# MPM281 High Stablility Pressure Sensor



### **Features**

- Pressure range -1bar...0bar~0.07bar...
- Gauge, Absolute, Sealed gauge, Vacuum
- Constant current or constant voltage power supply
- Silicone/Fluorocarbon oil filling options, isolated construction, excellent media compatibility
- Ф19mm standard OEM pressure sensor
- Full stainless steel 316L
- Wide temp. compensation range -10°C ~80°C
- Long-term stability ± 0.1%FS/Year

## **Applications**

- Industrial process control
- Level measurement
- Gas, liquid pressure measurement
- Pressure gauges
- Pressure calibrators
- Liquid pressure system and Switch
- Refrigeration equipment and air conditioning system
- Aviation and navigation inspection

### Introduction

MPM281 High Stability Pressure Sensor is a silicon piezoresistive pressure sensor with isolated construction and temperature compensation. The sensor uses a high-reliability diffused silicon die encapsulated in a Φ19mm 316L stainless steel housing. 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. Fluorocarbon oil filling is available. It is tailored for pressure measurement in oxygen-rich conditions. MPM281 Pressure Sensor undergoes rigorous inspection and testing on the automated production line, suitable for demanding pressure measurement conditions.

### **Electrical Performance**

- Power supply: ≤2.0mA DC (constant current type) ≤10V DC (constant voltage type)
- Electrical connection: Φ0.5mm Kovar pin or 100mm silicon rubber cord
- Common mode voltage output: 50% input (typ.)
- Input impedance:  $2k\Omega \sim 8k\Omega$  (constant current type)

 $4k\Omega \sim 25k\Omega$  (constant voltage type)

- Output impedance:  $3.5k\Omega \sim 6k\Omega$
- Response time (10%~90%): <1ms

# **Construction Performance**

- Diaphragm: Stainless steel 316L
- Housing: Stainless steel 316L
- Vent tube: Stainless steel 304
- Pin: Gold-plated kovar
- O-ring: FKM/EPDM/NBR
- Net weight: ~16g

# **Environmental 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

# **Specifications**

All specifications were tested under basic conditions.

# **Basic Conditions**

Medium temperature: (35±1)°C

Ambient temperature: (35±1)°C

Vibration: 0.1g (1m/s²) Max

Relative humidity: (50±10)%RH

Local air pressure: (0.86~1.06)bar

Power supply: (1.5±0.0015)mA DC

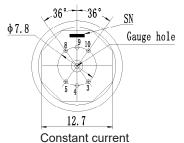
Item	Min.	Тур.	Max.	Units	Notes		
Pressure nonlinearity		±0.15	±0.2	%FS,BFSL	1		
Pressure repeatability		±0.03	±0.075	%FS			
Pressure hysteresis		±0.03	±0.075	%FS			
Zero output		±1.0	±2.0	mV DC			
Constant current output/span	70			mV DC	2		
constant voltage output/span	5		25	mV/V	3		
Zero thermal error		±0.5	±1.0	%FS,@35°C	4		
Span thermal error		±0.5	±1.0	%FS,@35℃			
Componentian town range	0~70			°C (≤0.35bar )			
Compensation temp. range		-10~80	°C (>0.35bar )				
Stability arror		±0.15	±0.20	%FS/Year(≤1bar )			
Stability error		±0.10	±0.15	%FS/Year(>1bar)			
Zava tha wasal layatawasia	±0.2			%FS (≤1bar )	_		
Zero thermal hysteresis		±0.15	%FS (>1bar )	5			
Insulation resistance	250			MΩ@250V DC	6		
Endurance		≥10 <sup>6</sup>		times			
Operating temp. range		-40~125		°C			
Storage temp. range	-40~125			°C			
1 P=0 35har nonlinearity <+0.3	1 P=0 35bar poplinearity <+0 3%FS						

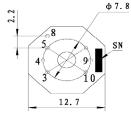
- 1. P=0.35bar, nonlinearity ≤±0.3%FS
- 2. Output/Span=full scale output zero point P=0.07bar, output/span ≥45mV, P=0.7bar, output/span ≥60mV
- 3. P=0.07bar, output /span 3mV/V ~ 6mV/V
- 4. P=0.07bar, zero thermal error≤1.5%FS
- 5. Within compensation temp. range
- 6. Insulation resistance was tested under RH≤65% and Temp.≤35 °C .

