

# Modbus TCP / EtherNet/IP Gateway GT200-MT-EI

## User Manual

V1.7

Rev A



*SST Automation*

E-mail: [SUPPORT@SSTCOMM.COM](mailto:SUPPORT@SSTCOMM.COM)

[WWW.SSTCOMM.COM](http://WWW.SSTCOMM.COM)



## **Important Information**

### **Warning**


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[www.sstcomm.com](http://www.sstcomm.com)

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# 1 Product Overview

## 1.1 Product Overview

GT200-MT-EI is a gateway which can realize the interconnection of different industrial Ethernet devices. The gateway supports Modbus TCP master/slave and EtherNet/IP slave. It can finish the data exchange between Modbus TCP network and EtherNet/IP network. Also, it supports the interconnection between Schneider PLC and AB PLC and connecting the Modbus TCP slave devices to the EtherNet/IP network.

## 1.2 Product Features

- Modbus TCP master or slave optional.
- EtherNet/IP slave.
- Redundant power.
- Support network status monitor function.
- Support I/O data monitor function.
- Provide easy-to-use configuration software SST-EE-CFG.

## 1.3 Technical Specifications

- [1] One Ethernet interface, Modbus TCP and EtherNet/IP shares this interface together.
- [2] Ethernet 10/100M self-adaptive.
- [3] IP address conflict detection.
- [4] Support static IP and DHCP function.
- [5] Act as a slave at the EtherNet/IP side, support ODVA standard EtherNet/IP communication protocol.
- [6] Read&write of I/O data of EtherNet/IP supports two ways:
  - a) Direct establish I/O connection to read/write I/O data.
  - b) Use MSG command to read/write I/O data.

- [7] As Modbus TCP master, support visiting at most 36 different IP or Modbus TCP slave of different unit ID, support function code 01H, 02H,03H, 04H, 05H, 06H, 0FH, 10H.
- [8] Act as slave at the Modbus TCP side, support 36 TCP connections, support function code 03H, 04H, 06H, 10H.
- [9] Max input bytes: 492 bytes, max output bytes: 492 bytes.
- [10] Provide byte swap function: No swap, double-byte swap, four-byte swap.
- [11] Operating temperature: -4°F~140°F (-20°C~60°C). Humidity: 5% ~ 95% (non-condensing).
- [12] Dimensions (W\*H\*D): 1.6 in \* 5.0 in \* 4.4 in (40 mm \* 125 mm \* 110 mm).
- [13] Installation: 1.4 in (35 mm) DIN RAIL.
- [14] Protection level: IP20.

## 1.4 Related Products

The related products include: GT200-MT-2RS etc.

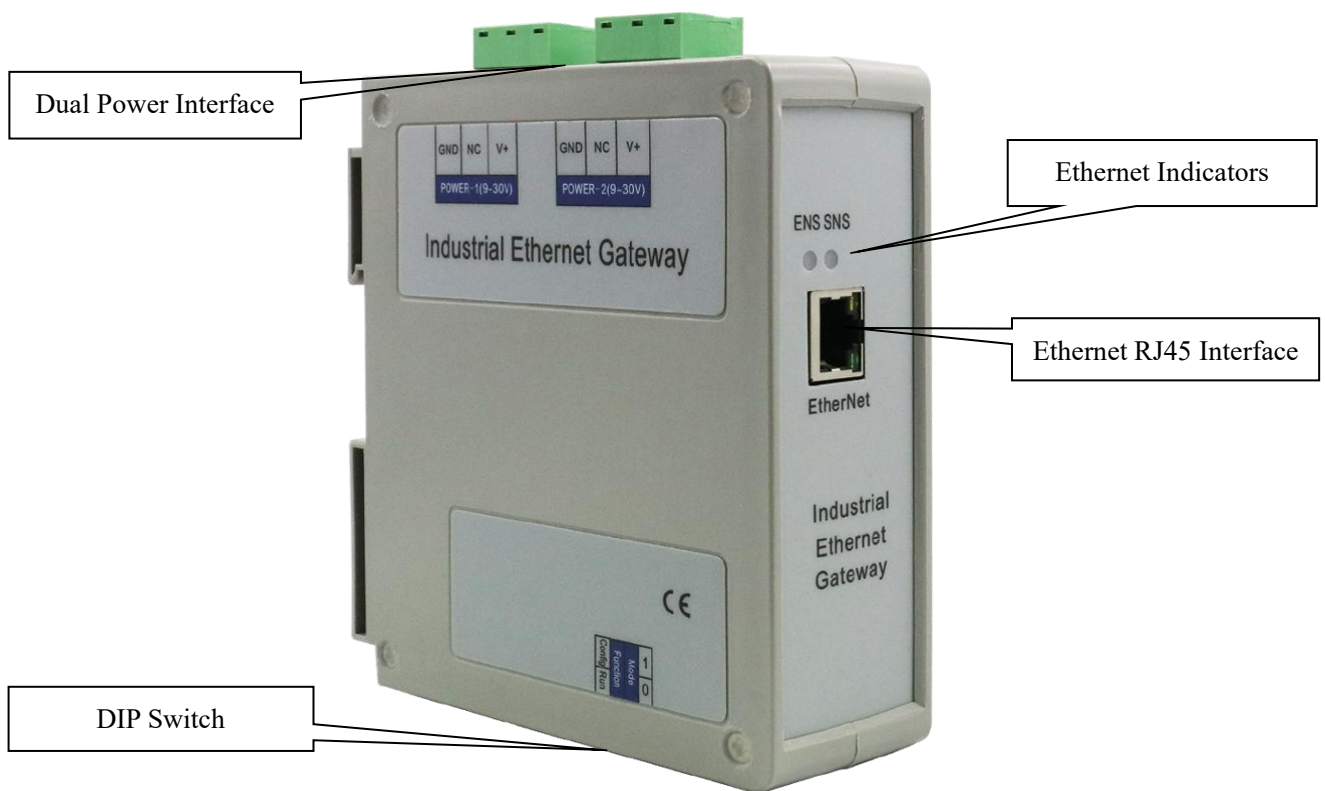
To get more information about related products, please visit SSTCOMM website: [www.sstcomm.com](http://www.sstcomm.com)

## 1.5 Revision History

Revision	Date	Chapter	Description
V1.7, RevA	12/28/2021	ALL	Update format

## 2 Hardware Descriptions

### 2.1 Product Appearance



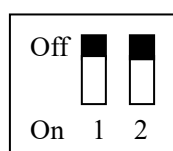
Notes: This picture is for reference only. The product appearance is subject to the actual product.

## 2.2 Indicators

Indicators	Status	Descriptions
ENS ( EtherNet/IP network status indicators )	Green on	EtherNet/IP connection is established.
	Blinking(Green)	EtherNet/IP connection is not established.
	Red on	Indicates conflict with IP address.
	Blinking(Red)	EtherNet/IP connection is off or DHCP state.
SNS ( Modbus TCP network status indicators )	Green on	At least one Modbus TCP connection has been established.
	Blinking(Green)	Modbus TCP no connection
	Blinking(Red)	Modbus TCP connection is off and no longer exists.
	Blinking(Red) ( lasts 3 seconds )	Modbus TCP connection is off.
ENS (Orange) and SNS (Orange) ( Orange: Red and green light on at the same time )	Simultaneously on	Start-up state
	Blink alternately	Configuration state

## 2.3 DIP Switch

The DIP switch is located at the bottom of the gateway, bit 1 is mode bit and bit 2 is function bit.



Mode (bit 1)	Function (bit 2)	Description
Off	Off	Run mode, allow reading and writing configuration data.
Off	On	Run mode, forbid reading and writing configuration data.
On	Off	Configuration mode, IP address is 192.168.0.10 (fixed), this mode can read and write configuration data but cannot finish communication between EtherNet/IP and Modbus TCP.
On	On	Reserved

**Notes:**

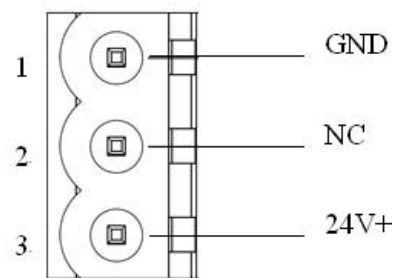
**Restart GT200-MT-EI (power off and power on) after resetting the configuration to make the configuration take effect!**

## 2.4 Interface

### 2.4.1 Power Interface

GT200-MT-EI has two power interfaces and power redundant function. When one power fails, another power can keep supplying power.

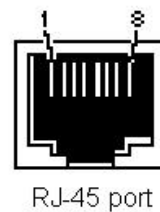
Pin	Function
1	GND
2	NC, not connected
3	24V+ , DC 24V



### 2.4.2 Ethernet Interface

Ethernet interface uses RJ-45 connector. Its pin (standard Ethernet signal) is defined as below:

Pin	Signal Description
S1	TXD+, Transmit Data+
S2	TXD-, Transmit Data-
S3	RXD+, Receive Data+
S4	Bi-directional Data+
S5	Bi-directional Data-
S6	RXD-, Receive Data-
S7	Bi-directional Data+
S8	Bi-directional Data-



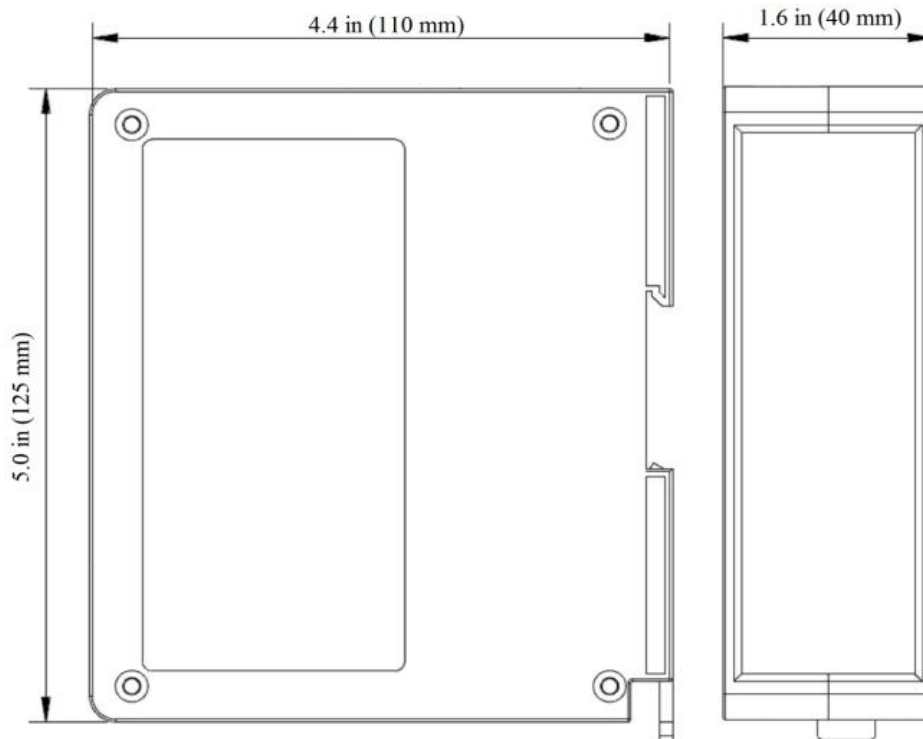


## 3 Hardware Installation

### 3.1 Machine Dimension

Size (width \* height \* depth):

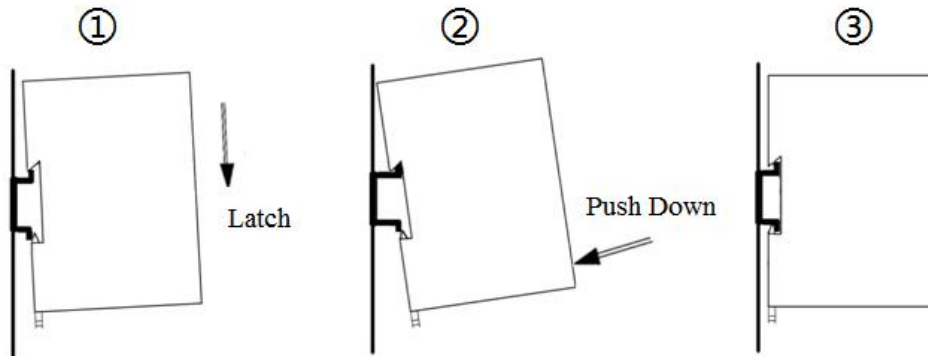
1.6 in \* 5.0 in \* 4.4 in (40 mm \* 125 mm \* 110 mm)



## 3.2 Installation Method

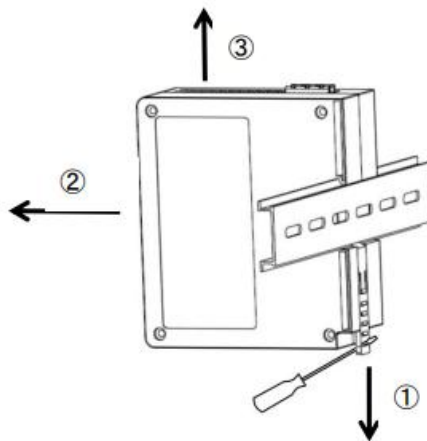
Using 1.4 in (35mm) DIN RAIL.

### Install the gateway



### Uninstall the gateway

1. Use a screwdriver to pass through the DIN RAIL bar, pull down and hold.
2. Pull out the gateway.
3. Lift up the gateway.



