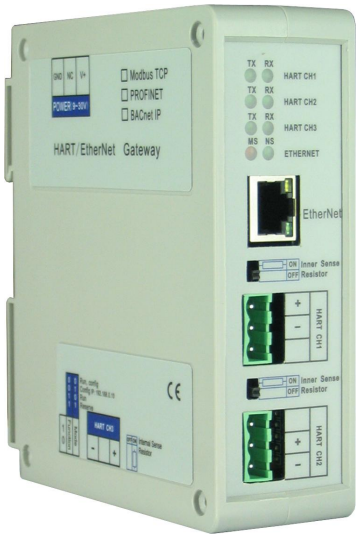
3-channel HART/Modbus TCP Gateway
GT200-3HT-MT

User Manual

V 1.2

REV A



SST Automation

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1 Product Overview

1.1 Product Function

GT200-3HT-MT gateway is designed to exchange data between multiple channel HART and Modbus TCP. HART interface can be configured as a primary master or the secondary master. Modbus TCP side acts as a slave.

1.2 Product Features

- Simple application: Users only need to refer to product manuals and application examples;
- 3 independent HART channels with transformers-isolated;
- Rich debugging functions, command segmentation mapping function, visual display of data exchange, HART slave's command diagnosis function facilitates user's communication test;
- Ethernet 10/100M self-adaptive;
- The HART command and TCP/IP parameters can be configured by configuration software.

1.3 Technical Specifications

[1] HART interface can be used as a primary master or a secondary master;

[2] Supports 3 independent HART channels, under multi-drop mode, each channel support connecting at most 13 instruments with gateway internal resistor and supports connecting 15 instruments with an external resistor (250Ω/2W);

[3] HART interface supports single-point and multi-drop mode;

[4] Under single-point mode, supports HART slave device's data burst operation;

[5] Supports all commands of the HART protocol;

[6] Each HART command can be configured for change-of-state output, polling output, initialization output or

no output;

[7] Each channel of HART supports up to 100 HART commands, the output buffer is up to 2000 bytes, and the input buffer is up to 3000 bytes;

[8] Each channel can choose to use an internal or external HART sampling resistor;

[9] Ethernet 10/100M self-adaptive. Supports IP address conflict detection and auto routing Modbus TCP slave supports at most 36 connection and 512 command request simultaneously;

[10] The Ethernet side can be configured as a Modbus TCP slave station, supporting function codes: 03H, 04H, 06H, 10H;.

[11] Power: 24VDC (9V~30V), <100mA (24VDC);

[12] Working circumstance temperature: -4℉~140℉(-20℃~60℃), Rel Humidity: 5%~ 95% (non-condensing);

[13] External dimensions (W*H*D):1.57 in*4.92 in*4.33 in (40mm*125*110mm);

[14] Installation: 1.38 in (35mm) DIN RAIL;

[15] Protection Level: IP20;

1.4 Safety and Explosion-proof Features

GT200-3HT-MT is not the product with the features of safety and explosion-proof, please put it in the control room when using.

1.5 Related Products

The related products include: GT200-3HT-RS and GT200-HT-DP etc.

If you want to get more information about these products, please visit SSTCOMM website: http://www.sstcomm.com.

1.6 Revision History

Revision	Date	Chapter	Description
REV A	7/31/2017	Chapter 4	V1.2 REV A new release, enable the memory data display, diagnosis,

			mode selection and other functions, increase the 4.2.7, 4.2.8 chapters.

2 Quick Start Guide

The following example introduces the use of the Gateway GT200-3HT-MT.

2.1 Configuration of Gateway

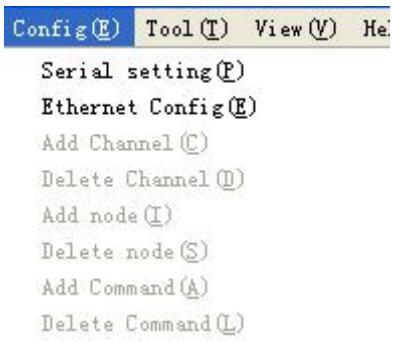
2.1.1 Connection Settings

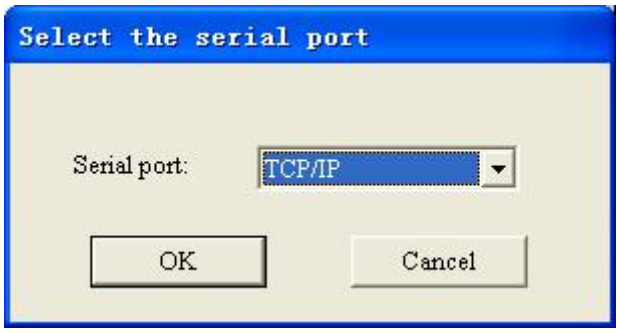
1. Turn on the "mode" DIP switch and turn off the "function" DIP switch
2. Use network cable to connect the gateway's Ethernet port (RJ45 interface) with that of computer;
3. Power on the gateway, now the IP address of the gateway is fixed: 192.168.0.10 and it is configurable.

2.1.2 Software Configuration

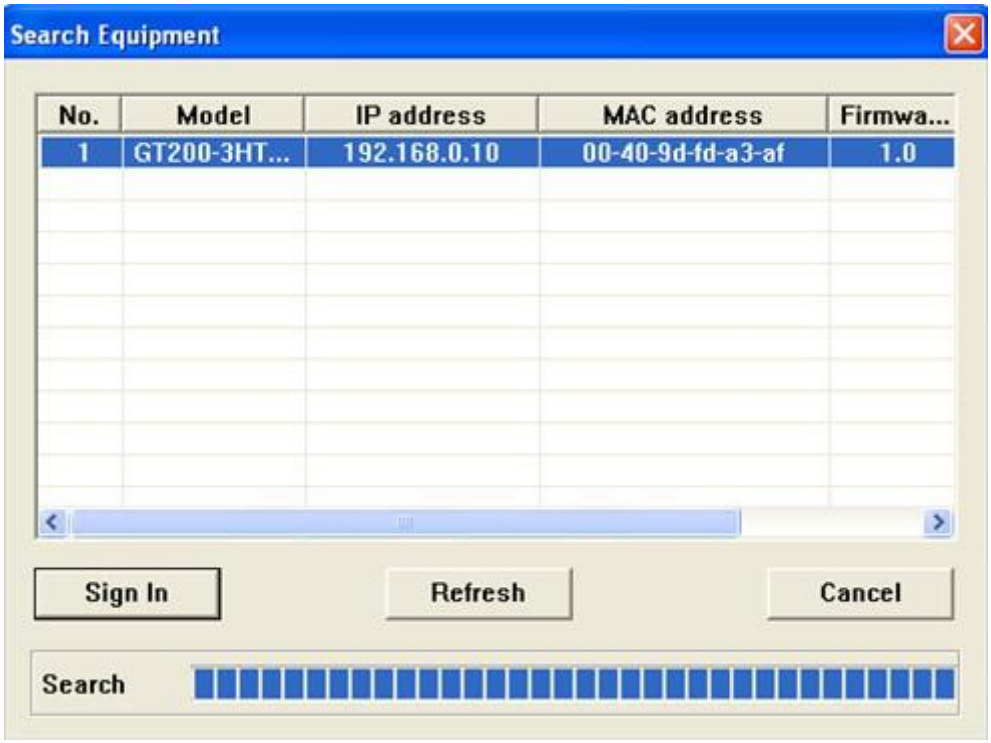
1. Open the SST-HE-CFG software installed on your computer;

2. Click "Fieldbus" in the tree view on the left, in the "mode" item, select Modbus TCP;
3. Click "Serial setting" in "config" menu, then you will see the "Select the serial port" dialog box in the pop-up menu;





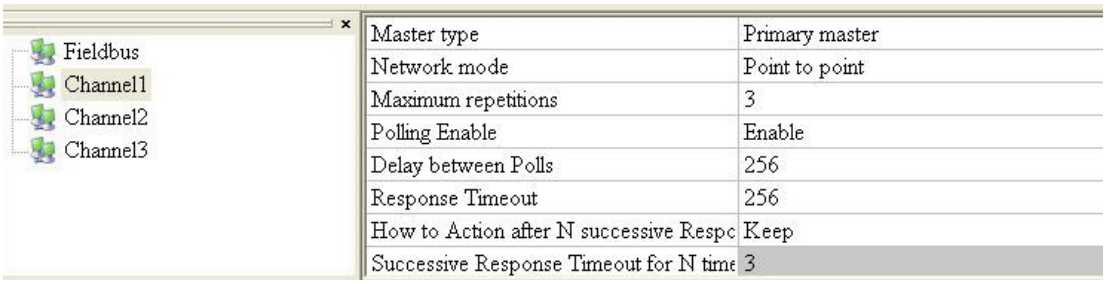
4. Click "OK", select the gateway and click "Sign In" in the following "device searching" dialog box;



5. Select the "fieldbus" in the tree view on the left, configure as below in the right interface;

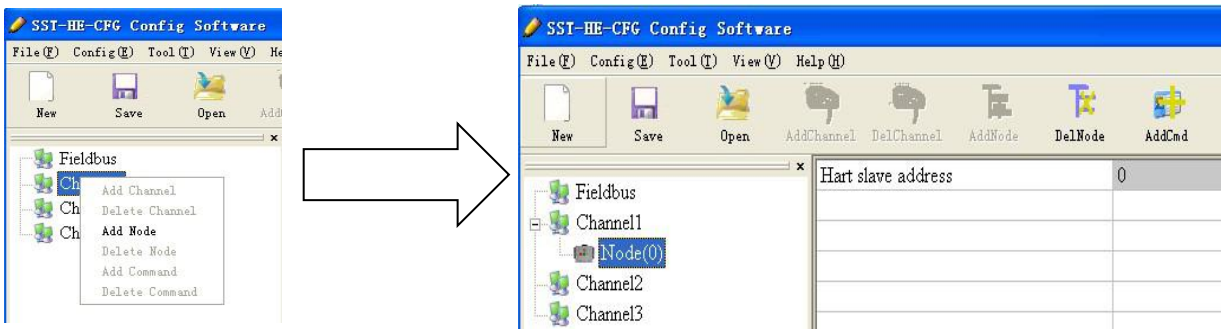
Mode	Modbus TCP
Assign IP Mode	Manual Assign
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
DNS1	0.0.0.0
DNS2	0.0.0.0

6. Click the "Channel1" in the tree view on the left, the table appearing on the right is configured as below:

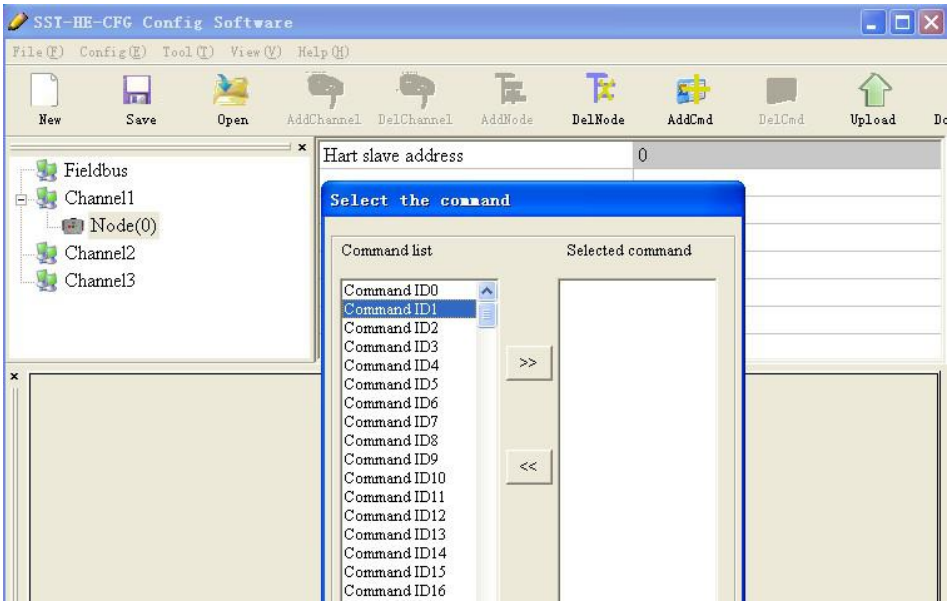


Note: In HART protocol, it specifies that the device with slave address 0 works under point to point mode, it allows digital communication and analog communication exist simultaneously. The device with slave address 1~15 works under the multi-drop mode, the analog output of the device is the minimum value and it only allows digital communication. The protocol also specifies that the fieldbus device default address is 0 before delivery.

7. Right click Channel1, select "Add Node" in the popup menu as below:



8. Right click: "Node(0)", select "Add Command" in the popup menu, add Command ID1 in the popup dialog box (double click "Command ID1" or select "Command ID1" and click "»"), click OK to return.

