User Guide

Introduction



The PT100 sensor is made of specially treated platinum wire wrapped around the inner surface of the sensor. Compared with the general axial thermal resistance, it can reflect the actual temperature of the measured object quickly and accurately. The sensor 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 sensor 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 sensor 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

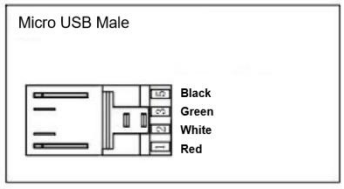
- High precision, wide range, good consistency.
- Super stability and anti-interference.
- Standard MODBUS RTU protocol.

Specification

Specification		
Model	UB-PT-N1	UB-PT-P1
Power Supply	DC 5 V ~ 12 V	DC 5 V ~ 12 V
Measuring Range	-200 ~ 600 ℃	-200 ~ 600 ℃
Measuring Accuracy	± (2% +1 ℃)	± 0.5 ℃
Connector	Micro USB / Audio	
Max Current	237 mA (@5 V), 129 mA (@12 V)	
Dimensions	85 x 33 x 60 mm	
Sensor Length	200 mm	
Sensor Diameter	Φ5 mm	
Cable Length	0.5 m	
Tail Line Working Temperature	-30 ~ 200 ℃	
Communication Protocol	RS485 Modbus RTU Protocol	
RS485 Address	0xC2	
Baud Rate	1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s (default), 19200 bit/s	

Wiring Instruction

Wiring Instruction				
RS485	VCC	B	A	GND
Micro USB	Red	White	Green	Black
Audio	Red	Green	White	Black





Communication Protocols

1. Communication Basic Parameters

Communication Basic Parameter	
Coding System	8-bit binary
Data Bit	8 bits
Parity Checking Bit	none
Stop Bit	1 bit
Error Checking	CRC Check
Baud Rate	1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s (default), 19200 bit/s

2. Data Frame Format

The Modbus-RTU communication protocol is used in the following format:

- Initial structure ≥ 4 bytes in time.
- Address code: 1 byte, default 0xC2.
- Function code: 1 byte, support function code 0x03 (read only) and 0x06 (read / write).
- Data area: N bytes, 16-bit data, high byte comes first.
- Error check: 16-bit CRC code.
- End structure ≥ 4 bytes of time.

Request					
Slave Address	Function Code	Register Address	No. of Registers	CRC LSB	CRC MSB
1 byte	1 byte	2 bytes	2 bytes	1 byte	1 byte

Response							
Slave Address	Function Code	No. of Bytes	Content 1	Content 1	...	Content n	CRC
1 byte	1 byte	1 byte	2 bytes	2 bytes	...	2 bytes	2 bytes

3. Register Address

Register Address				
Address	Content	Register Length	Function Code	Description of Definitions
0x0000	Temperature	1	03	Signed integer data, divided by 10, in [℃]
0x0064	Address	1	03/06	1 ~ 255
0x0065	Baud Rate	1	03/06	2:1200, 3:2400, 4:4800, 5:9600, 6:19200, 7:38400, 8:43000, 9:56000, 10:57600, 11:115200

Product Application

1. Do not directly place the sensor in a high temperature environment or the environment of steam, water mist, water curtain or condensation for a long time.

2. The temperature tolerance of the sensor tail line is 200℃ . Exceeding this temperature will lead to the failure of normal temperature measurement and even permanent damage.