

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	≤ 20 MPa
Pressure type	Differential pressure
Accuracy	$\pm 0.5\%$ FS
Long-term stability	$\pm 0.5\%$ FS/year (≤ 200 kPa)
	$\pm 0.2\%$ FS/year (> 200 kPa)
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	≤ 400 g

Measuring Range & Accuracy Table

Differential Pressure									
Unit	Measuring Range	Accuracy	Overpressure	Code	Unit	Measuring Range	Accuracy	Overpressure	Code
KPa	0 - 40	±0.5%FS	100	K040	mbar	0 - 400	±0.5%FS	1000	m400
	0 - 50		100	K050		0 - 500		1000	m500
	0 - 60		100	K060		0 - 600		1200	m600
	0 - 70		100	K070		0 - 700		1400	m700
	0 - 80		200	K080		0 - 800		1600	m800
	0 - 90		200	K090		0 - 900		1800	m900
	0 - 100		200	K100	bar	0 - 1	±0.5%FS	2	B001
	0 - 160		300	K160		0 - 1.6		3	B1D6
	0 - 200		400	K200		0 - 2		4	B002
	0 - 250		500	K250		0 - 2.5		5	B2D5
	0 - 300		600	K300		0 - 3		6	B003
	0 - 400		1000	K400		0 - 4		10	B004
	0 - 500		1000	K500		0 - 5		10	B005
	0 - 600		1000	K600		0 - 6		10	B006
	0 - 700		1400	K700		0 - 7		14	B007
	0 - 800		1600	K800		0 - 8		16	B008
	0 - 900		1800	K900		0 - 9		18	B009
MPa	0 - 1	±0.5%FS	2	M1D0		0 - 10		20	B010
	0 - 1.6		3	M1D6		0 - 16		30	B016
	0 - 2		4	M2D0		0 - 20		40	B020
	0 - 2.5		5	M2D5		0 - 25		50	B025
	0 - 3		6	M3D0		0 - 30		60	B030
	0 - 3.5		6	M3D5		0 - 35		60	B035
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					

Test standard: GB/T 17614.1-2015/IEC60770-1:2010;

Ambient temperature: 20°C ± 5°C ;

Relative humidity: 45% ~ 75%

Thermal Error

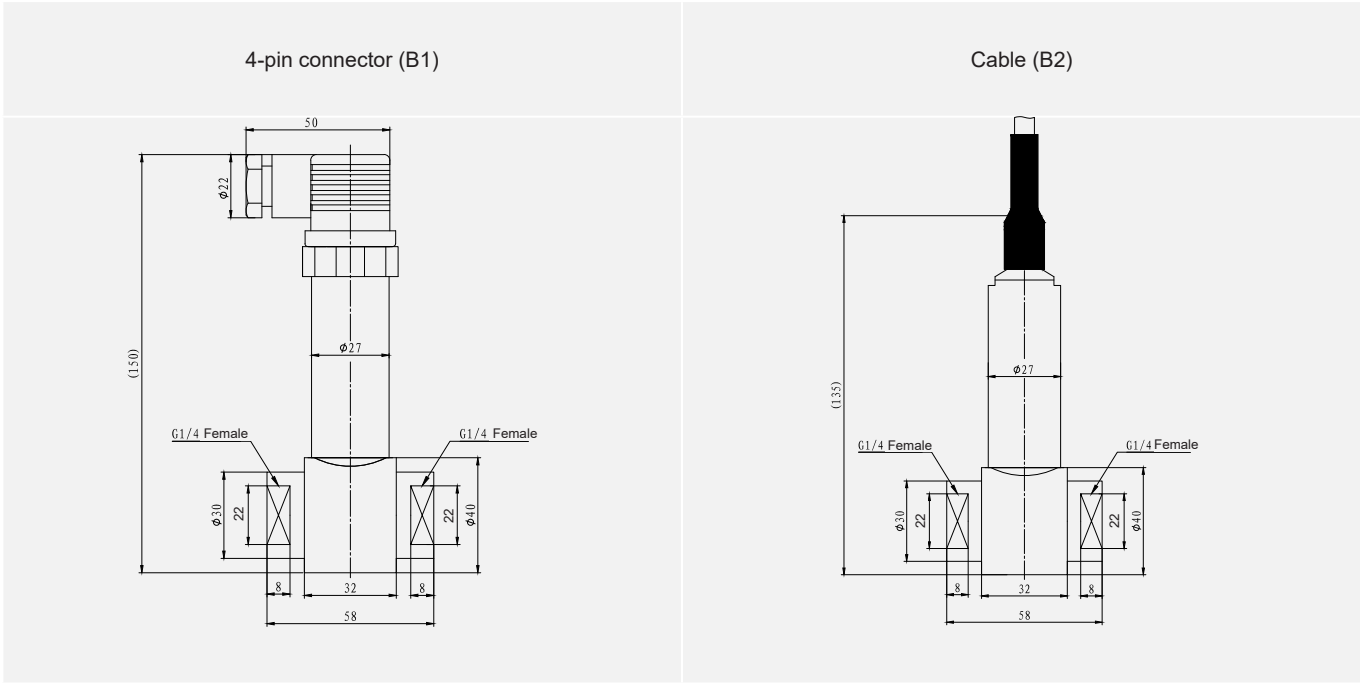
Zero thermal error	$\pm 0.03\%FS/^{\circ}C$ ($\leq 100kPa$)
	$\pm 0.02\%FS/^{\circ}C$ ($> 100kPa$)
Full span thermal error	$\pm 0.03\%FS/^{\circ}C$ ($\leq 100kPa$)
	$\pm 0.02\%FS/^{\circ}C$ ($> 100kPa$)