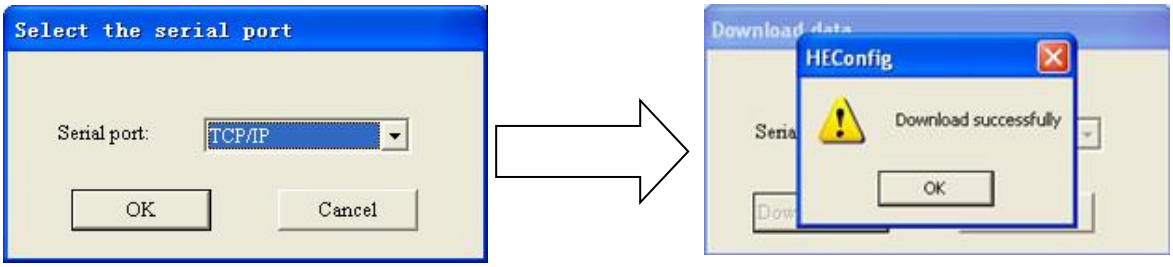


9. Click "Command ID1", the configuration table on the right is configured as below:

Mode of outputting commands	Polling output
Memory starting address of sending data	3000
Modbus register starting address of send	1500
Sending data length (BYTE)	0
Sending data length (WORD)	0
Memory starting address of receiving dat	7
Modbus register starting address of recei	3
Receiving data length (BYTE)	0
Receiving data length (WORD)	0
Command index	0

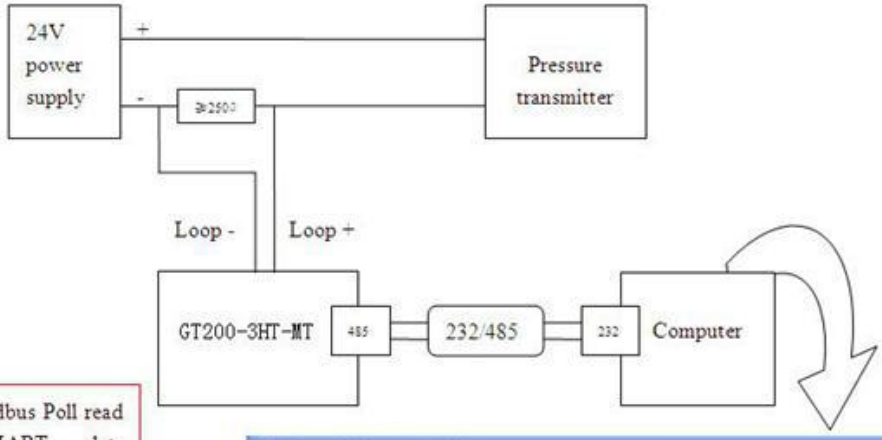
10. Click the icon

in the pop-up dialog box, Select the computer port to which the gateway is connected, and then click Download:

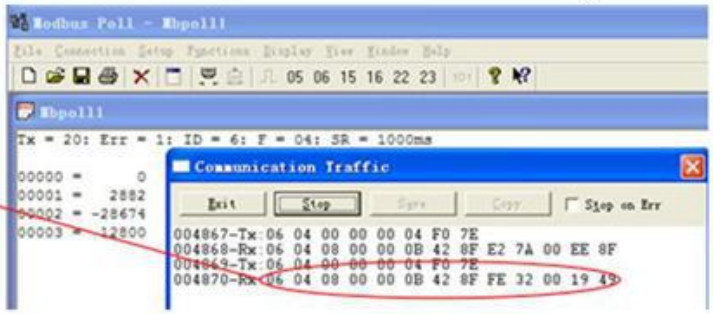


2.2 Function Demo

HART interface of the gateway GT200-3HT-MT connects with a 2-wire pressure transmitter with slave address 0. The Ethernet port is connected to the PC through network cable. The configured Modbus POLL software in PC can simulate to work as a Modbus TCP master, and then you can see the main variable value of the pressure transmitter in data exchange window:

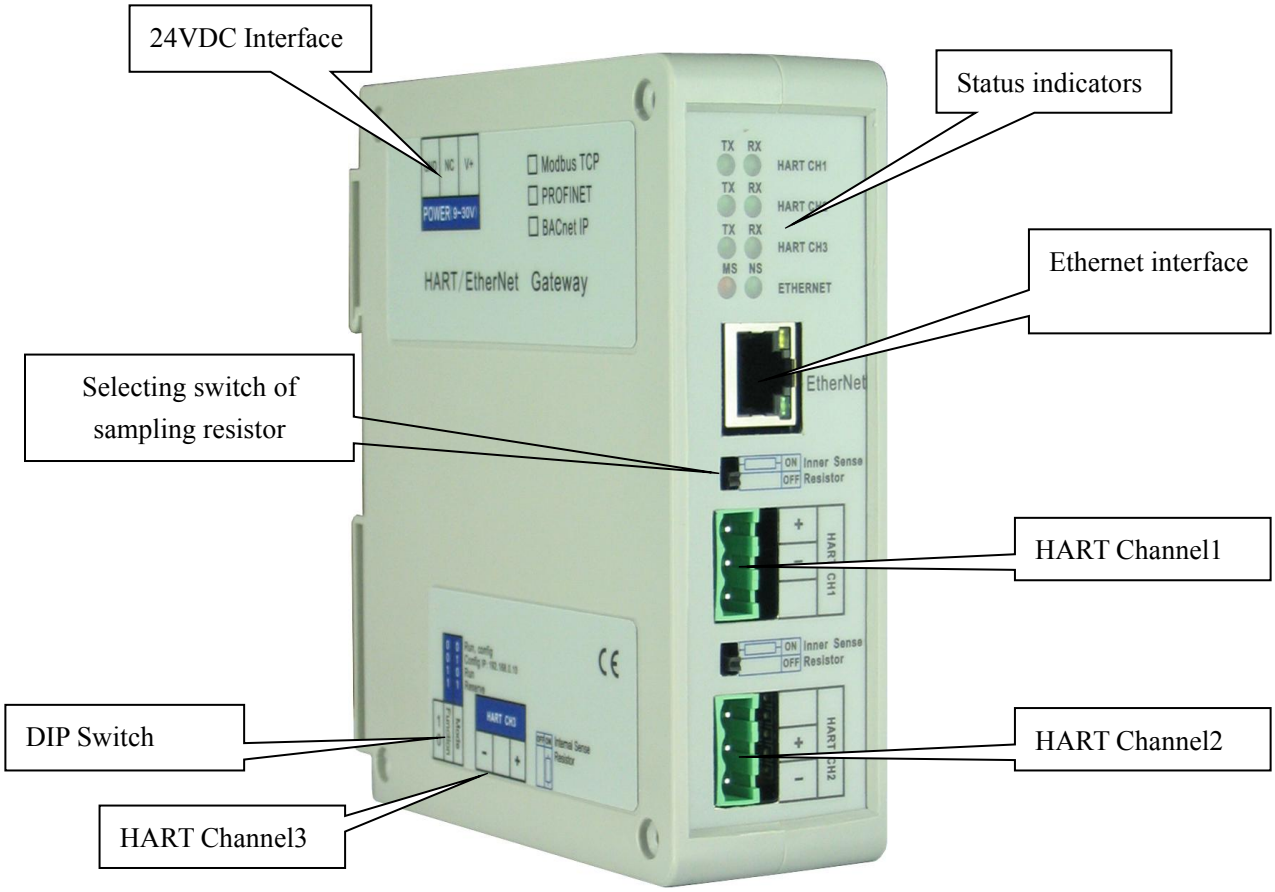


The Modbus Poll read the HART data "00,00,0B,42,8F,FE,32", where the front double "00" means that the device is in normal state, "0B" indicates that the pressure unit is PSI, "42, 8F, FE, 32" means the pressure value, the value is 71.9964752197266 (psi).



3 Hardware Descriptions

3.1 Product Appearance



Note: This picture is for reference only. Product appearance should refer to the real object.

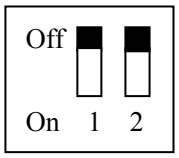
3.2 Indicators

Indicator	State	Status description
TX	Blinking	HART channel data is sending
	OFF	No data sending
RX	Blinking	HART channel data is receiving
	OFF	No data receiving
NS	Green LED OFF	No Modbus TCP data is exchanging
	Green LED Blinking	Modbus TCP data is exchanging
MS	Red LED ON	Indicate confliction of IP address
	Red LED Blinking	Connection OFF, configuration status, DHCP, BOOTP, IP address conflict detection with Modbus TCP
	Red LED Blinking (Remain 3 seconds)	Connection OFF with Modbus TCP

3.3 Configuration Switch/Button

3.3.1 Status Setting Switch

Configuration switch is located at the bottom of product, bit 1 is the mode selecting bit and bit 2 is the function setting bit.



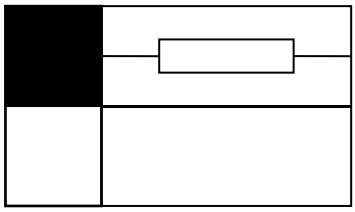
Debugging (bit 1)	Configuration (bit 2)	Description
Off	Off	In run mode, enable read/write the configuration data
Off	On	In run mode, disable read/write the configuration data
On	Off	Configuration mode, IP address is fixed: 192.168.0.10, read/write the configuration data is available
On	On	Reserved

Note: After re-configuring the switch, you have to restart the GT200-3HT-MT to make the settings take effect!

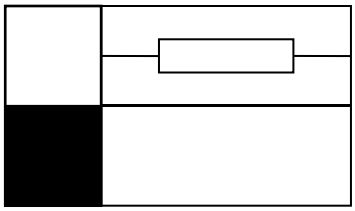
(Power off then Power on)

3.3.2 Internal / External Sampling resistor Switch

GT200-3HT-MT can choose to use the internal sampling resistor or external sampling resistor to get the HART signal. The specification of the internal resistor is 270Ω, 2W. When the power of the sampling resistor exceeds 2W, you must use the external resistor.



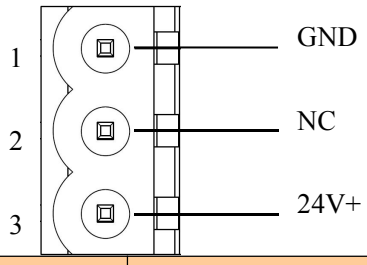
Switch to ON, using the internal sampling resistor



Switch to OFF, using the external sampling resistor

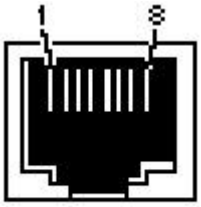
3.4 Interface

3.4.1 Power Interface



Pin	Function
1	Power GND
2	NC(Not Connected)
3	24V+, DC Positive 24V

3.4.2 Ethernet Interface

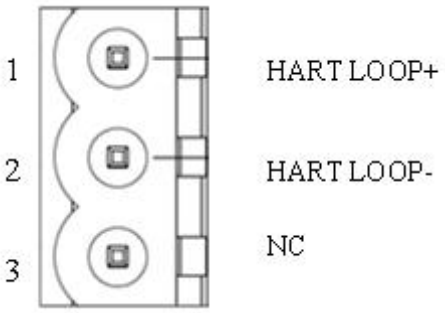


RJ-45 port

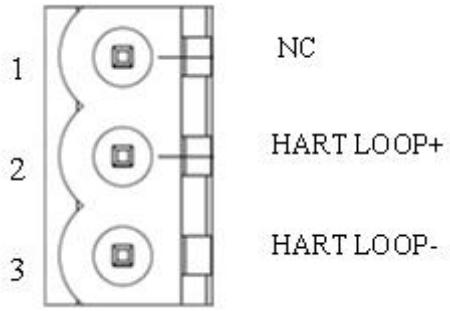
Ethernet interface use RJ-45 plug-in, its pin definition (standard Ethernet signal) is shown below:

Pin	Signal description
S1	TXD+, Tranceive Data+, Output
S2	TXD-, Tranceive Data-, Output
S3	RXD+, Receive Data+, Input
S4	Bi-directional Data+
S5	Bi-directional Data-
S6	RXD-, Receive Data-, Input
S7	Bi-directional Data+
S8	Bi-directional Data-

