

Transmitter-PM4 with ceramical or Polysilicone cell

High overload

Turn Down 100 : 1

Flush diaphragm

Self monitoring

Local display and adjustment

SMART function and communication

Explosion protection EEx ia IIC

PROFILE

The pressure transmitter PM4 works on the two wire principle and, depending on the measuring range, it features a ceramic or polysilicon measuring element.

Gauge pressures from 1 mbar up to 400 bar, and absolute pressures from 4 mbar onwards are converted into a standardised, pressure proportional 4...20 mA signal.

Microprocessor technology ensures reliable and simple operation.

DESCRIPTION

The transmitter PM4 comprises the measuring cell and the electronics housing. An ASIC in the sensor module stores all the sensor-specific data. Pressure applied is sensed capacitively from the deflection of the ceramic diaphragm, which is in direct contact with the process media.

With polysilicone sensors, the pressure acts onto a metal separating diaphragm, which transmits the pressure to the sensor via a (selectable) filling liquid.

Depending on the application, the process connection has an external (male) or an internal (female =f) tapping.

Flush diaphragm is possible for silicone as for ceramic sensors.

An optional LCD indicator with integrated bargraph is very useful for on-site adjustment and display. Span start (zero) and span are adjustable on-site by means of four push buttons. A turn-down ratio of 100 : 1 is possible within the range of each measuring cell.

Microprocessor controlled electronics provides comprehensive monitoring functions. If an internal fault is detected, the self-monitoring function generates an alarm which drives the output signal into a pre-selectable condition (upscale, downscale or no effect).

Electronics and terminals are housed in separate hermetic compartments. This ensures that the electronics is protected from aggressive environments when the terminal compartment is opened.

If the mounting makes access to the terminal compartment difficult, or the display cannot be viewed easily, the entire transmitter can be rotated up to 320 degree.

TECHNICAL DATA

INPUT

CERAMIC CELL UP TO 40 BAR

Gauge pressure

Cell type	measuring limits	smallest span	max. overload
0,1 bar	-1/+01 bar	1 mbar	4 bar
0,4 bar	-1/+0,4 bar	4 mbar	10 bar
2 bar	-1/+ 2 bar	0.02 bar	20 bar
10 bar	-1/+10 bar	0.1 bar	40 bar
40 bar	-1/+40 bar	0.4 bar	60 bar

Absolute pressure

Cell type	measuring limits	smallest span	max. overload
0,4 bar	0/+0,4 bar	4 mbar	10 bar
2 bar	0/+2 bar	0.02 bar	20 bar
10 bar	0/+10 bar	0.1 bar	40 bar
40 bar	0/+40 bar	0.4 bar	60 bar

POLYSILICON CELL UP TO 400 BAR

Gauge pressure

Cell type	measuring limits	smallest span	max. overload
100 bar	-1/+100 bar	1 bar	400 bar
400 bar	-1/+400 bar	4 bar	600 bar

Absolute pressure

Cell type	measuring limits	smallest span	max. overload
100 bar	0/+100 bar	1 bar	400 bar
400 bar	0/+400 bar	4 bar	600 bar

Minimum pressure

(For polysilicone only) 10 mbar absolute

Process media

Liquids and gases (aggressive or corrosive with suitable material selection)

Filling liquid

Selecting the filling liquid depends from pressure and temperature conditions of the process. Second criteria is immunity of the filling liquid with the process. (For polysilicone only).

