PROFIBUS DP / EtherNet/IP Gateway
GT200-DPM-EI

User Manual

V 1.3

SST Automation

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Important Information

Warning

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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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Catalog

1 Product Overview 1
1.1 Product Function 1
1.2 Product Feature 1
1.3 Technical Specifications 1
1.4 Revision History 2
2 Hardware Descriptions 3
2.1 Product Appearance 3
2.2 Indicators 4
2.3 Interfaces 4
2.3.1 Ethernet Interface 4
2.3.2 PROFIBUS DP Interface 5
2.3.3 RS232 Interface 5
2.3.4 Mini USB B Interface 5
2.3.5 Configuration Switch 6
2.3.6 Power Interface 6
3 Hardware Installation 7
3.1 Mechanical Dimensions 7
3.2 Mounting Method 7
4 Quick Start Guide 8
5 Working Principle 9
6 Configure Ethernet Parameters 10
6.1 SST-EPM-CFG Software Instructions 10
6.2 Software Interface Description 10
6.3 Function Descriptions 11
6.3.1 Configuration Window 11
6.3.2 Upload Configuration 12
6.3.3 Download Configuration 12
6.3.4 Save Configuration Project 13
6.3.5 Loading configuration project 14
6.3.6 Export Excel 14
7 Configure PROFIBUS DP Parameters 15
7.1 Install SYCON.net 15
7.2 Start to Configure 19
7.3 Configure DP Master Parameters 21
7.4 Add PROFIBUS DP Devices 22
7.4.1 Configure Devices Parameters 24
7.4.2 Set the Station Address 26
7.5 Download the Configuration 27
8 Communication with EtherNet/IP Scanner 32

8.1 EtherNet/IP Communication Parameters....32
8.2 Read/Write Data by IO Messaging (Recommend)....33
8.3 Read/Write Data by MSG....37
8.3.1 Read Data....37
8.3.2 Write Data....41

1 Product Overview

1.1 Product Function

The GT200-DPM-EI gateway can connect PROFIBUS DP devices to EtherNet/IP network, and implement data communication between EtherNet/IP and PROFIBUS DP. It acts as a PROFIBUS DP master and a EtherNet/IP adapter.

1.2 Product Feature

- Wide Application: Implement the connection between the PROFIBUS DP devices and the EtherNet/IP network. Connects the PROFIBUS DP devices to Rockwell or Omron PLC.
- Easy to Use: Users don't need the details of PROFIBUS DP and EtherNet/IP protocols, just refer to this manual and application examples, finish network configuration and establish the communication in a short time.
- Transparent Communication: Able to establish transparent transmission between PROFIBUS DP and EtherNet/IP.

1.3 Technical Specifications

[1] Supports PROFIBUS DP V0 Master functions, according to EN50170 and JB/T 10308.3-2001.

[2] Up to 492 bytes input and 492 bytes output at PROFIBUS DP side.

[3] 2.5KV photoelectric isolation on both PROFIBUS DP interface and EtherNet/IP interface.

[4] Acts as adapter in the EtherNet/IP network, and supports ODVA standard EtherNet/IP protocol.

[5] Up to 492 bytes input and 492 bytes output at EtherNet/IP side.

[6] Two Ethernet RJ45 ports, baud rate adaptive.

[7] Power supply: 9~30 VDC, maximum 4W.

[8] Operating temperature: -4℉~140℉(-20℃ ~ 60 ℃); Humidity: 5% ~ 95% (non-condensing).

[9] External dimensions (W*H*D): 34mm * 116mm * 107.4mm / 1.4 in * 4.6 in * 4.3 in

[10] Installation: 1.38in (35mm) DIN Rail.

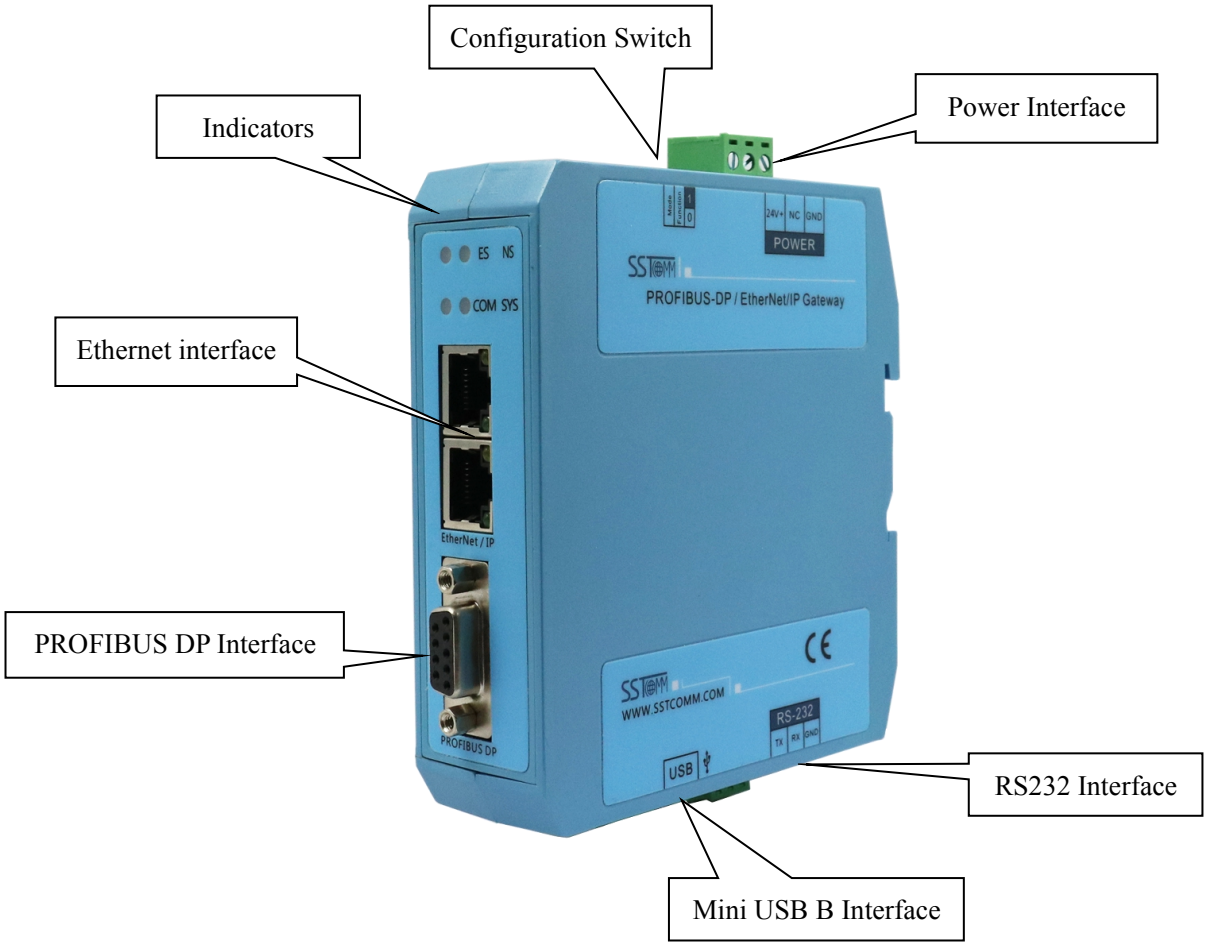
[11] Protection level: IP20.

1.4 Revision History

Revision	Date	Chapter	Description
V1.1	8/17/2017	ALL	New release
V1.3	7/15/2021	ALL	Version updated

2 Hardware Descriptions

2.1 Product Appearance



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

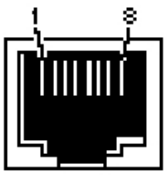
2.2 Indicators

Indicator	State	Description
COM	Green	PROFIBUS DP communication is normal
	Green blinking	More than one DP master are in the same network
	Red	At least one DP slave is disconnected
	OFF	No DP configuration or no IP address assigned in DHCP mode
SYS	Green	DP master initialized normally
	Green, blinking irregularly	Configuration lost
	Red, quick blinking	Hardware error
	OFF	No IP address assigned in DHCP mode
ES	Green	Network initialized normally
	Orange, slow blinking	Configuration mode, fixed IP address 192.168.0.10
	Orange, quick blinking	Bootload state
NS	Green	EtherNet/IP communication is normal
	Green blinking	No EtherNet/IP connection
	Orange, slow blinking	Configuration mode, fixed IP address 192.168.0.10
	Orange, quick blinking	Bootload state

2.3 Interfaces

2.3.1 Ethernet Interface

The two Ethernet interfaces are the RJ-45 socket, 10/100M adaptive.

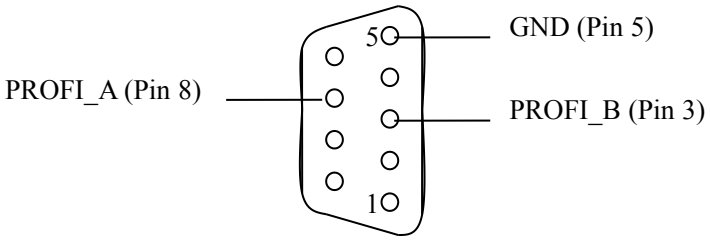


RJ-45 port

Pin	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-

2.3.2 PROFIBUS DP Interface

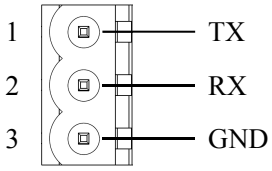
PROFIBUS DP wiring instructions as shown below:



Pin	Signal	Description
1	NC	Not connected
2	NC	Not connected
3	PROFI_B	Data P (B), **must be connected**
4	RTS	Request to send
5	GND	Isolated ground for +5VDC
6	PROFI_5V	Isolated +5VDC
7	NC	Not connected
8	PROFI_A	Data N (A), **must be connected**
9	NC	Not connected

2.3.3 RS232 Interface

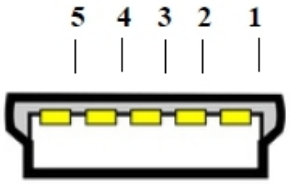
The RS232 interface can be used for PROFIBUS DP parameters configuration, connected to the computer.



Pin	Signal	Description
1	TX	Connected to RX of user device
2	RX	Connected to TX of user device
3	GND	Connected to GND of user device

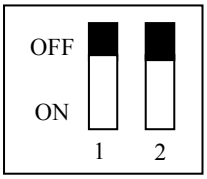
2.3.4 Mini USB B Interface

Mini USB B interface is defined as below:



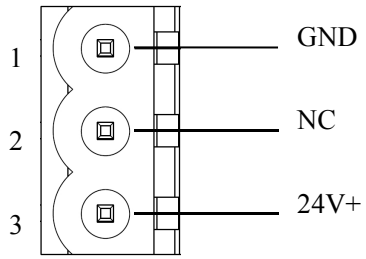
Pin	Name	Description
1	VBUS	+5V
2	D-	Data negative
3	D+	Data positive
4	IN	NC
5	GND	Signal Ground

2.3.5 Configuration Switch



Function (Bit 1)	Mode (Bit 2)	Description
Off	Off	Run mode, allow set the IP address of the gateway
Off	On	Configuration mode (fixed IP address 192.168.0.10)
On	Off	Run mode,forbidden to set the IP address
On	On	spare

2.3.6 Power Interface

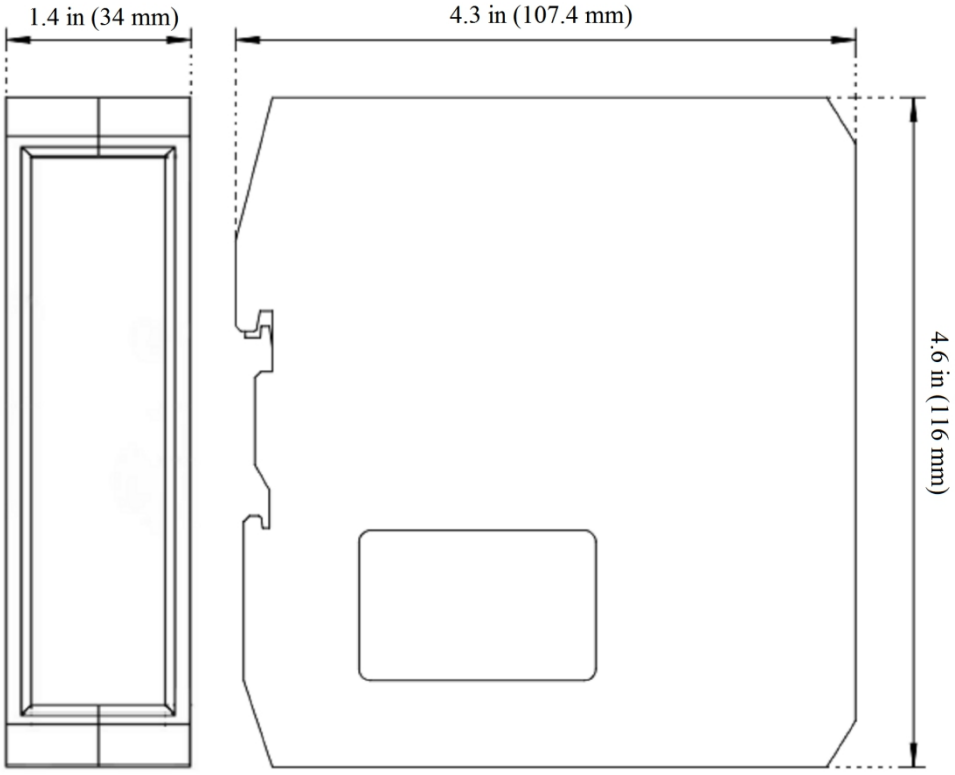


Pin	Description
1	Ground
2	Not connected
3	+24V DC

3 Hardware Installation

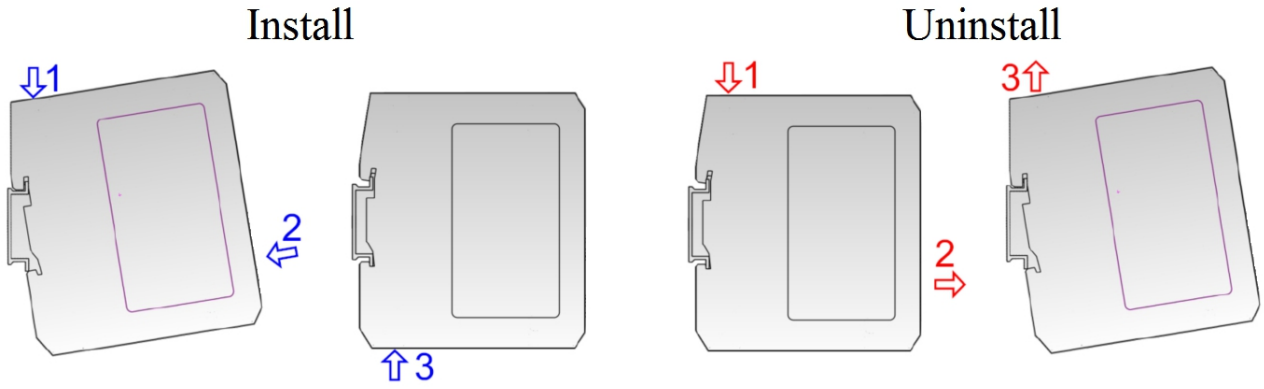
3.1 Mechanical Dimensions

Size (width * height * depth): 34mm * 116mm * 107.4mm / 1.4 in * 4.6 in * 4.3 in



3.2 Mounting Method

Use 13.8 in (35 mm) DIN Rail.



4 Quick Start Guide

Users can configure the GT200-DPM-EI work referring to the following steps:

1. Correctly connect the power supply and the communication interfaces of the GT200-DPM-EI, referring to chapter 2 and 3.

   Notes: Do not power on the devices before you confirm that the wiring is correct.

2. Install the configuration tools (downloaded at www.sstcomm.com). Configure the GT200-DPM-EI according to the application.

   (1) Configure the EtherNet/IP parameters with SST-EPM-CFG software, referring to chapter 7. Download the configuration by Ethernet cable.

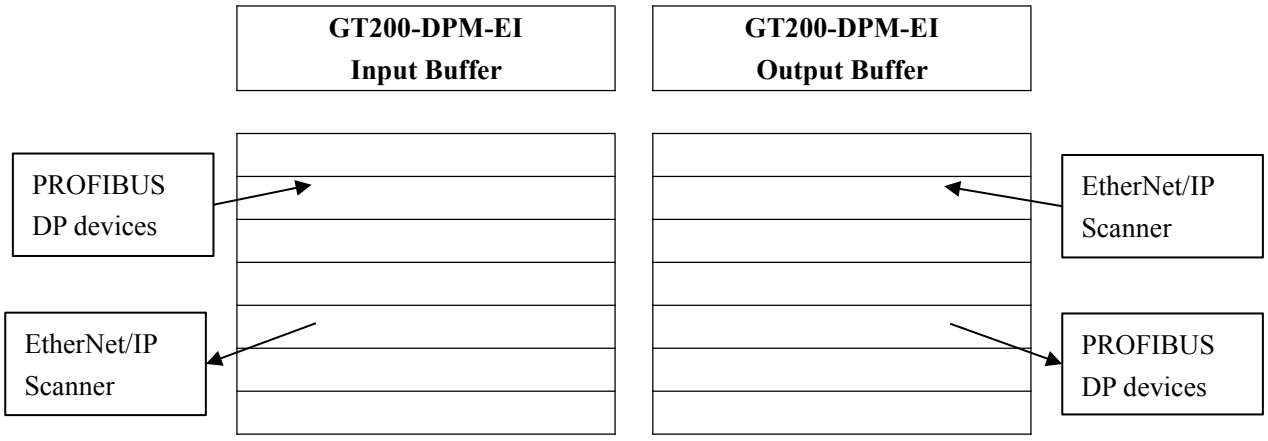
   (2) Configure the PROFIBUS DP parameters, referring to chapter 8. Download the configuration by the USB cable or RS-232 cable.

3. Connect the GT200-DPM-EI with the PROFIBUS DP devices and an EtherNet/IP scanner, then test the data transformation.

5 Working Principle

By creating the data conversion between the EtherNet/IP and PROFIBUS DP through mapping, there are two data buffers in the GT200-DPM-EI.

