

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

User Manual

V3.2

Rev A



SST Automation

E-mail: support@sstautomation.com

www.SSTAutomation.com



Important Information

Warning

The data and examples in this manual cannot be copied without authorization. SST Automation reserves the right to upgrade the product without notifying users.

The product has many applications. The users must make sure that all operations and results are in accordance with the safety of relevant fields, and the safety includes laws, rules, codes and standards.

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Technical Support Contact Information

www.sstautomation.com

E-mail: support@sstautomation.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/Server and EtherNet/IP adapter. 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 Server devices to the EtherNet/IP network.

1.2 Product Features

- Dual network segment communication capability: Provides dual network ports, specially designed to meet the data transmission needs between different network segments
- Large-capacity data processing: With a maximum input and output of 2000 bytes, it can meet various large-volume application scenarios and help users process more business-critical data.
- QoS guarantee mechanism: Supports the QoS function of Ethernet/IP to ensure the priority and integrity of data transmission and reduce the possibility of data loss or delay.
- Efficient communication mode: Provides two output command modes, serial and parallel, to meet diverse communication needs and improve the overall communication efficiency of the system.
- Real-time network monitoring: Built-in network status monitoring function, real-time monitoring of the device connection status on the EtherNet/IP or Modbus TCP side to ensure the continuity of device online and data transmission.
- Flexible access device: Modbus TCP port configuration is flexible, supports more device access, meets large-scale system integration needs, and improves interoperability between devices.

1.3 Technical Specifications

[1] The gateway has two Ethernet interfaces (EtherNet 1 and EtherNet 2):



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◆ Modbus TCP uses EtherNet 1, EtherNet/IP can use EtherNet 1 or EtherNet 2, and default use EtherNet 1.

◆ The two Ethernet interfaces cannot use the same network segment.

◆ Cascading is not supported.

[2] IP address conflict detection.

[3]Support static IP and DHCP function.

[4]EtherNet/IP act as adapter:

◆ Supports ODVA standard EtherNet/IP communication protocol.

◆ 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.

◆ Number of input bytes: Instance102 maximum 492 bytes, Instance202 maximum 2000 bytes.

◆ Number of output bytes: Instance101 maximum 492 bytes, Instance201 maximum 2000 bytes.

◆ Supports QoS function.

[5]Modbus TCP side:

◆ Supports byte swap function: no swap, two-byte swap, four-byte swap.

◆ Supports Server port setting, the default is 502.

[6]Modbus TCP act as Client:

◆ Supports access to up to 36 Modbus TCP Servers.

◆ Supports function codes: 01H, 02H, 03H, 04H, 05H, 06H, 0FH, 10H, 17H.

◆ Supports up to 200 commands.

◆ Supports 2 command output modes: serial output and parallel output.

[7]Modbus TCP act as Server:

◆ Support connect up to 36 Modbus TCP devices.

◆ Supports function code: 03H, 04H, 06H, 16H, 17H.

◆ Supports the exchange of function codes 1 and 2 and function codes 3 and 4.

[8]Power supply: 24VDC (9-30VDC), 90mA (24VDC).

[9]Operating temperature: -4°F-140°F (-20°C-60°C). Humidity: 5% - 95% (non-condensing).

[10]Dimensions (W*H*D): 0.9in*3.9in*4.5 in (22.5mm*99mm*114.5mm).



[11]Installation: 1.4 in (35 mm) DIN RAIL.

[12]Protection level: IP20.

1.4 Related Products

The related products include GT200-MT-RS485, GT200-MT-2RS485, GT200-MT-2R232, GT200-MT-2RS, GT200-MT-EI, GT200-MT-CA, and GT200-MT-CO.

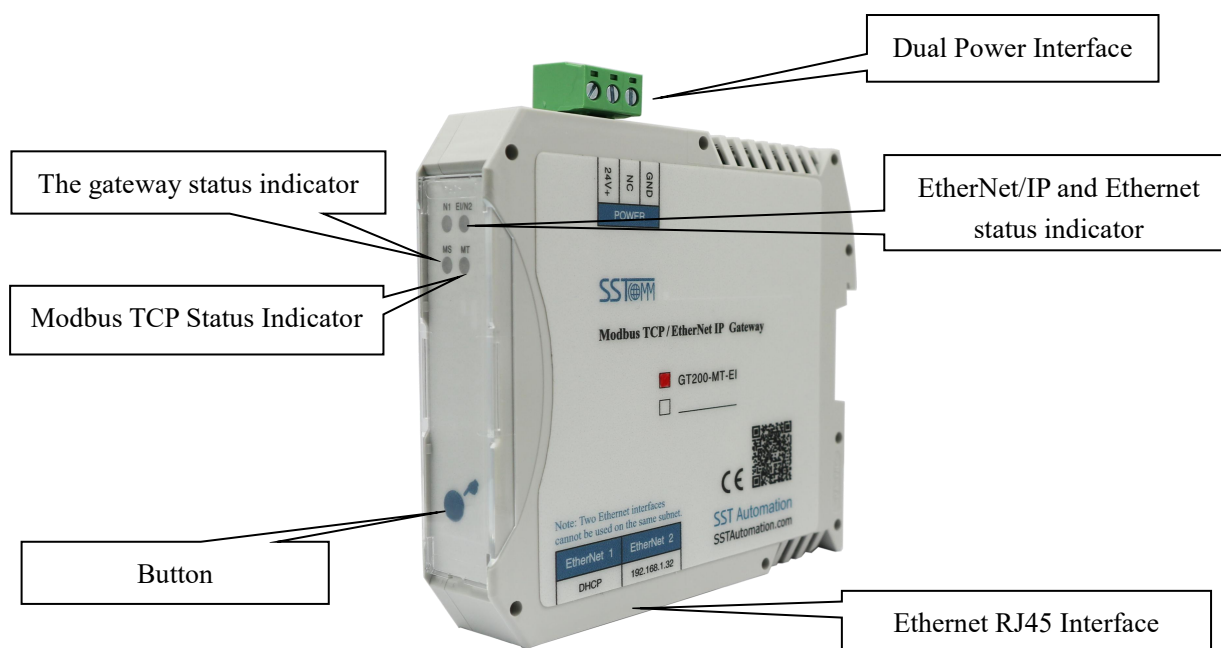
For more information about related products, please visit SST Automation's website: www.sstautomation.com.

1.5 Revision History

Revision	Date	Chapter	Description
V3.2, RevA	11/21/2024	Chapter 6, 7	Added tables to explain the data mapping between Modbus TCP and EtherNet/IP. Updated the EtherNet/IP connection instructions to use with Studio 5000 Logix Designer.
V3.2	6/17/2024	ALL	Add new parameter description
V2.1	5/17/2023	PART	Updated the product picture, dimensions
V1.7, RevA	12/28/2021	ALL	Update format

2 Hardware Descriptions

2.1 Product Appearance



Note: This picture is for reference only and the appearance of the product is subject to change in the actual product.

2.2 Indicators

Indicators	Status	Descriptions
NI (EtherNet 1 network status indicators)	Blinking(Red)	DHCP state (EtherNet 1)
	Red on	The IP addresses of EtherNet 1 and EtherNet 2 are in the same network segment
E1/E2 (EtherNet/IP and EtherNet 2 Network Status Indicators)	Green on	EtherNet/IP connection is established.
	Blinking(Green)	EtherNet/IP connection is not established.
	Blinking(Red)	DHCP state (EtherNet 2)
	Red on	The IP addresses of EtherNet 1 and EtherNet 2 are in the same network segment
MS (The gateway status indicator)	Green on	Startup completed
	Green light flashes (2Hz)/off	Factory reset via button
	Red on for 500ms	Lock configuration function
	Red on for 300ms Red off for 400ms Red on again for 300ms	Unlock configuration function
	Red on	Equipment failure
	Orange on	Start the application
Modbus TCP Client Mode (Modbus TCP network status indicator)	Green on	Modbus TCP all node connections have been established
	Green blinking quickly (on 500ms, off 500ms)	Modbus TCP connection is not established
	Green blinking slowly (1700ms on, 300ms off)	Modbus TCP Some nodes have been connected (Not all nodes have been connected)
	Blinking(Red) (lasts 3 seconds)	Node disconnection
	Blinking(Red)	All nodes are disconnected (failed to establish connection)
Modbus TCP Server Mode (Modbus TCP network status indicator)	Green on	Modbus TCP connection established
	Blinking(Green)	Modbus TCP connection not established or disconnected
	Blinking(Red) (lasts 3 seconds)	Node disconnection
N1 (Orange) and N2 (Orange) (Orange: Red and green light on at the same time)	Simultaneously on	Start-up state
	Blink alternately (lasts 3 seconds)	localization function



2.3 Button

Restore Factory Settings: Press and hold the button for 5 seconds within 10 seconds after the device is powered on (the MS light is always on). The MS light will green blinking (2Hz), and click the button within 5 seconds, the MS light will off, the device will be restored to factory settings and automatically restart. After restoring to factory settings, the IP address becomes the default value DHCP (EtherNet 1) and 192.168.0.10 (EtherNet 2). If the button is not clicked for more than 5 seconds, the MS light will be restored to be always on green and normal operation will be restored.

Lock configuration function: When the device is running, double-click the button, the MS red light turns on for 500ms and then turns off, indicating that the configuration function is locked. Double-click the button again, the MS red light turns on for 300ms, turns off for 400ms, then turns on for 300ms and then turns off, indicating that the configuration function is unlocked.

locked configuration function: The configuration software searches for the device, status display shows prohibit remote configuration.

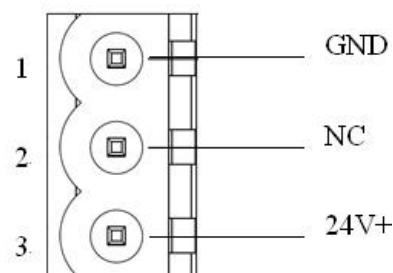
Unlocked configuration function: The configuration software searches for the device, status display shows allows remote configuration.

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

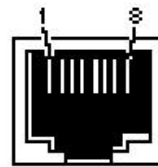




2.4.2 Ethernet Interface

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-



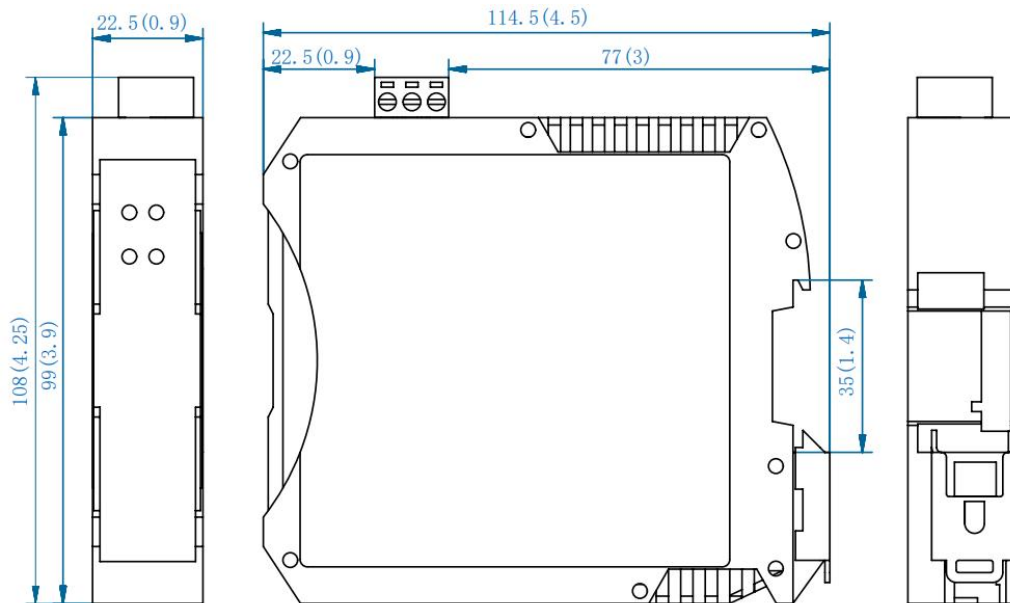
RJ-45 port

3 Hardware Installation

3.1 Machine Dimension

Size (width * height * depth):

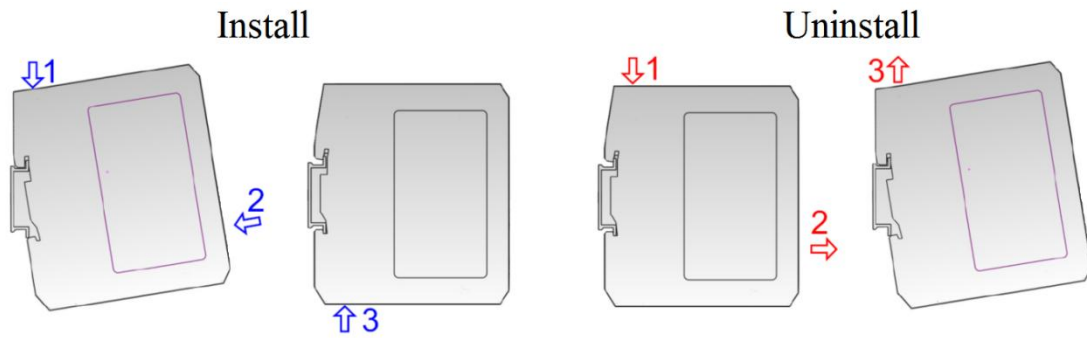
0.9in * 3.9in * 4.5in (22.5mm * 99mm * 114.5mm)





3.2 Installation Method

Using 1.4 in (35mm) DIN RAIL.





4 Quick Start Guide

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

1. Wiring: Please see [Chapter2.4](#).

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.

2. Download SST-EE-CFG software from <https://www.sstautomation.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:

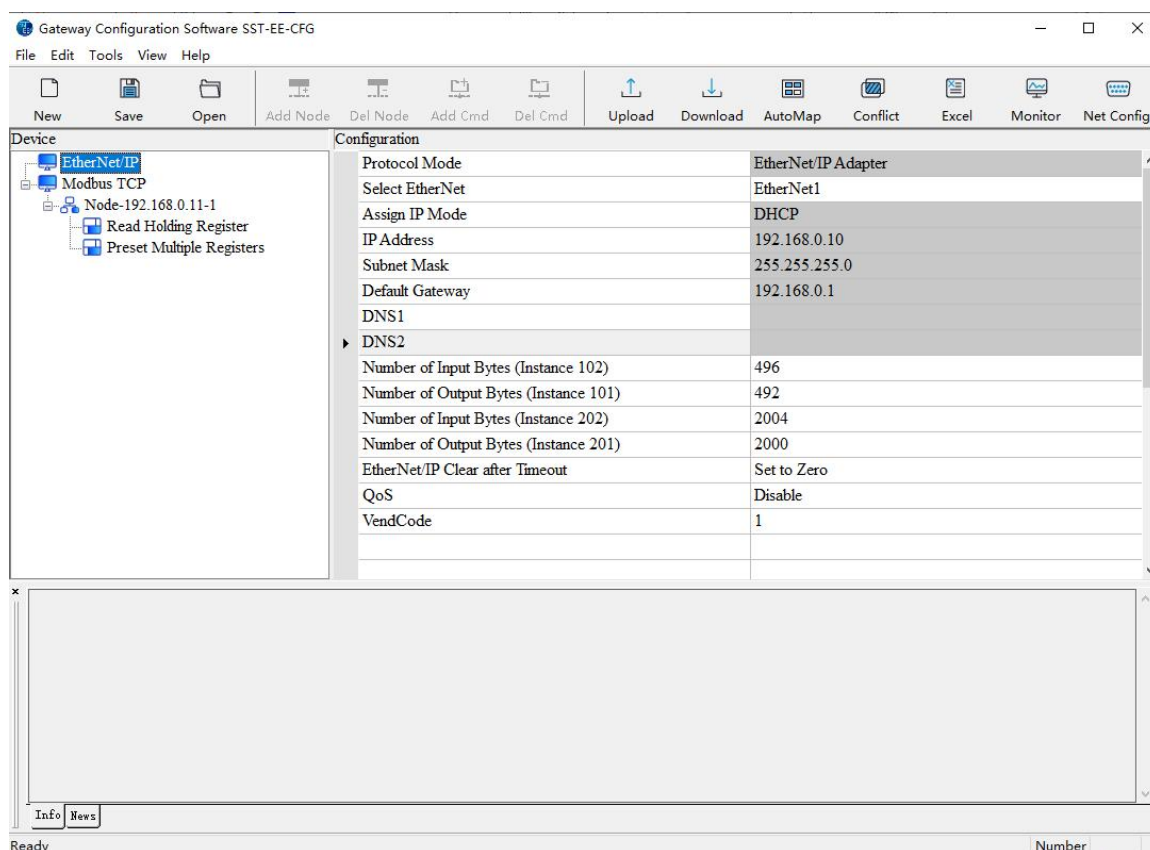
- a) The network factory setting of GT200-MT-EI are DHCP (EtherNet 1) and 192.168.0.10 (EtherNet 2).
After 30s IP address allocation timeout in DHCP mode, the IP address will be returned to fixed 192.168.1.10.
- b) Make sure that the GT200-MT-EI and your computer are in the same network segment.
- c) 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 sstautomation.com website.

