

Industrial Pressure Transmitter

- Professionalization
- Customization
- Industrialization
- Intelligentization



Integrated Temperature and Pressure Transmitter

Overview

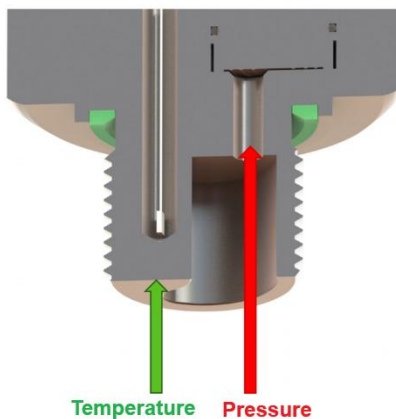
The integrated temperature and pressure transmitter is a high-performance instrument with both temperature and pressure measurement functions.

HPTM180/189 temperature and pressure transmitters use high-stability pressure sensitive elements for independent measurement and are equipped with high-precision temperature sensitive elements, which can accurately measure medium pressure and temperature at the same time. The compact size of the transmitter allows for a wide range of pressure and electrical interface options, while the unique venting design for micro-pressure measurement enables more stable pressure measurement. The original front temperature sensitive element design is more accurate than traditional temperature measurement methods, and introduces a smaller temperature difference, allowing for more accurate measurement of medium temperature.

Features

- ◆ Parallel measurement of temperature and pressure
- ◆ Up to 0.2 level pressure channel measurement
- ◆ Temperature sensor front-mounted method measurement, smaller error
- ◆ Breathable design makes pressure measurement more stable
- ◆ Supports a variety of electrical interfaces

Working principle



The temperature sensor is a built-in high precision PT100 or PT1000 with a measurement position close to the medium to be measured, a small temperature difference and a fast response. The temperature measurement is also supported by a probe rod structure to reach the center of the temperature to be measured.

The pressure sensor is a highly stable and accurate silicon piezoresistive pressure-sensing core, where the process pressure acts directly on the isolation diaphragm, causing it to deform. The signal conditioning circuit converts the MEMS chip signal into a standard current or voltage output.

