SONBEST RS485 Interface with Communication Function Temperature and Humidity Controller User Manual

Contents

SONBEST RS485 Interface with Communication Function Temperature and Humidity Controller

SC7210B u sing the standard RS485 bus MODBUS RTU protocol,easy access to PLC DCS and other instruments or systems for monitoring temperature,humidity state quantities.The internal use of high precision sensing core and related devices to ensure high r eliability and excellent long term stability,can be customized RS232,RS485,CAN,4 20mA,DC0~5V 10V,ZIGBEE,Lora,WIFI,GPRS and
other output methods.

Technical Parameters

Technical parameter	Parameter value
Brand	SONBEST
Temperature measuring range	-30℃~80℃
Temperature measuring accuracy	±0.5℃ @25℃
Humidity measuring range	0~100%RH
Humidity accuracy	±3%RH @25℃
Communication Interface	RS485
Default baud rate	9600 8 n 1
Power	AC185~265V 1A
Control mode	Relay
carrying capacity	10A 220VAC
Running temperature	-40~80°C
Working humidity	5%RH~90%RH

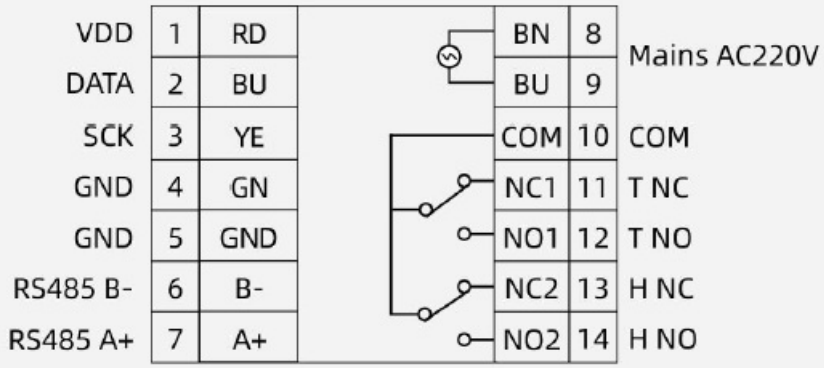
How to wiring?

