

## HPTM410 Combined Temperature & Pressure Transmitter



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## Overview

HPTM410 combined temperature and pressure transmitter adopts a fully sealed submersible structure and can obtain two signals of liquid level and temperature at the same time. This type of transmitter is composed of pressure and temperature sensors that have passed long-term stability and reliability tests and high-precision signal conditioning special circuits, which are packed into a stainless-steel shell. The integrated structure and standardized signals provide convenience for on-site use and automatic control. The special cable is sealed with the housing and can be used in liquids compatible with the transmitter structural material for a long time.

HPTM410 temperature and pressure integrated transmitter has small size, light weight, and good long-term stability. It is suitable for simultaneous measurement and control of liquid level and temperature in urban water supply and drainage, hydrological exploration, water affairs and chemical industry.

## Feature

- ◆ Parallel measurement of temperature and pressure
- ◆ Probe submersible measurement, simple and convenient
- ◆ The sensor part put into the liquid is a fully sealed stainless-steel structure
- ◆ Supports a variety of output signals

## Application

- ◆ Hydrological exploration
- ◆ Water affairs
- ◆ Level and temperature measurement of various liquids at industrial sites

## Technical Parameters

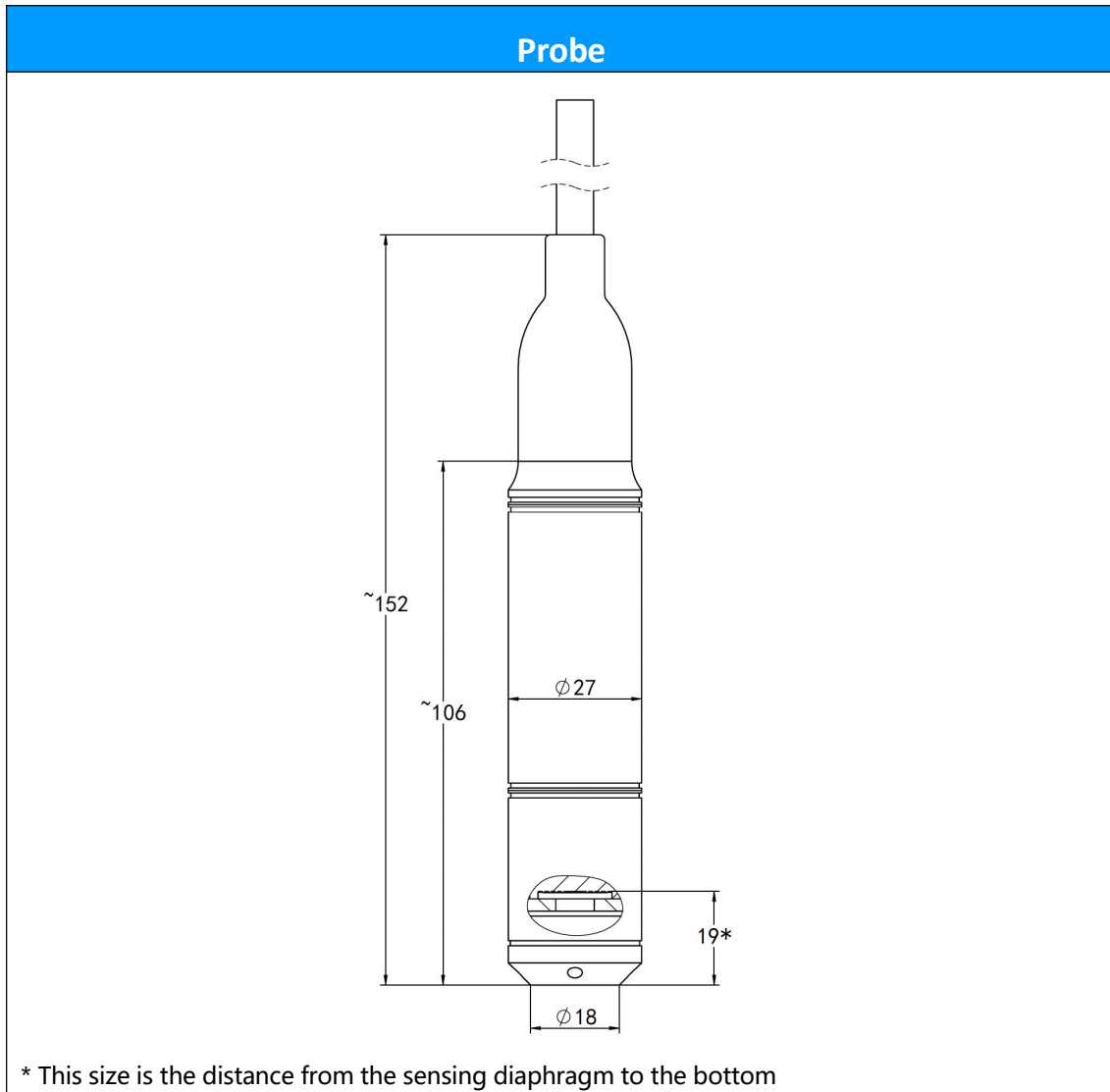
<b>Level Range</b>	0~1...500mH <sub>2</sub> O Note: The measurement unit can be converted to mH <sub>2</sub> O, inH <sub>2</sub> O, m, mm, etc. When using m, mm, etc. as the unit, please give the density value of the measurement medium.
<b>Temperature Range</b>	-40~100°C Note: Supports customized intermediate range, such as 0~60°C, etc.

