

SC1200B-20



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160 points 20-channel temperature controller

fine

Product Overview

SC1200B-20 intelligent temperature controller, with the United States DALLAS dedicated bus temperature sensor, on-line monitoring and control of equipment based on the integration of practical industrial use MODBUS-RTU protocol, low-cost temperature state,

The instrument can be (1) SMT industry temperature data monitoring (2) Electronic Equipment Factory temperature data monitoring (3) cold storage temperature monitoring (4) Storage Temperature Monitoring (5) pharmaceutical GMP monitoring system (6) Ambient Temperature Monitoring (7) telecommunications room temperature monitoring (8) air-conditioning control systems and other applications where energy efficiency (9) battery pack temperature alarm control.

In order to facilitate networking and industrial applications, the module uses MODBUS-RTU communication protocol widely used in industry to support secondary development, and provide random testing and secondary development of software. Users only need to use any serial communication software module data query and set according to our protocol.



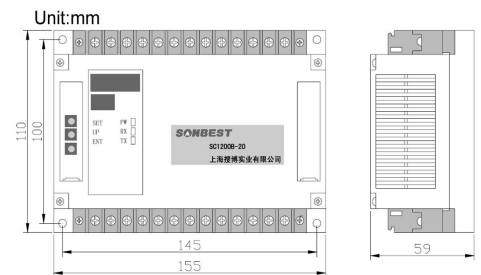
ORDERING INFORMATION

Type	Order No.	Remark
SC1200B-20	SC1200B-20	Sensor with optional

Parameters

Parameter	Value
Display temperature range	-40 °C ~ +100 °C
Measurement Accuracy	± 0.5 °C (0-85 °C)
Baud Rate	9600
Communication port	RS485
Power supply	Bus-powered, DC7V-36V 1A
Power Consumption	2W
Storage Temperature	-40 - 85 °C
Operating Environment:	-40 - 85 °C
Dimensions	155 × 111 × 60mm ³
Control Interface with a carrying capacity	2A 120V AC 2A 24V DC

Dimensions

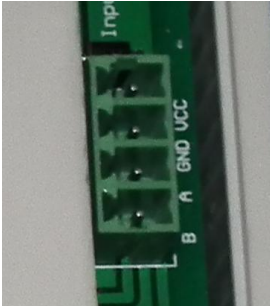


Interface Description

1. Power supply and RS485 interface

As shown in the picture, a total of four pins of the interface, including VCC, GND of the power supply, A, B for the RS485 communication interface. Pins are defined as follows:

- [B] Foot-B- [A] Foot-A +
- [VCC] DC 6-24V + [GND] DC 6-24V-

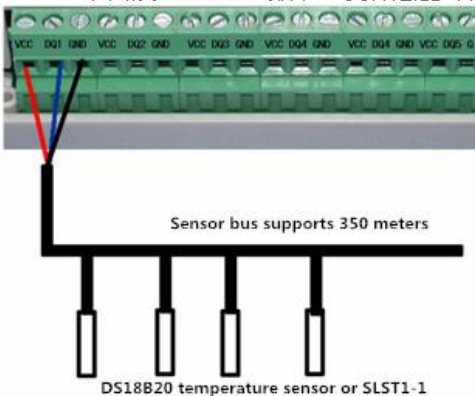


2. Sensor Interface and relay contact output control



As shown above, there are upper and lower instrument terminal block, the lower side of the pin terminal block as shown above, the first three pin sensor leads, the rest of the control output terminal block.

SLST series and DS18B20 digital temperature sensor can press the map method to access the instrument:

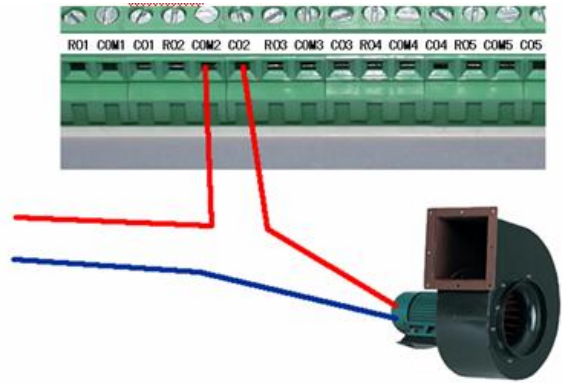


External temperature sensor pin is defined as follows:

VCC	DQ	GND
5V+	Signal	5V-

A total of 20 road relay output interface, each channel is controlled

independently. They were identified as C01 \ R01, C02 \ R02... C20 \ R20



As shown above, because Cn, Rn (n = 1-20) as a separate switch, as shown on the map can access the relevant controlled device.