WIRING METHOD

Easy-to-understand wiring without complicated operations

WIRING METHOD

Easy-to-understand wiring without complicated operations

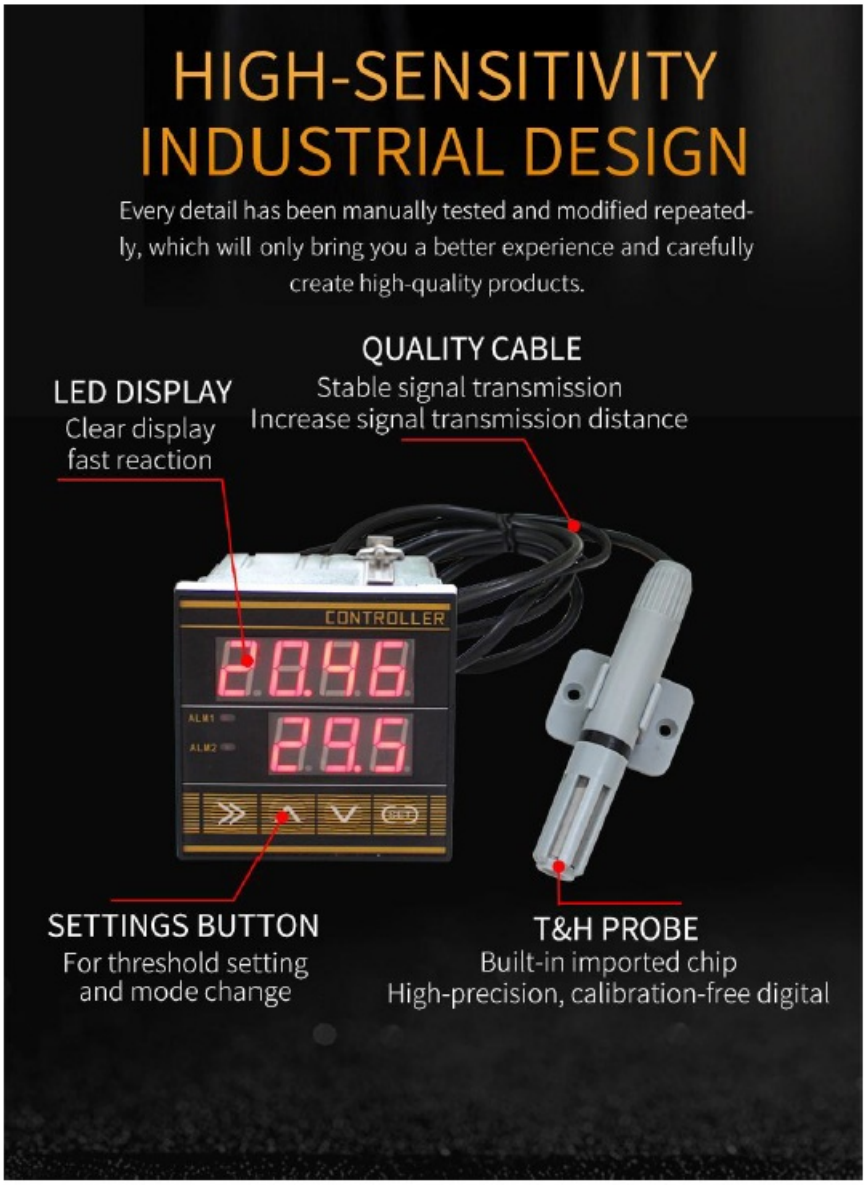


Left sensor wiring

(1)RD	VDD
(2)BU	DATA
(3)YE	SCK
(4)GN	GND

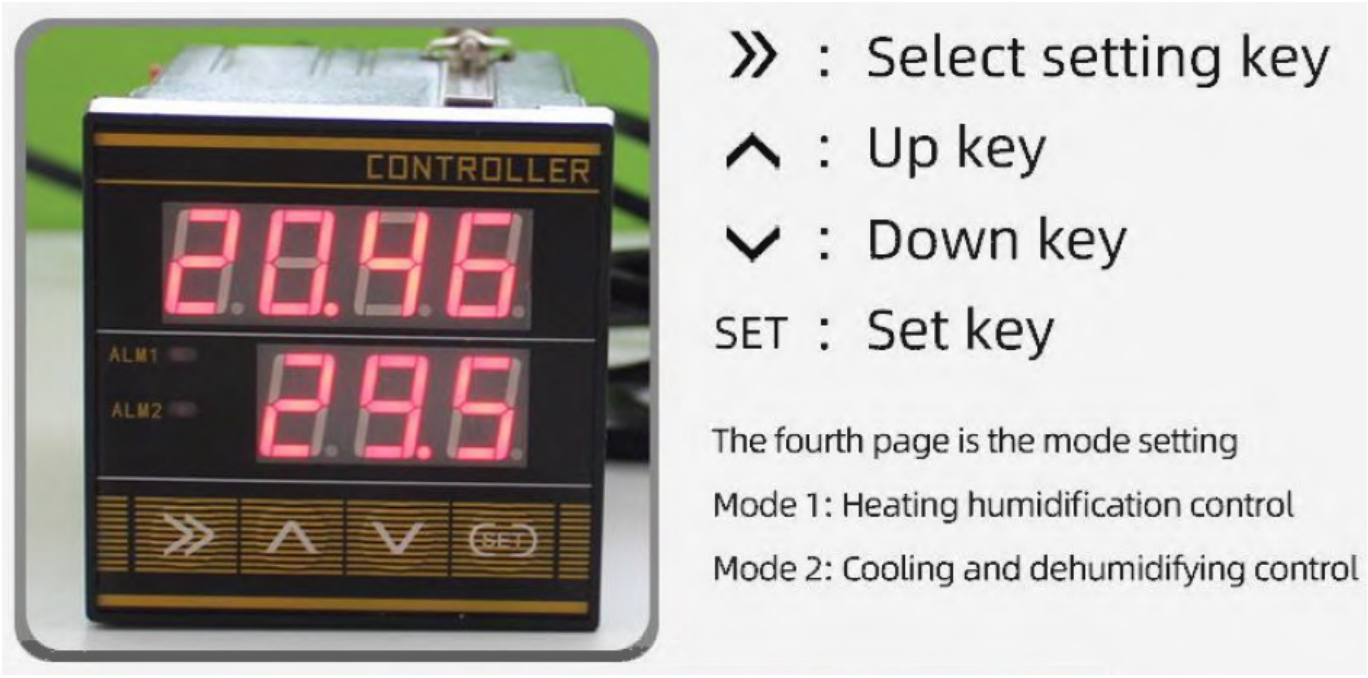
AC220V wiring on the right

(8)GN	L GN
(9)BU	N BU



DETAILED KEYS

Standard MODBUS-RTU protocol, default baud rate is 9600, invalid check, 8 data bits, software can change threshold and other parameters, and query lighting data in real time through RS485

