

High Accuracy Analog Output Pressure Transmitter MPM480



Applications

- Mechanical manufacturing
- Hydraulic and pneumatic control technology
- Marine industry
- Petroleum and petrochemical industry
- Natural gas industry
- Municipal and environmental engineering

Features

- Support reversed-polarity, overcurrent and overvoltage protection, conforming EMI protection requirements
- Intrinsic safety type, Ex ia IIC T6 Ga
- Explosion-proof type, Ex d IIC T6 Gb
- CE, RoHS and CCS approved

Introduction

MPM480 Pressure Transmitter utilizes a stainless steel isolated piezoresistive OEM pressure sensor as the signal measuring element. It is available for a wide temperature compensation by using automatic computer test and laser trimming technology. It includes a signal processing circuit that is housed in a stainless steel housing and converts the milli-volt signal into a standard output signal. A rigid testing and screening is required in the whole manufacturing process of the product from the original components, semi-finished to the final finished product for stable and reliable performance. The transmitter undergoes stringent testing and aging at every stage—components, semi-finished, and finished products—ensuring stable and reliable performance.



Specifications

Range	-100kPa...0kPa ~ 10kPa...100MPa
Pressure type	Gauge G, Absolute A, Sealed Gauge S, Positive/Negative N
Accuracy	Refer to "Measuring Range & Accuracy Table"
Long-term stability	±0.2%FS/year
Operating temperature	-30°C ~ 80°C (B1, B3)
	-20°C ~ 70°C (B2, cable material: PE, PVC)
	-20°C ~ 80°C (B2, cable material: PUR)
	-10°C ~ 60°C (Intrinsically safe explosion-proof)
	-20°C ~ 60°C (Flameproof)
Storage temperature	-40°C ~ 120°C
	-20°C ~ 85°C (B2)
Vibration	10g, 55Hz ~ 2000Hz
Shock	100g, 11ms
IP rating	IP65
Weight	≤ 375g

Measuring Range & Accuracy Table

Gauge Pressure G									
Unit	Measuring Range	Accuracy	Overpressure	Code	Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	0 - 7	±1%FS	15	K007	mbar	0 - 70	±1%FS	150	m070
	0 - 10		20	K010		0 - 100		200	m100
	0 - 20		40	K020		0 - 200	±0.5%FS	500	m200
	0 - 25	±0.5%FS	50	K025		0 - 250		500	m250
	0 - 40		100	K040		0 - 400		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	±0.25%FS	300	K160		0 - 1.6		3	B1D6
	0 - 200		400	K200		0 - 2	±0.25%FS	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	±0.25%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 - 1.5	±1%FS	3	P1D5					
	0 - 3	±0.5%FS	6	P003					
	0 - 5		10	P005					
	0 - 10		15	P010					
	0 - 15		20	P015					
	0 - 30	±0.25%FS	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					

Sealed Gauge Pressure S

Unit	Measuring Range	Accuracy	Overpressure	Code	Unit	Measuring Range	Accuracy	Overpressure	Code
MPa	0 - 3.5	±0.25%FS	7	M3D5	bar	0 - 35	±0.25%FS	70	B035
	0 - 4		10	M4D0		0 - 40		100	B040
	0 - 5		10	M5D0		0 - 50		100	B050
	0 - 6		10	M6D0		0 - 60		100	B060
	0 - 7		10	M7D0		0 - 70		100	B070
	0 - 8		15	M8D0		0 - 80		150	B080
	0 - 9		15	M9D0		0 - 90		150	B090
	0 - 10		15	M010		0 - 100		150	B100
	0 - 16		30	M016		0 - 160		300	B160
	0 - 20		30	M020		0 - 200		300	B200
	0 - 25		37.5	M025		0 - 250		450	B250
	0 - 30		45	M030		0 - 300		525	B300
	0 - 35		52.5	M035		0 - 350		375	B350
	0 - 40		60	M040		0 - 400		600	B400
	0 - 50		75	M050		0 - 500		750	B500
	0 - 60		90	M060		0 - 600		900	B600
	0 - 70		100	M070		0 - 700		1000	B700
	0 - 80		100	M080		0 - 800		1000	B800
	0 - 90		100	M090		0 - 900		1000	B900
	0 - 100		110	M100		0 - 1000		1100	B01K

psi	0 - 500	±0.25%FS	750	P500
	0 - 600		1500	P600
	0 - 700		1500	P700
	0 - 800		1500	P800
	0 - 900		1500	P00
	0 - 1000		1500	P01K
	0 - 2000		3000	P02K
	0 - 3000		4500	P03K
	0 - 4000		6000	P04K
	0 - 5000		7500	P05K
	0 - 6000		9000	P06K
	0 - 7000		10500	P07K
	0 - 8000		12000	P08K
	0 - 9000		13500	P09K
	0 - 10000		15000	P10K

