Differential Pressure Transmitter for General Industry

MDM490

Applications

- Petroleum
- Chemical
- Electric power
- Hydrology

Features

- Intrinsically safe, Ex ia IICT6 Ga
- Laser welding, fully sealed
- Temperature compensation and aging, stable and reliable performance
- Zero and span externally adjustable
- CE, EAC, RoHS and CCS approved

Introduction

MDM490 Differential Pressure Transmitter features a solid-state piezoresistive sensing die. A sealed silicon oil-filled chamber between the die and the corrugated diaphragms ensures stable pressure transmission. Applied differential pressure is uniformly transferred to the die via the silicon oil. The chip is electrically connected to the signal processing circuit via lead wires. Utilizing the piezoresistive effect of semiconductor silicon, the transmitter converts differential pressure into an electrical signal. The integrated Wheatstone bridge provides excellent linearity, ensuring high-accuracy measurement.

Specifications

Range	0kPa ～ 40kPa…3.5MPa
Overpressure	Positive pressure ≤ 2 times FS; negative pressure not permitted
Max. static pressure	≤ 20MPa
Pressure type	Differential pressure
Accuracy	±0.5%FS
Long-term stability	±0.5%FS/year (≤ 200kPa)
	±0.2%FS/year (＞ 200kPa)
Operating temperature	-30°C ~ 80°C (connector type)
	-20°C ~ 70°C (cable type, cable material: PE, PVC)
	-20°C ~ 80°C (cable type, cable material: PUR)
Storage temperature	-40°C ~ 120°C (B1)
	-20°C ~ 85°C (B2)
Vibration	10g, 30Hz ～ 2000Hz
Shock	100g, 11ms
IP rating	IP65
Weight	≤ 400g

Measuring Range & Accuracy Table

Differential Pressure

Unit	Measuring Range	Accuracy	Overpressure	Code
KPa	0 - 40	±0.5%FS	100	K040
	0 - 50		100	K050
	0 - 60		100	K060
	0 - 70		100	K070
	0 - 80		200	K080
	0 - 90		200	K090
	0 - 100		200	K100
	0 - 160		300	K160
	0 - 200		400	K200
	0 - 250		500	K250
	0 - 300		600	K300
	0 - 400		1000	K400
	0 - 500		1000	K500
	0 - 600		1000	K600
	0 - 700		1400	K700
	0 - 800		1600	K800
	0 - 900		1800	K900
MPa	0 - 1	±0.5%FS	2	M1D0
	0 - 1.6		3	M1D6
	0 - 2		4	M2D0
	0 - 2.5		5	M2D5
	0 - 3		6	M3D0
	0 - 3.5		6	M3D5
psi	0 - 5	±0.5%FS	10	P005
	0 - 10		15	P010
	0 - 15		20	P015
	0 - 30		45	P030
	0 - 60		150	P060
	0 - 100		150	P100
	0 - 160		300	P160
	0 - 200		300	P200
	0 - 300		450	P300
	0 - 500		750	P500

Unit	Measuring Range	Accuracy	Overpressure	Code
mbar	0 - 400	±0.5%FS	1000	m400
	0 - 500		1000	m500
	0 - 600		1200	m600
	0 - 700		1400	m700
	0 - 800		1600	m800
	0 - 900		1800	m900
bar	0 - 1	±0.5%FS	2	B001
	0 - 1.6		3	B1D6
	0 - 2		4	B002
	0 - 2.5		5	B2D5
	0 - 3		6	B003
	0 - 4		10	B004
	0 - 5		10	B005
	0 - 6		10	B006
	0 - 7		14	B007
	0 - 8		16	B008
	0 - 9		18	B009
	0 - 10		20	B010
	0 - 16		30	B016
	0 - 20		40	B020
	0 - 25		50	B025
	0 - 30		60	B030
	0 - 35		60	B035

Test standard: GB/T 17614.1-2015/IEC60770-1:2010;
Ambient temperature: 20°C ± 5°C ;
Relative humidity: 45% ～ 75%