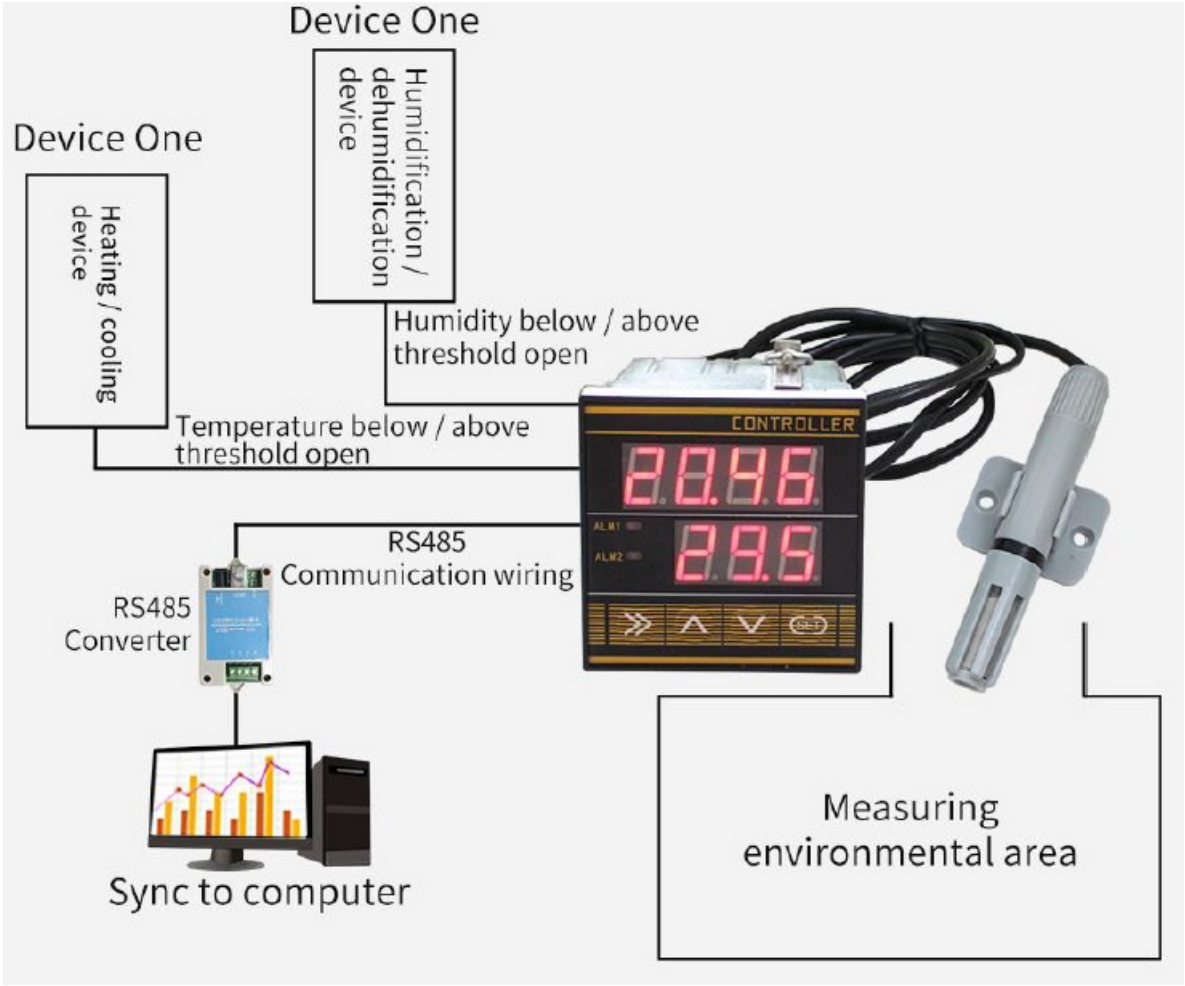


The upper part is the temperature display value
The lower part is the humidity display value.

- Press and hold SET for two seconds and release it to enter the heating and humidifying control setting.
  Press }) to select the position, press /\, and V to adjust the value model , the controller will act when the value is lower than the lower limit threshold.
  Upper threshold: Minimum temperature 0, maximum 99.9
  Humidity minimum 0, maximum 99.9
- Press SET to enter the cooling and dehumidifying control setting
- Press }) to select the posit ion, press /\ and 11V11 to adjust the value