Materials

Diaphragm

- Ceramic
- Stainless steel 316 L
- (Hastelloy C on request)

Process coupling

- Stainless steel 316 L
- (Hastelloy C on request)

Gasket

- Viton (Ceramic only)

OUTPUT

Standard signal: 4...20 mA
 max. output current: 20,5 mA
 Ripple: $\leq 0.25\%$ fsd
 Characteristic: pressure proportional

Conformity: $\leq 0,1\%$
 (zero based to DIN 16 084 of set span with TD 10:1)

For TD 100:1 **Conformity error**

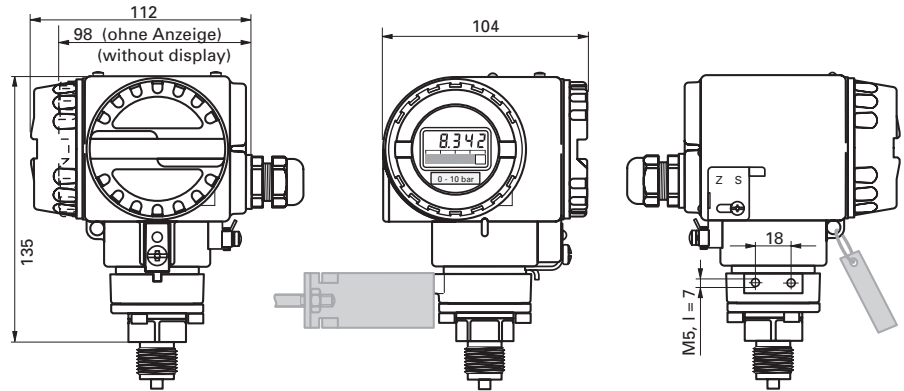
$$= \pm 0.1\% \times \frac{0.1 \times \text{nominal value}}{\text{set span}}$$

Load

$$R_{Load} = \frac{U_{Supply} - U_{MIN} [V]}{0,023 [A]} - R_{Lead} [\Omega]$$

Load effect: $\leq 0.01\%$ per 100 Ω
 Damping: Adjustable 0...16 s
 (settling time for 63 % of final value)
 Undamped delay for T90: 150 ms

Fig. 1 Dimensions [mm]



Filling media (for Polysilicone only)

Filling media	Medium temperature at $50 \text{ mbar} \leq p_{abs} \leq 1 \text{ bar}$	Medium temperature at $p_{abs} \geq 1 \text{ bar}$	Remarks
Silicone oil	-40 up to 180 °C	-40 up to 200 °C	standard
Fluorolube	-40 up to 80 °C	-40 up to 175 °C	for oxygen, inert
Voltalef	-40 up to 80 °C	-40 up to 175 °C	for oxygen, inert

DISPLAY

4 digit LDC display of pressure, and LCD bargraph with 28 segments for output signal.

POWER SUPPLY

Supply voltage

11.5 ... 45 VDC
 11.5...30 VDC for intrinsic safety

Voltage effect

$\leq 0.1\%$ between 12 and 36 VDC

Ripple

no effect for $U_{pp} \leq 0.5\%$ at 24 VDC

EXPLOSION PROTECTION

Protection type: EEx ia IIC T4, zone 1
 Certificate of conformity
 KEMA Nr. Ex 95.C.3881

Installation

Transmitter in zone 1 hazarded area

ENVIRONMENTAL CONDITIONS

Permissible temperatures

For operation: -40... + 85 °C
 For storage: -40.... +100 °C

Temperature effects¹⁾

Temperature Coefficient Tk in % / 10 K		
Span start	Span	Ambient temperature
$\pm 0,02\%$	$\pm 0,02\%$	-10 ... + 60 °C
$\pm 0,05\%$	$\pm 0,05\%$	-40 ... -10 °C
$\pm 0,05\%$	$\pm 0,05\%$	+60 ... +85 °C

Max. process temperature

without temperature isolator: ≤ 130 °C,
 limited to heating-up of electronics.
 with thermal isolator ≥ 130 °C
 for Ex limited to + 70 °C = T4

Relative humidity

100 % no condensation

Climatic category

Class GPC to DIN 40 040

Vibration effect

(For electronics only) No effect from mechanical vibrations with 4 mm stroke at 5...15 Hz, or 2g at 15...150 Hz, or 1 g at 150...2000 Hz

¹⁾ referred to nominal span of the cell.
 Referred to adjusted span:
 -10...+60 °C: $\pm 0,1\% * TD + 0,1\%$,

