

Digital Pressure Transmitter for General Industry

MPM3801GRF



Applications

- Industrial process control
- Gas flowmeter industry
- Smart pressure measurement instrument
- Medical device
- IoT

Features

- Low power consumption with temperature compensation
- Full stainless steel and compact
- Standard I²C or SPI protocol
- Suitable for gas roots flowmeter, oval gear flowmeter
- RoHS approved

Introduction

MPM3801GRF Digital Pressure Transmitter utilizes an MPM3801 oil-filled stainless steel corrugated diaphragm pressure sensor, enclosed within a stainless steel housing. All wetted parts are made of stainless steel, ensuring excellent corrosion resistance and long-term stability. The sensor is fully temperature-compensated across its entire operating range, guaranteeing zero stability, sensitivity, linearity, and overall performance reliability over a wide temperature spectrum.

Specifications

Range	-100kPa...0kPa - 7kPa...7MPa
Overpressure	≤ 2 times FS
Pressure type	Gauge G, Absolute A, Sealed Gauge S, Positive/Negative N
Pressure accuracy	Refer to "Measuring Range & Accuracy Table"
Temperature accuracy	±1.5°C (reference value under constant temperature conditions)
Long-term stability	±0.2%FS/year
Compensation temperature	-10°C ~ 50°C
Operating temperature	-20°C ~ 80°C
Storage temperature	-20°C ~ 85°C
Vibration	10g, 20Hz - 2000Hz
Shock	100g, 11ms
IP rating	IP67
Weight	≤100g

Measuring Range & Accuracy Table

Gauge Pressure G

Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	0 - 7	±1%FS	15	K007
	0 - 10		20	K010
	0 - 20		40	K020
	0 - 25		50	K025
	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	±0.25%FS	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	±0.25%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 - 1.5	±1%FS	3	P1D5
	0 - 3		6	P003
	0 - 5		10	P005
	0 - 10	±0.5%FS	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

Unit	Measuring Range	Accuracy	Overpressure	Code
mbar	0 - 70	±1%FS	150	m070
	0 - 100		200	m100
	0 - 200		500	m200
	0 - 250		500	m250
	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	±0.25%FS	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

Sealed Gauge Pressure S

Unit	Measuring Range	Accuracy	Overpressure	Code	Unit	Measuring Range	Accuracy	Overpressure	Code
MPa	0 - 3.5	±0.5%FS	7	M3D5	bar	0 - 35	±0.5%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

psi	0 - 500	±0.5%FS	750	P500
	0 - 600		1500	P600
	0 - 700		1500	P700
	0 - 800		1500	P800
	0 - 900		1500	P900
	0 - 1000		1500	P01K

Absolute Pressure A

Unit	Measuring Range	Accuracy	Overpressure	Code	Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	0 - 40	±0.5%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	±0.25%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
						0-40		100	B040
						0-50		100	B050
						0-60		100	B060
						0-70		140	B070

MPa	0 - 1	±0.25%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
	0 - 4		6	M4D0
	0 - 5		10	M5D0
	0 - 6		10	M6D0
	0 - 7		14	M7D0

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

psi	0 - 5	±0.5%FS	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 - 400		750	P400
	0 - 500		750	P500
	0 - 600		1500	P600
	0 - 700		1500	P700
	0 - 800		1500	P800
	0 - 900		1500	P900
	0 - 1000		1500	P01K

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	±0.5%FS	150	C16B		- 1 - +0.6	±0.5%FS	1.5	C0D6
	- 100 - +100		300	C11B		- 1 - +1		2	C101
	- 100 - +150		300	C1B5		- 1 - +1.5		3	C1D5
	- 100 - +300		500	C13B		- 1 - +3		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		150	PF30
	-15 - +50		150	PF50
	-15 - +80		300	PF80
	-15- +100		300	PF1B
	-15 - +150	±0.5%FS	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 the MICROSENSOR.

