

MPTW 500 Series

Miniature Pressure Sensor

Applications

Aerospace
Automobile Manufacturing
Petroleum and Petrochemical
Industrial Automation
Shipbuilding
Construction Machinery

Features

High Precision and Stability
Superior Environmental Adaptability
Flexible Customization
Fast Response and Low Power Consumption
Comprehensive Safety Certification
High Frequency



Profiles

The MPTW500 Series miniature pressure sensor developed by DABEY Tech is a high-precision multi-functional sensor designed for wide temperature range applications.

Adopting state-of-the-art MEMS silicon micromachining chips, proprietary oil-filled dielectric isolation, robust anti-interference circuit layout, and all-stainless steel internal & external structural interfaces, the MPTW500 Series delivers outstanding measurement accuracy and superior long-term reliability, compatible with a broad spectrum of measuring media.

Equipped with an integrated electronic preamplifier featuring a 10 kHz frequency bandwidth, this sensor series boasts ultra-compact dimensions, extensive measuring ranges and excellent overpressure resistance.

It supports multiple electrical output signals and output configurations, and is available for two pressure measurement types: absolute pressure and sealed gauge pressure.

DATASHEET
PRESSURE MEASUREMENT

Dabey Technology Co., LTD
Sales@dabeysensor.com
86-18890003683
www.dabeysensor.com

Performance Parameters

Main Performance Indicators

Specification	Description	
Range	Absolute Pressure or Sealed Gauge Pressure as below	
Units	Mpa	Psi
Range	0-2	0-300
	0-5	0-700
	0-10	0-1500
	0-35	0-5000
	0-70	0-10000
	Note: Other non-standard ranges or units can be customized	
Accuracy (Integrated Non-linearity,Hysteresis, Repeatability)	A1:0.2%FS ⁵ BFSL	
	A2:0.1%FS ⁵ BFSL	
	“Custom accuracy available upon request	
Overload Pressure ²	2xFS ⁵	
Burst Pressure ³	3xFS ⁵	

Mechanical Performance

Specifications	Description
Pressure connection	See selection table, customizable
Vibration Impact on Sensor Accuracy	<1ppmFS ⁵ /g
Vibration ⁸	20g peak, sine wave 10–2000 Hz
Shock ⁹	50g half-sine wave, duration 11 ms
Housing Material	Standard 316L/17-4PH stainless steel ("Other materials available upon request)
Measuring Medium	All fluids compatible with 316L/17-4PH Stainless steel compatible fluid
Weight	≤13g; weight of cable and electrical connectors is additional and depends on selection

Electrical performance

Power Supply/Output	See selection table, customizable
Circuit Bandwidth	S1、S2 Chip natural vibration frequency ≥400KHz
	S4 The circuit bandwidth is about 10KHz@3DB
Actual Frequency Response	S1、S2 The frequency response is limited by the acoustic characteristics of the resonant cavity.
	The frequency response of the liquid medium is approximately 5 KHz at 3DB.

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	S4 $\leq$ 10KHz@3DB
Power-up Time	S1、S2 <1ms S4 <200ms
Zero and Full-Scale Output Range	Rating within $\pm 5\%$ FS Other requirements can be customized
Insulation Resistance	$\geq 100\text{M}\Omega@50\text{VDC}$
Electrical strength	leakage current $\leq 5\text{mA}@50\text{VAC RMS}$
Maximum Operating Current	S4 <25mA
Input Impedance	S1、S2 >5000 Ω
Output impedance	S1、S2 5000 Ω (Typical value) S4 <150 Ω
Long-term stability	Typical values $\pm 0.1\%$ FS ⁵
Electrical connection	See selection table, can be customized

