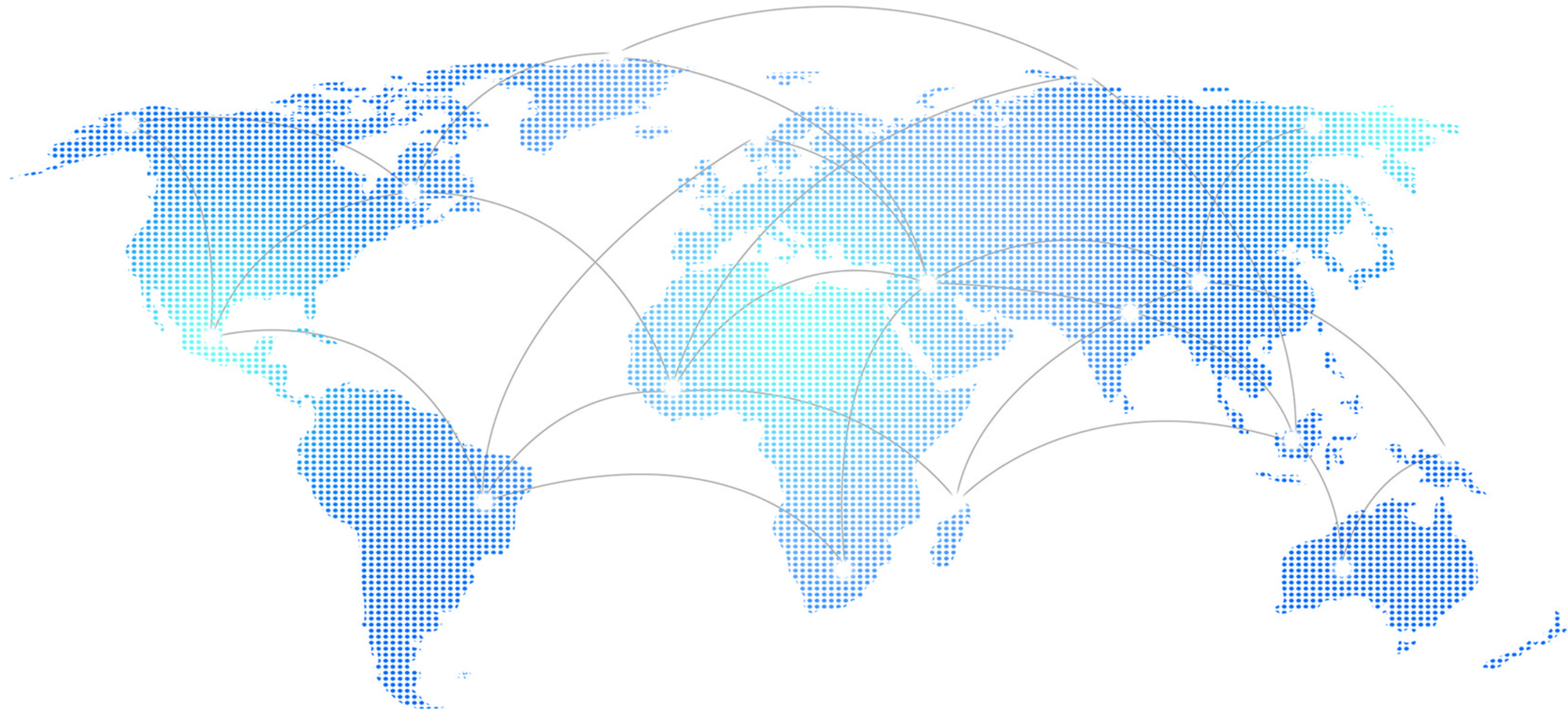


HIGHJOIN



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**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 integrated temperature and pressure transmitter** adopts an industry-leading unique design, equipped with high-stability pressure sensitive elements and high-precision temperature sensitive elements, which can accurately measure the pressure and temperature of the medium at the same time.