Output Signals

Output signal	Power supply	Output digits	Output digital value	Power consumption
I ² C	3.3V±0.1V DC (default)	14-bit (Max. digital value 16383)	1638 (zero, 10%) ~ 14746 (span, 90%)	5μA (standby) 3mA (operating) @25°C
	5V±0.1V DC			
SPI	3.3V±0.1V DC (default))			
	5V±0.1V DC			

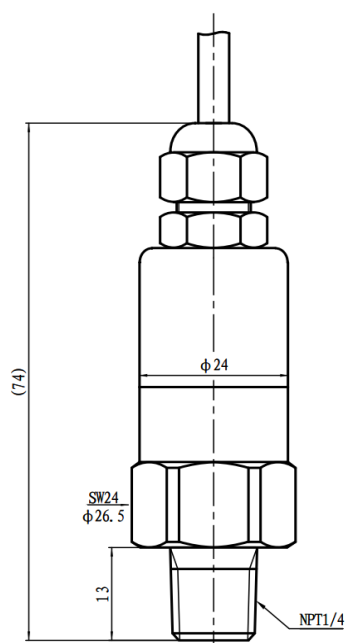
Note:

The sensor provides a 14-bit pressure output with a max. digital value of 16,383. To allow for overpressure tolerance, the effective output range is set to 10%–90% of max. digital value, corresponding to a zero of 1,638 and a span of 14,746.

Outline Construction

Electrical Connection

Unit: mm



Color	I ² C	SPI
Black	V-	V-
Red	V+	V+
Green	SCL	SCLK
White	SDA	MISO
Yellow	None	SS

Construction Materials

Wetted parts

Isolated diaphragm: SS 316L

Pressure port: SS 304/SS 316L

Non-wetted parts

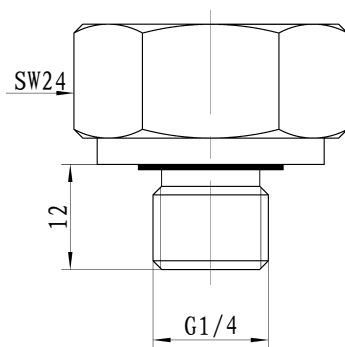
Housing: Stainless steel 304/ Stainless steel 316L

Cable: PUR

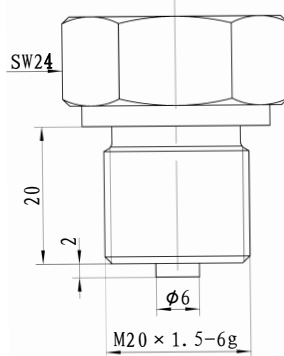
Process Connection

Unit: mm

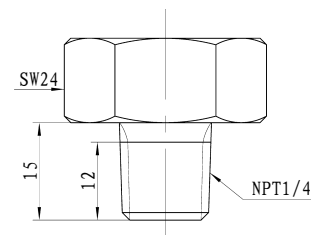
G1/4 Male, face seal (C2)



M20×1.5 Male, waterline seal (C5)



NPT1/4 Male (C6)



Order Guide

MPM3801GRF Digital Pressure Transmitter												
MPM3801GRF	Code		Pressure type									
	G		Gauge/ Sealed gauge pressure									
	S											
	A		Absolute pressure									
	N		Negative pressure									
	Range		-100kPa...0kPa - 10kPa...7MPa									
	XXXX		Range-specific code									
	Code		Output signal									
	C		I ² C									
	D		SPI									
	Code		Power supply									
	V6		5V±0.1V DC									
	V7		3.3V±0.1V DC									
	Code		Accuracy									
	A1		±0.25%FS									
	A2		±0.5%FS									
	A3		±1%FS									
	Code		Construction material									
	22		Diaphragm 316L Pressure port 304 Housing 304									
	24		Diaphragm 316L Pressure port 316L Housing 316L									
	Code		Sensor sealing									
	00		FKM (standard)									
	01		EPDM (optional for special media based on compatibility)									
	Code		Process connection									
	C2		G1/4 Male									
	C5		M20×1.5 Male - waterline									
	C6		NPT1/4 Male									
	Code		Process connection sealing									
	N		None (except for C6)									
	1		NBR									
	2		FKM (standard, except for C5, C6)									
	3		EPDM									
	4		Copper (C5 required)									
	Code		Cable material									
	P2		PUR									
	Code		Cable length (Unit: m)									
	L001		1									
	L1D5		1.5 (standard)									
	L002		2									
MPM3801GRF	G	M1D6	C	V7	A1	22	00	C1	2	P2	L001	The complete spec.

Notes

- 1、MPM3801GRF cable material is PUR, the recommended cable length ≤2m
- 2、The maximum operating range is 7 MPa. For applications requiring a higher range, please select a suitable alternative.
- 3、For special requirements, please feel free to contact us and specify it in the order.