

# MPM280 Piezoresistive OEM Pressure Sensor

## Features

- Pressure range 0 ~ 20kPa...35MPa;
- Gauge, absolute and sealed gauge;
- Constant current power supply;
- Isolated construction to measure various media
- Φ19mm OEM pressure element
- 316L stainless steel material
- Tantalum diaphragm or titanium construction for option
- Different male thread connection optional



## Application

- Industrial process control
- level measurement
- Gas, liquid pressure measurement
- Pressure meter
- Pressure calibrator
- Liquid pressure system and switch
- Refrigeration equipment and air conditioner
- Aviation and navigation inspection

## Introduction

### General MPM280 Piezoresistive Pressure Sensor

The outline, installation dimension and sealing method of the general MPM280 is strongly interchangeable, it is widely used for measuring pressure which is compatible with stainless steel and Viton;

### Assembled MPM280 Piezoresistive Pressure Sensor

Put general MPM280 pressure sensor into the housing with standard or special thread; use face type seal or waterline seal; with flexible construction and strict inspecting and screening; the assembled MPM280 sensor has similar application with general type sensor, it can be used for mounting and production of different pressure instruments;

### Welded MPM280 Piezoresistive Pressure Sensor

Put general MPM280 pressure sensor into the housing with standard or special thread; and weld sensor with housing together, no O-ring for sealing. The whole product has flexible construction, it has wider application fields than general pressure sensor, can be used for mounting and production of different pressure instruments;

### Flush Diaphragm MPM280 Piezoresistive Pressure Sensor

<http://www.microsensor.cn>

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Flush diaphragm pressure sensor is a full-welded pressure sensor, it has pressure port G1/2 male or M20x1.5 male, sealing by Viton O-ring at the end of thread. The isolated diaphragm is welded in front of thread port, the whole measure range is 0 ~ 100kPa...35MPa. It can be used for food, medicine, sanitation fields in which the media is easily dirty.

#### **Anti-corrosive MPM280 Piezoresistive Pressure Sensor**

The anti-corrosive MPM280TH pressure sensor has similar outline, installation dimension and sealing methods as general MPM280 pressure sensor. For construction material, TH type (Tantalum diaphragm + Hastelloy C housing). The sensor is sealed by Viton O-ring. It can be used for strong corrosive media measurement or sea water. The measure range is -100kPa ~ 0; 0 ~ 100kPa...2Mpa.

The titanium anti-corrosive MPM280Ti pressure sensor has similar outline, installation dimension and sealing methods as general MPM280 pressure sensor. It uses all titanium material in construction, TC4 housing material and TA1 diaphragm. It can be applied for the pressure measurement of sea water or corrosive media. The measure range is -100kPa ~ 0; 0 ~ 100kPa...2Mpa.

MPM 280Ti Piezoresistive Pressure Sensor can be used in wet environment or sea water. Its anti-corrosive performance is far better than stainless steel. MPM280Ti has good anti-corrosive performance for pitting, acid etching, stress corrosion, alkali, chlorine-organism, chloride, nitric acid and vitriol etc.

#### **Gauge MPM280 Pressure Sensor with Vacuum Measurement**

We can use general type, assembled type as well as flush diaphragm type gauge pressure sensor to measure pressure below air pressure, the min. pressure can be around -100kPa.

### **Electric Performance**

Power supply:  $\leq 2.0\text{mADC}$

Electric connection: Kovar pin or 100mm silicon rubber flexible wires

Common mode voltage output: 50% of input (typ.)

Input impedance:  $3\text{k}\Omega \sim 8\text{k}\Omega$

Output impedance:  $3.5\text{k}\Omega \sim 6\text{k}\Omega$

Response (10% ~ 90%):  $< 1\text{ms}$

Insulation resistor:  $100\text{M}\Omega$ , 100VDC

Overpressure: 1.5 times FS

### **Construction Specification**

Diaphragm: stainless steel 316L	Titanium TA1 (MPM280Ti)	Tantalum Ta (MPM280TH)
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Housing: stainless steel 316L	Titanium TC4 (MPM280Ti)	Hastelloy C (MPM280TH)
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Pin: Kovar

O-ring: Viton

Net weight: ~23g ( general type )

~50g ( flush diaphragm )

