HPTM280 Combined
Pressure & Temperature Transmitter

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Overview

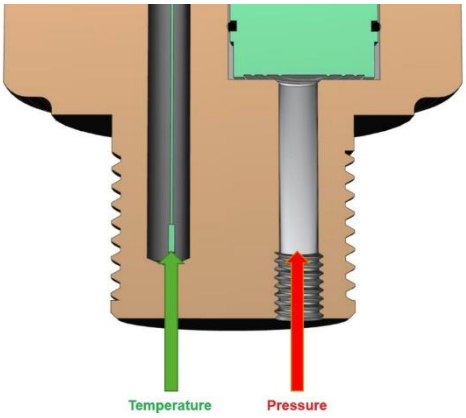
HPTM280 digital temperature and pressure integrated transmitter adopts the industry's leading and unique design structure, with built-in independent measurement of high-stability pressure sensitive elements and high-precision temperature sensing elements, which can simultaneously achieve accurate measurement of medium pressure and temperature. In addition, the product has a field display, which can alternately display pressure and temperature values, and can also be networked through RS485.

The product has been screened for long-term aging and stability, with reliable and stable performance. It can be used in places with relatively harsh environments and can meet the accurate measurement of multiple parameters at one measuring point. It is widely used in the simultaneous measurement of fluid pressure and temperature in the field of industrial process control.

Features

- Pressure and temperature are measured in parallel
- Temperature sensor is placed in front for smaller error
- Temperature probe is supported
- On-site display, alternately displays pressure and temperature
- RS485 communication
- Optional built-in lithium battery power supply

Measuring principle

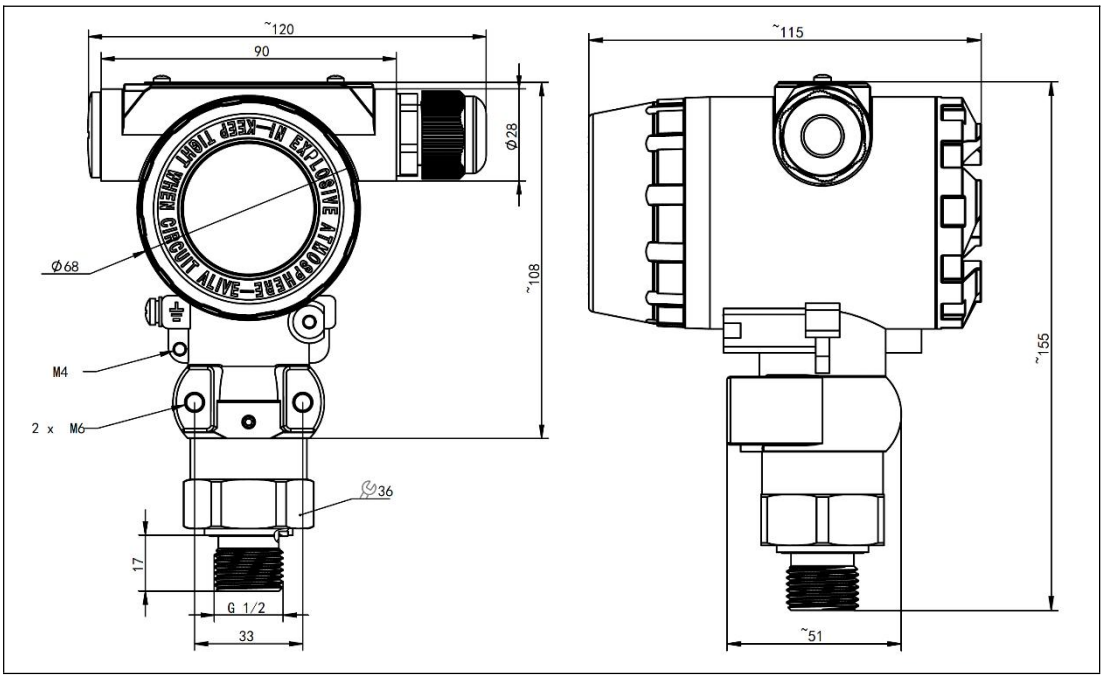


The temperature sensor is a built-in high-precision PT100 or PT1000. The measurement position is close to the medium to be measured, with a small temperature difference and a fast response. Temperature measurement also supports a probe structure to penetrate the center of the temperature to be measured. The pressure measurement channel uses a high-stability and high-precision silicon piezoresistive pressure sensing core. The process pressure acts directly on the isolation diaphragm, causing the diaphragm to deform. The signal conditioning circuit converts the MEMS chip signal into a standard current or voltage signal output.