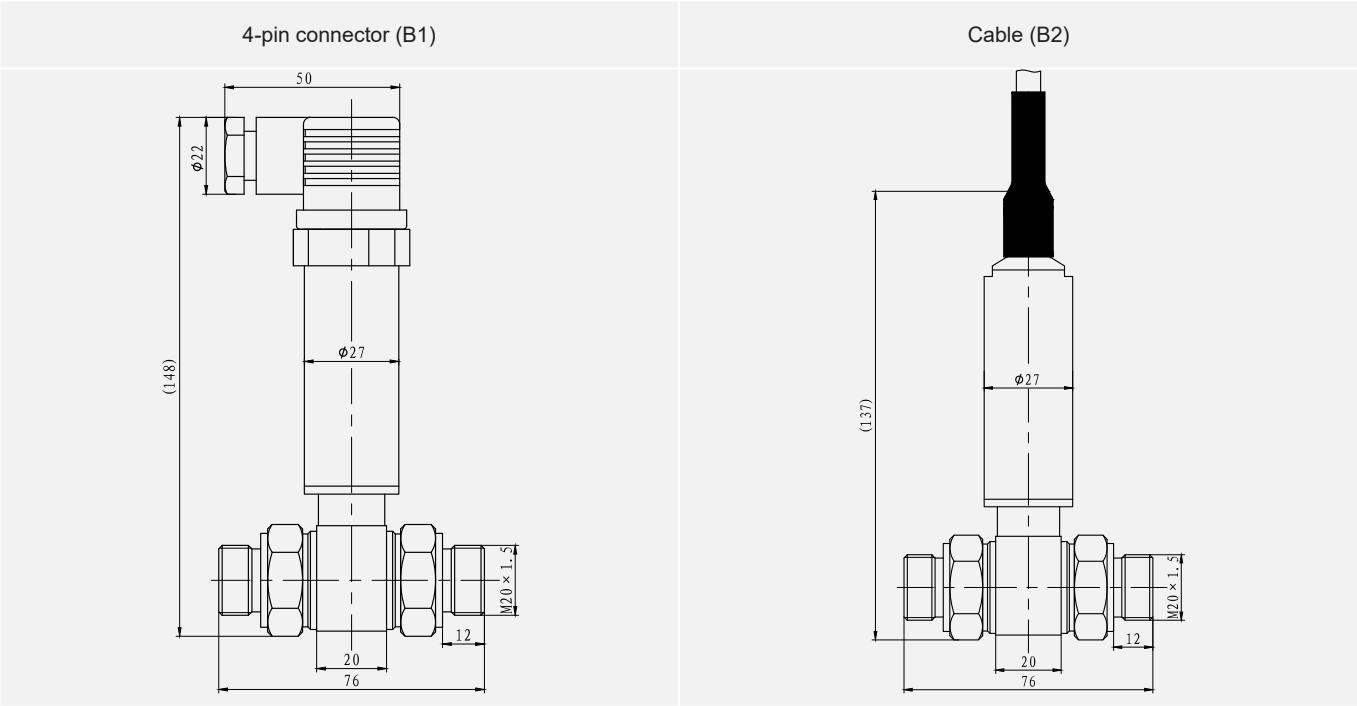
Output Signals

Output Signal	Supply Voltage	Output Type	Load Resistance
4mA~20mA DC(E)	15V~28V DC (intrinsically safe, powered by safe-ty 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





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								
			Construction material								
			Code	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.

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