## 4 Quick Start Guide

The following steps will help users to quickly configure GT200-MT-EI:

1. Wiring: Please see [Chapter2.4](#).
  - a) Please connect the gateway's network port to the router. Connect to the PC with a network cable for configuring the gateway. And use other network cables to connect to Modbus TCP network and Ethernet IP network equipment.
  - b) GT200-MT-EI has two power interfaces, which are redundant, use DC 24V power supply. The user can connect one or both.
2. Download SST-EE-CFG software from [www.sstcomm.com/Download1/](http://www.sstcomm.com/Download1/) and install it.
3. Open the SST-EE-CFG configuration software and configure the parameters of Ethernet IP and Modbus TCP respectively. See [Chapter5](#) Software Instructions.

**Note:**

- a) The network factory setting of GT200-MT-EI is DHCP. If no DHCP Server on the network, users can set DIP Switch to "1(ON) , 2(OFF)" and restart gateway to make the settings take effect. Now, the IP address of GT200-MT-EI is 192.168.0.10 (fixed), subnet mask is 255.255.255.0, gateway address is 192.168.0.1. For other dial switch settings, see [Chapter2.3](#).
  - b) Make sure that the GT200-MT-EI and your computer are in the same network segment.
  - c) If you can't discover any gateways, please test the network connection first. Please refer to the note "[How to Use the Ping Command](#)" located on our Support page on the [sstcomm.com](http://sstcomm.com) website.
4. Configure the EtherNet IP network as required. Make sure that the configuration matches the configuration present in the GT200-MT-EI. Refer to the instructions in [Chapter 6.3](#) and [6.4](#).

## 5 Software Instructions

SST-EE-CFG is the software based on Windows platform. It is used to configure GT200-MT-EI series gateway and set the relevant parameters of two different industrial Ethernet.

Double click the software icon on the desktop after installation to enter the “Select device” interface:



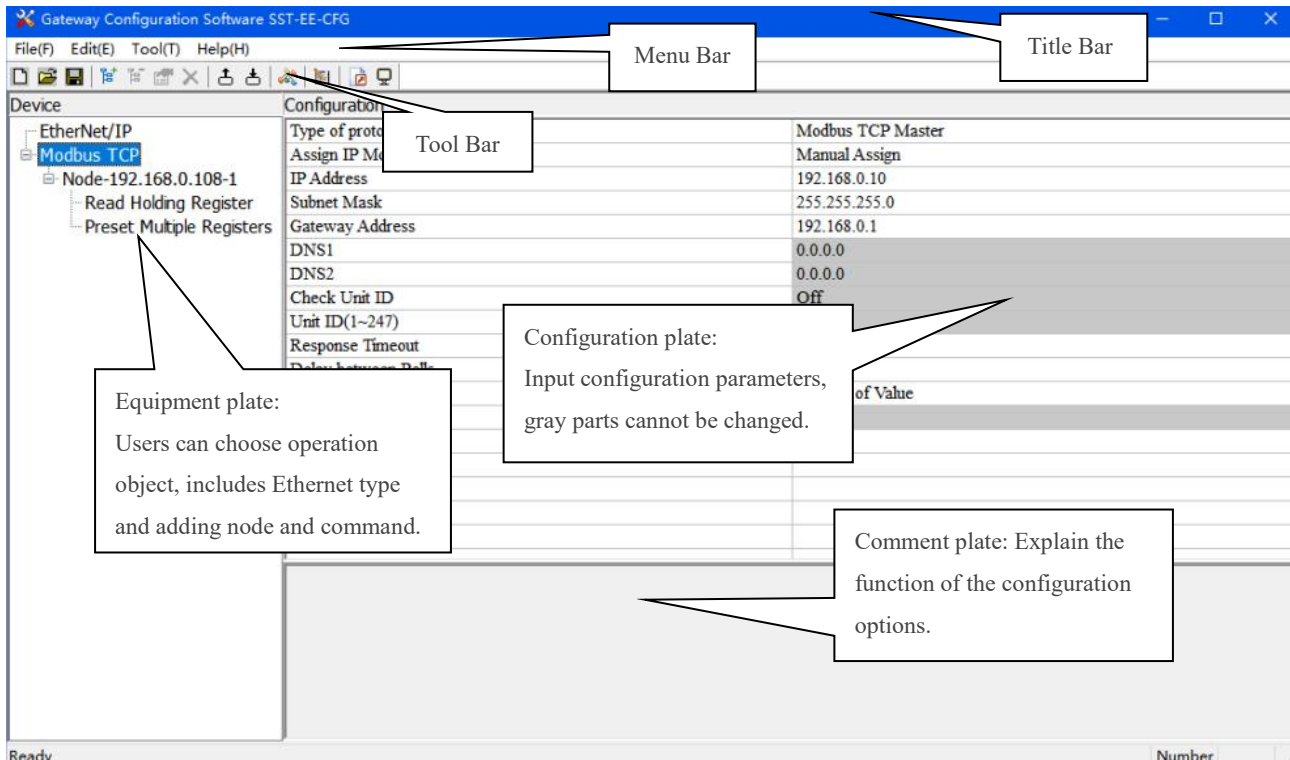
Select “GT200-MT-EI”, click OK to enter into the main interface of GT200-MT-EI (enter into the default parameters setting interface of EtherNet/IP). Click the Ethernet type of equipment view interface to switch the parameters setting interface.

### 5.1 Software Interface

The main interface of SST-EE-CFG includes: Title bar, Menu bar, Tool bar, Status bar, equipment plate, configuration plate and comment plate.

**Note:** In this software, all gray parts are the part which cannot be changed.

# GT200-MT-EI Modbus TCP/EtherNet IP Gateway User Manual











## Tool Bar:

Toolbar interface shown as follow:



The function from left to right is: New, Open, Save, Add Node, Delete Node, Add Command, Delete Command, Upload Config, Download Config, Conflict Detect, Auto Mapping, Export Xls and Debug.

-  New: Create a new configuration project.
-  Open: Open a configuration project.
-  Save: Save current configuration.
-  Add Node: Add a Modbus TCP slave node.
-  Del Node: Delete a Modbus TCP slave node.
-  Add Command: Add a Modbus command.
-  Delete Command: Delete a Modbus command.
-  Upload Config: Read the configuration information from the module and shown in the software.



Download Config: Download the configuration file to the gateway.



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



Auto Mapping: Used to automatically calculate the mapped memory address without confliction by each command.



Export Xls: Export current configuration to the local hard disk, saved as .xls file.



Debug: Monitor the gateway memory buffer data.

## 5.2 Device view

### 5.2.1 EtherNet/IP

Click “EtherNet/IP” ,configuration view interface is as below.

Device	Configuration	
EtherNet/IP	Type of Fieldbus	EtherNet/IP Slave
Modbus TCP	Number of input bytes (Instance 102)	496
	Number of output bytes (Instance 101)	492
	Data cleared of continuous no-response from Modbus TCP slave	On

**Type of Fieldbus:** EtherNet/IP slave.

**Number of input bytes(Instance 102):** Input bytes number of EtherNet IP, range: 5~496, the default is 496.

**Number of output bytes(Instance 101):** Output bytes number of EtherNet/IP, range: 1~492, the default is 492.

**Data cleared of continuous no-response from Modbus TCP slave:** When one Modbus TCP node happens three consecutive no-response,clear corresponding input data of this node.

Only take effect when the gateway acts as Modbus TCP Master.“On/Off” optional. There are “On” and “Off” options.

## 5.2.2 Modbus TCP

### 1. Modbus TCP Master Configuration

Device	Configuration	
EtherNet/IP Modbus TCP	Type of protocol	Modbus TCP Master
	Assign IP Mode	Manual Assign
	IP Address	192.168.0.10
	Subnet Mask	255.255.255.0
	Gateway Address	192.168.0.1
	DNS1	0.0.0.0
	DNS2	0.0.0.0
	Check Unit ID	Off
	Unit ID(1~247)	
	Response Timeout	1000
	Delay between Polls	0
	Output Mode	Change of Value
	Scan Rate(1~255)	10

The configurable parameters are as follows:

**Type of Protocol:** Modbus TCP Master.

**Assign IP Mode:** Manual Assign, BOOTP and DHCP.

**IP Address:** The IP Address of the device.

**Subnet Mask:** The Subnet Mask of the device.

**Gateway Address:** The Gateway Address of the device.

**DNS1:** The DNS1 of the device.

**DNS2:** The DNS2 of the device.

**Response Timeout:** When Modbus TCP master sends out commands, it waits for the response from slave. Range: 300~60000ms, the default is 1000.

**Delay between Polls:** Receive the right response after one Modbus command has been sent or sending next Modbus command after response timeout, the range is 0~ 2500ms, the default is 0.

**Output Mode:** Three options: Cycle, Forbidden, Change of Value.

Cycle: The write command will be sent periodically.

Forbidden: The write command won't be sent.

Change of Value: When the output data change, the write command will be sent.

**Scan Rate:** Scan Rate is ratio of fast scan to slow scan. Every Modbus command can be set to fast scan or slow scan. If this parameter value is set to 10 then every fast scan command will be sent 10 times and those slow

commands will be sent once.

## 2. Node

The Configuration view supports three types of operation: Edit Menu, Edit Toolbar and Right click edit Menu.

- [1] **Add node:** Left click on Modbus TCP or existing nodes, and then perform the operation of adding a new node. Then there is a new node named “New node” under Modbus TCP.
- [2] **Delete node:** Left click on the node to be deleted, and then perform the operation of deleting the node. The node and all commands will be deleted.
- [3] **Copy node:** Left click the existing node, choose the node and execute the operation of copying nodes (include all commands under the node)
- [4] **Paste node:** Left click and choose any existing node, execute operation of paste node. Then at the Ethernet rear part you can see a new node (include all commands under the node). Node parameters of new node is default setting, it needs to be reset.

The node interface is displayed as follows:

Device	Configuration	
EtherNet/IP	Unit ID(1~247)	1
Modbus TCP	IP address to access Modbus TCP slaves	192.168.0.108
Node-192.168.0.108-1	Device Status	On
	Mapping Address (HEX)	
	Mapping Bit (0~7)	

**Unit ID:** Slave address of Modbus TCP, 1~247 optional.

**IP address to access Modbus TCP slaves:** Input IP address of Modbus TCP slave which gateway wants to visit.

**Device Status:** On, Off optional. When “On”, “mapping address” and “mapping bit ” is optional. Users can see the communication state between this node and gateway in EtherNet/IP input data.

**Mapping Address:** Address range that equipment state is mapped in the module memory, 0x0000~0x01EB. Calculate by clicking “Auto mapping”.

**Mapping Bit:** Bit x of device status located in memory mapping bytes. Range: 0~7.



### 3. Command

The Configuration view supports three types of operation: Edit Menu, Edit Toolbar and Right click edit Menu.

[1] **Add command:** Left click on the node, and then perform the operation of adding command to add a command for the node.

[2] **Delete command:** Left click on the command to be deleted, perform the operation of deleting the command.

It supports the commands: 01, 02, 03, 04, 05, 06, 15 and 16. Double click the command to select the command.



The command interface is displayed as follows:

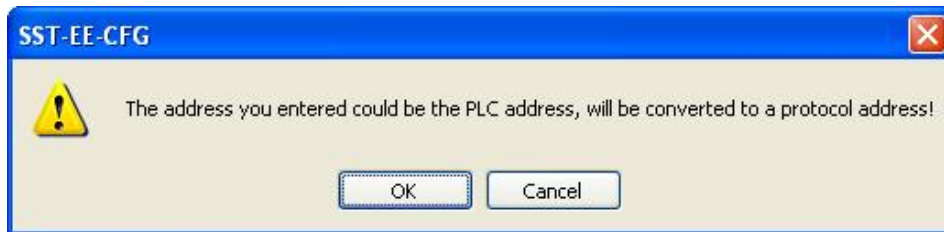
Device	Configuration	
EtherNet/IP	Slave Address (1~247)	1
Modbus TCP	Function Code	1
Node-192.168.0.108-1	Starting Address	
Read Coil Status	Number of Data	
	Mapping Address (HEX)	
	Mapping Bit (0~7)	
	Number of Bytes	
	Byte Swap	no swap
	Type of Check	CRC
	Type of Scan	Fast Scan

**Slave Address:** Modbus Slave address.

**Function Code:** Modbus Function Code.

**Starting Address:** The starting address of status or register. Range: 0~65535.

**Note:** This item of SST-EE-CFG indicates protocol address. When users input PLC address, it will pop up the dialog box below. After clicking OK, the PLC address users input will be converted into the protocol address.



Here is the example of PLC address and corresponding protocol address.

Command	PLC Address	Protocol Address
Coil Status	00001~00010	00000~00009
Input Status	10001~10010	00000~00009
Holding Register	40001~40010	00000~00009
Input Register	30001~30010	00000~00009

**For example:** When Modbus command is configured as 03H (read holding register), when users input 40001 in this item (Modbus register starting address), it will pop up the dialog box after confirming. When clicking OK, PLC address 40001 will be converted into 0.

**Number of Data:** The number of data.

Modbus function code (3,4,16): The number of registers 1~112.

Modbus function code (1,2,15): The number of switching value or coil 1~400.

**Mapping Address (HEX):** Data starting address in module memory buffer.

- When the device status “Off”, address range that data is mapped in the module memory:

Read command: 0x0000~0x01EB

Write command: 0x4000~0x41EB

- When the device status “On” recommended “Auto Mapping” to calculate mapping address by software.
- Users can also use this area after write command is about local data exchange: 0x0000~0x01EB.