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~125g ( assembled type )

~13.5g (MPM 280Ti)

## Environment Condition

Position: deviate 90° from any orientation, zero change  $\leq 0.05\%$ FS

Shock: no change at 10gRMS, (20 ~ 2000)Hz

Impact: 100g, 11ms

Media compatibility: the gas or liquid which is compatible with construction material and Viton

## Basic Condition

Media temperature: ( 25 $\pm$ 1 )

Environment temperature: ( 25 $\pm$ 1 )

Shock: 0.1g (1m/s/s) Max

Humidity: (50% $\pm$ 10% ) RH

Local air pressure: ( 86 ~ 106 ) kPa

Power supply: ( 1.5 $\pm$ 0.0015 ) mADC

## Basic Specification

Item*	Min.	Typ.	Max.	Units
Linearity		$\pm 0.15$	$\pm 0.25$	%FS,BFSL
Repeatability		$\pm 0.05$	$\pm 0.075$	%FS
Hysteresis		$\pm 0.05$	$\pm 0.075$	%FS
Zero output			$\pm 2$	mVDC
FS output**	70			mVDC
Zero thermal error		$\pm 0.75$	$\pm 1.0$	%FS, @25
FS thermal error		$\pm 0.75$	$\pm 1.0$	%FS, @25
Compensated temp. range	0 ~ 50			
Working temp. range	-40 ~ 125			
Storage temp. range	-40 ~ 125			
Stability		$\pm 0.2$	$\pm 0.3$	%FS/year

\*testing at basic condition , G: Gauge; A: Absolute; S: Sealed gauge

\*\* 0AG, FS output  $\geq 60$ mV

0BG, FS output  $\geq 45$ mV

02A, 03A, 02GY, 03GY, FS output  $\geq 50$ mV

07A, 08A, 07GY, 08GY, FS output  $\geq 60$ mV

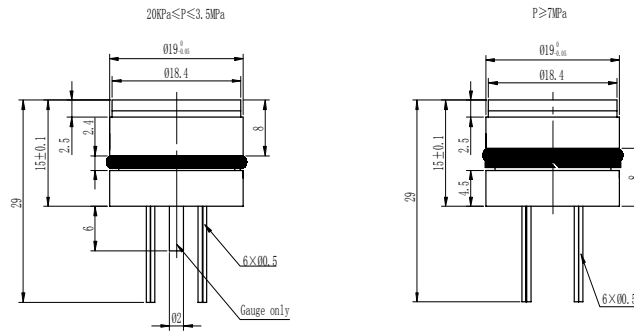
## Outline Construction

(Units: mm)

<http://www.microsensor.cn>

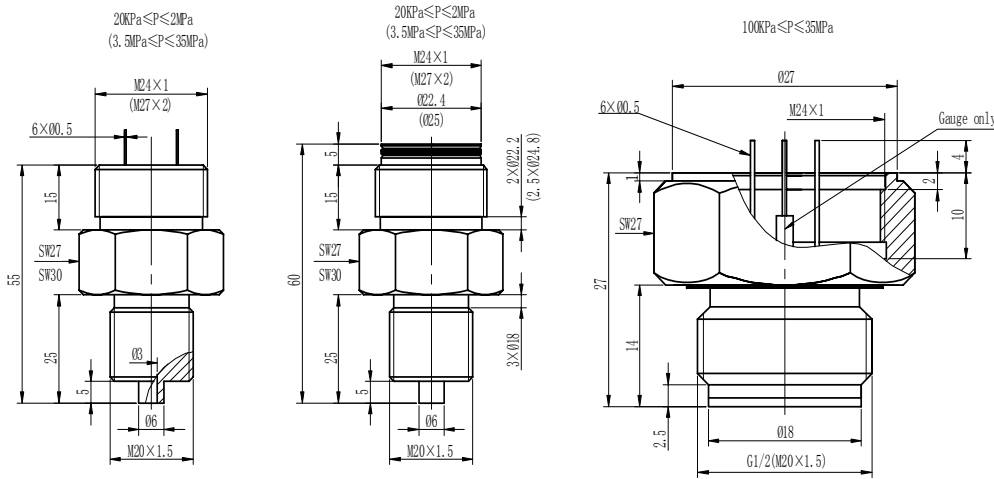
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Option 0 or Null

For option 0, we suggest the installation dimension is  $\Phi 19_{+0.02}^{+0.05}$  mm.