Display and buttons

In order to facilitate the difference between on-site alarm setting device designed LED display and button functions, display is divided into two windows, as shown below, the keys on the left side, when the need to set, you can cover the keys cover.

The device has a total of three buttons, namely:

- (1) SET: Set the shift key;
- (2) UP: numeric (numbers 0 to 9) Cycle button;
- (3) ENT: Go to Settings and channel switching keys;

Display has two operating states, namely:

(1) Work status

When the instrument is in working condition, the lower channel number display cycle, the above display data channel between the temperatures values corresponding to the channel round robin, round robin cycle is 1 second.

When the device reference temperature channel 21-channel, when all of a channel temperature is greater than or less than 21 channels, and the difference is more than equal to the set value, the corresponding channel relay output alarm signal.



(2) Set Status

By [ENT] key to enter the setting state ; press [ENT] key each time the channel number plus one ; when the channel was added to the maximum (first 20 channels) , the automatic withdrawal set up state into the normal working condition ; When the channel is switched to when the user wants to set the channel can be set by the shift key [SET] and [UP] numeric keys to enter the cycle difference set ;

When users need to set each channel relative to the absolute difference between the first 21 channels, you can follow these steps:

- 1 Press [SET] button, the cursor appears indicating, each press, move forward one; followed by cycle;
- 2 When the cursor is on a bit , press the [UP] key ; current default value starting from 0 , each time you press the plus-one , followed by cycle ;
- 3 after the current channel is set correctly (no cursor , set value ranges from 0 to 100) , users can continue to press the parties [ENT] key to the next channel (Special note: " If the set value is not in the range 0-100 , you can not enter The next channel settings) ;
- 4 After setting is completed, the user will need to switch back to the state of working conditions; work status and setting status differences: Set status nowadays row shows the lower right corner there is a decimal point, and work status, lower row of the display does not have this decimal point.

Indicator

- Equipment designed three lights, each function is as follows:
- PW - power indicator, the lamp lit after power.
- RX - receive data indicator when communicating
- Transmit Data indicator TX-communication

Communication protocol

Set the default baud rate is: 9600

Data Query (function 4)

PC sends commands:
 [Device Address] [Order] [00] [00] [00] [query data length n] [CRC low 8] [CRC high 8]
 Meaning is as follows: A, device address: module comes with the ID address.
 B, Order No. : 0x04.
 C, CRC checksum, read the number of high- eight low 8.

Example: Query 1 # module 11 data:
 [01] [04] [00] [00] [00] [0B] [B1] [CD]
 Module reply:
 01 04 16 07 9E 07 8A 07 9E 07 8A 07 8A 07 9E 07 8A 07 A8 07 8A 07 6C 07 94 D5 25
 Module response format:

[Device Address] [Data Length] [Data 1]... [Data n] [CRC low 8] [CRC high 8]

The example query replies : 0x01 table address table for the command number 1,0 x04 , 0x16 sheet total of 22 data , the data is first converted into 10 hex is 07 9E : 1950 , because the module with a resolution of 0.01 , the value required divided by 100 , that the actual temperature is 19.5 degrees , two bytes for each temperature value , i.e. integer variables , the actual value of the need in this value by 100 basis.

- To facilitate inquiries: 1- 5 # query command is:
- Query 1 # command module 21 temperature values (hexadecimal): 01 04 00 00 00 15 31 C5
 - Query 2 # command module 21 temperature values (hexadecimal): 02 04 00 00 00 15 31 F6
 - Query 3 # command module 21 temperature values (hexadecimal): 0,304,000,000,153,027
 - Query 4 # command module 21 temperature values (hexadecimal): 0,404,000,000,153,190

Check relay status (function 1)

PC sends commands:
 [Device Address] [Order] [00] [00] [00] [query data length n] [CRC low 8] [CRC high 8]
 Meaning is as follows: A, device address: module comes with the ID address.
 B, Order No.: 0x01.
 C, CRC checksum, read the number of high-eight low 8.

