# HPTM890 Combined
# Pressure & Temperature Transmitter

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## Overview

HPTM890 digital display temperature and pressure transmitter integrates a highly stable pressure-sensitive element and a high-precision temperature-sensitive element for independent measurement, enabling simultaneous and accurate measurement of medium pressure and temperature. It can output two standard 4-20mA signals. Additionally, this product features a 4-digit dual-row LED field display that can simultaneously show pressure and temperature values.

Having undergone long-term aging and stability testing, the product boasts reliable and stable performance, making it suitable for harsh environments. It can accurately measure multiple parameters at a single measurement point and is widely used in industrial process control for the simultaneous measurement of fluid pressure and temperature.

## Features

◆ Parallel measurement of pressure and temperature
◆ Temperature sensor is placed close to the medium being measured, smaller measurement errors.
◆ Supports temperature probe
◆ Large LED display showing both pressure and temperature simultaneously

## Measuring principle
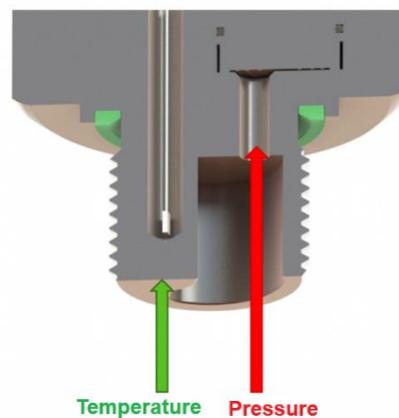


The temperature sensor is a built-in high-precision PT100 or PT1000. The measurement position is close to the medium to be measured, with a small temperature difference and a fast response. Temperature measurement also supports a probe structure to penetrate the center of the temperature to be measured.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