  In mode 2, the controller will act when the value is higher than the upper th reshold.
  Lower limit threshold: Minimum temperature -30, maximum 99.9
  Humidity minimum 0, maximum 99.9
- Press SET twice to enter the control hysteresis setting
  Press }) to select the position, press /\ and V to adjustthe value.
  Hysteres is: Minimum temperature 0, maximum 10
  Humidity minimum 0, maximum 10
- Press SET three times to enter the control mode setting
  Press }) to select the posit ion, press /\ and V to adjustthe value.
  Mode 1: Action below the lower limit threshold
  Mode 2: Action above the upper threshold

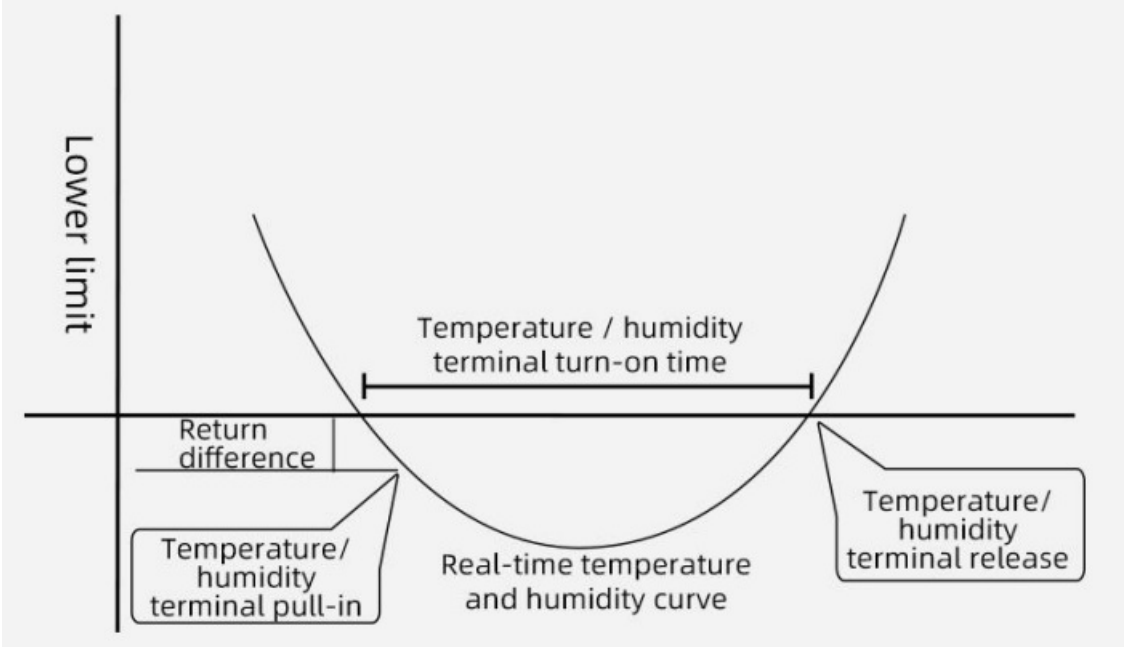
How to use?

