

# PT100 Temperature Probe User Guide

## Product Introduction

This product adopts modbus-rtu protocol, and the computer can monitor the temperature through the communication mode of RS485 interface. Cooperate with WS1 Pro series product to monitor the data on computer platform or mobile APP, and generate temperature data report through the platform.

The PT100 probe is made of specially treated platinum wire wrapped around the inner surface of the probe. Compared with the general axial thermal resistance, it can reflect the actual temperature of the measured object quickly and accurately. The buttcock line is made of high temperature zone shielded fiberglass material, with a temperature range of up to 200 degrees Celsius. PT100 adopts the chip imported from Germany with high stability, and adopts a more stable three-wire connection mode to ensure the accuracy of temperature measurement and anti-interference ability of the system. The probe shell is made of 304 stainless steel, which has good resistance to acid and alkali corrosion. The shell is completely wrapped and can reach IP68 waterproof grade, which means the probe can be continuously measured in water.



## Use Case Scenarios

Widely used in chemical plants, power plants, oil refineries, cold storage, sewage treatment plants, steel plants, food plants and other industrial temperature measurement sites.

## Features

1. RS485 Interface.
2. High precision, wide range, good consistency.
3. Super stability and anti-interference.
4. Wide voltage input, DC5-12V.
5. Standard MODBUS RTU protocol.
6. Cooperate with WS1 Pro to achieve remote monitoring report generation and other functions.

## Product Specification

Specification	
Model	UB-PT-N1
Working Voltage	DC5V~12V
Output Interface	Micro USB / 3.5mm Audio
Communication Methods	RS485
Communication Protocol	MODBUS RTU
Communication Address	1-255 (can be customized)
Baud Rate	300 bit/s,600 bit/s, 1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s, 19200bit/s,38400bit/s,43000 bit/s, 56000 bit/s, 57600 bit/s,115200 bit/s (can be customized)
Measuring Range	-200~600°C

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Measuring Accuracy	$\pm(2\%+1^{\circ}\text{C})$
Probe Length	200mm
Probe Diameter	$\Phi 5$
Lead Length	3 meters
Buttcock Line Temperature Range	-30~200°C

### Communication Protocol

1. All communication circuits shall follow the master/slave mode. In this way, data can be transferred between one primary station (e.g., PC) and multiple sub-stations.No communication should start from a substation.
2. The information transmission mode is asynchronous, byte format is 1 start bit, 8 data bits, and 1 stop bit, no check.
3. Compliance with MODUBS RTU protocol standards.
4. The default baud rate is 9600 and the address is 0xC2.

Query Message from Master (Read)									
Address	Function Code (Read)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB		
0xC2	0x03	RegAddr_H	RegAddr_L	Data_H	Data_L	CRC16_L	CRC16_H		
Response Message from Slave									
Address	Function Code (Read)	Byte Count	Data1 MSB	Data1 LSB	Data2 MSB	Data2 LSB	...	CRC16 LSB	CRC16 MSB
0xC2	0x03	BytesLenth	Data1_H	Data1_L	Data2_H	Data2_L	...	CRC16_L	CRC16_H

Query Message from Master (Write)									
Address	Function Code (Write)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB		
0xC2	0x06	RegAddr_H	RegAddr_L	Data_H	Data_L	CRC16_L	CRC16_H		
Response Message from Slave									
Address	Function Code (Write)	Starting Address Hi	Starting Address Lo	No.of Registers Hi	No.of Registers Lo	CRC16 LSB	CRC16 MSB		
0xC2	0x06	RegAddr_H	RegAddr_L	Data_H	Data_L	CRC16_L	CRC16_H		

### Product Application

1. Do not directly place the transmitter in a high temperature environment.
2. It is prohibited to place the transmitter in the environment of steam, water mist, water curtain or condensation for a long time.
3. The temperature tolerance of the probe buttcock line is 200°C . Exceeding this temperature will lead to the failure of normal temperature measurement and even permanent damage.
4. Once the waterproof box of transmitter is opened, it will not be returned or replaced.