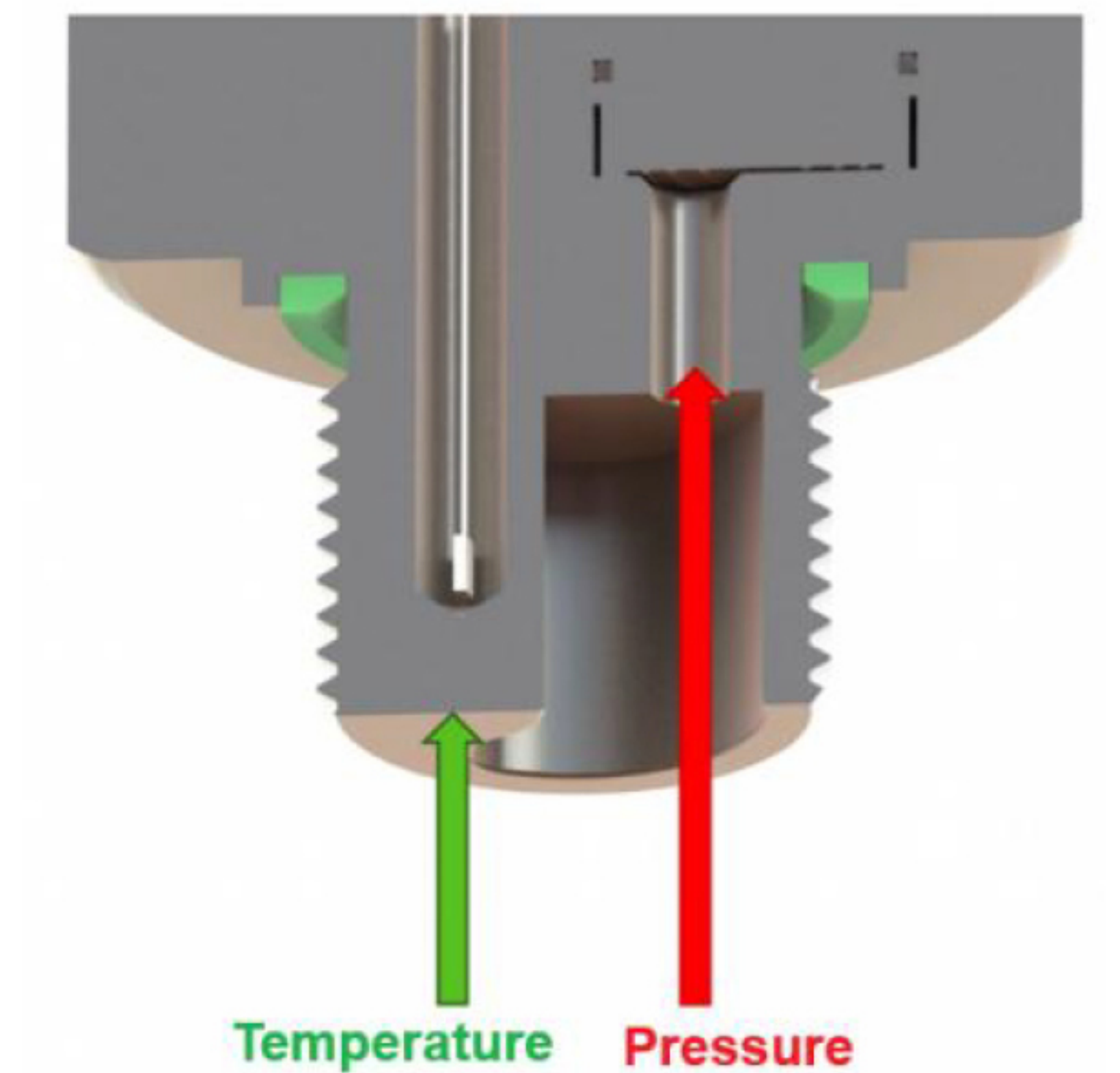
The transmitter has a compact design, supports a variety of pressure and electrical interface options, and has strong adaptability. Its unique breathable design is particularly suitable for measuring small pressures, ensuring more stable pressure readings. In addition, the internal front-end temperature sensing element is more advanced than the traditional temperature measurement method, with a smaller temperature difference and more accurate measurement.

This product is widely used in the field of industrial process control, especially in the simultaneous measurement of fluid pressure and temperature, showing stable performance and reliability.