Technical Parameters

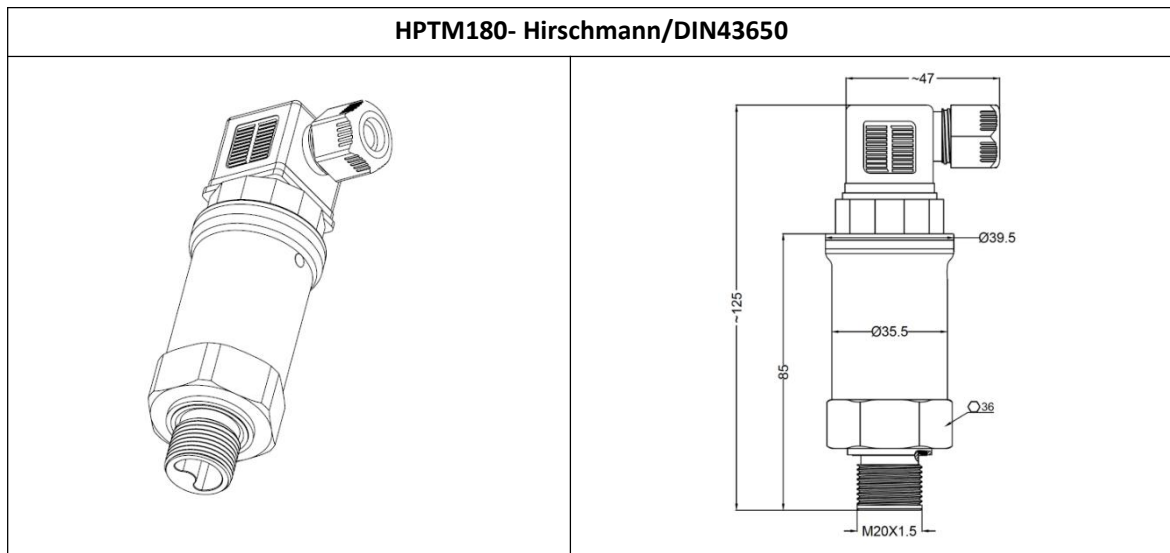
HPTM180

Pressure Range	0~50kPa...40MPa (gauge pressure) 0~50kPa...10MPa (absolute pressure)
Temperature Range	-40~85℃ Note: Supports customized intermediate range, such as 0~80℃, etc.
Measuring Medium	Various liquids, gases and various compatible with contact materials
Output Signal/Power Supply (1)	Pressure: 2-wire 4~20mADC/ Vs=10~30 VDC Temperature: 3-wire PT100/PT1000
Output Signal/Power Supply (2)	Pressure: 2-wire 4~20mADC/ Vs=10~30 VDC Temperature: 2-wire 4~20mADC/ Vs=10~30 VDC
Output Signal/Power Supply (3)	Pressure: 3-wire 0~5VDC / Vs=8.5~30 VDC Temperature: 3-wire 0~5VDC / Vs=8.5~30 VDC
Output Signal/Power Supply (4)	Pressure: 3-wire 0~10VDC / Vs=12~30 VDC Temperature: 3-wire 0~10VDC / Vs=12~30 VDC
Output Signal/Power Supply (5)	4-wire Modbus-RTU/RS485 / Vs=10~30 VDC(Normal) / Vs=3.1~8 VDC (battery supply, low power consumption mode)
Accuracy	±0.5%FS (pressure measure, typical) ±0.2%FS (pressure measure, optional) ±0.4℃ (temperature measure)
Long-term Stability	±0.2%FS/year (pressure measure). ±0.1%FS/year(temperature measure);
Response Time	≤3ms (pressure)
Start-up Time	≤5s
Compensation temperature Range(pressure)	-10~70℃
Temperature Coefficient of Zero (pressure)	±1.5%FS(Reference 30° C, in compensation range)
Temperature Coefficient of Full Scale(pressure)	±1.5%FS(Reference 30° C, in compensation range)
Medium Temperature	HPTM180: -40~85℃ HPTM189: -40~140℃(5 pcs heat sinks) -40~200℃(9 pcs heat sinks) -40~350℃(9 pcs heat sinks, microporous structure)
Ambient Temperature	-40~85℃
Storage Temperature	-40~85℃
Protection grade	IP65, DIN43650/Hirschmann electrical connection IP66, M12x1 connector (housing without breathable design)

