

MPTW100 Series

Miniature Pressure Sensor

Applications

Aerospace
Automobile Manufacturing
Petroleum and Petrochemical
Industrial Automation
Shipbuilding
Construction Machinery

Features

Light in weight ($\leq 24.5\text{g}$)
Compact structure design
High precision pressure measurement
Wide Range
Fast Response
High frequency

Profiles

The MPTW100 series pressure sensor from DABEY Technology is a wide temperature range, compact, multi functional high precision pressure sensor.

Adopting advanced silicon micromachined MEMS chip, special oil filled media isolation, robust anti interference circuit design and stainless steel internal external structural interfaces, the MPTW100 series features high accuracy, superior reliability and compatibility with diverse measured media. Its electronic circuit delivers a frequency bandwidth up to 10 kHz.

Benefiting from the forward mounted design of the pressure sensing element, this series achieves small footprint, wide measuring range and high over pressure resistance.

This sensor supports multiple electrical output signals and output configurations, and can measure both absolute pressure and sealed gauge pressure.



DATASHEET
PRESSURE MEASUREMENT

Dabey Technology Co., LTD
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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	0-1	0-150
	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	
Working Principle	Four-arm Wheatstone bridge silicon-based MEMS chip	
Chip natural vibration frequency	>400KHz	

Mechanical Performance

Specifications	Description
Pressure connection	See selection table, customizable
Vibration Impact on Sensor Accuracy	<1ppmFS ⁵ /g
Vibration ⁸	20 g peak, sine wave 10-2000 Hz
Shock ⁹	50 g 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
Weight	≤24.5g; 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 、S5、S6 The circuit bandwidth is about 10KHz@3DB
	S1、S2 ≤ Chip natural vibration frequency @3DB
Actual Frequency Response	S4 、S5、S6 ≤ 10KHz@3DB
	Note: Specific and installation method related。
Power-up Time	S1、S2<1ms
	S4 、S5、S6 <200ms

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Zero and Full-Scale Output Range	Rating within $\pm 5\%FS$
	Other requirements can be customized
Insulation Resistance	$\geq 100M\Omega @ 50VDC$
Electrical strength	leakage current $\leq 5mA @ 50VAC$ RMS
Maximum Operating Current	S4 、S5、S6 <25mA
Input Impedance	S1、S2 >5000 Ω
Output impedance	S1、S2 5000 Ω (Typical)
	S4 、S5、S6<150 Ω
Long-term stability	Typical values $\pm 0.1\%FS^5$
Electrical connection	See selection table, can be customized

Temperature Performance⁴

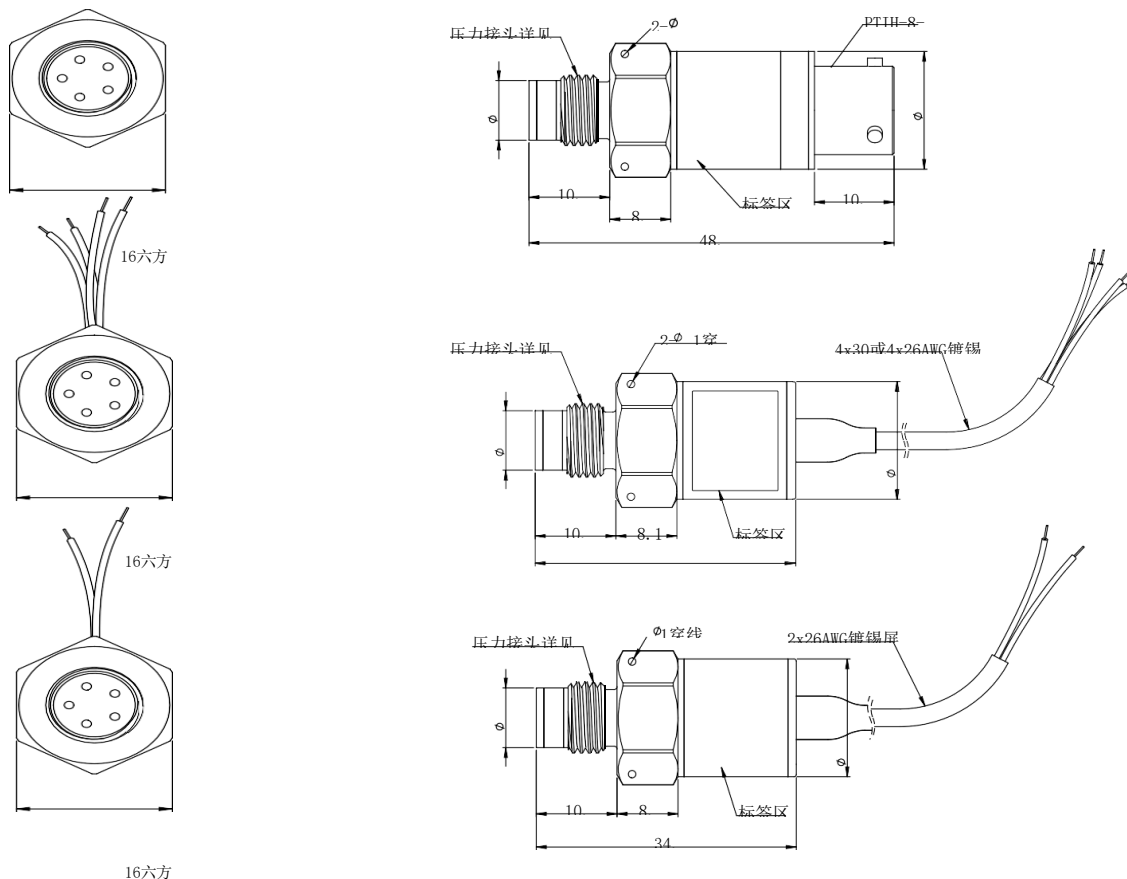
Specifications	Description
Temperature Compensation Range	Selectable within the range of -55°C to 150°C
Operating and storage temperature range	-55°C-150°C
Total error in the whole temperature zone ⁷	S1、S2
	Zero drift < $\pm 1.5\% FS^5/100^\circ C$
	Full scale drift < $\pm 1.5\% FS^5/100^\circ C$
	S4 、S5、S6
	Total error ⁶ $\frac{TYP < \pm 0.25\% FS^5/100^\circ C}{MAX < \pm 0.5\% FS^5/100^\circ C}$