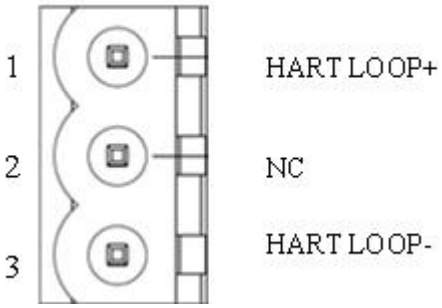
3.4.3HART Interface



HART Channel 1



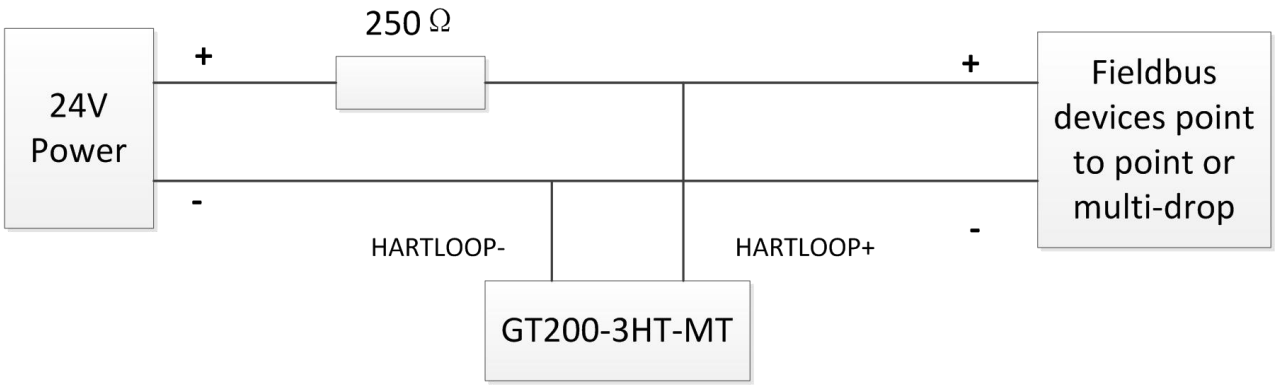
HART Channel 2

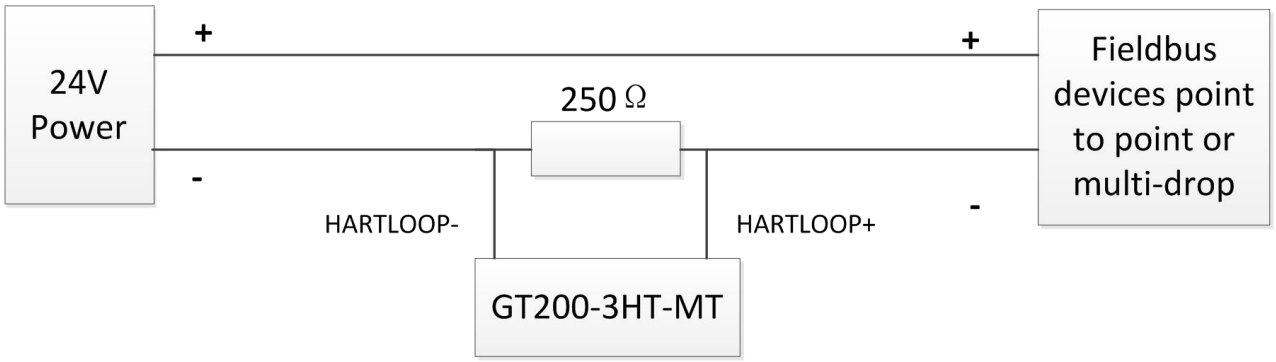


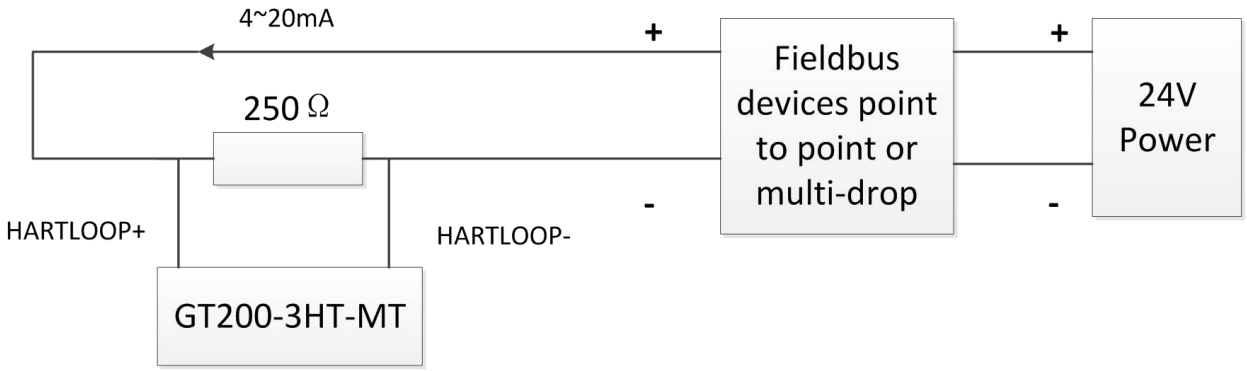
HART Channel 3

Symbol	Function
HARTLOOP+	Connect HART signal positive
HARTLOOP-	Connect HART signal negative
NC	NC

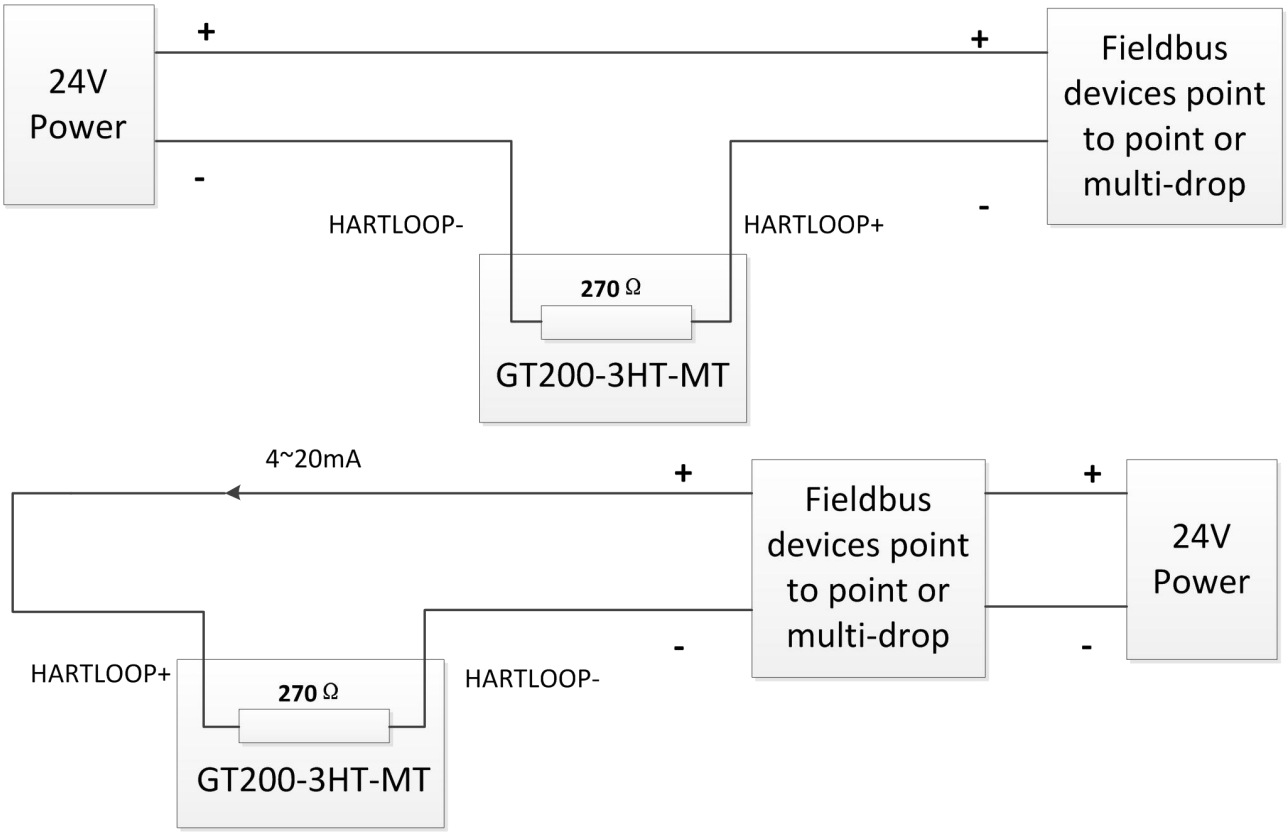
3.5 Topology of GT200-3HT-MT and Fieldbus Devices







Not using the internal resistor



Using the internal resistor

Note: 1. Some HART slave instrument need to perform self-test and other internal work when power is on, they may not start HART communication, then gateway cannot receive the response data of the instrument right at this moment. It is recommended the HART slave instrument and gateway uses separate power supply so that the gateway can immediately establish communication with instrument.

2. When configuring HART commands in configuration software SST-HE-CFG, the commands need to be configured according to the actual demands. To improve the speed of bus communication, it is recommended not to configure the empty nodes (the nodes without connection) and empty commands (the actual unnecessary commands).

4 Software Instructions

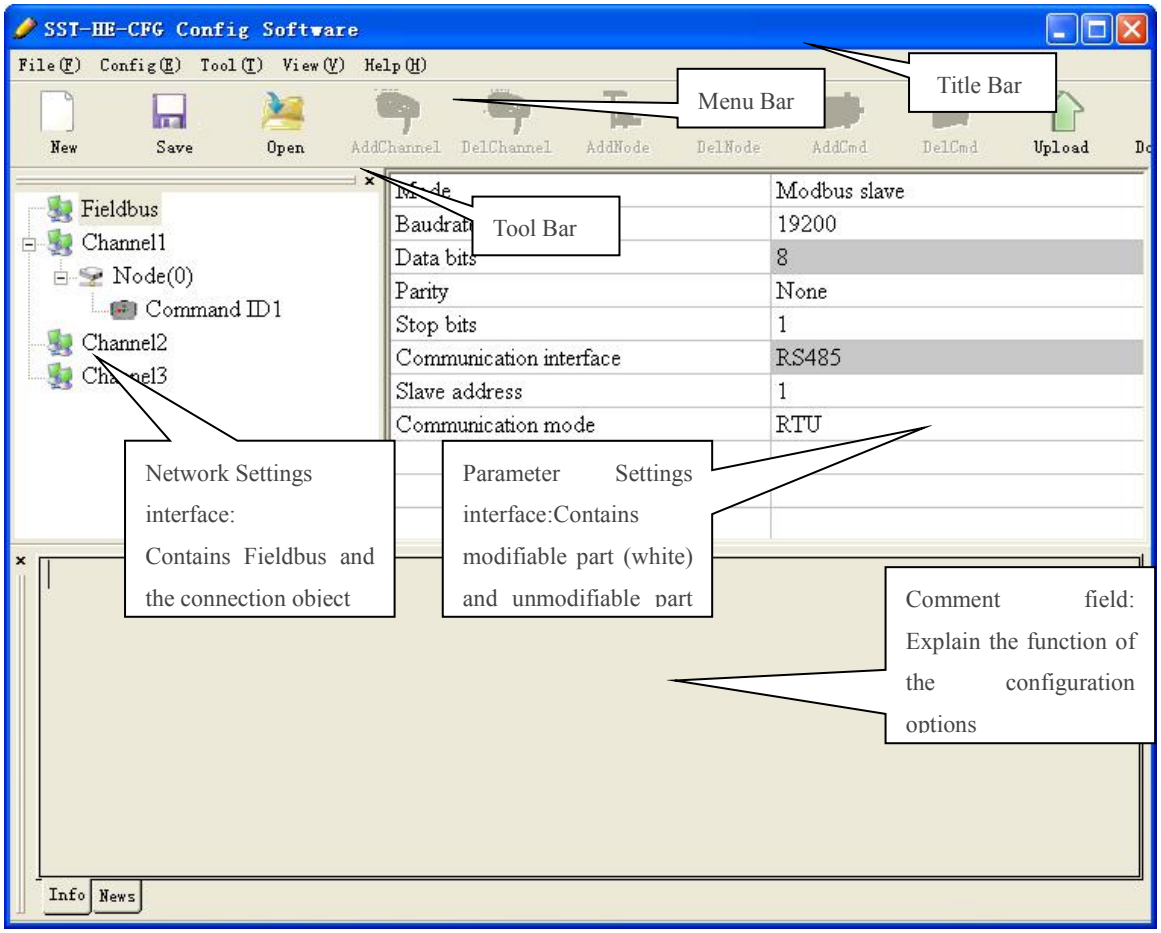
4.1 Software Interface Description

SST-HE-CFG is a configuration software based on Windows platform, and used to configure HART series products.

The following describes how to use the software SST-HE-CFG to configure the product GT200-3HT-MT. You may also check the software user manual to get detailed usage.

Double-click on the icon

to enter the main interface of software:



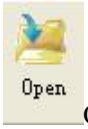
Tool Bar:

Toolbar interface shown as follow:

The function from left to right is: New, Save, Open, AddNode, DelNode, DelCmd, Upload, Download, AutoMap, Conflict, Export, Memory, Diagnose, Debug and Mode switch. GT200-3HT-MT doesn't support "Memory", "Diagnose", "Debug" and "Mode switch" function temporarily.

New: Create a new configuration file

Save**:** Save the configuration file



Open: Open the configuration file

AddChannel: This function can't be used temporarily

DelChannel: This function can't be used temporarily

AddNode: Add a HART slave node

DelNode: Delete a HART slave node

AddCmd: Add a HART command

DelCmd: Delete a HART command

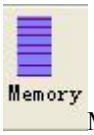
Upload: Read the configuration information from the module and shown in the software

Download: Download the configuration file to the gateway

AutoMap: Used to automatically calculate the mapped memory address without confliction by each command

Conflict: To check whether there are some conflicts with configured commands in the gateway memory data buffer

Export: Output current configuration to the local hard disk and saved as Excel form



Memory: Show the data exchange inside of the gateway. GT200-3HT-MT doesn't support this function temporarily.