Module response format:
 [Device Address] [Data Length] [Data 1]... [Data n] [CRC low 8] [CRC high 8]

A total of 20 relay device with three bytes to represent the state of the relay, which has four no. Table 1 relay, 0 Meter Relay not pull. As shown in Table, N1-N20 to be 20 state following the electrical output value. 3 High byte 8 No,

Byte 1							
8	7	6	5	4	3	2	1
N8	N7	N6	N5	N4	N3	N2	N1

Byte 2							
8	7	6	5	4	3	2	1
N16	N15	N14	N13	N12	N11	N10	N9
Byte 3							
x	x	x	x	4	3	2	1
				N20	N19	N18	N17

Example: Query 1 # module 20 relay output status:

01 01 01 00 00 15 FC 39

Module reply:

01 03 00 F0 0F 38 4A 7

Reply 3 bytes 00 F0 0F, according to the table can be filled out as follows:

Byte 1							
8	7	6	5	4	3	2	1
N8	N7	N6	N5	N4	N3	N2	N1
0	0	0	0	0	0	0	0
Byte 2							
8	7	6	5	4	3	2	1
N16	N15	N14	N13	N12	N11	N10	N9
1	1	1	1	0	0	0	0
Byte 3							
x	x	x	x	4	3	2	1
0	0	0	0	1	1	1	1

It indicates that the relay is not energized N1-N12, N13- N20 pull.

Sensors automatically search (function number 6)

PC sends commands:

[Device Address] [Order No.: 06] [Sub Command: 0x0C]
[Subcommand: 0x01] [Storage control bit 0 | 1] [Number of bytes read, is fixed at 01] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: module comes with the ID address.

B, Order No.: 0x0C; subcommand: 0x01

C, [storage control bit 0 | 1], when the serial number needs to be saved, this value is 1, when the serial numbers do not need to save, this value is 0

D, CRC checksum, read the number of high-eight low 8.

Example: 1 device automatically searches for all sensors:

01 06 0C 01 01 01 1B 0A

Module reply:

01 06 01 0B A1 CE

Module response format:

[Device Address] [Command function code] [Data Length] [Search to the number of sensors] [CRC low 8] [CRC high 8]

In this case the number of the search to the sensor: 0x0B i.e. 11

The new sensor is read into the specified location (function number 0x22)

PC sends commands:

[Device Address] [Order: 0x22] [Subcommand: 01] [Channel number] [00] [destination number] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: module comes with the ID address.

B, Order No.: 0x22; subcommands: 01

C, CRC checksum, read the number of high-eight low 8.

Example: After the new sensor connected to the device a channel, if the user wants to position the sensor in the channel 4, then send the command is:

01 22 01 01 00 04 A8 32

Module reply:

01 22 08 28 00 00 00 02 00 00 00 C7 7E

[Device Address] [Command function code: 0x22] [Data Length: 08]
[Search into the 8-byte sequence number] [CRC low 8] [CRC high 8]

The query specifies the location of the sensor serial number (function number 0x22)

PC sends commands:

[Device Address] [Order: 0x22] [Subcommand: 0x02]
[Subcommand: 01] [00] [query data length n] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: module comes with the ID address.

B, Order No.: 0x22; subcommands: 02

C, CRC checksum, read the number of high-eight low 8.

Example: The user needs to query the device 21 point sensor serial number, then send the command is:

01 22 02 01 00 15 68 7A

Module reply:

01 22 A8 28 00 00 00 02 00 00 00 28 F8 8D A0 02 00 00 0C 28 14
A4 A0 02 00 00 53 28 74 9F A0 02 00 00 64 28 7C 93 7C 02 00 00
F7 28 42 71 A0 02 00 00 43 28 8A 81 A0 02 00 00 DB 28 8A AF 7C
02 00 00 92 28 86 BB 7C 02 00 00 8C 28 36 E1 7C 02 00 00 A3 28
41 F4 42 02 00 00 4D 28 21 98 A0 02 00 00 F0 28 51 D9 7C 02 00
00 5F 28 71 CB 7C 02 00 00 16 28 D9 8F A0 02 00 00 0E 28 F9 A0
A0 02 00 00 2F 28 C5 B5 A0 02 00 00 11 28 65 A9 7C 02 00 00 03

28 0D A3 A0 02 00 00 CF 28 CD A8 A0 02 00 00 20 28 67 BA 31
02 00 00 22 FB DE

Module response format:

[Device Address] [Command function code: 0x22] [Data length]
[Search into the 8-byte sequence number 1]... [Search to the 8-byte
sequence number n] [CRC low 8] [CRC high 8]

**The new sensor serial number is written directly to the device
specified location (function number 0x22)**

PC sends commands:

[Device Address] [Order: 0x22] [Sub-Command: 0x0C] [Destination
number] [8 bytes sensor serial number] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: module comes with the
ID address.