**Mapping Bit (0~7):** When reading/writing a coil or reading input status, its value will be mapped into bits of input or output buffer.

**Number of Bytes:** The number of the data bytes.

**Byte Swap:** There are three types: no swap, double-byte swap and four-byte swap.

**Type of Check:** Data communication error check.

**Type of Scan:** Every Modbus command can be set to fast scan or slow scan. The gateway will send Modbus command according to the Scan Rate. Scan Rate is the ratio of fast-scan command to slow-scan command.

## 4. Modbus TCP Slave Configuration

Device	Configuration	
<ul style="list-style-type: none"> <li>↳ EtherNet/IP</li> <li>↳ Modbus TCP</li> </ul>	Type of protocol	Modbus TCP Slave
	Assign IP Mode	Manual Assign
	IP Address	192.168.0.10
	Subnet Mask	255.255.255.0
	Gateway Address	192.168.0.1
	DNS1	0.0.0.0
	DNS2	0.0.0.0
	Check Unit ID	Off
	Unit ID(1~247)	1
	Response Timeout	1000
	Delay between Polls	0
	Output Mode	Change of Value
	Scan Rate(1~255)	10
	Network status indicator	Two ends network monitor with each other
	Byte Swap	no swap

**Check Unit ID:** On, Off optional.

**Unit ID (1~247):** Valid when “Check unit ID” is “On”, range: 1~247.

**Network status indicator:** Two ends network monitor with each other, EtherNet/IP end monitors Modbus TCP network status, Modbus TCP end monitors EtherNet/IP network status and no indicating optional.

**Byte Swap:** No swap, double-byte swap, four-byte swap optional, the default is no swap.

Please see the “Modbus TCP Master” section for other parameter descriptions.

## 5.3 Tool

The “Tool” option on the menu bar contains the following functions:

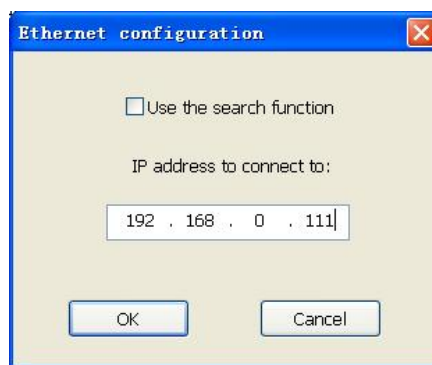
- Config Ethernet
- Upload Config
- Download Config
- Conflict Detect
- Export Xls
- Monitor I/O Data

### 5.3.1 Config Ethernet

“Config Ethernet” has two options.

- (1) The default option is to check “use the search function”. The users can search all GT200-MT-EI gateways on the network.
- (2) When “use the search function” is not checked, users can search a gateway with the specified IP address.

Fill in the IP address of the gateway you want to search, and click “OK” button to confirm search.

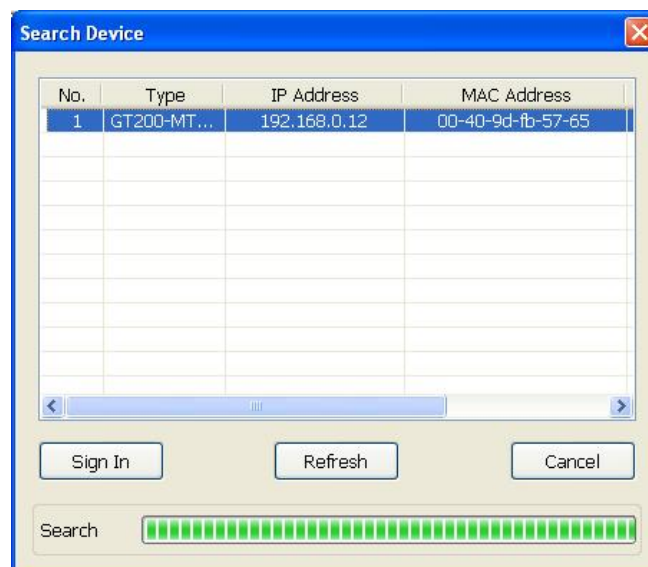


### 5.3.2 Upload Config and Download Config

#### 1. Upload Config

Select “Upload” to upload the gateway configuration information from the device to the software.

When uploading the configuration from the gateway to the software, the pop-up window is as below:



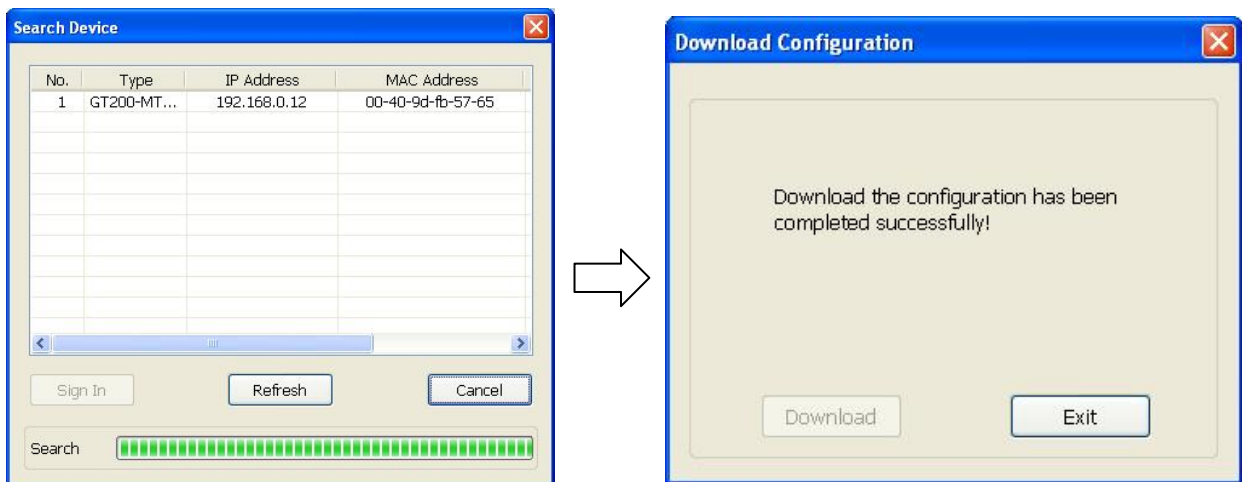
Click “refresh” button will search equipment on the Ethernet again.

Select the equipment you want to configure and click “Sign In” to enter into the upload dialog box. The interface is shown below:



## 2. Download Config

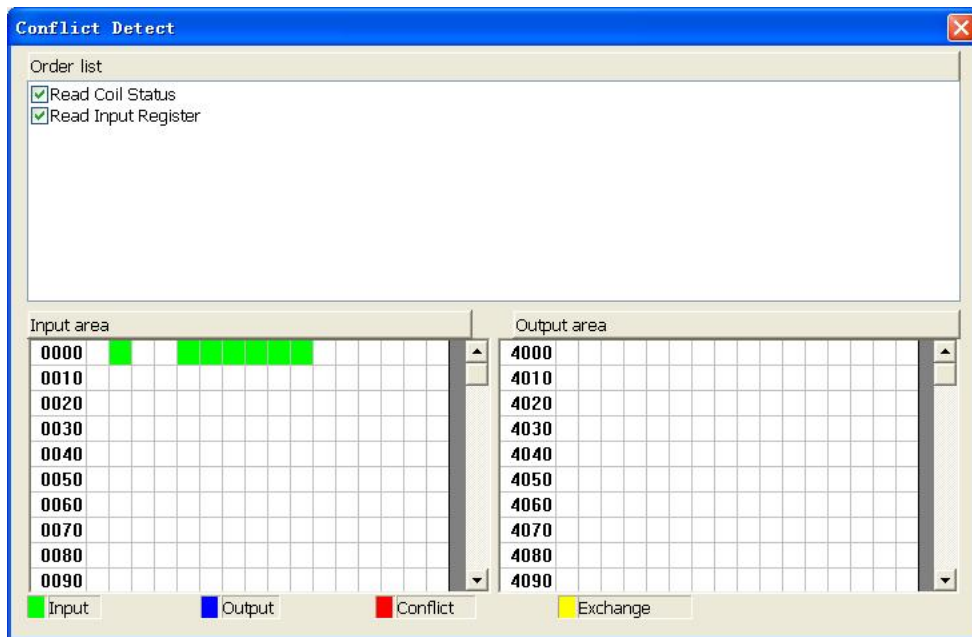
Select “Download” to download the configured gateway information to the gateway device. The operation of download configuration is the same as upload configuration:



**Notes:** Before downloading, please confirm all configurations have been completed and right.

### 5.3.3 Conflict Detect

It is used to check whether there exists confliction in “memory mapping data”. If users find confliction, it can be adjusted in time. The interface is shown below:



#### 1. Command List Operation

It shows configured command in the command list interface. Check box before each command is used to check the position of this command in memory mapping area. Click one command and check the box, it will show the position where relevant commands occupy in the memory mapping area. Click the command again and uncheck the box, the command will not be shown in the mapping area. This function will be used for confliction detect among commands in memory mapping area.



#### 2. Memory Mapping Operation

Memory mapping area divides into input area and output area.

**Input mapping address range:** 0x0000~0x3FFF.

**Output mapping address range:** 0x4000~0x7FFF.

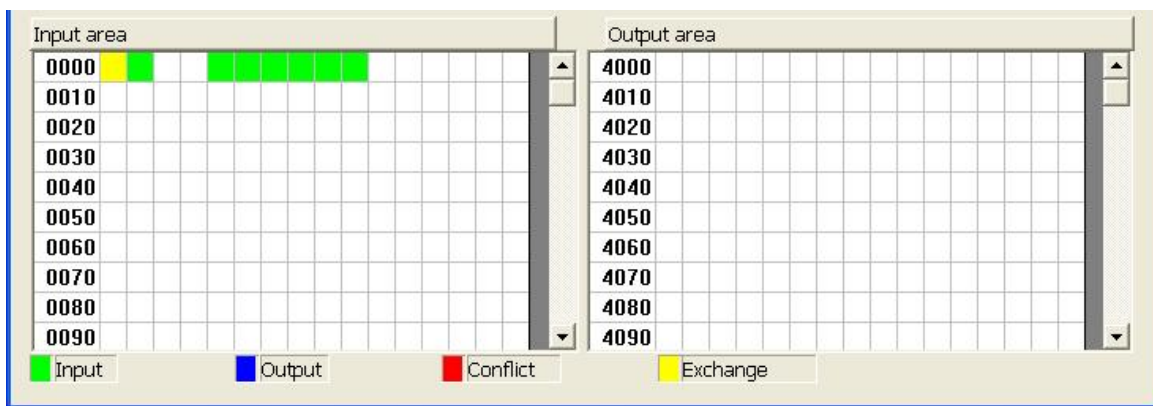
Each grid represents one byte address.

**Green:** Read command is shown in input mapping area, it will be in green without conflict.

**Yellow:** Write command: When address mapping area is located in input area, it will be in yellow without conflict.

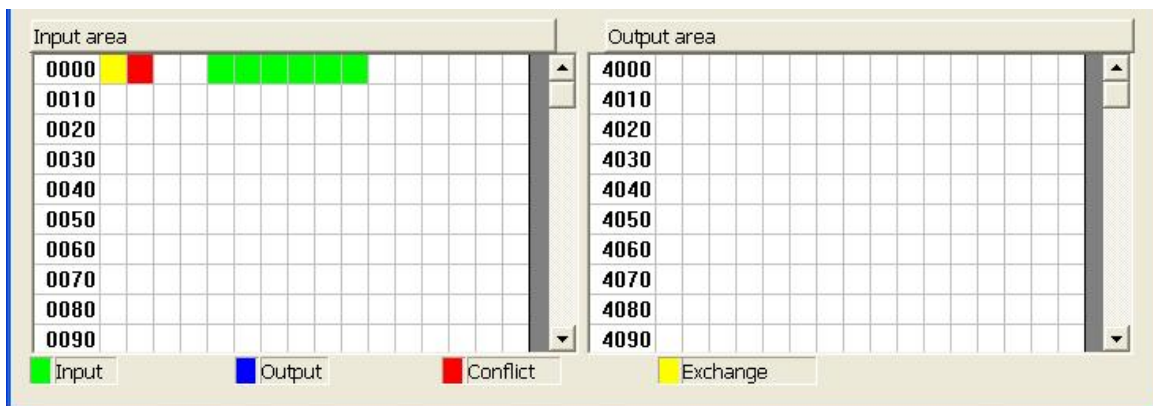
**Blue:** When address mapping area is located in output area, it will be in blue without conflict.

**Red:** In input area or output area, different command occupied on the same byte, this byte area will be in red.




For bit operation command, the above grid displaying meaning works the same.