Diagnose: through this function could analyze operating condition of fieldbus device; also it can finish some certain analysis. GT200-3HT-MT doesn't support this function temporarily.

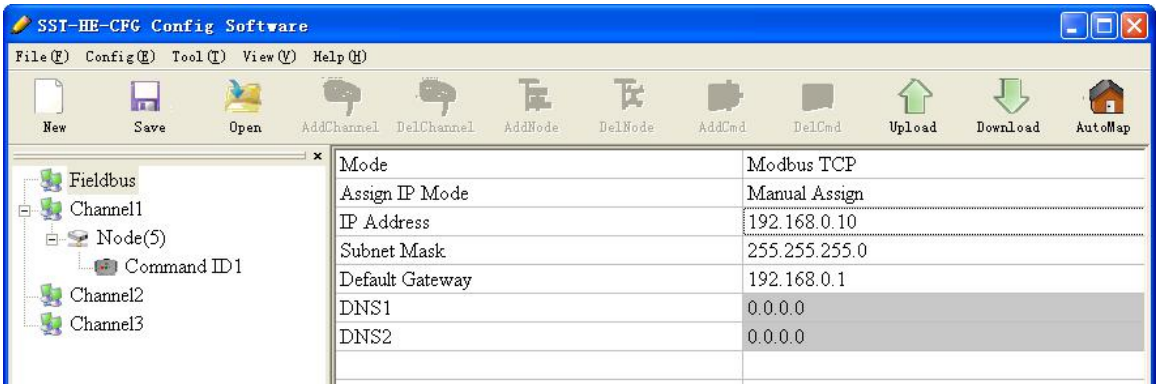
Debug: through this function could send any request frame to Hart fieldbus and show the response information received in HART, convenient to debug. GT200-3HT-MT doesn't support this function temporarily.

Mode switch: Specify that the operation of the gateway is debugging or configuring. GT200-3HT-MT doesn't support this function temporarily.

4.2 Software Functional Specifications

4.2.1 Configure the Fieldbus

Click the "Fieldbus" in the tree view on the left, select "Modbus TCP" in the "Mode select" in the configuring plate on the right and then click enter to confirm. It is shown below:



Here user can configure some parameters:

Assign IP Mode: Manual Assign, BOOTP, DHCP optional;

IP Address: Set the IP address of GT200-3HT-MT;

Subnet Mask: Set the subnet mask of device;

Default Gateway: Set the gateway address of device;

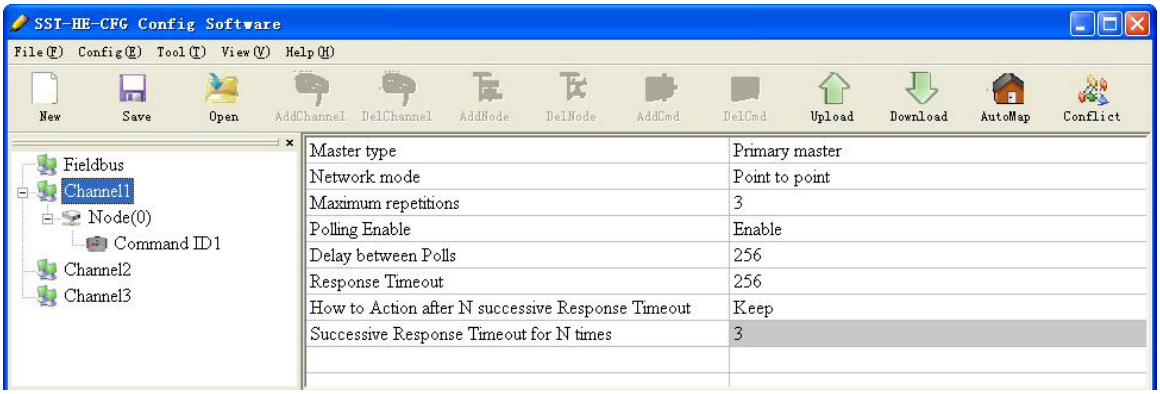
DNS1: Default 0;

DNS2: Default 0;

4.2.2Configure the HART Fieldbus

4.2.2.1 Set the parameters of HART channel

Click the HartChannel0 in the tree view, the configuration plate will be shown on the right:



Master type: Primary master, Secondary master

Network mode: Select the network mode of HART, and the gateway only can communicate with the HART slave device with 0 as its address in "point to point" mode;

Maximum repetitions: Select the number of retransmitting a HART command: 0~5

Polling Enable: Whether to use polling feature, and "Enable" shows using the polling feature.

Delay between Polls: Set delay time of two commands (From transmitting a command to transmitting the next command), the range is 256~65535ms

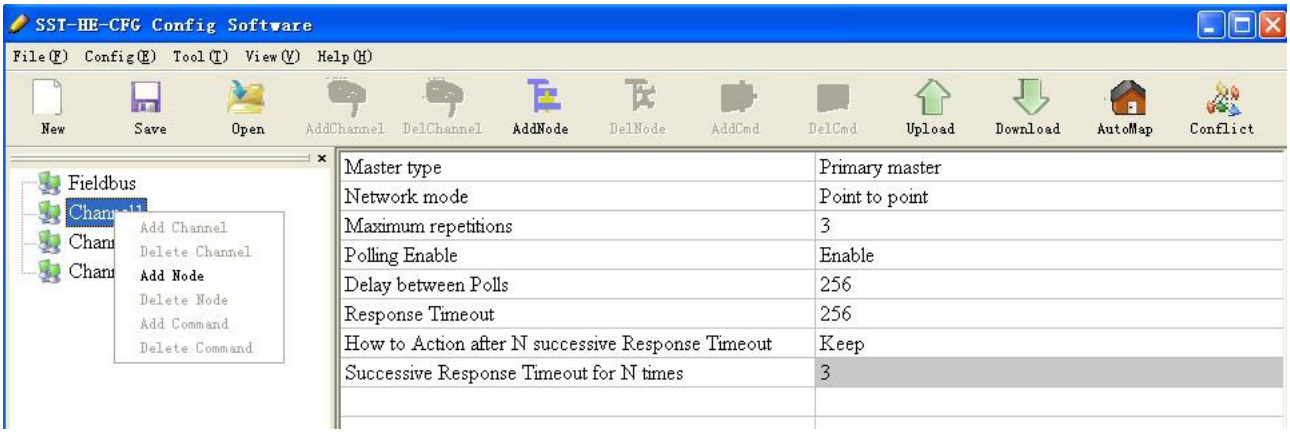
Response Timeout:Time waiting for the response from slave after the gateway transmitting commands, the range is 256~65535ms

How to Action after N successive Response: Clear HART input data or not when number of timeout is more than value of parameter "Timeout number"

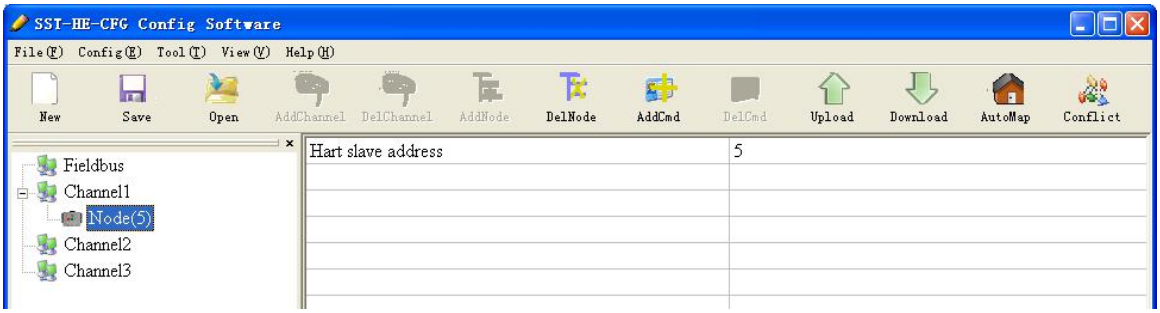
Successive Response Timeout for N times: When the value of parameter "Timeout clear" is "Clear", the parameter is effective: 1~14

4.2.2.2 Add Slave Nodes

Click the selected HART channel, right click the mouse and select "Add Node" in the popup menu.



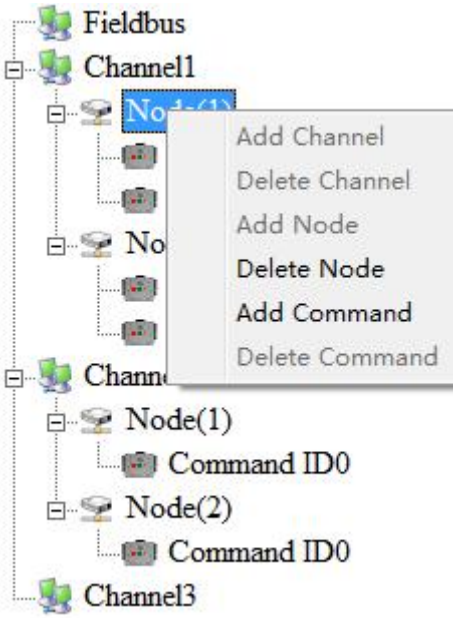
Click the added node, set slave address in the right configuration plate, and please notice that HART channel can only be equipped with one slave node whose address is 0.



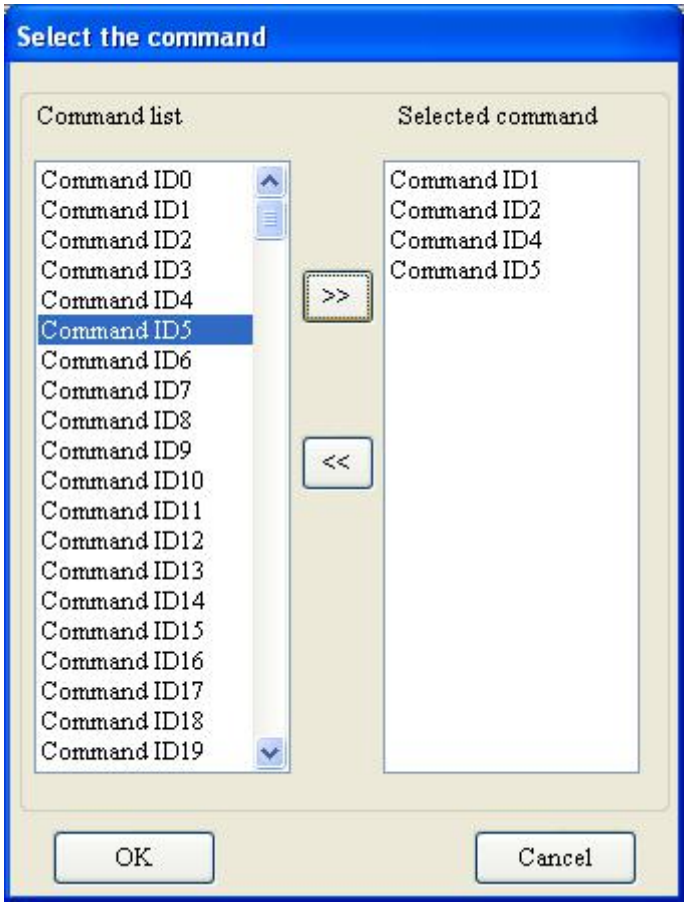
Note: When configured node numbers are more than the actual connected devices, the redundant node will lead to the longer time of polling output; so, it is recommended that configured node numbers should corresponds with actual devices.

4.2.2.3 Add Commands

Select the "Node ()", Right click and select "Add Command" in the popup menu



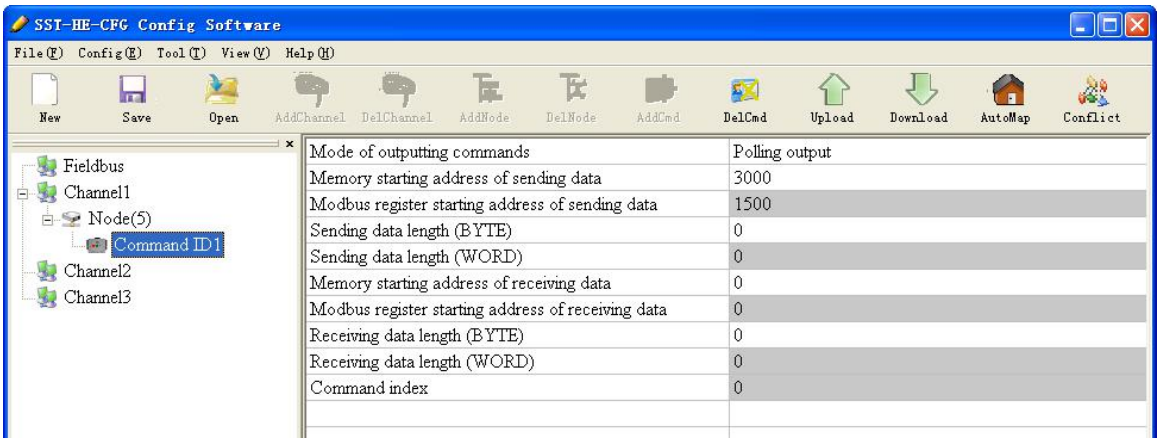
Choose the command you want in the popup menu, and then click "OK" to exit:



Note: the same command can only be configured once in one node.