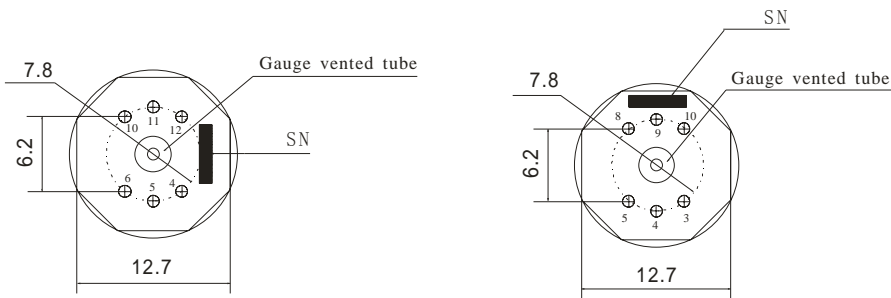


Option1or2

Option3or4

OptionPC<sub>1</sub>orPC<sub>3</sub>

### Electric Connection



Pin	Electric connection	Wire color
5	(+IN)	Black
6	(-IN)	Yellow (white)
4	(+OUT)	Red
10	(-OUT)	Blue
Other pins are useless		

Pin	Electric connection	Wire color
8	(+IN)	Black
5	(-IN)	Yellow (white)
4	(+OUT)	Red
9	(-OUT)	Blue
Other pins are useless		

Note: The actual electric connection method, please check the parameter label enclosed with products.

## Order Guide

MPM280(TH/Ti)*	Piezoresistive OEM Pressure Sensor					
	Range code	Pressure range	Ref.	Range code	Pressure range	Ref.
	0B	0 ~ 20kPa	G	10	0 ~ 1MPa	G.A
	0A	0 ~ 35kPa	G	12	0 ~ 2MPa	G.A
	02	0 ~ 70kPa	G.A	13	0 ~ 3.5MPa	G.S.A
	03	0 ~ 100kPa	G.A	14	0 ~ 7MPa	S
	07	0 ~ 200kPa	G.A	15	0 ~ 10MPa	S
	08	0 ~ 350kPa	G.A	17	0 ~ 20MPa	S
	09	0 ~ 700kPa	G.A	18	0 ~ 35MPa	S
	Code	Pressure type				
	G	Gauge				
	A	Absolute				
	S	Sealed gauge				
	Code	Pressure connection	Installation			
	0 or null	O-ring				
	1	Assembled M20x1.5 male, waterline seal	Top: M24x1 male (P≤2MPa)			
	2	Assembled M20x1.5 male, waterline seal	Top: M27x2 male			
	3	Welded M20x1.5 male, waterline seal	Top: M24x1 male (P≤2MPa)			
	4	Welded M20x1.5 male, waterline seal	Top: M27x2 male			
	PC <sub>1</sub>	Flush diaphragm M20x1.5 male,	Top: M24x1 female			
	PC <sub>3</sub>	Flush diaphragm G1/2 male,	Top: M24x1 female			
	Code	Compensation				
	L	Laser trimming				
	M	Outer compensated resistor (providing resistor value)				

						Code	Electric connection
						1	Kovar pin(default)
						2**	flexible wire, default length:100mm
						Code	Special measurement
						Y	Gauge sensor to measure vacuum (0~ -100kPa)
MPM280	09	G	0	L	1	Y	The whole spec

\* When you select Tantalum diaphragm and Hastelloy C housing, the P/N is MPM280TH;

When you select Titanium construction, the P/N is MPM280Ti.

\*\* The default version code for electric connection for sensors on the parameter card is 1. And it is also allowable to print code 1 even though the electric connection is flexible wire (original code 2). The wire length shall be as per customers' request on the contact.

## Order Note

1. It is recommended that the sensor should be installed as Suspended Mode to avoid face tight press and avoid affecting sensor stability.
2. Please pay attention to protect the diaphragm and the compensated board to prevent any damage or bad performance.
3. Temperature resistant range of standard Viton O-ring of sensor is -20°C ~ 250°C. When working temperature is lower than -20°C, or sensor is applied in critical environment, please contact us.