

Features

- Two wire system
- Piezoresistive measuring element
- Output signal 4-20 mA
- Conformity error $\leq \pm 0.5$ % FS or $\leq \pm 0.25$ % FS
- Standard DIN measuring ranges from 0 ... 100 mbar up to 0 ... 25 bar or selection of measuring ranges in mWC or psi
- Temperature compensation within $-5^{\circ}\text{C} \dots +50^{\circ}\text{C}$ [$+23^{\circ}\text{F} \dots +122^{\circ}\text{F}$]
- Optional overvoltage (lightning) protection according to EN 61000-4-5
- Compact and robust

Picture



Specifications

All specifications, unless otherwise noted, at DC 24 V supply voltage, $R_L = 100 \Omega$, $T_{amb} = 25^{\circ}\text{C}$ [77°F].

Measurement Range Independent Technical Data

| | |
|---|---|
| Type | Two wire current transmitter |
| Output signal | 4 ... 20 mA |
| Response time 10 ... 90% FS | 1 ms |
| Supply voltage | DC 9 ... 33 V |
| Reverse polarity protection | integrated |
| Supply voltage influence | $< 0,1$ % FS |
| Dielectric strength case / supply | 500 V |
| Load resistance limitation | $R_L [\Omega] \leq (+U_B [V] - 9 [V]) / 0,02 [A]$ |
| Load resistance influence | $< 0,1$ % FS |
| Protection class | IP68 (~NEMA 6P) |
| Medium temperature range | $-5^{\circ}\text{C} \dots +50^{\circ}\text{C}$ [$+23^{\circ}\text{F} \dots +122^{\circ}\text{F}$] |
| Compensated temperature range | $-5^{\circ}\text{C} \dots +50^{\circ}\text{C}$ [$+23^{\circ}\text{F} \dots +122^{\circ}\text{F}$] |
| Storage temperature range | $-5^{\circ}\text{C} \dots +50^{\circ}\text{C}$ [$+23^{\circ}\text{F} \dots +122^{\circ}\text{F}$] |
| Acid resistance | pH5 ... pH9 |
| Weight of submersible transmitter without cable | approx. 160g [0,35 lb] without surge protection approx. 210g [0,47 lb] with surge protection plus approx. 260 g [0.57 lb] with weight extension |
| Measuring cell, diaphragm, housing | Stainless steel 1.4435 (316L) |
| Seals | Viton |
| Cable | Choice of PE / PUR / FEP cable with integrated pressure equalising pipe |
| Outer diameter | 6 mm [0.24"] PE / PUR; 5 mm [0.2"] FEP |
| Leads | 0.22 mm ² [AWG 24], Cu wire 7 x 0.20 tinned |
| Resistance | $\leq 82.9 \text{ m}\Omega/\text{m}$ [$25.3 \text{ m}\Omega/\text{ft}$] (one conductor) |
| Minimum cable bending radius | 100 mm [4"] |
| Tensile load | $< 400 \text{ N}$ [90 lbf] (PE / PUR cables) $< 15 \text{ N}$ [3.4 lbf] (FEP cables) |
| Tensile strength | $> 500 \text{ N}$ [112 lbf] |

| | |
|---|---|
| Pressure equalising pipe diameter | Ø 1.4 / 0.8 mm [0.055" / 0.03"] PE / PUR; Ø 1.1 / 0.6 mm [0.04" / 0.02"] FEP |
| PE cable (foodstuffs approved / drinking water) | |
| Permitted environmental temperature | -20°C ... +70°C [-4°F ... +158°F] |
| Weight | Approx. 41 g/m [0.44 oz/ft] |
| PUR cable (mechanically robust) | |
| Permitted environmental temperature | -20°C ... +95°C [-4°F ... +203°F] |
| Weight | Approx. 45 g/m [0.48 oz/ft] |
| FEP cable (high temperature range) | |
| Permitted environmental temperature | -40°C ... +90°C [-40°F ... +194°F] |
| Weight | Approx. 55 g/m [0.59 oz/ft] |


Electromagnetic Compatibility**Emissions**

| | |
|-------------------------------|--------------|
| Basic specification emissions | EN 61000-6-3 |
| Emissions class B | EN 55022 |