Absolute Pressure A

Unit	Measuring Range	Accuracy	Overpressure	Code	Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	0 - 40	±1%FS	100	K040	bar	0-1	±0.5%FS	2	B001
	0 - 50		100	K050		0-1.6		3	B1D6
	0 - 60		100	K060		0-2		4	B002
	0 - 70		100	K070		0-2.5		5	B2D5
	0 - 80		200	K080		0-3		6	B003
	0 - 90		200	K090		0-4		10	B004
	0 - 100		200	K100		0-5		10	B005
	0 - 160	±0.5%FS	300	K160		0-6		10	B006
	0 - 200		400	K200		0-7		14	B007
	0 - 250		500	K250		0-8		16	B008
	0 - 300		600	K300		0-9		18	B009
	0 - 400		1000	K400		0-10		20	B010
	0 - 500		1000	K500		0-16	±0.25%FS	30	B016
	0 - 600		1000	K600		0-20		40	B020
	0 - 700		1400	K700		0-25		50	B025
	0 - 800		1600	K800		0-30		60	B030
	0 - 900		1800	K900		0-35		60	B035
MPa	0 - 1	±0.5%FS	2	M1D0		0-40		100	B040
	0 - 1.6	±0.25%FS	3	M1D6		0-50		100	B050
	0 - 2		4	M2D0		0-60		100	B060
	0 - 2.5		5	M2D5		0-70		140	B070
	0 - 3		6	M3D0		0-80		160	B080
	0 - 3.5		6	M3D5		0-90		180	B090
	0 - 4		6	M4D0		0-100		200	B100
	0 - 5		10	M5D0		0-160		300	B160
	0 - 6		10	M6D0		0-200		300	B200
	0 - 7		14	M7D0		0-250		375	B250
	0 - 8		16	M8D0		0-300		350	B300
	0 - 9		18	M9D0		0-350		525	B350
	0 - 10	±0.25%FS	20	M010		0-400		600	B400
	0 - 16		30	M016		0-500		750	B500
	0 - 20		30	M020		0-600		900	B600
	0 - 25		37.5	M025		0-700		1000	B700
	0 - 30		45	M030		0-800		1000	B800
	0 - 35		52.5	M035		0-900		1000	B900
	0 - 40		60	M040		0-1000		1100	B01K
	0 - 50		75	M050	psi	0 - 5	±1%FS	10	P005
	0 - 60		90	M060		0 - 10		15	P010
	0 - 70		100	M070		0 - 15		20	P015
	0 - 80		100	M080		0 - 30	±0.5%FS	45	P030
	0 - 90		100	M090		0 - 60		150	P060
	0 - 100		110	M100		0 - 100		150	P100
mbar	0 - 400	±1%FS	1000	m400		0 - 160	±0.25%FS	300	P160
	0 - 500		1000	m500		0 - 200		300	P200
	0 - 600		1200	m600		0 - 300		450	P300
	0 - 700		1400	m700		0 - 400		750	P400
	0 - 800		1600	m800		0 - 500		750	P500
	0 - 900		1800	m900		0 - 600		1500	P600
						0 - 700		1500	P700
						0 - 800		1500	P800
						0 - 900		1500	P900
						0 - 1000		1500	P01K
						0 - 2000		3000	P02K
						0 - 3000		4500	P03K
						0 - 4000		6000	P04K
						0 - 5000		7500	P05K
						0 - 6000		9000	P06K
						0 - 7000		10500	P07K
						0 - 8000		12000	P08K
						0 - 9000		13500	P09K
						0 - 10000		15000	P10K

