MDM290 Piezoresistive OEM Differential Pressure Sensor

Introduction

MDM290 piezoresistive differential pressure sensor is OEM differential pressure sensor with stainless steel isolated diaphragm. It has integrated construction, high static pressure, high stablity and good reliability. The high and low pressure sides are protected by isolated diaphragm. It can be used for measuring corrosive and conductive fluid media. The measured differential pressure is transmitted onto the die through the diaphragm and filling silicon oil so that the sensor could measure differential pressure precisely. The sensor is tested automatically, and compensated zero and temperature performance with provided resistors. The installation dimension is consistent with general products which makes the sensor has a good interchangeability. It is widely used for industrial process control and differential pressure measure fields, etc.

Features

- Pressure range: 0kPa ~ 35kPa…3.5MPa
- Constant current/constant voltage power supply
- Isolated construction, possible to various fluid media
- OEM differential pressure sensor
- Stainless steel 316L
- High static pressure 20MPa
- 1.5 times overpressure

Application

- Industrial process control
- Differential pressure measurement
- Gas, liquid pressure measure
- Pressure checking meter
- Pressure calibrator
- Ventura and eddy-current flow meter

Electric Performance

- Power supply: ≤2.0mA DC; ≤10V DC
- Electrical connection: 100mm silicon rubber flexible wires
- Common mode voltage input: 50% of input (typ.)
- Input impedance: 3kΩ ~ 8kΩ
- Output impedance: 3.5kΩ ~ 6kΩ
- Response (10% ~ 90%): <1ms
- Insulation resistor: 100MΩ, 100VDC
- Overpressure: refer to Order Guide
- Max. static pressure: 20MPa
- Zero drift/static pressure: ≤0.5mV/MPa

Construction Performance

- Diaphragm: stainless steel 316L
- Housing: stainless steel 316L
- Pin: silicon rubber flexible wire
- O-ring: Viton
- Net weight: ~ 36g

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 Viton

Basic Condition

- Media temperature: (25±1)℃
- Environment temperature: (25±1)℃
- Shock: 0.1g (1m/s2) Max.
- Humidity: (50%±10%)RH
- Local air pressure: (86 ~ 106)kPa
- Power supply: (1.5±0.0015)mADC

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			±3	mV DC
FS output	60			mV DC
Zero thermal error		±0.75	±1.0	%FS, @25℃
Span thermal error		±0.75	±1.0	%FS, @25℃
Compensated temp. range		0 ~ 50		℃
Working temp. range		-40 ~ 125		℃
Storage temp. range		-40 ~ 125		℃
Long-term stability		±0.3	±0.5	%FS/year
*testing at basic condition				

Outline Construction (Unit: mm)
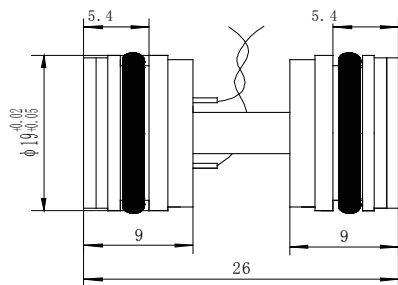
The suggested installation dimension is Φ19 $^{+0.05}_{+0.02}$ mm

Electrical Connection
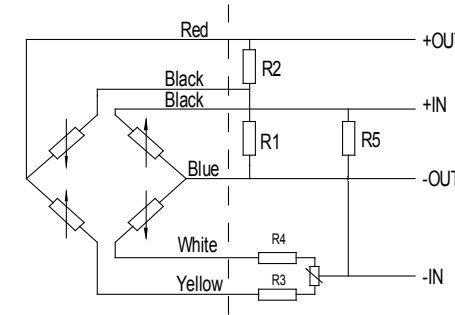
With compensated circuit board

Wire color	Definition
Black	+IN
Yellow	-IN
Red	+OUT
Blue	-OUT

Outer compensated resistor
(providing resistor value)

Wire color	Definition
Red	+OUT
Black	+IN
Black	+IN
Yellow	-IN
Yellow	-IN
Blue	-OUT

Notes

The actual electrical connection method, please check the parameter label enclosed with products.

1. The resistance bridge on the left of the dashed is sensor's bridge circuit;

2.MDM290 sensor has no laser trimming board, it compensates zero and temperature drift by outer compensated resistors, the connection to see the above chart; connect zero trimming resistor R3(R4), the other R4(R3) is short circuit as negative power supply; R1 or R2 is zero temperature drift compensated resistor, only one of them is used, the other is open circuit, please select the right resistor according to the specification label enclosed with sensor; R5 is sensitivity temperature compensated resistor. We suggest that please connect the outer resistor and differential pressure sensor as close as possible.

Order Guide

MDM290	Piezoresistive OEM Differential Pressure Sensor				
	Range code	Pressure range	Range code	Pressure range	
	0A	0kPa ~ 35kPa	09	0kPa ~ 700kPa	
	02	0kPa ~ 70kPa	10	0kPa ~ 1000kPa	
	03	0kPa ~ 100kPa	12	0MPa ~ 2MPa	
	07	0kPa ~ 200kPa	13	0MPa ~ 3.5MPa	
	08	0kPa ~ 350kPa			
			Code	Compensation	
			L	With compensated circuit board	
			M	Outer compensated resistor (providing resistor value)	
				Code	Electrical connection
				2	100mm silicon rubber flexible wires
MDM290	12	M	2	the whole spec	

Notes

1.Please notice that one side of the leading wire is High Pressure Side, the other is Low Pressure Side. Or identify High Pressure Side by mark "+", and identify Low Pressure Side by mark "-" carefully;

2.During application, please pay attention that the pressure of high pressure side should be higher than that of low pressure side;

3.Please pay attention to protect the diaphragm, prevent it from damaging;

4.Please do not pull or drag the 6 leading wires;

5.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.