Rail temperature and humidity transmitter

manual

—— V2.0

Model: CR-CT01TH

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Table of contents

1.Product Introduction

1.1Product Overview

CR-CT01TH is used to collect ambient temperature and humidity. It has a standard DIN35 rail mounting card and can be directly used

Rail installation. Use imported high-precision temperature and humidity sensors to ensure the product's excellent reliability, high precision and mutual

It adopts 485 communication interface and standard Modbus-RTU communication protocol. It is powered by 9～24V wide voltage range.

Complete specifications and easy installation.

1.2Features

This product uses built-in sensors, is compact, and integrates multiple elements to meet customers' environmental information needs.

demand.

The measuring unit is imported from Switzerland, which features accurate measurement, stable values and small errors.

The output signal is RS485, standard Modbus-RTU communication protocol, supports changing the communication address and wave

The 485 communication can theoretically communicate up to 1200 meters, supports secondary development, and is widely used.

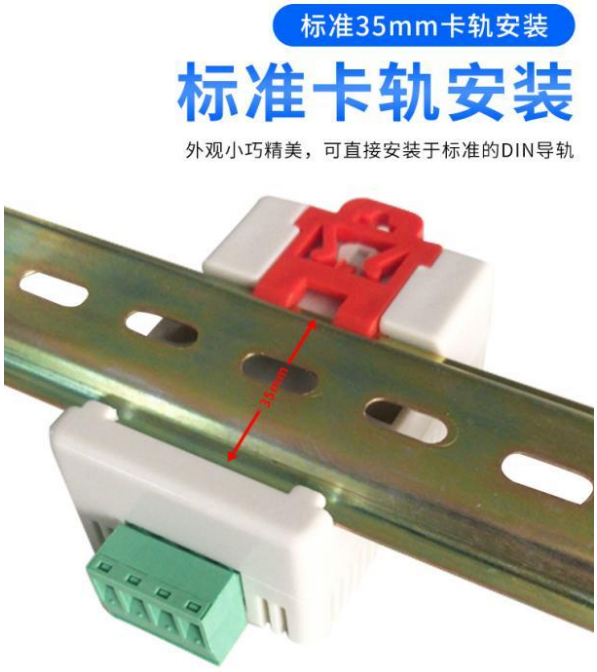
2.Main technical indicators

Technical Parameters	
Signal output type	RS485
Supply voltage	DC 9V-24V
Product power consumption (@12V DC)	⩽4mA
Communication Protocol	Modbus-RTU
Data refresh time	＜1S
temperature	Range: -40-80℃ Resolution: 0.1℃ Accuracy: ±0.3℃ (0℃-65℃)
humidity	Range: 0-100%RH Resolution: 0.1%RH Accuracy: ±3%RH
Operating Environment	- 40~80℃

3.Wiring Instructions

	illustrate
electricity source	Power positive (9～24V DC)
	Negative power supply
Pass letter	485-A
	485-B

4.Dimensions and installation instructions



5. RS485Communication Protocol

5.1ModbusCommunication Protocol

Basic communication parameters:

Baud rate	9600 (default)
Data bits	8-bit
Stop bits	1 bit
Check digit	none
Device Address	1 (default)

Host inquiry frame structure:

Address code	Function code	Register start address		Number of registers		CRC16 checksum	
		high	Low	high	Low	Low	high
1 byte	1 byte 1	byte	1 byte	1 byte	1 byte	1 byte	1 byte

Slave response frame structure:

Address code	Function code	Number of valid bytes	Data Area	Check code
1 byte 1	byte	1 byte	N bytes	2 bytes

Address code: The device address of the transmitter, which is unique in the communication network (factory default 0x01).

When the 485 bus is connected to multiple 485 devices, do not set the same device address.

Function code: Function instructions sent by the host. Modbus protocol has two common register instructions:

(1) Read single or multiple register values: Function number 3 (0x03) is used to read device information, parameters, Number data.

(2) Write a single register: Function number 6 (0x06) is used to change device information, such as device address, The device baud rate, etc., will not be lost when power is off.

Register starting address, number of registers:

(1) When reading a single parameter, the register starting address is the register address of the parameter, and the number is 1. For example, when reading humidity, the register start address is 0x0002 and the number of registers is 0x0001.