Parameters

Pressure Range	0～50kPa…40MPa (Gauge). 0～50kPa…10MPa (Absolute)
Temperature Range	-40～100℃ Note: Supports customized intermediate range, such as 0～80℃, etc.
Measuring Medium	Various liquids, gases and various compatible with contact materials
Output Signal	RS485
Power Supply	Vs=3.1~8V_{DC} (built-in lithium battery ER14250, 3.6V 1200mAh) Vs=5V_{DC} (external power supply) Vs=24V_{DC} (external power supply)
Accuracy	Pressure: ±0.5%FS standard. ; ±0.2%FS option Temperature: ±0.4℃
Long-term stability	±0.25%FS/year
Power Consumption	
Standby current	<20uA
Acquisition cycle	0 ~ 65535 seconds
Power Consumption	The sensor acquisition cycle is 1s, and the power consumption is about 300uA The sensor acquisition period is 3s, and the power consumption is about 110uA Sensor acquisition cycle 5s, power consumption about 75uA ..... Note: The longer the collection cycle, the lower the power consumption
Compensation temperature	-10~70℃
Zero-point Temperature Coefficient	±1.5%FS reference 30℃,within temperature compensation range
Full scale Temperature Coefficient	±1.5%FS reference 30℃,within temperature compensation range
Medium Temperature	-40～100℃
Ambient Temperature	-30～70℃
Storage Temperature	-30～70℃
Protection grade	IP65
Electric protection	Reverse polarity protection
Mechanical Stability	Vibration 20g(20~5000Hz) Shock resistance 20g(11ms)
Insulation resistance	>100MΩ 500VDC
Dielectric strength	500VAC 50Hz test voltage applied for 1min without breakdown and arcing

Structural Drawings (Unit: mm)



Note:

1. The dimensions listed in the figure may change with the update of the process
2. Support customized appearance structure with temperature probe

Structural Materials

Ordering code	Part	Material
S4	Pressure port	SS304
S6		SS316L
M1	Pressure sensor	SS316L
F1	O-ring	FKM
Y1	Display Shell	Aluminum alloy

Electrical Connections

Output signal	4-wire Modbus-RTU/RS485			
Signal Definition	Power+ (+V)	Power-(-V)	RS485A	RS485B
Supply voltage 24V	+24V	GND	485A	485B
Supply voltage 5V	+5V	GND	485A	485B
Battery powered	battery+	battery-	485A	485B

Ordering Guide

Model Name	Type							
HPTM280	Combined Pressure & Temperature Transmitter							
	Pressure Range	Pressure measuring range						
	(0~X)kPa	X is upper limit of the range						
		Temperature Range	Pressure measuring range					
		(T1 - T2)°C	T1 is the lower limit of the range T2 is the upper limit of the range					
			Code	Output Signal				
			B7	RS485				
				Code	Process connection			
				P1	M20×1.5			
				G12	G1/2			
					Code	Electrical connection		
					C8	Cable gland		
						Code	Pressure interface material	
						S4	304	
						S6	316L	
							Code	Pressure interface material
							L	L = insertion depth (mm)
								Code / Additional functions
								G: Gauge pressure (Default)
								A: Absolute pressure
								VL36: 3.6V Lithium battery inside
								V5: 5V Power supply
								V24: 24V Power suppky
								QF: Factory report
								Other requirements
Eg: HPTM280	(0 - 1)MPa	(0 - 100)°C	B7	P1	C8	S4	G V24	