The gateway will write the data from the PROFIBUS DP devices to the network input buffer, then output to the corresponding EtherNet/IP Scanner by POLL I/O write command. At the same time gateway take the data from the output buffer and write to the PROFIBUS DP devices.



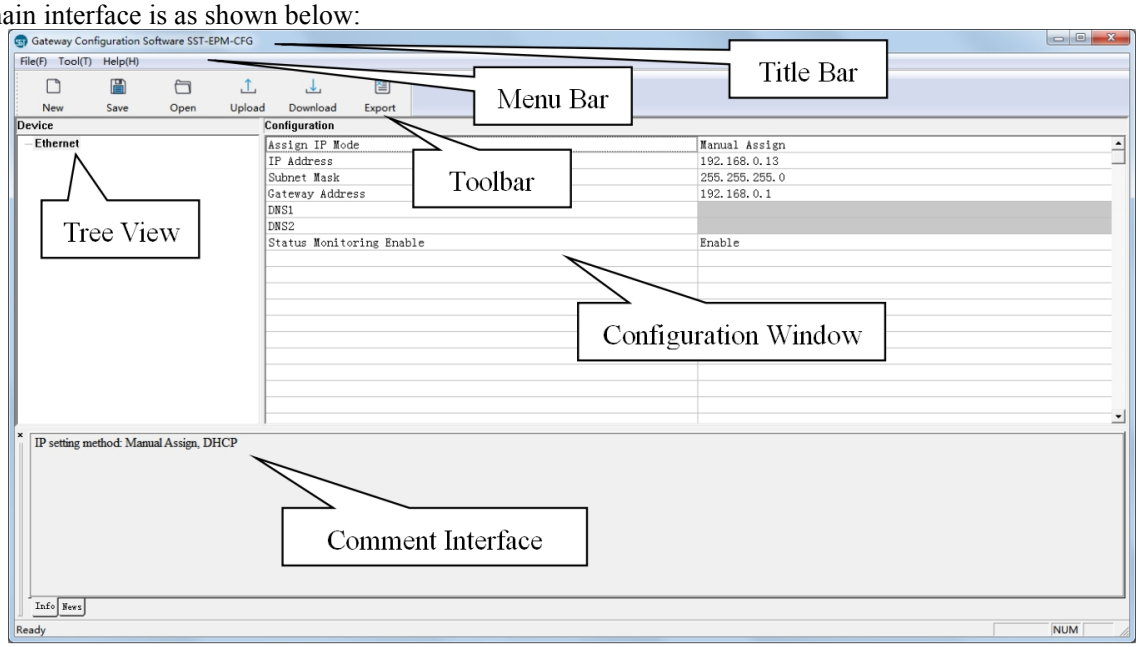
6 Configure Ethernet Parameters

6.1 SST-EPM-CFG Software Instructions

SST-EPM-CFG is a configuration software to configure GT200-DPM-EI parameters, based on Windows OS. Supported OS: WinXP, Win7, Win8, Win10.

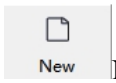
6.2 Software Interface Description

The main interface is as shown below:



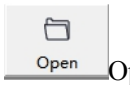
Toolbar:

The toolbar provides icon shortcuts to major functions.

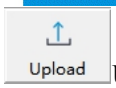


New: Create a new configuration project.

Save: Save the current configuration.

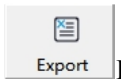


Open: Open a configuration project.



Upload: Upload the configuration from the gateway.

Download: Download the configuration to the gateway.

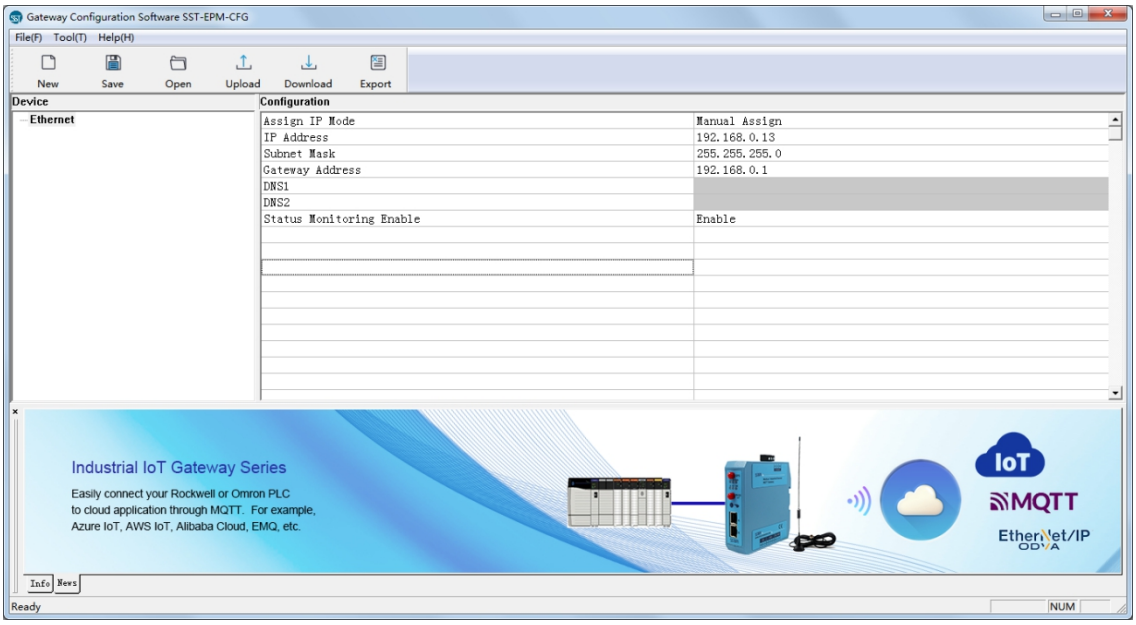


Export: Export the configuration to an Excel Table.

6.3 Function Descriptions

6.3.1 Configuration Window

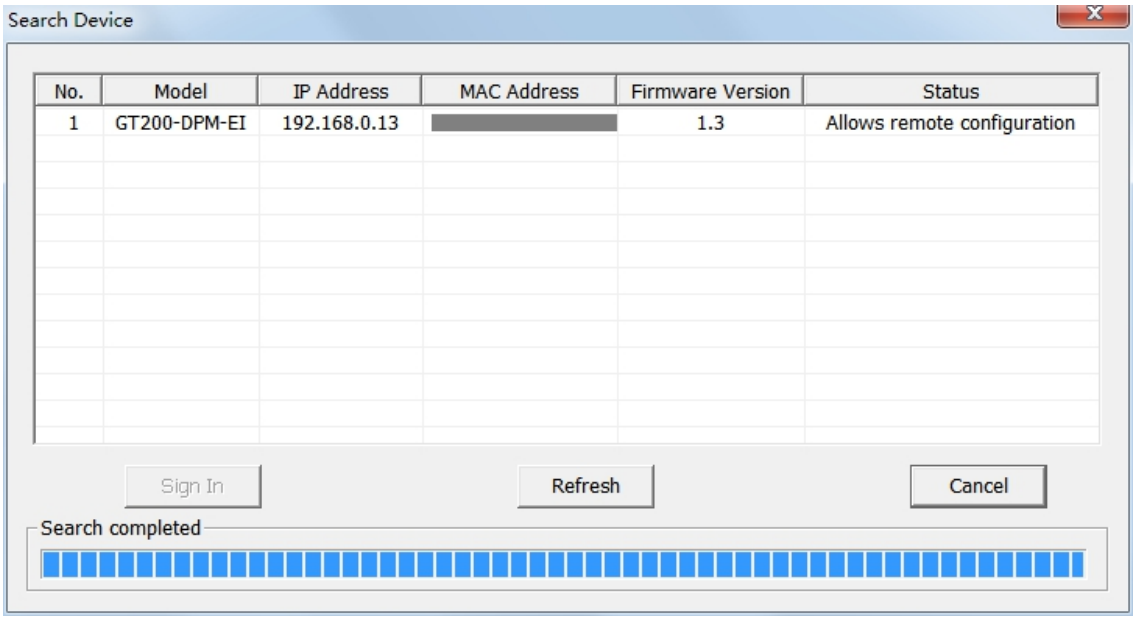
On the device view interface, click Ethernet. The configuration view interface is displayed as follows:
Notes: All gray parts are non-configurable items.



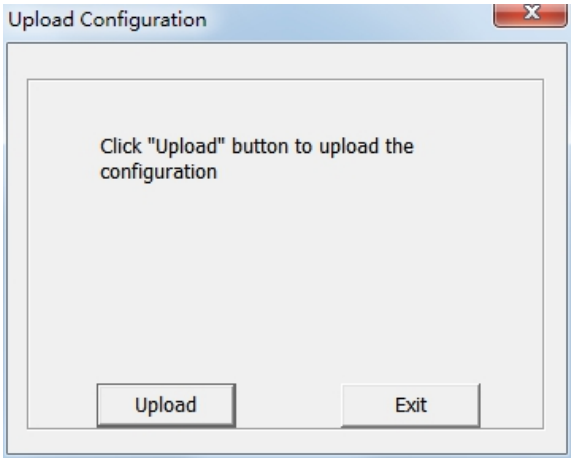
Assign IP Mode: Manual Assign, DHCP optional.
IP Address: The IP address of the GT200-DPM-EI.
Subnet Mask: The subnet mask of the GT200-DPM-EI.
Default Gateway:The gateway address of the GT200-DPM-EI.
DNS1: Default 0.0.0.0.
DNS2: Default 0.0.0.0.
Status Monitoring Enable: When enabled, the status of the DP slave is obtained. If it is off, its status will not be monitored.

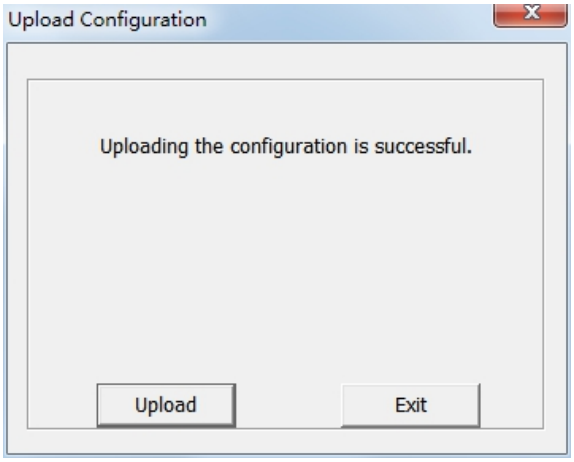
6.3.2 Upload Configuration

Select Upload Configuration to upload the gateway configuration information from the device to the software. The display interface is as follows:



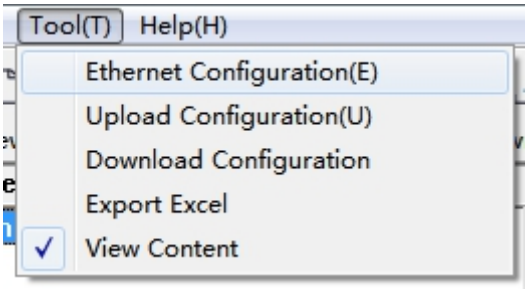
Select device, click Sign In. Then click Upload.





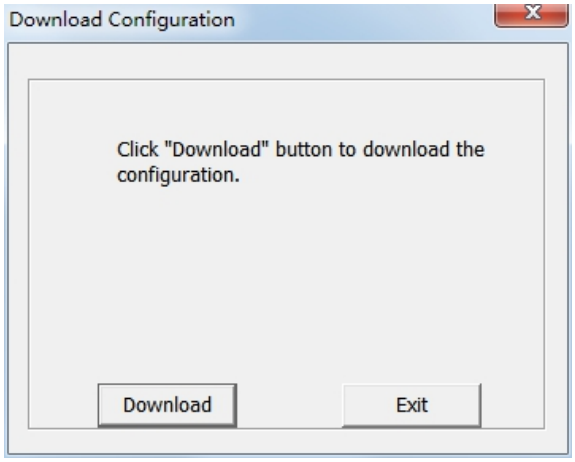
6.3.3 Download Configuration

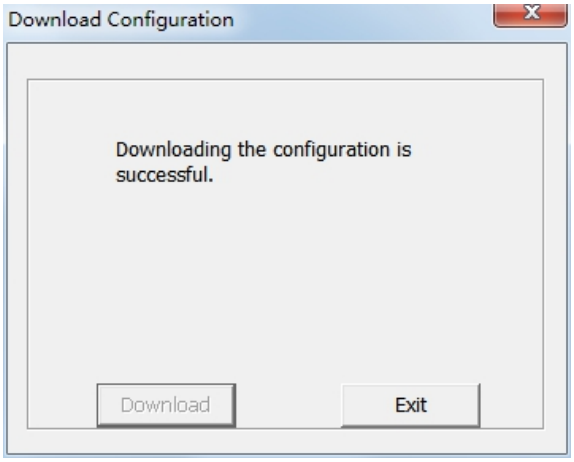
Select Download Configuration to download the configured gateway information to the gateway device. The download and upload steps are similar:



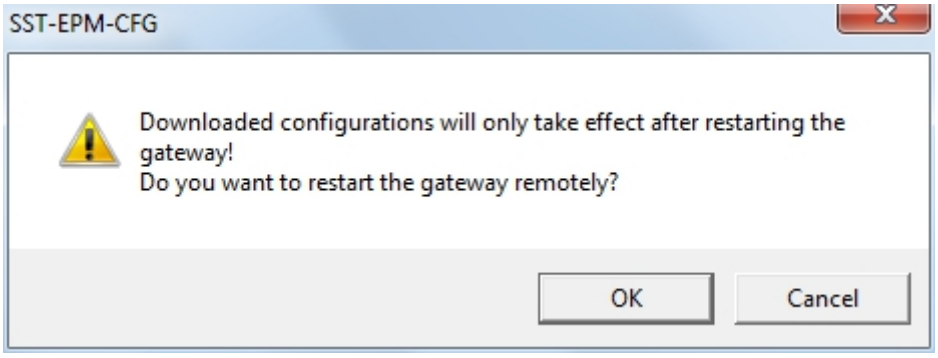
Notes: Before downloading, please confirm all the configuration data is correct.

Select device, click Sign In. Then click Download.



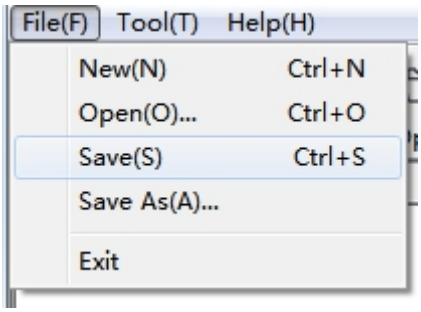


After the download is completed, it will prompt whether to perform a reset operation. Click "OK" to automatically restart the firmware and make the IP address effective. If you select "Cancel", you need to restart the firmware manually to make the IP address take effect.



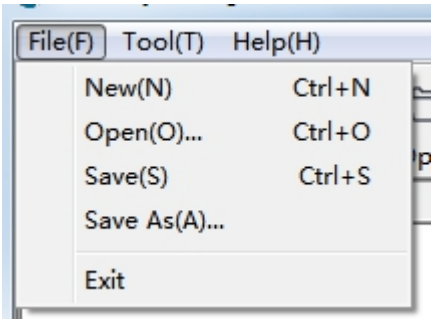
6.3.4 Save Configuration Project

Select "Save" to save the configured project as a *.chg file.



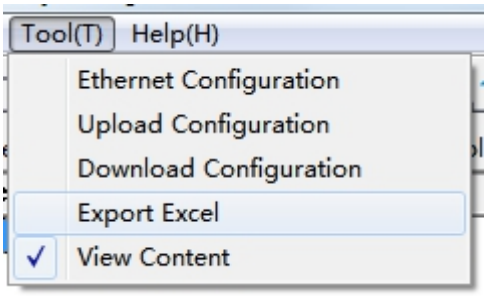
6.3.5 Loading configuration project

Select "Open" to open the saved .chg file.



6.3.6 Export Excel

Select "Export Excel" in the Tool menu, or click the icon on the Toolbar, to export the configuration to an Excel Table.

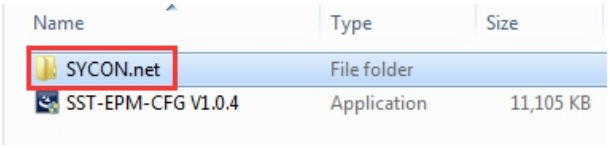


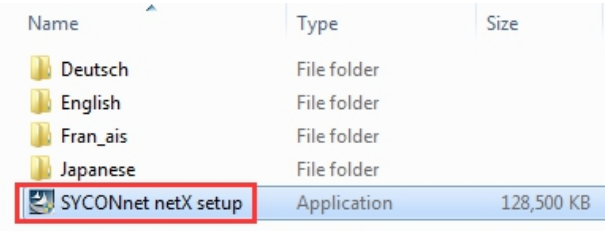
7 Configure PROFIBUS DP Parameters

7.1 Install SYCON.net

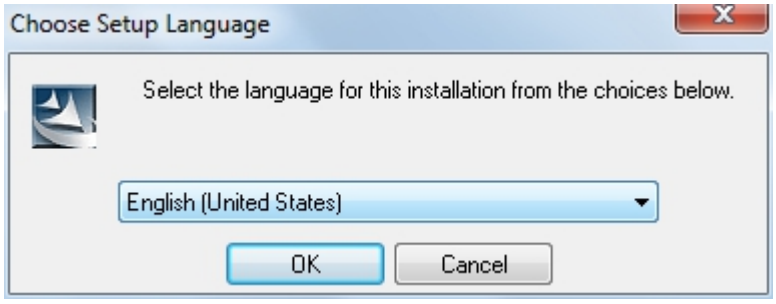
The STCON.net setup application is in the Configuration Tools folder (downloaded at www.sstcomm.com).