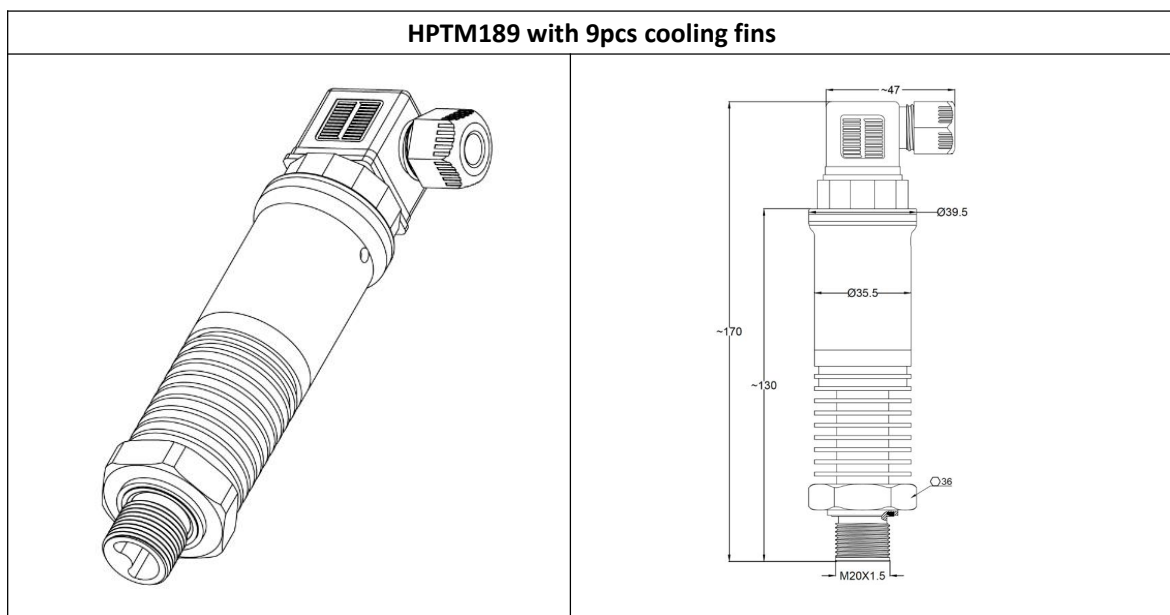
	IP67, cable outlet (housing without breathable design)
Short circuit protection	Permanent
Reverse polarity protection	No damage, circuit does not work
Vibration	20g(20~5000Hz)
Shock resistance	50g(11ms)
Insulation resistance	>20M Ω @500VDC
Dielectric strength	<2mA 500VAC 1min

Structural Drawing(unit:mm)

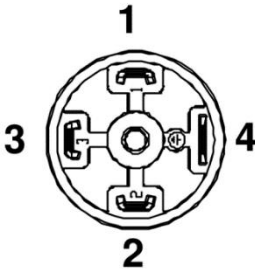
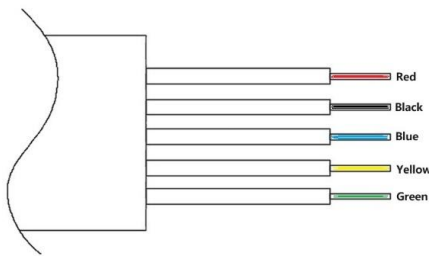
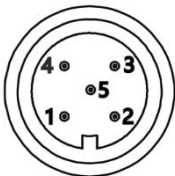
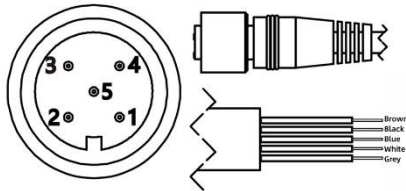
HPTM180- Hirschmann/DIN43650



HPTM189 with 9pcs cooling fins



Electrical Interface

Hirschmann/DIN43650			Cable outlet		
					
M12×1-5P			M12×1-5P, with cable		
 Note: For output signals with only 4 cores, M12×1-4P.			 Note: For output signals with only 4 cores, brown, black, blue, white.		
Output signal	Pressure: two-wire 4 ~ 20mA current		Temperature: three-wire PT100/PT1000		
Signal definition	Power supply+ (+V)	Power supply- (0V/+OUT)	A	B	B
Cable outlet	red	black	blue	yellow	green
M12×1	1	2	3	4	5
M12×1, with cable	brown	black	blue	white	grey
Output signal	Pressure: two-wire 4 ~ 20mA current		Temperature: two-wire 4 ~ 20mA current		
Signal definition	Power supply+ (+V)	Power supply- (0V/+OUT)	Power supply+ (+V)	Power supply- (0V/+OUT)	
Hirschmann /DIN43650	1	2	3	4	
Cable outlet	red	black	yellow	green	
M12×1	1	2	3	4	
M12×1, with cable	brown	black	blue	white	
Output signal	Pressure: three wire voltage		Temperature: three wire voltage		
Signal definition	Power supply+ (+V)	Common port (GND)	Pressure output (+OUT)	Temperature output (+OUT)	
Hirschmann /DIN43650	1	2	3	4	