APPLICATION OF INTELLIGENT CONTROLLER
Example: During monitorin g, if the temperature and humidity exceed / below the th reshold, the sensor will transmit the temperature and humidity data to the contro ller, then the controller will turn off/ on the device according to the preset t hreshold, and the data will be transmitted through the RS485 communication port. Sync to computer


Device One
Humidification / dehumidification device
Device One
Heating / cooling device
Humidity below / above threshold open
Temperature below / above threshold open
CONTROLLER
RS485
Communication wiring
RS485
Converter
Sync to computer
Measuring environmental area

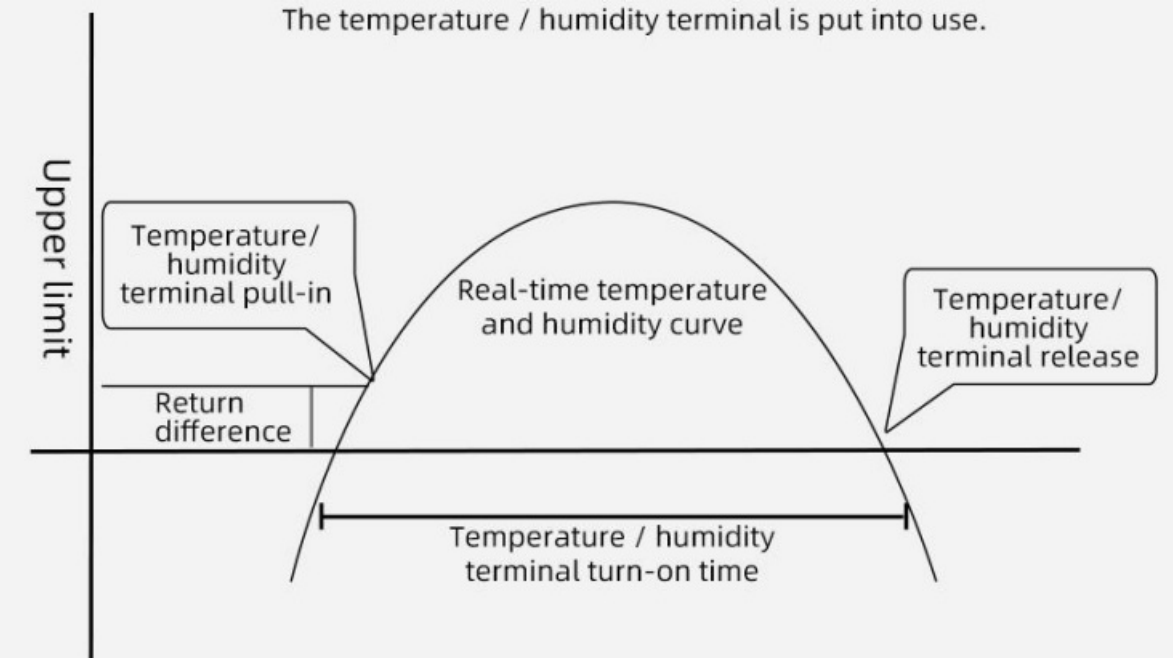
CONTROL METHOD AND PROCESS

Heating and humidification control, cooling and dehumidification control
Mode 1: The action is below the lower threshold
The temperature I humidity terminal is put into use.