1. Open the folder “SYCON.net” and run the “SYCONnet netX setup”.

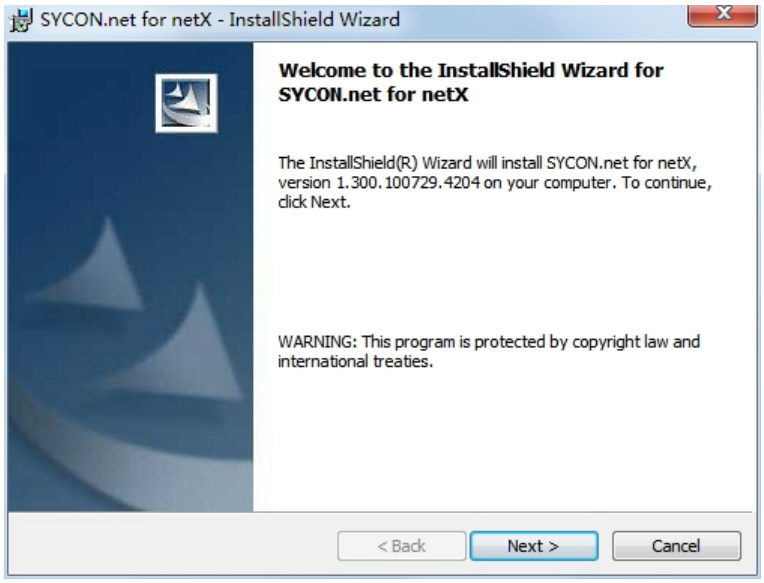


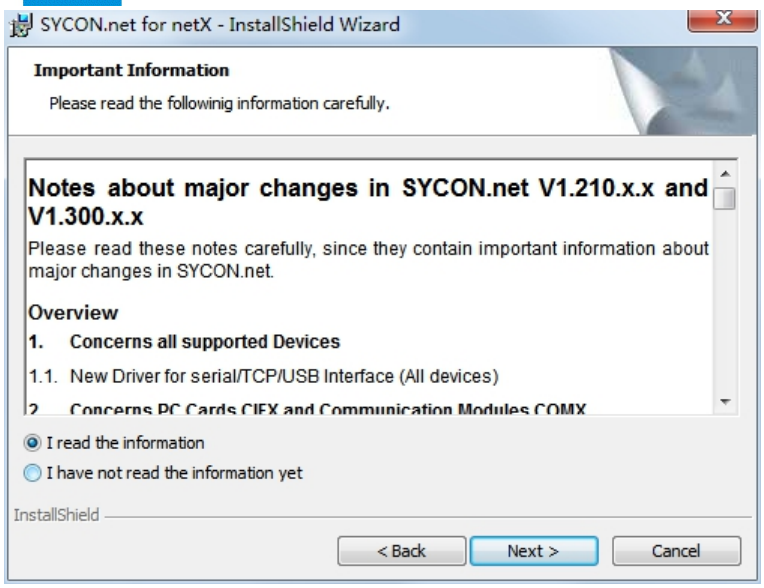


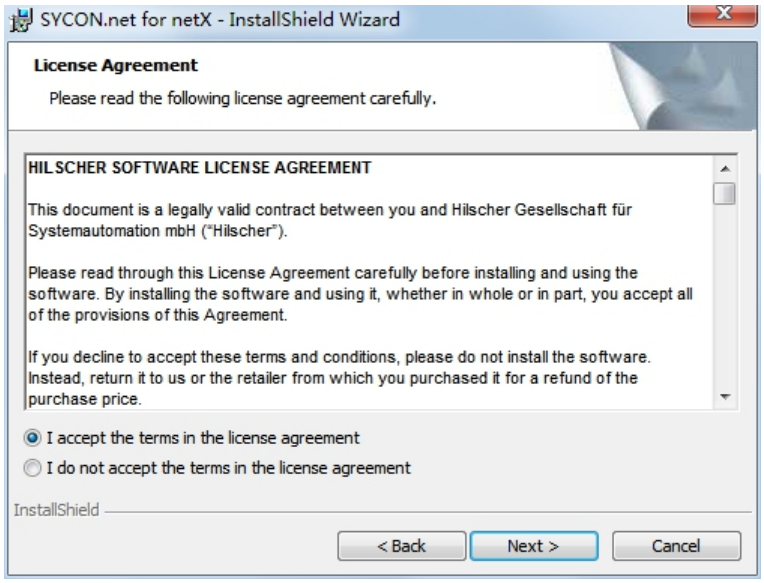
2. Select the language.



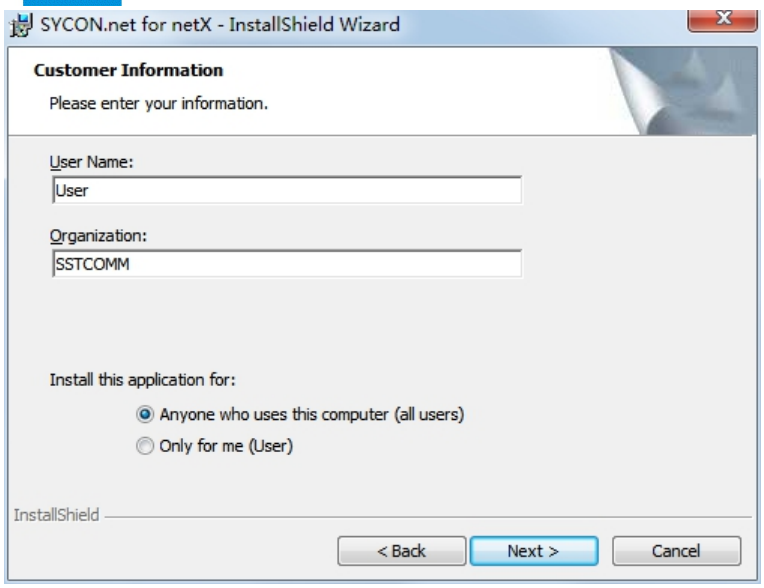
3. Install the application following the instructions:



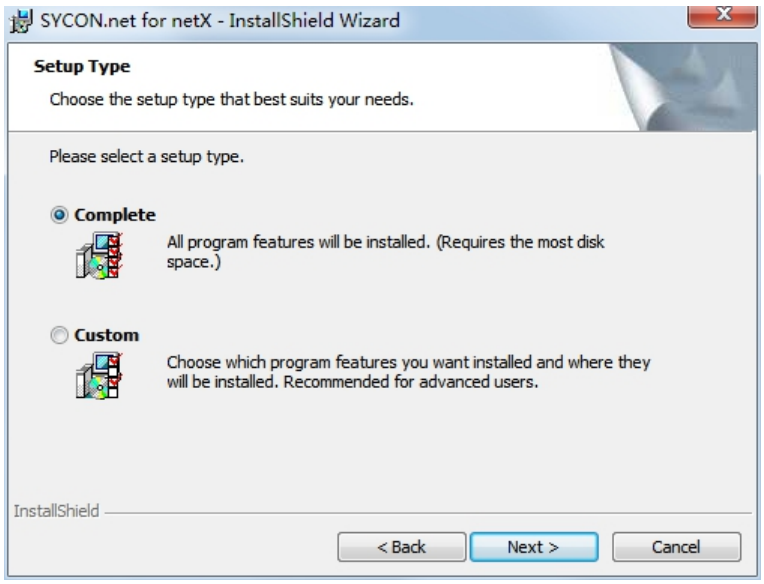




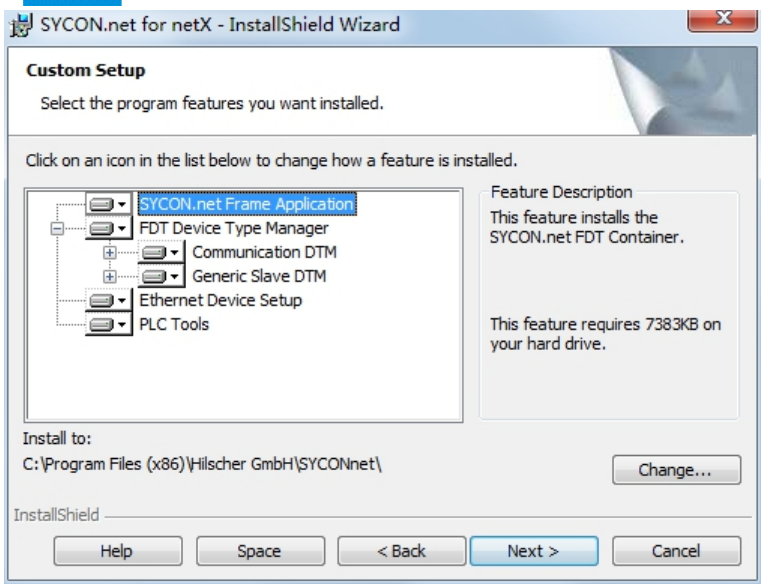
4. Set the User Name and Organization.



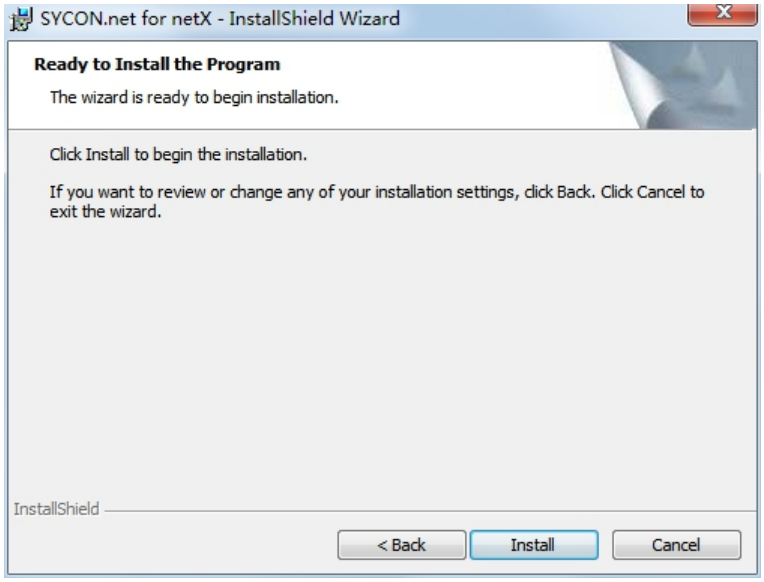
5. Select a setup type.

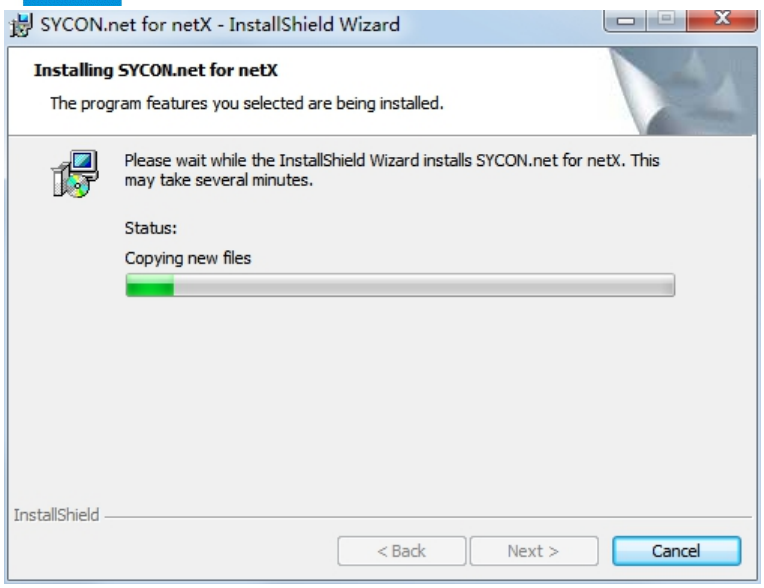


If you select the Custom Setup, you can set the Installation path and the features to install. It's recommended to install all the features.



6. Click Install to begin the installation and wait for installing.

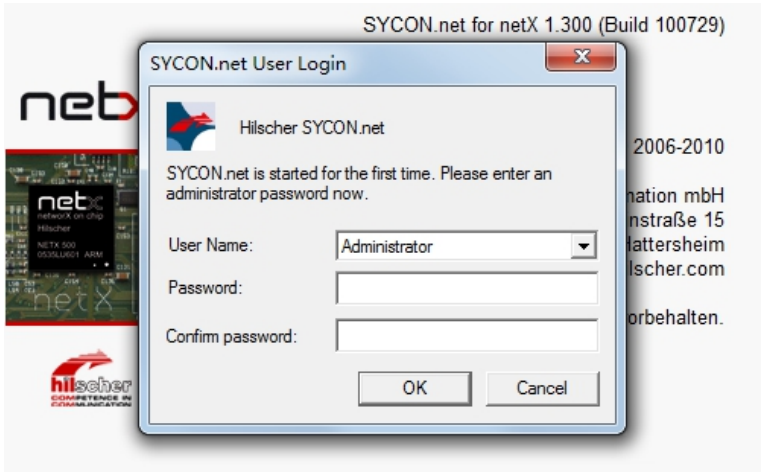




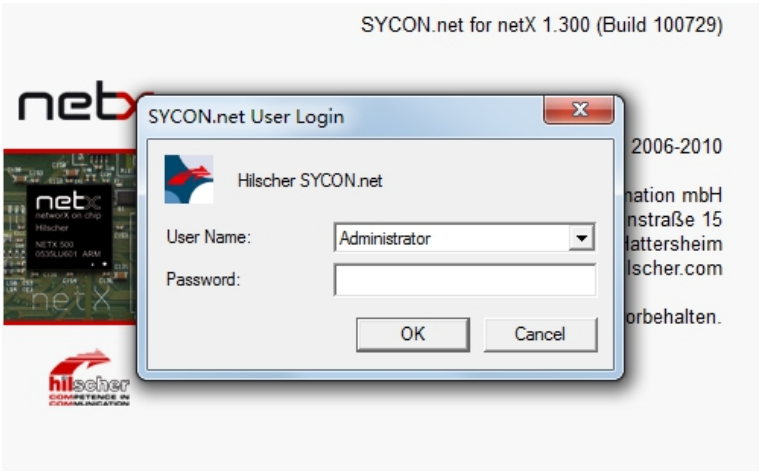
7.2 Start to Configure

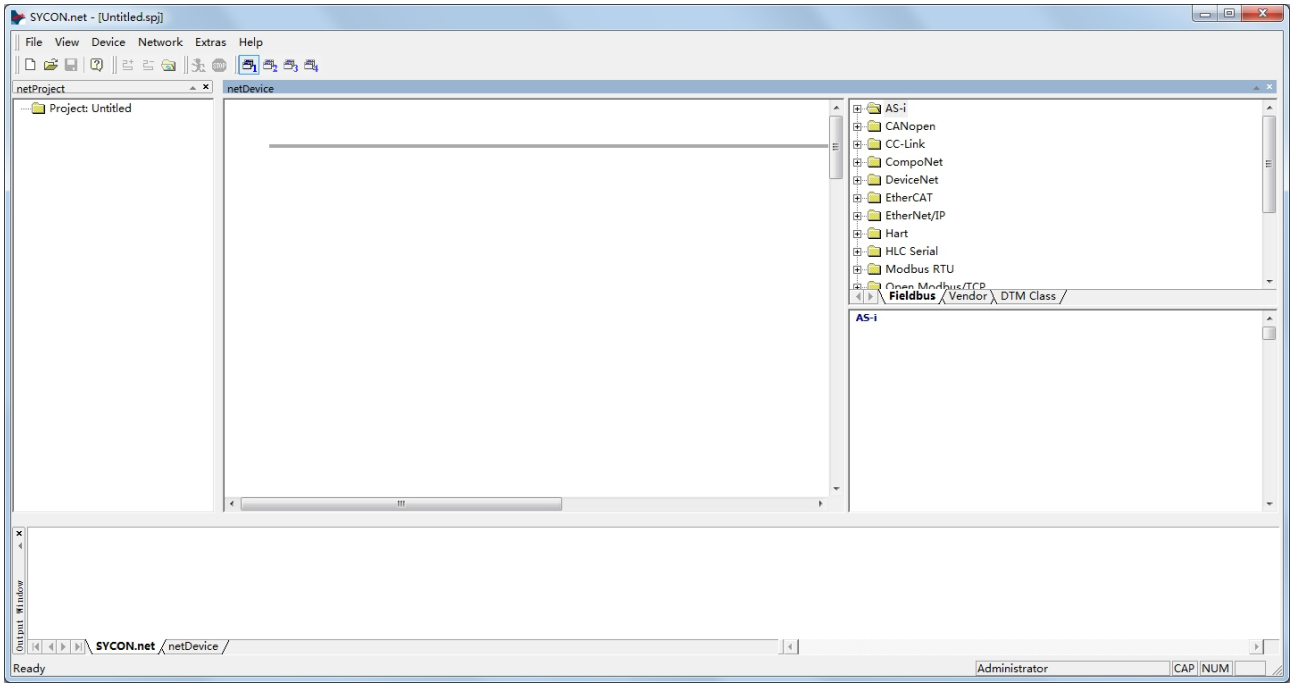
1. Open the SYCON.net.

For the first time to open the software, it requires to set the password. If you don't want to set the password, please leave blank and click OK.

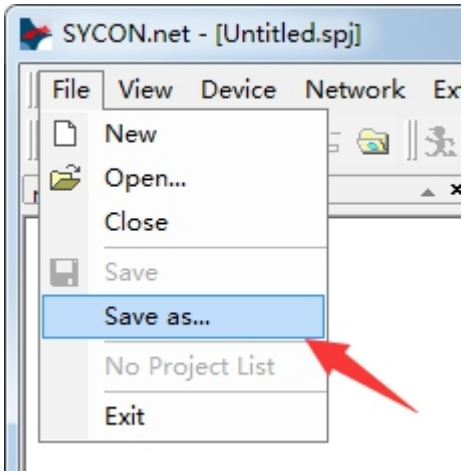


The second time and thereafter to open the software, if you didn't set the password before, please directly click OK to enter the configuration window.