Thermal Error

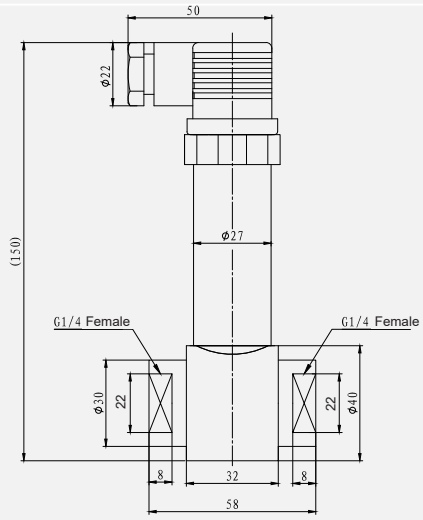
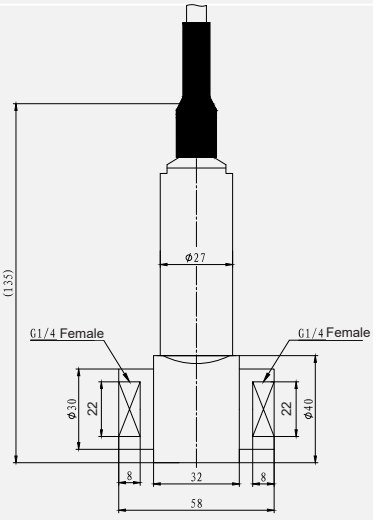
Zero thermal error	±0.03%FS/℃（≤ 100kPa）
	±0.02%FS/℃（> 100kPa）
Full span thermal error	±0.03%FS/℃（≤ 100kPa）
	±0.02%FS/℃（> 100kPa）

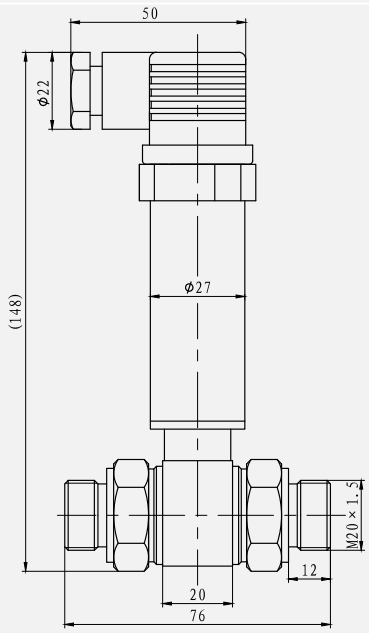
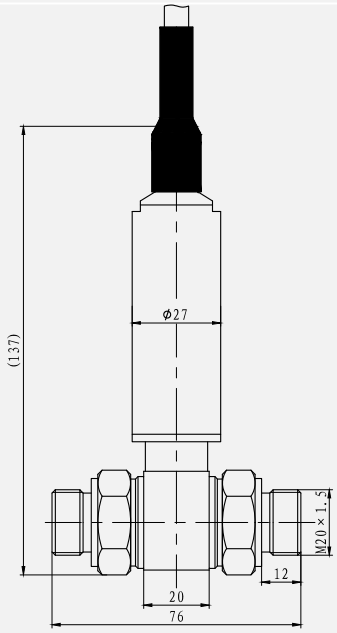
Output Signals

Output Signal	Supply Voltage	Output Type	Load Resistance
4mA~20mA DC(E)	15V~28V DC (intrinsically safe, powered by safety barrier	2-wire	≤(U-15)/0.02(Ω)
0mA~10mA DC(Q)		3-wire	
0mA~20mA DC(U)			
0V~5V DC(J)			> 10 kΩ
1V~5V DC(F)			
0V~10V DC(V)			

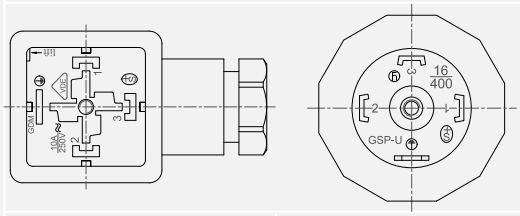
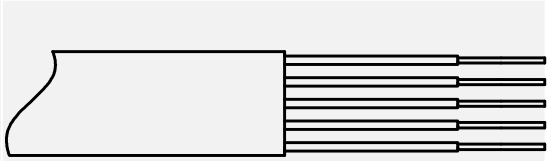
Outline Construction

