MCM201 Pressure and Temperature Sensor

Features

- Pressure range: 0bar~0.35bar…1000bar
- Gauge, Absolute, Sealed gauge
- Pressure and Temperature dual output
- Temperature error ±0.5℃
- Φ19mm standard OEM pressure sensor
- Long-term stability ± 0.1%FS/Year

Application

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

Introduction

MCM201 Pressure and Temperature Sensor is a high-stability measuring element with an isolated construction and precise temperature compensation. It is packaged with a whole stainless steel 316L housing with diameter of Φ19mm. The sensor chip adopts high stable and reliable silicon die and PT100 or PT1000 temperature probes, which can achieve an accurate pressure and temperature measurement. 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 and the built-in platinum resistor can measure the temperature of the measured medium, in which the monitoring of both pressure and temperature is realized.

MCM201 has been strictly inspected and screened on the automated production line, and the mature production process ensures that the sensor has excellent reliability and long-term stability. It can be widely used in industrial sites where pressure and temperature integrated measurement are required.

Electrical Performance

- Power supply: ≤2.0mA DC
- Electrical connection: Φ0.5mm Kovar pin or 100mm silicon rubber flexible wires
- Common mode voltage output: 50% input (typ.)
- Input impedance: 2kΩ~8kΩ
- Output impedance: 3.5kΩ~6kΩ
- Response (10%~90%): <1ms
- Insulation resistor: 100MΩ@100V 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: ~16g

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

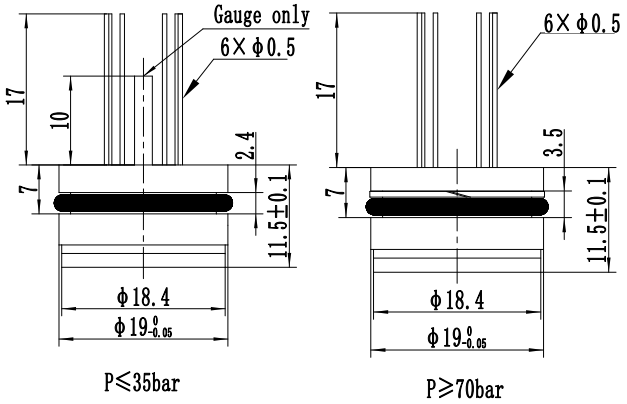
- Media temperature: (35±1)℃
- Environment temperature: (35±1)℃
- Shock: 0.1g (1m/s^2) Max
- Humidity: (50±10)%RH
- Local air pressure: (0.86~1.06)bar
- Power supply: (1.5±0.0015)mA DC

Specification

Class	Item*	Min.	Typ.	Max.	Units
Temperature Parameters	Temp. error		±0.5		℃
	Response time		0.4 (In water) 、1.0(In air)		m/s
	Temp. Stability Error		≤ 0.05		%/Year
Pressure Parameters	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
	Output/Span***	70			mV DC
	Zero thermal error		±0.75	±1.0	%FS,@35℃
	Span thermal error		±0.75	±1.0	%FS,@35℃
	Compensated temp. range		0~70(0.35bar G,0.35 bar A)		℃
			-10~80		℃
	Working temp. range		-40~125		℃
	Storage temp. range		-40~125		℃
	Pressure stability error		±0.1	±0.2	%FS/Year

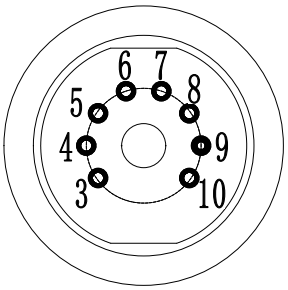
* testing at basic condition
** 0A Linearity ≤ ±0.3%FS
*** Output/Span=full scale output - zero point
For range code 0.7bar,FS output ≥60mV

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
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 the electrical connection is subject to the connection mode indicated on the attached parameter sheet.

Order Guide

MCM201	Pressure and Temperature Sensor					
Range code	Pressure range	Ref.	Range code	Pressure range	Ref.
0A	0bar~0.35bar	G.A	13	0bar~35bar	G.A.S
02	0bar~0.70bar	G.A	14	0bar~70bar	S.A
03	0bar~1bar	G.A	15	0bar~100bar	S.A
07	0bar~2bar	G.A	17	0bar~200bar	S.A
08	0bar~3.5bar	G.A	18	0bar~350bar	S.A
09	0bar~7bar	G.A	19	0bar~700bar	S.A
10	0bar~10bar	G.A	20	0bar~1000bar	S.A
12	0bar~20bar	G.A			

Code	Pressure type
G	Gauge
A	Absolute
S	Sealed gauge

Code	Pressure connection
0 or null	O-ring

Code	Compensation
L	Laser trimming
M	Outer compensated resistor (providing resistor value)

Code	Electrical connection
1	Kovar pin
2*	100mm silicon rubber flexible wires(default)

Code	Temperature probe
T1	PT100
T2	PT1000

Code	Special measurement
Y	Gauge sensor to measure vacuum (-1bar~0bar)

MCM201	07	G	0	L	1	T1	Y	the whole spec

**The default code for electrical connection is “1”on the parameter card. And it is also allowed to print code “1” if the electrical connection is flexible wire (original code “2”). The wire length shall be as per customers’ request on the contact.

Notes

1. The default unit of the company’s 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 temperatureis lower than -20℃ , or sensor is applied in critical environment, please contact us.