

MPM280 Piezoresistive OEM Pressure Sensor

Features

- Pressure range 0kPa~20kPa...70MPa;
- Gauge, absolute and sealed gauge;
- Constant current / Constant Voltages power supply;
- Isolated construction to measure various fluid media
- $\Phi 19$ mm 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 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 specialized 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 specialized 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, and can be used for mounting and production of different pressure instruments;

Flush Diaphragm MPM280 Piezoresistive Pressure Sensor

Flush diaphragm pressure sensor is a pressure sensing element through male thread and clamp connection. It has pressure port G1/2 male, M20x1.5 male and DN25 clamp, sealed by Viton or silicon O-ring. The isolated diaphragm is welded in front of thread port, the range is 0kPa~100kPa...35MPa(thread connection) and 0~100kPa...3.5MPa(clamp connection). It can be used to detect the pressure of food, medicine, sanitation fields and the occasion in which the measured media is easily dirty.

Anti-corrosive MPM280 Piezoresistive Pressure Sensor

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MPM280TH pressure sensor has similar outline, installation dimension and sealing methods as general MPM280 pressure sensor. For construction material, the isolated diagram uses tantalum material and housing uses Hastelloy C material. The sensor is sealed by Viton O-ring. It can be used to measure strongly corrosive media. The pressure range is -100kPa~0kpa; 0kPa~100kPa...35MPa.

MPM280TS pressure sensor has similar outline, installation dimension and sealing methods as general MPM280 pressure sensor. For construction material, the isolated diagram uses tantalum material and housing uses stainless steel 316L material. The sensor is sealed by Viton O-ring. It can be used to measure strongly corrosive media. The pressure range is -100kPa~0kpa; 0kPa~100kPa...35MPa.

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 used to measure sea water or corrosive media. The pressure range is -100kPa~0kpa; 0kPa~100kPa...70MPa.

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, chloride, chlorine-organism, nitric acid and vitriol etc.

Gauge MPM280 Pressure Sensor with Vacuum Measurement

We can use gauge type of general, assembled and flush diaphragm type MPM280 to measure pressure below air pressure, the min. pressure can be around -100kPa.

Electric Performance

Power supply: $\leq 2.0\text{mA DC}$; $\leq 10\text{V DC}$

Electric connection: $\phi 0.5\text{mm}$ 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 Performance

Diaphragm: stainless steel 316L Titanium TA1 (MPM280Ti) Tantalum Ta (MPM280TH, MPM280TS)

Housing: stainless steel 316L Titanium TC4 (MPM280Ti) Hastelloy C (MPM280TH)

Pin: Kovar

O-ring: Viton

Net weight: $\sim 23\text{g}$ (general type, MPM280TH and MPM280TS)

$\sim 50\text{g}$ (flush diaphragm)

$\sim 125\text{g}$ (assembled type)

$\sim 13.5\text{g}$ (MPM 280Ti)

Environment Condition

Position: deviate 90° from any direction, zero change $\leq \pm 0.05\% \text{FS}$

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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±1)°C