## 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.



## 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

## Technical Parameters

<b>Pressure Measuring Range</b>	0~50kPa...40MPa (gauge) 0~50kPa...10MPa (absolute)
<b>Temperature Measuring Range</b>	-40~100 °C
<b>Measuring Medium</b>	Various liquids, gases compatible with contact materials
<b>Output Signal/Power Supply (1)</b>	Pressure:2-wire 4~20mADC/ Vs=10~30 VDC Temperature:3-wire PT100/PT1000
<b>Output Signal/Power Supply (2)</b>	Pressure: 2-wire 4~20mADC/ Vs=10~30 VDC Temperature: 2-wire 4~20mADC/ Vs=10~30 VDC
<b>Output Signal/Power Supply (3)</b>	Pressure: 3-wire 0~5VDC / Vs=8.5~30 VDC Temperature:3-wire 0~5VDC / Vs=8.5~30 VDC
<b>Output Signal/Power Supply (4)</b>	Pressure:3-wire 0~10VDC / Vs=12~30 VDC Temperature: 3-wire 0~10VDC / Vs=12~30 VDC
<b>Output Signal/Power Supply (5)</b>	4-wire Modbus-RTU/RS485 / Vs=10~30 VDC(Normal) / Vs=3.1~8 VDC (battery supply, low power consumption mode)
<b>Accuracy</b>	±0.5%FS (pressure measure, standard) ±0.2%FS (pressure measure, optional) ±0.4 °C (temperature)
<b>Long-term Stability</b>	±0.2%FS/year (pressure measure). ±0.1%FS/year(temperature measure);

<b>Response Time</b>	≤3ms (pressure)
<b>Start-up Time</b>	≤5s
<b>Compensation temperature Range</b>	-10~70 °C (pressure channel)
<b>Temperature Coefficient</b>	±1.5%FS(Reference 30°C, in compensation range)
<b>Working Temperature</b>	<b>HPTM180:</b> -40~100 °C; <b>HPTM189:</b> -40 to 140°C (5* heat sinks ) -40 to 200°C (9 *heat sinks) -40 to 350°C (9* heat sinks, microporous structure)
<b>Ambient Temperature</b>	-40~85 °C
<b>Storage Temperature</b>	-40~85 °C
<b>Protection grade</b>	IP65, DIN43650/Hirschmann electrical connection IP66, M12x1 connector (housing without breathable design) IP67, cable outlet (housing without breathable design)
<b>Electrical Protection</b>	Short circuit protection Reverse polarity protection Electromagnetic compatibility
<b>Mechanical Stability</b>	Vibration 20g(20~5000Hz); Shock resistance 50g(11ms)
<b>Insulation resistance</b>	>20MΩ @500VDC
<b>Dielectric strength</b>	<2mA @500VAC 1min

