm FS/°C typ. ± 150 ppm FS/°C max.	± 60 ppm FS/°C typ. ± 100 ppm FS/°C max.
-25°C ... +85°C [-13°F...+185°F]	± 200 ppm FS/°C typ. ± 250 ppm FS/°C max.	± 150 ppm FS/°C typ. ± 200 ppm FS/°C max.
Long term stability (1 yr)	< 4 mbar [0.058 psi]	< 4 mbar [0.058 psi]

Parametrization

With the help as an accessory available Programmig kit MPPKIT, consisting of interface box and programming software under Windows 9x / ME / NT / 2000 / XP, parametrization of the transmitter can be undertaken (see also data sheet 21.210.0066900.001 and operation manual 21.810. 0066900.001).

- Range selection for the output current 4 ... 20mA (Programming)

  With the range selection 4 ... 20mA is it possible to allocate other measurement values to the 4 mA and 20 mA output values as the standard 0% FS and 100% FS. (Typicaly at 4 mA a value from range -5% FS ... +25% FS, at 20 mA a value from range +25% FS ... +105% FS.) On this way a subrange or negative pressure can also be measured.
  By exchange the values for 4 mA and 20 mA one another an inverted control will be reached. (Rising pressure thereby produces falling output current.)



The adjustability range is diagrammed on the picture on the left.

In the case of inverted control there are always the same adjustability possibilities as at the noninverted control.
For clearness reasons is the correspondig range not displayed.

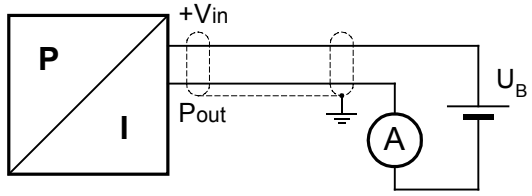
- Programmable Low Pass Filter on current output.
  The analog output can be attenuated with a low-pass filter of 1st order in the range of ~30 ms (default) and 10s.
  Hint: Select the minimum value during start-up.

- Recalibration 0% and 100%
  The transducer is calibrated to the nominal measurement range (FS) ex works. On detection of an inevitable long-term drift, the transducer could be recalibrated. It is possible to compensate either only zero point drift, or only span drift or both together. The origin calibration is nonvolatile saved in the transmitter and can be reestablish on demand.
  Setting range 0%: -5% … +5% of nominal measurement range (FS)
  Setting range 100%: 95% ... 105% of nominal measurement range (FS)

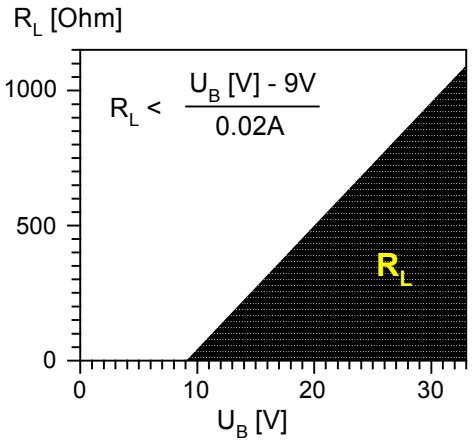
Standard Settings

The transducers have the following standard parameterization:
- Current range: 4 ... 20mA
- Measurement range begin: 4 mA = 0% of nominal measurement range (FS)
- Measurement range end: 20 mA = 100% of nominal measurement range (FS)
- Damping: ~30 ms

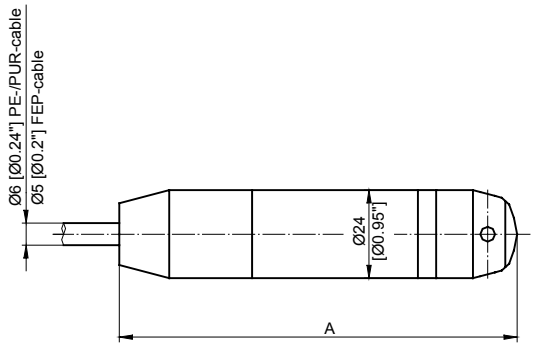
Standard Schematic / Electrical Connections



+Vin ↔ white
Pout ↔ yellow



Dimensions



A = 137 mm (5.4") with / without surge (lightning) protection

Ordering information

Table 1:
The exact order number for an article is formed from the individual optionscodes according to the table (with the BAAN-Configurator PCF or manually).