Click input/output area grids, each bit of relevant byte in the grid will show whether each bit is occupied. As is shown below:

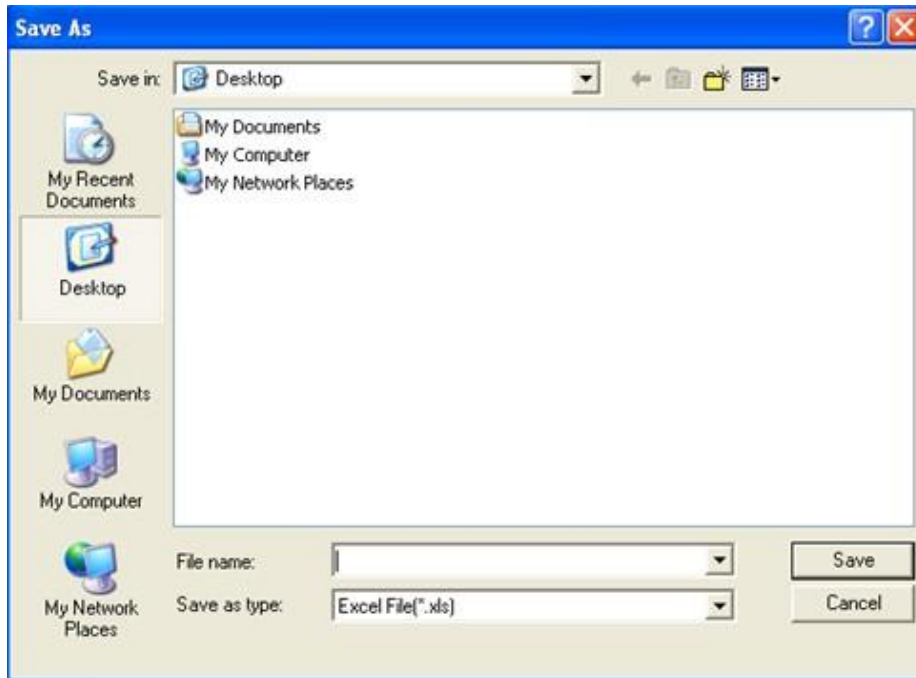


### 5.3.4 Export Xls

Excel configuration Excel file will help users to check the relevant configuration.

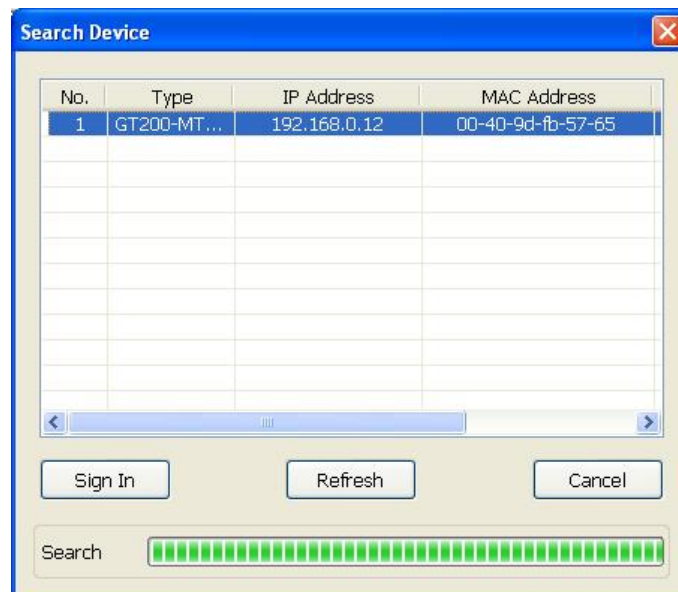
Select the export xls icon , export the configuration information to excel and save. Select the appropriate path,

shown as below:



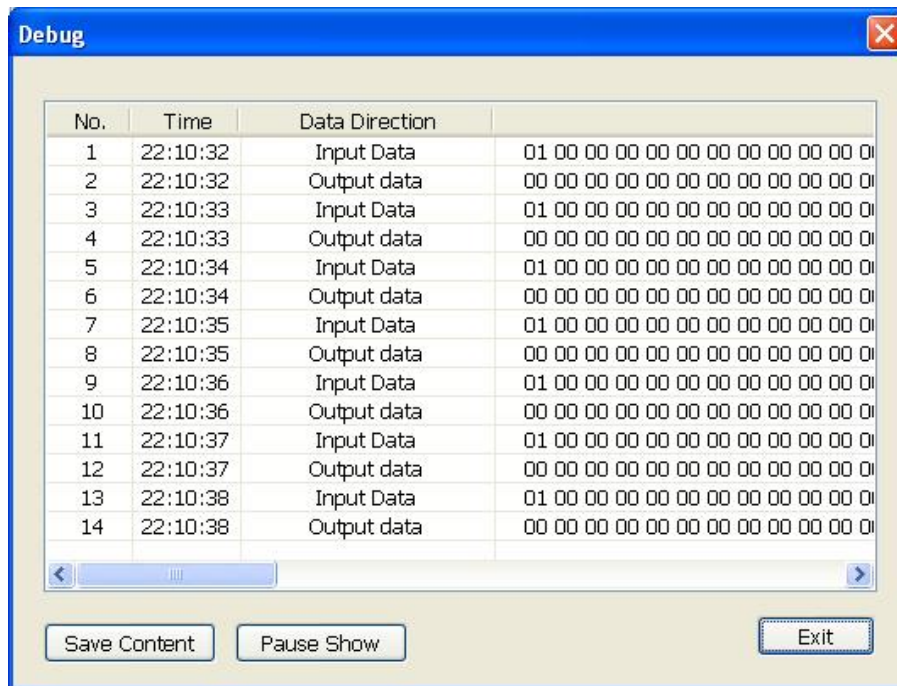
### 5.3.5 Monitor I/O Data

This function is used to monitor the buffer data, click “Monitor I/O Data” and it will pop up the dialog box of searching equipment:



Click “Sign In”, it will pop up the I/O data monitor dialog box below:





Click “Save Content” button can save relevant content to the PC hard disk. This button becomes “Stop saving”. If you want to finish saving, you can press “Stop saving” button. It can pause displaying buffer data by clicking “Pause displaying”.

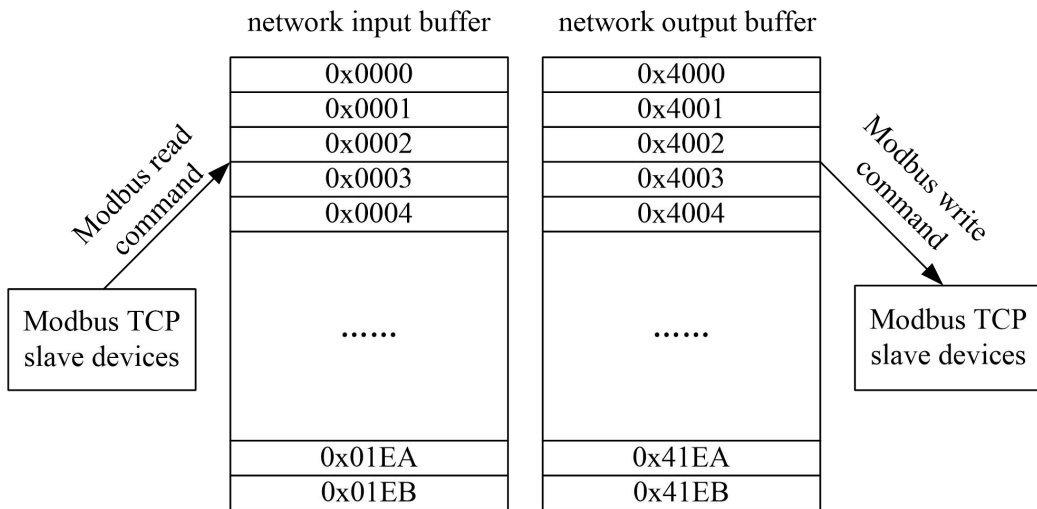


## 6 Working Principle

### 6.1 Modbus TCP Master

Ethernet supports Modbus TCP function, described as below:

Data exchange of Modbus TCP and EtherNet/IP of GT200-MT-EI is set up through “mapping”. There are two data buffer areas, one is EtherNet/IP network input buffer and the other is EtherNet/IP network output buffer. Network input and output buffer is all for EtherNet/IP master. When the gateway is Modbus TCP master, Modbus read command will write the read data to the network input buffer for EtherNet/IP accessing. Modbus write register command gets data from network output buffer and export to the Modbus TCP slave equipment through write command.



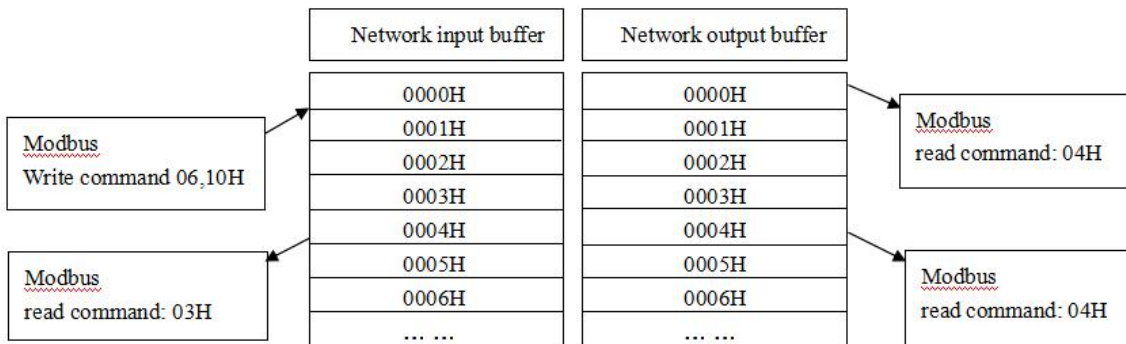
As is shown above: Network input buffer range is 0x0000~0x01EB (function code 01H, 02H, 03H, 04H as data input; function 05H, 06H, 15H, 16H as local data exchange); Network output buffer range is 0x4000~0x41EB (function code 05H, 06H, 15H, 16H as data output).

Ethernet can support configuring at most 48 commands, each one can read one group of continuous Modbus registers.

## 6.2 Modbus TCP Slave

### 1. Data Exchange

Data exchange of Modbus TCP and EtherNet/IP of GT200-MT-EI is set up through “mapping”. There are two data buffer areas, one is EtherNet/IP network input buffer and the other is EtherNet/IP network output buffer. Network input and output buffer is all for EtherNet/IP. When the gateway is Modbus TCP slave, Modbus write register command will write the read data to the network input buffer for EtherNet/IP accessing. Modbus read command gets data from network output buffer and export to the Modbus TCP master equipment through response message.



The gateway acts as Modbus TCP slave, support function: 03H, 04H, 06H and 10H.

Network input buffer is Modbus TCP master output at the Modbus TCP side. It is mapped to the Modbus read holding register. Users can use No.3 command to read back. It supports 03H, 06H and 10H function code. Register starting address is 40001(0).

Network output buffer is Modbus TCP master input. It is mapped to Modbus input register. Users can use No.4 function code to read data. It supports 04H function code. Register starting address is 30001 (0).

### 2. Network Status Monitor

When the gateway acts as Modbus TCP slave, it has the network status monitor function. Described as below:

- a. EtherNet/IP monitor data are located in the first word of input data, it monitors the numbers that Modbus TCP has been connected to master. If closed, then it doesn't input data.

**Notes:** “Open” monitor function means: in the SST-EE-CFG configuration software, Ethernet parameters

“network status indicators” is selected as “two ends network monitors with each other” or “EtherNet/IP end monitors Modbus TCP network status”. If “close” monitor function, that means in the configuration software, this parameter is “Modbus TCP end monitors EtherNet/IP network status” or “no indicating”.

- b. Modbus TCP slave monitor data is fixed on the register of 35001 (5000). When EtherNet/IP network fails, the register is set to 0 and 1 if network is normal.
- c. No matter open or close the monitor function, it can still get the network status of EtherNet/IP by reading the register which address is 35001 (5000).
- d. If opened, it will map the register which address is 35001 (5000) to the register which address is 30001 (0), EtherNet/IP output data starts to be mapped the address starting from 30002 (1).
- e. If closed, EtherNet/IP output data will be mapped to the address starting from 30001 (1).

**Notes:** “Open” monitor function means: in the SST-EE-CFG configuration software, Ethernet parameters “network status indicators” is selected as “two ends network monitors with each other” or “Modbus TCP end monitors EtherNet/IP network status”. If “close” monitor function, that means in the configuration software, this parameter is “EtherNet/IP end monitors Modbus TCP network status” or “no indicating”.

## 6.3 EtherNet/IP Connection Parameters Set

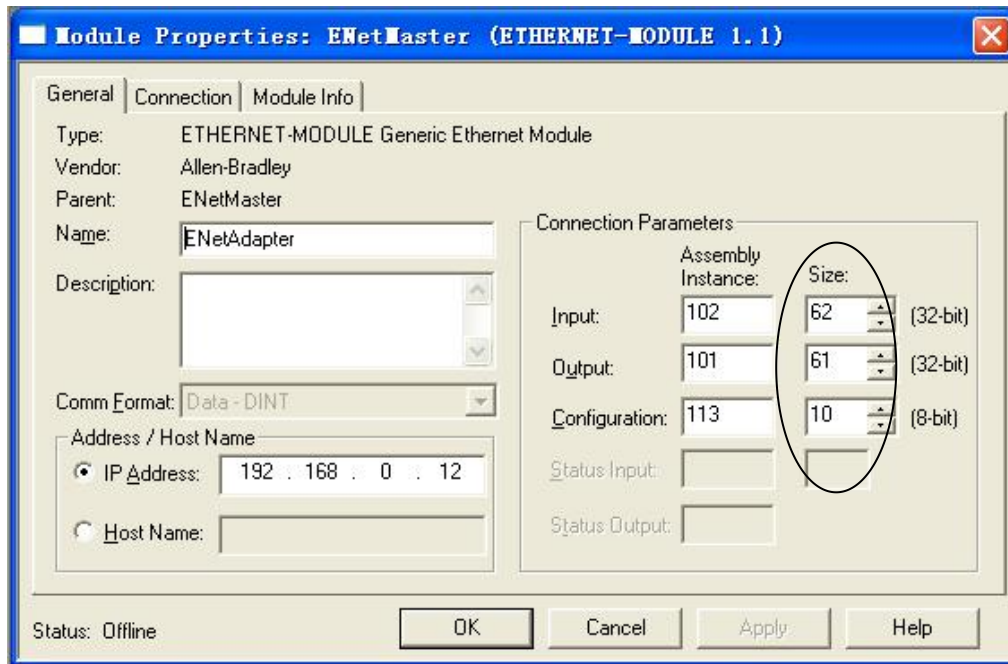
Connection parameters the gateway provides are as below:

- a. Input bytes number Instance102, range 5~496 bytes, the default value is 496 bytes.
- b. Output bytes number Instance 101, range 1~492 bytes, the default value is 492 bytes.
- c. Config bytes Instance113, 10 bytes (fixed).