Positive/Negative Pressure N									
Unit	Measuring Range	Accuracy	Overpressure	Code	Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	- 25 - 0	±1%FS	50	V025	bar	- 0.25 - 0	±1%FS	0.5	VD25
	- 40 - 0		100	V040		- 0.4 - 0		1	V0D4
	- 60 - 0		100	V060		- 0.6 - 0		1	V0D6
	- 100 - 0		150	V100		- 1 - 0		1.5	V1D0
	- 3 - +3		10	C033		- 0.03 - +0.03		0.1	C0D3
	- 5 - +20		30	C520		- 0.05 - +0.2		0.3	C052
	- 5 - +25		30	C525		- 0.05 - +0.25		0.3	C5D5
	- 15 - +15		30	C015		- 0.15 - +0.15		0.3	CD15
	- 20 - +20		30	C020		- 0.2 - +0.2		0.3	C0D2
	- 25 - +25		50	C025		- 0.25 - +0.25		0.5	CD25
	- 30 - +30		50	C030		- 0.3 - +0.3		0.5	C003
	- 50 - +50		100	C050		- 0.5 - +0.5		1	C005
	- 100 - +60		150	C16B		- 1 - +0.6		1.5	C0D6
	- 100 - +100		300	C11B		- 1 - +1		2	C101
	- 100 - +150		300	C1B5		- 1 - +1.5		3	C1D5
	- 100 - +300	±0.5%FS	500	C13B		- 1 - +3	±0.5%FS	5	C103
	- 100 - +500		1000	C15B		- 1 - +5		10	C105
	- 100 - +900		2000	C19B		- 1 - +9		20	C109
	- 100 - +1000		2500	C11K		- 1 - +10		25	C110
	- 100 - +1500		3000	C1K5		- 1 - +15		30	C115
	- 100 - +1600		3000	C1K6		- 1 - +16		30	C116
	- 100 - +2000		3000	C12K		- 1 - +20		30	C120
	- 100 - +2400		5000	C24K		- 1 - +24		50	C124
	- 100 - +2500		5000	C25K		- 1 - +25		50	C125
	- 100 - +3000		6000	C30K		- 1 - +30		60	C130
	- 100 - +3500		7000	C35K		- 1 - +35		70	C135

psi	-15 - 0	±1%FS	20	PF00
	-15 - +10		20	PF10
	-15 - +15		45	PF15
	-15 - +30	±0.5%FS	150	PF30
	-15 - +50		150	PF50
	-15 - +80		300	PF80
	-15 - +100		300	PF1B
	-15 - +150		450	P1B5

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

Ambient temperature: 20°C ± 5°C

Relative humidity: 45% ~ 75%

For other measurement ranges, please contact MICROSENSOR.

Thermal Error

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

Output Signals

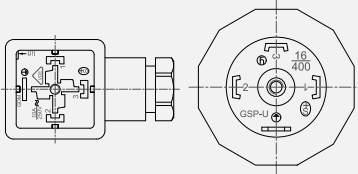
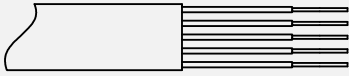
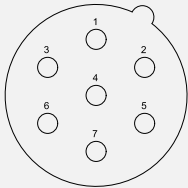
Output Signal	Supply Voltage	Output Type	Load Resistance
4mA~20mA DC(E)	15V~28V DC (Intrinsically safe, powered by safety barrier)	2-wire	$\leq (U-15)/0.02(\Omega)$
0mA~10mA DC(Q)		3-wire	
0mA~20mA DC(U)			
0V~5V DC(J)			$> 100\text{ k}\Omega$
1V~5V DC(F)			
0V~10V DC(V)			

Outline Construction

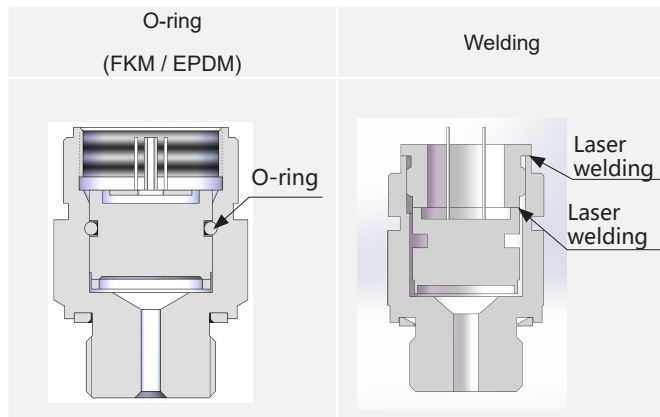
Unit: mm

Flameproof (d)	4-pin Connector (B1)	Cable (B2)	7-pin Connector (B3)