4. After the configuration is downloaded, the device can be restarted automatically or manually. After the restart is completed, the downloaded configuration takes effect.

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 icon to enter the main interface of the software:



5.1 Software Interface

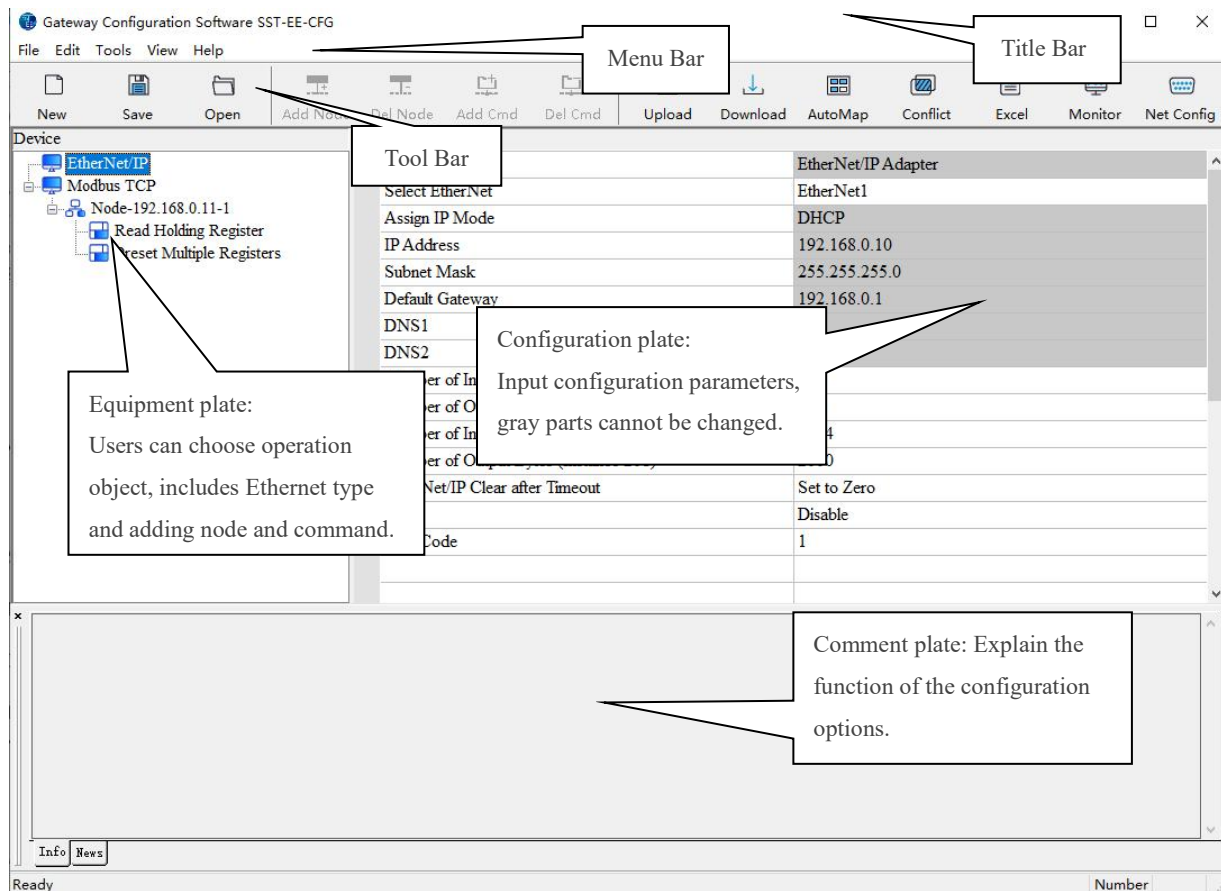
The main interface of SST-EE-CFG includes: Title bar, Menu bar, Tool bar, equipment plate, configuration plate and comment plate.

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

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Tool Bar:

Toolbar interface shown as follow:



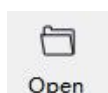
The function from left to right is: New, Save, Open, Add Node, Delete Node, Add Command, Delete Command, Upload Config, Download Config, Auto Mapping, Conflict Detect, Export Xls and Debug.



New: Create a new configuration project.



Save: Save current configuration.

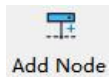


Open: Open a configuration project.

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Add Node

Add Node: Add a Modbus TCP Server node.



Del Node

Del Node: Delete a Modbus TCP Server node.



Add Cmd

Add Command: Add a Modbus command.



Del Cmd

Delete Command: Delete a Modbus command.



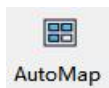
Upload

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



Download

Download Config: Download the configuration file to the gateway.



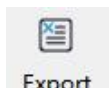
AutoMap

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



Conflict

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



Export

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



Monitor

Monitor: Monitor the gateway memory buffer data.



Net Config

Net Config: Config the gateway IP Address.

5.2 Device view

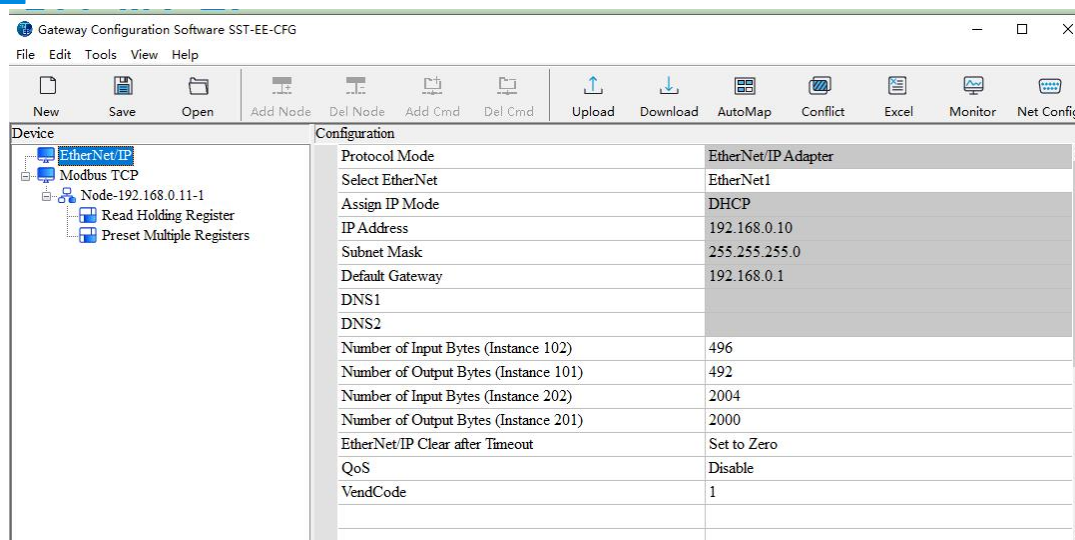
5.2.1 EtherNet/IP

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

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Protocol Mode: EtherNet/IP Adapter.

Select EtherNet: EtherNet/IP Adapter network port. Supports EtherNet 1 and EtherNet 2. Default value is EtherNet 1.

Assign IP Mode: Manually Assign and DHCP.

IP Address: The IP Address of the device.

Subnet Mask: The Subnet Mask of the device.

Default Address: The Gateway Address of the device.

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.

Number of input bytes(Instance 202): Input bytes number of EtherNet IP, range: 5-2004, the default is 2004.

Number of output bytes(Instance 201): Output bytes number of EtherNet/IP, range: 1-2000, the default is 2000.

EtherNet/IP Clear after Timeout: When all read commands of a certain Modbus node fail to receive a correct response, the EtherNet/IP input data corresponding to the read commands of this node will be cleared to zero. Default value is Set to Zero.

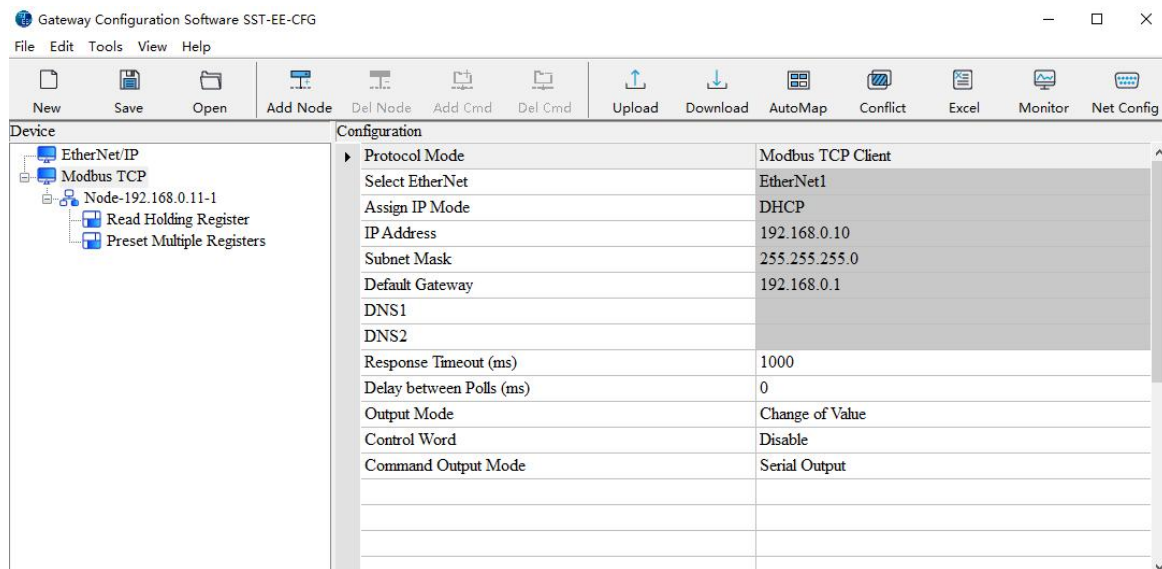
Keep: Keep the last data.

QoS: Supports Disable and Enable. Default value is Disable.

VendCode: Can be modified according to requirements. Range: 1-65535. Default value is 1.

5.2.2 Modbus TCP

1. Modbus TCP Client Configuration



The configurable parameters are as follows:

Protocol Mode: Modbus TCP Client, Modbus TCP Server.

Select EtherNet: Modbus TCP communication network port. Only supports EtherNet 1.

Assign IP Mode: Manually Assign and DHCP.

IP Address: The IP Address of the device.

Subnet Mask: The Subnet Mask of the device.

Default Address: The Gateway Address of the device.

Response Timeout(ms): The maximum amount of time to wait for a response from the Modbus Server after the Modbus TCP Client sends a command. Range: 300-60000ms. Default value is 1000ms.

Delay between Polls(ms): The amount of delay time between receiving a response and sending the next request. Range: 0-2500ms. Default value is 0ms.

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.

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Control Word: Supports Disable, All Commands and Only Write Commands. Default value is Disable.

Command Output Mode: Serial Output: All commands for a single Modbus TCP Server device are sent one by one, and the next command is sent after receiving a response or timeout.

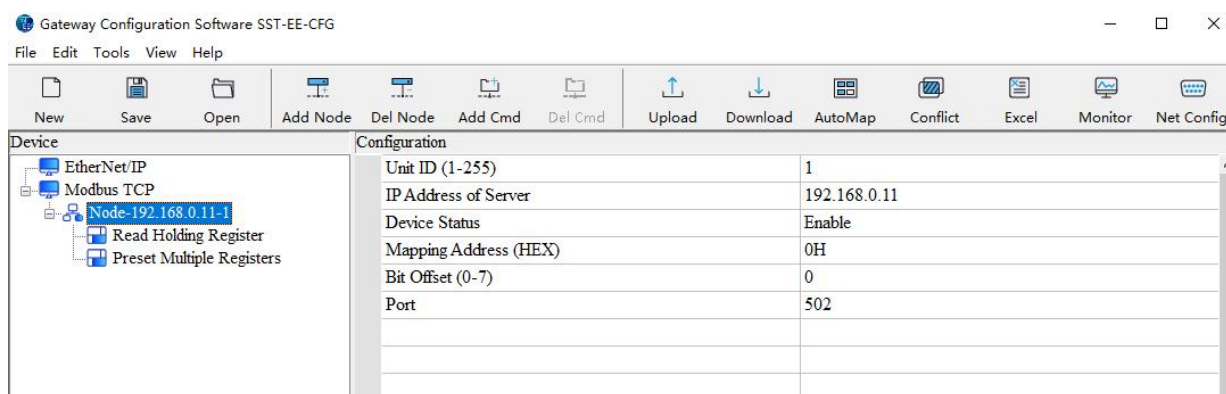
Parallel Output: All commands for a single Modbus TCP Server device are sent together.

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:



Unit ID: Server address of Modbus TCP, 1-255 optional.

IP address of Server: Input IP address of Modbus TCP Server which gateway wants to visit.

Device Status: Refers to the online and offline status of the Modbus TCP Server device. Supports Disable and Enable. Default is Enable.

Enable: The online status of the Modbus TCP Server device can be monitored on the EtherNet/IP side. The status



accounts for the memory mapping address of the gateway through Mapping Address and Bit Offset.

Mapping Address(HEX): This function is valid when Device Status is Enable. Address mapped by device status in gateway memory. Range: 0x0000-0x07CF.

Bit Offset(0-7): This function is valid when Device Status is Enable. Bit X of memory mapping bytes in device status. Range: 0-7.

Port: This function is valid when Device Status is Enable. Bit X of memory mapping bytes in device status. Range: 0-7.

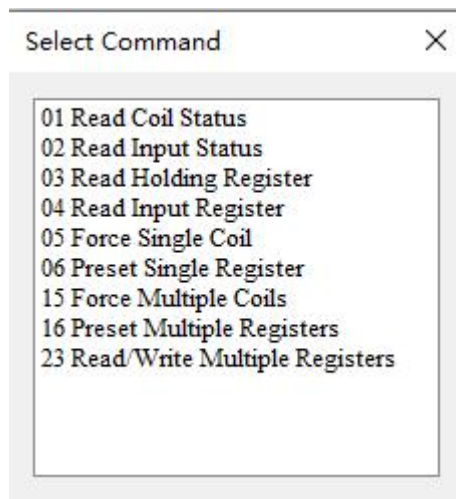
3. Command

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.

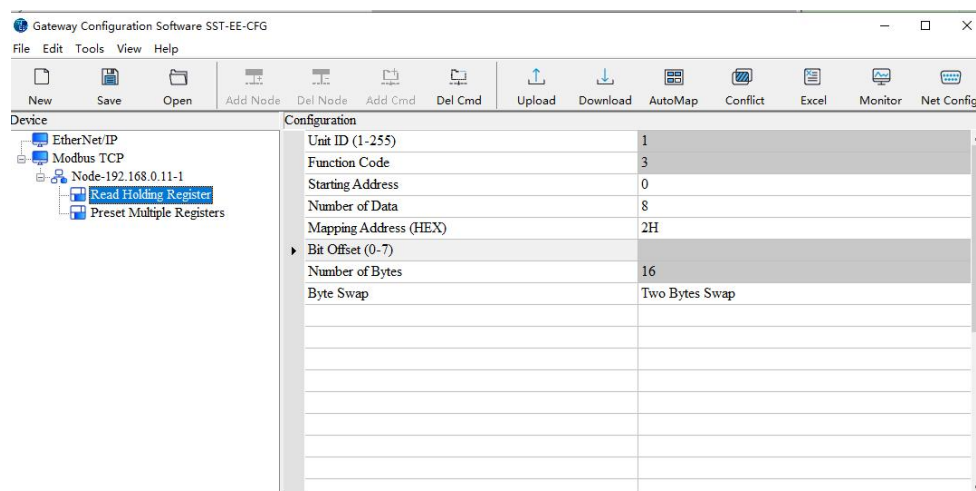


The command interface is displayed as follows:

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Unit ID(1-255): Modbus TCP Server address. Range: 1-255.

Function Code: Modbus Function Code.

Starting Address: The starting address for initiating read/write commands in Modbus Server devices. Range: 0-65535.

Note: 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 1-127.

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

Mapping Address (HEX): The mapping address range of data in module memory:

Read command: 0x0000-0x07CF.

Write command: 0x4000-0x47CF.

Write commands as a local data exchange can also use the region: 0x0000-0x07CF.