Unit:mm

4-pin connector (B1)	Cable (B2)
	

4-pin connector (B1)	Cable (B2)
	

Electrical Connection

Definition	4-pin connector(B1)		Cable(B2)	
				
	Current 2-wire	Voltage 3-wire	Current 2-wire	Voltage 3-wire
+V	1	1	Red	Red
+OUT	2	3	Black	White
GND	Null	2	Null	Black

Construction Materials

Wetted parts
Isolated diaphragm: SS 316L
Pressure Port: SS 304/SS 316L
Non-wetted parts
Housing: Stainless steel 304/ Stainless steel 316L
Cable: PE/PUR/PVC

Order Guide

MDM490	Differential Pressure Transmitter
Range	Measuring range 0kPa ～ 40kPa…3.5MPa
XXXX	Range-specific code

Code	Output signal
E	4mA~20mA DC
Q	0mA~10mA DC
U	0mA~20mA DC
J	0V~5V DC
F	1V~5V DC
V	0V~10V DC

Code	Power supply
V13	15V~28V DC

Code	Accuracy
A2	±0.5%FS

Code	Construction material		
	Isolated diaphragm	Pressure port	Housing
22	SS 316L	SS 304	SS 304
24	SS 316L	SS 316L	SS 316L

Code	Process connection
C1	M20×1.5 Male
C2	G1/4 Male
C3	G1/2 Male
C4	G1/4 Female
C8	NPT1/4 Female

Code	Process connection sealing
1	NBR
2	FKM(Standard)
3	EPDM
N	None（C4、C8）

Code	Electrical connection
B1	4-pin connector
B2	Cable connection
B11	4-pin connector with 1.5 m PVC cable

Code	Electrical connection
P1	PE（Standard）
P2	PUR
P3	PVC
N	None（non-cable connection option）

Code	Cable length (Unit: m)
L001	1
L1D5	1.5
L002	2
L003	3
L005	5
L006	6
L007	7
L008	8
L009	9

MDM490	M3D5	E	V13	A2	22	C1	2	B2	P1	The complete spec.

	Code	Cable length (Unit: m)			
	L010	10			
	N	None（non-cable connection option）			
		Code	Certification requirement ①		
		i	Intrinsically safe explosion-proof Ex ia IICT6 Ga		
		T	Ship-use Ex ia IICT6 Ga, Ex d IICT6 Gb		
		i T	Intrinsically safe and ship-use		
		N	None		
			Code	Accessory	
			N	No accessories required	
			M6	M6 digital indicator	
			M7	M7 digital indicator	
			Yb3	Yb junction box (3-core terminals)	
			Yc3	MS200 (3-core terminals)	
			Yd	PD140	
			YeM6	Ye（M6）	
			YeM7	Ye（M7）	
			Ye	Ye (without indicator)	
			MS01	Polymer plug	
	L001	i	Ye(M6)		The complete spec.

Notes

1、" ① " refers to certification requirements. For the intrinsically safe explosion-proof type, current output is available only. The product can be intrinsically safe explosion-proof and suitable for ship-use simultaneously.

2、The minimum operating temperature of FKM O-ring is -20°C, while EPDM O-ring is -40°C.

3、When ordering transmitters with YeM6 or YeM7 indicator, increase the power supply by 5V DC. For example, if the original V13 supply is 15V ~ 28V DC, the supply for YeM6 or YeM7 should be 20V ~ 33V DC.

4、The ambient temperature of transmitter should be -20°C~ 70°C with M6 indicator, while -10°C~ 60°C with M7 indicator.

5、To ensure safe operation, install a three-valve manifold between the measurement point and the transmitter
to allow gradual and uniform pressure application to the differential pressure transmitter's positive and negative chambers.

6、Ensure the static pressure at the measurement point does not exceed 20MPa, and the overpressure in the transmitter's chambers remains within specified limits.

7、 For other special requirements, please consult with the MICROSENSOR and specify them in the order.