<b>Measuring Medium</b>	Various liquids compatible with contact materials
<b>Output Signal/Power Supply (1)</b>	Level: 2-wire 4~20mADC/ Vs=10~30 VDC Temperature: 3-wire PT100/PT1000
<b>Output Signal/Power Supply (2)</b>	Level: 2-wire 4~20mADC/ Vs=10~30 VDC Temperature: 2-wire 4~20mADC/ Vs=10~30 VDC
<b>Output Signal/Power Supply (3)</b>	Level: 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>	Level: 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 (Level measure), ±0.4℃ (temperature measure)
<b>Electrical Connection</b>	DIN43650/ Hirschmann, cable outlet, M12*1
<b>Long-term Stability</b>	±0.25%FS/year
<b>Compensation temperature Range(level)</b>	0~70℃
<b>Temperature Coefficient of Zero (level)</b>	±1.0%FS(Reference 25° C, in compensation range); (Temperature drift of ≤20kPa range ±1.5%FS, 0~70℃)
<b>Temperature Coefficient of Full Scale(level)</b>	±1.0%FS(Reference 25° C, in compensation range) (Temperature drift of ≤20kPa range ±1.5%FS, 0~70℃)
<b>Medium Temperature</b>	-40~80℃
<b>Ambient Temperature</b>	-40~80℃
<b>Storage Temperature</b>	-40~85℃
<b>Protection grade</b>	IP68
<b>Insulation resistance</b>	>20MΩ @500VDC
<b>Dielectric strength</b>	<2mA 500VAC 1min

