MDM290 Piezo-resistive Differential Pressure Sensor

Applications

·Biomedical Instruments
·Venturi & Whirlpool Flowmeter
·Process Controls
·Hydraulic pressure & Switches

Features

·Pressure range：0～35kPa…3.5MPa
·OEM differential pressure sensitive element
·Integrated full stainless steel structure
·Tantalum diaphragm as options
·Constant power supply ≤2.0mADC
·Specifications Auto-tested by a computer system
·Compensation Zero & temperature characters

Performance

MDM290 piezo-resistive differential pressure oil-filled element is an OEM pressure sensor for measuring differential pressure, with its integrated structure and reliability, the sensor can be used for higher line pressure. Its high & low pressure port are all protected by an isolated diaphragm, it gives the possibility to contact with some corrosive and conductive liquids medium. The measured differential pressure on the insolated diaphragm via filled silicon oil is transfer to the silicon pressure element to achieve the precise measurements. The sensitive chip is a high accuracy and stability piezo-resistive pressure sensitive chip. The sensor is assembled on the advanced production line, auto-tested and compensated by a computer system. The sensor has good exchangeability with its general assembly size as identical with other products.

Specification

(Supply =1.5mA, Room Temp. =25℃)

	Min.	Typ.	Max.	Unit
0～35kPa…3.5MPa				
Non-linearity		0.10	0.25	±% of FS，BFSL
Repeatability		0.05	0.075	±% of FS，BFSL
Hysteresis		0.03	0.075	±% of FS，BFSL
0～100kPa…3.5MPa				
FS Output	70			mVDC
Zero Output	-2.0	0	+2.0	mVDC
TEMPERATURE				
Zero Temperature Error	in reference to 25℃			
≤100kPa		±0.75	±1.25	%FS
≥200kPa		±0.50	±0.75	%FS
FS Temperature Error	in reference to 25℃			
≤100kPa		±0.50	±0.75	%FS
≥200kPa		±0.50	±0.50	%FS
Current supply		1.5	2.0	mADC
Compensated Temp. Range	0 ～ 50℃			
Operating Temp. Range	-40 ～ 125℃			
Long-term stability		0.3	0.5	±% of FS，12 months
Medium	Gas & liquids medium compatible with 316 stainless steel and Viton.			

Electrical Specifications

Current Excitation:	≤2.0mADC
Electrical Connection:	Gold-plated Kovar leads or 6 colors silicon rubber wire
Output common mode Voltage:	50% of input
Input Impedance:	2kΩ~8kΩ
Output Impedance:	3.5kΩ~6kΩ
Response Time(10%~90%):	≤1 millisecond
Insulation Resistance:	100MΩ, 50VDC
Inhesion Frequency:	≤2kHz for high pressure port ≤1kHz for low pressure port

Physical specifications

Overpressure:	2XFS for high pressure port Not over 1.0MPa for low pressure port
Max. line pressure:	20MPa
Zero point drift / line pressure:	<0.5mV/MPa
Materials of Construction	
Diaphragm:	316L Stainless Steel; Tantalum (optional)
Housing:	316L Stainless Steel
O-rings:	Viton
Lead:	Gold-plated Kovar or silicon rubber flexible wire
Fill Fluid:	Silicon oil <0.5CC
Weight:	36g

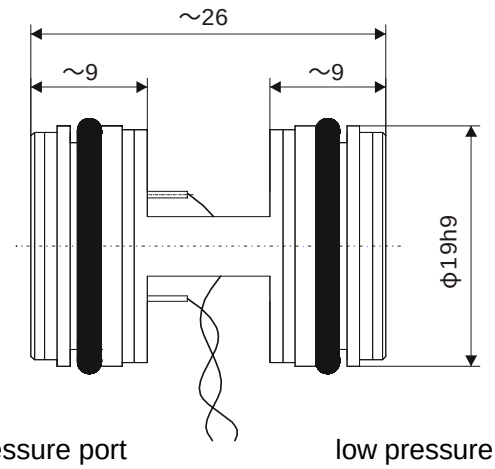
Environmental Conditions

Position Effect:	<0.2%FS of Zero shift for 90° tilt in any direction
Vibration Effect:	No change at 10gs' RMS, 20~2000Hz
Shock:	100g, for 10 millisecond
Life:	>100 million cycles

Reference Specifications

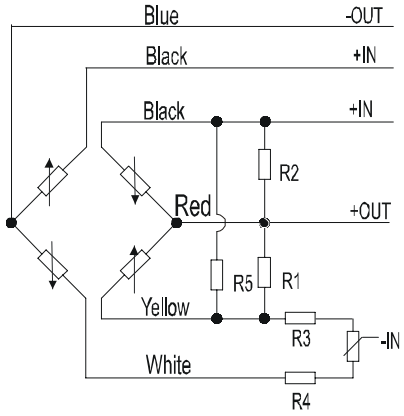
Media Temperature:	25±1℃
Ambient Temperature:	25±1℃
Vibration:	0.1g(1m/s/s)max
Humidity:	50%±10%
Ambient Pressure:	86~106kPa
Excitation Source:	1.5±0.0015mADC

Construction (unit: mm)



high pressure port low pressure port

Electrical Connection



Order Guide

MDM290 (TS) *	Piezo-resistive Pressure Sensor				
	Code	Pressure range	+ overpressure	- overpressure	Unit
	0A	0～35	70	35	kPa
	02	0～70	150	70	kPa
	03	0～100	200	100	kPa
	07	0～200	400	200	kPa
	08	0～350	700	350	kPa
	09	0～700	1400	700	kPa
	10	0～1.0	2.0	1.0	MPa
	12	0～2.0	4.0	1.0	MPa
	13	0～3.5	7.0	1.0	MPa
		Code	Temperature Compensation		
		M	With outer compensated resistors		
			Code	Electric connection	
			1	Kovar pins	
			2	6-color flexible 100mm wire**	

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Note: * If the user needs Tantalum diaphragm and stainless steel housing, please add TS behind MDM290, it's MDM290TS;

** This electric connection is recommended by our company; it is also the default electric connection.

Attention:

a. Optional version: MDM 290TS = Ta-diaphragm and stainless steel housing

b. The actual measuring differential pressure shall not bigger than 80% of the sensor range.

c. In the operation, the pressure on high pressure port shall be higher than on the low pressure port.

d. Take care of protecting the isolated diaphragm to avoid any distortion

e. Please do not pull the leading wires.

f. If used for line pressure higher than our specifications, please contact the factory.