

MPM281PT Pressure and Temperature Sensor



Features

- Pressure range: 0kPa~35kPa...100MPa
- Temperature range: -40~125°C
- 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 $\pm 0.1\% \text{FS/Year}$

Applications

- Industrial process control
- Level measurement
- Gas, liquid pressure measurement
- Pressure gauge
- Hydraulic and switches
- HVAC system
- Aviation and navigation inspection
- Medical oxygen pressure measurement

Introduction

MPM281PT Temperature and Pressure Sensor is a measuring element with isolated construction and precise temperature compensation. The sensor uses a high-reliability diffused silicon die encapsulated in a $\Phi 19\text{mm}$ 316L stainless steel housing and is equipped with a PT100 or PT1000 temperature probe to achieve precise measurement of pressure and temperature. Precision compensation provides a wide temperature range and zero-point calibration. The measured pressure is accurately converted to an electrical signal via an isolated diaphragm, while the internal platinum resistance element achieves precise measurement of the medium temperature. This product undergoes rigorous inspection and testing on the automated production line, suitable for various pressure and temperature measurement conditions.

Electrical Performance

- Power supply: $\leq 2.0\text{mA DC}$
- Electrical connection: $\Phi 0.5\text{mm}$ Kovar pin or 100mm silicone wires
- Common mode voltage output: 50% input (typ.)
- Input impedance: $2\text{k}\Omega \sim 8\text{k}\Omega$
- Output impedance: $3.5\text{k}\Omega \sim 6\text{k}\Omega$
- Response time(10%~90%): $< 1\text{ms}$
- Insulation resistance: $100\text{M}\Omega @ 100\text{V DC}$
- Overpressure: 2 times FS or 110MPa(min. value is valid)

Construction Performance

- Diaphragm: Stainless steel 316L
- Housing: Stainless steel 316L
- Vent tube : Stainless steel 316L
- Pin: Kovar
- O-ring: FKM
- Net weight: $\sim 16\text{g}$
- Oil filling: Silicone oil

Environment Conditions

- Vibration: No change at 10gRMS, (20~2000)Hz
- Shock: 100g,11ms
- Medium compatibility: The gas or liquid which is compatible with stainless steel and FKM

Basic Conditions

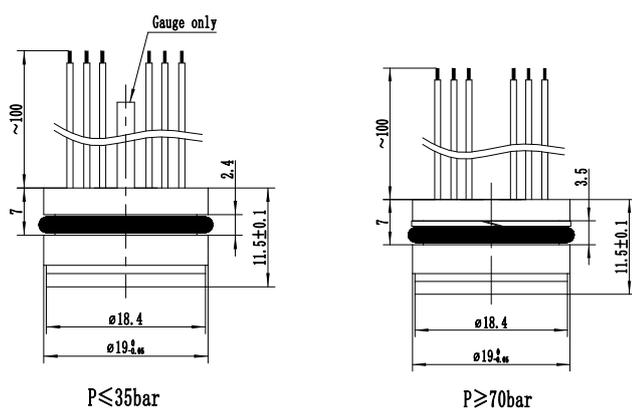
- Medium temperature: (35±1)°C
- Ambient temperature: (35±1)°C
- Vibration: 0.1g (1m/s²) Max
- Humidity: (50±10)%RH
- Ambient pressure: (86~106)kPa
- Power supply: (1.5±0.0015)mA DC

Specifications

Class	Item*	Min.	Typ.	Max.	Units	
Temperature specifications	Temp. error		±0.5		°C	
	Response time		0.4 (In water) 、 1.0(In air)		m/s	
	Temp. stability error		≤ 0.05		%/Year	
Pressure specifications	Nonlinearity**		±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°C	
	Span thermal error		±0.75	±1.0	%FS,@35°C	
	Compensation temp. range		0~70(0.35bar G,0.35 bar A)			°C
				-10~80		°C
	Operating temp. range			-40~125		°C
Storage temp. range			-40~125		°C	
Long-term stability error			±0.1	±0.2	%FS/Year	

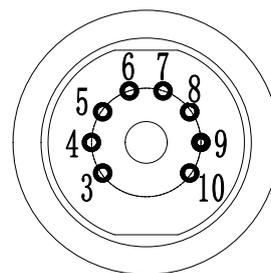
* Testing at basic condition
 ** 0A Nonlinearity ≤ ±0.3%FS
 *** Output/Span=full scale output - zero point
 For range code 02,FS output ≥60mV

Outline Construction (Unit: mm)



The recommended installation dimension is $\Phi 19^{+0.05}_{-0.02}$ mm

Electrical Connection



Pin	Range code 02/03/17/18/19/20		Other range codes	
	Definition	Wire color	Definition	Wire color
4	-OUT	Blue	+OUT	Red
7	-IN	Yellow	-IN	Yellow
8	+IN	Black	+IN	Black
9	+OUT	Red	-OUT	Blue
5&6	T OUT	White or Green	T OUT	White or Green

T OUT is the temperature signal, and please check the parameter label enclosed with the products for the actual electrical connection method.

Order Guide

MPM281PT-07-G-F-L-1-T1

Range code	Pressure range	Ref.
0A	0kPa~35kPa	G.A
02	0kPa~70kPa	G.A
03	0kPa~100kPa	G.A
07	0kPa~200kPa	G.A
08	0kPa~350kPa	G.A
09	0kPa~700kPa	G.A
10	0MPa~1MPa	G.A
12	0MPa~2MPa	G.A
13	0MPa~3.5MPa	G.A.S
14	0MPa~7MPa	S.A
15	0MPa~10MPa	S.A
17	0MPa~20MPa	S.A
18	0MPa~35MPa	S.A
19	0MPa~70MPa	S.A
20	0MPa~100MPa	S.A

Code	Temperature probe
T1	PT100
T2	PT1000

Code	Electrical connection
1	Kovar pin
2	100mm silicone wires

Code	Compensation
L	Temperature compensation(1.5mA excitation)
M	Compensation resistor (1.5mA excitation)

Code	Sealing
F	FKM O-ring

Code	Pressure type
G	Gauge
A	Absolute
S	Sealed gauge
GY0	Withstand vacuum pressure while Zero at atmospheric pressure
GY	Withstand vacuum pressure while Zero at -100kPa

Notes

1. The default unit of the product is kPa. 1kPa=0.01bar.
2. Zero shift: Range code 0A can be shifted to -10kPa or -20kPa, 02 can be shifted to -35kPa, -50kPa or -70kPa, 03 ~13 can be shifted to -100kPa.
3. It is recommended that the sensor be assembled as a "suspended" construction to avoid direct pressure on its face and affecting sensor stability.
4. Protect the isolated diaphragm and ceramic circuit board to prevent any damage or low performance.
5. The FKM O-ring of sensor has a temperature range of -20°C~250°C by default. For operating temperature below -20°C or harsh media, please contact the MICROSENSOR.