(2) When reading multiple parameters, the register starting address is the first register address among the multiple parameters. The number of registers is the number of registers occupied by all parameters. For example, when reading temperature and humidity, the register starting address is 0x0001, the number of registers is 0x0002.

Data Area: Specific communication data, note that the high byte of 16-bit data comes first.

CRC code：16-bit CRC check code, low byte first, high byte last.

5.2Modbusregister

Parameter name	Register Address (hexadecimal)	parameter type	Modbus Function Number	Parameter range and description	Remark
temperature	0x0001	16 bit	3 Read-only	- 400-800 correspondence - 40.0~80.0℃	Negative numbers are two's complement
humidity	0x0002	16 bit	3 Read-only	0-1000 corresponding 0-100.0%RH	
Modbus Slave address	0x0100	16 bit	3/6 Read and Write	0-255	1 (default)
Serial communication baud Rate	0x0101	16 bit	3/6 Read and Write	0-6 1:2400 2:4800 3:9600 4:19200 5:57600 6:115200	9600 (default)

6. ModbusCommunication Example

6.1Function Number03Communication Example

Read device address:

Inquiry frame:

Address code	Function code	Starting address	Number of registers	Check code Low	Check code High
01	03	01 00	00 01	85	F6

Response frame:

Address code	Function code	Character length	Data content	Check code Low	Check code High
01	03	02	00 01	79	84

Device address: 0001 (hexadecimal) = 0001 (decimal) => Device address: 1

Read temperature and humidity values:

Inquiry frame:

Address code	Function code	Starting address	Number of registers	Check code Low	Check code High
01	03	00 01	00 02	95	CB

Response frame:

Address code	Function code	Character length	Data content	Check code Low	Check code High
01	03	04	01 0C 02 3E	BB	7C

Temperature calculation: 010C (hexadecimal) = 268 (decimal) => Temperature = 268/10 = 26.8°C

Humidity calculation: 023E (hexadecimal) = 574 (decimal) => Humidity = 574/10 = 57.4%RH

6.2Function Number06Communication Example

Modify the device address to 02:

Request frame:

Address code	Function code	Modified mail Register address	Write to register value	Check code Low	Check code High
01	06	01 00	00 02	09	F7

Response frame:

Address code	Function code	Register Address	Modified value	Check code Low	Check code High
02	06	01 00	00 02	09	C4

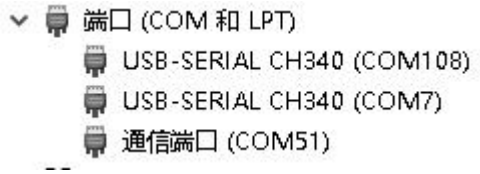
7.Software Usage

7.1Device connection computer instructions

Users can use the "Temperature and Humidity" software provided by our company or any serial port debugging software and device

When communicating, please note that the device needs to be connected to the computer via USB to 485. After the USB is inserted into the computer,

You can check the COM port in "My Computer - Properties - Device Manager - Ports".



Connect the A and B of the device to the A and B of the adapter module, power the device, open the software, and select the correct serial port.

port, baud rate and other serial communication parameters. Note that both the sent and received data must be in hexadecimal.

Transmit and display.

7.2" CUBERAYS"Environmental Monitoring" Software Instructions

7.2.1Connecting devices

Steps: ①Set up---②Select serial port---③Get device information---④Communication is successful