Opening and closing process of temperature and humidity control equipment
Working condition of temperature/ humidity terminal access: measured value <lower limit threshold-return difference
Temperature I humidity terminal release action condition: measured value> lower limit threshold+ return difference value
XAs shown in the figure above, when the measured value is lower than the lower threshold minus the return difference, it will be pulled into the internal temperature/ humidity terminal of the controller and powered on. When the measured value rises to the sum of the upper limit and the return difference, the temperature/ humidity terminal is disconnected. Turn off the device.

Mode 2: Action above the upper threshold
The temperature/ humidity terminal is put into use.



Opening and closing process of temperature and humidity control equipment
Working conditions for temperature and humidity terminal access: measured value> upper threshold+ hysteresis
Temperature and humidity terminal release action conditions:
measured value <upper limit threshold-return difference XAs shown in the figure above, when the measured value is higher than the upper threshold plus the return difference, the internal temperature I humidity terminal of the controller will pull in and turn on the device; when the measured value drops to the lower limit threshold minus the return difference, the temperature / humidity terminal Disconnect and turn off the device.

The product uses RS485 MODBUS RTU standard protocol format, all operation or reply commands are hexadecimal data. The default device address is 1 wh en the device is shipped, the default baud rate is 9600, 8, n, 1

1. Read Data (Function id 0x03)

   Inquiry frame (hexadecimal), sending example: Query 1# device 1 data, the host computer sends the command:01 03 00 00 00 02 C4 0B .

Device ID	Function id	Start Address	Data Length	CRC16
01	03	00 00	00 02	C4 0B

   For the correct query frame, the device will respond with data:01 03 04 00 7A 00 00 DB EA , the response format is parsed as follows:

Device ID	Function id	Data Length	Data 1	Data 2	Check Code
01	03	04	00 79	00 7A	DB EA

Data Description: The data in the command is hexadecimal. Take data 1 as an example. 00 79 is converted to a decimal value of 121. If the data magnification is 100, the actual value is 121/100=1.21. Others and so o n.

2. Data Address Table

Address	Start Address	Description	Data type	Value range
40001	00 00	temperature	Read Only	0~65535
40002	00 01	humidity	Read Only	0~65535
40101	00 64	model code	read/write	0~65535
40102	00 65	total points	read/write	1~20
40103	00 66	Device ID	read/write	1~249
40104	00 67	baud rate	read/write	0~6
40105	00 68	mode	read/write	1~4
40106	00 69	protocol	read/write	1~10

3. read and modify device address
    1. Read or query device address

       If you don’t know the current device address and there is only one device on th e bus, you can use the command FA 03 00 64 00 02 90 5F Query device address.

Device ID	Function id	Start Address	Data Length	CRC16
FA	03	00 64	00 02	90 5F

       FA is 250 for the general address. When you don’t know the address, you can use 250 to get the real device address, 00 64 is the device model register.

       For the correct query command, the device will respond, for example the response data is: 01 03 02 07 12 3A 79, the format of which is as shown in the following table:

Device ID	Function id	Start Address	Model Code	CRC16
01	03	02	55 3C 00 01	3A 79

       Response should be in the data, the first byte 01 indicates that the real address of the current device is, 55 3C converted to decimal 20182 indicates that the current device main model is 21820, the l ast two bytes 00 01 Indicates that the device has a status quantity.

    2. Change device address

For example, if the current device address is 1, we want to change to 02, the command is:01 06 00 66 00 02 E8 14 .

Device ID	Function id	Start Address	Destination	CRC16
01	06	00 66	00 02	E8 14

After the change is successful, the device will return information: 02 06 00 66 00 02 E8 27 , its format is parsed as shown in the following table:
Response should be in the data, after the modification is successful, the first byte is the new device address. After the general device address is changed, it will take effect immediately. At this time, the user needs to cha nge the query command of the software at the same time.