4.2.2.4 Configure Slave Commands

Click the command number in the tree view; you will see the configuration plate in the right place:



Mode of outputting command: You can use the execution way of the command, change-of-state, polling output, Initialization output and disable output optional;

- ✓ Change-of-state output: Execute this command once s data buffer of HART changes
- ✓ Polling output: This order is put in the polling list, executed periodically
- ✓ Initialization output: Execute the command only once when power is on
- ✓ Disable output: the command will not be sent.

Set starting address of sending data: 3000~4999;

Modbus register starting address of sending data: the property is automatically calculated by gateway, used for register addressing;

Sending data length (BYTE): used to set the length of output data by this command;

Sending data length (WORD): the property is automatically calculated by gateway, used for user checking output data length conveniently, 1 word=2 byte;

Memory starting address of receiving data: set the memory address of input data by this command. Response data only includes data area of HART frame;

Modbus register starting address of receiving data: the property is automatically calculated by gateway, used for register addressing;

Receiving data length (BYTE): set the length of input data by this command;

Receiving data length (WORD): the property is automatically calculated by gateway, used for user checking

output data length, 1 word=2 byte;

Command index: the property is automatically calculated by gateway, it indicates the index in the configured command list this command belongs to.

4.2.2.5 Delete Commands

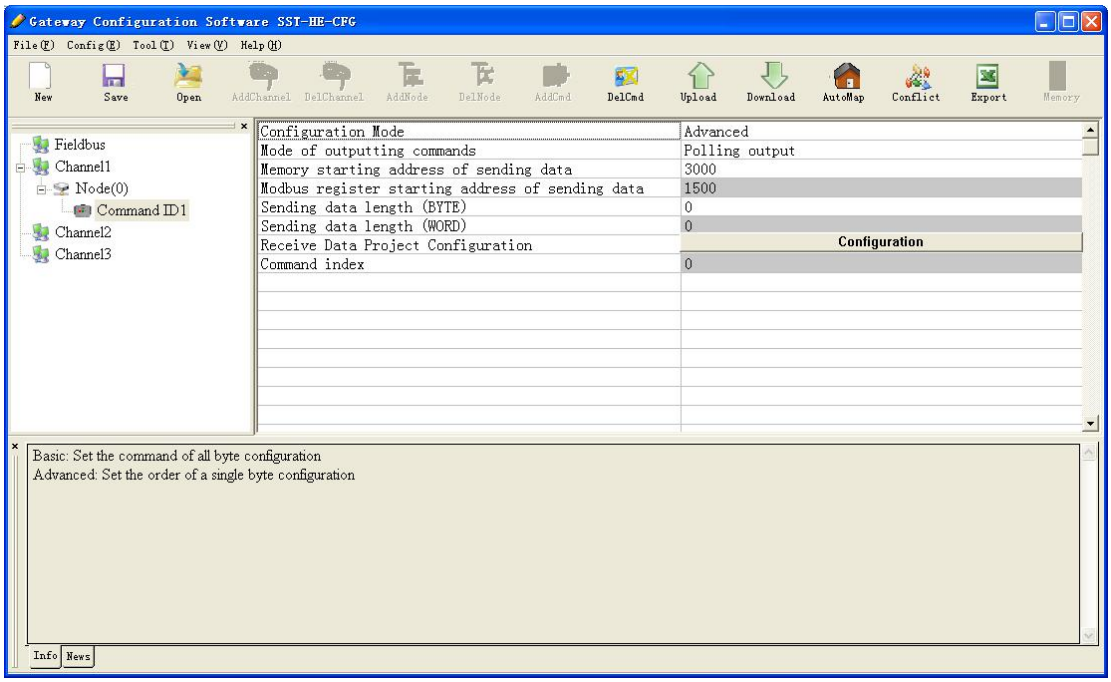
Select the command you want to delete with the left mouse button. Right click the mouse and click "Delete Command". Through the menu command can also be the same action. When a node is deleted, all commands under that node are also deleted.

4.2.2.6 Delete Nodes

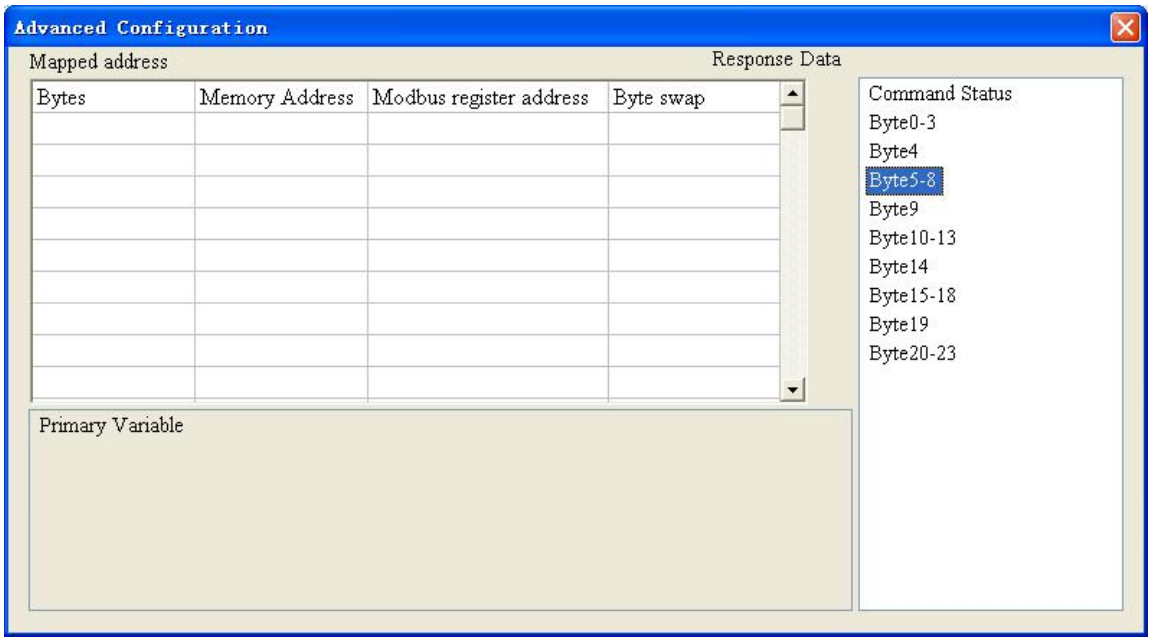
Select the node needed to be deleted, Right click the mouse and click "Delete Node". Through the menu command can also be the same action.

4.2.2.7 Advanced Options to Configure Slave Commands

When using HART command configuration, sometimes users want to get one part data of one command. For example, No.1 HART command. Only the float value of the main variable is required, and the unit of the main variable is not required, which is why the advanced option exists. Advanced option is actually the execution of "segment mapping function", The response data of each HART command is divided into segments that can be extracted independently. Users can get any part data they want. Below is the interface of Advanced Option:



This interface details is described in chapter 4.2.2.4, so here we don't describe it. The below is the example of No.3 HART command, to show how to use "Segment Mapping" function, we can see one "configuration" button after the "Receive Data Project Configuration" option, click it:



There are many parts in "Bytes". For example, "Command Status" means the communication status and relevant code of HART response command, "Byte0-3" means byte 0 to 3 of data area of HART response command, and so on.

In the above example, click "Byte5-8" will show the Primary Variable in the left bottom area. Other fields have corresponding explanations.

First to explain the "Mapping":

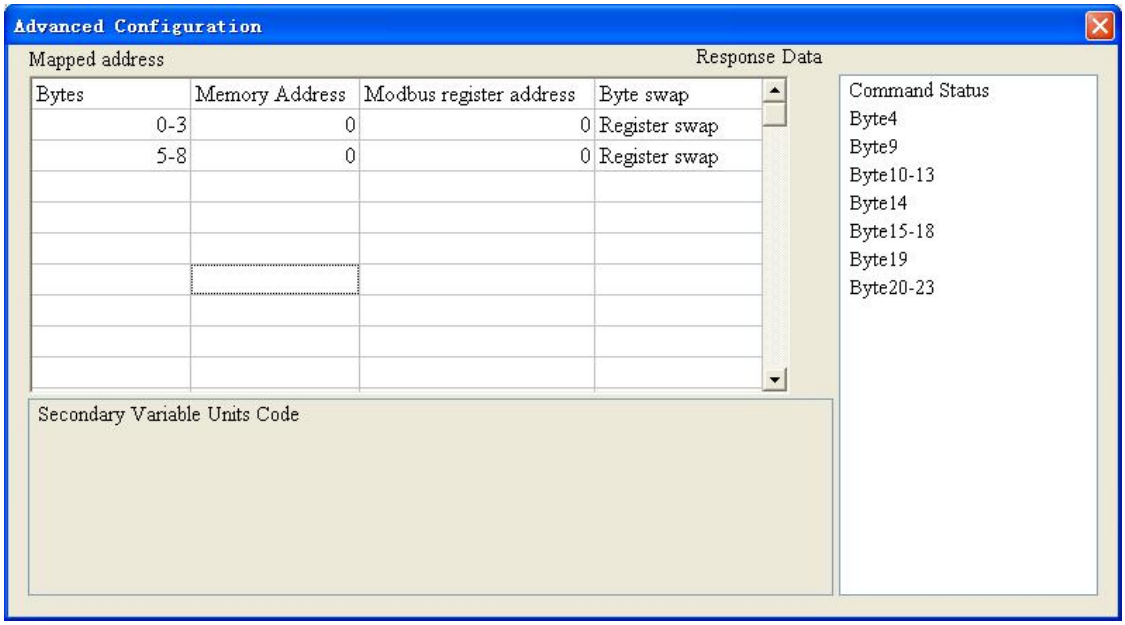
Bytes: response bytes of "Response Data";

Memory Address: assigned memory address which this byte is located in memory buffer area of GT200-3HT-MT;

Starting address: the relevant Modbus register address of "Memory Address"; Note: this address is not a single address, which is takes up the same amount of memory as the "Memory Address".

Byte swap: there are two options, "no swap" and "register swap", swap option is only valid to float type data. When using "no swap", the byte order is byte1, byte2, byte3 and byte4. After using "register swap", the byte order will be byte3, byte4, byte1 and byte2. For example, the original data is 0x12345678, it will be 0x56781234 after using "register swap".

Choose "Byte0-3" and " Byte5-8 ", click auto mapping, as shown below:



Close the dialog box, download the configuration into GT200-3HT-MT.

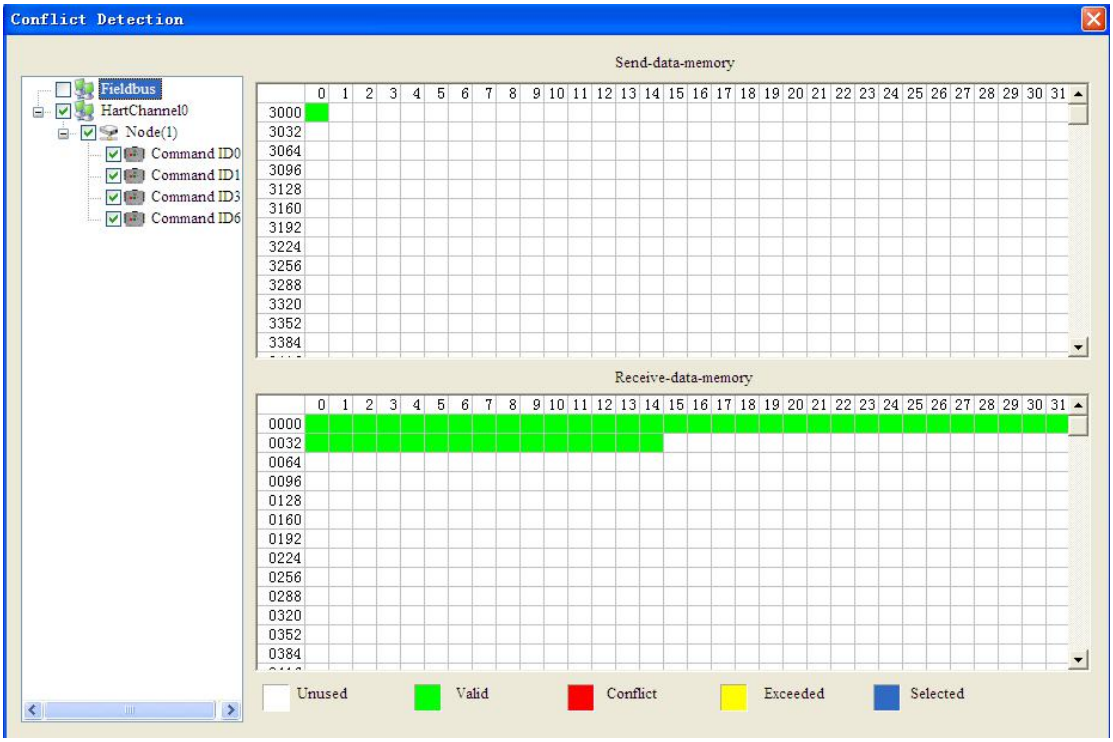
Others are the same with "Basic Mode".