## Structural Drawings(unit:mm)

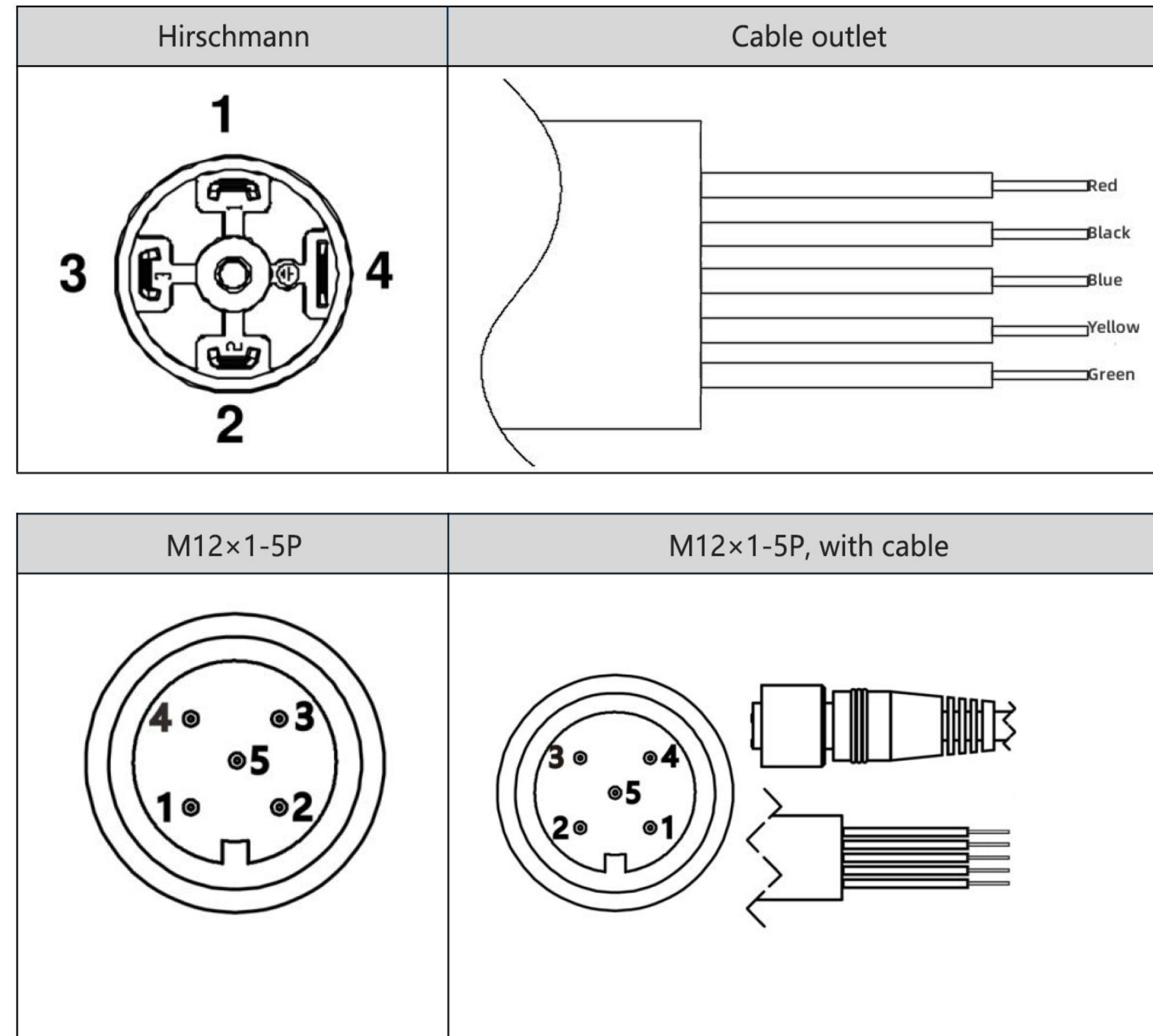
### HPTM180

Hirschmann/DIN43650, IP65	Mini-size Hirschmann, IP65
M12×1,IP66	Cable outlet, IP67

### HPTM189

Hirschmann/DIN43650, IP65	Mini-size Hirschmann, IP65
M12×1,IP66	Cable outlet, IP67

# Electrical Connection



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		
	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	
	Power supply+ (+V)	Power supply- (0V/+OUT)	Power supply+ (+V)	Power supply- (0V/+OUT)
Hirschmann	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	
	Power supply+ (+V)	Common port ((GND)	Pressure output (+OUT)	Temperature output(+OUT)
Hirschmann	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			
	Power supply+ (+V)	Power supply- (-V)	RS485A	RS485B
Hirschmann	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

## HPTM180

Model Name	Type	Pressure Range	Measuring Range	Temperature Range	Measuring Range	Code	Output Signal (pressure)	Output Signal (temperature)	Code	Process connection	Code	Electrical connection	Code	Pressure connector material	Code	Length	Code	Additional functions	
HPTM180	Integrated Temperature and Pressure Transmitter	(X1 - X2)kPa	X1 is the lower limit X2 is the upper limit	(T1 - T2)°C	T1 is the lower limit T2 is the upper limit	B1PT100	(4 - 20)mA	3-wire PT100	P1	M20x1.5	C1	DIN43650/Hirschmann	S4	304	L	L=Insertion length(mm)	G	Gauge pressure	
						B1PT1000	(4 - 20)mA	3-wire PT1000		G12	G1/2	C1.1	DIN43650 type c/Mini-size Hirschmann	S6	316L		A	Absolute pressure	
						B1B1	(4 - 20)mA	(4 - 20)mA		G14	G1/4	C2	cable outlet				QF	Factory Report	
						B3B3	(0 - 10)V	(0 - 10)V				C5	M12x1 -4P						Other requirements
						B4B4	(0 - 5)V	(0 - 5)V				C6	M12x1 -5P						
						B7	Modbus-RTU/RS485												
Eg: HPTM180		(0 - 1)MPa		(0 - 100)°C		B1B1	P1	C1	S4	L=50mm							G		

## HPTM189

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