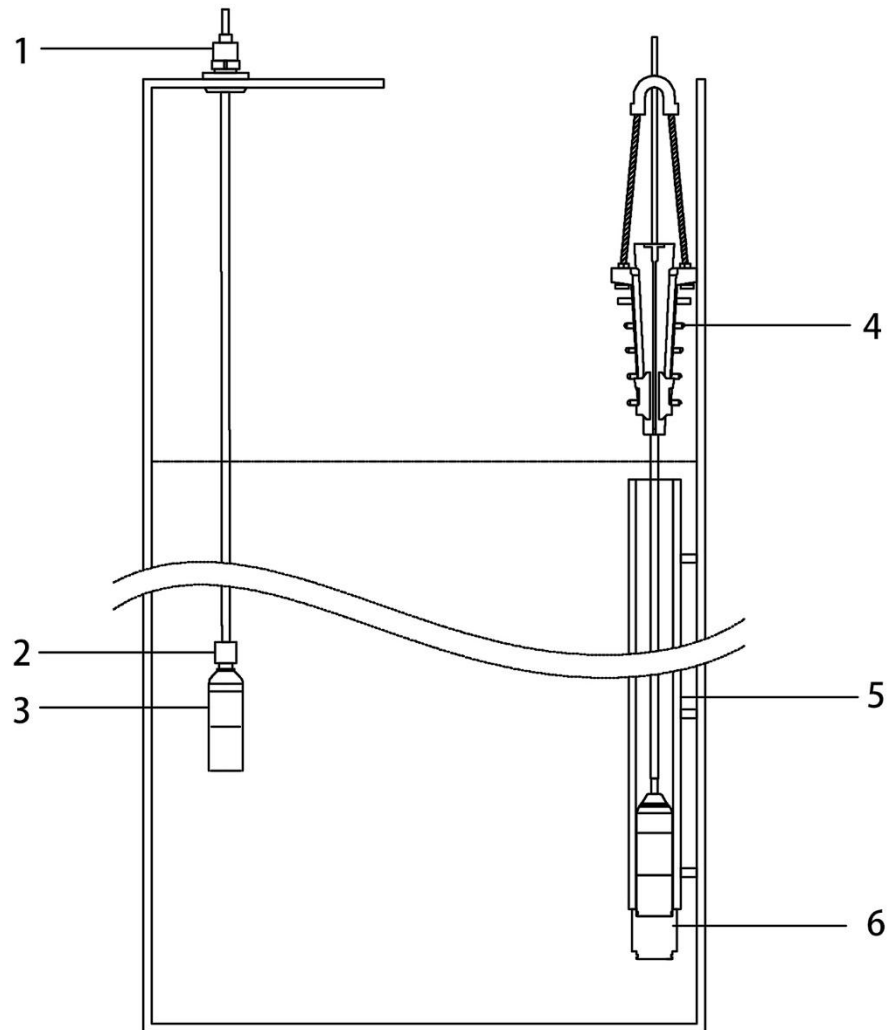
## Housing Material

Code	Part	Material
S4	Shell	304
S6		316L
M1	Pressure sensor	silicon piezoresistive type, 316L
FK	O-ring	FKM(Applicable temperature range -20 ~ 200℃)
NB		NBR(Applicable temperature range -40 ~ 120℃)
C2U	Cable	PU polyurethane cable, outer diameter (7.2±0.2) mm
C2N		NBR nitrile cable, outer diameter (7.2±0.2) mm
C2F		Fluorine plastic cable, outer diameter (7.2±0.2) mm

## Structure Drawings (unit: mm)



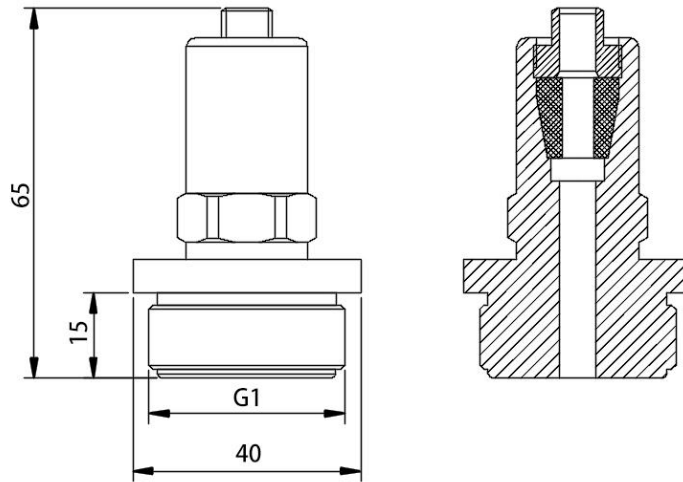
## Installation



1. Threaded Mounting Parts(W1)
2. Top connection heavy hammer(W2)
3. Level transmitter
4. Cable clip(W8)
5. Protective tube
6. Bottom connection heavy hammer(W3)

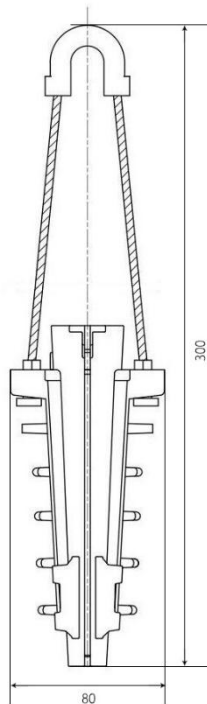
### Notes:

- If heavy hammer in bottom, need to consider the influence of the height of the bottom hammer on the height from the sensing diaphragm to the bottom of the measurement medium.
- The weight hammer can be customized according to user requirements

**Threaded Mounting Parts (Code: W1)**

Weight: ~450g

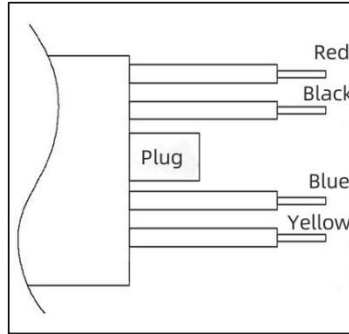
1. Used to fix the entire product at the top
2. Except for G1 thread, other threads can be customized if required

