

PIL4 Pressure Sensor (Liquid)



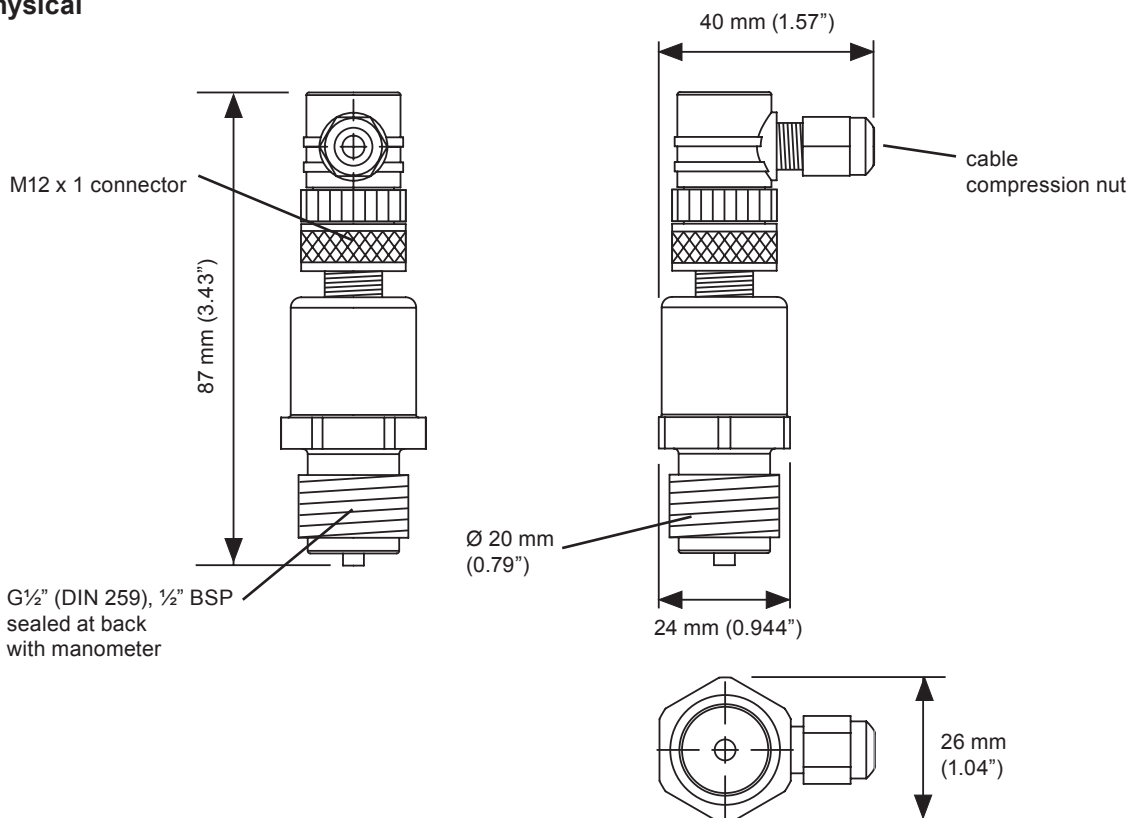
Description

High accuracy gauge pressure sensor for liquids in HVAC applications with a 4 to 20 mA outputs. The use of thick film resistances fixed on a ceramic chip gives no mechanical ageing or creepage. Electrical connection is facilitated by an M12 two part connector with screw terminals and pressure connection is by way of a G $\frac{1}{2}$ (BSP) male thread sealed at back with manometer.

Features

- $\pm 0.3\%$ full scale accuracy
- Wide temperature range
- 4 to 20 mA output
- IP67 electrical connection
- Compact rugged construction
- Also for use with compressed air or other non-combustible gases

Physical



FUNCTIONALITY

The differential pressure between gauge pressure and ambient is applied across a ceramic chip onto which are fixed thick film resistances. The medium is only in contact with the stainless steel housing and the ceramic cell and FPM O-ring making the sensor suitable for use with all normal cleaning materials. The electronics are protected from the medium by an FPM O-ring seal.