Input Instance 102 data length can be set in the software SST-EE-CFG, range 5~496 bytes, among them the first 4 bytes is real-time frame header (reserved).

Output Instance101 data length can be set in the software SST-EE-CFG, range 1~492 bytes.

Take configuration parameters of RSLogix5000 as an example:

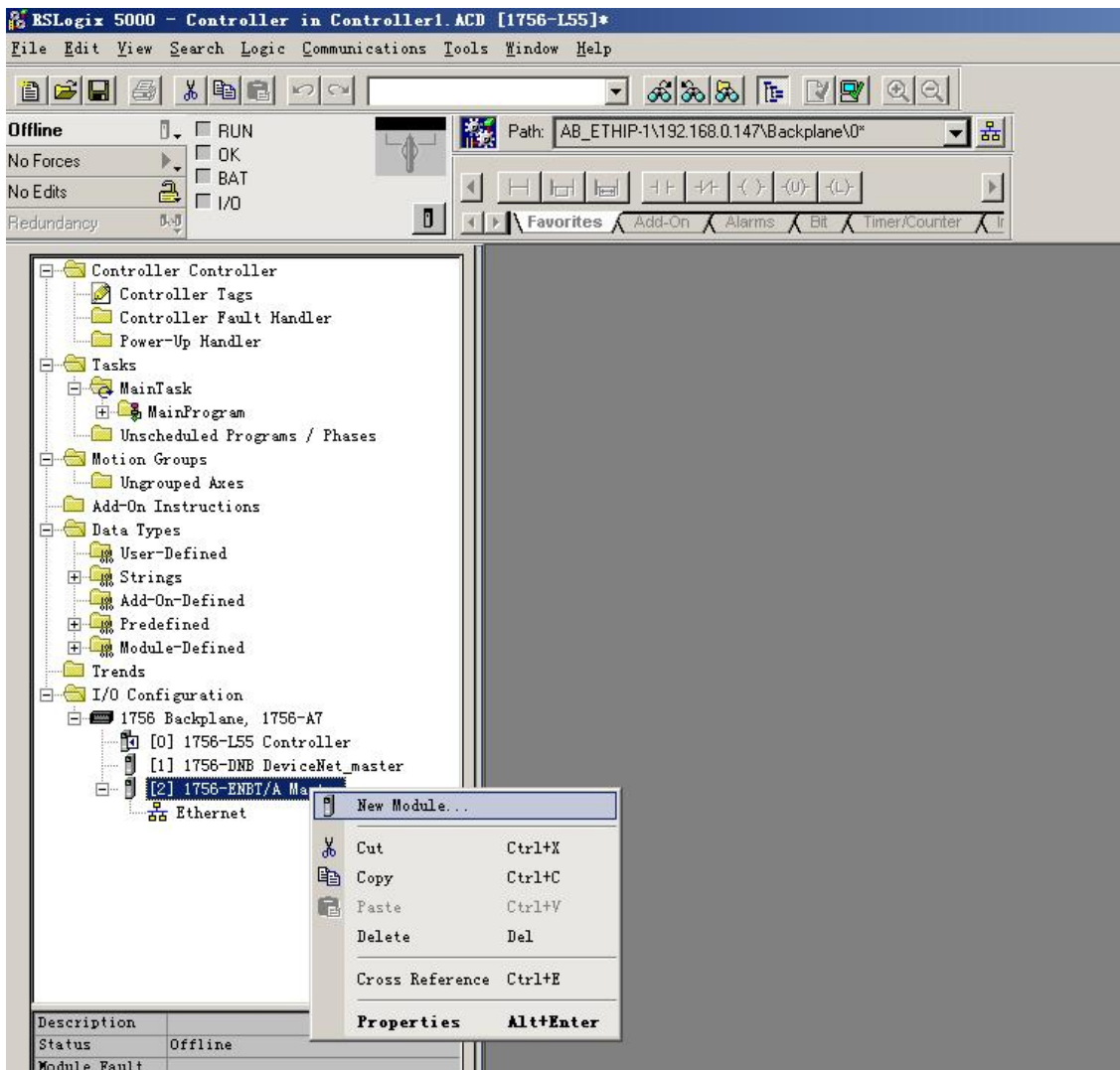


**Notes:** The “Size” (the bytes number that has been configured) in the above picture, is consistent with the input/output bytes number of Instance which has been configured in the configuration software SST-EE-CFG). In the above picture, “Size” is 62 ( $62 \times 32 / 8 = 248$ ) in the input bytes Instance102. Now, the relevant bytes number should also be 248 in the configuration software.

## 6.4 Read/Write Data by IO Messaging (Recommend)

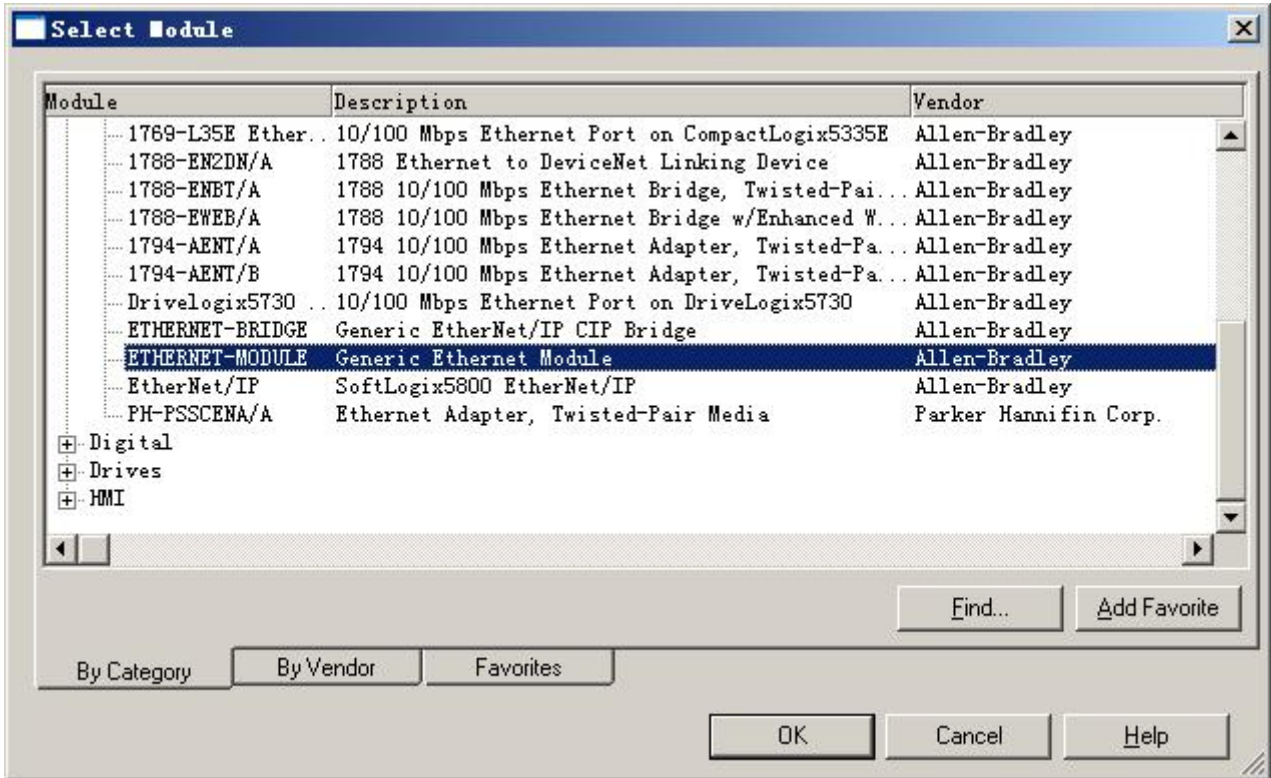
Right click on EtherNet/IP scanner module, click "New Module", as shown below:

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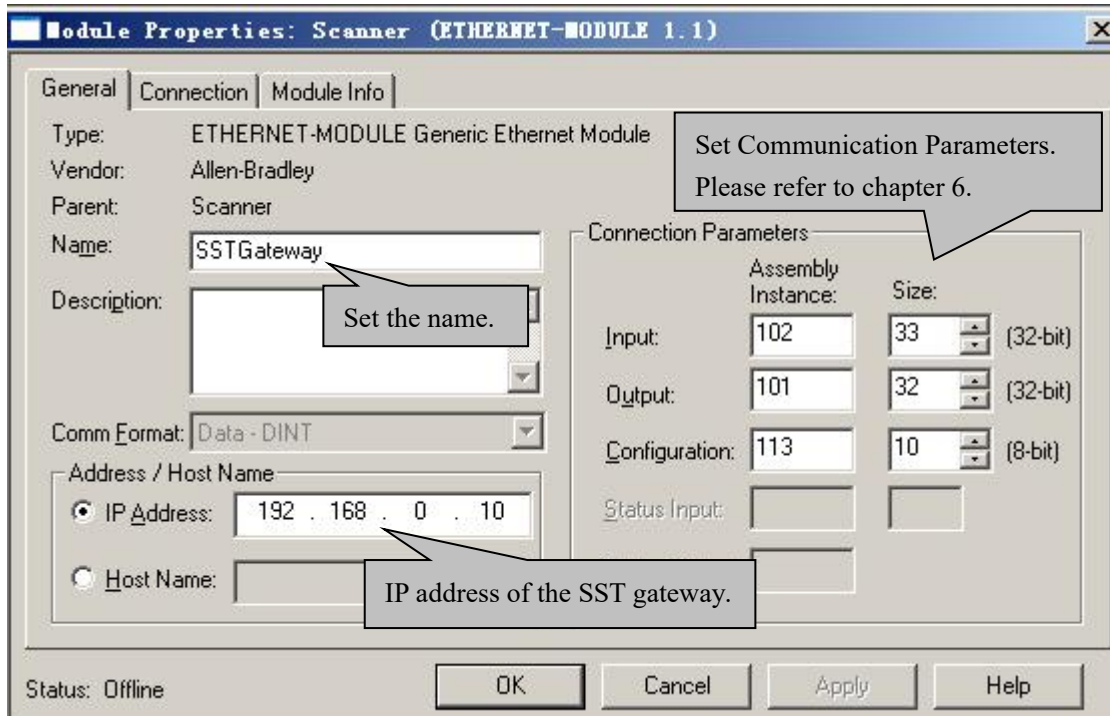


In the pop-up dialog box, unfold "+" before "Communications", choose "ETHERNET-MODULE", click "OK", as shown below:

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Configure relevant information in the pop-up window, as shown below:



In the above picture, the module information needs to be configured includes:

**Name:** Name the added EtherNet/IP adapter module.

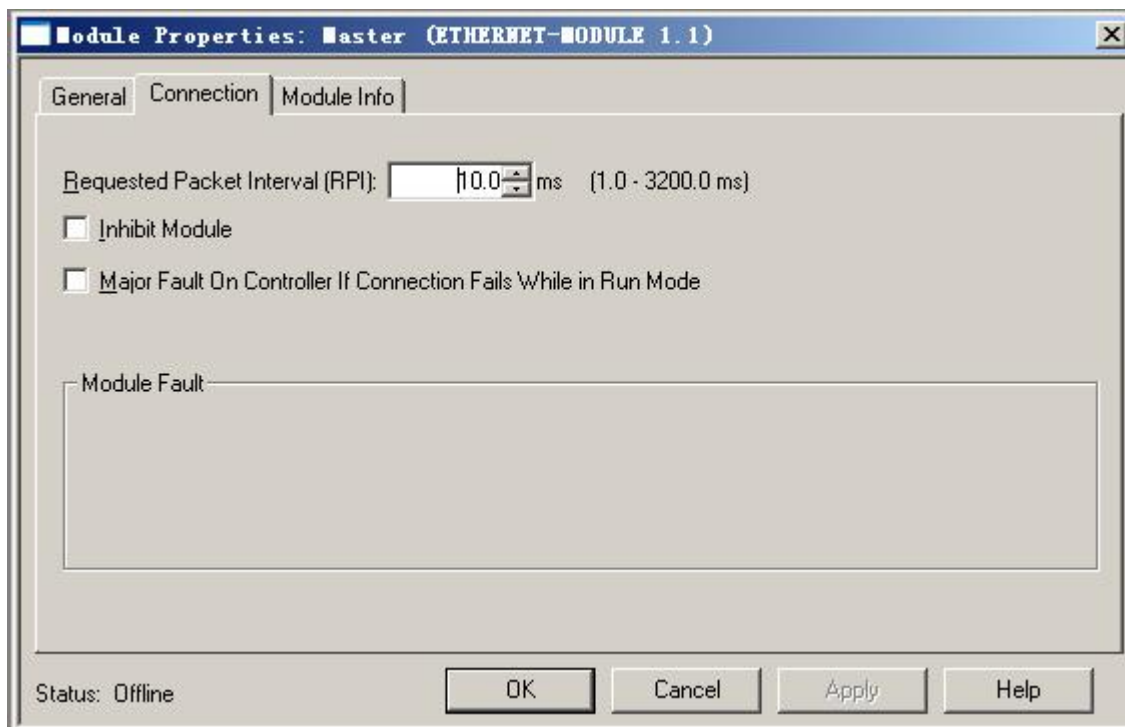
**Comm Format:** Configure data types. Users can choose data types as DINT, INT, SINT and REAL, etc. After confirmation, this cannot be changed. If you want to change data types, you can create new module.

