GT200-HT-RS FAQ

V1.1

Version record:

Version number	Update time	Update notes
V1.0	6-6-2013	Original version
V1.1	8-10-2022	Revision

## 1. How to supply power to the product GT200-HT-RS?

a) GT200-HT-RS is of wide voltage input: 11VDC to 30VDC, the standard voltage is 24VDC (80MA), the positive pole of the power supply connects to "24V+", the negative pole connects to "GND".

b) The GT200-HT-RS serial port supports the RS485 and RS232 interface, the "D+" and the "D-" of RS485 connect with the "D+" and the "D-" of the connected device. The "RX", "TX" and "GND" of RS232 connect with the "RX", "TX" and "GND" of user's device (our product had finished cross connection so user doesn't need to do it again).
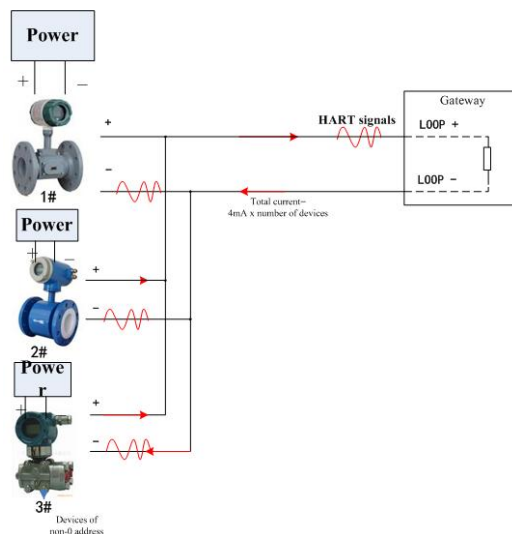
2. How to do wiring multiple HART instruments with our gateway?

The following is the two wire and four wire multi-drop wiring.

Two wire:
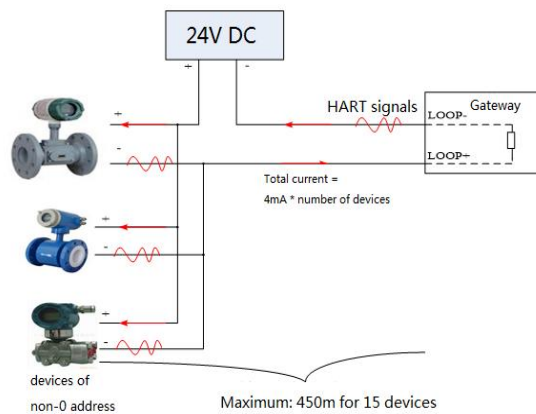
Four wire:

3. How to configure parameters to GT200-HT-RS?

a) Set the GT200-HT-RS DIP switch 1OFF 2ON.

b) Connect the RS232 configuration interface of GT200-HT-RS with PC.

c) Power on GT200-HT-RS and enters the configuration mode (the digital tube will show CF).

d) Configure parameters to GT200-HT-RS by using the SST-HT-CFG configuration software.

4. How to uses the SST-HT-CFG configuration software?

a) First select a field bus type according to the protocol type of the serial side: Modbus slave or User Config mode.

b) (if you select Modbus slave, then it means that GT200-HT-RS serves as a Modbus slave on the serial side to communicate with the Modbus master device; if you select the User Config, then GT200-HT-RS receives the Hart frame transmitted by the device on the serial side and transmits directly to the Hart device from the HART communication interface without data processing).

c) After selecting the bus type, you still need to configure some serial parameters according to your needs.

d) In the Hart bus, user needs to choose the point to point or the Multi-drop network mode according to the actual number of device connected with GT200-HT-RS. Under the point to point network mode, GT200-HT-RS can only connect with one HART meter which the address is 0; Under the multi-point network mode, GT200-HT-RS can connect with at most 15 Hart meters which the non-0 address and the meter address is respectively 1 to 15, the address can't be repeated (the HART slave address in HartChannel0 is the address of the HART meter).

e) You can add the Hart command in each node according to your needs and set the data length of reception or transmission (usually user only needs to read the main variable parameters of the meters, so you only need to add the command ID3 and set the data length of reception as 26 bytes without modifying other parameters such as the data length of transmission).

f) After the configuration, you can click on the automatic mapping function of the software to distribute the memory address automatically, and then download the configuration file to GT200-HT-RS.

5. How to configure the address of the Modbus slave of GT200-HT-RS?

When GT200-HT-RS serves as a Modbus slave, the slave address has two configuration forms:

a)   In the field bus part of the configuration software.

b)   By means of the front button of GT200-HT-RS (double click on the button and enters the address modification status, click on the button to modify the address, long press the button to shift the high / low bit or quit the modification of address).

6. What does the status of each indicator light of GT200-HT-RS mean?

GT200-HT-RS has 4 indicator lights, two of them form a group and represent respectively the communication status of the serial side and the HART side:

1. The first row: The indicator light TX means that GT200-HT-RS transmits data through the RS485/422 interface.

   i. The indicator light RX means that GT200-HT-RS receives data transmitted by the connected device in the RS485/422 interface.

