

MPM281 High Stability Pressure Sensor



Features

- Pressure range 0~0.07bar...1000bar
- Gauge, Absolute, Sealed gauge
- Constant current or constant voltage power supply
- Isolated construction, various medium measurement available
- Φ 19mm standard OEM pressure sensor
- Whole stainless steel 316L
- Wide compensated temperature range of -10°C ~ 80°C
- Long-term stability $\pm 0.1\%$ FS/Year

Application

- Industrial process control
- Level measurement
- Gas, liquid pressure measurement
- Pressure checking meter
- Pressure calibrator
- Liquid pressure system and Switch
- Cooling equipment and Air conditioning system
- Aviation and Navigation inspection

Introduction

MPM281 High Stability Pressure Sensor is a high-stability silicon piezoresistive pressure measuring element with an isolated construction and precise temperature compensation. Adopting high stable and reliable diffused silicon die, it is packaged in a whole stainless steel 316L housing with diameter of Φ 19mm. 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. The sensor can also be filled with fluorocarbon oil, which is more suitable for pressure measurement of medium in oxygen-enriched environments. MPM281 has been strictly inspected and screened on the automated production line, and has been repeatedly examined and tested, making it widely used in various high-demand pressure measurement occasions.

Electrical Performance

- Power supply: $\leq 2.0\text{mA DC}$ (constant current type)
 $\leq 10\text{V DC}$ (constant voltage type)
- Electrical connection: Φ 0.5mm Kovar pin or 100mm silicon rubber flexible wires
- Common mode voltage output: 50% input (typ.)
- Input impedance: $2\text{k}\Omega\sim 8\text{k}\Omega$ (constant current type)
 $4\text{k}\Omega\sim 25\text{k}\Omega$ (constant voltage type)
- Output impedance: $3.5\text{k}\Omega\sim 6\text{k}\Omega$
- Response (10%~90%): $< 1\text{ms}$
- Insulation resistor: $100\text{M}\Omega@100\text{V DC}$
- Overpressure: 2 times FS or 1100bar(min. value is valid)

Construction Performance

- Diaphragm: Stainless steel 316L
- Housing: Stainless steel 316L
- Pressure leading tube : Stainless steel 316L
- Pin: Kovar
- O-ring: FKM
- Net weight: $\sim 16\text{g}$

Environment Condition

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

Basic Condition

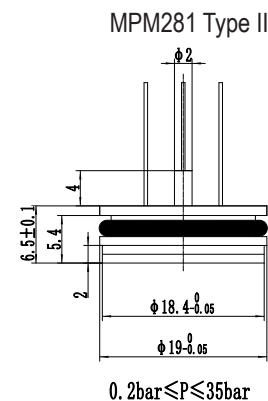
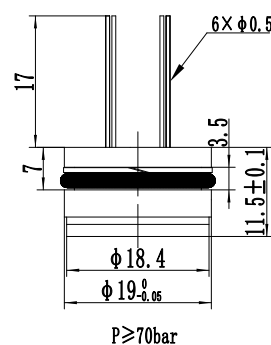
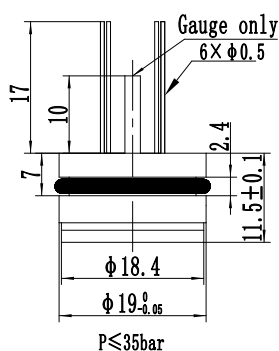
- Media temperature: (35±1)°C
- Environment temperature: (35±1)°C
- Shock: 0.1g (1m/s²) Max
- Humidity: (50±10)%RH
- Local air pressure: (0.86~1.06)bar
- Power supply: (1.5±0.0015)mA DC

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			±2.0	mV DC
Constant current output/span***	70			mV DC
Constant voltage output/span****		5~25		mV/V
Zero thermal error*****		±0.75	±1.0	%FS,@35°C
Span thermal error		±0.75	±1.0	%FS,@35°C
Compensated temp. range	0~70(0.07bar G,0.2bar G,0.35bar G,0.35bar A)			°C
	-10~80			
Working temp. range		-40~125		°C
Storage temp. range		-40~125		°C
Stability error		±0.1	±0.2	%FS/Year

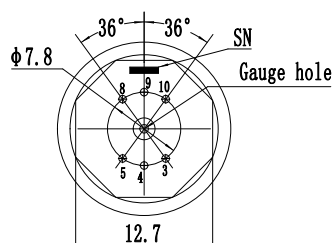
* testing at basic condition
 ** For range code 0.35bar,Linearity≤±0.3%FS
 *** Output/Span=full scale output - zero point
 For range code 70mbar, FS output ≥45mV,Range code 0.7bar,FS output ≥60mV
 **** For range code 70mbar,FS output 3mV/V~6mV/V
 ***** for rang code 70mbar, Zero thermal errors≤1.5%FS

Outline Construction (Unit: mm)



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

Electrical Connection



Pin	For range 02/03/17/18/19/20		Other range codes	
	Definition	Wire color	Definition	Wire color
4	-OUT	Blue	+OUT	Red
5	-IN	Yellow	-IN	Yellow
8	+IN	Black	+IN	Black
9	+OUT	Red	-OUT	Blue

Order Guide

MPM281		High Stability Pressure Sensor(MPM281FL:Filling with fluorocarbon oil)					
Code	Size						
null	φ19mm×11.5mm						
II	φ19mm×6.5mm (Only for range: 0.2bar~35bar)						
Range code	Pressure range	Ref.	Range code	Pressure range	Ref.		
0C	0bar~0.07bar	G	12	0bar~20bar	G.A		
0B	0bar~0.20bar	G	13	0bar~35bar	G.A.S		
0A	0bar~0.35bar	G.A	14	0bar~70bar	S.A		
02	0bar~0.70bar	G.A	15	0bar~100bar	S.A		
03	0bar~1bar	G.A	17	0bar~200bar	S.A		
07	0bar~2bar	G.A	18	0bar~350bar	S.A		
08	0bar~3.5bar	G.A	19	0bar~700bar	S.A		
09	0bar~7bar	G.A	20	0bar~1000bar	S.A		
10	0bar~10bar	G.A					
Code	Pressure type						
G	Gauge						
A	Absolute						
S	Sealed gauge						
Code	Pressure connection						
0 or null	O-ring						
Code	Compensation						
L	Constant current laser trimming compensation						
LCV	Constant voltage laser trimming compensation						
M	Outer compensated resistor (providing resistor value)						
Code	Electrical connection						
1	Kovar pin(default)						
2*	100mm silicon rubber flexible wires						
Code	Special measurement						
Y	Gauge sensor to measure vacuum only available for ranges ≥1bar (code 03~20)						
MPM281	07	G	0	L	1	Y	the whole spec
* Default code of electrical connection is 1 on the parameter sheet and it's also allowed to print code 1 when the electrical connection is flexible wires (original code 2). The default wire length is 100mm, but it can be produced as per customers' request when placing orders.							

Notes

1. The default unit of all the products is kPa (1kPa=0.01bar).
2. It is recommended that the sensor should be installed by a "suspended" structure so as to avoid pressing the seal on its end face and to prevent the stability of sensor element.
3. The isolation diaphragm and the ceramic board should be protected to avoid bumps that affect the performance or cause damage to the element.
4. Temperature resistant range of standard FKM O-ring of sensor is -20℃ ~250℃ . When working temperature is lower than -20℃ , or sensor is applied in critical environment, please contact us.