**IP Address:** Set IP address of the EtherNet/IP adapter module (IP address of GT200-MT-EI, configured by the software SST-EE-CFG).

**Connection Parameters:** Set Connection parameters during communication. Please refer to chapter 6.

**Note: "Size" (configured bytes) in the above picture should be the consistent with relevant input and output bytes of Instance in the above chapter.**

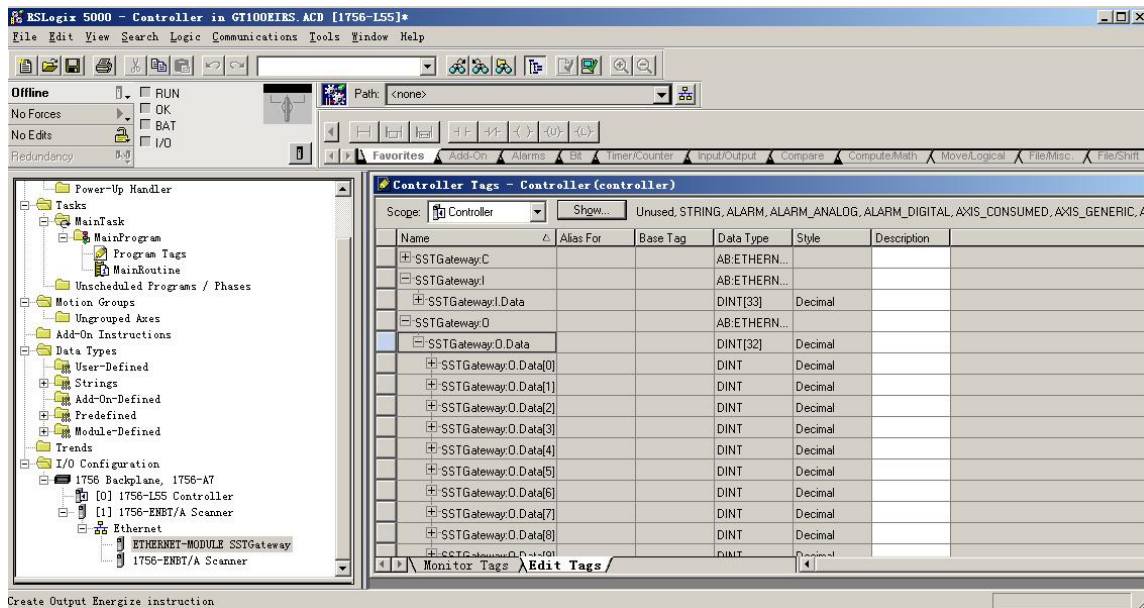
Click "OK", set scanner polling time interval in the pop-up dialog box, the default is 10ms, as shown below:



After setting this interval, click "OK" to save. Double click "Controller Tags", unfold "SSTGateway: O", as shown below:

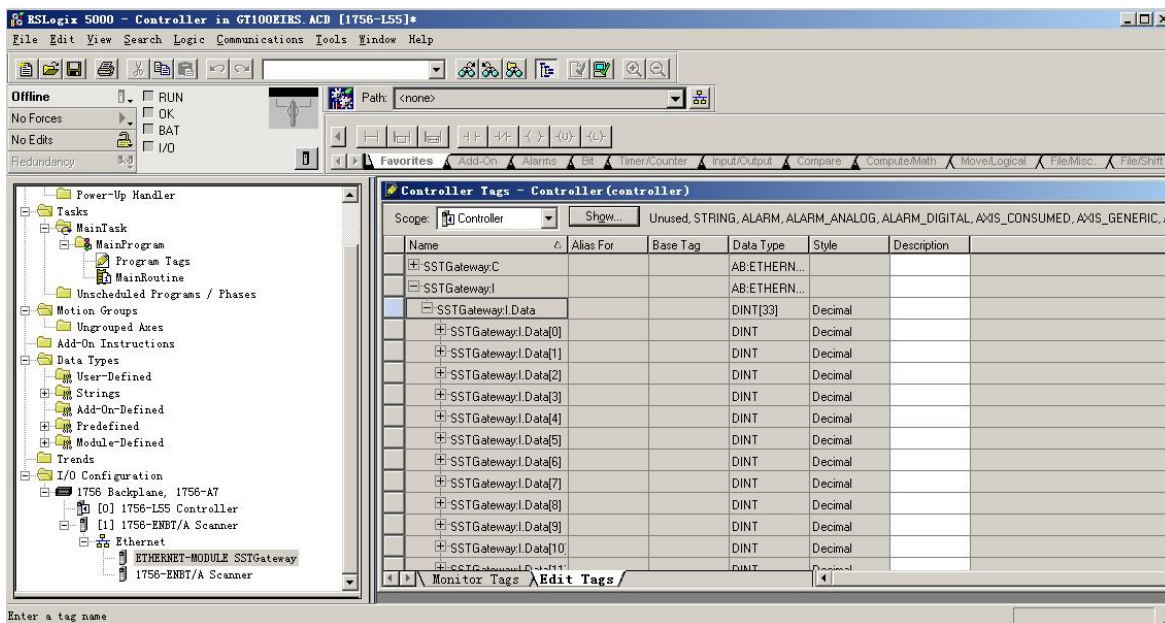


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In the above picture, SSTGateway:O.Data [0] ~SSTGateway:O.Data [31] is the corresponding output data address of SST Gateway module in scanner.

Unfold "SSTGateway: I", as shown below:



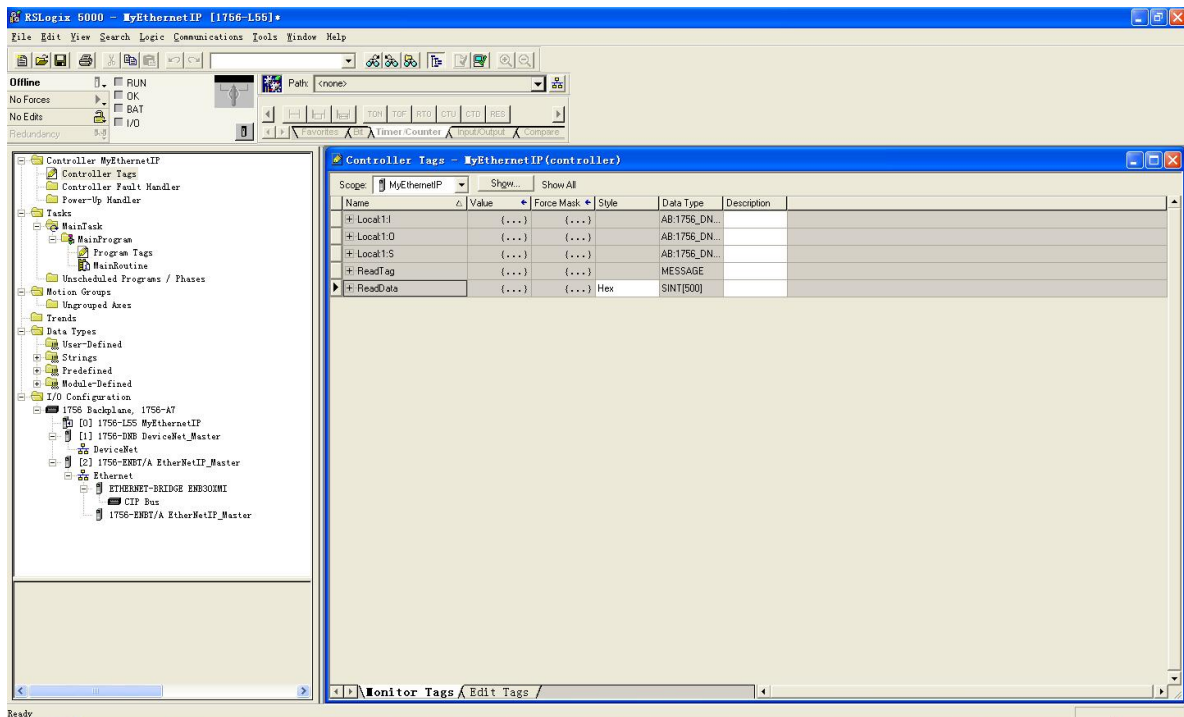
In the above picture, the first 4 bytes of SSTGateway: I. Data [0] are the status bytes. SSTGateway:I.Data [1] ~SSTGateway: I. Data [32] are the input data from the SST Gateway.

## 6.5 How to Read/Write I/O Data using MSG

The following RSLogix 5000 example will describe how to read/write I/O data using MSG.

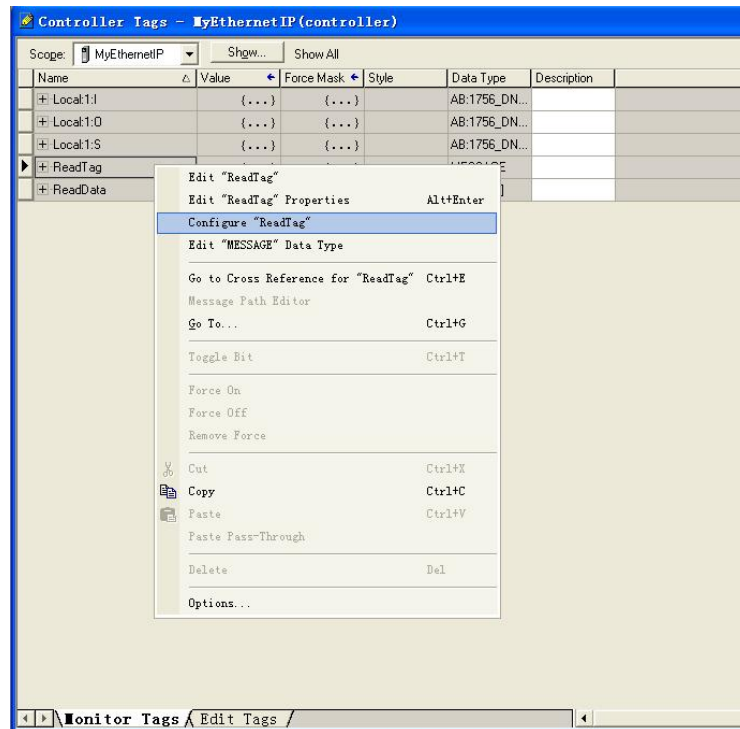
### 1. Read I/O Data

Create a new project. It is in the “Offline” mode. Add two new tags “ReadTag” and “ReadData” under the “Controller Tags” and set the type of “ReadTag” as “MESSAGE” and “ReadData” as “SINT[500]”.



Right click “ReadTag”, select “Configure “ReadTag””:

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In the new pop-up window, it needs to set some parameters as below:

**Message Type:** CIP Generic.

**Service Type:** Select “Get Attribute Single”, now, relevant service code will become “e (Hex)”.

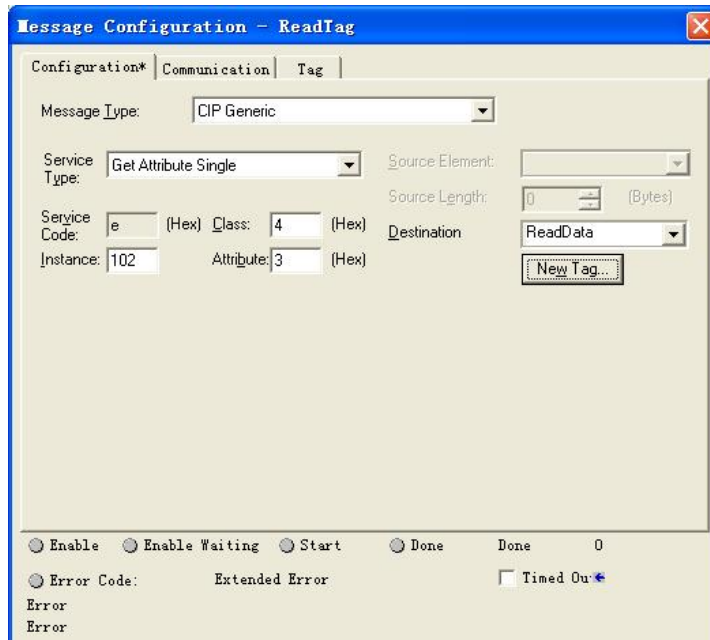
**Class:** 4 (Hex).