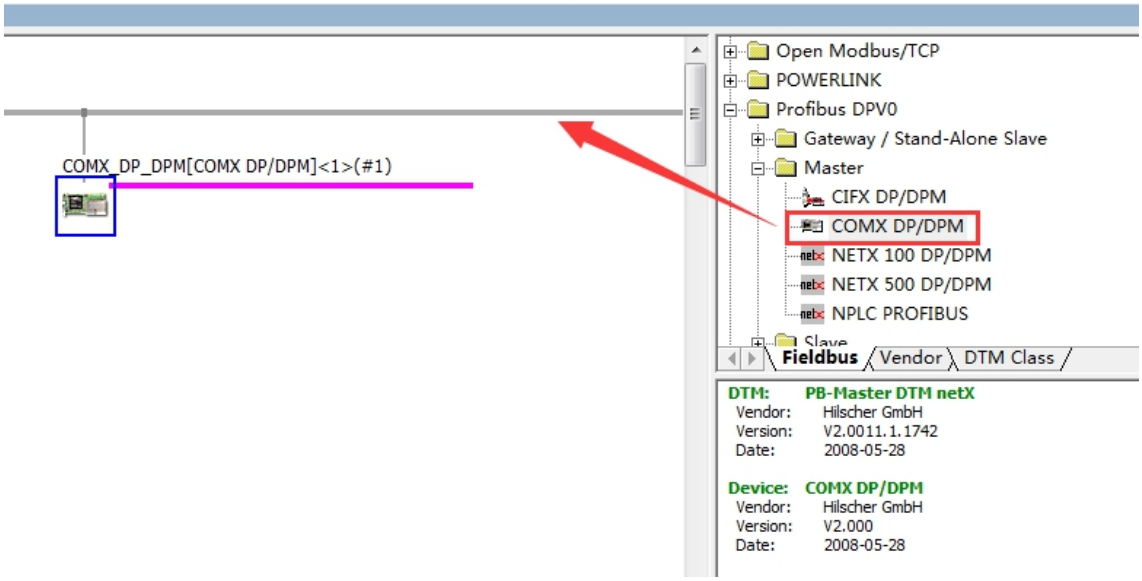




2. Save the project first.



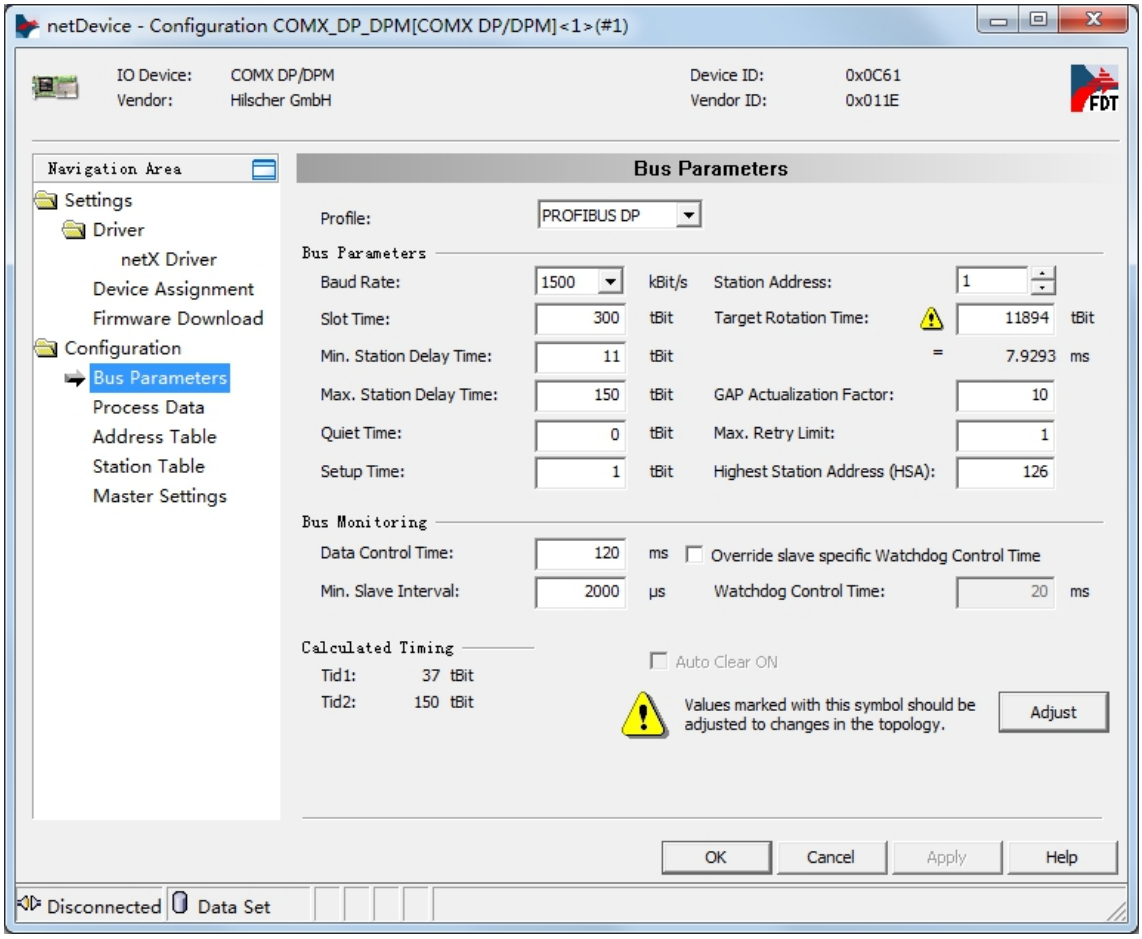
3. Open the Field device folder “Profibus DP V0” >> “Master” at right. Select “COMX DP/DPM” device, left-click on it and drag one onto the gray bus line at left, as shown below:



7.3 Configure DP Master Parameters

Double click on the master module and enter “Configuration” windows. Configure the parameters and apply the changes.

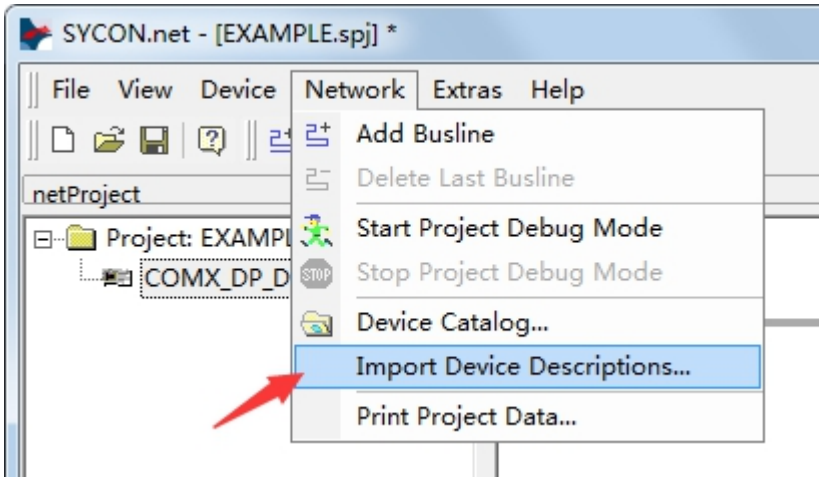
If your DP devices don’t require special parameters, you can keep them as default.



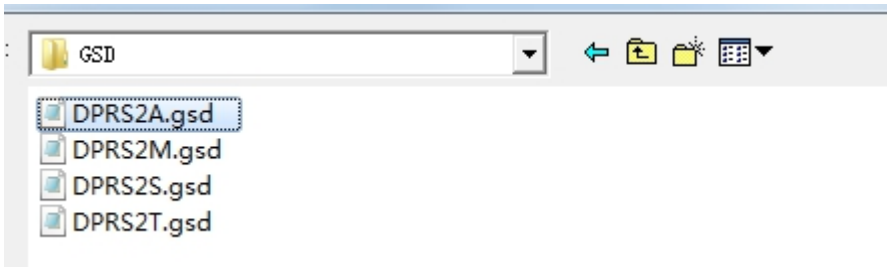
7.4 Add PROFIBUS DP Devices

1. Import the GSD files:

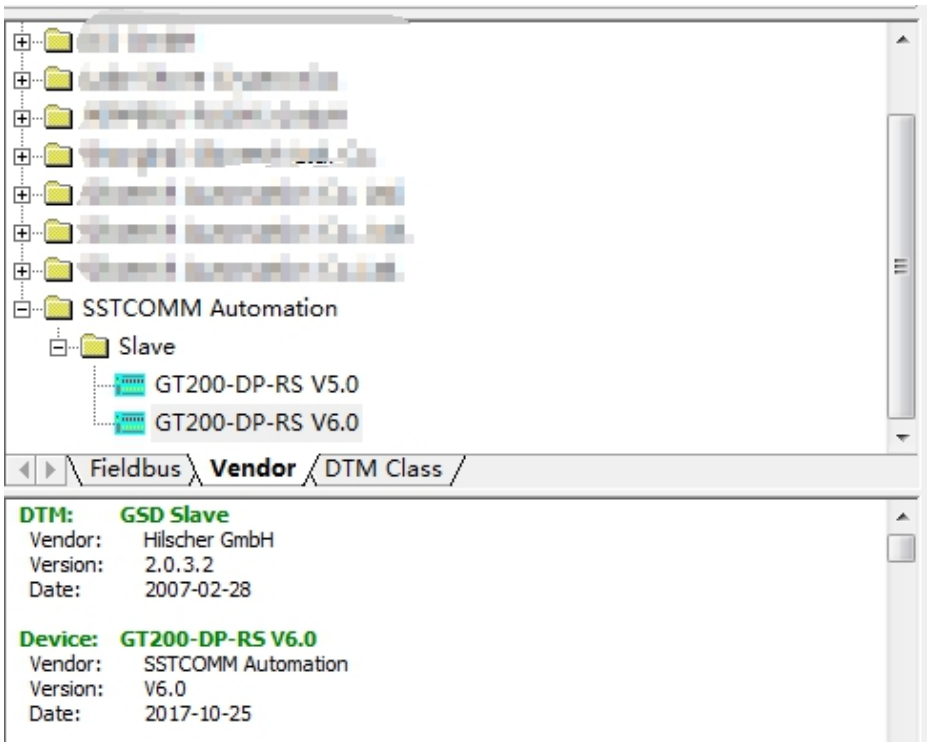
(1) Select “Network” >> “Import Device Descriptions...” in the top menu.



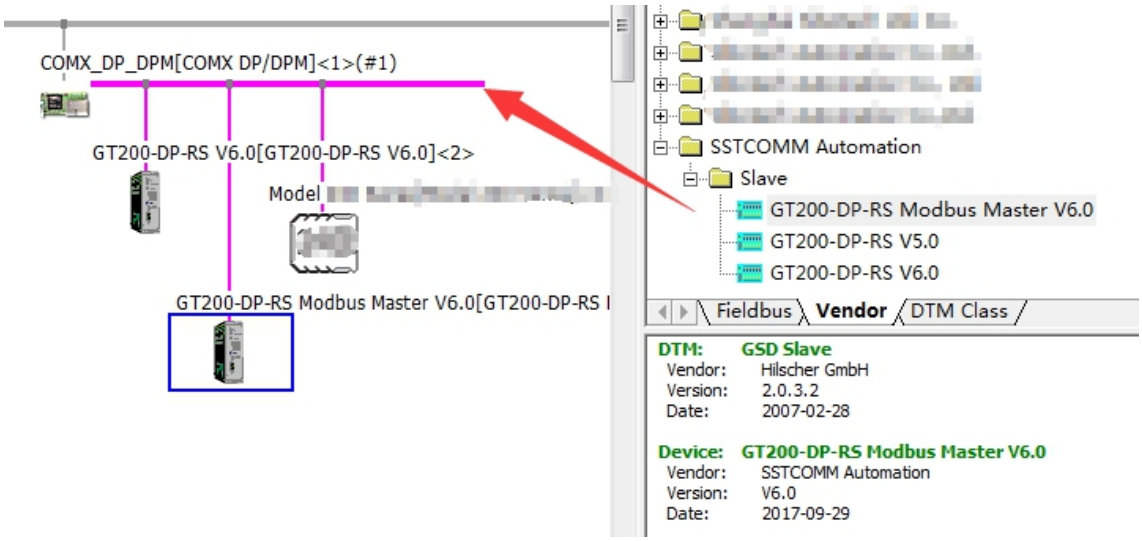
(2) Select the a GSD file of your device to import. Follow the instructions to finish importing.



(3) The device modules are in Vendor folders at right.

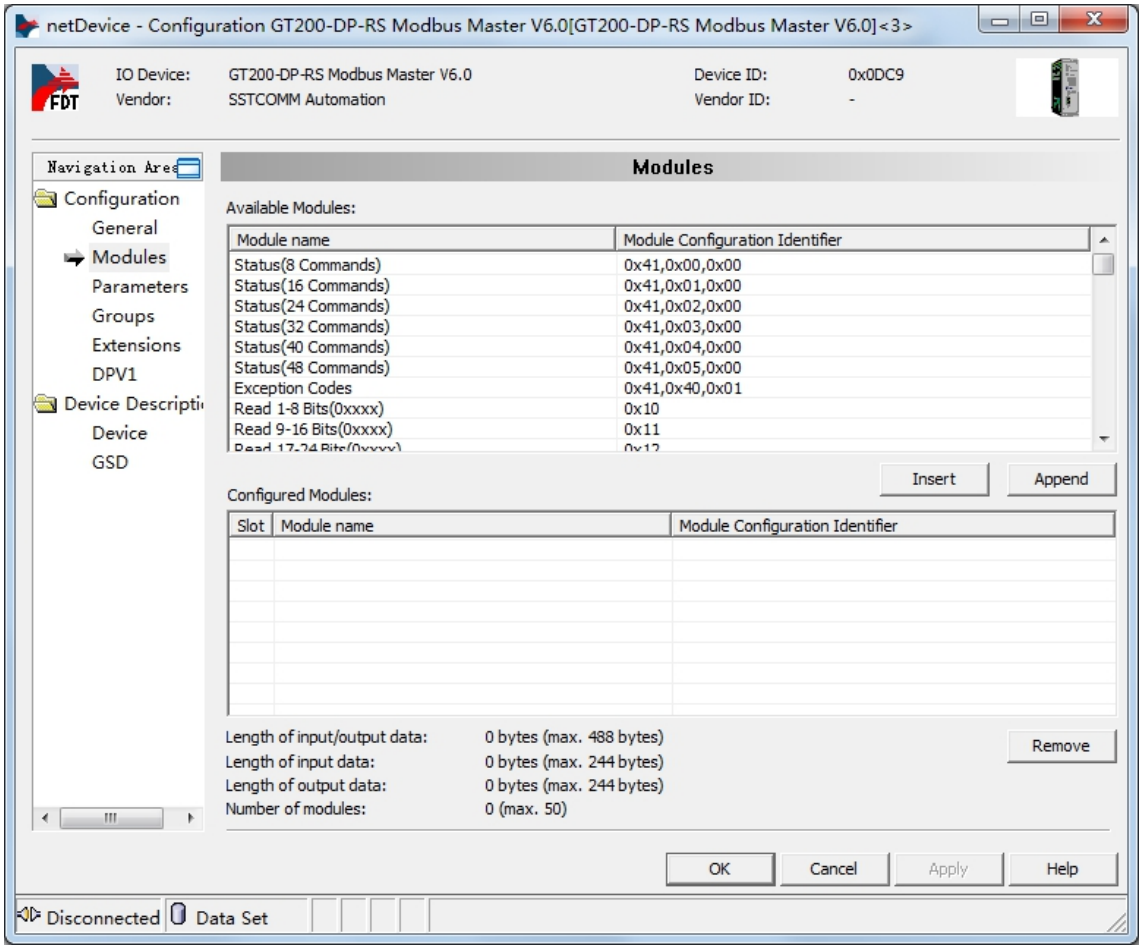


2. Select the device, left-click on it and drag it onto the red bus line of the master module at left. You can add many devices onto the red bus line.