The internal amplifier produces a 2 wire (loop-powered) 4 to 20 mA signal. The electrical connection is by way of an M12 x 1 two part connector with screw terminals (IP67) suitable for 5 mm (0.2") outside diameter cable.

The pressure connection is a G $\frac{1}{2}$ " (BSP) outside diameter male thread sealed at back with manometer.

INSTALLATION

The pressure applied to the pressure port must not be greater than 3 times measuring range above ambient for PIL4/4, and 2.5 times measuring range for PIL4/6, PIL4/10, PIL4/16, and PIL4/25.

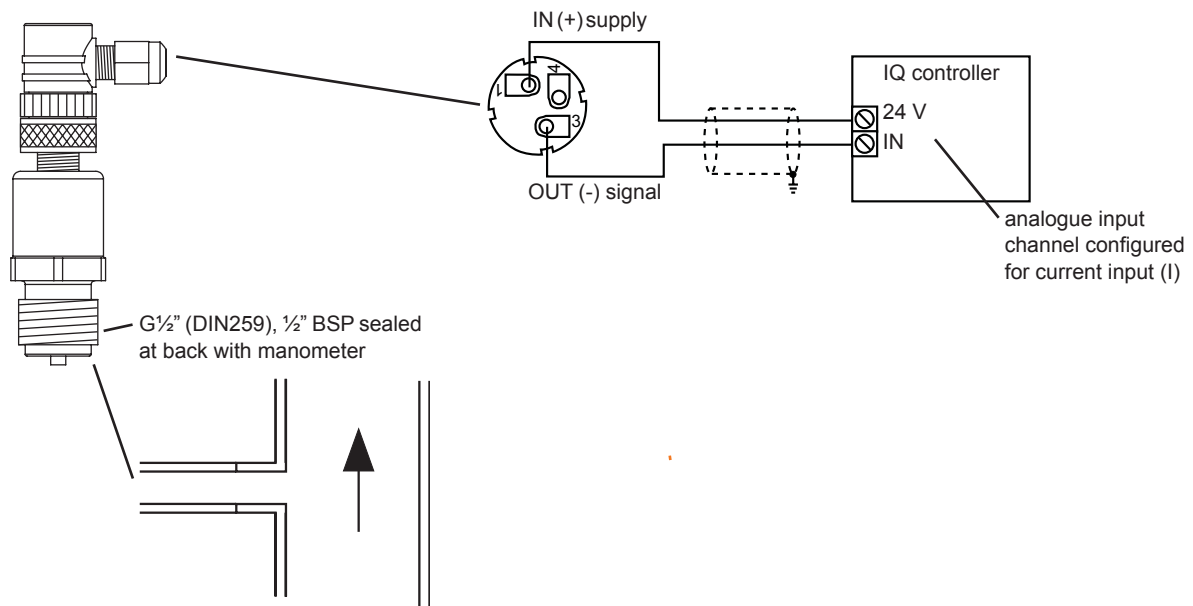
The installation procedure involves:-

- Choose location
- Mount sensor
- Connect pressure point
- Connect to controller
- Configure input channel
- Test system


The installation procedure is covered in the PIL4 installation instructions, TG201278.

INSTALLATION (continued)

CONNECTIONS



DISPOSAL.



WEEE Directive:

At the end of their useful life the packaging and product should be disposed of by a suitable recycling centre.
Do not dispose of with normal household waste.
Do not burn.

ORDER CODES

PIL4/[range]

:Liquid pressure sensor 4 to 20 mA output
e.g. PIL4/4 liquid pressure sensor 0 to 4 bar, 4 to 20 mA output

[range]
4 :0 to +4 bar
6 :0 to +6 bar
10 :0 to +10 bar
16 :0 to +16 bar
25 :0 to +25 bar

ACC/SP

:Steam pigtail, required if used on steam or water above 125 °C, 257 °F (typically drops from 200 °C, 392 °F to ambient from medium to sensor)

SPECIFICATION

Output :4 to 20 mA (short circuit proof, protected against polarity reversal).