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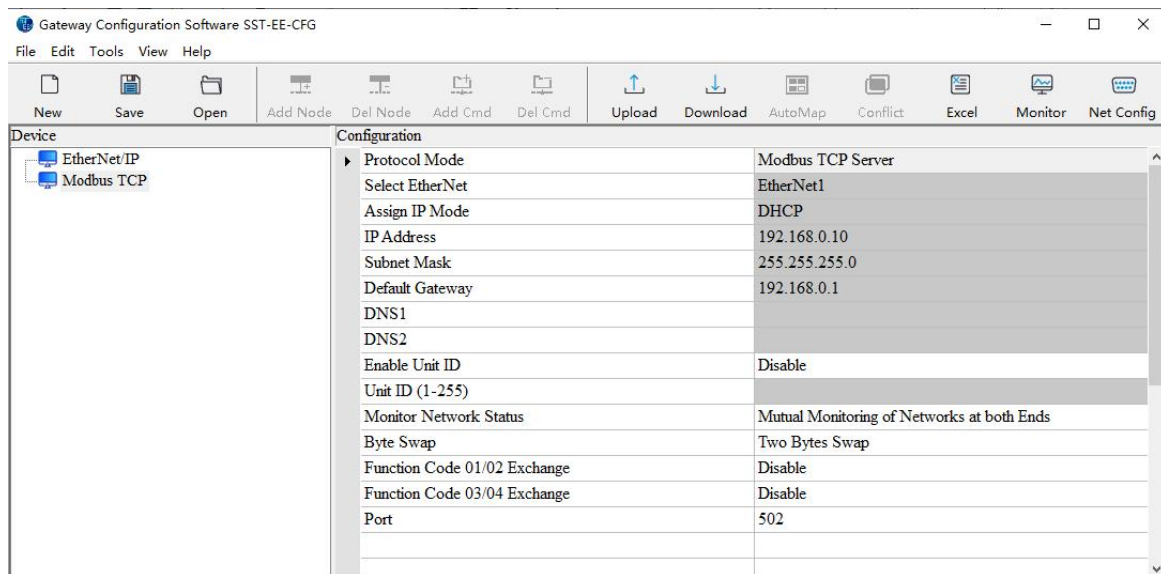
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Bit Offset (0-7): Modbus function codes 01, 02, 05, 15, can set the position of the bit address in bytes through this parameter. Range: 0-7.

Number of Bytes (Read): The number of bytes of data. Displayed in decimal

Byte Swap: There are three types: No Swap, Two Bytes Swap, Four Bytes Swap.

4. Modbus TCP Server Configuration



The configurable parameters are as follows:

Protocol Mode: Modbus TCP Client, Modbus TCP Server.

Select EtherNet: Modbus TCP communication network port. Only supports EtherNet 1.

Assign IP Mode: Manually Assign and DHCP.

IP Address: The IP Address of the device.

Subnet Mask: The Subnet Mask of the device.

Default Address: The Gateway Address of the device.

Enable Unit ID: Supports Disable and Enable. Default value is Disable.

Unit ID (1-255): Modbus TCP Server address. Range: 1-255.

Monitor Network Status: The gateway has the option to set whether to monitor the online status of the device on the EtherNet/IP or Modbus TCP side.

Byte Swap: There are three types: No Swap, Two Bytes Swap, Four Bytes Swap.

Function Code 01/02 Exchange:



Disable: 01 function code corresponds to 0x area coil status data, and 02 function code corresponds to 1x area input status data.

Enable: 01 function code corresponds to 1x area input status data, and 02 function code corresponds to 0x area coil status data.

Function Code 03/04 Exchange:

Disable: 03 function code corresponds to 4x area holding register data, and 04 function code corresponds to 3x area input register data.

Enable: 03 function code corresponds to 3x area input register data, and 04 function code corresponds to 4x area holding register data.

Port: The port of the Modbus TCP Server device can be configured. Range: 1-65535. Default value is 502.

5.3 Tool

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

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

5.3.1 Search Equipment

Before configuring parameters, the user will need to search for the gateway using the software. The software provides two ways to search the gateway for the user.

Method 1: Search All Equipment of Ethernet

Click "Upload" or "Download" button of the main interface and the software will search all of the available devices and list them in the main interface.

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Search Device

No.	Type	IP Address	MAC Address	Firmware Version	State
1	GT200-MT-EI	192.168.0.10	64-ea-c5-1f-1e-e1	3.1	Allows remote configuration

Upload Refresh IP Search Locate Cancel

Searching completed

Method 2: IP Search

Click "IP Search" button of the main interface will pop up a dialog box, and user need to enter the IP address of the equipment.

Search Device

No.	Type	IP Address	MAC Address	Firmware Version	State

Upload Refresh IP Search Locate Cancel

Searching completed

Enter the correct IP address, the software will search the network for a GT200-MT-EI device with this IP address.

Ethernet configuration

☐ Use the search function

IP address to connect to:

192 . 168 . 0 . 10

OK Cancel

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After finding the device, click OK, and list the information of the equipment in the main interface.

Search Device

No.	Type	IP Address	MAC Address	Firmware Version	State
1	GT200-MT-EI	192.168.0.10	64-ea-c5-1f-1e-e1	3.1	Allows remote configuration

Upload Refresh IP Search Locate Cancel

Searching completed

Note: If the users select the "IP search", users need to enter correct IP address or it will not get any devices

5.3.2 Locate

When users manage multiple GT200-MT-EI gateways, the “Locate” function can be used to identify gateway that will be configured.

Users can click on the “Locate” button when the gateway is connected to Ethernet to make the N1and E1/N2 indicators of the gateway orange blinking alternately for 3 seconds to help them find it.

Search Device

No.	Type	IP Address	MAC Address	Firmware Version	State
1	GT200-MT-EI	192.168.0.10	64-ea-c5-1f-1e-e1	3.1	Allows remote configuration

Upload Refresh IP Search Locate Cancel

Searching completed

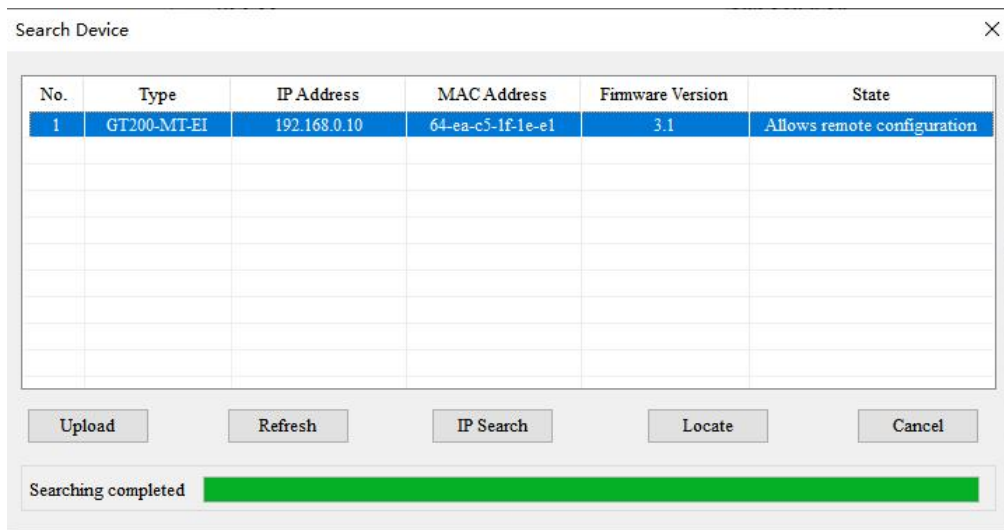


5.3.3 Upload Config and Download Config

1. Upload Config

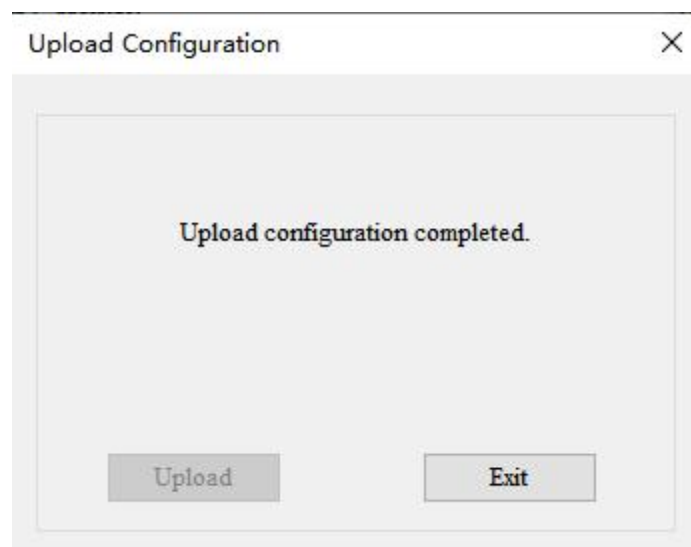
Select “Upload” to upload the gateway configuration information from the device to the software.

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 gateway you want to configure and click “Upload” to enter into the upload dialog box. The interface is shown below:



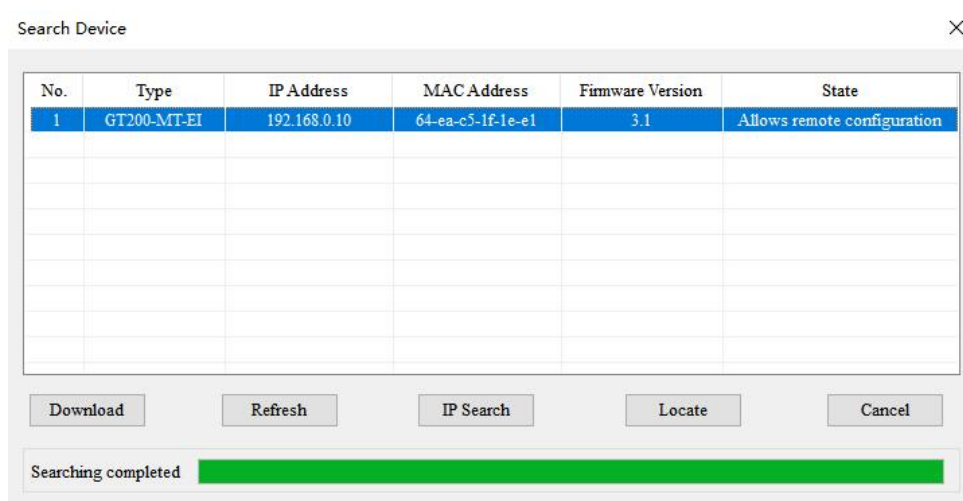
2. Download Config

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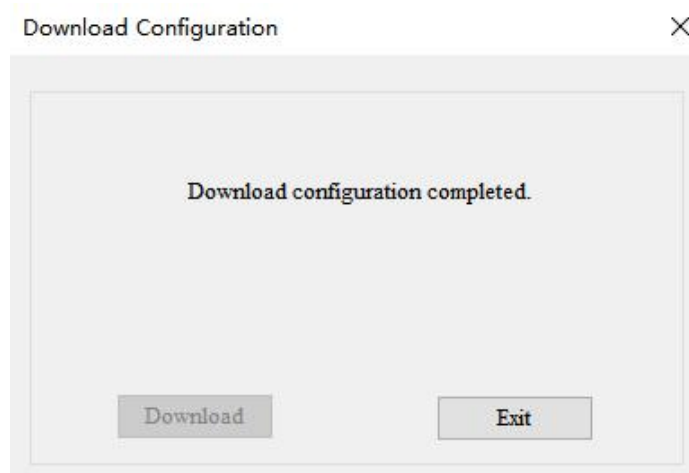
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Select “Download” to download the configured gateway information to the gateway device. The operation of download configuration is the same as upload configuration:



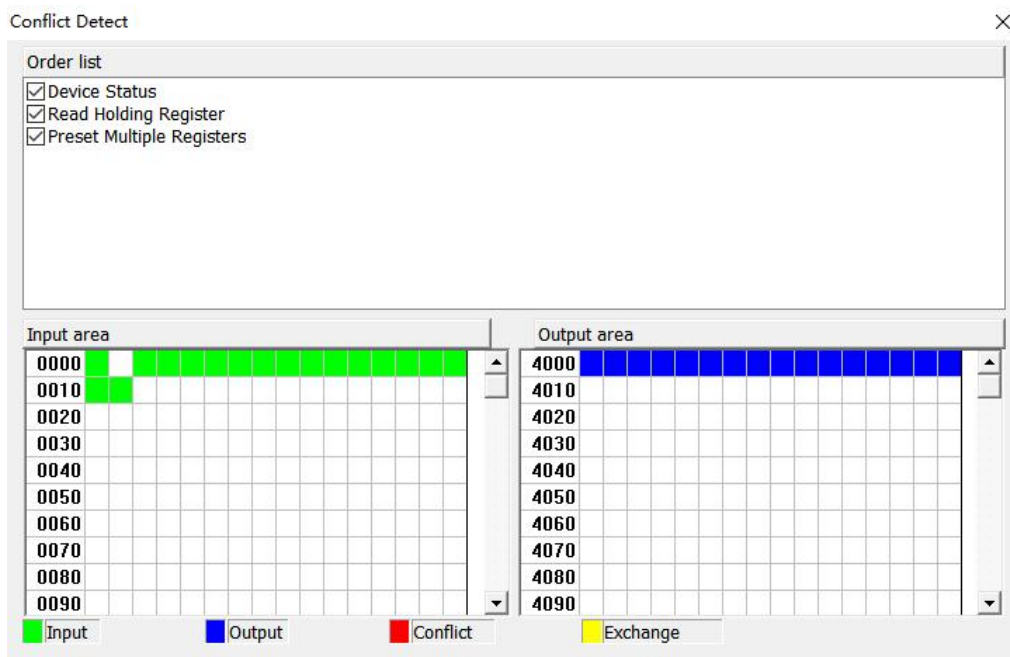
Select the gateway you want to configure and click “Download” to enter into the download dialog box. The interface is shown below:



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

5.3.4 Conflict Detect

It is used to check whether there exists confliction in “Conflict Detect”. 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: 0x0000-0x07CF.

Output mapping address range: 0x4000-0x47CF.

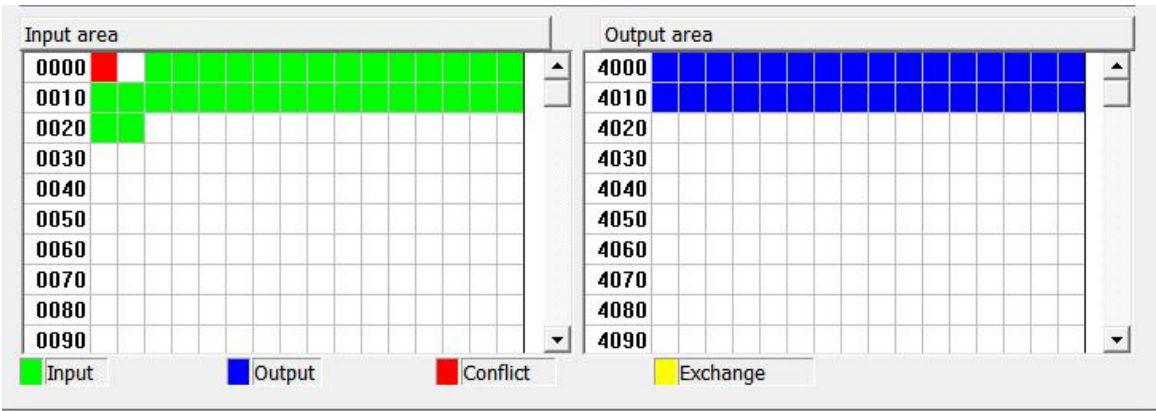
Each grid represents one byte address.

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.

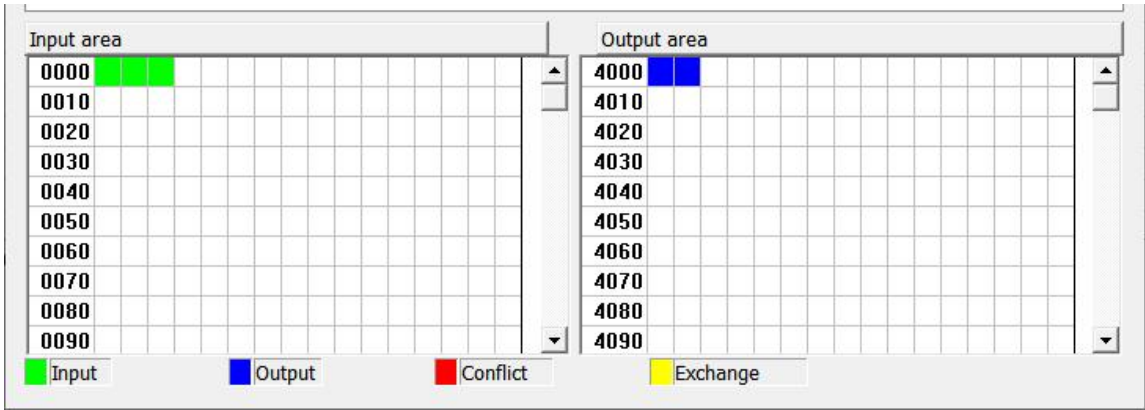
Blue: When address mapping area is located in output area, it will be in blue without conflict.