**Cable clip (Code: W8)**

Weight: ~340g

Used to fix the entire product at the top

## Electrical Interface



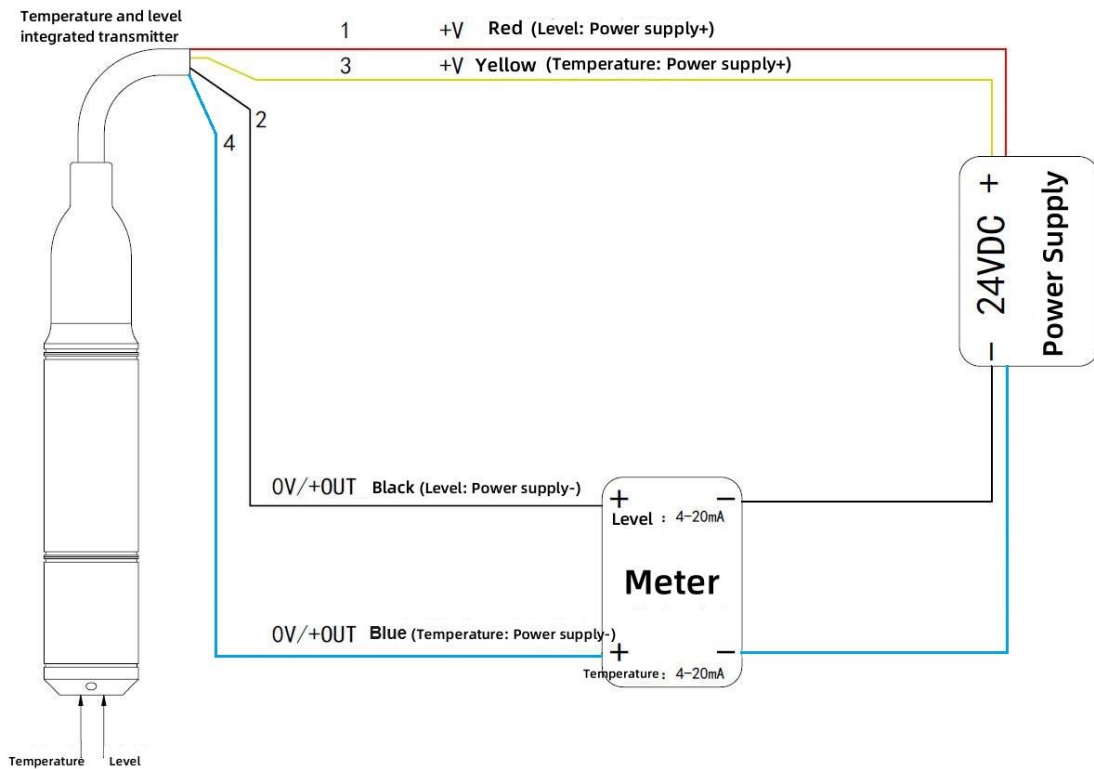
Output signal	Level: two-wire 4 ~ 20mA current		Temperature: two-wire PT100/PT1000	
	Power supply+(+V)	Power supply-(0V/+OUT)	A	B
Cable outlet	red	black	yellow	blue

Output signal	Level: 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)
Cable outlet	red	black	yellow	blue