4.2.3 Conflict Detection

"Conflict Detection" is used to check the distribution condition of the input and output data of all commands stored in the memory.

Click

icon will show the conflict detection interface as follow:



The left side is configuration commands, the right side is data memory address including receive data storage address and send data storage. Upper side is memory distribution of the HART's sending data; lower side is memory distribution of the HART's receiving data. When one memory unit is configured with two commands or more, the memory unit will display red color. When the distributed memory exceeds the defined scale of gateway, the exceeding part will display yellow color. White color area shows the usable memory. Green color area indicates occupied memory. Clicking one command, the distribution chart shown in blue will show the storage location of input/output data.

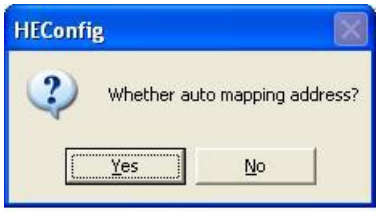
4.2.4 Auto Mapping

Automap will automatically distribute the memory with no confliction according to the input/output bytes

number by users' commands.

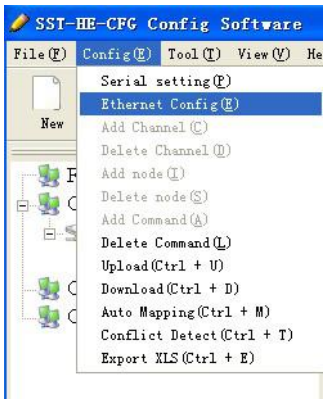
You should set the correct input/output bytes for each commands, then click

icon, select "yes" in the popup menu.



4.2.5 Upload Configuration

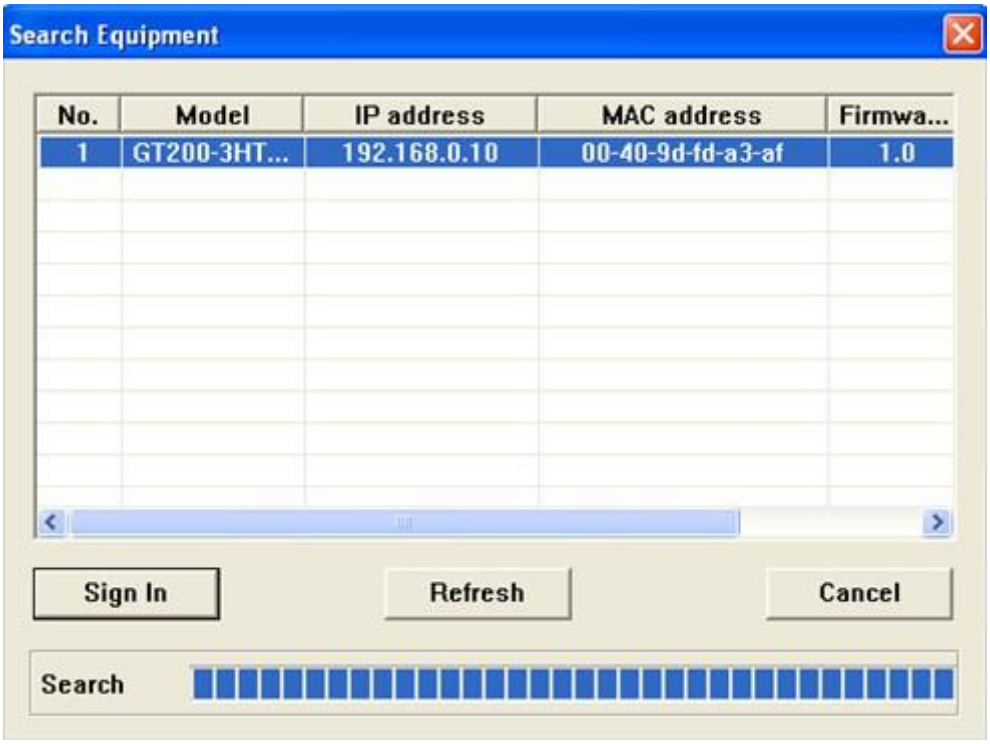
- Select the Ethernet Config interface:



- Show the "Ethernet Configuration" interface as below:

When checking "Use search function", it will search all identifiable hardware when the software is

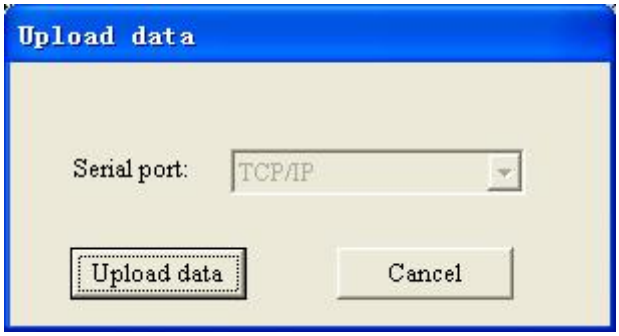
communicating with the hardware and will be shown in the device list:



- Select the device, click "Sign in" to connect the device.

When not checking "Use the search function", it will only search appointed hardware and only show this hardware in the device list.

- Click the upload icon again, pop up the dialog box below:



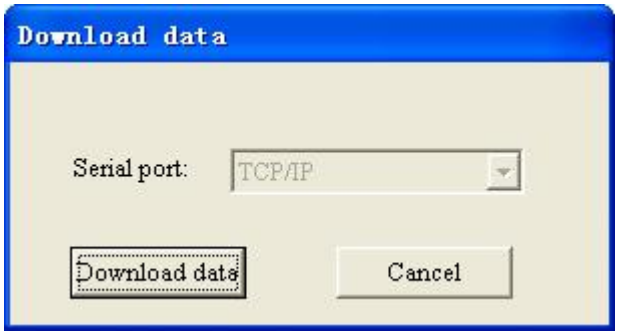
- Click "Upload data" button.

Now, user can upload the configuration of GT200-3HT-MT into the software and shown in the software.

4.2.6 Download Configuration

After configuring the command, click

button, pop up the dialog box below:



Click "Download data".

Note: Before downloading, please confirm all configuration data are correct.

4.2.7 Memory Data Display

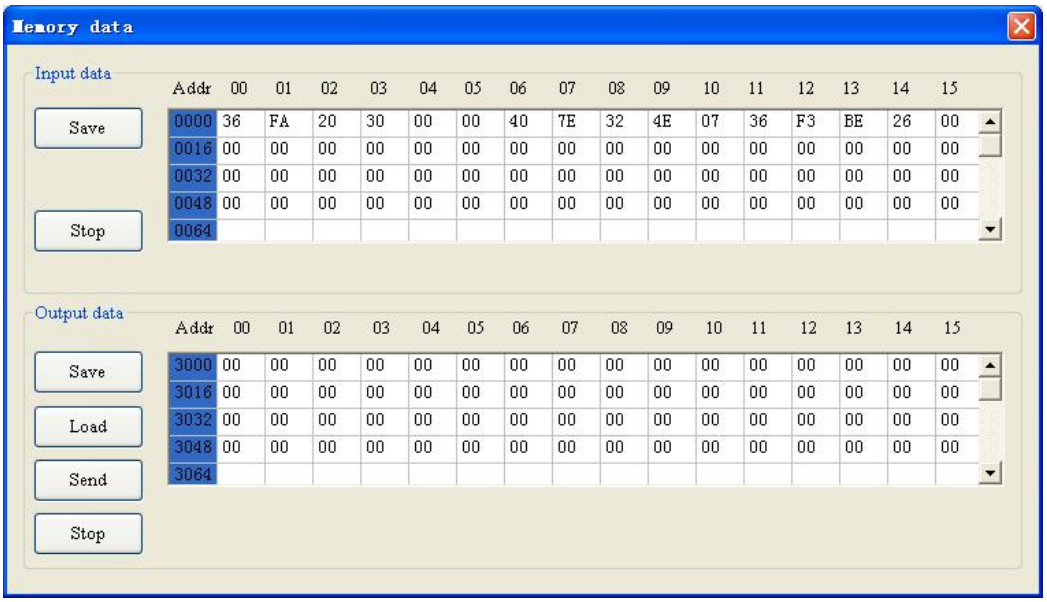
Show the data exchange inside of the gateway, users can use this function to debug the HART fieldbus in the absence of the EtherNet/IP side. Steps are as follows:

1. Ensure that the GT200-3HT-MT's function bit of DIP switch is in the OFF state and the mode bit of DIP switch is in the OFF state, restart the gateway. GT200-3HT-MT is in the run mode.
2. Use a network line to connect the GT200-3HT-MT's RJ-45 port and computer. Open the software "SST-HE-CFG", Click "Tool—Select Mode" and choose debug mode and then click on the

icon

, you can also click

to choose debug mode. Choose the correct gateway in the device scanning window, interface is as follows:



As is shown in the table, upper table shows the memory distribution of HART input data, lower table shows the output data. When you need to change the output data, click the "Stop" button firstly, then change the related data or load the already saved data table, at last, click the "Send".

4.2.8 Diagnose

The device diagnostics function allows the user to know which devices are not communicating properly, the execution of commands assigned, the status of the gateway's data transmission and reception, the display of

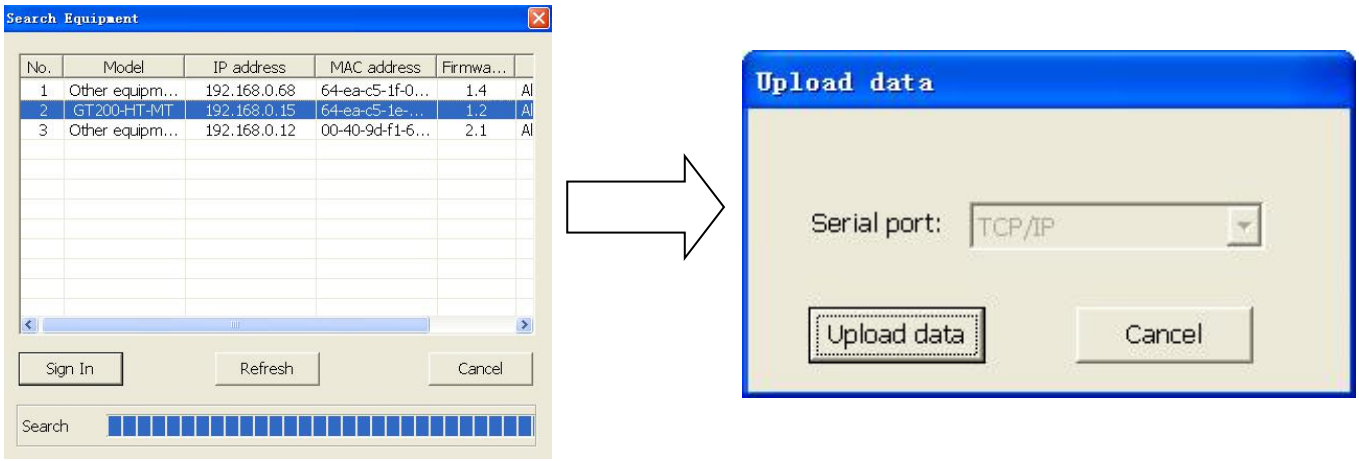
specific commands, and the real-time display of HART device data. The steps are as follows:

1) First, dial the DIP switch of GT200-3HT-MT to "1OFF2OFF", then power on again. At this moment GT200-3HT-MT is in running mode.