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:



5.3.5 Export Xls

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

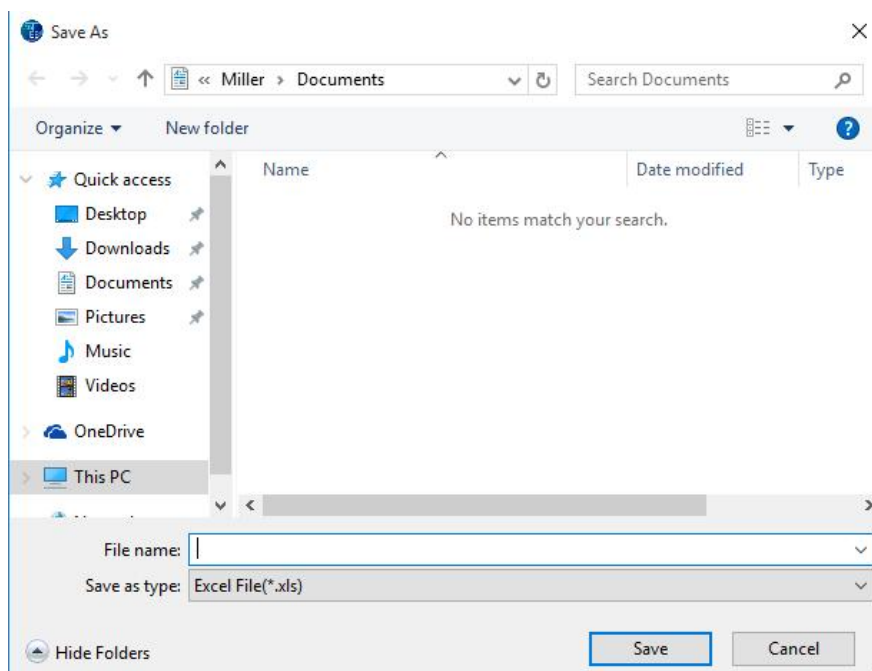
Select the export xls icon  , export the configuration information to excel and save. Select the appropriate path,

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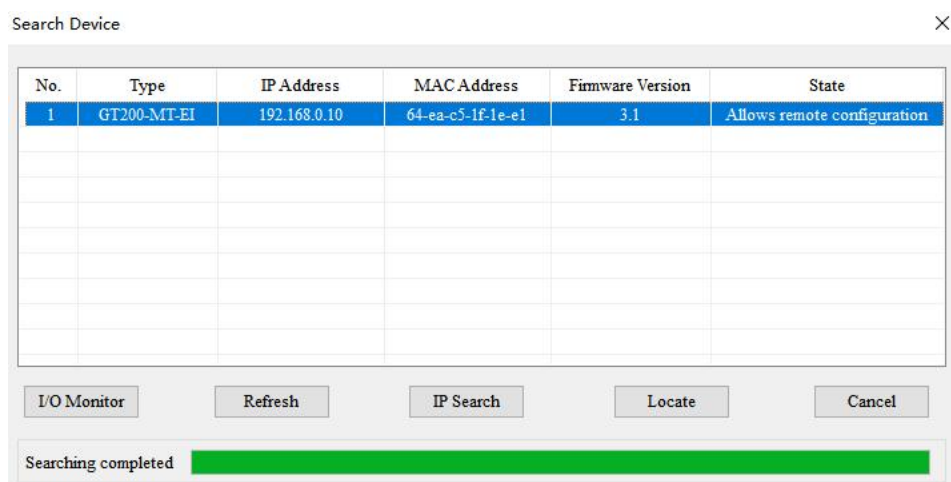
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shown as below:

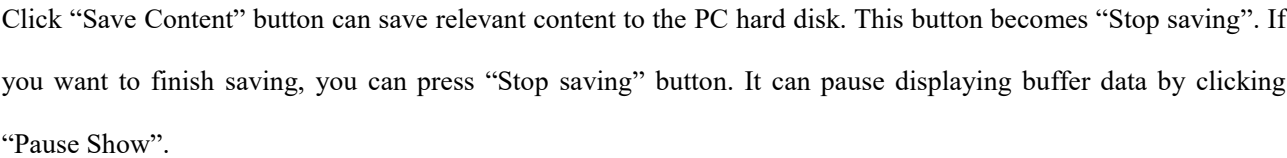


5.3.6 Monitor I/O Data

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:



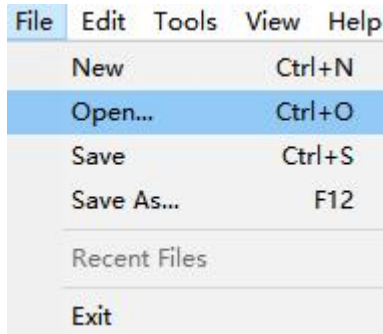
Click “I/O Monitor”, it will pop up the I/O data monitor dialog box below:





5.4.2 Open Configuration Project

Click the "Open" button on the menu bar or toolbar to open the saved.xml file.



Menu bar



Toolbar



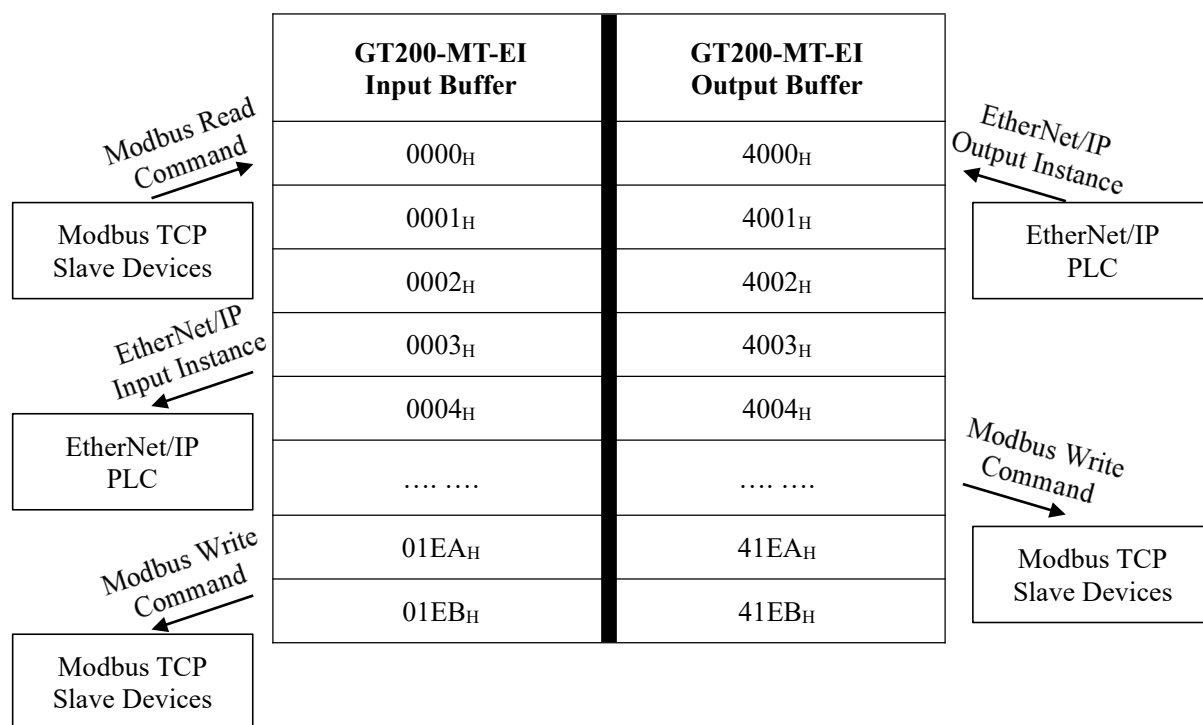
6 Interface Design Description

6.1 Modbus TCP Client (Master)

6.1.1 Data Exchange

The ethernet side of the gateway supports Modbus TCP function, as described 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 a Modbus TCP master, the Modbus read command will write the read data to the network input buffer for EtherNet/IP accessing. The Modbus write register command gets the data from the network output buffer and exports it to the Modbus TCP server equipment through the write command.



As shown above, the Network input buffer range is from 0000H to 01EBH. It supports function codes 01H, 02H, 03H, and 04H as data input, and function codes 05H, 06H, 15H, and 16H for local data exchange. The network output buffer range is from 4000H to 41EBH, supporting function codes 05H, 06H, 15H, and 16H as data output.

The ethernet can support at maximum of 48 commands, with each command capable of reading a group of continuous Modbus registers.



6.1.2 Device Status Monitor

When the gateway functions as a Modbus TCP Client, it has a device status monitor feature as described below:

- On the EtherNet/IP side of the connection, the first word (2 bytes) of input data following the gateway status bytes (4 bytes) monitors the connection status of each Modbus TCP Server (Slave) node that is connected to the gateway. If the node status monitor function is disabled, then the gateway will not show this data.

GT200-MT-EI Input Buffer	EtherNet/IP Input Data			Description																
	32-Bit	16-Bit	8-Bit																	
	Input.Data[0]	Input.Data[0]	Input.Data[0]	GT200-MT-EI Status Bytes: 00 00 00 00 _H = Disconnected 01 00 00 00 _H = Connected																
			Input.Data[1]																	
		Input.Data[1]	Input.Data[2]																	
			Input.Data[3]																	
0000 _H	Input.Data[1]	Input.Data[2]	Input.Data[4]	Node 1-8 Status Monitor Bits: <table><tr><th colspan="8">Mapping Bit</th></tr><tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr></table> 0 _B = Connected 1 _B = Disconnected	Mapping Bit								7	6	5	4	3	2	1	0
Mapping Bit																				
7				6	5	4	3	2	1	0										
0001 _H		Input.Data[3]	Input.Data[5]	Node 9-16 Status Monitor Bits: <table><tr><th colspan="8">Mapping Bit</th></tr><tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr></table> 0 _B = Connected 1 _B = Disconnected	Mapping Bit								7	6	5	4	3	2	1	0
Mapping Bit																				
7	6	5	4	3	2	1	0													
0002 _H	Input.Data[4]	Input.Data[6]	Modbus Address 4x0001 (Holding Register 0)																	
0003 _H	Input.Data[5]	Input.Data[7]	Modbus Address 4x0002 (Holding Register 1)																	
.... .																				

Note: To enable the node status monitor function, set the "Device Status" field to "On" in the SST-EE-CFG configuration software. To disable the node status monitor function, set this field to "Off"

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- b. On the Modbus TCP side of the connection, the EtherNet/IP monitor data is located on Modbus register address 3x5001 (Base-0 Input Register address 5000). When EtherNet/IP network fails, this register is set to 0, and set to 1 if network is normal.
- c. Regardless if the EtherNet/IP monitor function is enabled or disabled, Modbus Clients can still get the EtherNet/IP network status by reading Modbus register address 3x5001 (Base-0 Input Register address 5000).
- d. If the EtherNet/IP monitor function is enabled, it will map the register at address 3x5001 (Input Register 5000) to the register at address 3x0001 (Input Register 0), and the EtherNet/IP output data will be mapped to the Modbus register address starting from 3x0002 (Input Register 1).

GT200-MT-EI Output Buffer	Modbus TCP Register Address	Description		
4000 _H	3x0001	EtherNet/IP Monitor Bytes: 00 00 _H = EtherNet/IP Disconnected 00 01 _H = EtherNet/IP Connected		
4001 _H	Input Register 0			
4002 _H	3x0002	EtherNet/IP 32-Bit Index Output.Data[0]	EtherNet/IP 16-Bit Index Output.Data[0]	EIP 8-Bit Index Output.Data[0]
4003 _H	Input Register 1			EIP 8-Bit Index Output.Data[0]
4004 _H	3x0003		EtherNet/IP 16-Bit Index Output.Data[1]	EIP 8-Bit Index Output.Data[0]
4005 _H	Input Register 2			EIP 8-Bit Index Output.Data[0]
4006 _H	3x0004	EtherNet/IP 32-Bit Index Output.Data[1]	EtherNet/IP 16-Bit Index Output.Data[2]	EIP 8-Bit Index Output.Data[0]
4007 _H	Input Register 3			EIP 8-Bit Index Output.Data[0]
4008 _H	3x0005		EtherNet/IP 16-Bit Index Output.Data[3]	EIP 8-Bit Index Output.Data[0]
4009 _H	Input Register 4			EIP 8-Bit Index Output.Data[0]
....				
	3x5001 Input Register 5000	EtherNet/IP Monitor Bytes: 00 00 _H = Disconnected 00 01 _H = Connected		



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- e. If the EtherNet/IP monitor function is disabled, the EtherNet/IP output data will be mapped to the Modbus register address starting from 3x0001 (Input Register 0).

GT200-MT-EI Output Buffer	Modbus TCP Register Address	Description		
4000 _H	3x0001 Input Register 0	EtherNet/IP 32-Bit Index Output.Data[0]	EtherNet/IP 16-Bit Index	EIP 8-Bit Index Output.Data[0]
4001 _H			Output.Data[0]	EIP 8-Bit Index Output.Data[1]
4002 _H	3x0002 Input Register 1		EtherNet/IP 16-Bit Index	EIP 8-Bit Index Output.Data[2]
4003 _H			Output.Data[1]	EIP 8-Bit Index Output.Data[3]
4004 _H	3x0003 Input Register 2	EtherNet/IP 32-Bit Index Output.Data[1]	EtherNet/IP 16-Bit Index	EIP 8-Bit Index Output.Data[4]
4005 _H			Output.Data[2]	EIP 8-Bit Index Output.Data[5]
4006 _H	3x0004 Input Register 3		EtherNet/IP 16-Bit Index	EIP 8-Bit Index Output.Data[6]
4007 _H			Output.Data[3]	EIP 8-Bit Index Output.Data[7]
....				
	3x5001 Input Register 5000	EtherNet/IP Monitor Bytes: 00 00 _H = Disconnected 00 01 _H = Connected		

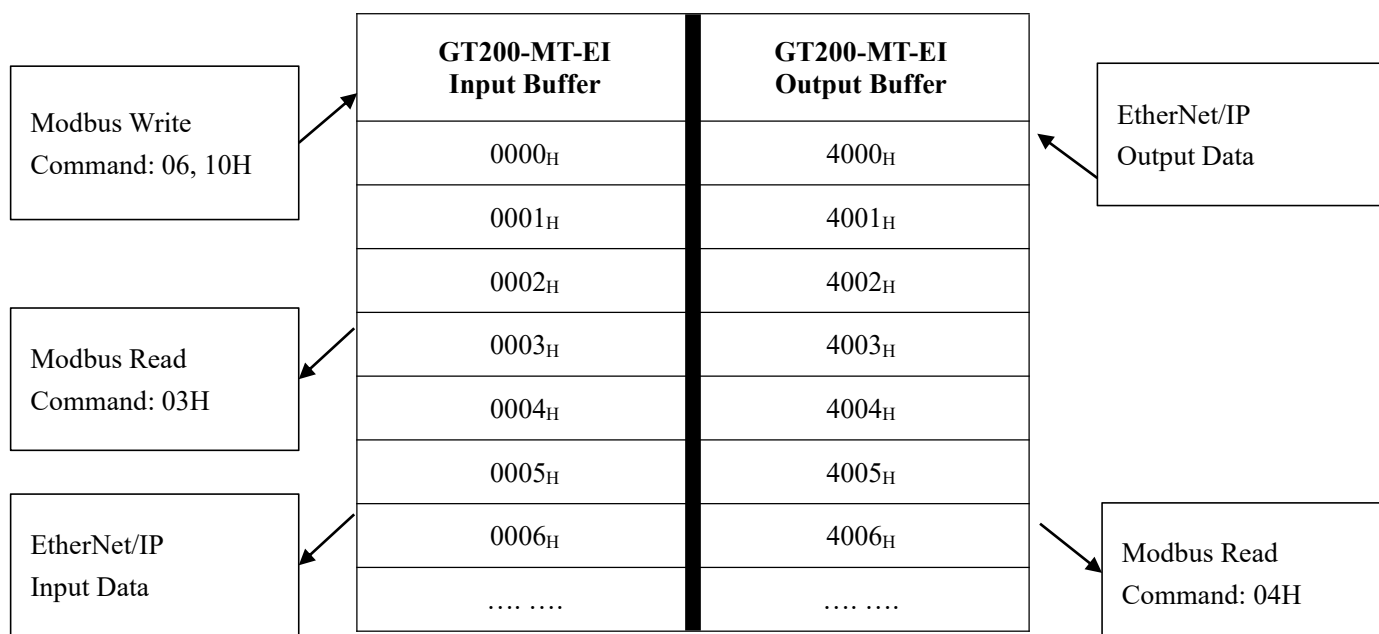
Note: To enable the EtherNet/IP monitor function, set the "Network Status Indication" field to either "Two ends network monitor with each other" or "Modbus TCP end monitors EtherNet/IP network status" in the SST-EE-CFG configuration software. To disable the EtherNet/IP monitor function, set this field to either "EtherNet/IP end monitors Modbus TCP network status" or "No Indication".



