

MPM281PT

Operation Manual

V1.1



Our company reserves the right to modify this operation manual due to renovation of production technology and craftwork. There is not any notification if certain information changes, Please pay attention to the latest version.

Our company also reserves the right of final explanation of this manual.

1 Introduction

MPM281PT Pressure and Temperature Sensor is a high-stability measuring element with an isolated construction and precise temperature compensation. It is packaged with a whole stainless steel 316L housing with diameter of $\Phi 19\text{mm}$ and adopts high stable and reliable silicon die and PT100 temperature element, which can achieve an accurate pressure and temperature measurement. The precision-calibrated compensation circuit performs a temperature compensation and zero-point deviation correction in a wide temperature range for the sensor element. The measured pressure is transmitted to the sensor chip through the isolation diaphragm and the internal medium, which realizes the precise conversion of pressure to electrical signal and the built-in platinum resistor can measure the temperature of the measured medium, in which the monitoring of both pressure and temperature is realized.

2 Features

- Pressure range: $-1\text{bar} \sim 0.35\text{bar} \cdots 1000\text{bar}$
- Gauge, absolute, sealed gauge
- Pressure and temperature dual output
- Temperature error $\pm 0.5^{\circ}\text{C}$
- $\Phi 19\text{mm}$ standard OEM pressure sensor
- Long-term stability $\pm 0.1\%\text{FS}/\text{Year}$

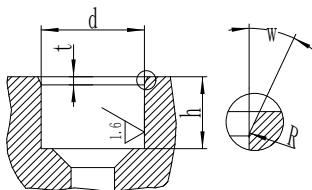
3 Specification

Class	Item*	Min.	Typ.	Max.	Units
Temperature Parameters	Temp. error	±0.5			℃
	Response time	0.4 (In water) 、 1.0(In air)			m/s
	Temp. stability error	≤ 0.05			%/Year
Pressure Parameters	Linearity**		±0.15	±0.25	%FS,BFSL
	Repeatability		±0.05	±0.075	%FS
	Hysteresis		±0.05	±0.075	%FS
	Zero output			±2.0	mV DC
	Output/Span***	70			mV DC
	Zero thermal error		±0.75	±1.0	%FS,@35℃
	Span thermal error		±0.75	±1.0	%FS,@35℃
	Compensated temp. range	0~70(0A G, 0AA)			℃
		-10~80			
	Working temp. range	-40~125			℃
	Storage temp. range	-40~125			℃
	Pressure stability error			±0.1	±0.2

	Overpressure	2 times FS or 1100bar(min. value is valid)
<p>*testing at basic condition</p> <p>** 0A Linearity $\leq \pm 0.3\%$FS</p> <p>*** Output/Span=full scale output - zero point</p> <p>For range code 02 FS output $\geq 60\text{mV}$</p>		

4 Outline and Installation

4.1 Outline Construction(Unit: mm)



Model	d	h	R(max.)	t	w
MCM201	$\phi 19^{+0.05}_{+0.02}$	≥ 15	0.5	1.5	$15^{\circ} \sim 25^{\circ}$

4.2 Installation

4.2.1 Attentions should be paid before sensor installation:

- Check to make sure that the sensor diaphragm is intact and free of damage.
- Check to make sure that the sensor's outgoing wires are intact and not broken.

c) Whether the size of the base to be assembled meets the sensor installation requirements.

d) Whether the tested medium is compatible with the sensormaterial.

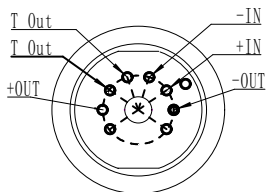
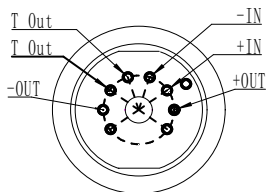
4.2.2 installation method:

The suggested installation dimension is: $\Phi 19^{+0.05}_{+0.02}$ mm, depth ≥ 15 mm.

If the locking ring is used for fixing, the inner diameter of the locking ring shall not be less than $\phi 15$ mm.

After the electrostatic discharge operation is performed in advance, remove the protective cover of the sensitive element diaphragm, measure the diaphragm toward the pressure-inducing hole of the base, and install it vertically downward. Do not touch any components of the circuit board and wire soldering when pressing. Make sure that the sealing ring is completely snapped into the base, and it will not leak out after being pressed back into place, and then use the locking ring, welding, and other measures to lock the installation position.

5 Electrical Connection



The definition of wire connection is shown below:

Definition	Wire color
+OUT	Red
-IN	Yellow
+IN	Black
-OUT	Blue
T OUT	White
T OUT	Green

Notes: The specific electrical connection method of the product is subject to the diagram on the provided product parameter card.

6 Unpacking,Completeness and Storage

6.1 Unpacking

- Check whether the package is in good condition, and confirm that the product quantity is correct and the accessories are complete.
- Avoid strong beating when unpacking, and pay attention to product terminal wiring to prevent damage to products and accessories.

6.2 Completeness

The sensor components should include:

MCM201 Pressure and Temperature Sensor	1batch;
Product information cards	1batch;
Product manual	1pc;
Product certificate	1pc;

6.3 Storage

The sensor should be stored in a dry and ventilated room with an ambient temperature of $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ and a relative humidity not more than 85%. There is no corrosive gas to the transmitter in the indoor air.

7 Precautions for Use

- a) Please pay attention to the operating conditions of the sensor:
Power Supply: $\leq 2.0\text{mA DC}$
Working Temp. / Storage Temp. Range: $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$.
- b) The pressure sensor should be assembled as "suspended" to avoid mechanical stress being transmitted to the pressure sensor.
- c) When assembling pressure sensors, both ground machines and personnel must be treated with anti-static to prevent electrostatic discharges up to 4kV HBM (Human Body Model).
- d) Do not forcefully pull the leads, and do not stress the circuit board, otherwise the circuit board may be damaged.
- e) Pay attention to the measurement range of the pressure sensor, and do not apply pressure higher than the upper limit of the range for a long time. If the pressure exceeds the allowable overload, the pressure sensing element will be damaged.
- f) When assembling the sensor, please apply a small amount of vacuum grease along the "O" ring. When the measuring medium is oxygen, do not apply any lubricant.

- g) Prevent conductive or corrosive media from entering the electrical connection part of the sensor or its back pressure cavity. Always keep the pressure sensor vented tube in smooth communication with the atmosphere(gauge type only).
- h) When soldering, the pins should not be cut too short, the soldering time should not exceed 5s and the pins should not be heated for a long time.

8 Responsibility

Within one year from the date of delivery, our company will replace or repair products with quality defects caused by material and process problems for free; for product failures caused by non-quality reasons during use, our company will be responsible for repairs and only charge the cost of materials fee. Packaging and shipping costs are borne by the user.

Definition

Nl: Non-linearity

Span: FS Output

Rp: Repeatability

Tcz: Temp. Coefficient of Zero

Hy: Hysteresis

Tcsp: Temp. Coefficient of Span

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