SM1200B-160

## 10-channel DS18B20 temperature acquisition instrument

Product Overview

SM1200B-160 is a strong drive ability of remote digital temperature acquisition device, according to different requirements, 1-160 of digital temperature sensor can be connected at the same time, communicates with RS485 way up a collection of standard MODBUS RTU protocol - industrial equipment, convenient combined with a variety of configuration software, rapidly to form a variety of temperature measuring system.

http:// www.sonbus.com

Parameters

| Parameter	Value	Unit
Support sensor	DS18B20, SLST1 series, SS10 series	
Temperature measurement range	-55～+125.0	℃
Precision	0.5	℃
DC Supply Voltage Range	6-24	V
Output Signal	RS485,MODBUS-RTU	
Baud Rate	9600	bps
Power	2	W
Ambient Temperature Range	-40 - 85	℃
Dimensions	155×111×60	mm³
Number of Channels	1-10 channel Each channel can connect up to 100 points	
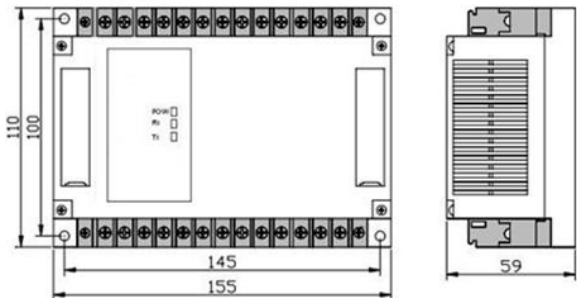
ORDERING INFORMATION

Type	NOTE
SM1200B16-160	Support 160 pcs ds18b20
SM1200B-160	Support 160 pcs ds18b20
SM1200B-600	Support 600 pcs ds18b20
SM1200B-1000	Support 1000 pcs ds18b20

Package dimensions

Interface with the set
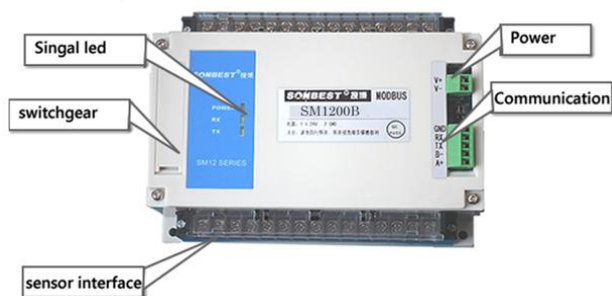
As shown in the above, the equipment by the power supply interface, RS485 interface, sensor wiring, calibration status indicator lights, button and pull code switch.

On the device on the left side of the positive plate (typically use a screwdriver to pry open), as shown in the figure below, left the top row needles for factory Settings, the following two switches, baud rate, respectively, and set the switch device address

Communication baud rate setting

His equipment is RS485 interface, paragraph 4 of S2 is not enabled, can pull to zero position. Baud rate is set by 3 before you dial the code switch S2 section, as shown in the picture ON the right, dial the code switch to "ON" say "1", to digital pull side said "0", ON behalf of the meaning is as follows:

switch S1			Baud rate
3	2	1	
0	0	0	19200
0	0	1	9600
0	1	0	4800

Device address set

In application, sometimes need more machine connected to the Internet using, networking equipment in the address cannot be the same, so the user to change device address, address range 1-63. This equipment device address change is done by drawing code switch S1. Dial the code switch to "ON" say "1", pull out the code switch S1 1-6 and address of the system is shown in the table below
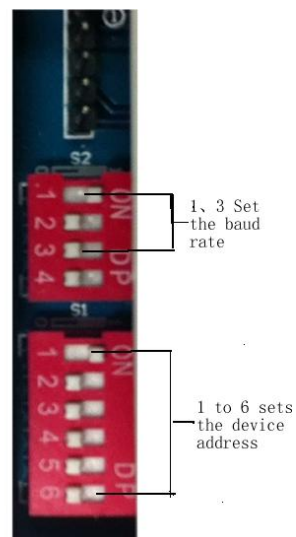
Switch S2						
6	5	4	3	2	1	Address
0	0	0	0	0	1	1
0	0	0	0	1	0	2
0	0	0	0	1	1	3
0	0	0	1	0	0	4
…	…	…	…	…	…	…
1	1	1	1	1	1	63

The default device factory address is 1, 9600 baud rate
Note: you must restart the device (power) of the new device address is set to take effect.