B, Order No.: 0x22; subcommands: 01

C, CRC checksum, read the number of high-eight low 8.

Example: a sensor-specific 8-byte sequence number is written to
the position of a device ID, a command is sent:

01 22 0C 01 28 F8 8D A0 02 00 00 0C 11 1E

Module reply:

01 22 08 28 F8 8D A0 02 00 00 0C 20 70

Module response format:

[Device Address] [Command function code: 0x22] [Data Length: 08]
[Search into the 8-byte sequence number] [CRC low 8] [CRC high
8]

**Batch write (set) of each channel set alarm difference
(function number 0x22)**

PC sends commands:

[Device Address] [Order: 0x22] [Subcommand: 0x0D] [Specified
position number] [The difference between the high alarm: Fixed 00]
[Set difference] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: module comes with the
ID address.

B, Order No.: 0x22; subcommands: 03

The difference between the C, set the value in the range of 1-255.

Example: Batch to 20:00 on the device are set to the temperature
difference between the 15 alarms, send the command is:

01 22 0D 00 00 0F BB 65

Module reply:

01 22 02 00 0F F2 7C

Module response format:

[Device Address] [Command function code: 0x22] [Data length]
[The difference between the high alarm: Fixed 00] [Alarm difference

between low] [CRC low 8] [CRC high 8]

As shown in the example, the difference is 0x0F, namely the
decimal value of 15, when compared with 21:00 of the position
location, if the difference is greater than this value and the 21
o'clock position, then relay the location, the corresponding alarm
contacts suck together.

**Batch reading device alarm settings for each channel
difference (function number 0x22)**

PC sends commands:

[Device Address] [Order: 0x22] [Subcommand: 0x03] [The
specified position number] [Read the words high] [Low reading
words] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: module comes with the
ID address.

B, Order No.: 0x22; subcommands: 03

C, CRC checksum, read the number of high-eight low 8.

Example: Batch reading device set alarm temperature difference of
20 points, then send the command is:

01 22 03 00 00 14 F9 86

Module reply:

01 22 14 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F 0F
0F 0F 8D D3

Module response format:

[Device Address] [Command function code: 0x22] [Data length]
[Position 1 difference]... [Location n the difference] [CRC low 8]
[CRC high 8]

As shown in the example, the difference is 0x0F, namely the
decimal value of 15, when compared with 21:00 of the position
location, if the difference is greater than this value and the 21
o'clock position, then relay the location, the corresponding alarm
contacts suck together.

**Set the alarm a single location difference (function number
0x22)**

PC sends commands:

[Device Address] [Order: 0x22] [Subcommand: 0x0D] [Specified
position number] [Fixed to 00] [Set difference] [CRC low 8] [CRC
high 8]

Meaning is as follows: A, device address: module comes with the
ID address.

B, Order No.: 0x22; subcommand: 0x0D

The difference between the C, set the value in the range of 1-255.

Example: the difference between the positions of an alarm set to 15,
then send the command is:

01 22 0D 01 00 0F EA A5

Module reply:

01 22 02 00 0F F2 7C

Module response format:

[Device Address] [Command function code: 0x22] [Data length]
 [Fixed to 00] [Difference set] [CRC low 8] [CRC high 8]

As shown in the example, the difference is 0x0F, namely the decimal value of 15, when compared with 21:00 of the position location, if the difference is greater than this value and the 21 o'clock position, then relay the location, the corresponding alarm contacts suck together.

Reading device address (Function No. 0x25)

PC sends commands:

[Device Address: Channel Command 0xFA] [Order: 0x25]
 [Subcommand: 0x02] [Fixed to 00] [High data length] [Low data length] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: When the device address without knowing the situation, you can use 250 or 0xFA channel address read out the actual address, when you use this command, make sure that access is only one device on the RS485 bus.