# **Outline Construction** MPM281 Type For Gauge Only ф 18. 4 φ 19-0. 05 ф 19-0. 05

### P ≤ 3. 5MPa **Electrical Connection**

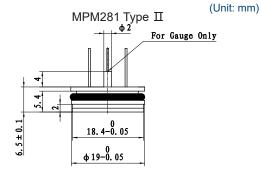
MICROSENSOR





P > 7MPa

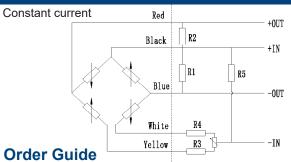
Constant voltage

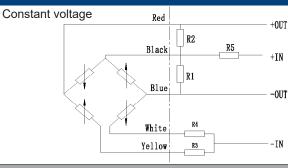


 $20kPa \le P \le 3.5MPa$ 

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

Pin		ge code 7/18/19/20	Other range code		
	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	





MPM281/MPM281FL	High Stability Pressure Sensor	r (MPM281FL:Filling with fluorocarbon oil	
		(	

Code	Size							
null	Ф19mm×11.5mm							
П	Φ 19mm×6.5mm (Only for range: 0.2bar~35bar)							

		\ ,			<u>'</u>	
Range code Pressure range		Ref.	Overload pressure	Burst pressure		
	0C 0bar~0.07bar 0B 0bar~0.20bar		G	250%FS	600%FS	
			G	250%FS	600%FS	
0A 0bar~0.35bar		G.A	250%FS	600%FS		
	02	0bar~	0.70bar	G.A	200%FS	500%FS
03		0bar	~1bar	G.A	200%FS	500%FS
	07	0bar~2bar		G.A	200%FS	500%FS
	08 0bar~3.5bar   09 0bar~7bar   10 0bar~10bar   12 0bar~20bar		G.A	200%FS	500%FS	
			G.A	200%FS	500%FS	
			G.A	200%FS	500%FS	
			G.A	200%FS	500%FS	
	13	13		G.A.S	200%FS	500%FS
	14			S.A	200%FS	400%FS
	15		S.A	150%FS	300%FS	
			S.A	150%FS	200%FS	
			S.A	150%FS	200%FS	
			S.A	150%FS	200%FS	
	20	0bar~1	1000bar	S.A 110%FS 150%FS		150%FS
		Code	Pressure type			

Pressure connection

G	Gauge
Α	Absolute
S	Sealed gauge

0 or null FKM O-ri				ng					
	Code Co					Compensation			
						Constant current power supply laser resistance compensation			
	LCV Constant voltage power supply laser resis compensation				er supply laser resistance				
M				Outer compensation resistor (providing resistor value)					
			С			Code Electrical connection			
				1		Kovar pin(defa	ault)		
				2,	ŕ	100mm silicon rubber wires			
						Code	Vaccum measurement		
						null	Without vaccum pressure		
						Y**	Withstand vaccum pressure while zero at atmospheric pressure		
						Y** (x ~ x)	With vaccum measurement while zero shift to specified vaccum		

Υ

1

0

G

07

MPM281

the whole spec

pressure point

<sup>\*</sup> Electrical connection default code is 1 on specification card. Silicon rubber cord connection (original code 2) can also be printed as code 1. Default wire length is 100mm, customizable per contract.

<sup>\*\*</sup> Code "Y" is only available for range codes 03 to 13. If you need to adjust Zero, please contact Micro Sensor.

# MPM281 High Stability Pressure Sensor

#### **Notes**

- 1. Gauge sensors with range ≥0.2bar can measure vacuum up to -0.2bar. (Gauge sensors with range 0.07bar can measure negative pressure up to -0.07bar.)
- 2. The default unit of all the products is kPa (1kPa=0.01bar).
- 3. It's recommended to use a "suspended" construction when assembling the pressure sensor to avoid applying direct pressure to its end face during sealing, preventing any interference with the sensor's stability.
- 4. Caution should be taken to protect the isolated diaphragm and ceramic compensation circuit board to prevent physical contact-induced impairment that may compromise the performance or cause damage to the pressure sensor.
- 5. Temperature resistant range of standard FKM O-ring of sensor is  $-20\,^{\circ}\text{C} \sim 250\,^{\circ}\text{C}$ . When operating temperature is lower than  $-20\,^{\circ}\text{C}$ , or sensor is applied in harsh conditions, please feel free to contact Micro Sensor.