The power interface

Equipment for the power supply interface of two core green connectors. The power of the equipment used for DC6 to 37 V, maximum voltage does not allow more than 37 V, the minimum voltage not less than 5.5 V, the recommended at the end of the single use of DC9V 1A, if the sensor is more and longer lead, it is recommended to use 2A - 3A DC9V power. Machine more long-distance communication, suggest using DC12 above 2A single power supply.

symbol	instructions
V+	The anode DC6 to 37 v
V-	The cathode DC6 to 37 v

Communication interface

symbol	instructions
GND	Don't use
RX	Don't use
TX	Don't use
B-	RS485 communication interface B-
A+	RS485 communication interfaceA+

The sensor interface

Sensor bus adopts three wire system. See wiring row, VCC, GND for sensor power supply. DQn for the sensor channel number, this equipment is a total of 10 channels, namely DQ1, DQ2,... DQ10

General line is the longest distance is not more than 300 meters, if the communication distance is greater than 300 meters, recommend the use of wire core coarser twisted-pair (signal wire and ground wire to ground).

Communication protocol

Data query function (no. 3 or 4)

PC sends commands:

[device address] [orders] [channel] position [number] [at] [query data length] [CRC low 8] [CRC high 8]

Meaning is as follows:

A, device address: the module's own ID address.

B, order number: 0 x03.

C, channel number, channel number 1 to 10, hex value range is: 1-0 x0a.

D, [number] position sensor number: 1-16, hex value range is: 1-0 x10.

E, query data length, range of values: 1 to 16, hex value range is: 1-0 x10.

F, CRC check, low high read number eight, eight.

Example: query 1 # equipment all 16 channel 1 data:

01 03 01 01 00 10 14 00

Module response:

01 03 20 08 B6 08 98 08 98 08 98 08 98 08 AC 08 70 08 D4 08 8E 08 A2 08 AC 08 B6 B4 92 B4 92 B4 92 B4 92 D8 D6

Module response format:

[device address] [function code] [data length] [1] data... Data [n] [CRC low 8] [CRC high 8]

Above example query reply: 0 x01 table address for the order number, 1, 0 x03 table 0 x20 table, a total of 32 data first data into decimal for 08 B6 is: 2230, because of the module resolution is 0.01, this value should be divided by 100, the actual temperature is 22.3 degrees, each temperature of two bytes, namely the integer variables, the actual values need to be on the basis of this value is divided by 100.

When the data is BA D2, namely the display - 177.10, shows that sensorless access, when the data is 92 B4, namely according to 193.10, according to the number on the bus without correct serial number.

For the convenience of the query: device address for 1 # query 1-5 channel command as follows:

Query 1 # 16 module 1 channel temperature command (hexadecimal) : 10 of 14 03 01 01 00 00 01

Query 1 # module 2 channel temperature 16 (hexadecimal) command: 01 03 02 01 00 10 of 14 7 e

Query 1 # module 3 channel temperature 16 (hexadecimal) command: 01 03 03 01 00 10 to 15, 82

Query 1 # 4 channel module temperature 16 (hexadecimal) command: 01 03 04 01 00 10 of 14 F6

Query 1 # 5 channel module temperature 16 (hexadecimal) command: 01 03 05 01 00 10 to 15 A

Sensor automatic search function (6)

PC sends commands:

[device address] [order no. : 06] [a command: 0 x0c] [channel] [storage control bit 0 | 1] [read number of bytes, fixed as 01] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: the module's own ID address.

B, order number: 0 x06; A command: 0 x01

C, [channel] : 1-10, hex value range is: 1-0 x0c.

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

D, CRC check, low high read number eight, eight.

Example: the automatic search 1 equipment all the sensors:

01 06 0C 01 01 01 1B 0A

Module response:

01 06 01 0B A1 CE

Module response format:

[device address] [command function code] [data length] [channel 1 sensor number] [channel] 2 sensor number... [channel number n sensors] [CRC low 8] [CRC high 8]

In this case the search to the number of sensors: 0 x0b is 11

Also can search multiple channels at the same time, such as from the beginning of the channel 1, search 10 channels, the command

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is:

01 06 0C 01 01 0A 5A CD

Equipment return:

01 06 01 0C 00 00 00 00 00 00 00 00 00 00 CD A1

01 device address, 06 for function, 01 for storage control code, 0 c for 1 channel search to the number of sensors, 00 00 00 00 00 00 00 00 behind is the remaining nine channel search to the number of sensors.

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

PC sends commands:

[device address] [order no. : 0 x22] [a command: 01] [channel] [storage control code: 01] [target location number] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: the module's own ID address.

B, order number: 0 x22; A command: 01

C, [channel] : 1-10, hex value range is: 1-0 x0a.

D, [target location number] : 1-10, hex value range is: 1-0 x0a.

E, CRC check, low high read number eight, eight.

Example: the new sensor after receiving device 1 channel, if the user wants to the sensor position in the channel 4, then send the command to:

01 22 01 01 00 04 A8 32

Module response:

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

Module response format:

[device address] [command function code: 0 x22] [data length: 08] [8 byte serial Numbers to search] [CRC low 8] [CRC high 8]

Note: all / 8 byte sequence number to search the right should be a 28 (decimal for 40) began to 8 bytes

Function of query designated position sensor's serial number (no. 0 x22)

PC sends commands:

[device address] [order no. : 0 x22] [a command: 0 x02] [channel] [at] [query data length n] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: the module's own ID address.