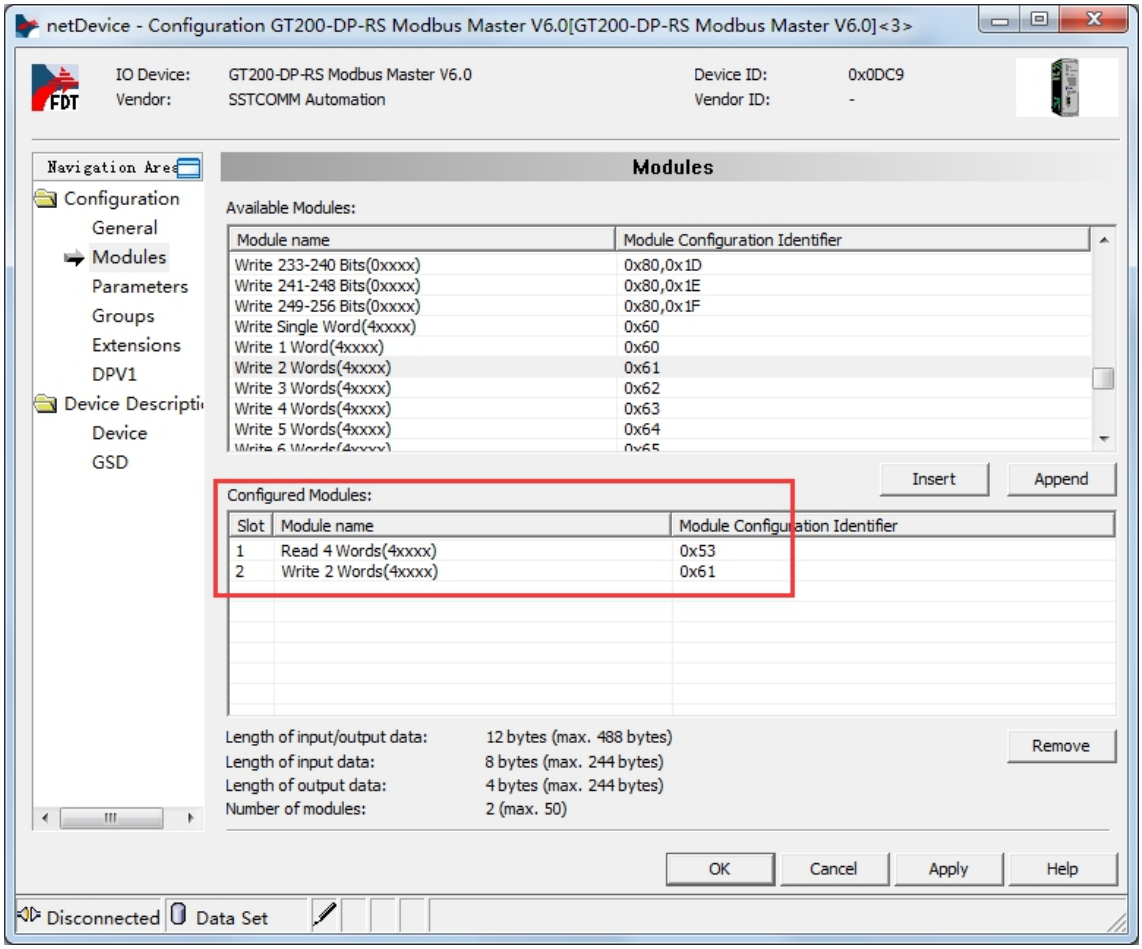
7.4.1 Configure Devices Parameters

1. Double click on a device and configure the parameters. Please refer to the appropriate documentations.



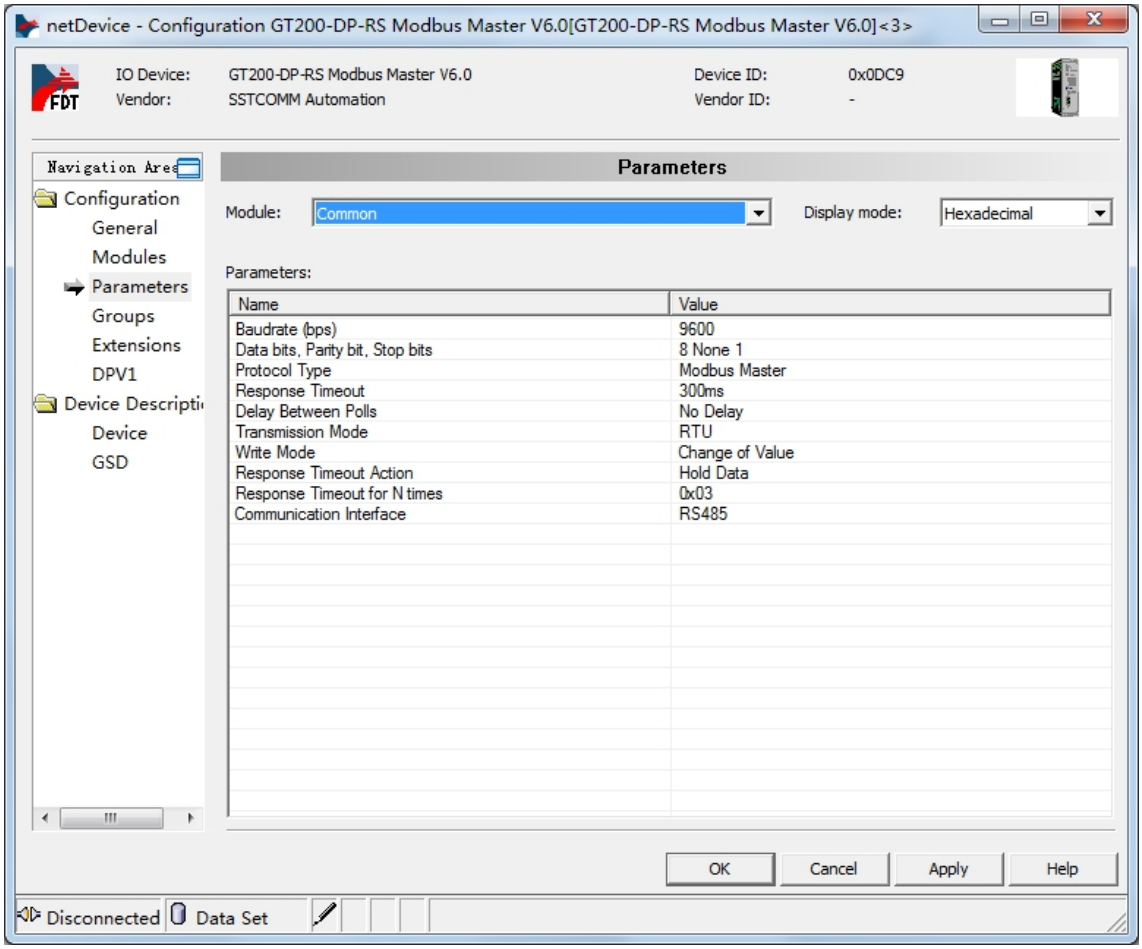
For example,

(1) In the “Configuration” >> “Modules” window, insert some modules as the configured modules.



(2) In the "Configuration" >> "Parameters" window, configure the common parameters and module parameters. Select the Module and Display mode at the top of the window.

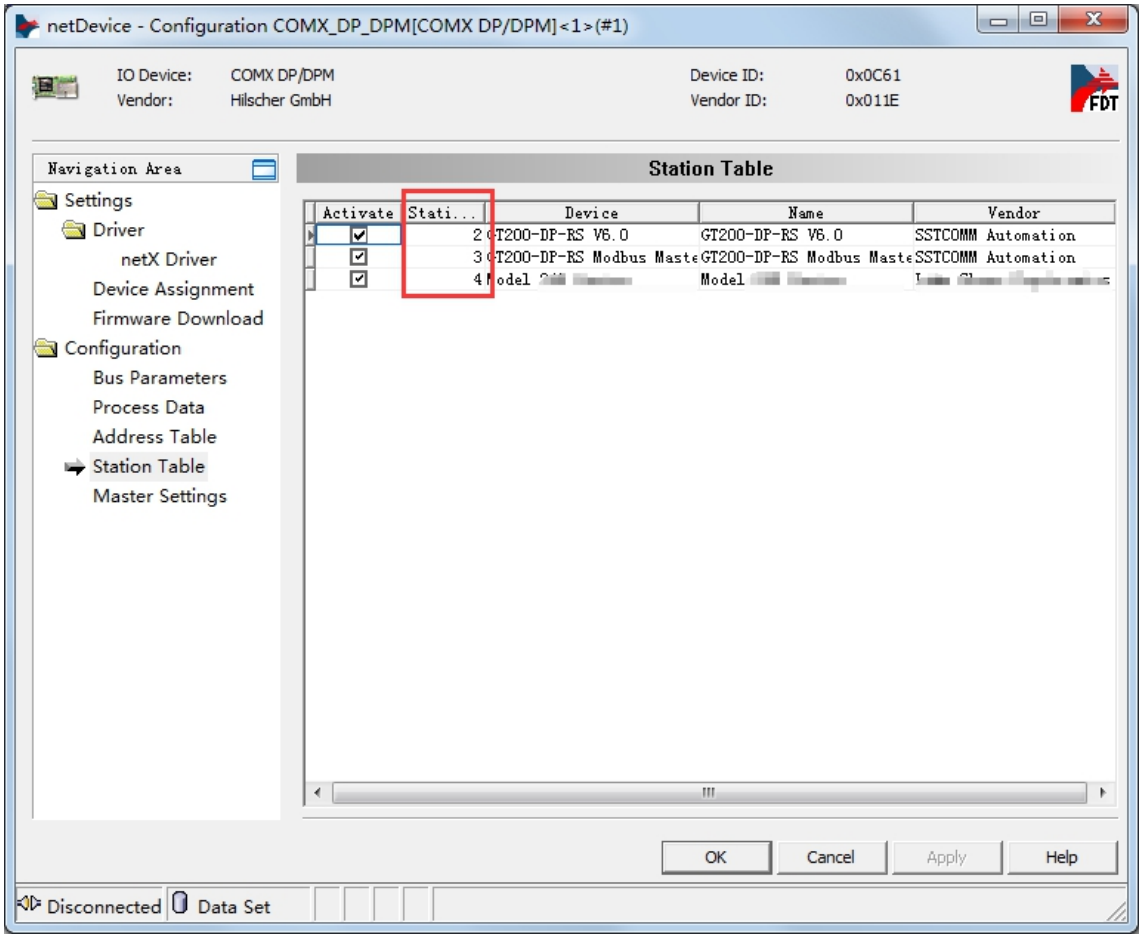
Notes: Some devices don't supports configure the parameters by master configuration tools.



2. Apply the changes and click OK.

7.4.2 Set the Station Address

Double click on the master module “COMX...” and open the configuration window. In “Configuration” >> “Station Table” window, set the DP station address and apply the changes.

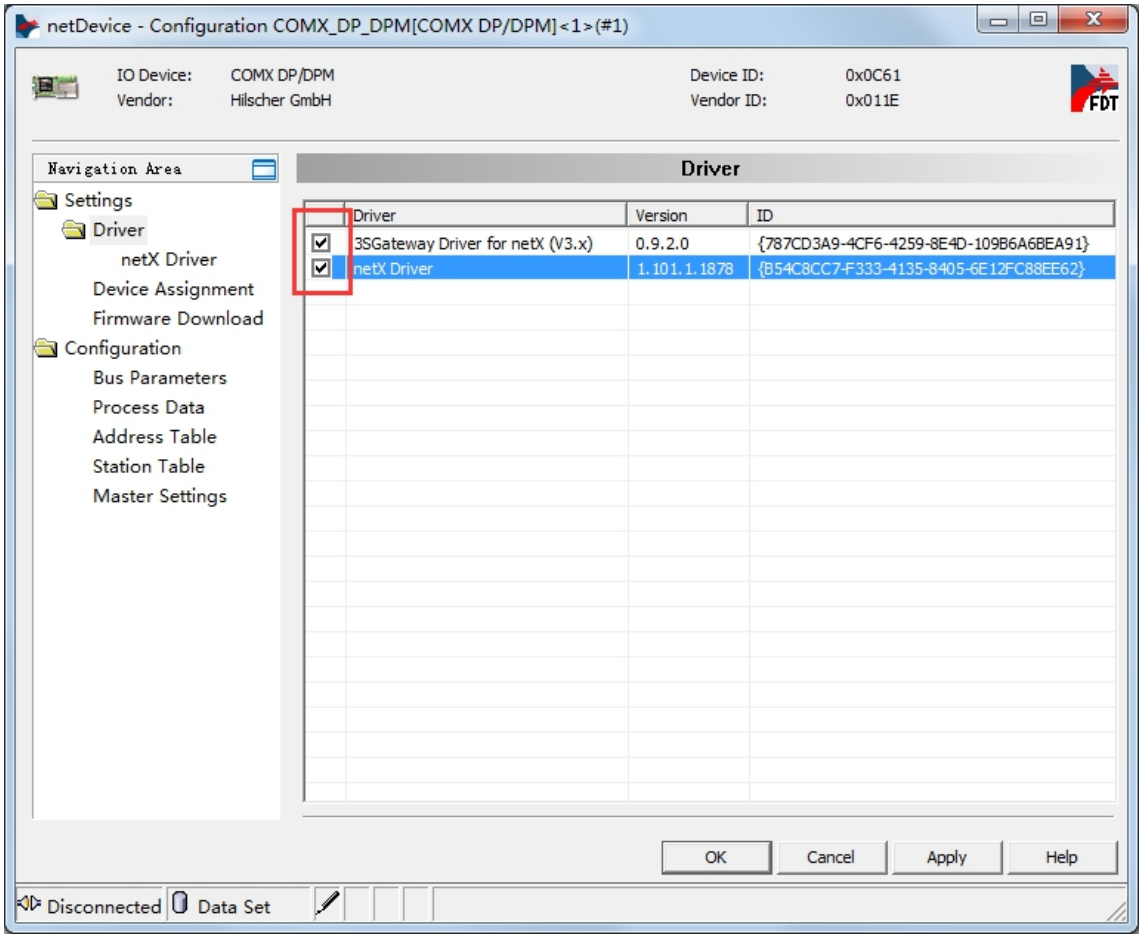


7.5 Download the Configuration

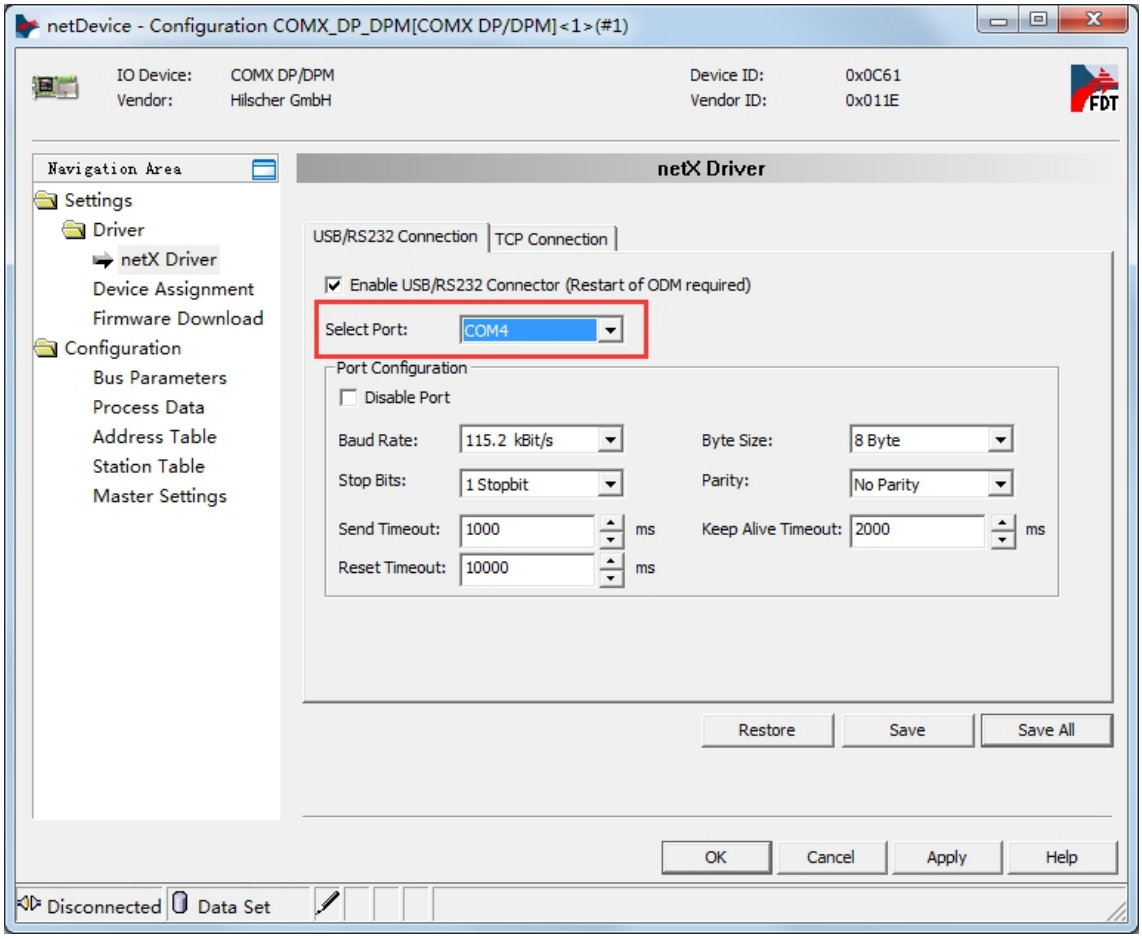
Before downloading the configuration to the GT200-DPM-EI, please confirm the configured parameters are correct.

1. Connect the GT200-DPM-EI with the computer by the Mini USB cable or RS-232 cable. Please refer to chapter 2.3.3 for details.

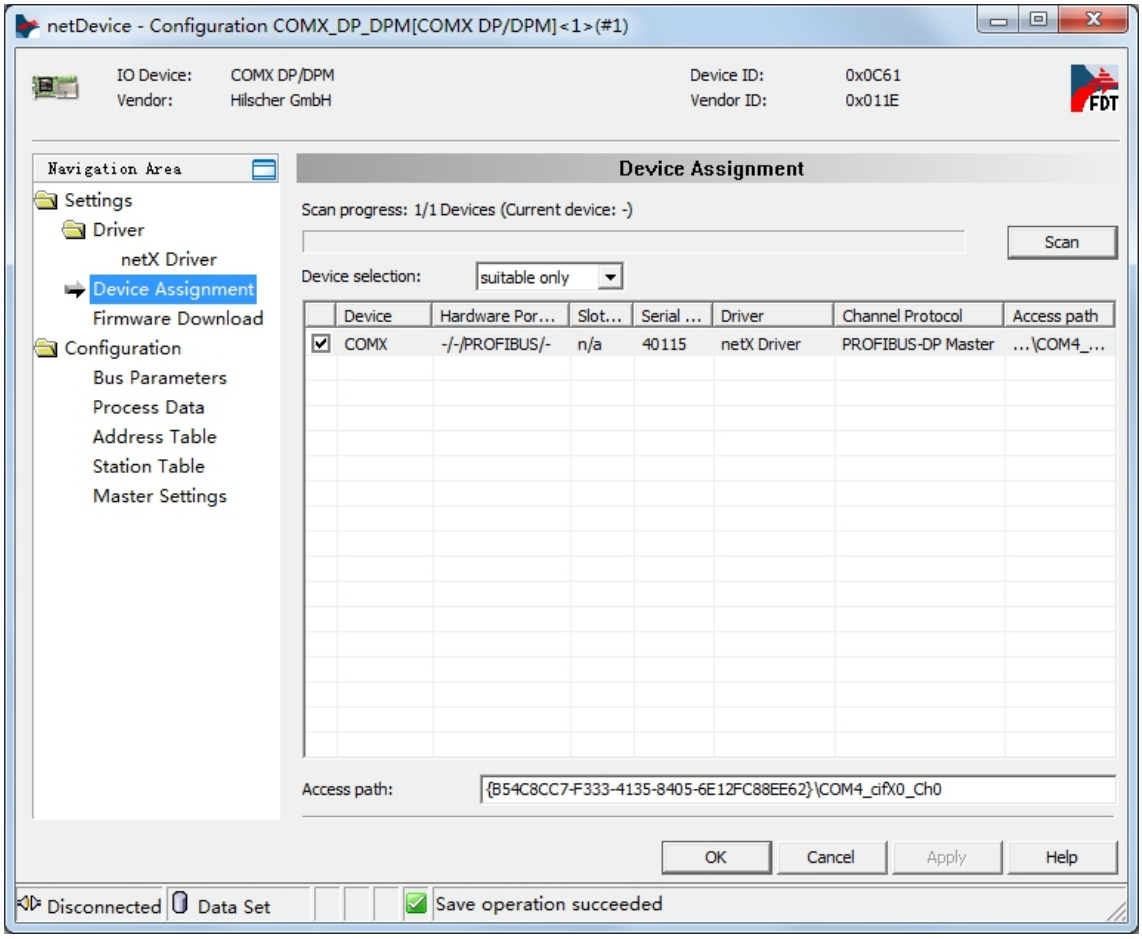
2. Double click on the master module “COMX...” and enter “Settings” >> “Driver” window. Tick the two driver and apply the changes, as shown below:



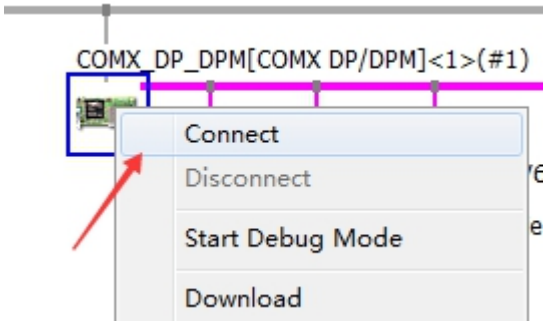
3. Enter “Settings” >> “Driver” >> “netX Driver” window, enable the USB/RS232 connector and select the correct COM port. The COM port can be confirmed in the Windows Device Manager. Save and apply the changes.