Whereas $TD = \frac{\text{defindedCellSpan}}{\text{adjustedSpan}}$

**ELECTROMAGNETIC
COMPATIBILITY**

Meets EN 50 082-2 and EN 50 011.
Tests according to IEC 801-1 to 801-6

GENERAL

Electronic housing

Die-cast aluminium AlSi12 with fully chromated surface, epoxy polyester coated

Housing protection type

IP 65 to IEC 529

Electrical connections

Screw terminals for 0.5...2.5 mm² via cable entry gland M12 x 1.5

Mounting position: not critical

Weight: depending from process coupling 1,3 kg respectively 1,7 kg

Accessories: operating instructions 9499-040-43501

Fig. 2 Temperature isolator

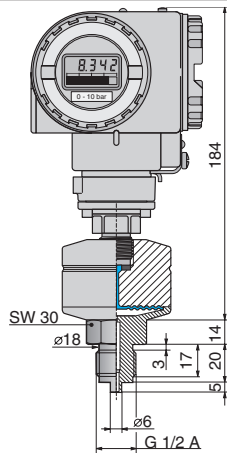


Fig. 3 Electrical connections

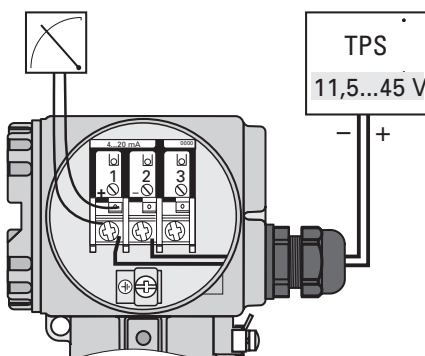


Fig. 4 Process couplings for ceramical cells

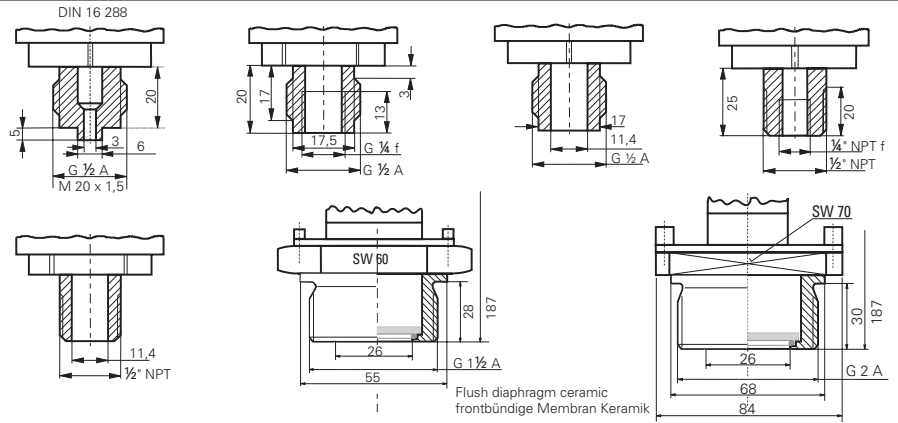
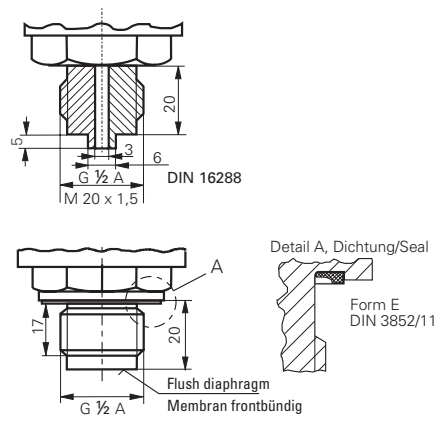