MPB	**PCF Order Number**														
	1/2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Type															
MPB	PB														
Pressure type															
Gauge		1													
Absolut		2													
Measurement range															
0 ... 100 mbar = 0 ... 1.45 psi			0	0											
0 ... 160 mbar = 0 ... 2.32 psi			0	1											
0 ... 250 mbar = 0 ... 3.63 psi			0	2											
0 ... 400 mbar = 0 ... 5.8 psi			0	3											
0 ... 600 mbar = 0 ... 8.7 psi			0	4											
0 ... 1.0 bar = 0 ... 14.5 psi			0	5											
0 ... 1.6 bar = 0 ... 23.2 psi			0	6											
0 ... 2.5 bar = 0 ... 36.25 psi			0	7											
0 ... 4.0 bar = 0 ... 58 psi			0	8											
0 ... 6.0 bar = 0 ... 87 psi			0	9											
0 ... 10 bar = 0 ... 145 psi			1	0											
0 ... 16 bar = 0 ... 232 psi			1	1											
0 ... 25 bar = 0 ... 362.5 psi			1	2											
0 ... 1 mWC			6	0											
0 ... 2 mWC			6	1											
0 ... 5 mWC			6	2											
0 ... 10 mWC			6	3											
0 ... 20 mWC			6	4											
0 ... 50 mWC			6	5											
0 ... 1.5 psi			7	0											
0 ... 3.0 psi			7	1											
0 ... 7.5 psi			7	2											
0 ... 15 psi			7	3											
0 ... 30 psi			7	4											
0 ... 75 psi			7	5											
0 ... 150 psi			7	6											
0 ... 300 psi			7	7											
Special range			9	9											
Version															
Closed version					5	5									
Electrical connection															
PE cable (food approved)							1	3							
PUR cable							1	5							
Teflon cable (temp. > +50°C [+122°F])							2	1							
Output signal															
4 ... 20 mA without surge (lightning) protection									0	5					
4 ... 20 mA with surge (lightning) protection									0	8					
Accuracy															
±0.2 % FS, only for FS = 100 mbar											4				
±0.1 % FS, only for FS > 100 mbar											2				
Temperature range															
Compensated -10°C ... +50°C [+14°F ... +122°F] (Medium 0 ... 80°C [+32°F ... +176°F])												0			
Compensated -25°C ... +85°C [-13°F ... +185°F] (Medium -25°C ... +85°C [-13°F ... +185°F])												1			
Cable length															
Cable length in meter (always ≥ 001)													x	x	x

Hints

- The load resistance R_L is the sum of load and cable resistance.
- The cable must not be tight bend or flat squeezed (because of the integrated pressure compensation tube).
- Note that humidity should not penetrate into the venting tube. Therefore do not remove the humidity-brake, that is mounted on the pressure compensation tube. Use of branch box with desiccator is recommended.
- To avoid damage of the separating membrane, do not touch the membrane.
- For field use with extension cables lengths ≥ 5 m (16 ft) or within a building with cable lengths ≥ 100 m (330 ft), a transmitter with the surge (lightning) protection option and an overvoltage protection ASBG.48 or similar (on the other side of cable) must be used.
- Connect the cable-shield to a good ground potential.
- Conversion table for pressure units
  (value in new unit) = coefficient x (value in old unit)

coefficient	new unit						
old unit	Pa = 1 N/m²	bar	mWC	ftWC	mmHg (Torr)	psi	kp/cm² = at
Pa = 1 N/m²	1	10^{-5}	1.02 x 10^{-4}	3.35	7.5 x 10^{-3}	1.45 x 10^{-4}	1.02 x 10^{-5}
bar	10^{5}	1	10.2	33.5	750	14.5	1.02
mWC	9.81 x 10^{3}	9.81 x 10^{-2}	1	3.28	73.6	1.42	0.1
ftWC	2.99 x 10^{3}	2.99 x 10^{-2}	0.305	1	22.4	0.433	3.05 x 10^{-2}
mmHg (Torr)	1.33 x 10^{2}	1.33 x 10^{-3}	1.36 x 10^{-2}	4.46 x 10^{-2}	1	1.93 x 10^{-2}	1.36 x 10^{-3}
psi	6.89 x 10^{3}	6.89 x 10^{-2}	0.703	2.31	51.7	1	7.03 x 10^{-2}
kp/cm² = at	9.81 x 10^{4}	0.981	10	32.8	736	14.2	1

Application example 2 bar = ? psi:
bar = "old unit", psi = "new unit", ⇒ "coefficient" = 14.5
2 bar = 14.5 x 2 psi = 29 psi

Accessories

	Abbreviation	Order No. *
Programming-Kit consisting of interface box and programming software under Windows 9x / ME / NT / 2000 / XP	MPPKIT	00 66 900.001
Extension cable 2-wire, shielded (L [m])	MPZVK	04 60 502
Branch box (small) IP54 (NEMA3)	MPZAD	00 65 195.001
Branch box complete, IP65 (IP67) (NEMA4), with desiccator	MPZAD.002	00 65 194.001
Surge protection AC/DC 48 V	ASBG.48	00 32 721.003
Suspension arrangement for submersible probe	MPZHVT	00 65 717.001
Protection tube 2 m [6.6 ft] (in still waters)	MPZSRR.002	00 65 720.002
Protection tube 2 m [6.6 ft] (in running waters)	MPZSRF.002	00 65 721.002
Protection tube extension 2 m [6.6 ft] for MPZSRR.002, MPZSRF.002	MPZSRV.002	00 65 722.002
Sensor cabinet	MPZFK	00 65 543.001
Protection tube for sensor cabinet	MPZSRU	00 65 549.001
Desiccant box	MPZDES	00 65 191.001

* The declaration of order numbers is only informative and doesn't mean any statement about keeping in stock or general availability of an article.

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