6.2 Modbus TCP Server (Slave)

6.2.1 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 the EtherNet/IP network input buffer and the other is the EtherNet/IP network output buffer. The network input and output buffer are all for EtherNet/IP. When the gateway is set to Modbus TCP server, the Modbus write register command will write the read data to the network input buffer for EtherNet/IP access. The Modbus read command retrieves data from the network output buffer and exports it to the Modbus TCP master equipment through a response message.



This gateway functions as a Modbus TCP Server and supports Function Codes 03H, 04H, 06H, and 10H.

The GT200-MT-EI Input Buffer is used to process output data from the Modbus TCP Master and is mapped to the Modbus Holding Registers. Function Code 03 is used to read this data back. The Input Buffer supports Function Codes 03H, 06H, and 10H. The starting address register is 4x0001 (Holding Register 0).

The GT200-MT-EI Output Buffer is used to process input data to the Modbus TCP Master and is mapped to the Modbus Input Registers. Function Code 04 is used to read this data. The Output Buffer only supports Function Code 04H. The starting address register is 3x0001 (Input Register 0).

6.2.2 Network Status Monitor

When the gateway functions as a Modbus TCP Server, it has a network status monitor feature as described below:

- a. On the EtherNet/IP side of the connection, the first word (2 bytes) of input data following the gateway status bytes (4 bytes) monitors the number of Modbus TCP Clients (Masters) that are connected to the gateway. If the Modbus TCP monitor function is disabled, then the gateway will not show this data.

GT200-MT-EI Input Buffer	EtherNet/IP Input Data			Description
	32-Bit	16-Bit	8-Bit	
	Input.Data[0]	Input.Data[0]	Input.Data[0]	GT200-MT-EI Status Bytes: 00 00 00 00 _H = Disconnected 01 00 00 00 _H = Connected
			Input.Data[1]	
		Input.Data[1]	Input.Data[2]	
			Input.Data[3]	
0000 _H	Input.Data[1]	Input.Data[2]	Input.Data[4]	Modbus TCP Monitor Bytes: Total number of Modbus TCP Clients connected
0001 _H			Input.Data[5]	
0002 _H		Input.Data[3]	Input.Data[6]	Modbus Address 4x0001 (Holding Register 0)
0003 _H			Input.Data[7]	
0004 _H	Input.Data[2]	Input.Data[4]	Input.Data[8]	Modbus Address 4x0002 (Holding Register 1)
0005 _H		Input.Data[5]	Input.Data[9]	
0006 _H		Input.Data[6]	Input.Data[10]	Modbus Address 4x0003 (Holding Register 2)
0007 _H		Input.Data[7]	Input.Data[11]	
.... .				

Note: To enable the Modbus TCP monitor function, set the "Network Status Indication" field to either "Two ends network monitor with each other" or "EtherNet/IP end monitors Modbus TCP network status" in the SST-EE-CFG configuration software. To disable the Modbus TCP monitor function, set this field to either "Modbus TCP end monitors EtherNet/IP network status" or "No Indication".

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- b. On the Modbus TCP side of the connection, the EtherNet/IP monitor data is located on Modbus register address 3x5001 (Base-0 Input Register address 5000). When EtherNet/IP network fails, this register is set to 0, and set to 1 if network is normal.
- c. Regardless if the EtherNet/IP monitor function is enabled or disabled, Modbus Clients can still get the EtherNet/IP network status by reading Modbus register address 3x5001 (Base-0 Input Register address 5000).
- d. If the EtherNet/IP monitor function is enabled, it will map the register at address 3x5001 (Input Register 5000) to the register at address 3x0001 (Input Register 0), and the EtherNet/IP output data will be mapped to the Modbus register address starting from 3x0002 (Input Register 1).

GT200-MT-EI Output Buffer	Modbus TCP Register Address	Description		
4000 _H	3x0001 Input Register 0	EtherNet/IP Monitor Bytes: 00 00H = EtherNet/IP Disconnected 00 01H = EtherNet/IP Connected		
4001 _H				
4002 _H	3x0002 Input Register 1	EtherNet/IP 32-Bit Index Output.Data[0]	EtherNet/IP 16-Bit Index Output.Data[0]	EIP 8-Bit Index Output.Data[0]
4003 _H				EIP 8-Bit Index Output.Data[1]
4004 _H	3x0003 Input Register 2	EtherNet/IP 32-Bit Index Output.Data[0]	EtherNet/IP 16-Bit Index Output.Data[1]	EIP 8-Bit Index Output.Data[2]
4005 _H				EIP 8-Bit Index Output.Data[3]
4006 _H	3x0004 Input Register 3	EtherNet/IP 32-Bit Index Output.Data[0]	EtherNet/IP 16-Bit Index Output.Data[2]	EIP 8-Bit Index Output.Data[4]
4007 _H				EIP 8-Bit Index Output.Data[5]
4008 _H	3x0005 Input Register 4	EtherNet/IP 32-Bit Index Output.Data[1]	EtherNet/IP 16-Bit Index Output.Data[3]	EIP 8-Bit Index Output.Data[6]
4009 _H				EIP 8-Bit Index Output.Data[7]
.....				
	3x5001 Input Register	EtherNet/IP Monitor Bytes: 00 00 _H = Disconnected		

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	5000	00 01 _H = Connected
--	------	--------------------------------

- e. If the EtherNet/IP monitor function is disabled, the EtherNet/IP output data will be mapped to the Modbus register address starting from 3x0001 (Input Register 0).

GT200-MT-EI Output Buffer	Modbus TCP Register Address	Description		
4000 _H	3x0001 Input Register 0	EtherNet/IP 32-Bit Index Output.Data[0]	EtherNet/IP 16-Bit Index Output.Data[1]	EIP 8-Bit Index Output.Data[0]
4001 _H				EIP 8-Bit Index Output.Data[1]
4002 _H	3x0002 Input Register 1	EtherNet/IP 32-Bit Index Output.Data[0]	EtherNet/IP 16-Bit Index Output.Data[2]	EIP 8-Bit Index Output.Data[2]
4003 _H				EIP 8-Bit Index Output.Data[3]
4004 _H	3x0003 Input Register 2	EtherNet/IP 32-Bit Index Output.Data[1]	EtherNet/IP 16-Bit Index Output.Data[3]	EIP 8-Bit Index Output.Data[4]
4005 _H				EIP 8-Bit Index Output.Data[5]
4006 _H	3x0004 Input Register 3	EtherNet/IP 32-Bit Index Output.Data[1]	EtherNet/IP 16-Bit Index Output.Data[4]	EIP 8-Bit Index Output.Data[6]
4007 _H				EIP 8-Bit Index Output.Data[7]
.... .				
	3x5001 Input Register 5000	EtherNet/IP Monitor Bytes: 00 00 _H = Disconnected 00 01 _H = Connected		

Note: To enable the EtherNet/IP monitor function, set the "Network Status Indication" field to either "Two ends network monitor with each other" or "Modbus TCP end monitors EtherNet/IP network status" in the SST-EE-CFG configuration software. To disable the EtherNet/IP monitor function, set this field to either "EtherNet/IP end monitors Modbus TCP network status" or "No Indication".

7 EtherNet/IP Connection Parameters

Connection parameters the gateway provides are as below:

- Input bytes number Instance102, range 5-496 bytes, the default value is 496 bytes.
- Output bytes number Instance 101, range 1-492 bytes, the default value is 492 bytes.
- Input bytes number Instance202, range 5-2004 bytes, the default value is 2004 bytes.
- Output bytes number Instance 201, range 1-2000 bytes, the default value is 2000 bytes.
- 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.

Note: The following example shows how to enter the configuration parameters in Studio 5000 Logix:

New Module

Type: ETHERNET-MODULE Generic Ethernet Module
 Vendor: Rockwell Automation/Allen-Bradley
 Parent: ENET
 Name: SSTGateway
 Description:
 Comm Format: Data - DINT
 Address / Host Name
☒ IP Address: 192 . 168 . 0 . 10
☐ Host Name:
☒ Open Module Properties

Connection Parameters

	Assembly Instance:	Size:	
Input:	102	124	(32-bit)
Output:	101	123	(32-bit)
Configuration:	113	10	(8-bit)
Status Input:			
Status Output:			

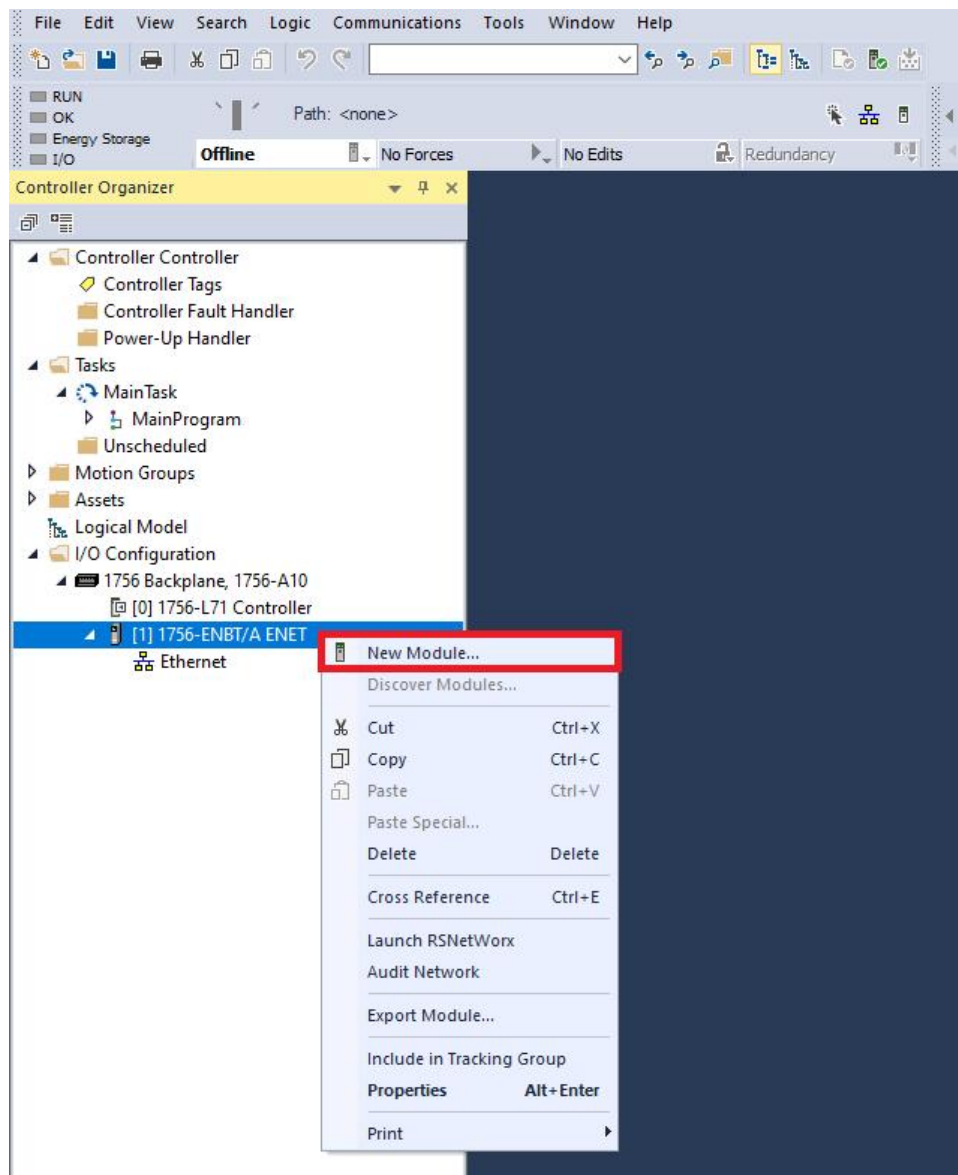
OK Cancel Help

The data size configured in Studio 5000 Logix must match the data size configured in the SST-EE-CFG configuration software. For example, if the input data size configured in the SST software is 496 bytes, and if Studio 5000 Logix is using DINT (32-bit), then the input data size must be set to 124 ($496 \times 8/32 = 124$).

7.1 Implicit I/O Messaging Connection Method (Recommended)

The following Studio 5000 Logix example will show how to connect using Implicit I/O Messaging.

First, right click on the EtherNet/IP scanner module and click "New Module", as shown below:

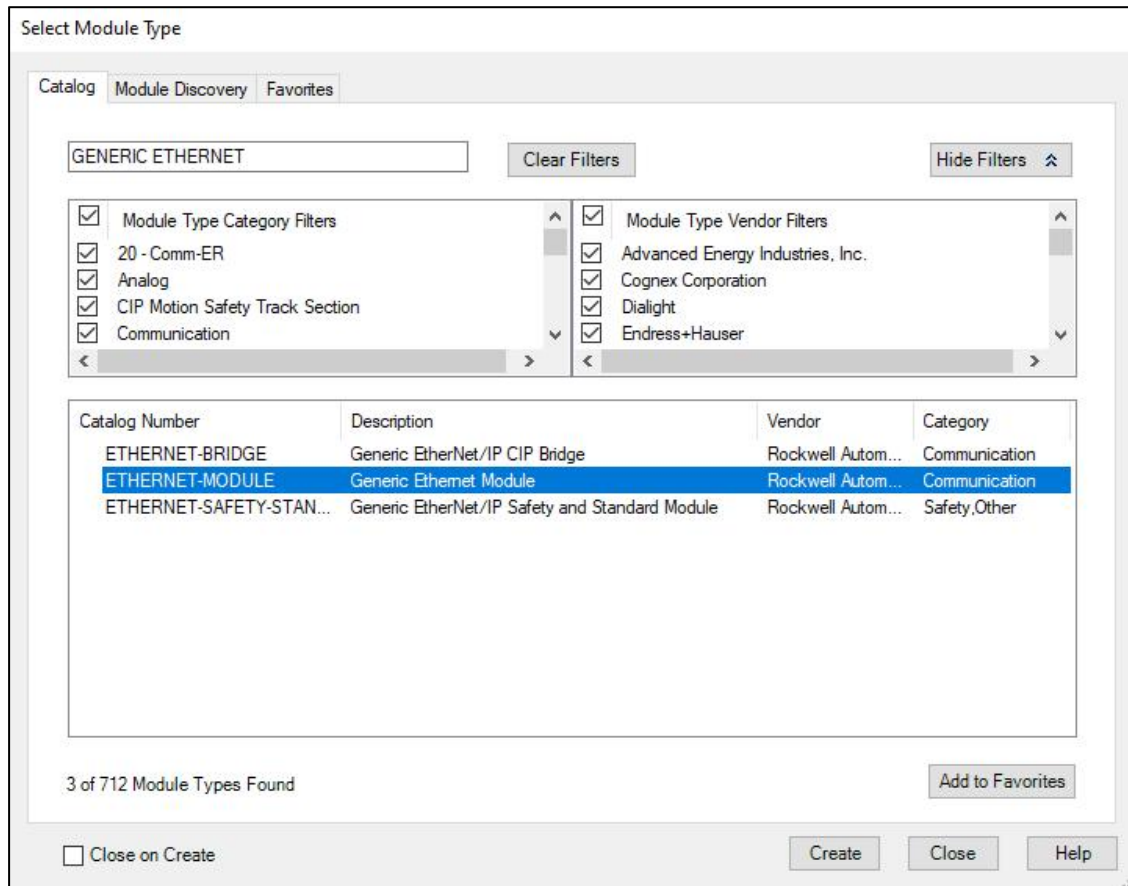


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In the pop-up dialog box, search for "GENERIC ETHERNET", choose "ETHERNET-MODULE", and click "Create" as shown below:



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

The screenshot shows the 'New Module' dialog box. On the left, fields include Type (ETHERNET-MODULE Generic Ethernet Module), Vendor (Rockwell Automation/Allen-Bradley), Parent (ENET), Name (SSTGateway), Description, Comm Format (Data - DINT), and Address / Host Name (IP Address: 192.168.0.10). On the right, the 'Connection Parameters' section includes Assembly Instance, Input, Output, Configuration, and Status Input, each with a corresponding Size (124, 123, 10, and empty). Callouts indicate: 'Set the device name.' for the Name field, 'Set the Connection Parameters. Please refer to Chapter 7.' for the Connection Parameters section, and 'IP address of the SST gateway.' for the IP Address field. At the bottom, there is a checkbox for 'Open Module Properties' and buttons for 'OK', 'Cancel', and 'Help'.

In the image above, the module information needs to be configured, which includes the following:

- Name:** The name of the added EtherNet/IP device module.
- Comm Format:** Configure data types such as DINT, INT, SINT, REAL and etc. After confirmation, this cannot be changed. To change data types, a new module must be created.
- IP Address:** Set the IP address of the added EtherNet/IP device module (The IP address of GT200-MT-EI, which is configured by the software SST-EE-CFG).
- Connection Parameters:** Set the Connection Parameters for communication. For more details, please refer to the beginning of [Chapter 7](#).