Electrical Interface Definition

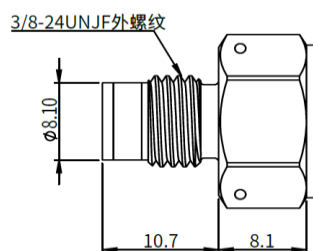
Electrical connector	Pin Definition	Electrical Output					
		S1	S2	S3	S4	S5	S6
C5	A/1	Vin+	Vin+	Vin+	Vin+	Vin+	Vin+
	B/2	Vout+	Vout+		Vout+	Vout+	Vout+
	C/3	Vout-	Vout-			Vout-	Vout-
	D/4	Vin-	Vin-	Vin-	Vin-	Vin-	Vin-
C8 C14	Red	Vin+	Vin+	Vin+	Vin+	Vin+	Vin+
	Green	Vout+	Vout+		Vout+	Vout+	Vout+
	White	Vout-	Vout-			Vout-	Vout-
	Black	Vin-	Vin-	Vin-	Vin-	Vin-	Vin-
C9	Red			Vin+			
	Black			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

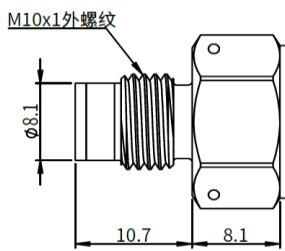
Outline Drawing



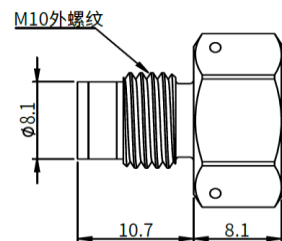
Pressure fittings & Recommended installation drawings



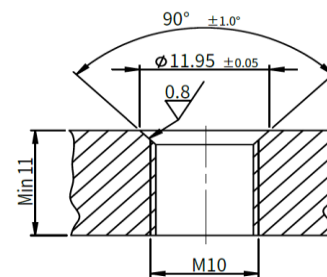
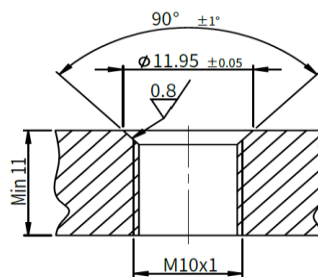
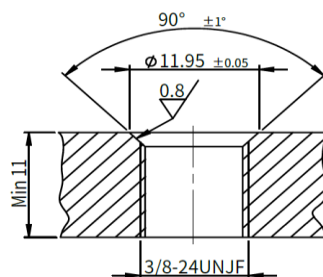
P15



P16



P17



Installation torque: Measuring range 0~35 MPaA, 10N.m
Measuring range 35~70 MPaA, 22N.m

O-ring: inner diameter 7.65mm, wire diameter 1.63mm,
material and measured medium match

How to Order? Look at the selection table below

Model NO

MPTW100

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
- S5 0~5V output, 8~32VDC powered, high-precision digital compensation, four-wire,
output common mode 2.5V (typical)
- S6 0~10V output, 14~32VDC powered, high-precision digital compensation, four-wire,
output common mode 5V (typical)

Circuit Connections

- C5 PTIH-8-4P
 - C8 4x30AWG (1m length) tinned shielded wire
 - C9 2x26AWG (1m length) tinned shielded wire
 - C14 2x26AWG (1m length) tinned shielded wire
- Note:Other specifications are available upon request.

Pressure Connection Fittings

- P15 3/8-24 UNJF external thread
- P16 M10x1 external thread
- P17 M10 external thread

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℃
TD	-55℃~150℃		

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

- 0~70
- 0~70

Unit

- MPa
- MPa

Type

- A (Absolute Pressure)
- S (Sealed Gauge Pressure)

Special Requirements

Refer to the purchase contract for details on 'S'.

MPTW100	S1	C5	P15	TA	A1	CA	0-20	MPa	A	S
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MPTW100-S1C5P15TAA1CA, 0~20Mpa, A