Fig. 5 Process couplings for Polysilicone sensor



ACCESSORY

Mounting bracket, 9404-290-01201

Fig. 6 Mounting bracket

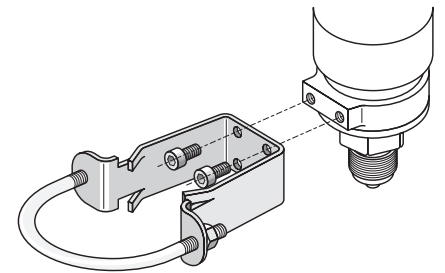
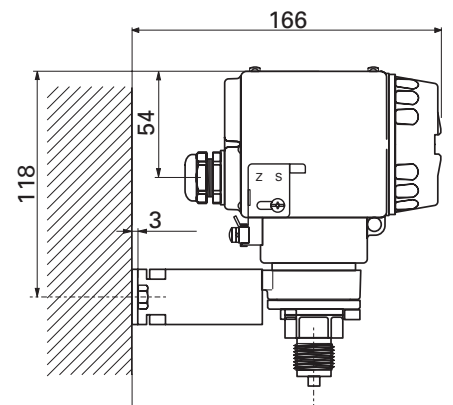
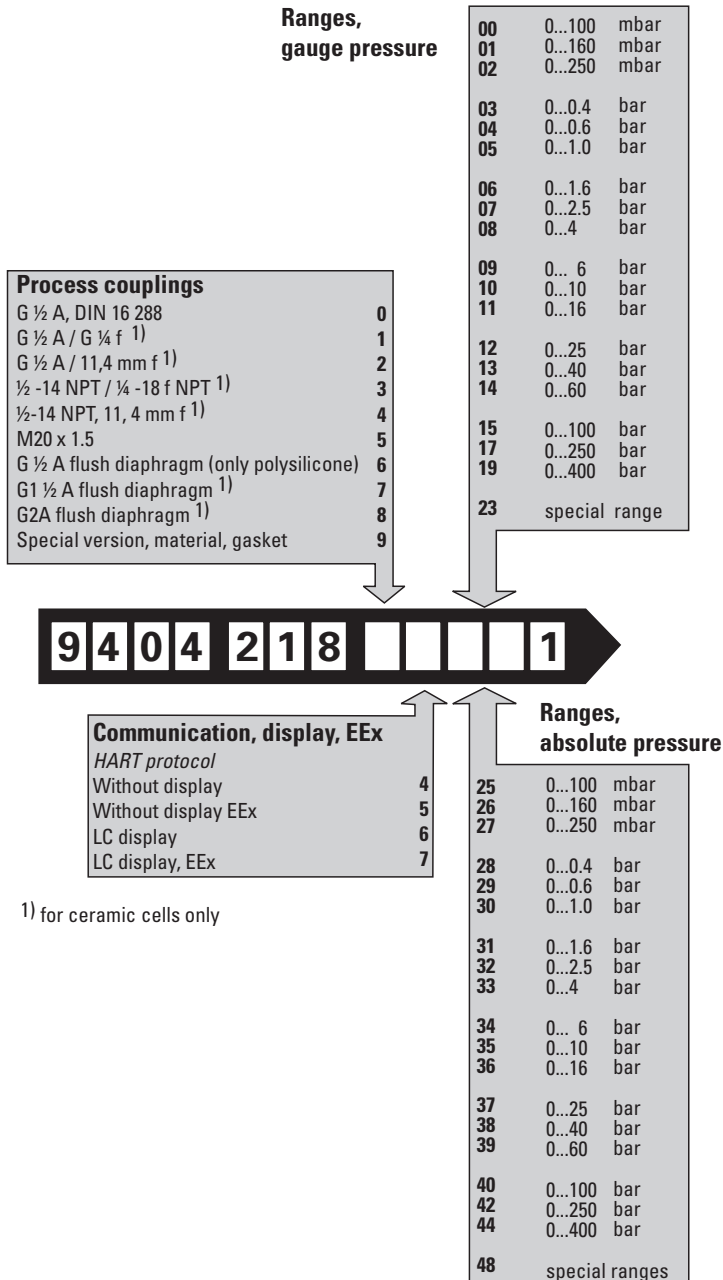


Fig. 7 Wall mounting



ORDERING STRUCTURE



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