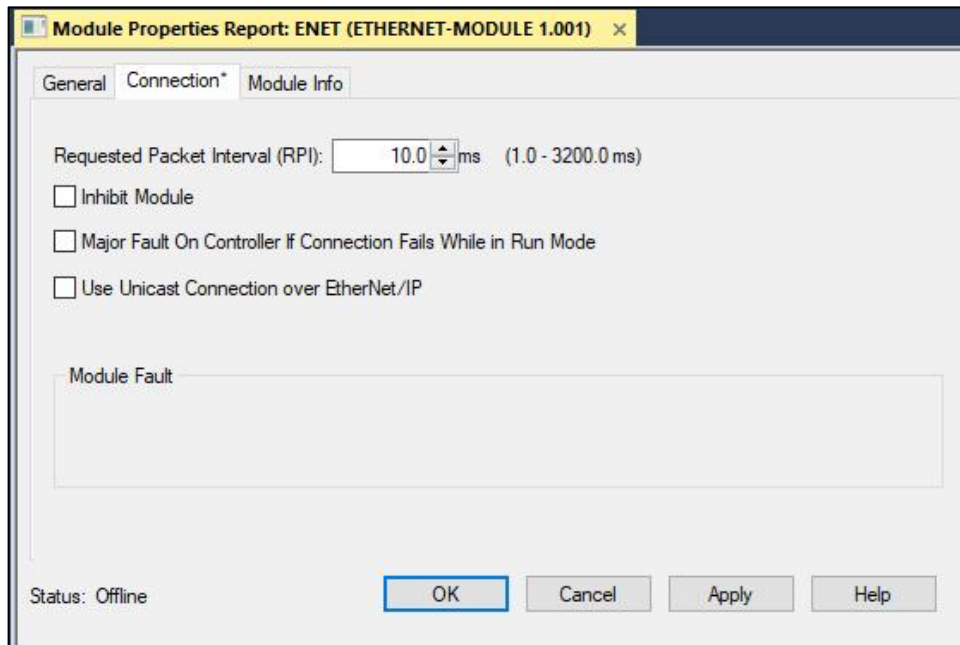
Note: "Size" (configured bytes) in the image above should be the consistent with relevant input and output bytes of the instance in the above chapter.

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Click "OK", and set the 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.

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To view the output data, first double click the "Controller Tags" tree. Then expand the "SSTGateway:O" tag as shown below:

The screenshot displays the SST Automation software interface. On the left, the 'Controller Organizer' tree is expanded to show 'Controller Tags'. Under 'Controller Tags', the 'SSTGateway:O' tag is selected. The main window shows a table of tags for 'SSTGateway:O'. The table has columns for Name, Value, Force Mask, Style, Data Type, Description, and Constant. The tags are listed as SSTGateway:O.Data[0] through SSTGateway:O.Data[28]. All values are 0, and all data types are DINT[124].

Name	Value	Force Mask	Style	Data Type	Description	Constant
SSTGateway:O.Data[0]	0		Decimal	DINT[124]		
SSTGateway:O.Data[1]	0		Decimal	DINT		
SSTGateway:O.Data[2]	0		Decimal	DINT		
SSTGateway:O.Data[3]	0		Decimal	DINT		
SSTGateway:O.Data[4]	0		Decimal	DINT		
SSTGateway:O.Data[5]	0		Decimal	DINT		
SSTGateway:O.Data[6]	0		Decimal	DINT		
SSTGateway:O.Data[7]	0		Decimal	DINT		
SSTGateway:O.Data[8]	0		Decimal	DINT		
SSTGateway:O.Data[9]	0		Decimal	DINT		
SSTGateway:O.Data[10]	0		Decimal	DINT		
SSTGateway:O.Data[11]	0		Decimal	DINT		
SSTGateway:O.Data[12]	0		Decimal	DINT		
SSTGateway:O.Data[13]	0		Decimal	DINT		
SSTGateway:O.Data[14]	0		Decimal	DINT		
SSTGateway:O.Data[15]	0		Decimal	DINT		
SSTGateway:O.Data[16]	0		Decimal	DINT		
SSTGateway:O.Data[17]	0		Decimal	DINT		
SSTGateway:O.Data[18]	0		Decimal	DINT		
SSTGateway:O.Data[19]	0		Decimal	DINT		
SSTGateway:O.Data[20]	0		Decimal	DINT		
SSTGateway:O.Data[21]	0		Decimal	DINT		
SSTGateway:O.Data[22]	0		Decimal	DINT		
SSTGateway:O.Data[23]	0		Decimal	DINT		
SSTGateway:O.Data[24]	0		Decimal	DINT		
SSTGateway:O.Data[25]	0		Decimal	DINT		
SSTGateway:O.Data[26]	0		Decimal	DINT		
SSTGateway:O.Data[27]	0		Decimal	DINT		
SSTGateway:O.Data[28]	0		Decimal	DINT		

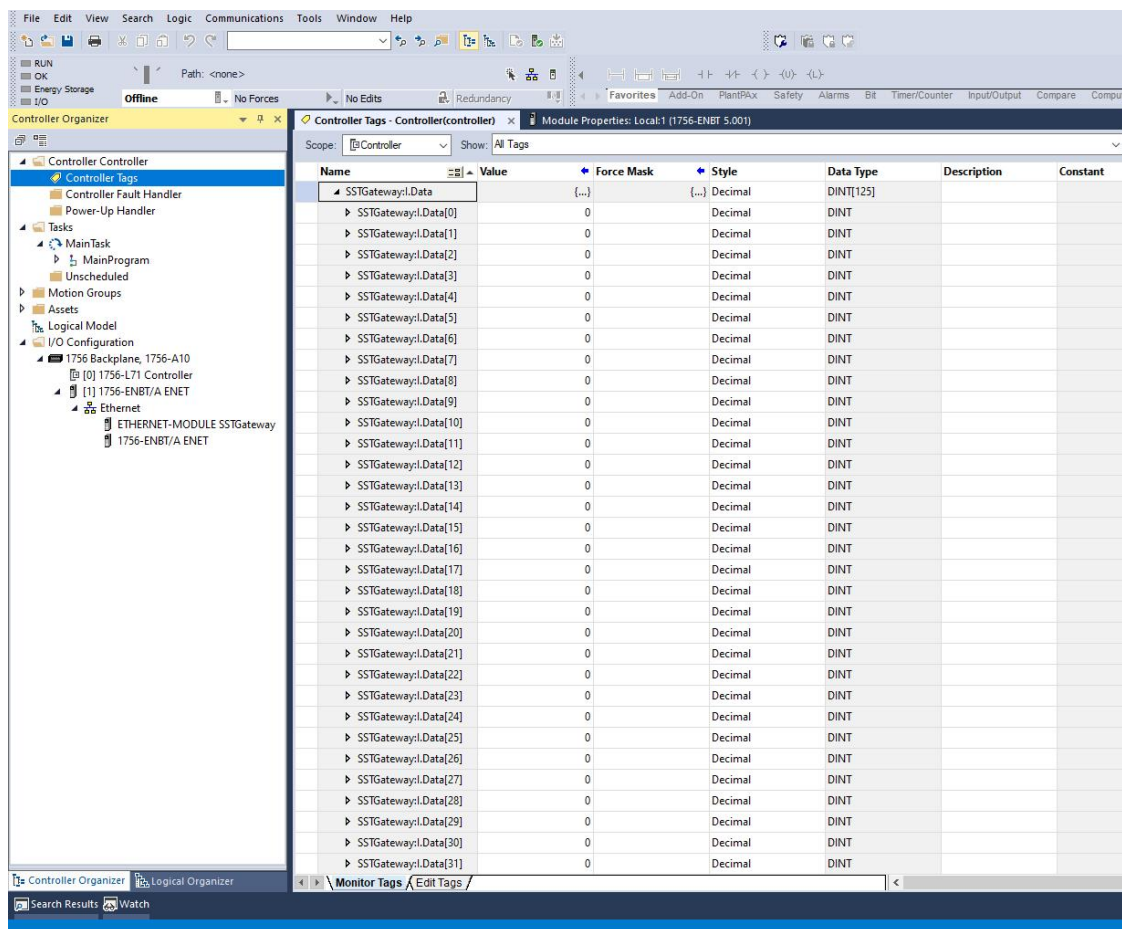
The SSTGateway:O data tag represents the corresponding output data addresses of the SST Gateway.

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To view the input data, expand the "SSTGateway: I" tag as shown below:



The SSTGateway:I data tag represents the corresponding input data addresses of the SST Gateway.

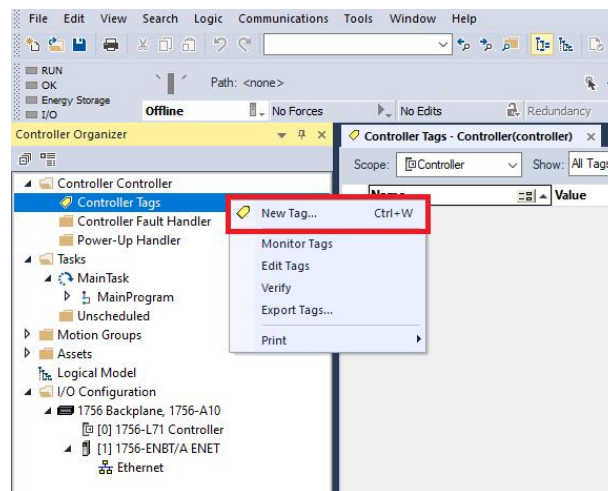
Please note that the first 4 input bytes are used to display the status bytes of the SST Gateway. See [Chapter 6](#) for more details.

7.2 Explicit MSG Connection Method

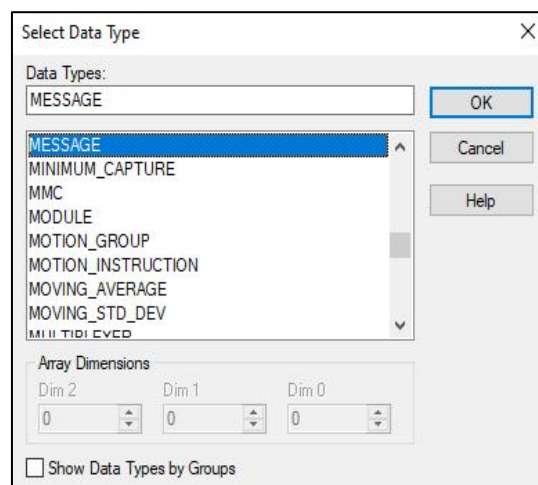
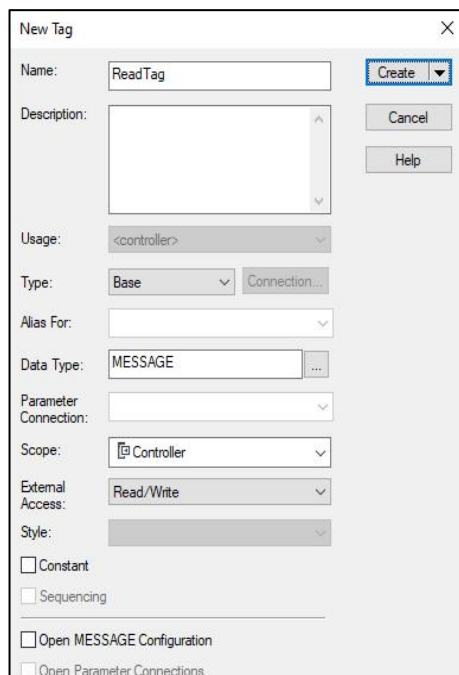
The following Studio 5000 Logix example will describe how to read/write EtherNet/IP data using explicit MSG messaging.

7.2.1 Read MSG Instruction Block

To start, create a new project in "Offline" mode. Then under "Controller Tags", add two new tags named "ReadTag" and "ReadData" as shown below:



Set the data type of "ReadTag" as "MESSAGE":

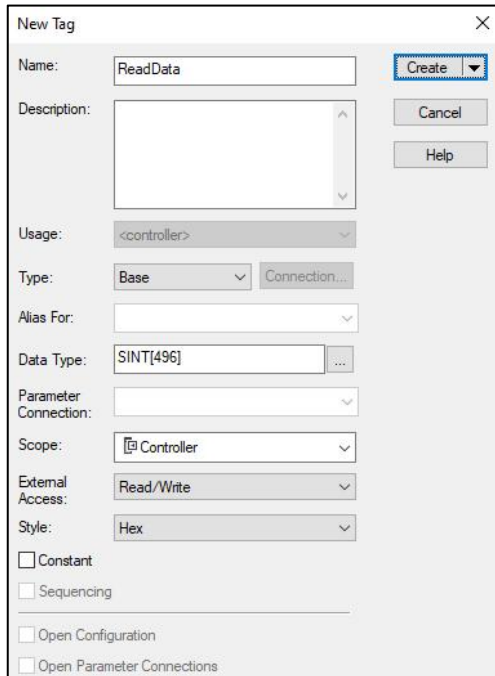


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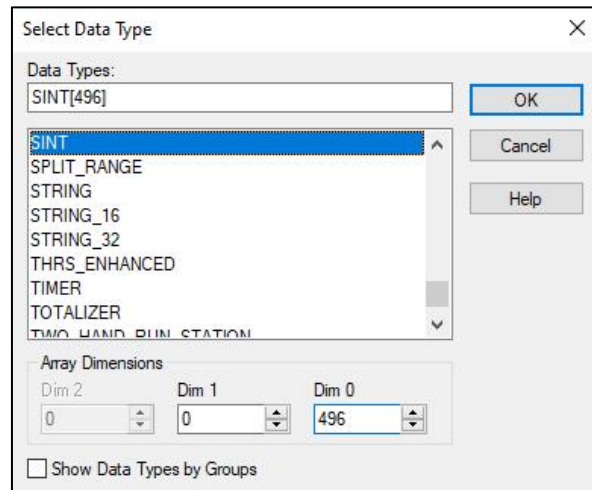
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Set the data type of "ReadData" as "SINT", then set the Array Dimension "Dim 0" to match the Input Data Size. Refer to the connection parameters from the beginning of [Chapter 7](#):



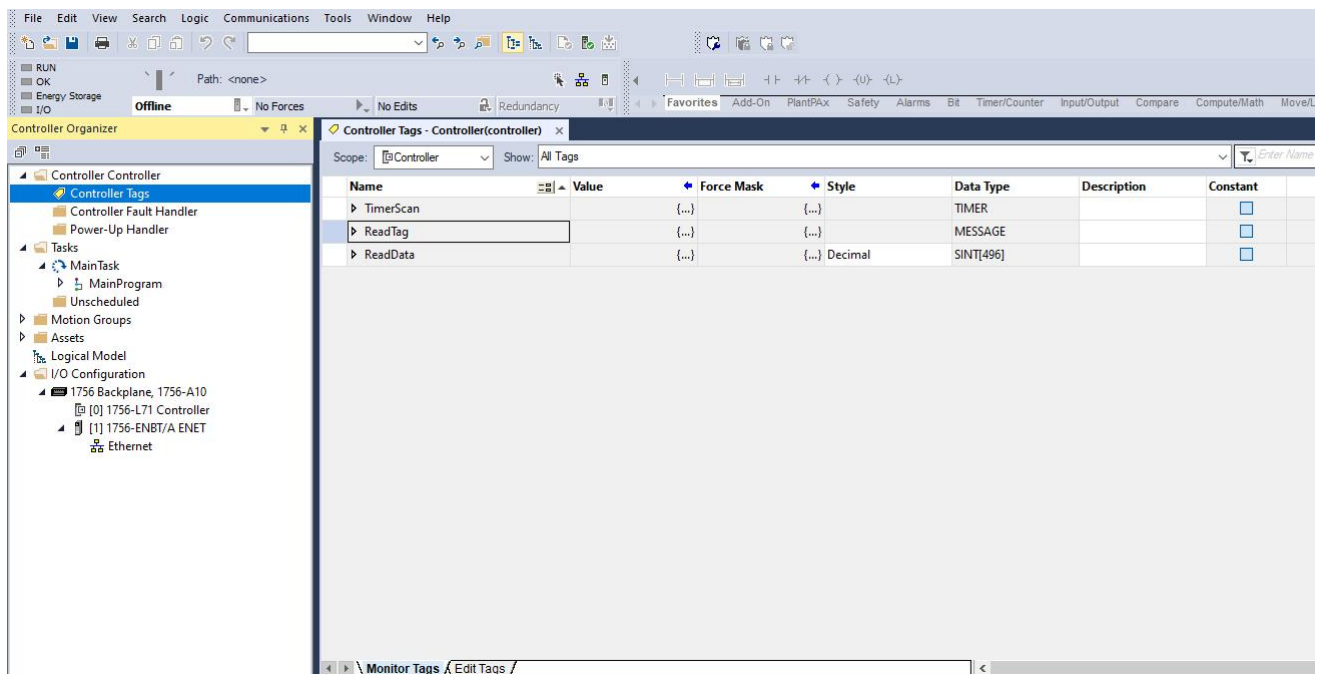
The "New Tag" dialog box is shown with the following settings:

