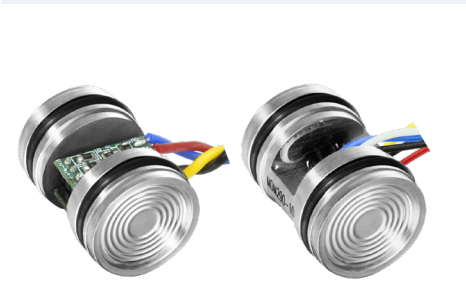
MDM290 Differential Pressure Sensor



Features

- Pressure range: 0kPa~ 35kPa…3.5MPa
- Constant current or constant voltage power supply for option
- Isolated construction, suitable for various fluids
- OEM differential pressure sensor
- Stainless steel 316L
- High static pressure 20MPa
- 2 times FS overpressure

Applications

- Industrial process control
- Differential pressure measurement
- Gas, Liquid pressure measure
- Pressure gauge
- Pressure calibrator
- Venturi and vortex flow meters

Introduction

MDM290 Differential Pressure Sensor is an OEM sensitive element with a stainless steel isolated diaphragm. It features an integrated construction, high static pressure resistance, and long-term stability. Both pressure sides are protected by diaphragms, allowing measurement with corrosive and conductive fluids. Differential pressure is transmitted through the diaphragm and silicone oil to the die for accurate measurement. The product utilizes a piezoresistive pressure sensor die, and is assembled on the advanced production line, automatically tested and compensated. Its dimensions are compatible with international standard products, ensuring good interchangeability. It is widely used in industrial process control and differential pressure measurement.

Electrical Performance

- Power supply: ≤2.0mA DC
- Electrical connection: 100mm silicone wires
- Common mode voltage output: 50% of input (typ.)
- Input impedance: 3kΩ ~ 8kΩ
- Output impedance: 3.5kΩ ~ 6kΩ
- Response time(10% ~ 90%): <1ms
- Insulation resistance: 100MΩ@100V DC
- Max. static pressure: 20MPa
- Zero drift or static pressure: ≤0.5mV/MPa

Construction Performance

- Diaphragm: Stainless steel 316L
- Housing: Stainless steel 316L
- Pin: Silicone wire
- O-ring: FKM
- Net weight: ~ 36g
- Oil filling: Silicone oil

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

Basic Conditions

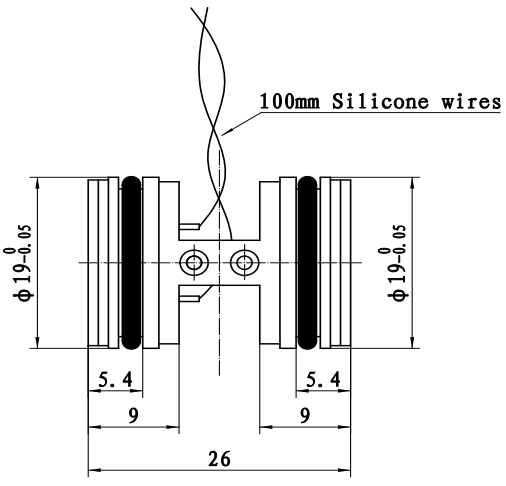
- Medium temperature: (25±1)℃
- Ambient temperature: (25±1)℃
- Vibration: 0.1g (1m/s^2) Max.
- Humidity: （50±10) %RH
- Ambient pressure: (86~106)kPa
- Power supply: (1.5±0.0015)mA DC

Specifications

Item*	Min.	Typ.	Max.	Units
Pressure nonlinearity		±0.15	±0.25	%FS,BFSL
Pressure repeatability		±0.05	±0.075	%FS
Pressure hysteresis		±0.05	±0.075	%FS
Zero output			±3.0	mV DC
Output/Span**	60			mV DC
Zero thermal error		±0.75	±1.0	%FS, @25℃
Span thermal error		±0.75	±1.0	%FS, @25℃
Compensation temp. range	0 ~ 50			℃
Operating temp. range	-40 ~ 125			℃
Storage temp. range	-40 ~ 125			℃
Long-term stability error		±0.3	±0.5	%FS/Year

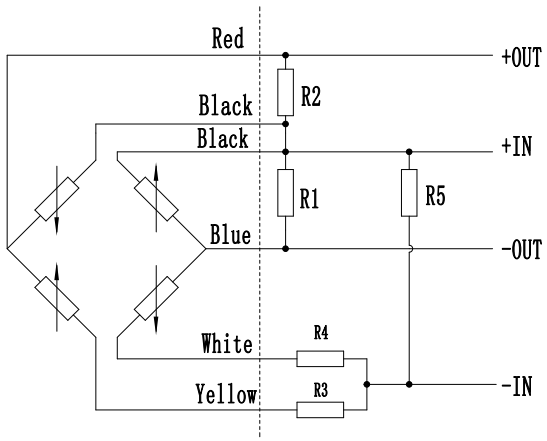
*Testing at basic condition
**Output/Span=full scale output - zero point

Outline Construction (Unit: mm)



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

Electrical Connection



Notes

1. Compensation method M-type, range code 0A-10 for 6-wire system, 12-13 for 5-wire system.
2. The arrow-marked resistor bridge to the left of the dashed line is the bridge circuit of the die.

Compensation method	Definition	Wire color
L Type	+OUT	Red
	+IN	Black
	-OUT	Blue
	-IN	Yellow
M Type	+IN	Black
	+IN	Black
	-IN	Yellow
	-IN	White
	+OUT	Red
	-OUT	Blue

3. Please check the specification label enclosed with the products for the actual electrical connection method.
4. MDM290 M-type sensor requires external resistors for zero and temperature drift compensation, using a 5-wire connection (as shown in the image). The zero adjustment resistor (R3 or R4) is connected, with the other resistor (R4 or R3) shorted to serve as the power supply negative terminal. R1 or R2 is the zero temperature drift compensation resistor, with only one needed, and the other left open, as specified in the specification label. R5 is the sensitivity temperature compensation resistor. For optimal performance, external compensation resistors should be placed as close to the differential pressure sensor as possible.

Order Guide

MDM290-10-L-2

Range code	Pressure range
0A	0kPa~35kPa
02	0kPa~70kPa
03	0kPa~100kPa
07	0kPa~200kPa
08	0kPa~350kPa
09	0kPa~700kPa
10	0MPa~1MPa
12	0MPa~2MPa
13	0MPa~3.5MPa

Code	Electrical connection
2	100mm silicone wires

Code	Compensation
L	Temperature compensation(1.5mA excitation)
M	Without temperature compensation, capable of providing resistance compensation value(1.5mA excitation)

Notes

1. The default unit of the product is kPa. 1kPa=0.01bar.
2. One side with leads is high-pressure side, and the other is low-pressure side. High and low-pressure sides can also be identified by the "+" and "-" markings. The pressure on the high-pressure side should generally not be lower than on the low-pressure side.
3. Protect the isolated diaphragm to prevent irreversible deformation.
4. Do not pull on the 6 pin wires.
5. The FKM O-ring of sensor has a temperature range of -20°C~250°C by default. For operating temperature below -20°C or harsh media, please contact the MICROSENSOR.