7.2.2Reading Data

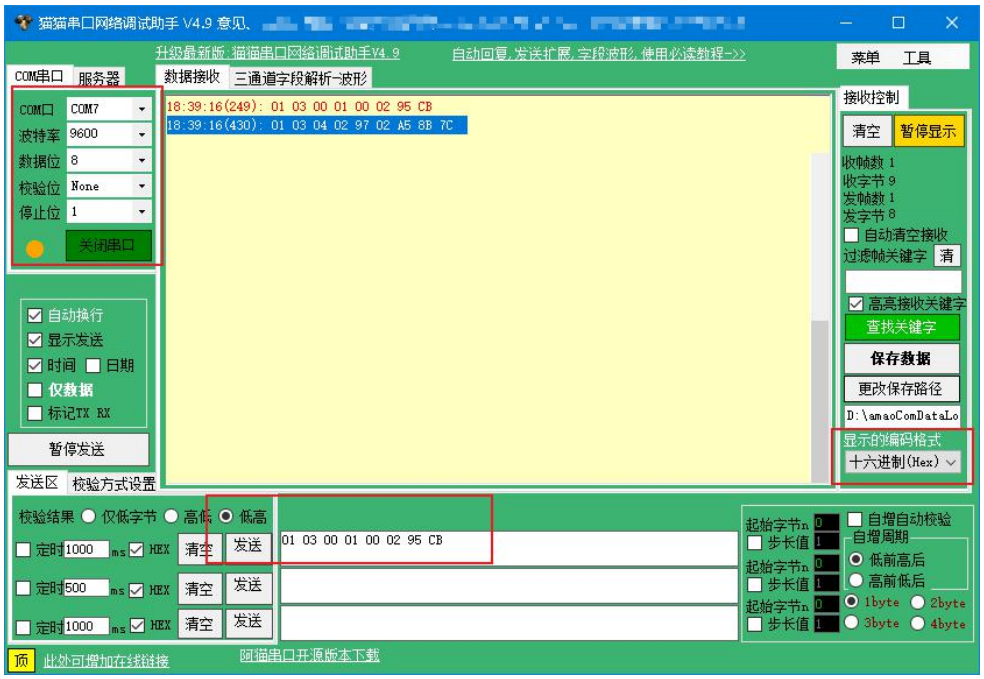
Steps: ①Display---②Click to query

7.2.3Change device address and baud rate

Modify device address Steps: ①Set --- ②Fill in the modified content --- ③Set --- ④OK

Modify the baud rate Steps: ①Set --- ②Select baud rate --- ③Set --- ④OK

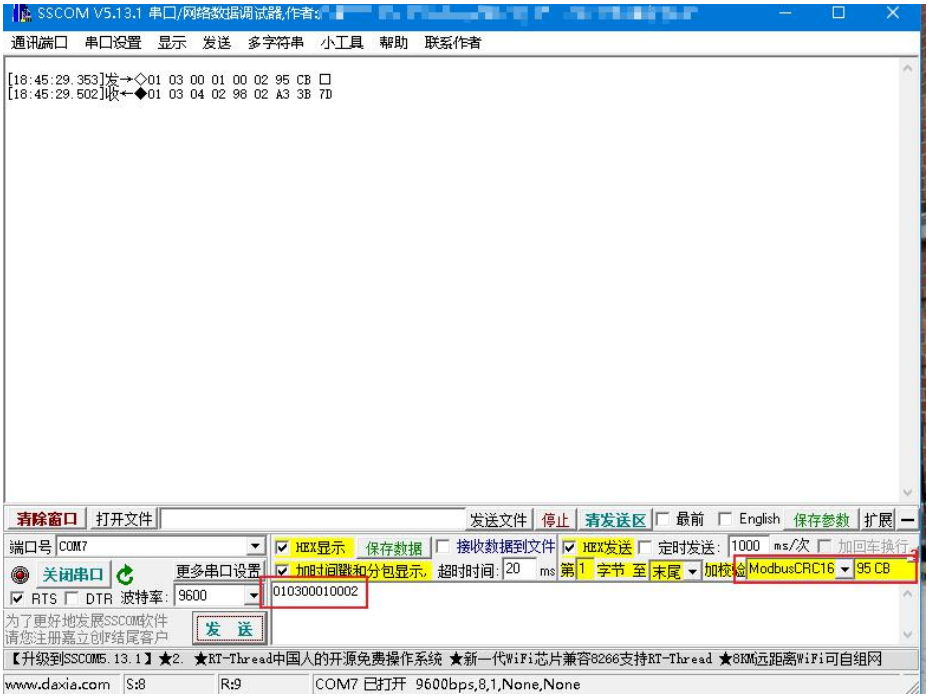
7.3Common Serial Port Assistant Usage Examples