Environment temperature: (25±1)°C

Shock: 0.1g (1m/s²) Max

Humidity: (50%±10%) RH

Local air pressure: (86~106)kPa

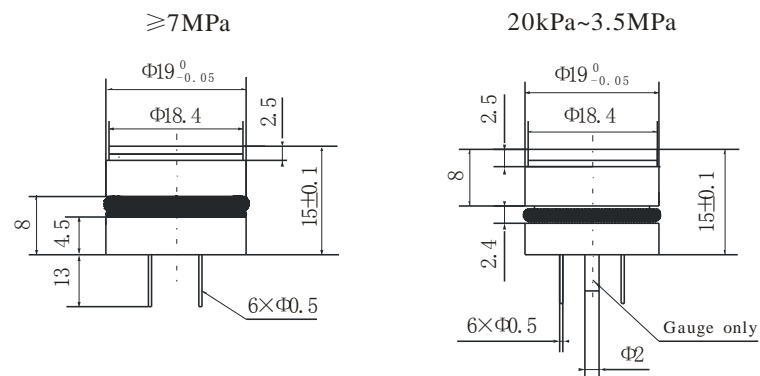
Power supply: (1.5±0.0015)mADC

Basic Specification

Item*	Min.	Typ.	Max.	Units
Linearity		±0.15	±0.25	%FS,BFSL
Repeatability		±0.05	±0.075	%FS
Hysteresis		±0.05	±0.075	%FS
Zero output		±1	±2	mV DC
FS output**	70			mV DC
Zero thermal error		±0.75	±1.0	%FS, @25°C
FS thermal error		±0.75	±1.0	%FS, @25°C
Compensated temp. range		0 ~ 50		°C
Working temp. range		-40 ~ 125		°C
Storage temp. range		-40 ~ 125		°C
Stability		±0.2	±0.3	%FS/year

*Testing at basic condition, G: Gauge; A: Absolute; S: Sealed gauge
 ** 0BG, FS output ≥45mV
 0AG, FS output ≥60mV
 02A, 03A, 02GY, 03GY, FS output ≥45mV
 07A, 08A, 07GY, 08GY, FS output ≥60mV

Outline Construction (Unit: mm)



For option 0 or null, suggested installation dimension is $\Phi 19^{+0.05}_{+0.02}$ mm.

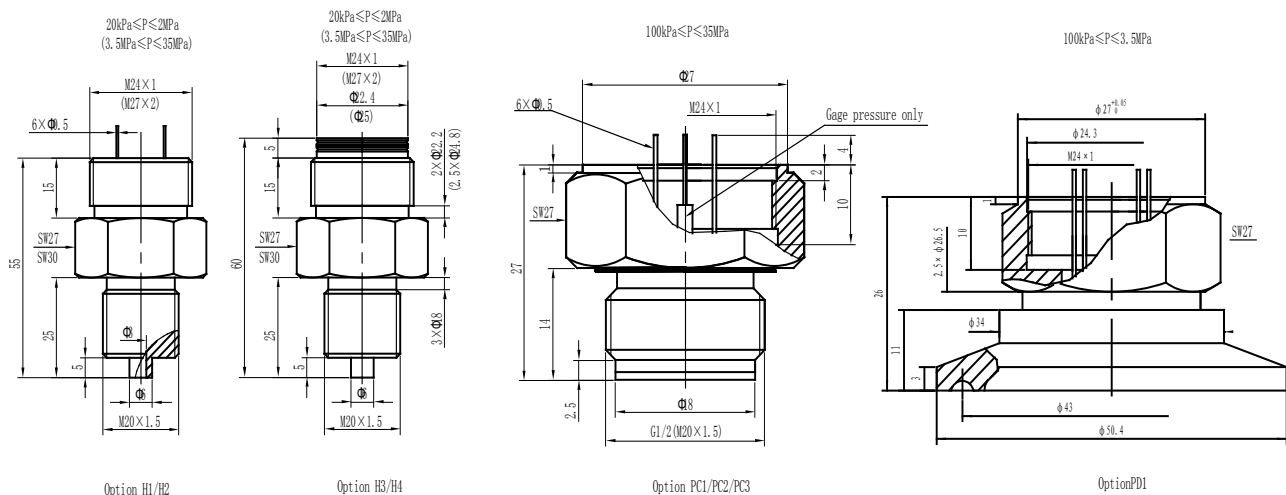
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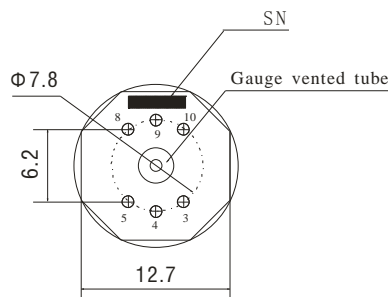
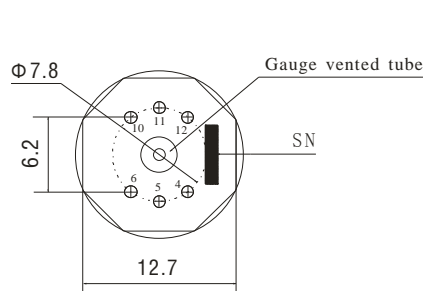
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Electric Connection



