

# User Manual for Temperature and Humidity Acquisition Series

(RS485 version)

V1.2



**中盛科技**  
ZHONGSHENGKEJI



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## foreword

The temperature and humidity collection series products independently developed and produced by Zhongsheng Technology are widely and stably applied in industrial sites, which are cost-effective

Features such as high ratio and good reliability.

This series of products has 1-way temperature and 1-way humidity collection functions, and the onboard Swiss imported high-precision, high-reliability temperature and humidity sensor

The sensor chip SHT30, the communication interface includes RS485, CAN and network port, etc. If the general model cannot meet your usage requirements

If you want, you can contact us to help you order.

Note: The data with prefix 0x or suffix H are hexadecimal.



## 1 Product introduction

### 1.1 Product function

• Adopt the latest high-precision digital temperature and humidity sensor (SHT30) from Sensirion in Switzerland, with high sensitivity, good stability,

Full range automatic temperature compensation;

• The MCU adopts the professional and leading high-quality low-power chip of ST Company, which has high reliability and strong anti-interference ability;

• RS485 communication, standard Modbus RTU protocol;

• Wide temperature measurement range: -40~+120;

• Humidity measurement range is wide: 0~100%;

• Support modification of address (1~255), baud rate (4800bps-115200bps) and verification method, and save when power off;

• Power supply, communication indicator light, parameter reset button;

• Hardware and software dual watchdog, never downtime;

• Provide supporting PC testing software, which is convenient for testing and modifying parameters.

### 1.2 Product Features

• High speed, high precision, high reliability, industrial grade;

• STMicroelectronics imported MCU (main control chip);

• High-precision temperature and humidity acquisition chip SHT30 imported from Switzerland;

• Built-in switching power supply circuit, wide supply voltage range, high conversion efficiency;

• Both power supply and communication have anti-reverse protection and over-current protection;

• Both power supply and communication have anti-static, lightning surge functions, and strong anti-interference;

• The key chips are brand new and imported;

• Industrial-grade products to meet the needs of different fields;

• Easy installation, standard C45 (35mm) U-shaped universal guide rail installation or screw installation.



### 1.3 Product parameters

The main parameters of the product are shown in Table 1.1.

Table 1.1 Product parameters

Product parameters	
Power supply voltage	5V DC/5~36V DC
Power consumption	<100mW
Communication method	RS485
Number of acquisition channels	1 channel temperature + 1 channel humidity
Temperature range	-40~+125
Temperature resolution	0.1°C
Temperature accuracy	±0.3°C
Humidity range	0~100%RH
Humidity resolution	0.1%RH
Humidity accuracy	±2%RH
long-term stability	Temperature: <0.03%/yr Humidity: <0.25%RH/yr
data update rate	30Hz/channel
Communication Protocol	Modbus RTU
support command	Read holding register 03H
	Read input register 04H
	Write a single holding register 06H
	Write multiple holding registers 10H
Data analysis method	1 decimal point
Communication address	1~255 can be set, save when power off
Baud rate	4800/9600/14400/19200/38400/56000/57600/115200bps can be set, power off save
Communication distance	0~1200 meters, can be extended by repeater
Parameter reset	reset button/software reset
LED Power/Communication	



Watchdog hardware	software dual watchdog never downtime
Protection function	Overcurrent/overvoltage/reverse connection/lightning surge protection
Working temperature	-40~+85
Working humidity	0%~95%RH (no condensation)
Dimensions	Length × Width × Height: 65 × 46 × 28.5mm
Installation method	Standard C45 (35mm) universal guide rail installation, or screw hole installation

## 1.4 Product Wiring

### 1.4.1 Product Wiring Table

Table 1.2 Wiring table

Wiring table	
logo	Function
+	Positive pole of power supply
-	Negative pole of power supply
A	RS485+
B	RS485-