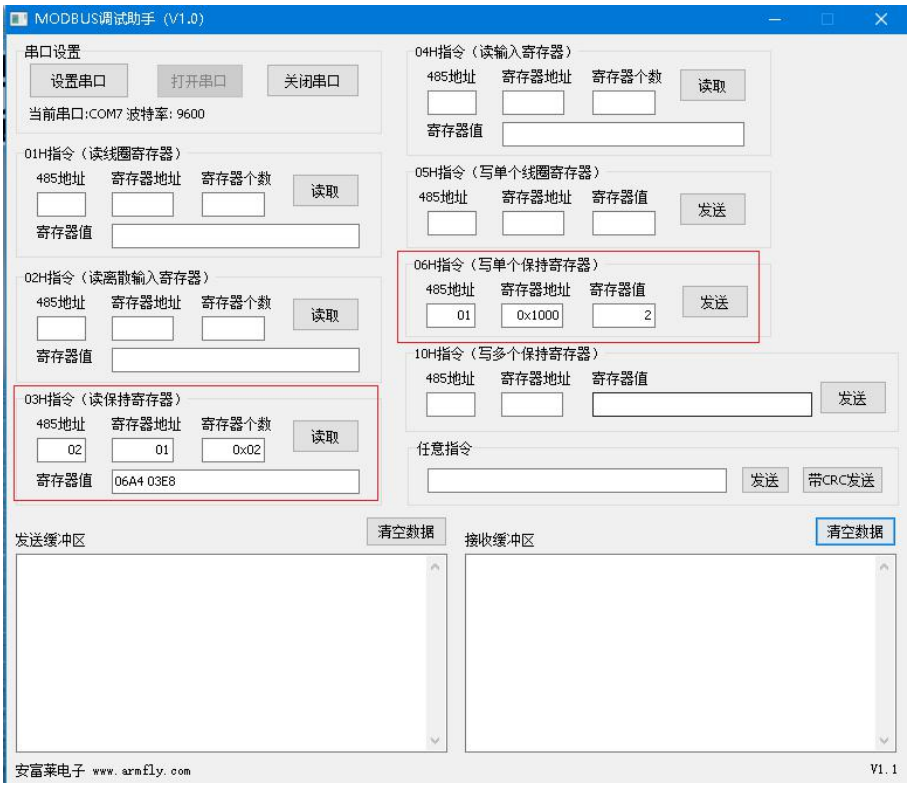
Note: After selecting the communication parameters, "Open the serial port", the verification result is "low high", and the displayed encoding format

The format is "HEX", enter the command in the command box, right-click and select "CRC-16 Check" to fill in

Enter the verification code and click "Send".



Description: Select communication parameters, turn on "HEX display", "time stamp and packet display", "HEX Send", "End", add checksum "ModbusCRC16", enter the command in the command box, and click "Send".



Note: Open "Set Serial Port" and select communication parameters, then "Open Serial Port".

Enter the 485 address, register start address, and number of registers to read in the 03H instruction, and click “Read "Read", the register value shows the parameter value read.

Enter the 485 address, the register address to be modified, and the modified content in the 06H instruction, and click "Send". deliver".

8.Common Problems and Solutions

The device cannot connect to the PLC or computer. Possible reasons:

(1) The device is not powered normally. Low voltage or unstable voltage may cause data abnormality.

(2) The computer has multiple COM ports and the COM port selected is incorrect.

(3) The communication parameters such as baud rate, checksum, data bits, etc. are incorrectly selected.

(4) The device address is incorrect, or there is a device with a duplicate address (factory default is 1).

(5) The host polling interval and waiting response time are too short and need to be set to more than 300ms.

(6) The RS485 wiring is disconnected, or the A and B lines are connected in reverse.

(7) If there are too many devices or the wiring is too long, the power supply should be nearby, a 485 amplifier should be added, and a 120Ω terminal should be added.

Terminal resistance.

(8) The USB to 485 driver is not installed or is damaged.

(9) Equipment damage.

9.Warranty and after-sales

9.1Warranty Commitment

The product warranty period is 12 months from the date of delivery (due to failure to operate in accordance with the corresponding technical requirements or other

Except for product problems caused by human behavior).

9.2After-sales commitment

Users can consult technical issues by phone and get clear solutions.

If there is any problem, it can be returned to the factory for repair or replacement.

10.Contact Details

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