Immunity

| | |
|--|--|
| Basic specification noise immunity | EN 61000-6-2 |
| Electrostatic discharge | EN 61000-4-2 (4 kV contact, 8 kV air) |
| Radiated electromagnetic field | EN 61000-4-3 (10 V/m, 80 ... 1000 MHz, 80% AM 1 kHz) |
| Radiated electromagnetic field (GSM) | EN 61000-4-3 (10 V/m, 950 MHz, 200 Hz on/off) |
| Fast transients (burst) | EN 61000-4-4 (2 kV) |
| Conducted electromagnetic interference | EN 61000-4-6 (10 V/m, 0,15 ... 80 MHz, 80% AM 1 kHz) |
| Impulse voltage (surge) | EN 61000-4-5 (10 kA 8/20µs) [only with the option overvoltage (lightning) protection] |

Quality Tests

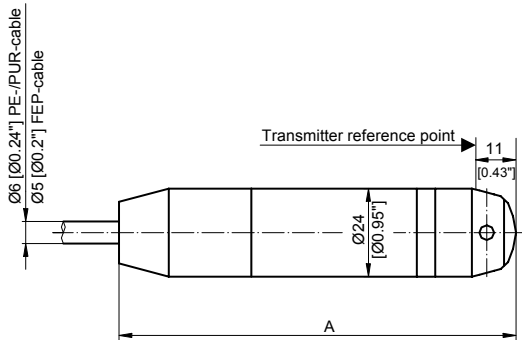
 The transmitters fulfil the requirements for noise immunity and emissions of the EMC directive 89/336/EEC.

Measurement Range Specific Technical Data

| Pressure ranges | 0.1 ... 0.5 bar [1.4 ... 7.25 psi] | > 0.5... 2 bar [7.25 ... 29 psi] | > 2 ... 25 bar [29 ... 362.6 psi] |
|--------------------------------------|---------------------------------------|-------------------------------------|--------------------------------------|
| Overload | 3 bar [43.5 psi] | 3 x FS min. 3 bar [43.5 psi] | 3 x FS |
| Bursting pressure | > 200 bar [2900 psi] | > 200 bar [2900 psi] | > 200 bar [2900 psi] |
| Conformity error * | ≤ ±0.5 % FS option * ≤ ±0.25 % FS | ≤ ±0.5 % FS ≤ ±0.25 % FS | ≤ ±0.5 % FS ≤ ±0.25 % FS |
| Temperature error | | | |
| Zero -5°C ... +50°C [+23°F...+122°F] | ≤ ±0.06 % FS/°C | ≤ ±0.03 % FS/°C | ≤ ±0.015 % FS/°C |
| Span -5°C ... +50°C [+23°F...+122°F] | ≤ ±0.015 % FS/°C | ≤ ±0.015 % FS/°C | ≤ ±0.015 % FS/°C |
| Long term drift | typ. ≤ 0.5 % FS/a | ≤ 0.2 % FS/a | ≤ 0.1 % FS/a |

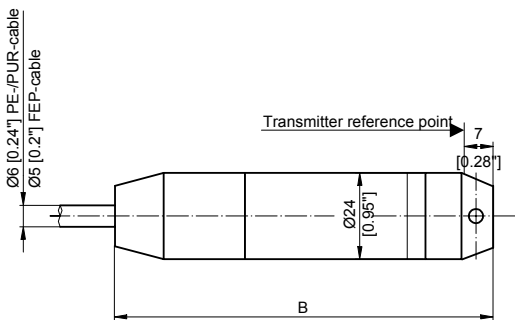
* Zero based non-conformity according to DIN 16086, including hysteresis and repeatability

Dimensions [mm]



Closed version (standard):

A = 108 mm [4.25"] without overvoltage protection
 A = 157 mm [6.2"] with overvoltage protection
 Plus 87 mm [3.4"] with weight extension



Open version:

B = 104 mm [4.1"] without overvoltage protection
 B = 153 mm [6.0"] with overvoltage protection
 Plus 87 mm [3.4"] with weight extension

| | | |
|------------------|---------------------|----------------------------------|
| rittmeyer | Data Sheet Hardware | DG DKap Stamm-Bez. Var Ind F Sp |
| | | 21.210.1560201.001.04.4.4 |

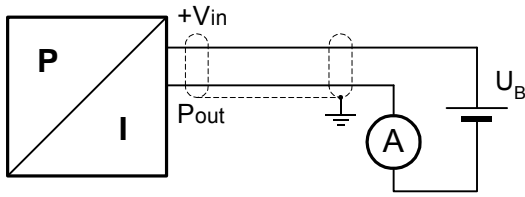
Ordering Information

Table 1:

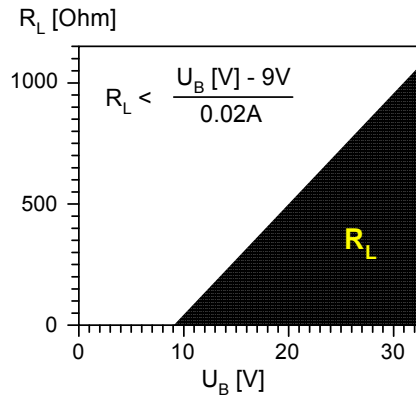
The exact order number for an article is formed from the individual optionscodes according to the table (with the BAAN-Configurator PCF or manually).

| MPA | PCF Order Number | | | | | | | | | | | | | | | | |
|---|------------------|---|---|---|---|---|---|---|----|----|----|----|----|----|----|---|---|
| | 1/2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | |
| Type | | | | | | | | | | | | | | | | | |
| MPA | PA | | | | | | | | | | | | | | | | |
| Pressure type | | | | | | | | | | | | | | | | | |
| Gauge | | 1 | | | | | | | | | | | | | | | |
| Pressure 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 | | | | | | | | | | | | | |
| Version | | | | | | | | | | | | | | | | | |
| Closed version | | | | | 5 | 5 | | | | | | | | | | | |
| Electrical connection | | | | | | | | | | | | | | | | | |
| PE cable (food approved) | | | | | | | 1 | 3 | | | | | | | | | |
| PUR cable (robust) | | | | | | | 1 | 5 | | | | | | | | | |
| FEP cable (large temperature range) | | | | | | | 2 | 1 | | | | | | | | | |
| Output signal | | | | | | | | | | | | | | | | | |
| 4 ... 20 mA without overvoltage protection | | | | | | | | | 0 | 5 | | | | | | | |
| 4 ... 20 mA with overvoltage (lightning) protection | | | | | | | | | 0 | 8 | | | | | | | |
| Accuracy | | | | | | | | | | | | | | | | | |
| ±0.5 % | | | | | | | | | | | 0 | | | | | | |
| ±0.25 % | | | | | | | | | | | 1 | | | | | | |
| Temperature range | | | | | | | | | | | | | | | | | |
| Compensated -5°C ... +50°C (medium -5 ... 50°C) | | | | | | | | | | | | 4 | | | | | |
| Cable length | | | | | | | | | | | | | | | | | |
| Cable length in meter (always ≥ 001) | | | | | | | | | | | | | | | x | x | x |

Block Diagram / Electrical Connections



+Vin ↔ white
 Pout ↔ yellow



Note

- The load resistance R_L is the sum of load and cable resistance.
- If the submersible transmitter is used at temperatures, where the medium can freeze over a longer time, we recommend the version with open protective cap. The version with open protective cap is recommended also in dirty water.
- In order to prevent destruction, the membrane must not be touched.
- The cable must not be tight bend or flat squeezed (because of the integrated pressure equalising pipe).
- Moisture must not be allowed to enter the pressure equalisation pipe. It is recommended that a junction box with dehumidifying agent is used.
- For applications in the field with extension cables having a cable length ≥ 5 m [16 ft] or inside a building with cable lengths ≥ 100 m [330 ft], a transmitter with the overvoltage protection option and an external overvoltage protection ASBG.48 or an junction box MPZADU.002 (at other end of the cable) must be used.
- The cable shield must be connected 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/m ² | bar | mWC | ftWC | mmHg (Torr) | psi | kp/cm ² = at |
| Pa = 1 N/m ² | 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/cm ² = 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. |
|---|--------------|---------------|
| Extension cable 2-wire, shielded (L [m]) | MPZVK | 04 60 502 |
| Junction box for submersible sensor IP65 (~NEMA 6) | MPZAD.002 | 00 65 194.001 |
| Junction box for submersible sensor IP65 (~NEMA 6), 1 OVP | MPZADU.002 | 00 65 193.001 |
| Surge protection AC/DC 48V | ASBG.48 | 00 32 721.003 |
| Suspension arrangement for submersible probe | MPZHVT | 00 65 717.001 |
| Protection tube 2 m [6.6 ft] (still waters) | MPZSRR | 00 65 720.001 |
| Protection tube 2 m [6.6 ft] (running waters) | MPZSRF | 00 65 721.001 |
| Protection tube extension 2 m [6.6 ft] for MPZSRR, MPZSRF | MPZSRV | 00 65 722.001 |
| Sensor box for submersible probe | MPZFK | 00 65 543.001 |
| Protection tube for sensor cabinet | MPZSRU | 00 65 549.001 |
| Dehumidifier insert complete | MPZDES | 00 65 191.001 |