B, order number: 0 x22; A command: 02

C, [channel] : 1-10, hex value range is: 1-0 x0a.

D, CRC check, low high read number eight, eight.

Example: the user needs to query address equipment 16 channel 1 on 1 point sensor serial number, then send orders for:

01 22 02 01 00 10 A8 79

Module response:

01 22 80 28 00 00 00 02 00 00 00 28 8A AF 7C 02 00 00 92 28 00 00 00 02 00 00 00 28 36 E1 7C 02 00 00 A3 28 41 F4 42 02 00 00

4D 28 51 D9 7C 02 00 00 5F 28 71 CB 7C 02 00 00 16 28 65 A9 7C 02 00 00 03 28 67 BA 31 02 00 00 22 28 B7 DB 7C 02 00 00 47 28 CF 06 43 02 00 00 1E 28 5F 82 7C 02 00 00 A9 28 00 00 00 00 00 00 00 28 00 00 00 00 00 00 00 28 00 00 00 00 00 00 00 28 00 00 00 00 00 00 00 41 95

Module response format:

[device address] [command function code: 0 x22] [data length] [search to 8 byte sequence number 1]... [search to 8 byte sequence number n] [CRC low 8] [CRC high 8]

Write the new sensor serial number directly to the equipment specified location (function 0 x22)

PC sends commands:

[device address] [order no. : 0 x22] [a command: 0 x0c] [channel] position [number] [8 bytes sensor serial number] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address: the module's own ID address.

B, [channel] : 1-10, hex value range is: 1-0 x0a.

C, position [number] : 1-16, hex value range is: 1-0 x0a.

D, CRC check, low high read number eight, eigh

Example: a sensor will be unique serial number 8 bytes written equipment number 1 position, then send the command to:

01 22 0 c 01 28 CD 9 b 1 f 03 01 00 00 1f CD 00

Module response:

22 1 f 28 CD 9 b 03 01 00 00 1 f 12 6f

Module response format:

[device address] [command function code: 0 x22] [data length: 08] [8 byte serial Numbers to search] [CRC low 8] [CRC high 8]

Read the device address (function 0 x25)

PC sends commands:

[device address: channel command 0 xfa] [order no. : 0 x25] [a command: 0 x02] [fixed at 00] [data length high] [data length low] [CRC low 8] [CRC high 8]

Meaning is as follows: A, device address, when I do not know the device address, can use 250 or 0 xfa channel address read actual address, use this command, please make sure that only access A device on RS485 bus.

B, order number: 0 x22; A command: 01

C, CRC check, low high read number eight, eight.

Example: a sensor will be unique serial number 8 bytes written equipment number 1 position, then send the command to:

FA 25 02 00 00 01 99 FE

Module response:

01 25 01 01 D0 C3

Module response format:

[device address] [command function code: 0 x25] [data length:

01] [actual address values] [CRC low 8] [CRC high 8]

Modify the device address (function 0 x06)

PC sends commands:

[device address] [order no. : 0 x06] [a command: 0 x0b] [fixed at 00] [high target address: fixed 0 x00] [low] target address [CRC low 8] [CRC high 8]

Meaning is as follows: A, equipment address: the original address, only address right before executing this command.

B, order number: 0 x06; A command: 0 x0bTarget address low

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

Example: the device address from 1 to 2, then send the command to:

01 06 0B 00 00 02 0A 2F

Module response:

01 25 01 01 D0 C3

Module response format:

[device address] [command function code: 0 x25] [data length: 01] [actual address values] [CRC low 8] [CRC high 8]

Connection with configuration software

For the convenience of data query for node, can be addressed to the node address. If there are ten channels of equipment, the address and configuration software in 4 XXXX relationship is as follows:

N * 256 + 02, the starting address of the corresponding channel 1 is: 40257, address 2 corresponding to 40513

Where n for the node address.

If there are five sensor channel 2, according to the communication and information, query the five command of sensor data are as follows:

01 03 02 00 00 05, 84, 71

From the above address, you can see that group on addressing method of configuration software, then the sensor node first address as follows:

02 * 256 + 01 = 256

Channel in the system and sensor addressing:

sensor \\ channel	1	2	3	4	**5**
1	40258	40259	40260	40261	**40262**
2	40514	40515	40516	40517	**40518**
3	40770	40771	40772	40773	**40774**
4	41026	41027	41028	41029	**41030**
…	…	…	…	…	…

Above four aabb, register for the integer data type (2 bytes), the range of values: 0-65535

Among them:

AA for channel coding, the scope of value for 01-99.

BB is the sensor number, value range of 01-99

Such as 1 # channel 3 position sensor's address is: 40259