Electrical Connection

Definition	4-pin Connector (B1)		Cable (B2)		7-pin Connector (B3)	
						
	Current 2-wire	Voltage 3-wire	Current 2-wire	Voltage 3-wire	Current 2-wire	Voltage 3-wire
(+V)	1	1	Red	Red	1	1
(+OUT)/(-V)	2	3	Black	White	2	4
(GND)	Null	2	Null	Black	Null	2

Sensor Sealing



Construction Materials

Wetted parts

Isolated diaphragm: SS 316L/ Tantalum/Titanium

Pressure port: SS 304/SS 316L/Hastelloy C/Titanium

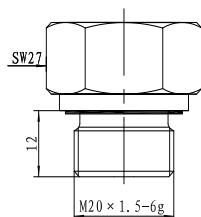
Non-wetted parts

Housing: SS 304/ SS 316L/Titanium

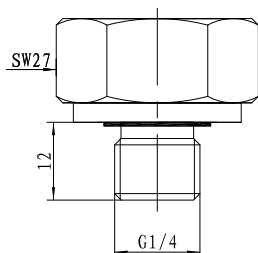
Cable: PE/PUR

Process Connection

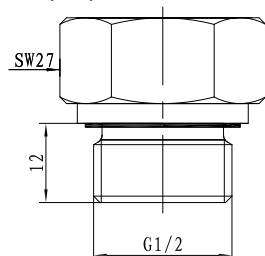
M20× 1.5 Male, face seal (C1)



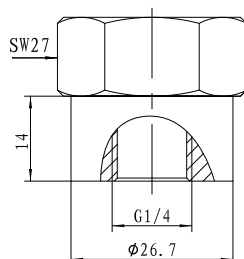
G1/4 Male, face seal (C2)



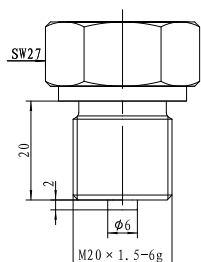
G1/2 Male, face seal (C3)



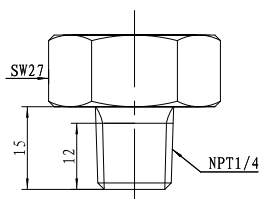
G1/ 4 Female, waterline seal (C4)



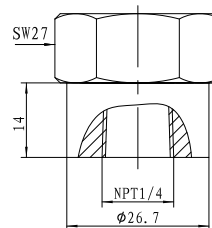
M20×1.5 Male, Waterline (C5)



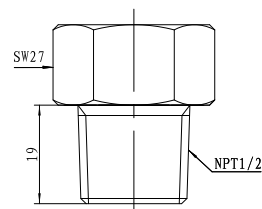
NPT1/4 Male (C6)



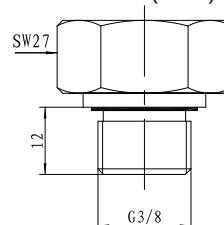
NPT1/ 4 Female (C8)



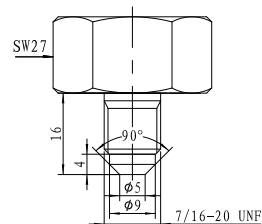
NPT1/2 Male (C10)



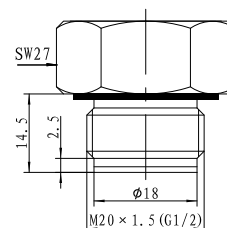
G3/ 8 Male, waterline seal (C16)



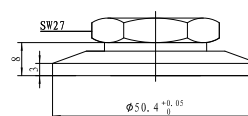
7/16- 20 UNF Male, 90° cone seal (C26)



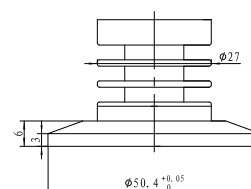
M20×1.5 or G1/2 flush diaphragm (PC1/PC3)



DN25 Clamp (PD1)



DN25 Clamp connection with heat sink (PD1s)