Temperature Performance⁴

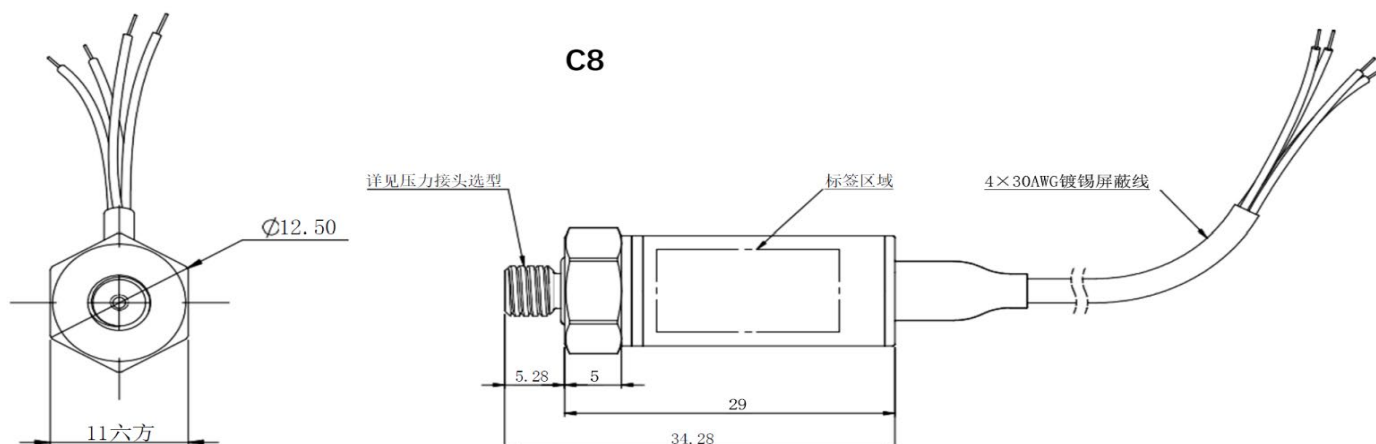
Specifications	Description
Temperature Compensation Range	Selectable within the range of -55°C to 150°C
Operating and storage temperature range	-55°C-150°C
Total error in the whole temperature zone ⁷	S1、S2 Zero drift < $\pm 1.5\%$ FS ⁵ /100°C Full scale drift < $\pm 1.5\%$ FS ⁵ /100°C S4 Total error ⁶ Typical value < $\pm 0.25\%$ FS ⁵ /100°C Total error ⁶ Maximum value < $\pm 0.5\%$ FS ⁵ /100°C

Electrical Interface Definition

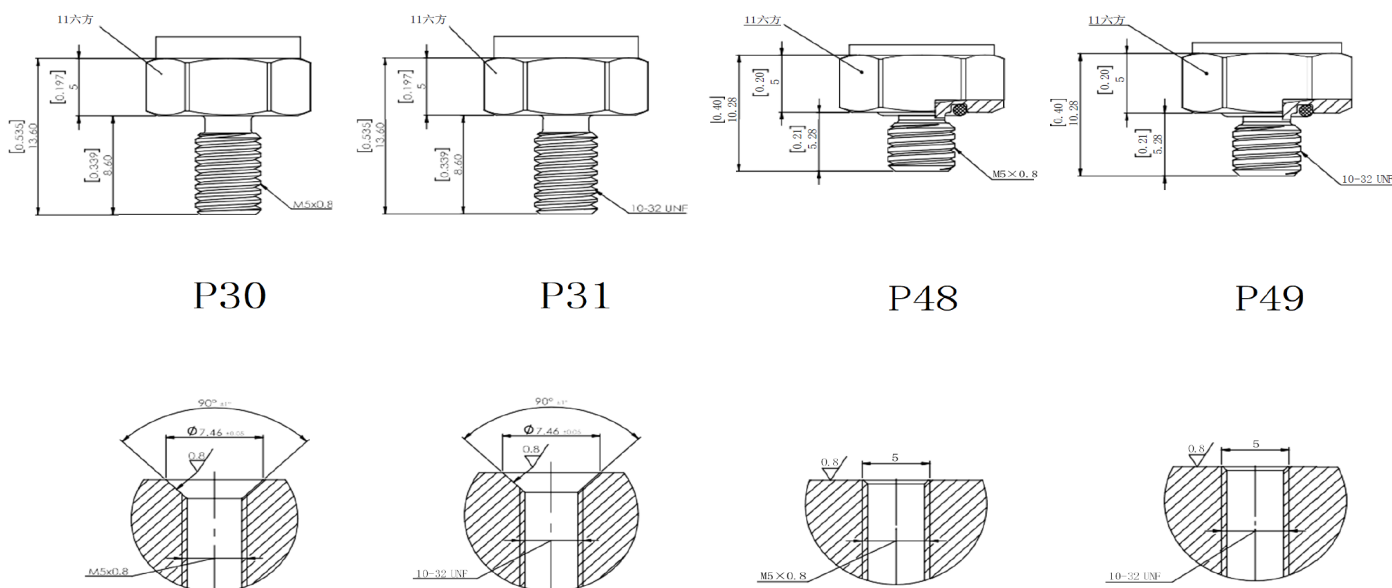
Electrical connector	Pin Definition	Electrical Output		
		S1	S2	S4
C8	Red	Vin+	Vin+	Vin+
	Green	Vout+	Vout+	Vout+
	White	Vout-	Vout-	
	Black	Vin-	Vin-	Vin-