Accuracy :±0.3 % full scale typical (max. ±0.5% full scale, total of linearity, hysteresis, repeatability)

Resolution :0.1% full scale

Thermal characteristic :± 0.2%/10K max.

Long term stability : ± 0.25% full scale max. (according to IEC EN60770-1)

(Accuracy, Resolution, Thermal characteristic, Long term stability under test conditions 25°C, 45% RH, 24 Vdc supply)

Supply :7 to 33 Vdc

Supply current :<23 mA

Overload and ruptive pressure
 PIL4/4 :up to 3 x measuring range
 PIL4/6 to PIL4/25 :up to 2.5 x measuring range
 e.g. PIL4/16 will operate up to 40 bar, but above this pressure will be damaged beyond repair.

Dimensions :87 mm (3.43") x 40 mm (1.57"), (diameter, max.)

Weight :90 gm, 3.2 ozs approximately

Dynamic response :Response time <2 ms (1 ms typical)

Load cycle :<100 Hz

Pressure connector :G½" (DIN 259), ½" BSP male thread sealed at back with manometer with profile seal ring in FPM (specified range -30 °C to +135 °C, -22 °F to 275 °F)

Electrical connections :M12x1 three pin connector, with female part incorporating 3 screw terminals and cable compression nut for up to 5 mm (0.2") OD cable (IP67)

Materials
 Housing :(in contact with medium) ceramic (AL₂O₃), stainless steel 1.4305 (AISI 303).
 Seals :FPM (fluoroelastomer) O-ring

Temperature
 Medium :-15 °C to +125 °C, 5 °F to +257 °F
 Ambient :-30 °C to +85 °C, -22 °F to +185 °F
 Storage :-50 °C to +100 °C, -58 °F to +212 °F

Protection :IP67

Electromagnetic compatibility :CE conformity according to EN 61326-2-3

Shock test :according to IEC 68-2-27, 100 g, 11 ms half sine wave, all 6 directions, free fall from 1 m on concrete (6 times)

Constant shock :according to IEC 68-2-29, 40 g for 6ms, 1000 times all 3 directions

Vibration :according to IEC 68-2-6, 20 g 15 to 2000 Hz, 15 to 25 Hz with amplitude ± 15 mm, 1 octave/min. in all 3 directions, 50 constant load.

Input channel and sensor scaling

The input channel should be linked for loop powered current, I.

The sensor type module must be set up with the correct scaling. The recommended method of setting the sensor type scaling is to use SET. For all IQ2 series controllers with firmware version 2.1 or greater, or IQ3/4 series controllers, the appropriate SET Unique Sensor Reference from those given below should be used.

PIL4/4: **Pressure I 4 bar**
 PIL4/6: **Pressure I 6 bar**
 PIL4/10: **Pressure I 10 bar**
 PIL4/16: **Pressure I 16 bar**
 PIL4/25: **Pressure I 25 bar**

Alternatively enter scaling manually using sensor type *scaling mode 5, characterise, with input type set to 2 (current) and appropriate row from the table below.

	Y	*E	U	L	P	I ₁	I ₂	O ₁	O ₂
PIL4/4	2 (current)	2	4.1	0	2	4	20	0	4
PIL4/6	2 (current)	2	6.1	0	2	4	20	0	6
PIL4/10	2 (current)	2	10.1	0	2	4	20	0	10
PIL4/16	2 (current)	2	16.1	0	2	4	20	0	16
PIL4/25	2 (current)	3	25.1	0	2	4	20	0	25

*Note that for IQ3/4 the scaling mode and exponent (E) don't need to be set up.

For all other IQ controllers see the sensor Scaling Reference Card, TB100521A, for scaling settings.

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