Pin	Definition	Wire color
4	+OUT	Red
5	+IN	Black
6	-IN	Yellow/White
10	-OUT	Blue
Other pins are useless		

Pin	Definition	Wire color
4	+OUT	Red
5	-IN	Yellow/White
8	+IN	Black
9	-OUT	Blue
Other pins are useless		

Pin	Definition	Wire color
4	-OUT	Blue
5	-IN	Yellow/White
8	+IN	Black
9	+OUT	Red
Other pins are useless		

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

Order Note

1. We suggest you to use Floating construction when you install the sensor to prevent affecting sensor stability;

2. Please pay attention to protect sensor isolated diaphragm and ceramic compensated board, to avoid damaging sensor or affecting the performance;

3. Temperature resistant range of standard Viton O-ring of sensor is -20℃ ~ 250℃ . When working temperature is lower than -20℃ , or sensor is applied in critical environment, please contact us.

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Order Guide

MPM280(TH/TS/Ti)*

Piezoresistive OEM Pressure Sensor

Range code	Pressure range	Ref.	Range code	Pressure range	Ref.	
0B	0kPa ~ 20kPa	G	12	0MPa ~ 2MPa	G.A	
0A	0kPa ~ 35kPa	G.A	13	0MPa ~ 3.5MPa	G.S.A	
02	0kPa ~ 70kPa	G.A	14	0MPa ~ 7MPa	S.A	
03	0kPa ~ 100kPa	G.A	15	0MPa ~ 10MPa	S.A	
07	0kPa ~ 200kPa	G.A	17	0MPa ~ 20MPa	S.A	
08	0kPa ~ 350kPa	G.A	18	0MPa ~ 35MPa	S.A	
09	0kPa ~ 700kPa	G.A	19	0MPa ~ 70MPa	S.A	
10	0kPa ~ 1000kPa	G.A				
		Code	Pressure type			
		G	Gauge			
		A	Absolute			
		S	Sealed gauge			
		Code	Pressure connection		Installation	
		0 or null	O-ring			
		H1	M24×1 male (assembled, P≤2MPa)		C1~C11 are available for pressure connections for both assembled and welded type	
		H2	M27×2 male (assembled, P≤70MPa)			
		H3	M24×1 male (welded, P≤2MPa)			
		H4	M27×2 male (welded, P≤35MPa)			
		C1	M20×1.5 male, face type seal		Pressure connection options for assembled or welded type	
		C2	G1/4 male			
		C3	G1/2 male			
		C4	G1/4 female			
		C5	M20X1.5male waterline seal			
		C6	1/4NPT male			
		C7	1/4NPT female			
		C8	1/2NPT male			
		C9	1/2NPTfemale			
		C10	R1/4 male			
		C11	R1/2 male			
		PC ₁	Flush diaphragm M20×1.5 male,		Top: M24×1 female	
		PC ₂	Flush diaphragm R1/2 male,			
		PC ₃	Flush diaphragm G1/2 male,			

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				PD ₁	DN25 clamp		
					Code	Compensation	
					L	Laser trimming	
					M	Outer compensated resistor (providing resistor value)	
						Code	Electric connection
						1	Kovar pin(default)
						2**	100mm silicon rubber flexible wires
							Code Special measurement
						Y	Gauge sensor to measure vacuum(0kPa ~ -100kPa)
MPM280	09	G	0	L	1	Y	The whole spec

* For sensor with tantalum diaphragm and hastelloy housing, the model shall be MPM280TH, For sensor with tantalum diaphragm and 316L housing, the model shall be MPM280TS, for all titanium material sensor (titanium diaphragm and titanium housing), the model shall be MPM280Ti.

**For assembled and welded type, please choose the top connection and pressure connection at the same time, eg. H1C2. For other customized options not shown in the order guide, please contact us.

***For the sensor with "flexible silicone wire", the electric connection on the parameter label shall be default code "1", wire length shall be made clear on the contract.