- 1: Custom compound ranges can be specially ordered, for example, (5-100)KPaA.
- 2: Pressure overload below this limit does not affect product performance.
- 3: This is the safe upper limit for the sensor; exceeding this value may cause leakage or deformation.
- 4: Temperature performance refers to the performance within the compensated temperature range.
- 5: FS = Full Scale (Full Range).
- 6: Error based on the best endpoint line fit.
- 7: Refer to China's national standard GB/T 15478-2015

Outline Drawing (mm [inch])



Pressure fittings & Recommended installation drawings(mm [inch])



P30&P31

Installation torque: 6.5 N·m for pressure range 0–35 MPaA
O-ring: 3.5 × 1.5 mm, material compatible with the measured medium

P48 & P49

Installation torque: 6.5 N·m for pressure range 0–35 MPaA
O-ring: 4.8 × 1.0 mm, material compatible with the measured medium

How to Order? Look at the selection table below

Model No :

MPTW500

Signal output

- S1 0~100mV output, 10VDC powered, output proportional to supply voltage, four-wire.
 - S2 0~100mV output, 8-16VDC powered, output independent of supply voltage, four-wire.
 - S4 0.5~4.5V output, 8~32VDC powered, high-precision digital compensation, three-wire
- See compensation circuit specification.

Electrical Connection

- C8 4x30AWG (1m length) tinned shielded wire
- Note:Other specifications are available upon request.

Pressure Connection Fittings

- P30 M5*0.8 external thread, Length:8.6mm
- P31 10-32 UNF external thread, Length:8.6mm
- P48 M5*0.8 external thread, Length: 5.28mm
- P49 10-32 external thread, Length: 5.28mm

Note:Other specifications are available upon request

Compensation Temperature Range

TA	25℃~80℃	TE	-10℃~50℃
TB	-20℃~125℃	TF	-20℃~80℃
TC	-40℃~125℃	TG	-40℃~80℃

Accuracy

- A1 0.2%FS BFSL
- A2 0.1%FS BFSL

Calibration Report

- CA Ambient temperature six-point pressure data
- CB Five-point full-temperature data

							Pressure Range	Unit	Type	Special Requirements
							0~35	MPa	A (Absolute Pressure)	
							0~35	MPa	S (Sealed Gauge Pressure)	
MPT500	S1	C8	P30	TA	A1	CA	0~10	Mpa	A	S

MPTW500- S1C8P30TAA1CA, 0~20Mpa, A

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