2. The second row: The indicator light TX means that GT200-HT-RS transmits HART request frames

to Hart bus.

   ii. The indicator light RX means that GT200-HT-RS receives HART response frames transmitted by the Hart bus.

7. What is the function of the sampling resistor of GT200-HT-RS?

•The product GT200-HT-RS allows the data communication by analyzing the current signals on the sampling resistor, so the correct use of the sampling resistor has a great influence on the communication of Hart. The specification of the sampling resistor in the interior of GT200-HT-RS is 270 Ohm 2W, it can support at most 13 meters for communication under ideal conditions; if you use the external resistor, we suggest that it be about 250 ohm 2W, the communication result will be affected if the value is too large or too small.

8. How to use the debugging function of GT200-HT-RS?

•First, set the bit 2 of DIP switch to status "ON", and after powering on again, the digital tube will show the address of the Modbus slave.

•Two debugging interfaces of GT200-HT-RS (RS232 or RS485) connect with PC.

•Open the "Diagnose" or "Memory" of the configuration software SST-HT-CFG and you will see the data of the HART meter.

•Under this condition, user can set up communication with HART meter directly by transmitting Hart frames to the HART meters with the function of "Serial Debug" of the software.

9. After the Modbus master read the data, how to analyze these data and what does each byte mean?

※HART Common Commands

Note: The front two bytes of the actual response data is the status info of the device. The data after that two bytes is the device response data.
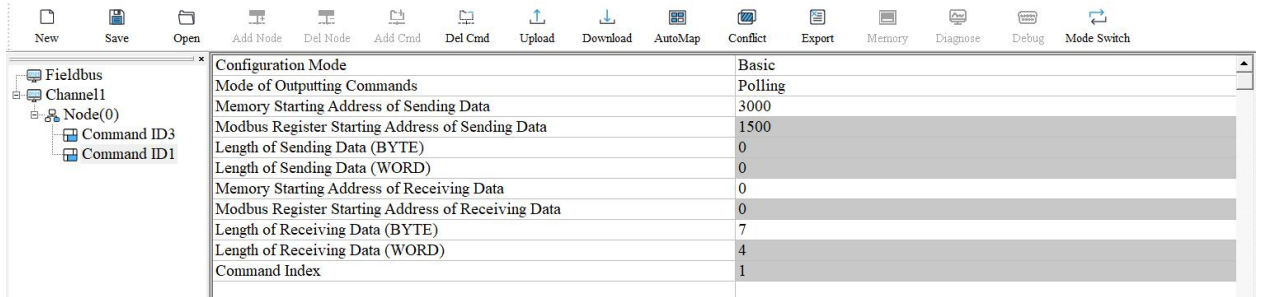
Command 1 (Command ID1): Read Primary Variable

Return primary variable value in float data type.

Request: None

Response:

Byte	Description
Byte 0	Primary Variable Units
Byte 1-4	Primary Variable

Please check the picture of the SST configuration software below:

New	Save	Open	Add Node	Del Node	Add Cmd	Del Cmd	Upload	Download	AutoMap	Conflict	Export	Memory	Diagnose	Debug	Mode Switch

Configuration Mode	Basic
Mode of Outputting Commands	Polling
Memory Starting Address of Sending Data	3000
Modbus Register Starting Address of Sending Data	1500
Length of Sending Data (BYTE)	0
Length of Sending Data (WORD)	0
Memory Starting Address of Receiving Data	0
Modbus Register Starting Address of Receiving Data	0
Length of Receiving Data (BYTE)	7
Length of Receiving Data (WORD)	4
Command Index	1

Tree navigation: Fieldbus → Channel1 → Node(0) → Command ID3, Command ID1

As the request is: "None", the user should fill "0" for the section "Length of Sending Data (BYTE)"

The "Length of Receiving Data (BYTE)" will be 7, which is the sum of 2 status bytes and 5 device response bytes.

Command 3 (Command ID 3): Read Dynamic Variable and Primary Variable Current

Read primary variable current and four (at most) pre-defined dynamic variables. The primary variable current always matches the AO output current of the device. A second, third and fourth variable is defined for each device type, E.g. The second variable is the sensor temperature, etc.

Request: None

Response:

Byte	Description
Byte 0-3	Primary Variable Loop Current（units of milli-amperes）
Byte 4	Primary Variable Units Code
Byte 5-8	Primary Variable
Byte 9	Secondary Variable Units Code
Byte 10-13	Secondary Variable
Byte 14	Tertiary Variable Units Code
Byte 15-18	Tertiary Variable
Byte 19	Quaternary Variable Units Code
Byte 20-23	Quaternary Variable

10. Why the speed of communication of HART is slow and how to speed up?
a) The HART protocol specifies that the baud rate is fixed: 1200bps, and applied a request-and-response communication, it can finish at most two times of communications in 1 second; if the meter applies the intermittent communication, it can finish at most 3 times of communication in 1 second.
b) If you need a little high speed of collecting data in the scene, we suggest that user lower the number of the meters in the same HART bus in order to reduce the polling cycle and increase the speed of communication.

11. Can the Hart interface of GT200-HT-RS supply working current to the meters?

The HART interface of GT200-HT-RS is only used to collect signals, it won't transmit any current signals; it will need to connect with an extra working power supply for the operation of the meter.