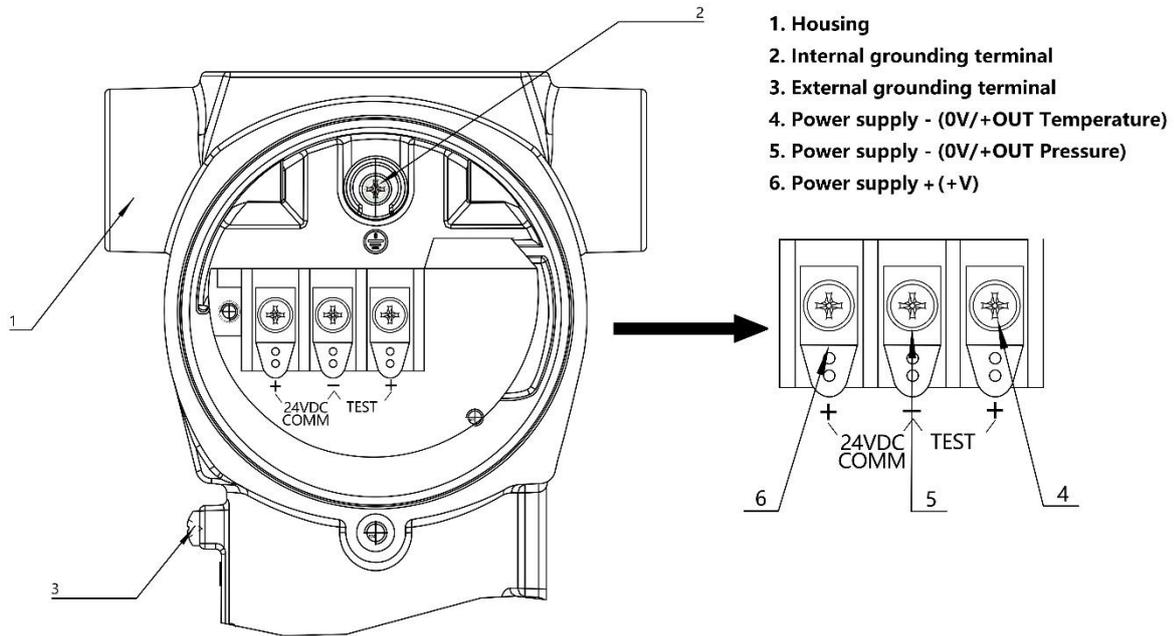| | |
|---|---|
| **Pressure Range** | -100kPa...0~50kPa...40MPa (Gauge)<br>0~50kPa...40MPa (Absolute) |
| **Overload Pressure** | 1.5 times full scale |
| **Temperature Range** | -40~100℃<br>Note: Supports customized intermediate range, such as 0~80℃, etc. |
| **Measuring Medium** | Various liquids, gases and various compatible with contact materials |
| **Output Signal/Power Supply** | Pressure: 4~20mA$_{DC}$<br>Temperature: 4~20mA$_{DC}$<br>Vs=24 V$_{DC}$(9~30V$_{DC}$) |
| **Accuracy** | Pressure: ±0.5%FS standard.; ±0.2%FS optional<br>Temperature: ±0.4℃ |
| **Compensation temperature (for pressure measure)** | -10~70℃ |
| **Zero-point Temperature Coefficient (for pressure measure)** | ±1.5%FS reference 30℃, within temperature compensation range |
| **Full scale Temperature Coefficient (for pressure measure)** | ±1.5%FS reference 30℃, within temperature compensation range |
| **Medium Temperature** | -40~100℃ |
| **Temperature Resistance of LED** | -30~70℃ |
| **Storage Temperature** | -30~70℃ |
| **Protection grade** | IP65 |
| **Electric protection** | Reverse polarity protection |
| **Mechanical Stability** | Vibration 20g(20~5000Hz)<br>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)
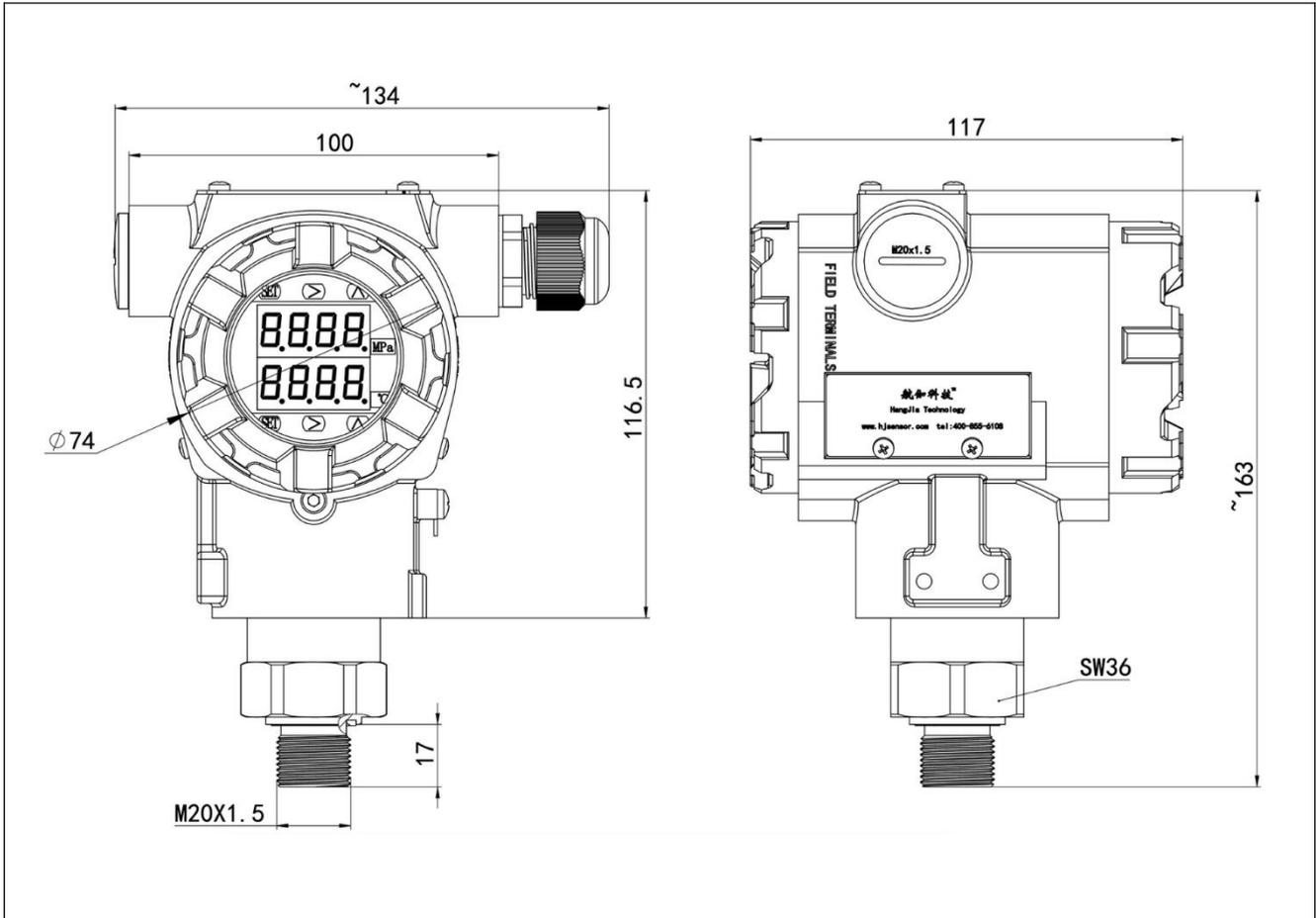