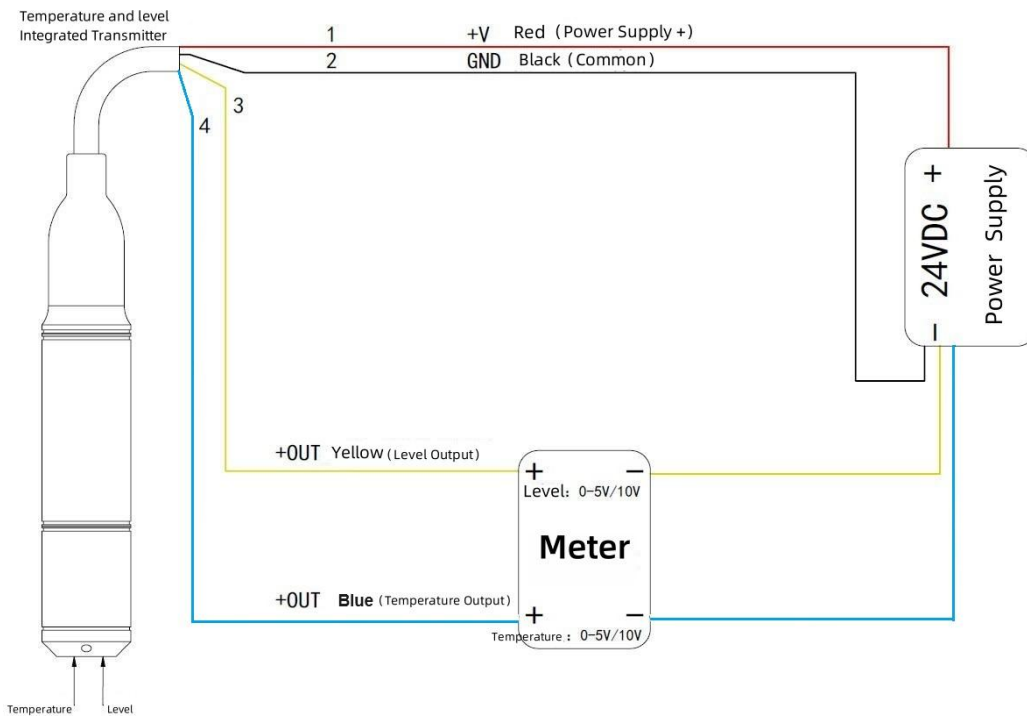
Output signal	Level: three wire voltage		Temperature: three wire voltage	
	Power supply+(+V)	Common port (GND)	Level output (+OUTLevel)	Temperature output (+OUTTemp)
Cable outlet	red	black	yellow	blue

Output signal	Four-wire Modbus-RTU/RS485			
	Power supply+(+V)	Power supply-(-V)	RS485A	RS485B
Cable outlet	red	black	yellow	blue