4. Read and Modify Baud Rate
    1. Read baud rate
    The device default factory baud rate is 9600. If you need to change it, you can change it according to the following table and the corresponding communication protocol. For example, read the current device's baud rate ID, the command is:01 03 00 67 00 01 35 D5 , its format is parsed as follows.

Device ID	Function id	Start Address	Data Length	CRC16
01	03	00 67	00 01	35 D5

Read the baud rate encoding of the current device. Baud rate encoding: 1 is 2400; 2 is 4800; 3 is 9600; 4 is 19200; 5 is 38400; 6 is 115200.
For the correct query command, the device will respond, for example the response data is: 01 03 02 00 03 F8 45, the format of which is as shown in the following table:

Device ID	Function id	Data Length	Rate ID	CRC16
01	03	02	00 03	F8 45

coded according to baud rate, 03 is 9600, ie the current device has a baud rate of 9600.

    2. Change the baud rate
    For example, changing the baud rate from 9600 to 38400, ie changing the code from 3 to 5, the command is: 01 06 00 67 00 05 F8 16 01 03 00 66 00 01 64 15 .

Device ID	Function id	Start Address	Target Baud Rate	CRC16
01	03	00 66	00 01	64 15

Change the baud rate from 9600 to 38400, changing the code from 3 to 5. The new baud rate will take effect immediately, at which point the device will lose its response and the baud rate of the device should be queried accordingly. Modified.

5. Read Correction Value
    1. Read Correction Value

When there is an error between the data and the reference standard, we can reduce the display error by adjusting the correction value. The correction difference can be modified to be plus or minus 1000, t hat is, the value range is 0 1000 or 64535 65535. For example, when the display value is too small, we can correct it by adding 100. The command is: 01 03 00 6B 00 01 F5 D6 . In the command 100 is hex 0x64 If you need to reduce, you can set a negative val ue, such as 100, corresponding to the hexadecimal value of

FF 9C, which is calculated as 100 65535=65435, and then converted to hexadecimal to 0x FF 9C. The correction value starts from 00 6B. We take the first parameter as an example. The correction valu e is read and modified in the same way for multiple parameters.

Device ID	Function id	Start Address	Data Length	CRC16
01	03	00 6B	00 01	F5 D6

For the correct query command, the device will respond, for example the response data is: 01 03 02 00 64 B9 AF, the format of which is as shown in the following table:

Device ID	Function id	Data Length	Data value	CRC16
01	03	02	00 64	B9 AF

In the response data, the first byte 01 indicates the real address of the current device, and 00 6B is the first state quantity correction value register. If the device has multiple parameters, other parameters operate in this way. The same, the general temperature, humidity have this parameter, the light generally does not have this item.

2. Change correction value

   For example, the current state quantity is too small, we want to add 1 to its true value, and the current value plus 100 correction operation command is:01 06 00 6B 00 64 F9 FD .

Device ID	Function id	Start Address	Destination	CRC16
01	06	00 6B	00 64	F9 FD

   After the operation is successful, the device will return information: 01 06 00 6B 00 64 F9 FD, the parameters take effect immediately after successful change.

Disclaimer

Contact Us
Company: Shanghai Sonbest Industrial Co., Ltd

Address:Building 8,No.215 North east ro ad,Baoshan District,Shanghai,China
Web: http://www.sonbest.com
Web: http://www.sonbus.com
SKYPE: soobuu
Email: sale@sonbest.com
Tel: 86 021 51083595 / 66862055 / 66862075 / 66861077

Documents / Resources

	SONBEST RS485 Interface with Communication Function Temperature and Humidity Controller [pdf] User Manual RS485, Interface with Communication Function Temperature and Humidity Controller

References

- Home-ä¸Šæµ·æœåšå®žä¸šæœ‰é™å…¬å¸
- Home-SONBEST -SONBUS.COM| THE SENSOR COMPANY
- Home-SONBEST -SONBUS.COM| THE SENSOR COMPANY