- Name: ReadData
- Description: (empty)
- Usage: <controller>
- Type: Base
- Alias For: (empty)
- Data Type: SINT[496]
- Parameter Connection: (empty)
- Scope: Controller
- External Access: Read/Write
- Style: Hex
- Constant: ☐
- Sequencing: ☐
- Open Configuration: ☐
- Open Parameter Connections: ☐



The "Select Data Type" dialog box is shown with the following settings:

- Data Types: SINT[496]
- Array Dimensions: Dim 2: 0, Dim 1: 0, Dim 0: 496
- Show Data Types by Groups: ☐



The screenshot shows the SST Automation software interface. The "Controller Organizer" on the left lists the following structure:

- Controller Controller
 - Controller Tags
 - Controller Fault Handler
 - Power-Up Handler
 - Tasks
 - MainTask
 - MainProgram
 - Unscheduled
 - Motion Groups
 - Assets
 - Logical Model
 - I/O Configuration
 - 1756 Backplane, 1756-A10
 - [0] 1756-L71 Controller
 - [1] 1756-ENBT/A ENET
 - Ethernet

The "Controller Tags - Controller(controller)" window is open, showing a table of tags:

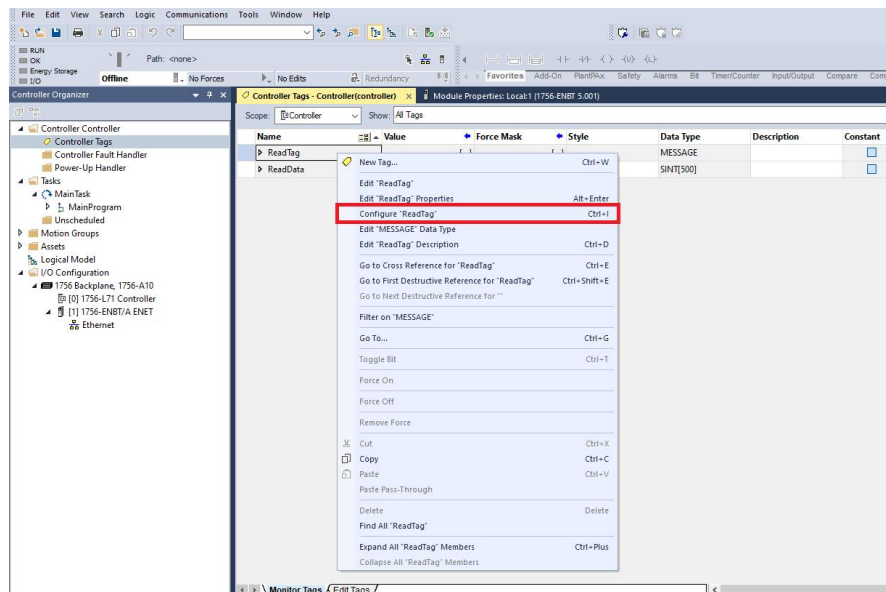
Name	Value	Force Mask	Style	Data Type	Description	Constant
TimerScan	{...}	{...}	{...}	TIMER		☐
ReadTag	{...}	{...}	{...}	MESSAGE		☐
ReadData	{...}	{...}	{...} Decimal	SINT[496]		☐

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Right click on "ReadTag", select "Configure 'ReadTag'" as shown below:



In pop-up window, configure the following settings:

Message Type: CIP Generic.

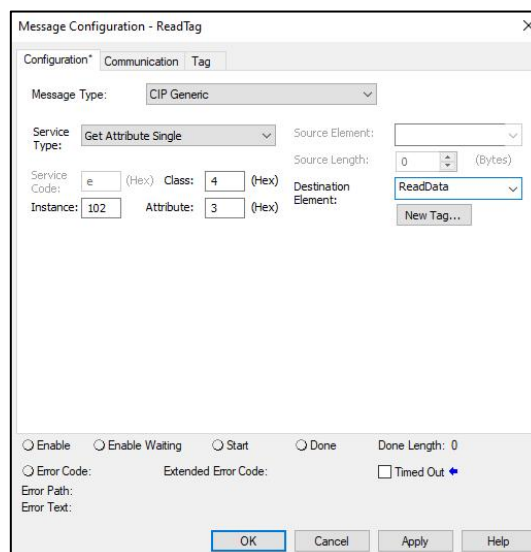
Service Type: Select "Get Attribute Single". The relevant service code will become "e (Hex)".

Class: 4 (Hex)

Instance: 102

Attribute: 3 (Hex)

Destination: Select the "ReadData" tag. The obtained data will be saved in this tag.



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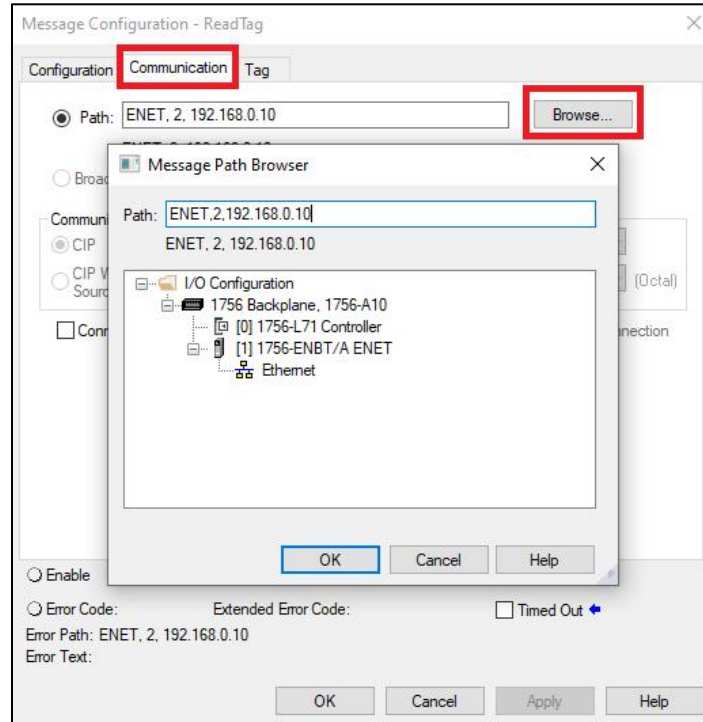
User Manual

Select the "Communication" tab and click the "Browse" button. Then input the network path to connect to the GT200-MT-EI.

Enter the network path in the following format:

[EtherNet/IP Interface Name], 2 (Ethernet Communication), [GT200-MT-EI IP Address]

Then click "OK" to confirm:



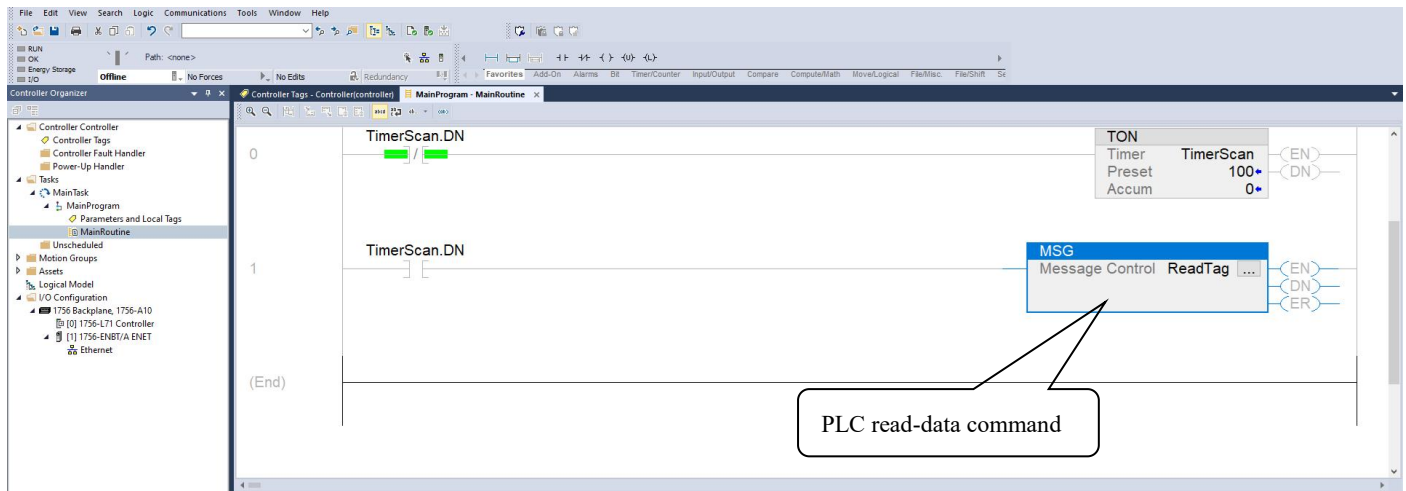
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Add a "MSG" command and select "ReadTag" as "Message Control" in the "MainRoutine" of "MainProgram" as shown in the image below. This is a simple command which can send a read request. The user still needs to add some logic commands to trigger this command in common program. For further details, please refer to Studio 5000 Logix reference material.

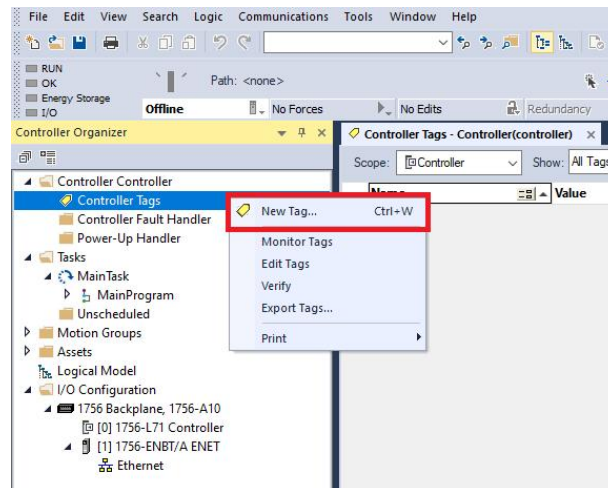
Download the program to the PLC and set PLC into "Online" state.



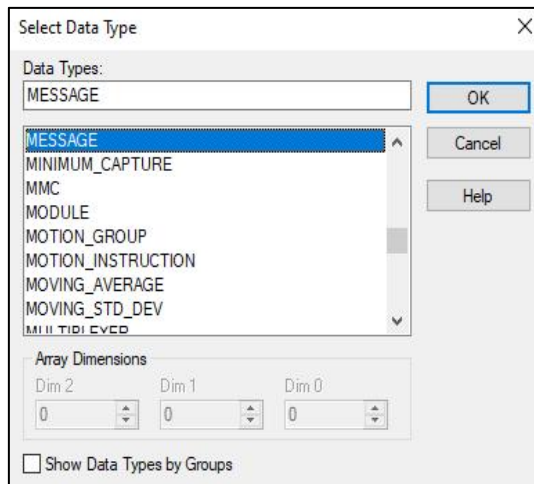
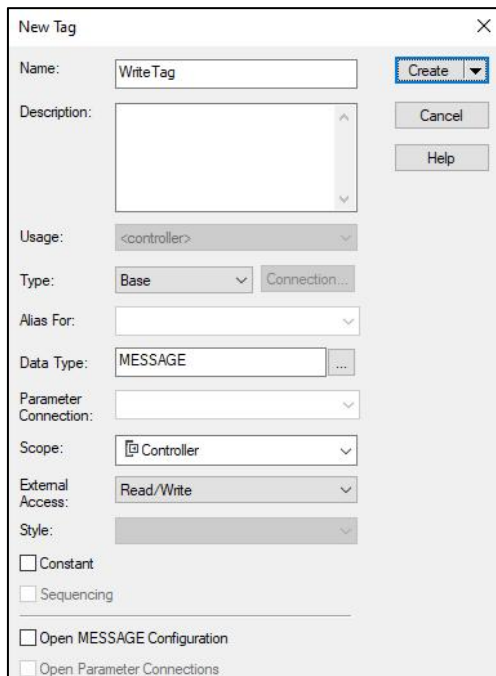
Click "Control Tags" and select "Monitor Tags". Expand "ReadData" to see that PLC can read Modbus TCP data through the GT200-MT-EI gateway.

7.2.2 Write MSG Instruction

Switch to "Offline" mode and add two new tags "WriteTag" and "WriteData", under the "Controller Tags". Define the type of "WriteTag" as "MESSAGE" and "WriteData" as "SINT[500]" as shown below:



Set the data type of "WriteTag" as "MESSAGE":

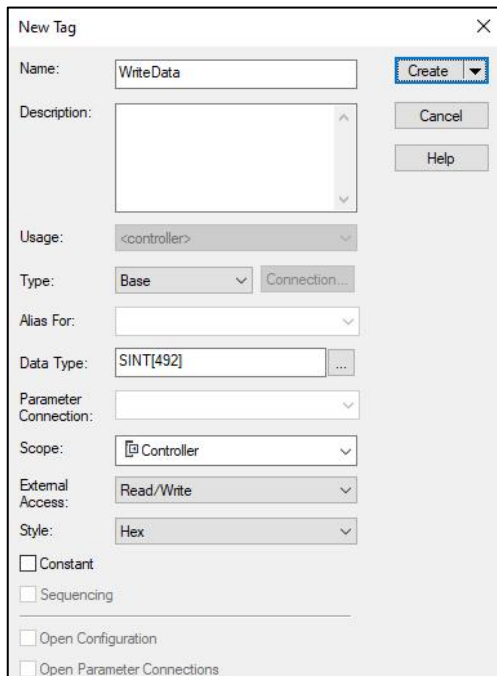


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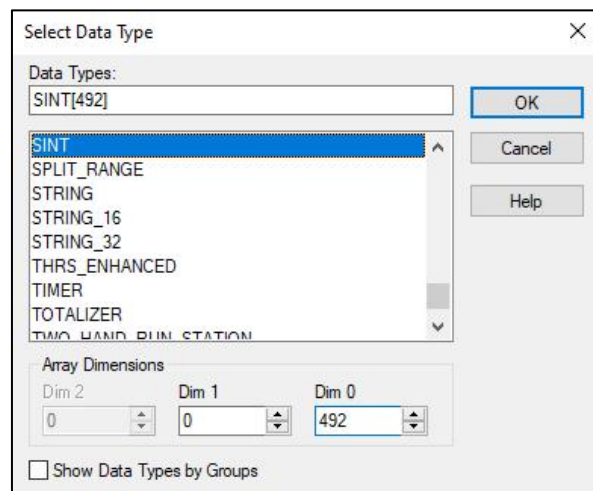
User Manual

Set the data type of "WriteData" as "SINT", then set the Array Dimension "Dim 0" to match the Output Data Size. Refer to the connection parameters from the beginning of [Chapter 7](#):



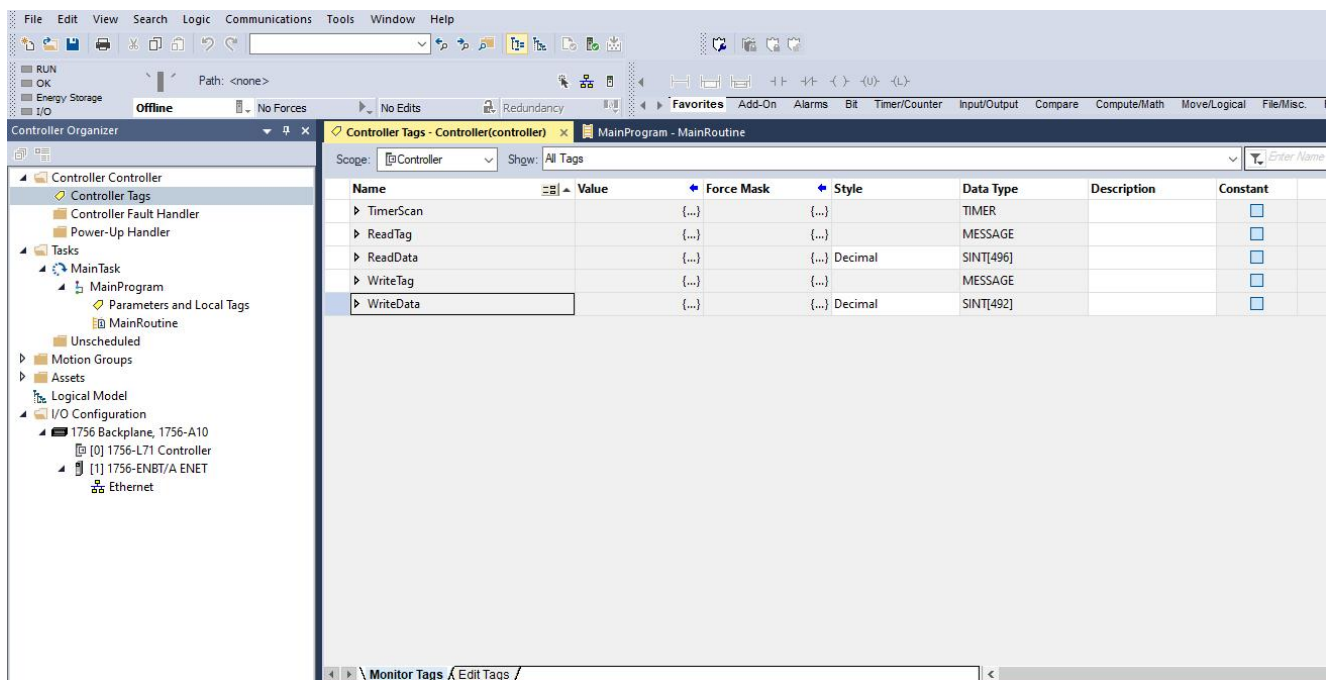
The "New Tag" dialog box is shown with the following settings:

- Name: WriteData
- Description: (empty)
- Usage: <controller>
- Type: Base
- Alias For: (empty)
- Data Type: SINT[492]
- Parameter Connection: (empty)
- Scope: Controller
- External Access: Read/Write
- Style: Hex
- Constant: ☐
- Sequencing: ☐
- Open Configuration: ☐
- Open Parameter Connections: ☐



The "Select Data Type" dialog box is shown with the following settings:

- Data Types: SINT[492]
- Array Dimensions: Dim 2: 0, Dim 1: 0, Dim 0: 492
- Show Data Types by Groups: ☐



The screenshot shows the SST Automation software interface with the following components:

- File Edit View Search Logic Communications Tools Window Help
- Path: <none>
- Controller Organizer: Controller Controller, Controller Tags, Controller Fault Handler, Power-Up Handler, Tasks, MainTask, MainProgram, Parameters and Local Tags, MainRoutine, Unscheduled, Motion Groups, Assets, Logical Model, I/O Configuration, 1756 Backplane, 1756-A10, [0] 1756-L71 Controller, [1] 1756-ENBT/A ENET, Ethernet
- Controller Tags - Controller(controller) x MainProgram - MainRoutine
- Scope: Controller Shw: All Tags
- Table with columns: Name, Value, Force Mask, Style, Data Type, Description, Constant
- Table rows: TimerScan, ReadTag, ReadData, WriteTag, WriteData

Name	Value	Force Mask	Style	Data Type	Description	Constant
TimerScan		{...}	{...}	TIMER		☐
ReadTag		{...}	{...}	MESSAGE		☐
ReadData		{...}	{...} Decimal	SINT[496]		☐
WriteTag		{...}	{...}	MESSAGE		☐
WriteData		{...}	{...} Decimal	SINT[492]		☐

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Enter into the "Monitor Tags" interface and input some data in the "WriteData" tag. This data will be outputted to GT200-MT-EI through PLC. As shown in the image below, 0x10, 0x20, 0x30, 0x40, 0x50, 0x60, 0x70, 0x80 and 0x90 are the data that will be outputted.

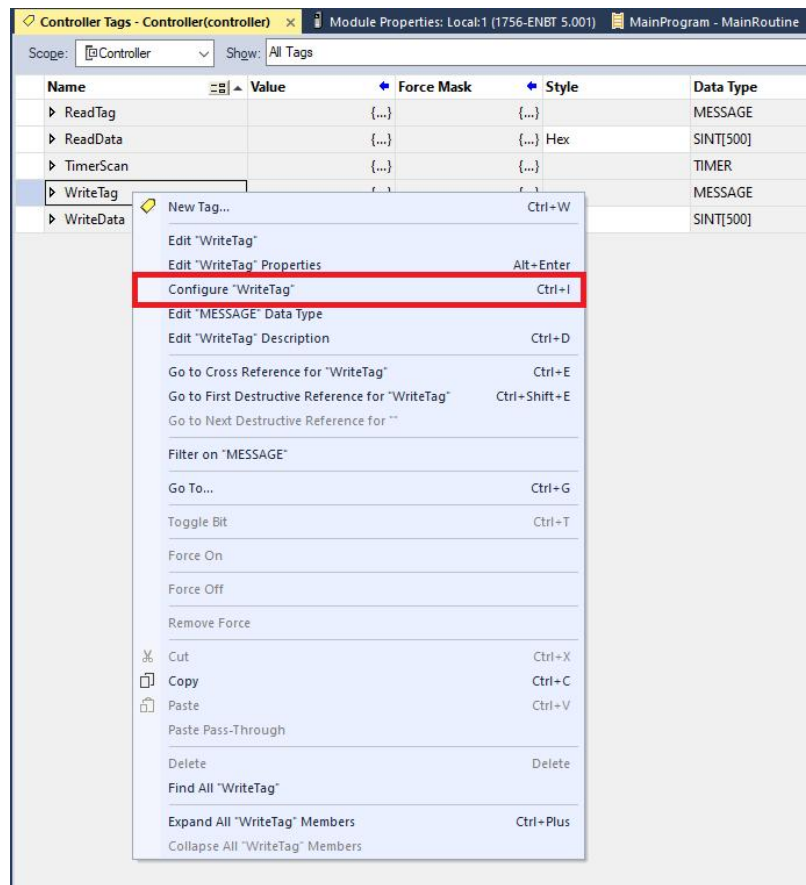
Controller Tags - Controller(controller) x MainProgram - MainRoutine						
Scope: Controller		Shgw: All Tags				
Name	Value	Force Mask	Style	Data Type	Description	
▶ TimerScan	{...}		{...}	TIMER		
▶ ReadTag	{...}		{...}	MESSAGE		
▶ ReadData	{...}		{...} Hex	SINT[496]		
▶ WriteTag	{...}		{...}	MESSAGE		
▲ WriteData	{...}		{...} Hex	SINT[492]		
▶ 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		

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Right click "WriteTag" and select "Configure "WriteTag" as shown below:





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In the new pop-up window, configure the following settings:

Message Type:	CIP Generic
Service Type:	Select "Set Attribute Single", and the relevant Service Code will become "10 (Hex)"
Class:	4 (Hex)
Instance:	101
Attribute:	3 (Hex)
Source Element:	Select "WriteData" tag, indicating that the data in the "WriteData" tag will become the data PLC outputs.
Source Length:	Use byte as unit, and this value should be less than or equal to the currently selecting bytes which instance represents (Configured bytes number in SST-EE-CFG).

Message Configuration - WriteTag

Configuration* Communication Tag

Message Type: CIP Generic

Service Type: Set Attribute Single

Source Element: WriteData

Source Length: 492 (Bytes)

Service Code: 10 (Hex) Class: 4 (Hex) Instance: 101 Attribute: 3 (Hex)

Destination Element:

New Tag...

☐ Enable ☐ Enable Waiting ☐ Start ☐ Done Done Length: 0

☐ Error Code: Extended Error Code: ☐ Timed Out

Error Path:

Error Text:

OK Cancel Apply Help

Select the "Communication" tab and click the "Browse" button. Then input the network path to connect to the GT200-MT-EI.

Enter the network path in the following format:

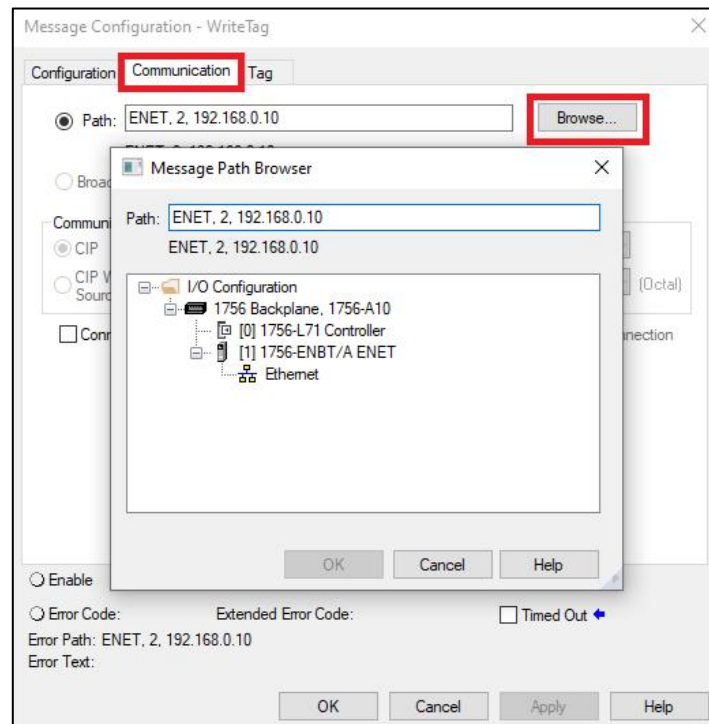
[EtherNet/IP Interface Name], 2 (Ethernet Communication), [GT200-MT-EI IP Address]

Then click "OK" to confirm:

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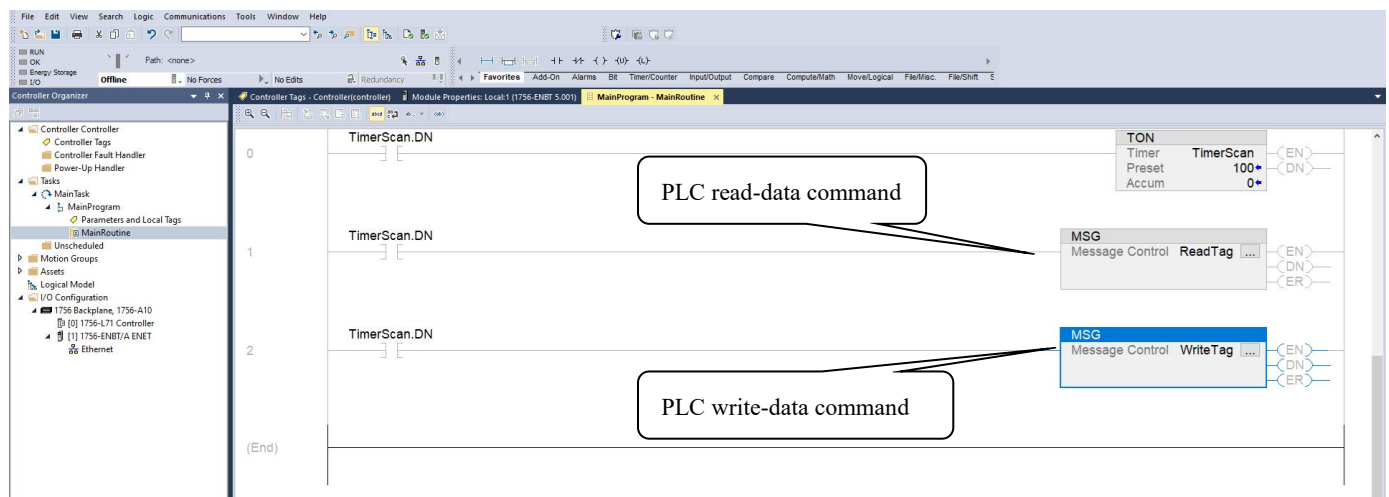
Modbus TCP/EtherNet IP Gateway

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Add a "MSG" command in the "MainRoutine" of "MainProgram" and select "WriteTag" as "Message Control" as shown below.

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

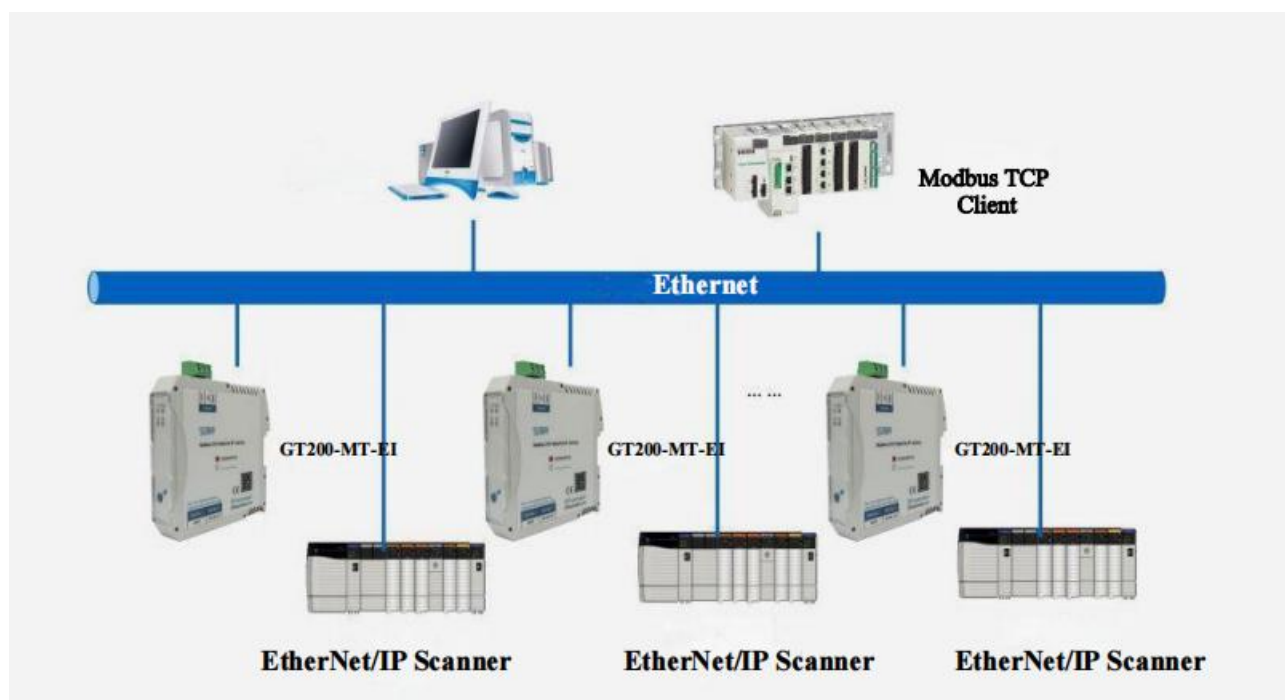


8 Typical Application

GT200-MT-EI can connect Modbus TCP Server 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.

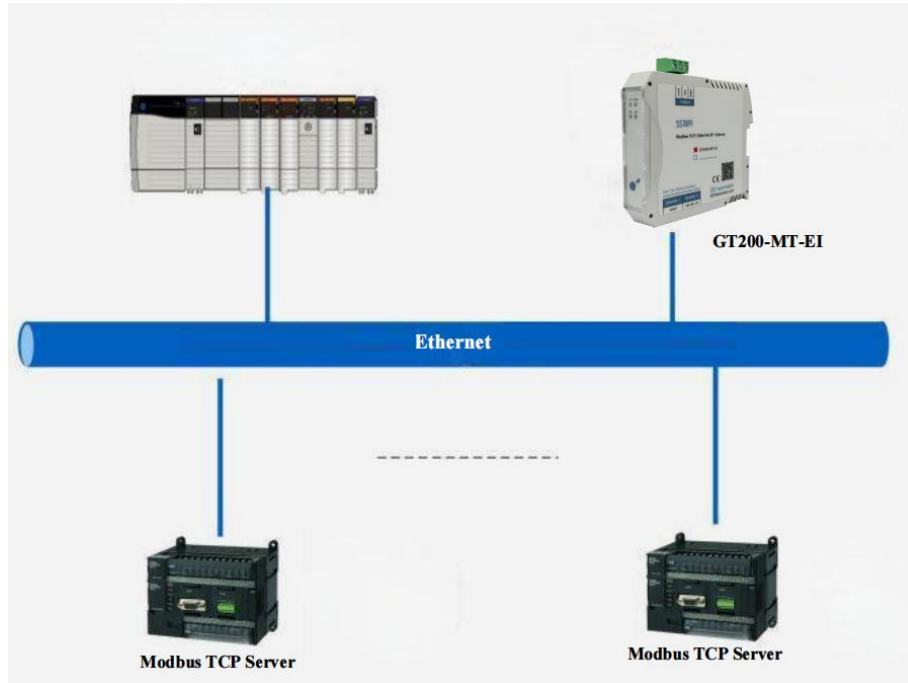
8.1 EtherNet/IP Master PLCs interconnect with Modbus TCP master PLCs



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 adapter and Modbus TCP Server.

8.2 Modbus TCP Server Devices Connect To EtherNet/IP Network



In this application case, GT200-MT-EI gateway needs to be configured as EtherNet/IP adapter and Modbus TCP master. EtherNet/IP master devices, Modbus TCP Server 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 Server to EtherNet/IP master through data mapping of GT200-MT-EI.