Note:

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 |
|---|---|---|
| A12 | Protection shell | Cast aluminum alloy ADC12 (default) |
| S4 | Pressure port | SS304(default) |
| S6 | | SS316L |
| M1 | Pressure sensor | SS316L(default) |
| FK | O-ring | FKM Fluor rubber sealing rings (applicable temperature range -20~200℃) (default) |

# Electrical Connections



1. Housing
2. Internal grounding terminal
3. External grounding terminal
4. Power supply - (0V/+OUT Temperature)
5. Power supply - (0V/+OUT Pressure)
6. Power supply + (+V)

| Output signal | Pressure: 4~20mADC<br>Temperature: 4~20mADC | | |
|---|---|---|---|
| Signal Definition | Power+<br>(+V) | Power-(0V/+OUT $_{Pressure}$) | Power-(0V/+OUT $_{Temperature}$) |
| Terminals | 24VDC+ | 24VDC- | TEST+ |

# Ordering Guide

| Model Name | Type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HPM86 | 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)℃ | T1 is the lower limit of the range<br>T2 is the upper limit of the range | | | | | | |
| | | | **Code** | **Output Signal** | | | | | |
| | | | B1B1 | Pressure: 4~20mADC<br>Temperature:4~20mADC | | | | | |
| | | | | **Code** | **Process connection** | | | | |
| | | | | P1 | M20×1.5 | | | | |
| | | | | G12 | G1/2 | | | | |
| | | | | | **Code** | **Electrical connection** | | | |
| | | | | | C7 | M20×1.5 female thread, with gland | | | |
| | | | | | | **Code** | **Pressure interface** | | |
| | | | | | | S6 | SS316L | | |
| | | | | | | | **Code** | **Pressure interface material** | |
| | | | | | | | L | L = insertion depth | |
| | | | | | | | | **Code** | **Additional functions** |
| | | | | | | | | G | Gauge pressure（Default） |
| | | | | | | | | A | Absolute pressure |
| | | | | | | | | QF | Factory report |
| | | | | | | | | | Other requirements |
| Eg：HPM86 | (0 ~ 100)KPa | (0 ~ 100)℃ | B1B1 | P1 | C7 | S4 | L=0 | G QF | |

# 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 |

| CE | |
|---|---|
| Certification organization | ECM |
| Certification scope | Pressure Transmitter |
| Standard | EN61326-1:2013 |
| | EN61326-2-3:2013 |
| | EN61000-6-2:2005/AC:2005 |
| | EN61000-6-4:2007+A1:2011 |
| Certificate No. | 3Z200408.NHET098 |