B, Order No.: 0x22; subcommands: 01

C, CRC checksum, read the number of high-eight low 8.

Example: a sensor-specific 8-byte sequence number is written to the position of a device ID, a command is sent:

FA 25 02 00 00 01 99 FE

Module reply:

01 25 01 01 D0 C3

Module response format:

[Device Address] [Command function code: 0x25] [Data Length: 01]
 [Actual address value] [CRC low 8] [CRC high 8]

Modify the device address (Function No. 0x06)

PC sends commands:

[Device Address] [Order: 0x06] [Sub-command: 0x0B] [Fixed to 00]
 [Destination address high: Fixed to 0x00] [Destination address low] [CRC low 8] [CRC high 8]

Meaning is as follows: A, Device Address: The original address of the device, only the address is correct before executing this command.

B, Order No.: 0x06; subcommand: 0x0B

C, [destination address low], modify the target device address.

Example: The device address changed from a 2, then send the command is:

01 06 0B 00 00 02 0A 2F

Module reply:

01 25 01 01 D0 C3

Module response format:

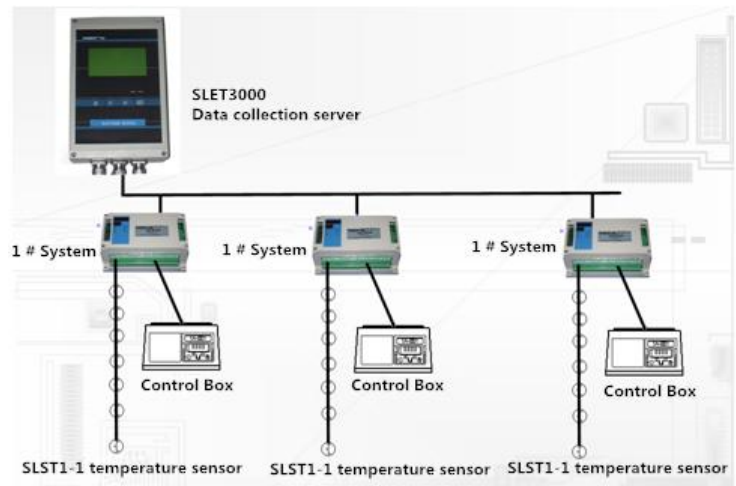
[Device Address] [Command function code: 0x25] [Data Length: 01]
 [Actual address value] [CRC low 8] [CRC high 8]

Typical applications

SC1200B-20S module can be connected directly to a PC or laptop (optional RS485-USB converter) to the scene of the data directly to a computer for display, analysis and storage via RS485 interface.

RS485 centralized control scheme

SC1200B module built-in RS485 interface converter, RS485 bus through networking, communication distance can be extended to up to 1,200 meters, the distance can effectively solve the simplest problems connected too short.



RS485 wireless systems acquisition and control transfer

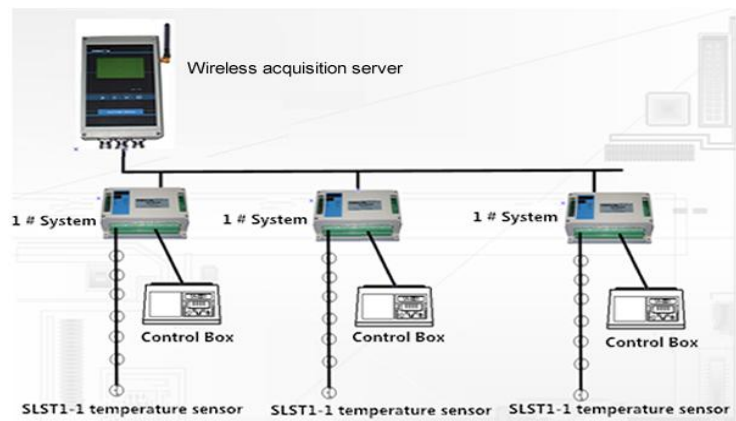


Chart Figure SC1200B-20 module RS485 network, each module has a node number, a small system that can place up to 255

SC1200B-20 module. SC1200B-20 communication protocol visit
will be free for users to secondary development.