

MDM291 Welded Differential Pressure Sensor



Introduction

MDM291 Welded Differential Pressure Sensor is an OEM sensitive element with a stainless steel isolated diaphragm and no o-ring. 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. Electrical connections and both sides are threaded for easy assembly. Differential pressure is transmitted through the pressure port, via the isolated diaphragm and silicone oil, to the sensor die, achieving a linear conversion of differential pressure to output voltage signal. This product utilizes a piezoresistive pressure sensor die, and is assembled on the advanced production line, automatically tested and compensated for temperature performance. It is widely used in industrial process control and differential pressure measurement.

Features

- Pressure range: 0kPa~35kPa...2MPa
- Constant current or constant voltage power supply for option
- Fully welded, no o-ring, and suitable for various fluids
- Stainless steel 316L
- High static pressure 20MPa
- Wide temp. compensation range: 0°C ~70°C
- Pressure port thread (optional)
- 2 times FS overpressure

Applications

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

Electrical Performance

- Power supply: $\leq 2.0\text{mA DC}$
- Electrical connection: 100mm silicone wires
- Common mode voltage output: 50% input (typ.)
- Input impedance: $2\text{k}\Omega\sim 8\text{k}\Omega$
- Output impedance: $3.5\text{k}\Omega\sim 6\text{k}\Omega$
- Response time(10%~90%): $< 1\text{ms}$
- Insulation resistance: $100\text{M}\Omega@100\text{VDC}$
- Max. static pressure: 20MPa
- Zero drift or static pressure: $\leq 0.5\text{mV/MPa}$

Construction Performance

- Diaphragm: Stainless steel 316L
- Housing: Stainless steel 316L
- Pin: Silicone wires
- O-ring: FKM/EPDM/FVMQ
- Net weight: ~355g
- Oil filling: Silicone oil

Environmental Conditions

- Vibration: No change at 10gRMS, (20~2000) Hz
- Shock: 100g, 11ms
- Medium compatibility: Gas or Liquid that is compatible with stainless steel

Basic Conditions

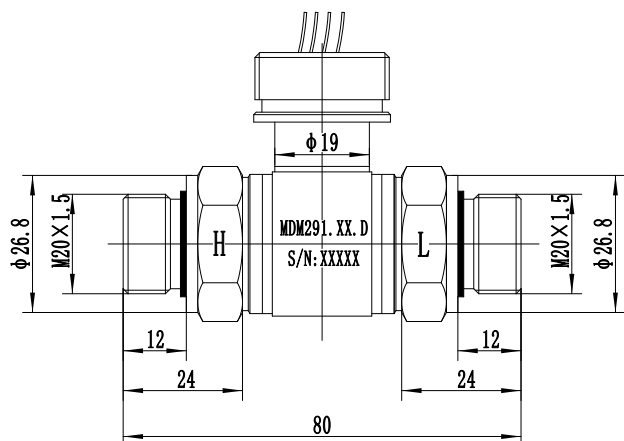
- Medium temperature: $(35 \pm 1)^\circ\text{C}$
- Ambient temperature: $(35 \pm 1)^\circ\text{C}$
- Vibration: 0.1g (1m/s^2) Max
- Humidity: $(50 \pm 10)\% \text{RH}$
- Ambient pressure: $(86 \sim 106)\text{ kPa}$
- Power supply: $(1.5 \pm 0.0015)\text{ mA DC}$

Specifications

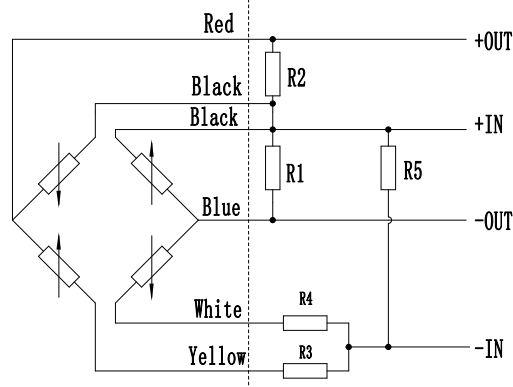
Item*	Min.	Typ.	Max.	Units
Pressure nonlinearity		± 0.15	± 0.25	%FS, BFS
Pressure repeatability		± 0.05	± 0.075	%FS
Pressure hysteresis		± 0.05	± 0.075	%FS
Zero output			± 2.0	mV DC
Output/Span**	70			mV DC
Zero thermal error***		± 0.75	± 1.0	%FS, @35°C
Span thermal error***		± 0.75	± 1.0	%FS, @35°C
Compensation temp. range	0 ~ 70			°C
Operating temp. range	-40 ~ 125			°C
Storage temp. range	-40 ~ 125			°C
Long-term stability error		± 0.3	± 0.5	%FS/Year

*Testing at basic condition
 **Output/Span=full scale output - zero point
 ***Code 0A :Max. Zero and FS thermal Error: $\pm 1\% \text{FS} (@35^\circ\text{C})$

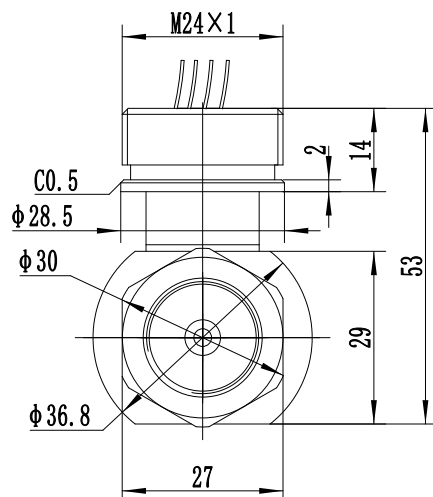
Outline Construction (Unit: mm)



Electrical Connection



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



Notes

1. The arrow-marked resistor bridge to the left of the dashed line is the bridge circuit of the die. R1~R5 are compensation resistors.
2. Please check the specification label enclosed with the products for the actual electrical connection method.

Order Guide

MDM291-10-0-L-2-C4-RTV

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

Code	Sealing
0	Null (Pressure connection C4)
EED	EPDM rectangular O-ring (pressure connection C1/C3)
FED	FKM rectangular O-ring (pressure connection C1/C3)
FVED	FVMQ rectangular O-ring (pressure connection C2)

Code	Potting
RTV	Potting with silicone RTV gel

Code	Pressure connection
C1	M20×1.5 male, face type seal
C2	G1/4 B male
C3	G1/2 B male
C4	G1/4 B female

Code	Electrical connection
2	100mm silicone wires

Code	Compensation
L	Temperature compensation (1.5mA excitation)

Notes

1. The default unit of the product is kPa. 1kPa=0.01bar.
2. High and low-pressure sides can be identified by the "H" and "L" markings.
3. The pressure on the high-pressure side should generally not be lower than on the low-pressure side during operation.
4. Protect the isolated diaphragm to prevent irreversible deformation.
5. Do not pull on the 6 pin wires.