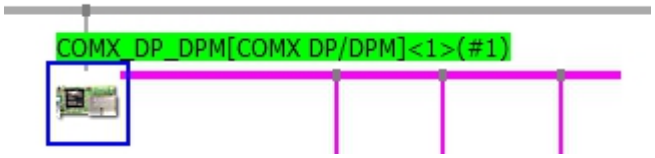


4. Enter “Settings” >> “Device Assignment” window, scan the suitable devices and tick the correct device, then apply the connection, as shown below:

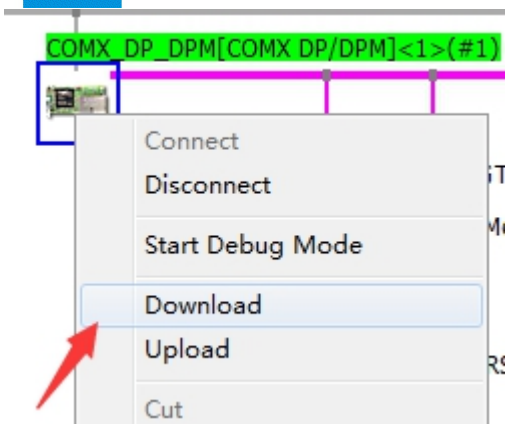


5. Close the configuration window. Right click on the master module “COMX...” and select Connect. If the connection is successful, the name of the module will turn green.

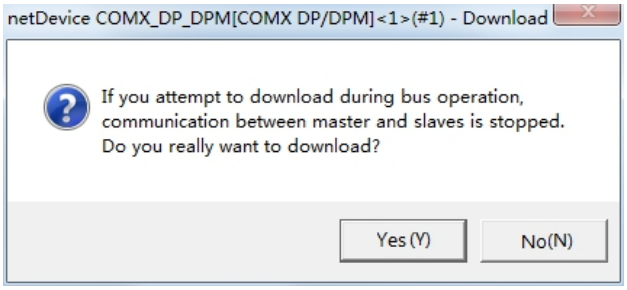


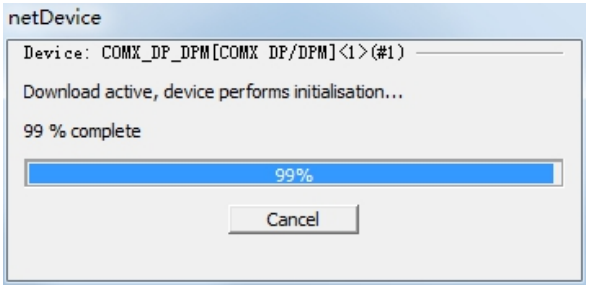


6. When connecting successfully, right click on the master module “COMX...” and select Download.



Click Yes to continue and wait for downloading.





8 Communication with EtherNet/IP Scanner

8.1 EtherNet/IP Communication Parameters

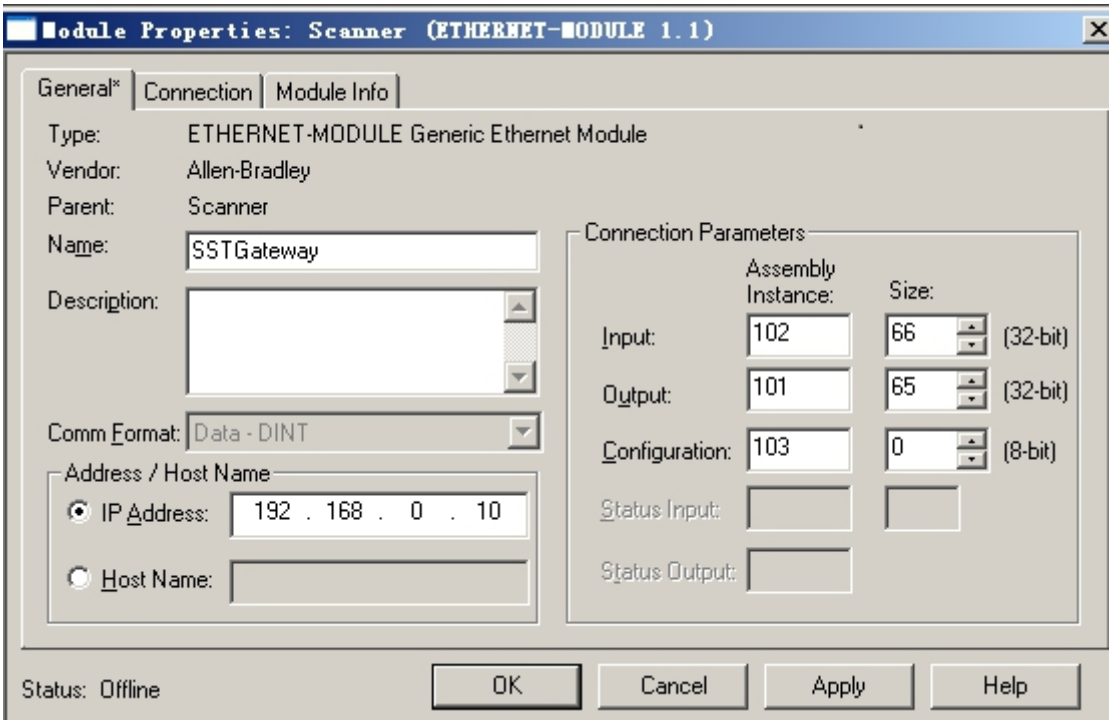
Connection parameters the adapter provides are as below:

Parameters \ Data Size	260 Bytes	492 Bytes
Input Instance	102	112
Output Instance	101	111
Configuration Instance	103	113

Notes: The Input data size should include 4-byte status. For example, when using the 260-byte parameters, the input size should be 264 bytes.

Take RSLogix5000 as an example:

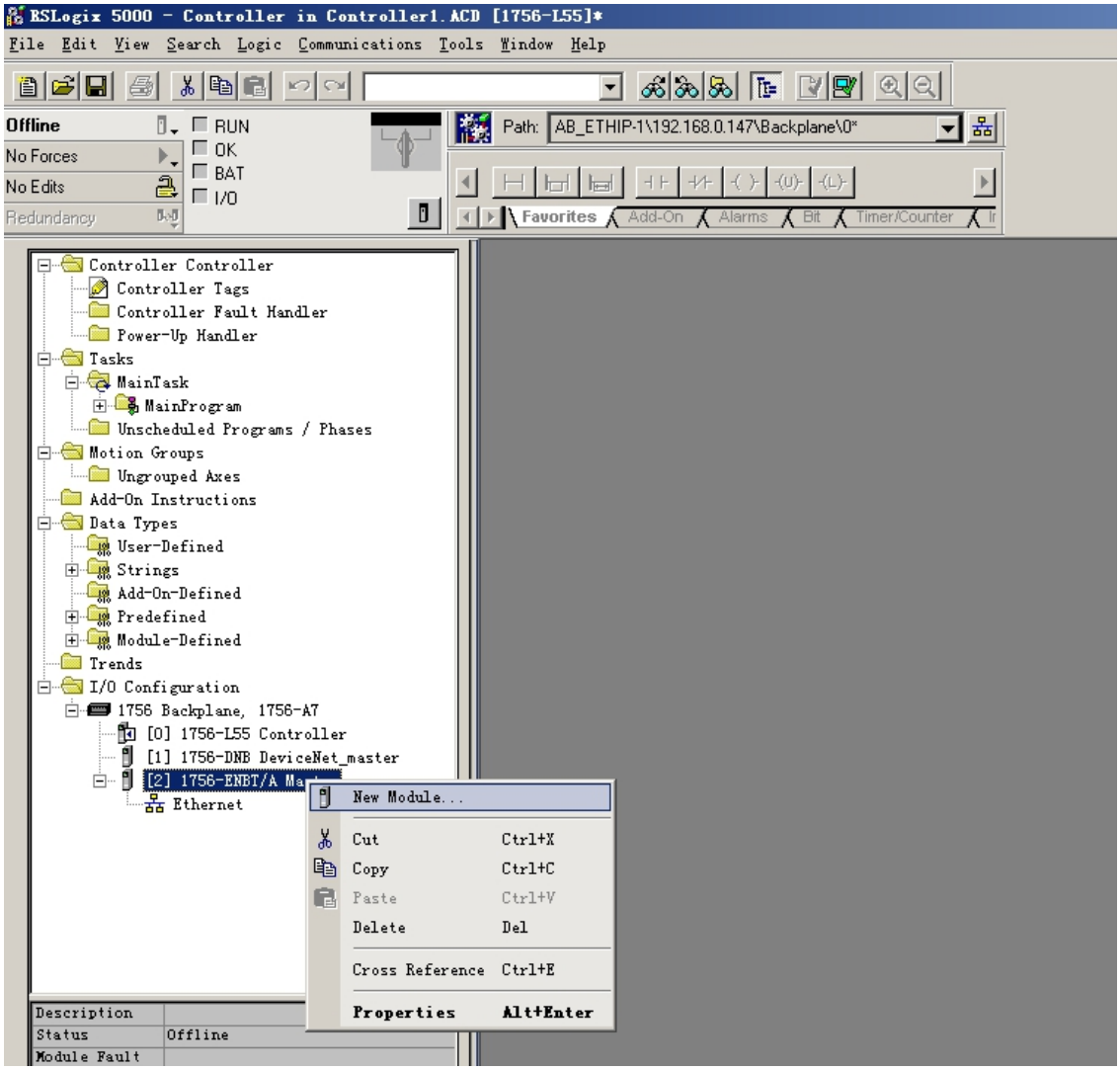
Because the data format is “DINT”, the data size is based on 32-bit and the “260 byte” should divide by 4.



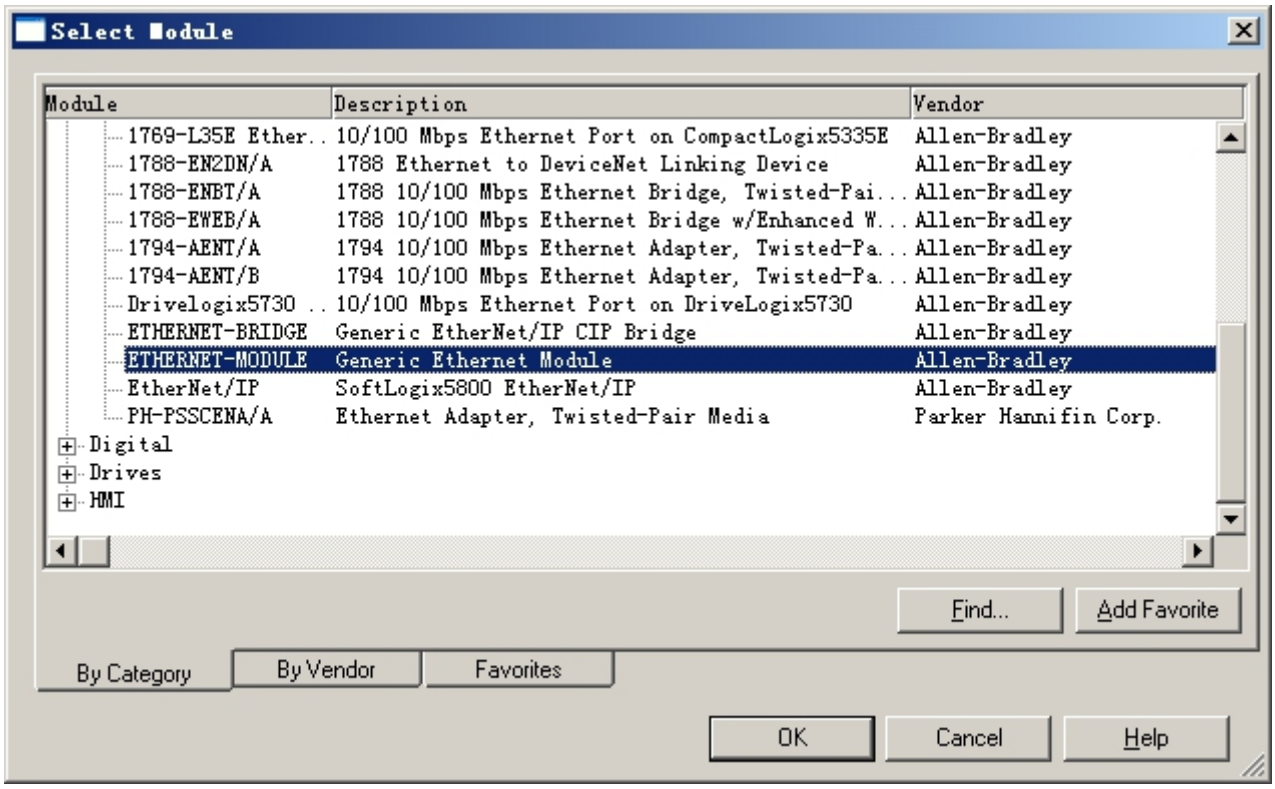
The following RSLogix 5000 examples will describe how to read/write data in two ways.

8.2 Read/Write Data by IO Messaging (Recommend)

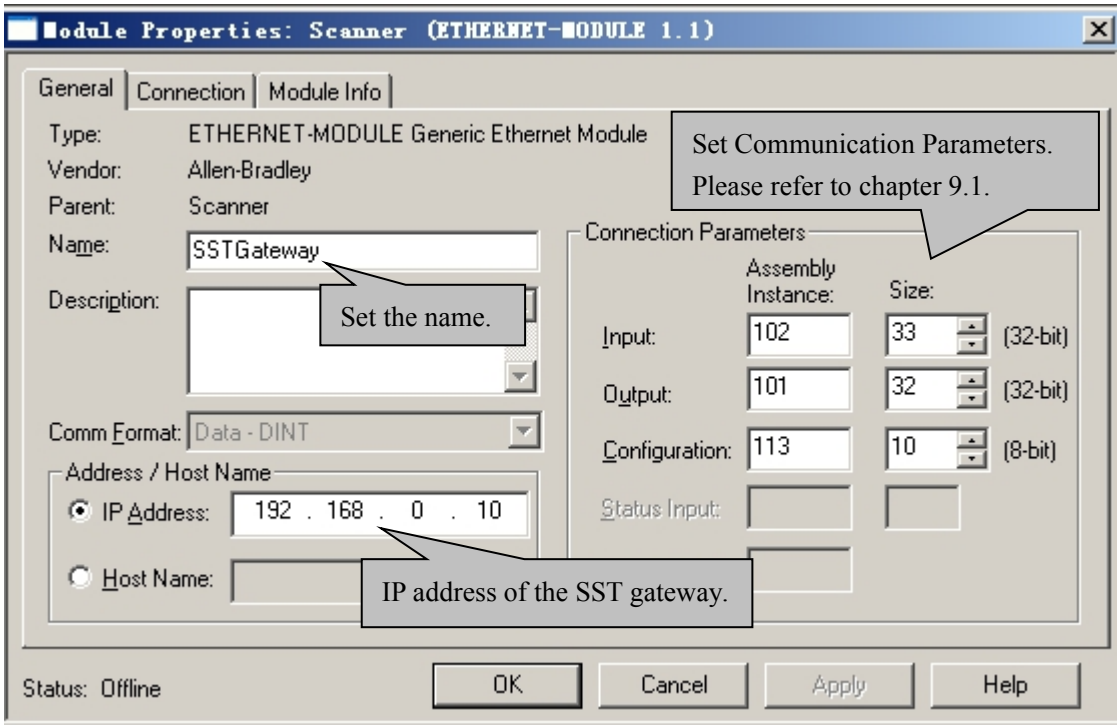
Right click on EtherNet/IP scanner module, click "New Module", as shown below:



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



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.

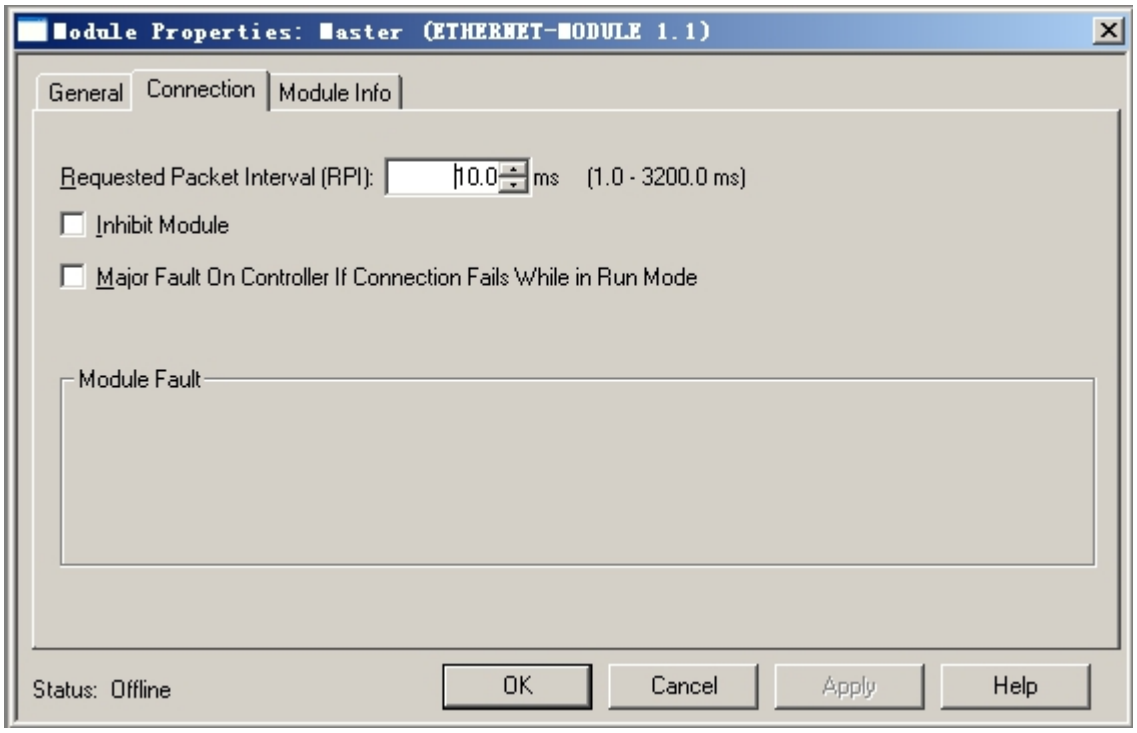
Comm Format: Configure data types. Users can choose data types as DINT, INT, SINT and REAL, etc. After confirmation, this cannot be changed. If you want to change data types, you can create new module.