### 1.4.2 Power supply and communication wiring

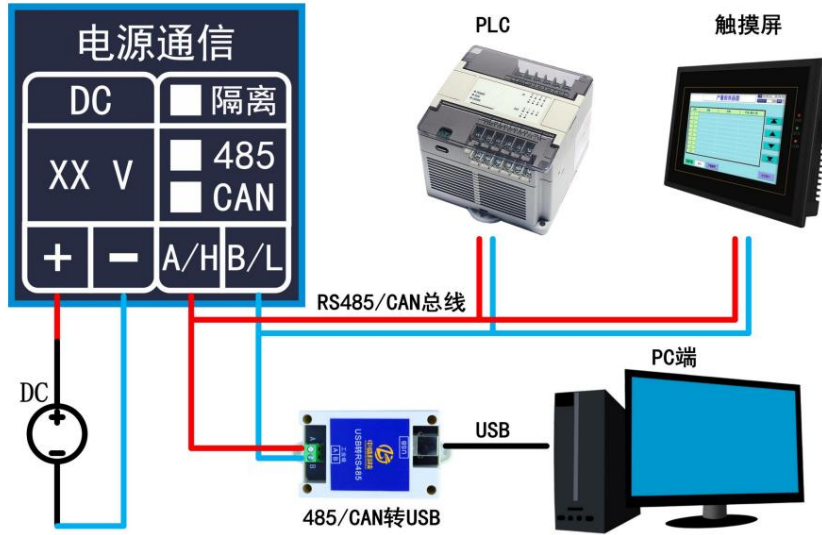


Figure 1.1 Schematic diagram of power supply and communication wiring

### 1.4.3 RS485 bus wiring

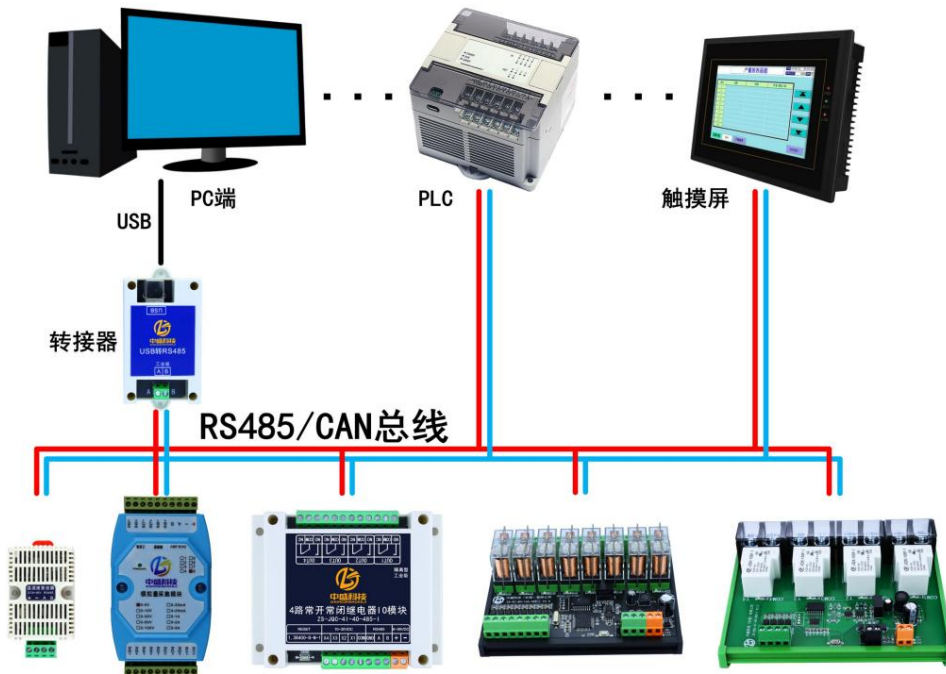


Figure 1.2 RS485 bus wiring diagram



## 2 communication protocol

The product adopts the standard Modbus RTU protocol, and the default communication parameters are as follows:

• Address: 1

• Baud rate: 9600

• Data bits: 8

• Stop bit: 1

• Parity check: none

### 2.1 Input register function definition

The temperature and humidity values are each represented by 1 input register. The input registers are read-only registers, and the

The values are all 16-bit unsigned integers, and a fixed 1-digit decimal point is used to represent the actual collected temperature and humidity values.

The function definition of the input register is shown in Table 2.1.