**Instance:** 102 .

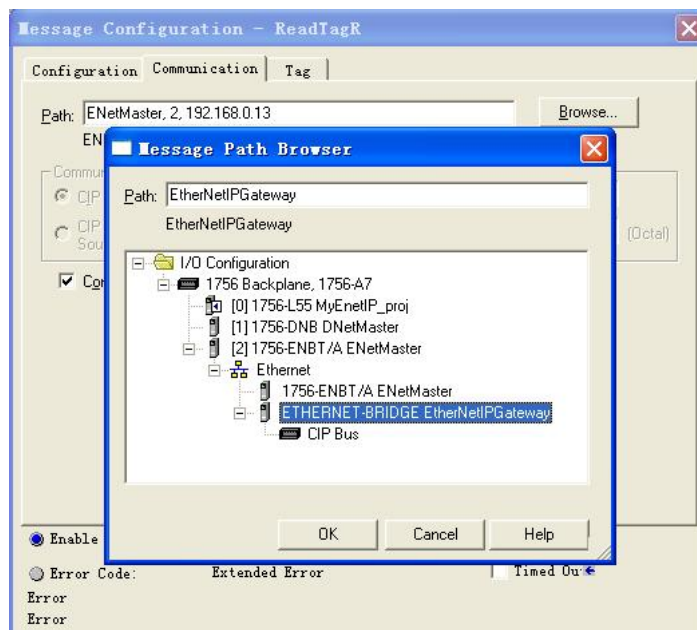
**Attribute:** 3 (Hex).

**Destination:** Select “ReadData” label, now, the data that have been got will be saved in this tag.

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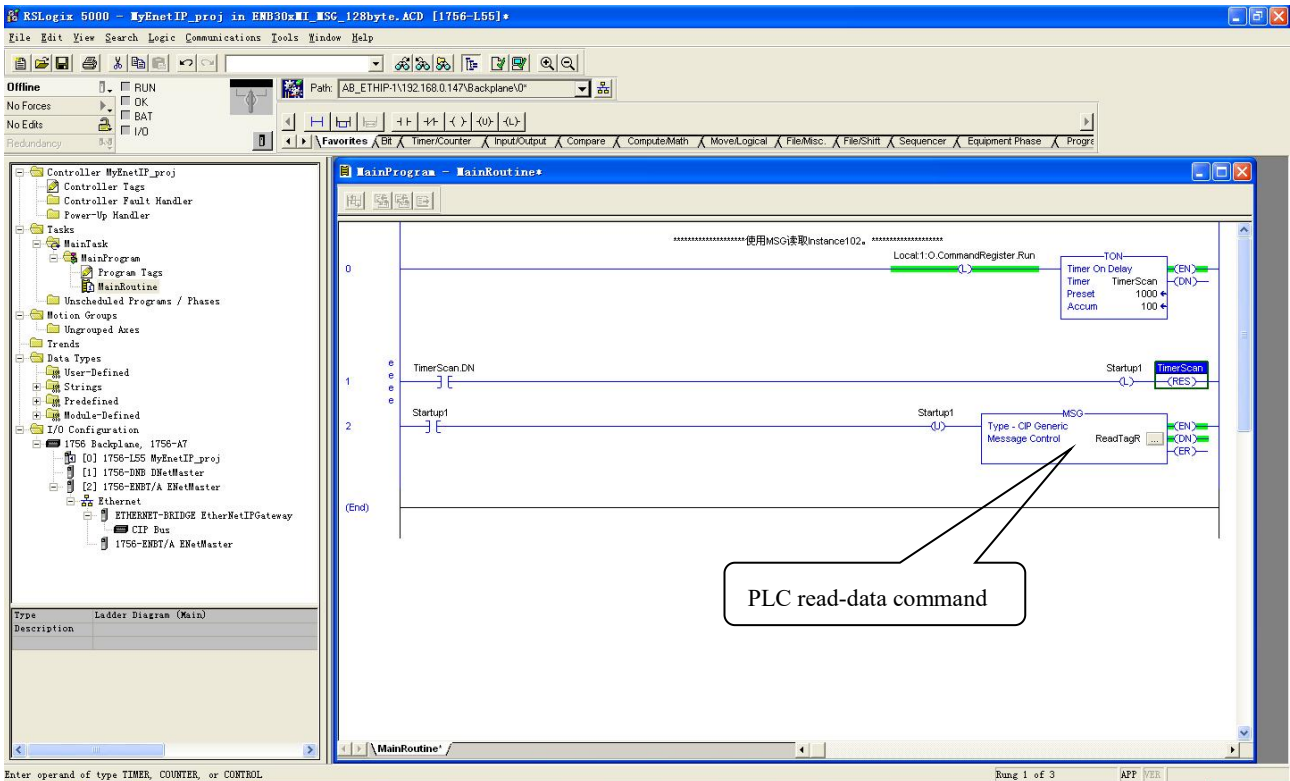
Select “Communication” label, first click “Browse” button. Select the gateway PLC has connected with, click “OK” to confirm:



Shown as picture below, add a “MSG” command and select “ReadTag” as “Message Control” in the “MainRoutine” of “MainProgram”. This is a simple command which can sent a read request, it still needs to add some logic commands to trigger this command in common program. About the detailed information, please refer to RSLogix5000.

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Download the program to the PLC and set PLC into “Online” state.

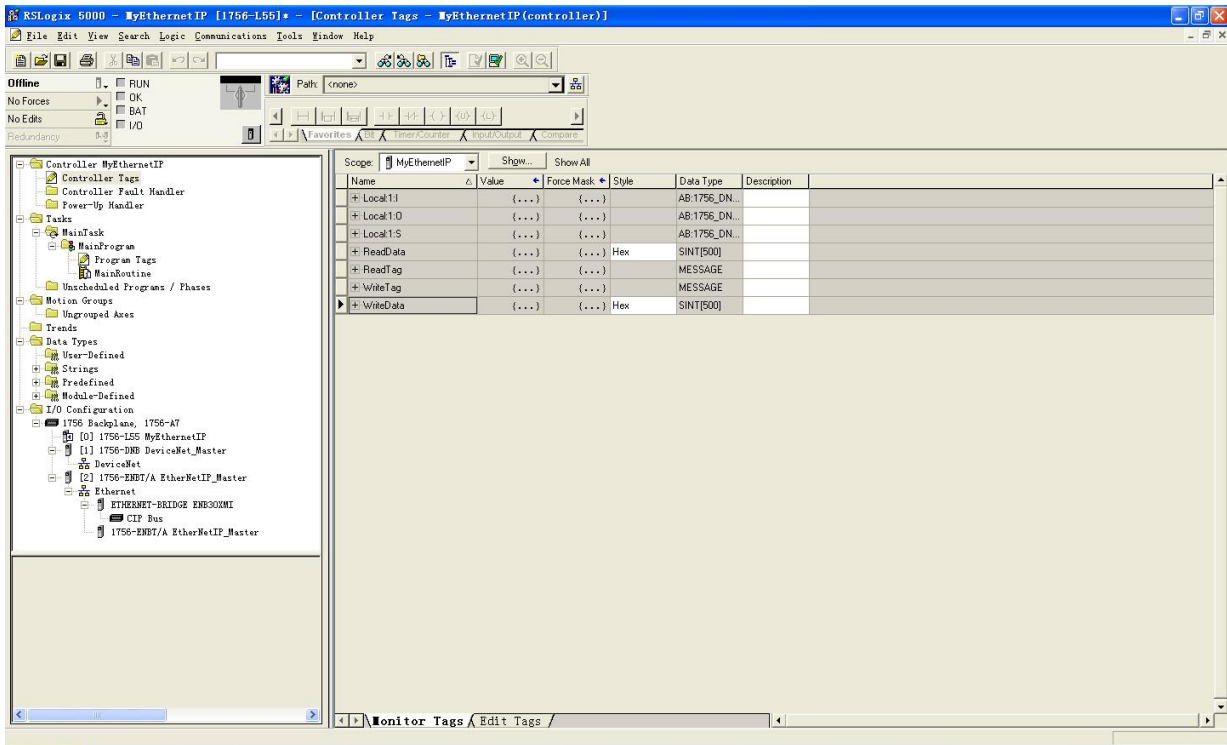


Click “Control Tags” and select “Monitor Tags”, unfold “ReadData”, you will see that PLC can read the data of Modbus TCP master or Modbus TCP slave through the gateway GT200-MT-EI.

## 2. Write I/O Data

Enter the “Offline” mode, add two new tags “WriteTag” and WriteData” under the “Controller Tags”. Define the type of “WriteTag” as “MESSAGE” and “WriteData” as “SINT[500]”:

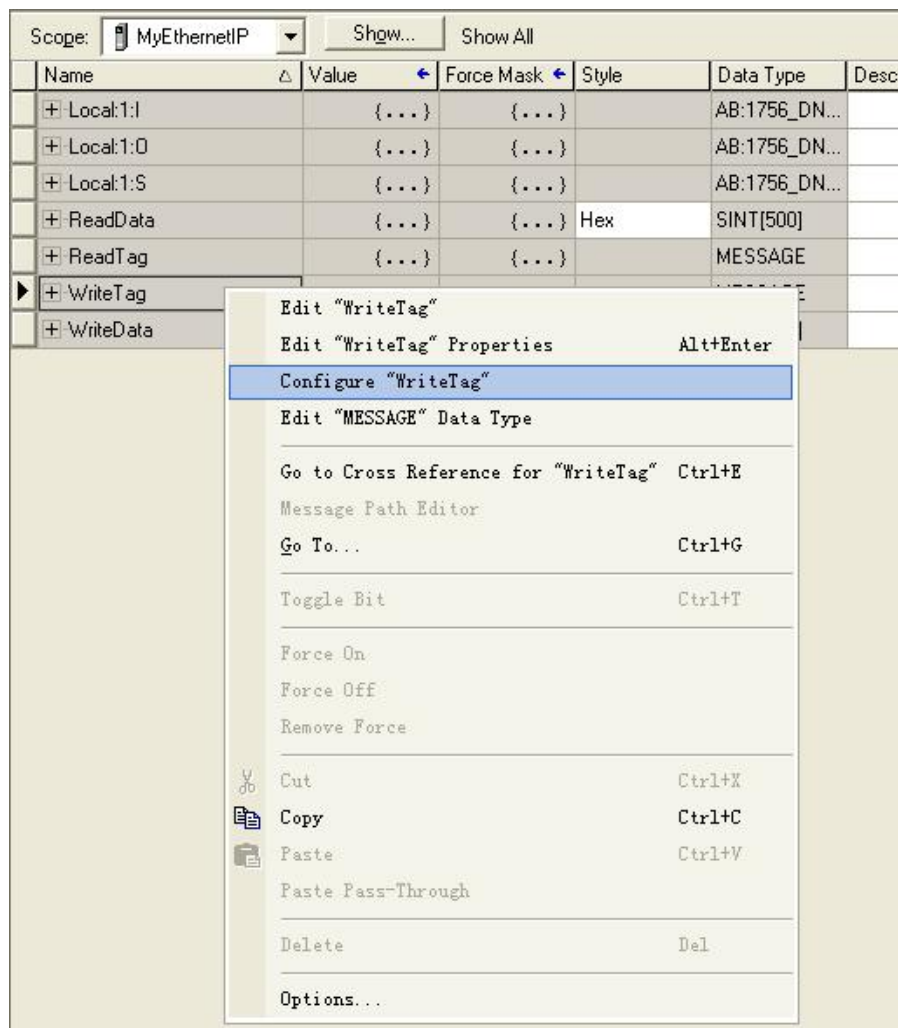
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Enter the “Monitor Tags” interface, input some data in the “WriteData” tag. There data will be outputted to GT200-MT-EI through PLC. Described as below picture, 0x10, 0x20, 0x30, 0x40, 0x50, 0x60, 0x70, 0x80 and 0x90 are the data that will be outputted.