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

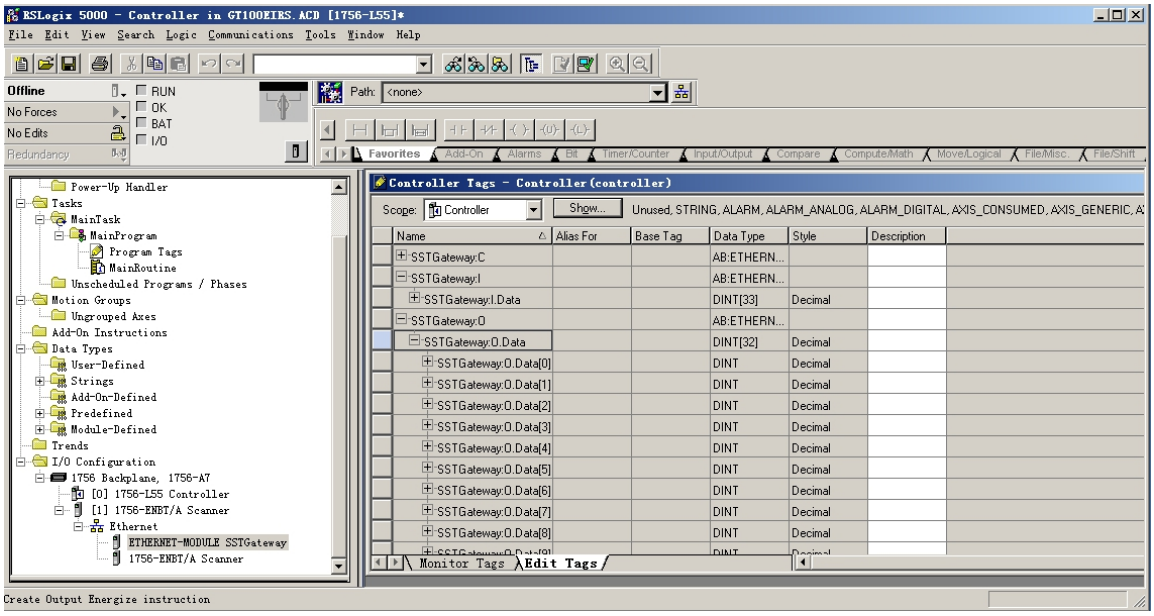
Connection Parameters: Set Connection parameters during communication. Please refer to chapter 9.1.

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:

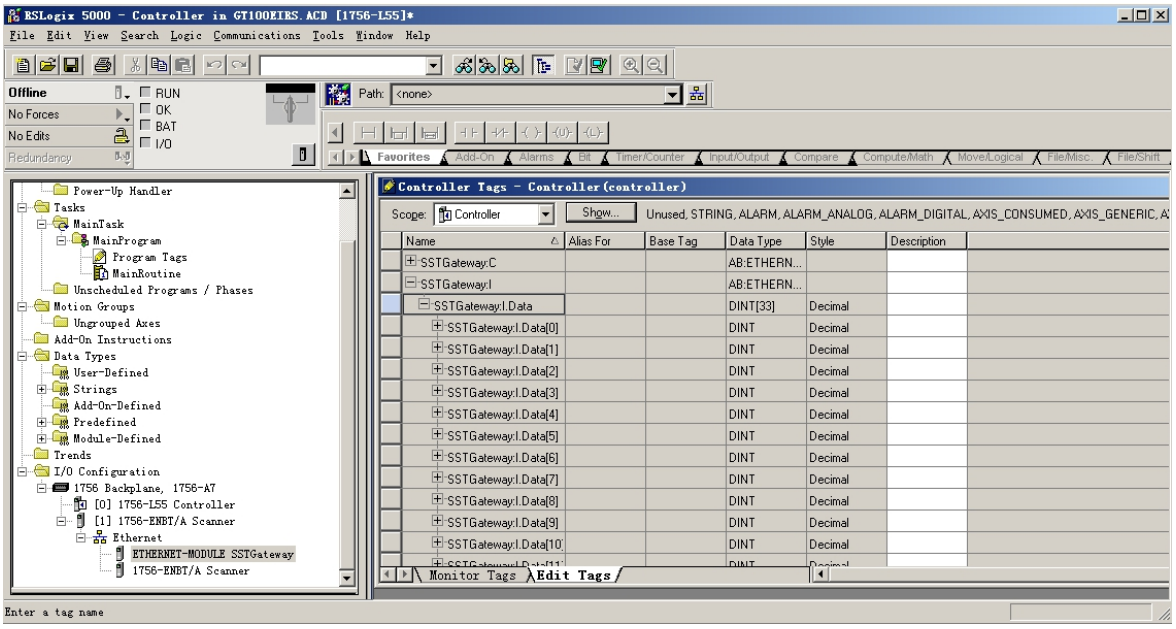


After setting this interval, click "OK" to save. Double click "Controller Tags", unfold "SSTGateway: O", as shown below:



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:

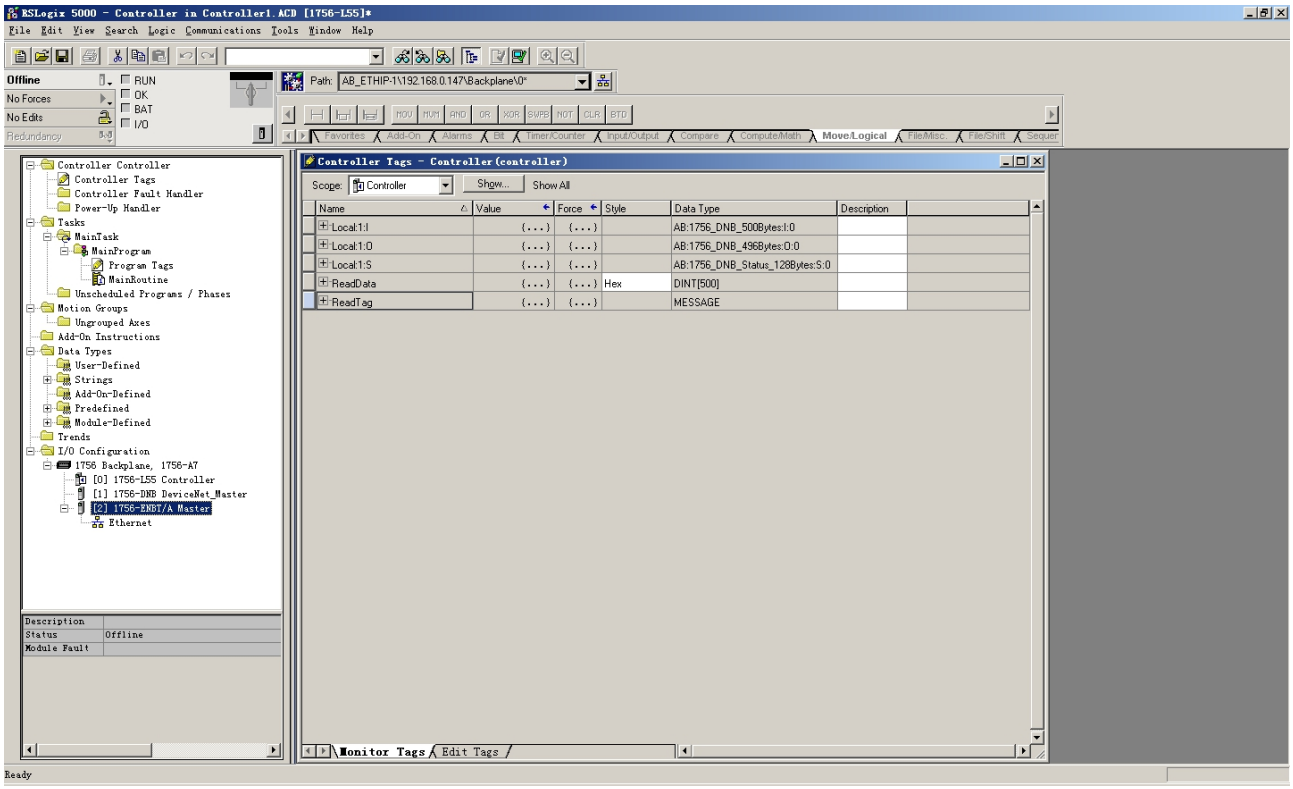


In the above picture, the first 4 bytes of SSTGateway: I. Data [0] are the status bytes. SSTGateway:I.Data [1] ~SSTGateway: I. Data [32] are the input data from GT200-DPM-EI.

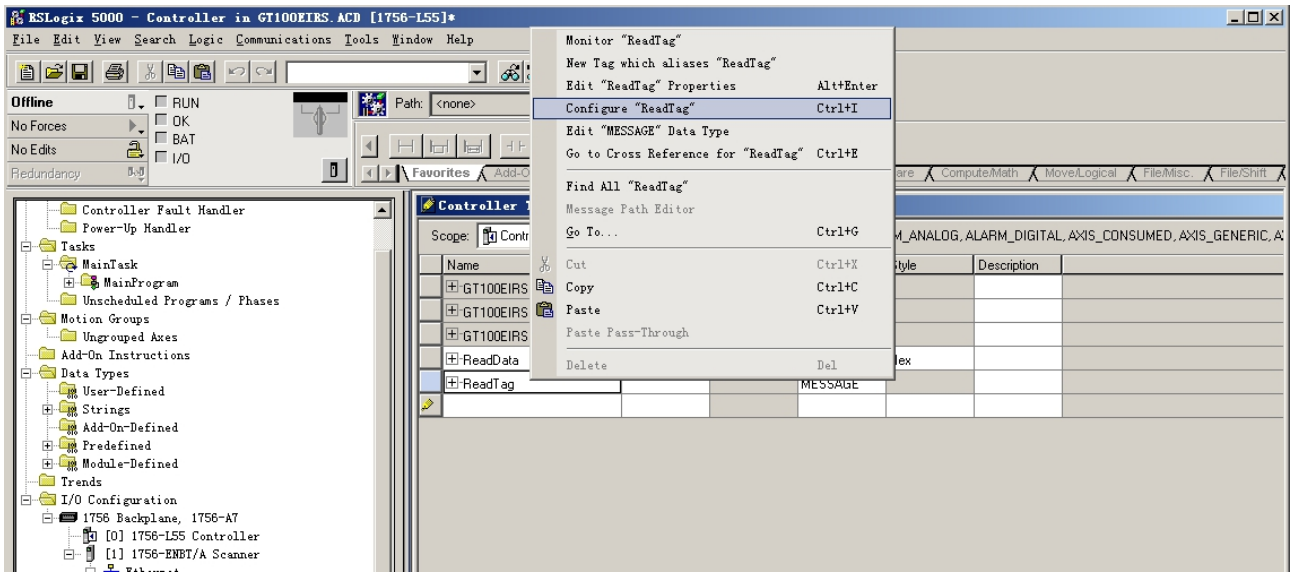
8.3 Read/Write Data by MSG

8.3.1 Read 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 "DINT [500]".



Right click "ReadTag", select "Configure "ReadTag":



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

Message Type: CIP Generic

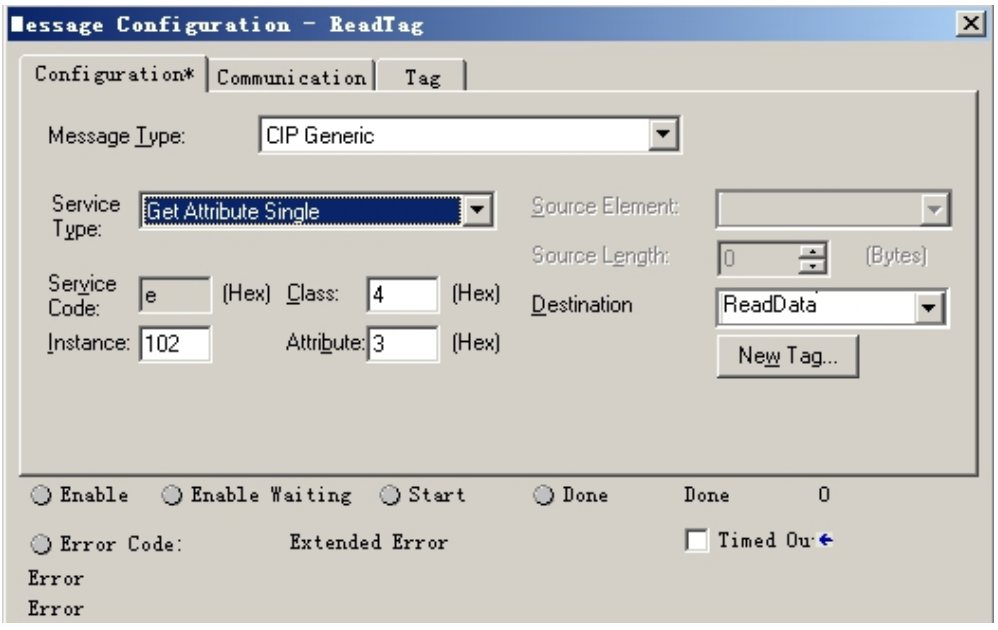
Service Type: Select "Get Attribute Single", now, relevant service code will become "e (Hex)"

Class: 4 (Hex)

Instance: Please refer to chapter 9.1 EtherNet/IP Connection Parameters.

Attribute: 3 (Hex)

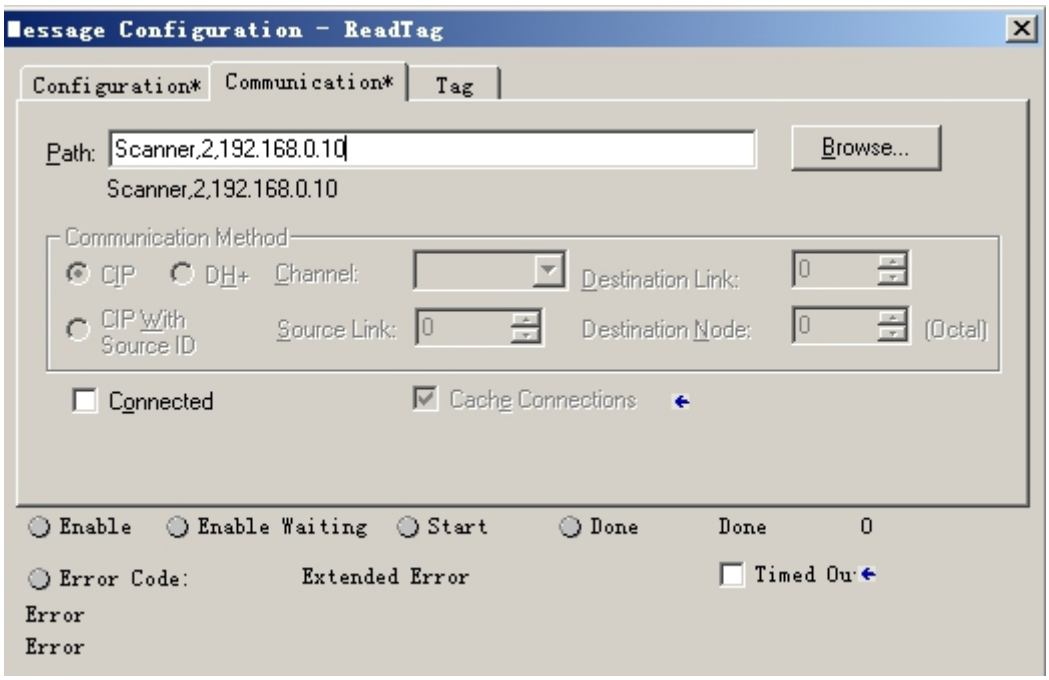
Destination: Select "ReadData" label, now, the data that have been received will be saved in this tag.