2) Connect the network port of GT200-3HT-MT to the computer, open the HTConfig software, click debug mode pop up the dialog box "Tools -> Select Mode", then select the diagnose in the tool or click the icon

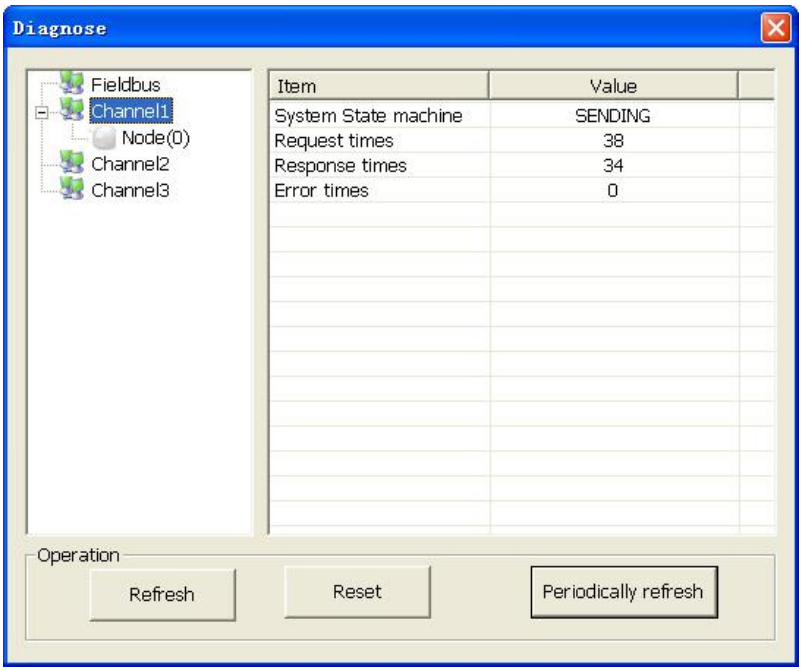
, select the debug mode, click OK, and then click

software pop up a dialog box to upload the gateway configuration, as shown below:



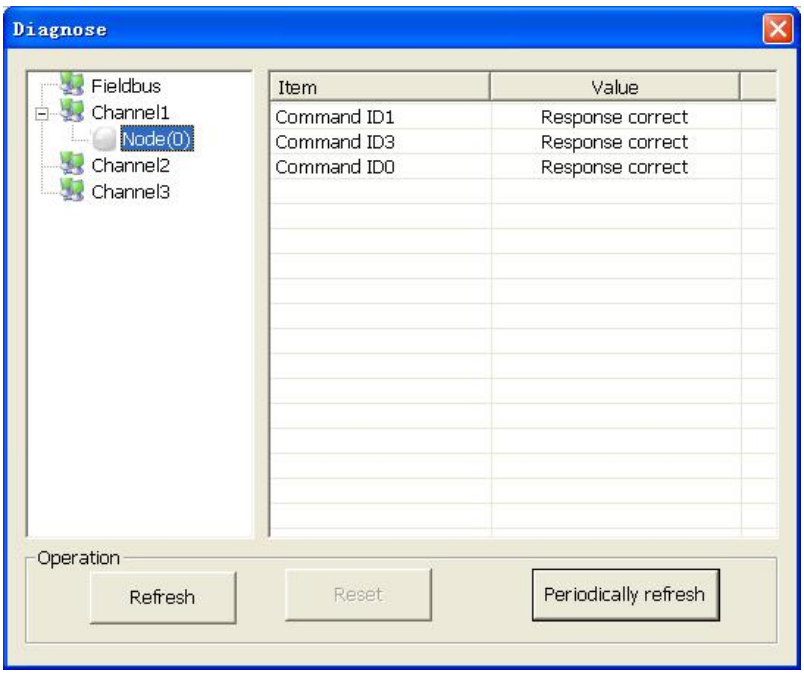
3) Click "Upload Data" to pop up the following picture:

4) Click "OK" to enter the diagnostic interface:



Click "Channel 1" in this interface, the right side of the gateway will display the status of the HART bus section, click "Refresh" will refresh the data once, click "Reset" will clear the system status, click " periodically refresh", the software will update the data in 500ms.

5) Click Node (x) appears below:

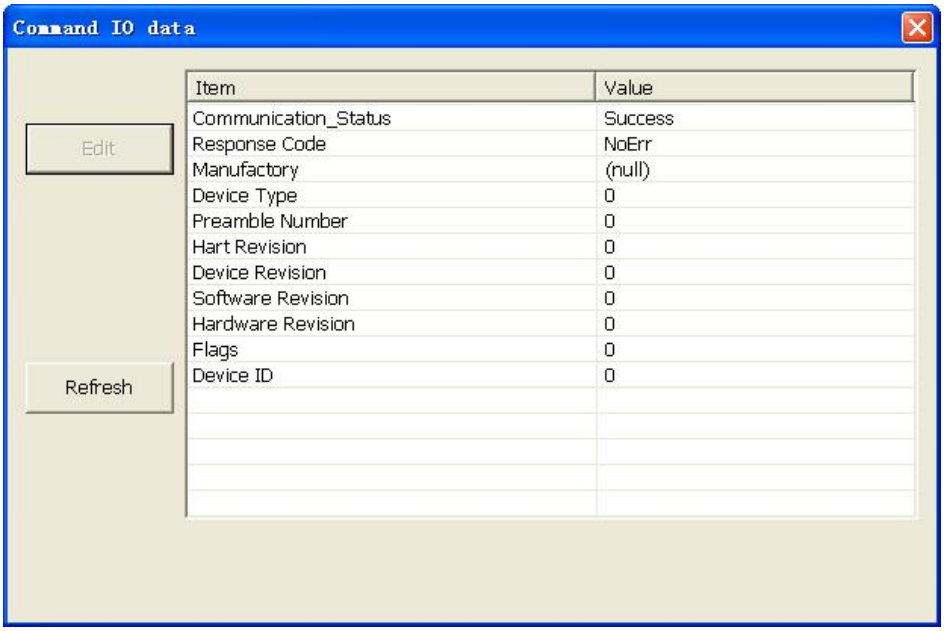


This screen shows the response status of the configured command.

Click "Refresh" will refresh these command status, "periodically refresh" will update the command status in 500ms

6) Double-click 0, 1, 2, 3, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19 commands will pop up their command information, commands 6, 17, 18, 19 can be used for data input.

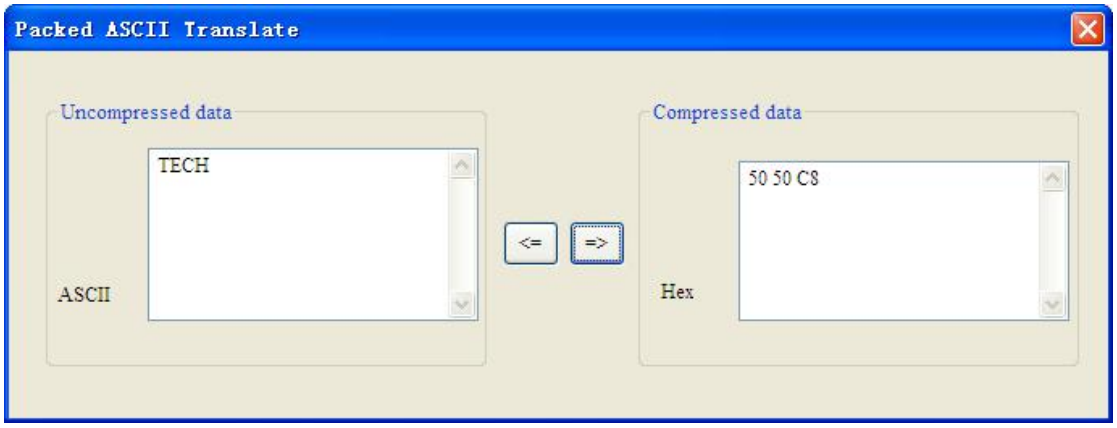
For example double click "CMD0" to pop up the following window:

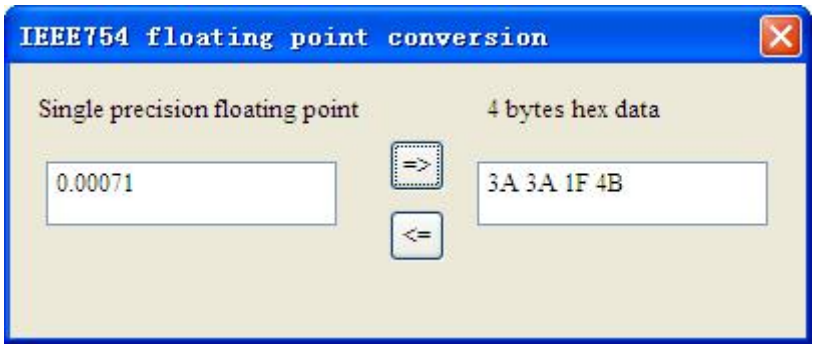


Click "Refresh" to update the data, "Edit" in the read-only command does not work.

4.2.9 Switching Tools

In the "Tools" menu, there are two practical tools: convenient for converting hexadecimal data and 1EEE754 or PACKEDASCII codes.





5 Working Principle

The gateway internally opens up a length of 8156 bytes of memory as input and output buffers which exchange data. 0 ~ 4999 memory is used as the storage area of the HART input data and output data. 5000~8155 memory is used as the storage area of the status of three HART channel and control variables. The specific assignment is shown in the table below:

	Gateway memory address	Corresponding Modbus register address	Data shift offset in channel	Read/write permission	Description
Three HART channel sharing memory	0-2999	0-1499		readable	The HART data input area
	3000-4999	1500-2499		readable, writable	The HART data output area
HART channel 1	5000-5019	800-809	0-19	readable	Device 0_cmd0 data
	5020-5039	810-819	20-39		Device 1_cmd0 data
	……	……			……Device 15_cmd0 data
	5320	960H	320		Gateway status
	5321	960L	321		Gateway HART port sending times
	5322	961H	322		Gateway HART port receiving times
	5323	961L	323		HART communication error times
	1924-1943	962-971			Reserved
	5324	972H	324		The response status of device 0_cmd0
	5325	972L	325		The response status of device 1_cmd0
	……	……			……The response status Device15 _cmd0
	5340-5439	980-1059	340-439		The response status of user command

	5440	1060-1195			Reserved
	5440	1196H	440		Universal receiving label
	5441	1196L	441		Universal receiving error counter
	5442-5443	1197	442-443		Universal receiving data length
	5444-5743	1198-1347	444-743		Universal receiving data
	2696-2999				Reserved
	3000-3999	0000-0499			HART data output area
	5744	0500H	744	readable, writable	Reset to send, receive, error counter
	5745	0500L	745		Polling enabled
	5746	0501H	746		Trigger label
	5747	0501L	747		Trigger command
	4004-4269	0502-0634			Reserved
	5748	0635H	748		Universal sending label
	5749	0635L	749		Universal mode enabled
	5750-5751	0636	750-751		Universal sending data length
	5752-6051	0637-0786	752-1051		Universal sending data
HART channel 2	6052-7103			Same as HART 1	HART channel 2 status/control variable, same as channel 1HART
HART channel 3	7104-8155			Same as channel 1	HART channel 3 status/control variable, same as channel 1

- The HART data input area: Store the data that HART slave device sends to gateway. All command response data of HART channel will be mapped here.
- The HART data output area: Store the data that the gateway sends to the HART slave device. All HART command will get the output data here.

- Device 0_cmd0~ Device 15_cmd0: When operating one slave command for the first time, the gateway internally will automatically execute the No. 0 command to obtain the device information (to obtain the long address). The response data of this internal command is stored in this area.
- Gateway status: The gateway status indicates the state of the gateway in the HART network, defined as:

  0---- No HART communications.

  1----Sending

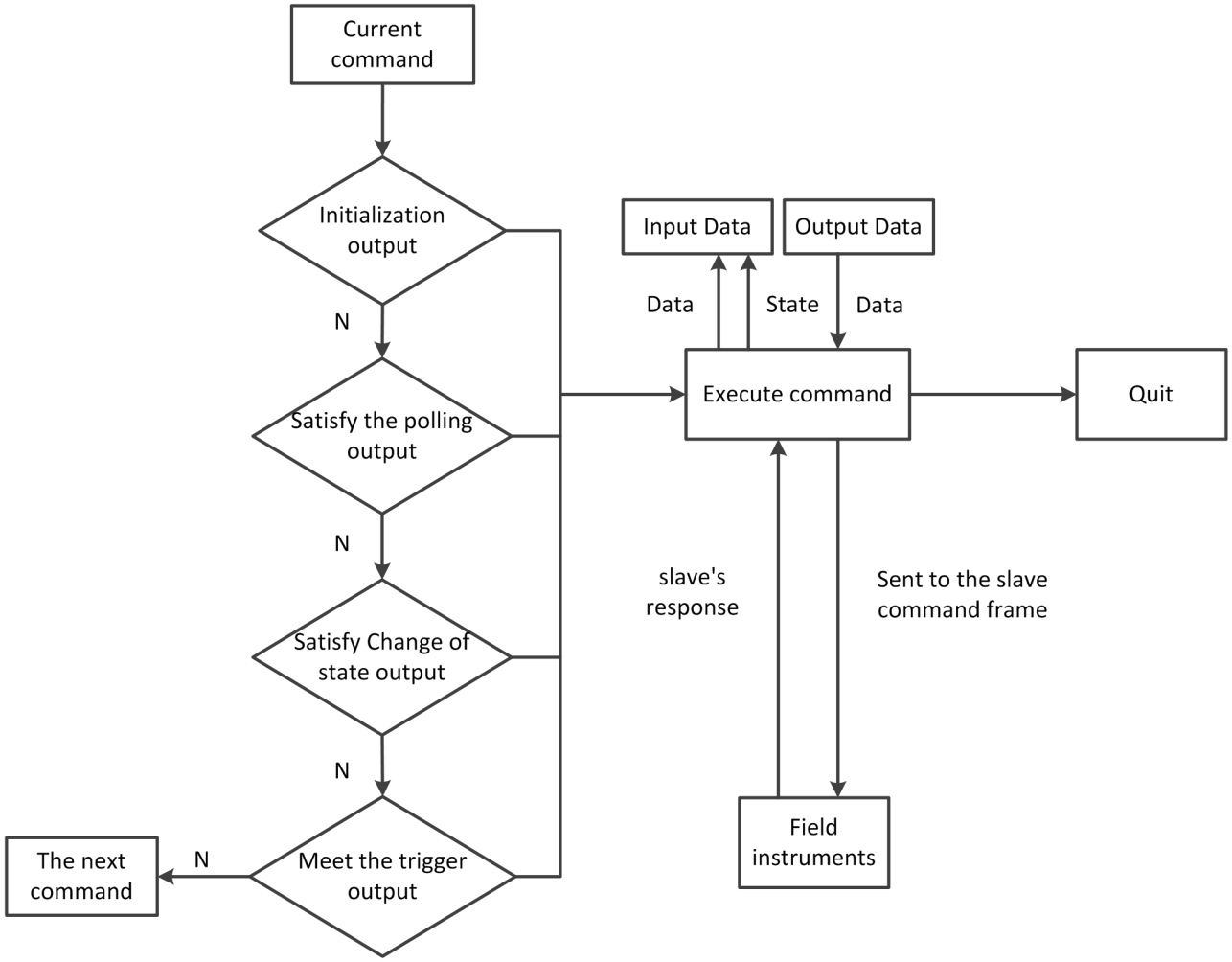
  2---- Waiting for a response

  3---- Handing a response
- Sending times of HART channel: The HART Transmit counter
- Receiving times of gateway HART port: The HART Receive counter
- Communication error times of HART channel: The HART Receive Error counter
- Device 0_cmd0~ Device 15_cmd0's response status: Show the response status of the internal command
- The response status of the user command: Show the response status of the user commands