## Electrical Connection

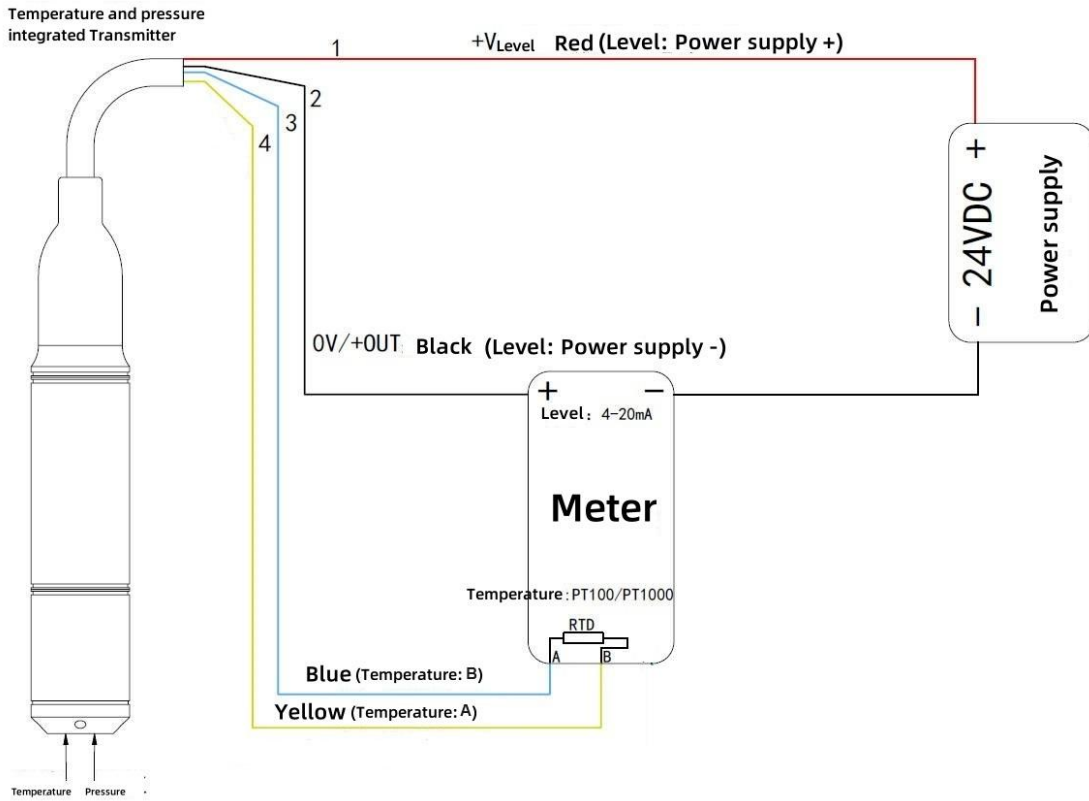


Level: 2-wire 4 to 20mA current  
Temperature: 2-wire 4 to 20mA current

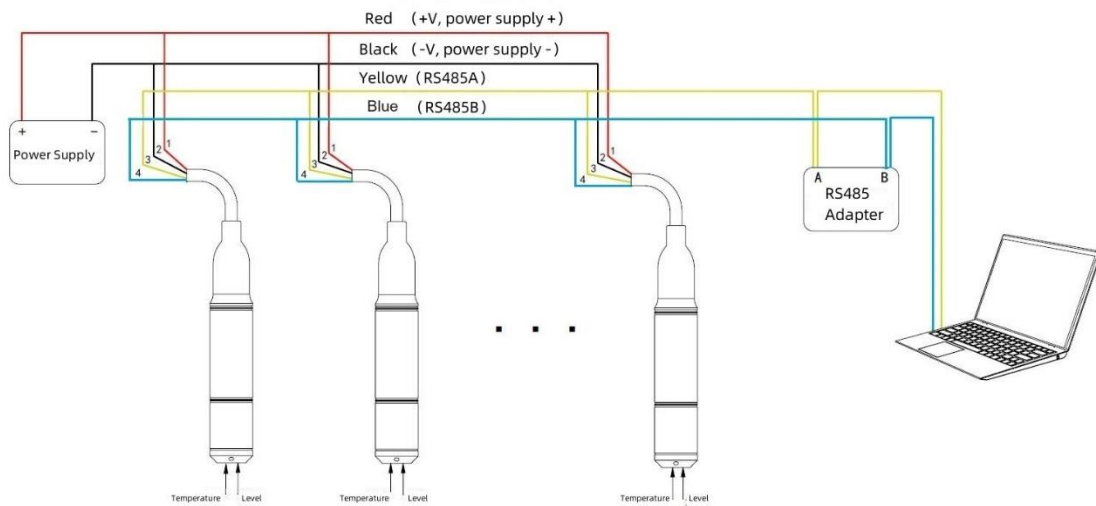


Level: 3-wire voltage output  
Temperature: 3-wire voltage output





Level: 2-wire 4 to 20mA current  
 Temperature: 2-wire PT100/PT1000 (cable outlet)



4-wire Modbus-RTU/RS485 (Hirschmann/DIN43650 Electrical Connection)

## Ordering Guide

Model Name	Type							
HPTM410	Combined temperature and pressure Submersible transmitter							
	<b>Level Range</b>	<b>Measuring Range</b>						
	(0 - X)mH <sub>2</sub> O (Ln)	X is the level range Ln is the cable length						
		<b>Temperature Range</b>						
		(T1 - T2)°C						
		T1 is the lower limit T2 is the upper limit						
	<b>Code</b>	<b>Output Signal (Level)</b>						
	B1PT100	(4 - 20)mA						
	B1PT1000	(4 - 20)mA						
	B1B1	(4 - 20)mA						
	B3B3	(0 - 10)V						
	B4B4	(0 - 5)V						
	B7	Modbus-RTU/RS485						
	<b>Code</b>	<b>Cable material</b>						
	C2N	NBR Nitrile cable						
	C2U	PU Polyurethane cable						
	C2F	Fluoroplastic cable						
	<b>Code</b>	<b>Mounting</b>						
	N	NA						
	W1	Threaded mounting parts						
	W2	Top hammer						
	W3	Bottom hammer						
	W8	Cable clip						
	<b>Code</b>	<b>Sensor</b>						
	M1	silicon piezoresistive, 316L						
		<b>Code</b>						
		S4						
		S6						
		<b>Code</b>						
		FL						
		M						
		P						
		FK						
		NB						
		QF						
		Other requests						
		<b>Others</b>						
		Lightning protection						
		Metal filter cap						
		plastic filter cap						
		FKM sealing ring						
		NBR sealing ring						
		Factory report						
		Other requests						
eg: HPTM410	(0 - 1)mH <sub>2</sub> O (L2)	(0 - 50)°C	B7	C2N	W1	M1	S4	M FK

## Certification Information

Factory certification	
Certification organization	CQM
Quality management system	ISO 9001:2015
Certification scope	Research, development and manufacture of pressure transmitter and temperature transmitter
Certificate No.	00223Q21711R1S