Cable outlet	red	black	yellow	green
M12×1	1	2	3	4
M12×1, with cable	brown	black	blue	white
Output signal	Four-wire Modbus-RTU/RS485			
Signal definition	Power supply+ (+V)	Power supply- (-V)	RS485A	RS485B
Hirschmann /DIN43650	1	2	3	4
Cable outlet	red	black	yellow	green
M12×1	1	2	3	4
M12×1, with cable	brown	black	blue	white

Ordering Guide

Model Name	Type														
HPTM180	Integrated Temperature and Pressure Transmitter														
	Pressure Range	Measuring Range													
	(X1 ~ X2)kPa	X1 is the lower limit X2 is the upper limit													
				Temperature Range	Measuring Range										
				(T1 ~ T2)°C	T1 is the lower limit T2 is the upper limit										
									Code	Output Signal(pressure)	Output Signal(temperature)				
									B1PT100	(4 ~ 20)mA	3-wire PT100				
									B1PT1000	(4 ~ 20)mA	3-wire PT1000				
									B1B1	(4 ~ 20)mA	(4 ~ 20)mA				
									B3B3	(0 ~ 10)V	(0 ~ 10)V				
									B4B4	(0 ~ 5)V	(0 ~ 5)V				
									B7	Modbus-RTU/RS485					
									Code	Process connection					
									P1	M20×1.5					
									G12	G1/2					
									G14	G1/4					
									Code	Electrical connection					
									C1	DIN43650/Hirschmann					
									C1.1	DIN43650 type c/Mini-size Hirschmann					
									C2	cable outlet					
									C5	M12×1 -4P					
									C6	M12×1 -5P					
									Code	Pressure connector material					
									S4	304					
									S6	316L					
									Code	Length					
									L	L=Insertion length(mm)					
									Code	Additional functions					
									G	Gauge pressure (Default)					
A									Absolute pressure						
QF									Factory Report						
	Other requirements														
Eg: HPTM180	(0 ~ 1)MPa	(0 ~ 100)°C	B1B1						P1	C1	S4	L=50mm	G		

Model Name	Type														
HPTM189	Integrated temperature and pressure Submersible transmitter														
Eg: HPTM189	Pressure Range	Measuring													
	(X1 - X2)kPa	X1 is the lower limit													
			Temperature Range	Measuring Range											
			(T1 - T2)°C	T1 is the lower limit T2 is the upper limit											
					Code	Output Signal (pressure)	Output Signal (temperature)								
					B1PT100	(4 - 20)mA	3-wire PT100								
					B1PT1000	(4 - 20)mA	3-wire PT1000								
					B1B1	(4 - 20)mA	(4 - 20)mA								
					B3B3	(0 - 10)V	(0 - 10)V								
					B4B4	(0 - 5)V	(0 - 5)V								
					B7	Modbus-RTU/RS485									
					Code	Process connection									
					P1	M20x1.5									
					G12	G1/2									
					G34	G3/4									
					Code	Electrical connection									
					C1	DIN43650/Hirschmann									
					C1.1	DIN43650 type c/Mini-size Hirschmann									
					C2	cable outlet									
					C5	M12x1-4P									
					C6	M12x1-5P									
					Code	Pressure connector material									
					S4	304									
					S6	316L									
						Code	Length								
						L	L=Insertion								
						Code	Additional functions								
						G	Gauge pressure (Default)								
					A	Absolute pressure									
					T5	5 heat sinks, temperature resistant to 140°C									
					T9	9 heat sinks, temp resistant to 200°C									
					T9H	9 heat sinks, microporous structure, temp resistant to 350°C									
					QF	Factory Report									
						Other requirements									
Eg: HPTM189	(0 - 1)MPa		(0 - 150)°C		B1B1	P1	C1	S4	L=30mm	G T9					