Order Guide

MPM480	Pressure Transmitter										
	Code	Pressure type									
	G	Gauge/Sealed gauge pressure									
	S										
	A	Absolute pressure									
	N	Negative pressure									
	Range	Measuring range -100kPa...0kPa ~ 10kPa...100MPa									
	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						
				A1	±0.25%FS						
				A2	±0.5%FS						
				A3	±1%FS						
					Construction material						
				Code	Isolated diaphragm		Pressure port		Housing		
				22	SS 316L		SS 304		SS 304		
				23	SS 316L		SS 316L		SS 304		
				24	SS 316L		SS 316L		SS 316L		
				25	Tantalum Ta1		SS 316L		SS 304		
				35	Tantalum Ta1		Hastelloy C		SS 304		
				40	Titanium TA1		Titanium TC4		Titanium TC4		
					Code	Sensor sealing					
					00	FKM (standard)					
					01	EPDM (optional by operating temp. and medium compatibility)					
					02	Welding (optional by operating temp. and medium compatibility)					
					03	Integral sintering (optional only for PC1, PC3, PD1, and PD1s)					
						Code	Process connection				
						C1	M20× 1.5 Male, face seal				
						C2	G1/4 Male, face seal				
						C3	G1/2 Male, face seal				
						C4	G1/ 4 Female				
						C5	M20×1.5 Male, waterline seal				
						C6	NPT1/4 Male				
						C8	NPT1/ 4 Female				
						C10	NPT1/2 Male				
						C16	G3/8 Male, face seal				
						C26	7/16-20 UNF Male, 90° cone seal				
						PC1	Flush diaphragm M20× 1.5 Male		0kPa ~ 40kPa...35MPa		
						PC3	Flush diaphragm G1/ 2 Male				
						PD1	Hygienic DN25 clamp connection				
						PD1S	Hygienic DN25 clamp connection with heat sink		0kPa ~ 40kPa...3.5MPa		

Order Guide

Code	Process connection sealing		
N	None (not optional for C4, C6, C8, C10, C26, PD1, and PD1s)		
1	NBR		
2	FKM (standard)		
3	EPDM		
4	Copper (C5 required)		
Code	Electrical connection		
B1	4-pin connector		
B11	4-pin Connector with 1.5 m PVC cable		
B2	Cable		
B21	Cable connection with M20×1.5 fixed thread		Flameproof only, select one
B22	Cable connection with NPT1/ 2 fixed thread		
B23	Cable connection with G1/ 2 fixed thread		
B3	7-pin connector		
B31	7-pin connector with 1.5 m PVC cable		
Code	Cable material (optional only for B2 cable)		
N	None (non-cable connection option)		
P1	PVC		
P2	PUR		
Code	Cable length (Unit: m)		
N	None (non-cable connection option)		
L01	1		
L1.5	1.5		
L02	2		
L03	3		
L04	4		
L05	5		
L06	6		
L07	7		
L08	8		
L09	9		
L10	10		
Code	Certification requirement ^①		
N	None		
i	Intrinsically safe explosion-proof Ex ia IICT6 Ga		
T	Ship-use		
d	Flameproof Ex db IICT6 Gb		
Code	Accessory		
N	No accessories required		
M6	M6 digital indicator (only for 4mA ~ 20mA DC output non- explosion proof or non-ship-use products with B1 electrical connection)		
M7	M7 digital indicator (only for 4mA ~ 20mA DC output non- explosion proof or non-ship-use products with B1 electrical connection)		
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		
D01	Damping gasket		
2	B2	P1	L10
			N
			Ye
The complete spec.			

The complete spec.

Notes

1. "①" refers to certification requirements. The details are:

For the intrinsically safe explosion-proof type, current output is available only.

The product can be intrinsically safe explosion-proof/flameproof and suitable for ship-use simultaneously.

2. Refer to the "Measuring Range" on page 2 for product accuracy.

3. The sensor O-ring material options are FKM and EPDM. The minimum operating temperature for FKM is -20°C, while for EPDM, it is -40°C.

4. When ordering the transmitter with M6 or M7 indicator, power supply should $\geq 20V$ DC.

5. The ambient temperature of transmitter should be -20°C~ 70°C with M6 indicator, while -10°C~ 60°C with M7 indicator. Indicator settings refer to its order guide, which can be obtained from the MICROSENSOR website.

6. If a metrology verification certificate is required, or there are any other special requirements, please consult with the MICROSENSOR and specify them in the order.