Name	Value	Force Mask	Style	Data Type	Description
Local:1:I	{...}	{...}		AB:1756_DN...	
Local:1:O	{...}	{...}		AB:1756_DN...	
Local:1:S	{...}	{...}		AB:1756_DN...	
ReadData	{...}	{...}	Hex	SINT[500]	
ReadTag	{...}	{...}		MESSAGE	
WriteData	{...}	{...}	Hex	SINT[500]	
WriteData[0]	16#10		Hex	SINT	
WriteData[1]	16#20		Hex	SINT	
WriteData[2]	16#30		Hex	SINT	
WriteData[3]	16#40		Hex	SINT	
WriteData[4]	16#50		Hex	SINT	
WriteData[5]	16#60		Hex	SINT	
WriteData[6]	16#70		Hex	SINT	
WriteData[7]	16#80		Hex	SINT	
WriteData[8]	16#90		Hex	SINT	
WriteData[9]	16#00		Hex	SINT	
WriteData[10]	16#00		Hex	SINT	

Right click “WriteTag”, select “Configure “WriteTag””:



In the new pop-up window, it needs to configure as below:

**Message Type:** CIP Generic.

**Service Type:** Select "Set Attribute Single", now, relevant Service Code will become "10 (Hex)".

**Class:** 4 (Hex).

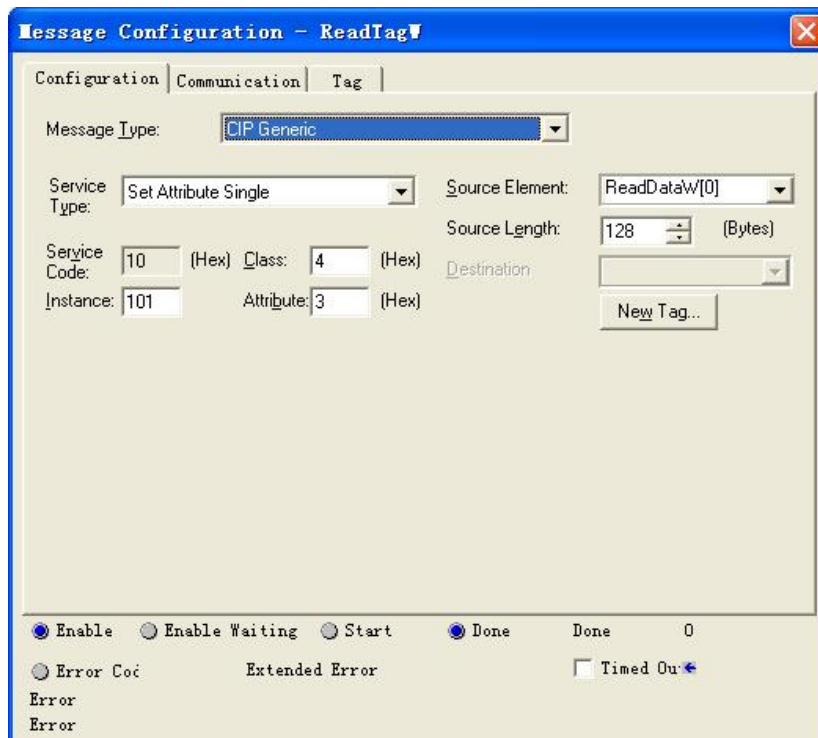
**Instance:** 101 .

**Attribute:** 3 (Hex).

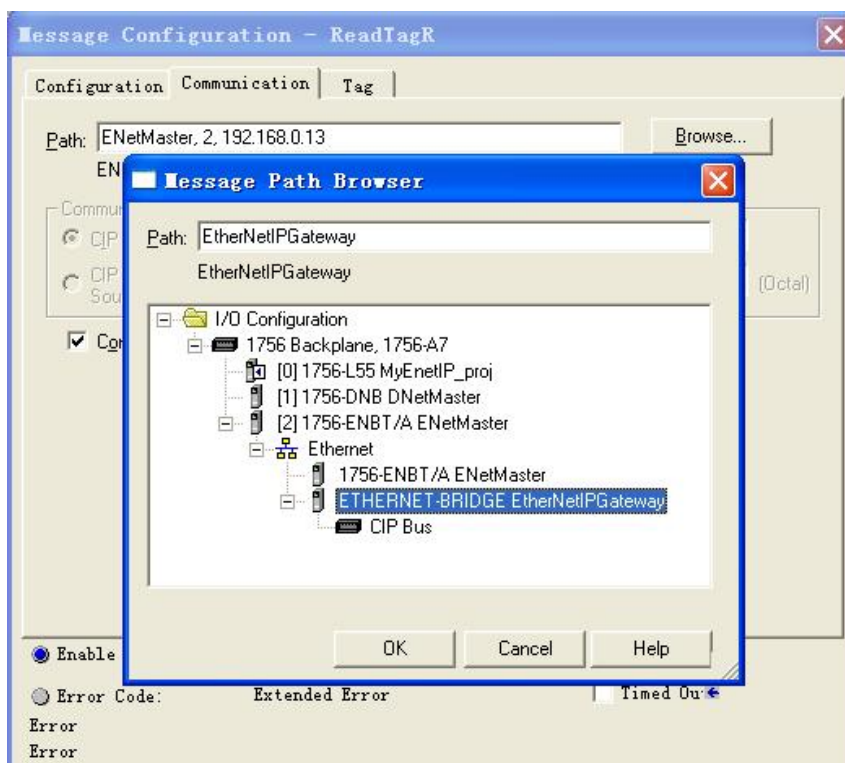
**Source Element:** Select "WriteData" tag, it indicates the data in the "WriteData" tag will become the data PLC outputs.

**Source Length:** Use byte as unit, this value should be less than or equal to the current selecting bytes which Instance represents (Configured bytes number in SST-EE-CFG).

# GT200-MT-EI Modbus TCP/EtherNet IP Gateway User Manual



Select “Communication” label, first click “Browse” button, select the gateway PLC connected in the new window, click “OK” to confirm:

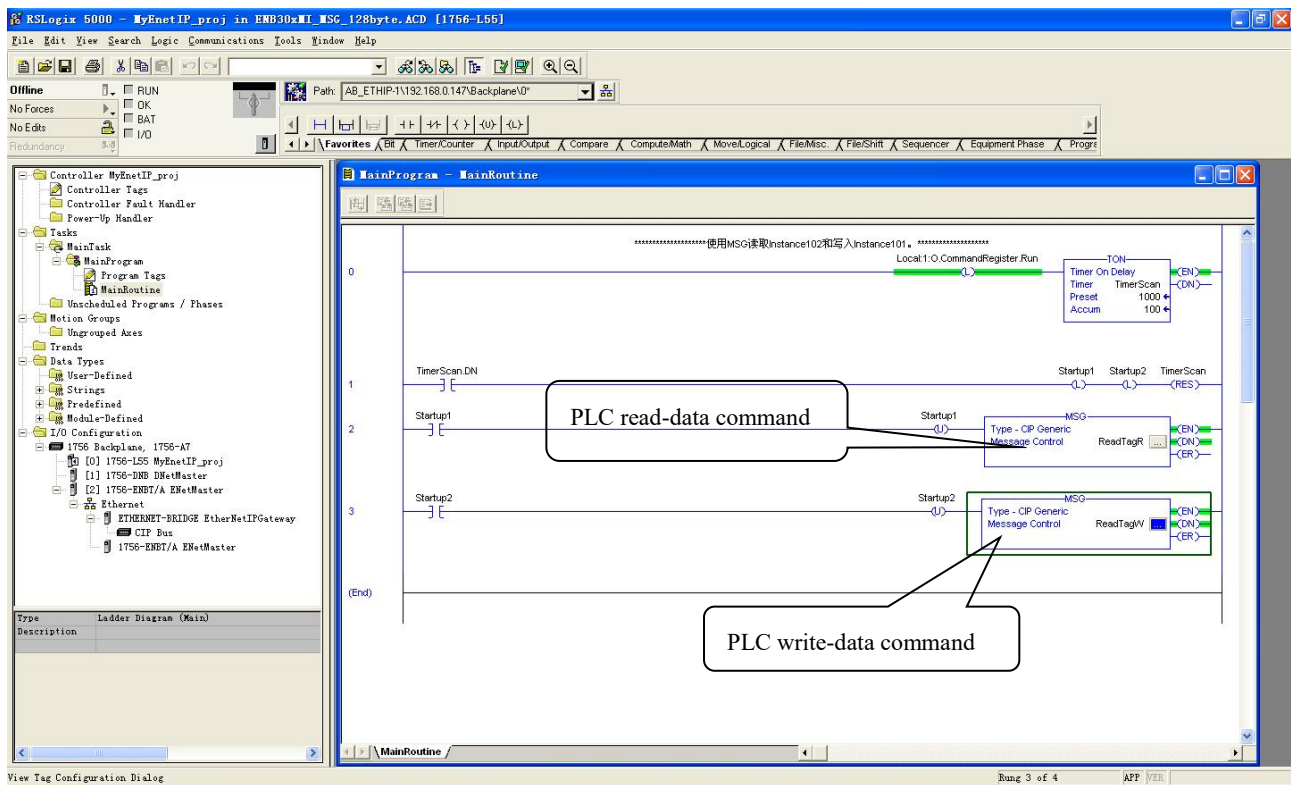




# GT200-MT-EI Modbus TCP/EtherNet IP Gateway User Manual

Shown as below, add a “MSG” command in the “MainRoutine” of “MainProgram” and select “WriteTag” as “Message Control”.

Download PLC program to the PLC and set PLC to “Online” state, the data in “WriteData” will be outputted to Modbus TCP master or slave through GT200-MT-EI.

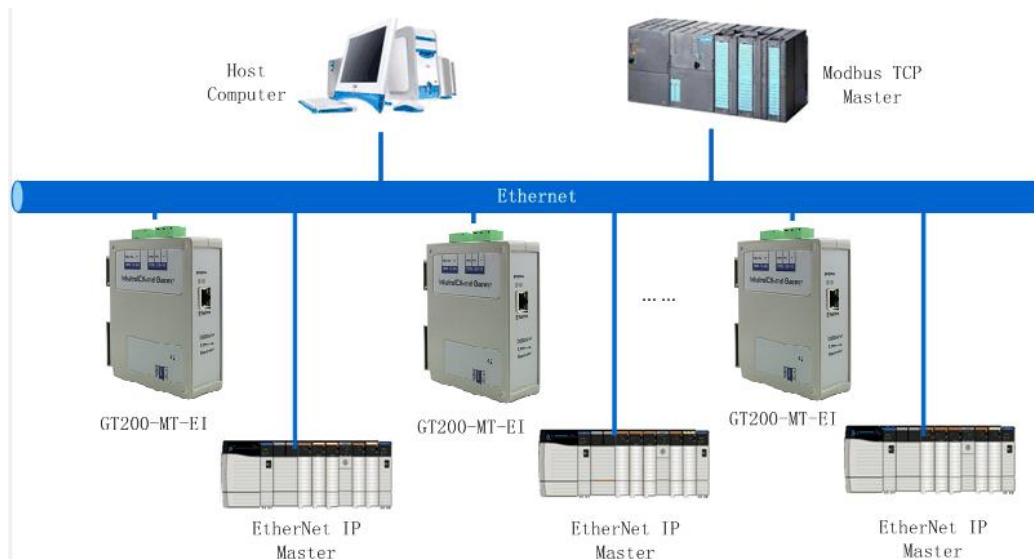


## 7 Typical Application

GT200-MT-EI can connect Modbus TCP slave equipment to the EtherNet/IP network, it can also realize the interconnection between Schneider Modbus TCP master PLC and AB EtherNet master PLC.

Here are some typical applications of GT200-MT-EI.

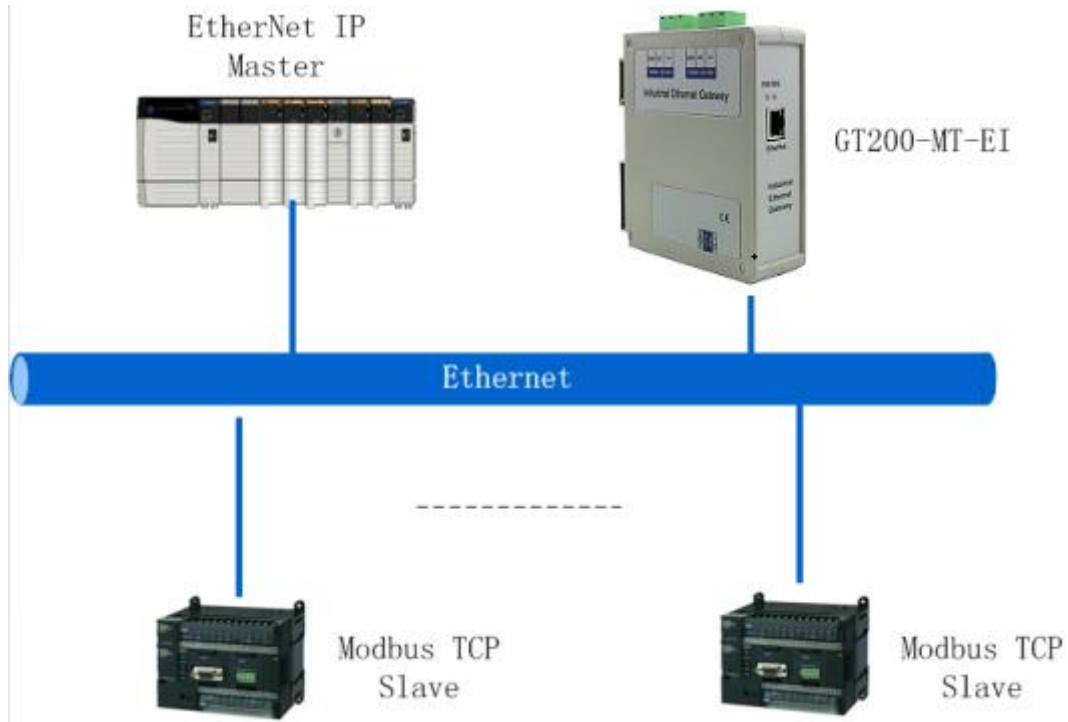
### 7.1 EtherNet/IP master PLCs interconnect with Modbus TCP master PLCs



In this case, different EtherNet/IP masters are connected to the same Modbus TCP master PLC with many GT200-MT-EI gateways through Ethernet switch machine, in this way many EtherNet/IP master PLC can communicate with Modbus TCP master PLC.

**Note:** GT200-MT-EI needs to be configured EtherNet/IP slave and Modbus TCP slave.

## 7.2 Modbus TCP slave devices connect to EtherNet/IP network



In this application case, GT200-MT-EI gateway needs to be configured as EtherNet/IP slave and Modbus TCP master. EtherNet/IP master devices, Modbus TCP slave devices, and industrial Ethernet gateway GT200-MT-EI connect with each other through Ethernet switch machine. It can realize the data uploading from Modbus TCP slave to EtherNet/IP master through data mapping of GT200-MT-EI.