Table 2.1 Input register function definition

Input register function definition		
Protocol address	PLC address	Functional description
0000H	30001	temperature value Unit: $\ddot{y}$ Analysis method: fixed 1 decimal point (1) Positive temperature: register data <10000 Example: The register value is 250, the actual humidity value: $250 \times 0.1 = 25 (\ddot{y})$ (2) Negative temperature: register data $\geq 10000$ Example: The register value is 10250 Actual humidity value: $-1 \times (10250 - 10000) \times 0.1 = -25 (\ddot{y})$
0001H	30002	humidity value Unit: %RH Analysis method: fixed 1 decimal point Example: The register value is 500, the actual humidity value: $500 \times 0.1 = 50 (\%RH)$
0002H	30003	temperature value
0003H	30004	Unit: $\ddot{y}$ Parsing method: 32-bit floating point number, big endian mode
0004H	30005	humidity value
0005H	30006	Unit: %RH Parsing method: 32-bit floating point number, big endian mode



## 2.2 Holding register function definition

This series uses the holding register in Modbus RTU to set the module parameters, and the contents of the register are saved when power off. keep sending

The registers are readable and writable registers, and the values in each register are 16-bit unsigned integers.

The function definition of the holding register is shown in Table 2.2.

Table 2.2 Holding register function definition

Holding register function definition			
Protocol address	PLC address	reset value	Functional description
0000H	30001	temperature value	temperature value Unit: $\ddot{y}$ Analysis method: fixed 1 decimal point (1) Positive temperature: register data <10000 Example: The register value is 250, the actual humidity value: $250 \times 0.1 = 25$ $\ddot{y}\ddot{y}$ (2) Negative temperature: register data $\geq 10000$ Example: The register value is 10250 Actual humidity value: $-1 \times (10250 - 10000) \times 0.1 = -25(\ddot{y})$
0001H	30002	humidity value	humidity value Unit: %RH Analysis method: fixed 1 decimal point Example: The register value is 500, the actual humidity value: $500 \times 0.1 = 50$ $\ddot{y}\%RH\ddot{y}$
0002H	30003	temperature value	temperature value Unit: $\ddot{y}$ Parsing method: 32-bit floating point number, big endian mode
0003H	30004		
0004H	30005	humidity value	humidity value Unit: %RH Parsing method: 32-bit floating point number, big endian mode
0005H	30006		
000AH	40011	1	RS485 bus address/station number (1~255). Factory default: 1 Note: This parameter is saved after power off, and it will take effect after power on again after modification



000BH	40012	1	<p>Baud rate setting.</p> <p>0: 4800</p> <p>1: 9600 (factory default)</p> <p>2: 14400</p> <p>3: 19200</p> <p>4: 38400</p> <p>5: 56000</p> <p>6: 57600</p> <p>7: 115200</p> <p>Note: This parameter is saved after power off, and it will take effect after power on again after modification</p>
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### 3 data download

#### 3.1 Modbus RTU protocol manual download



Figure 3.1 Click the icon above to download "Modbus RTU Protocol Manual"

#### 3.2 Zhongsheng Comprehensive Test System Download



Figure 3.2 Click the icon above to download Zhongsheng Comprehensive Test System



#### 4Company information

Zhongsheng Technology (Dongguan) Co., Ltd. is a company focusing on R&D, production and sales of industrial automation products and providing automatic A high-tech enterprise that provides solutions. Zhongsheng Technology has mastered the industry-leading "detection and control" technology, using our many years Experience, as well as a deep understanding of the automation field, and constantly meet customers' pursuit of product diversification and high quality.

The company has strong technology and research and development strength, and the proportion of hardware circuit design, software development and communication technology experts and R&D personnel More than 40%, with more than 50 patents and software works and more than 10 product series. At present, the main product series are several Digital input and output, analog input and output, temperature/humidity acquisition, AC acquisition, pulse input and output, digital tube display Screen, interface conversion and other series. Widely used in power systems, intelligent transportation, industrial automation, Internet of Things, mineral energy, It has accumulated a lot of successful experience in the fields of security system and smart home, and is the leading industrial automation product and solution in China. case provider.

Company contact information is as follows:

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#### Zhongsheng WeChat public account



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Thanks!