  Command state is defined:
  0---- Not executed
  1---- The correct response
  2---- Parity error
  3---- No response
  4---- Error defined in agreement
  5----No connection
- Universal Receiving label: The receive label under the universal model, this value changing one time indicates that HART port receives a HART frame
- Universal Receiving data length: Indicates the received data length in the universal mode
- Universal Receiving Error Counter: Show that the universal received error number
- Universal receiving data: Store the received data of HART port under the universal mode
- Reset to send, receive, error counter: The gateway control signal, when the value of memory changes, gateway causes all the counter to 0
- Polling enabled: This bit is readable and writable, writing 1 enables the polling output, writing 0 disables polling output; Reading 1 indicates that the polling state is enabled, 0 indicates that the polling is in the disabled state

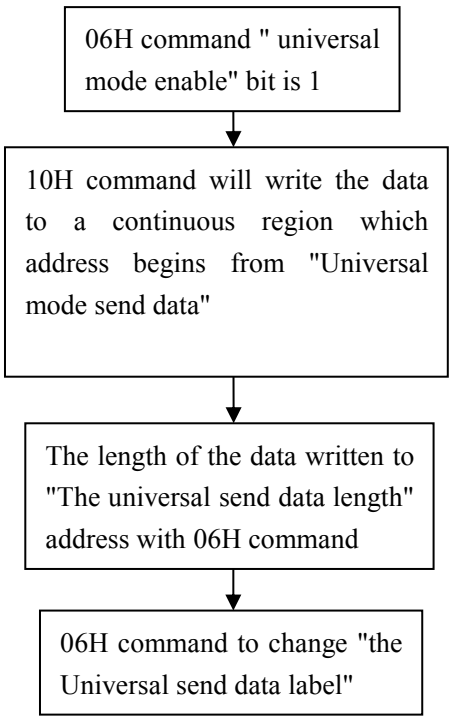
- Trigger label: Changing the value will result in a trigger operation
- Trigger command number: Command number executed by trigger operation
- Universal mode enabled: The value of 1 indicates a universal transfer function is enabled, otherwise disabled universal transfer function
- Universal sending label: The transfer label under the universal mode, this value changes in time will lead to send a HART frame
- Universal sending data length: The length of the sending data under the universal mode
- Universal sending data: the data need to send under the universal mode
- Register address calculation formula: Memory address=the starting memory address of HART channel+the offset of register; Modbus register address=Memory address/2 (integral part of the result indicates register address, the remainder indicates the low bit of register address, otherwise it is the high bit). For example, the memory address of No.2 HART channel status is: 6052+320=6372. Relative Modbus register address is: 6372/2=3186H

5.1 Flowchart of Executing One HART Command



5.2 Universal Sending and Receiving Data

User can visit/read universal receive/transfer control variable in order to start the "transparent transmission" with one HART channel. The detailed steps are as below:



The gateway stores the received HART frame in a continuous region whose starting address is "the Universal receiving data" and writes the length of the received data in the "Universal receiving data length". Then change the value of "universal receiving label". If any data is not received within the response waiting time, "universal receiving error counter" will plus 1. Before sending the universal frame, all users should read the universal receiving label and the error counter. After finishing the universal frame, it needs to read these two values continuously until one of them changes.

5.3 Trigger Command

Users can trigger any HART command which is configured by gateway through Modbus TCP. The specific approach is: appointing Modbus register address to "trigger command ID" of one channel; using No.6 command of Modbus to write the user trigger command number (when using SST-HE-CFG to configure commands, the software will automatically calculate and display) to the "trigger command number". Then rewriting "the trigger label" can trigger the value to change and trigger the gateway to finish a trigger operation. Parts of response data in the device will be stored to "the receiving data memory" which specified by this command number.

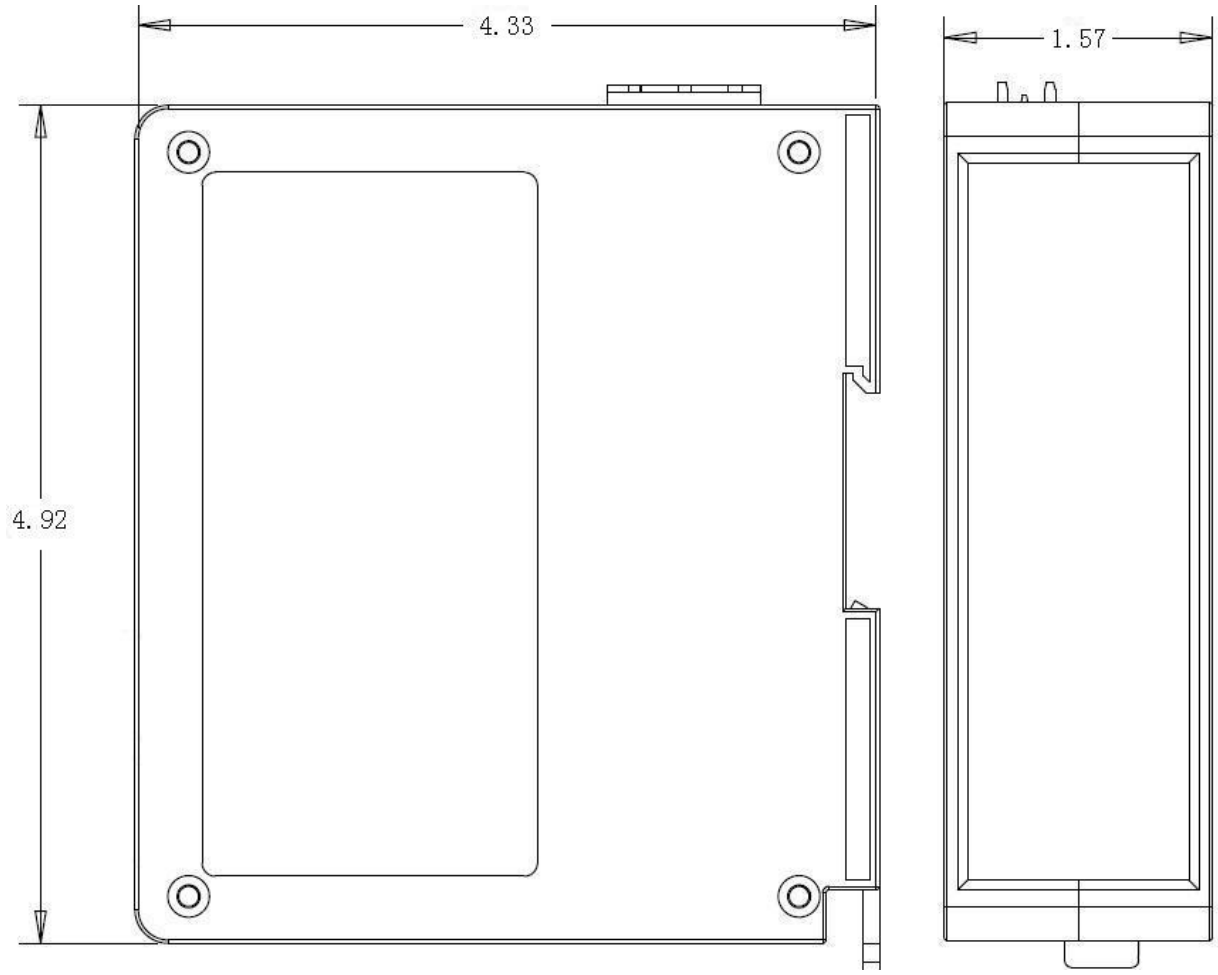
5.4 Data Exchange with Modbus

When fieldbus is configured as "Modbus TCP", user can exchange data, inquire the status of gateway and manage according to the corresponding address of gateway in the internal input and output buffer; Also you can do some trigger operation and transmission of universal frame.

6 Installation

6.1 Machine Dimension

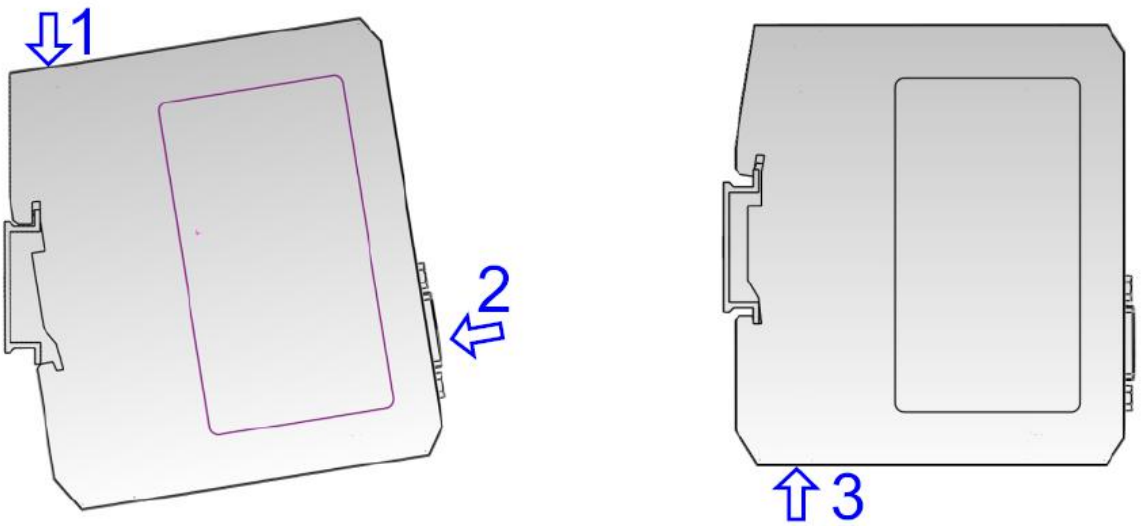
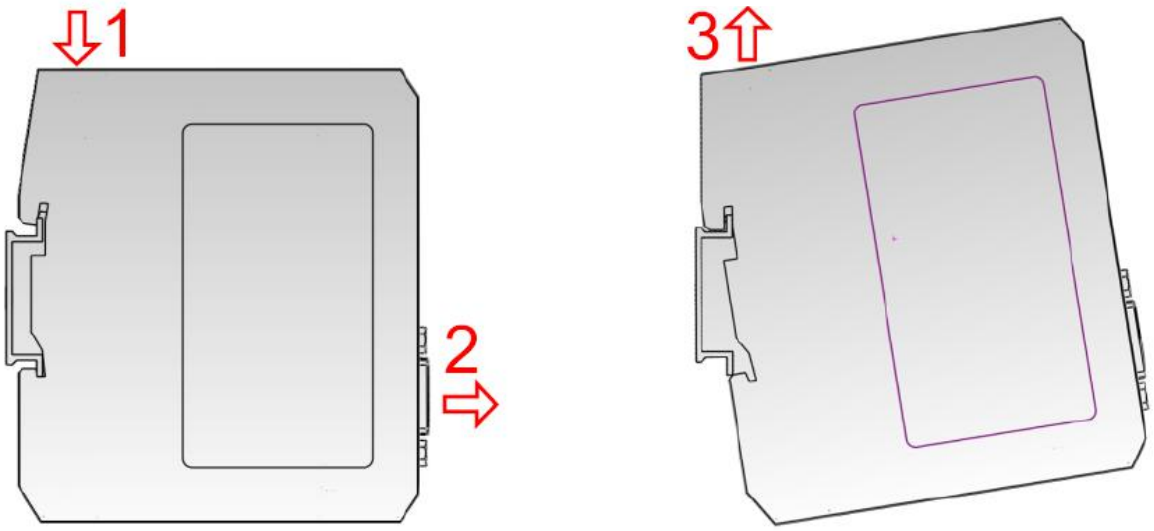
Size: 1.57 in (width)*4.92 in (height)*4.33 in (depth)



6.2 Installation Method

Using 1.38 in (35mm) DIN RAIL

Installing the gateway



Unloading the gateway