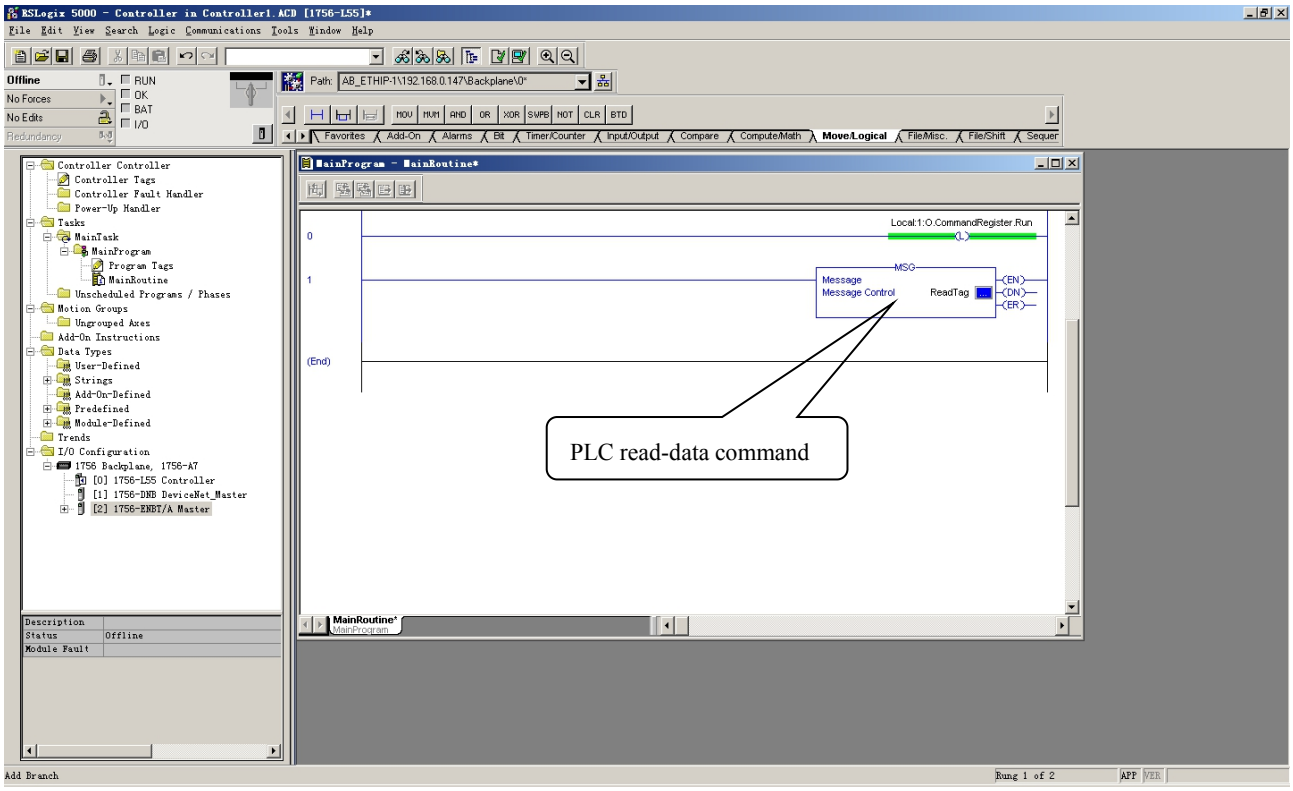
Choose "Communication" label, input the relevant path of connecting EtherNet/IP adapter in the blank space

behind the Path, the path format is: EthetNet IP hostname, EtherNet/IP scanner slot No., IP address of EtherNet/IP adapter, after setting the path, click "Apply", "Confirm". As is shown below:

In this instance, EtherNet/IP hostname is "Scanner", EtherNet/IP scanner slot No. Is "2", EtherNet/IP adapter (SST Gateway) is "192.168.0.10". IP address of SST Gateway is the address which is configured by the configuration software.



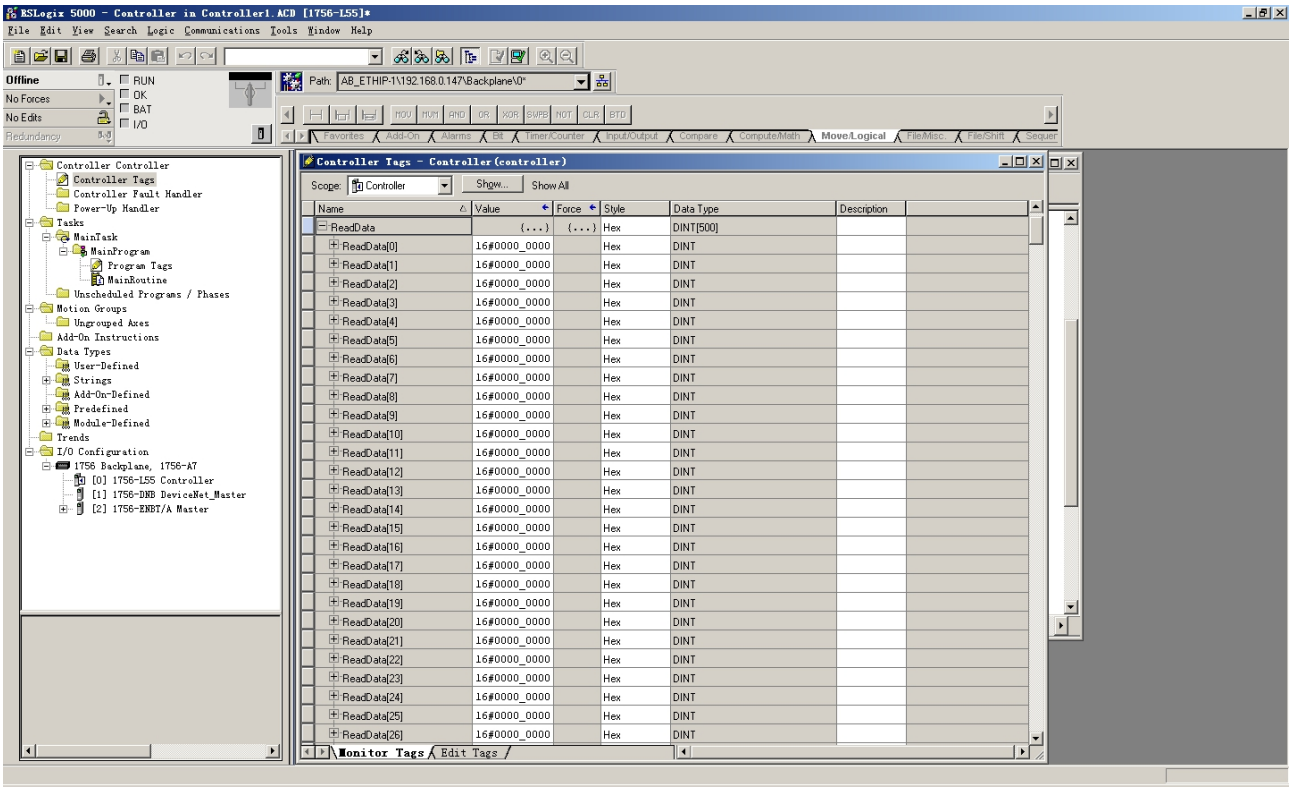
Add a "MSG" command in "MainRoutine" under the "MainProgram" and choose "ReadTag" as "Message Control", as shown below:



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.

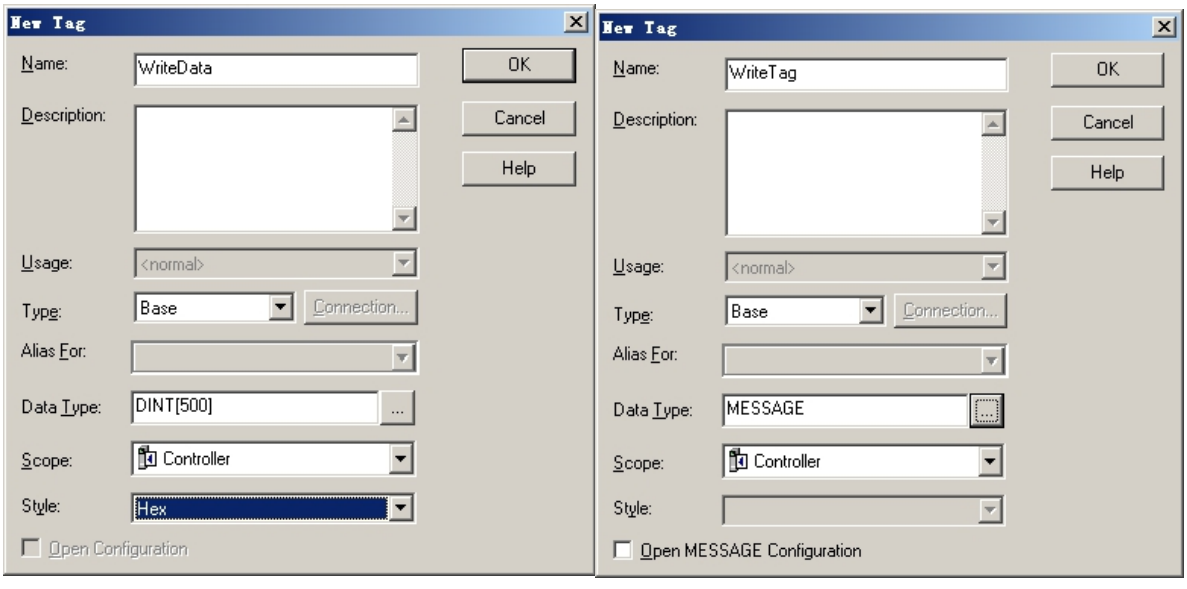
Download the program to the PLC and set PLC into "Online" state.

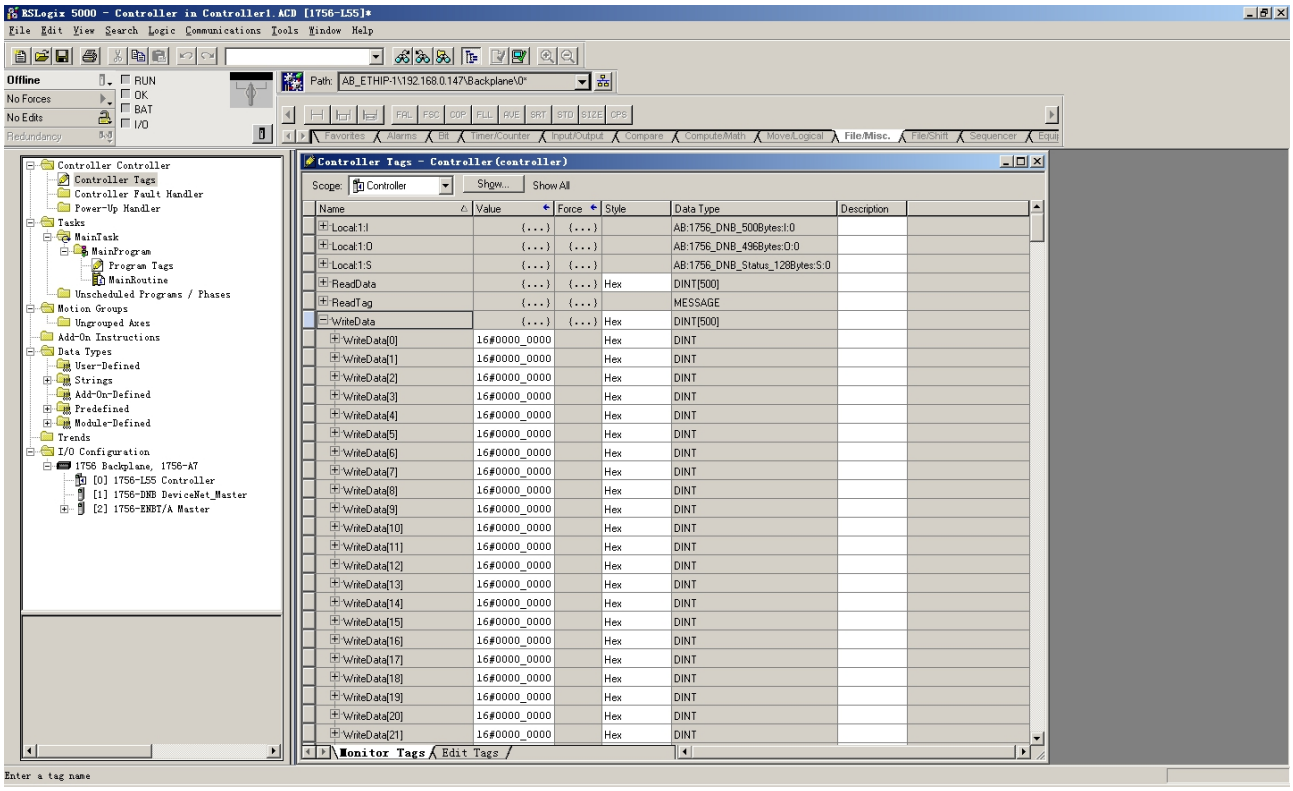
Click "Control Tags" and select "Monitor Tags", unfold "ReadData", you will see that PLC can read the data from EtherNet/IP adapter (SST Gateway).



8.3.2 Write 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 "DINT [500]":

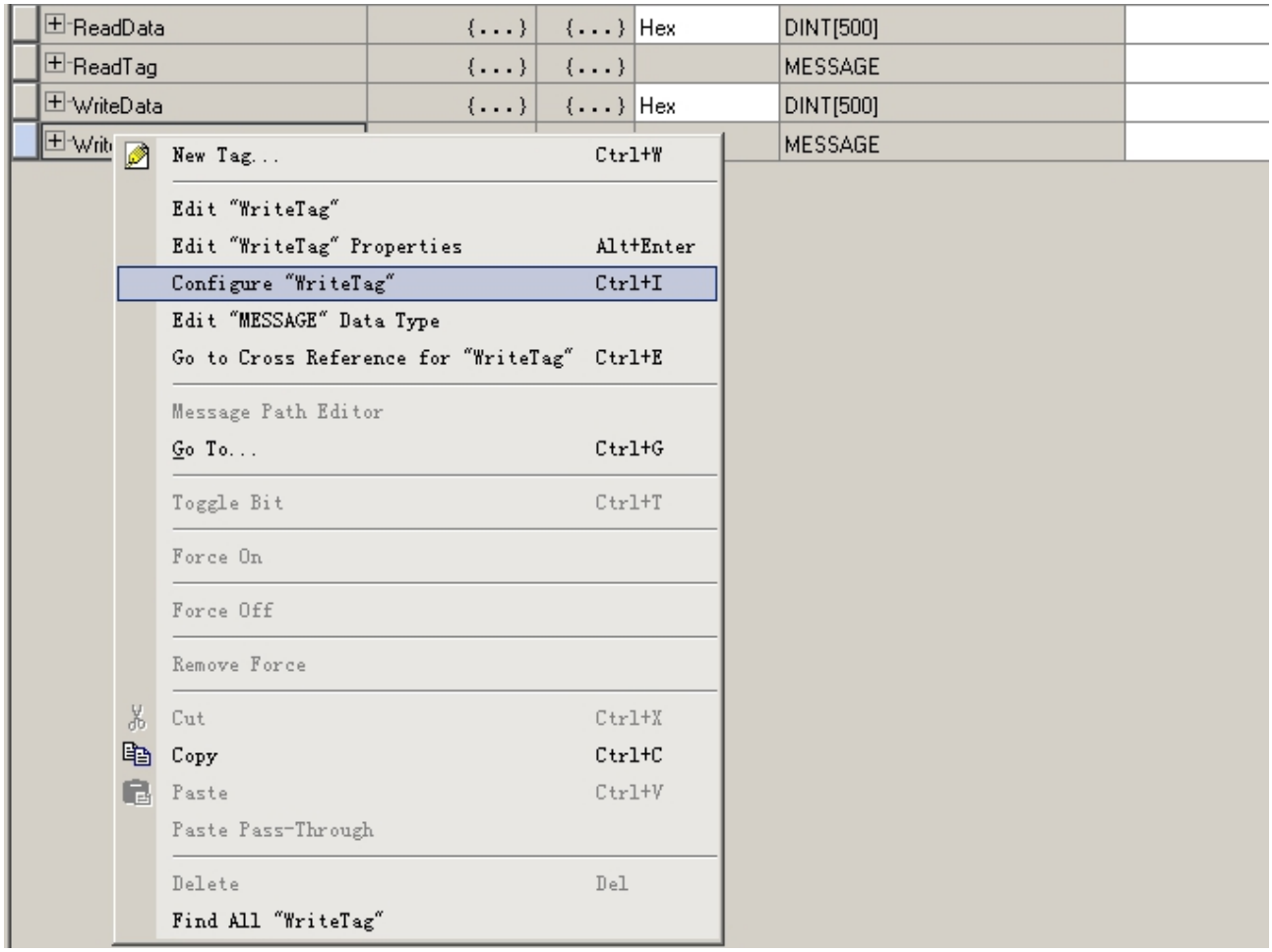




Enter the "Monitor Tags" interface; input some data beginning from address WriteData[0] in the "WriteData" tag.

There data will be outputted to SST Gateway.

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)"

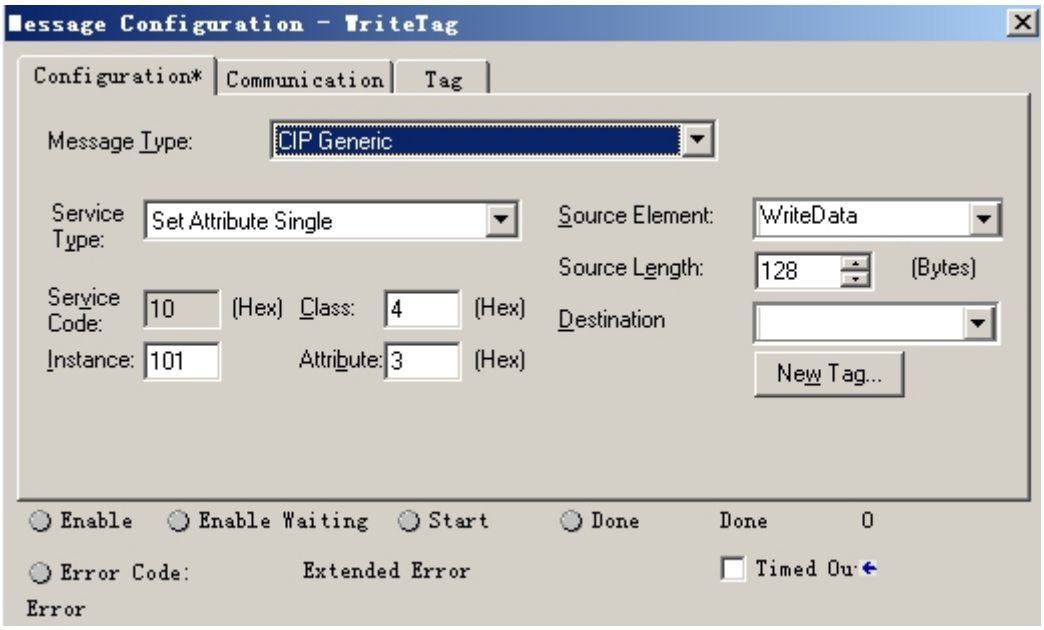
Class: 4 (Hex)

Instance: Please refer to chapter 9.1 EtherNet/IP Connection Parameters.

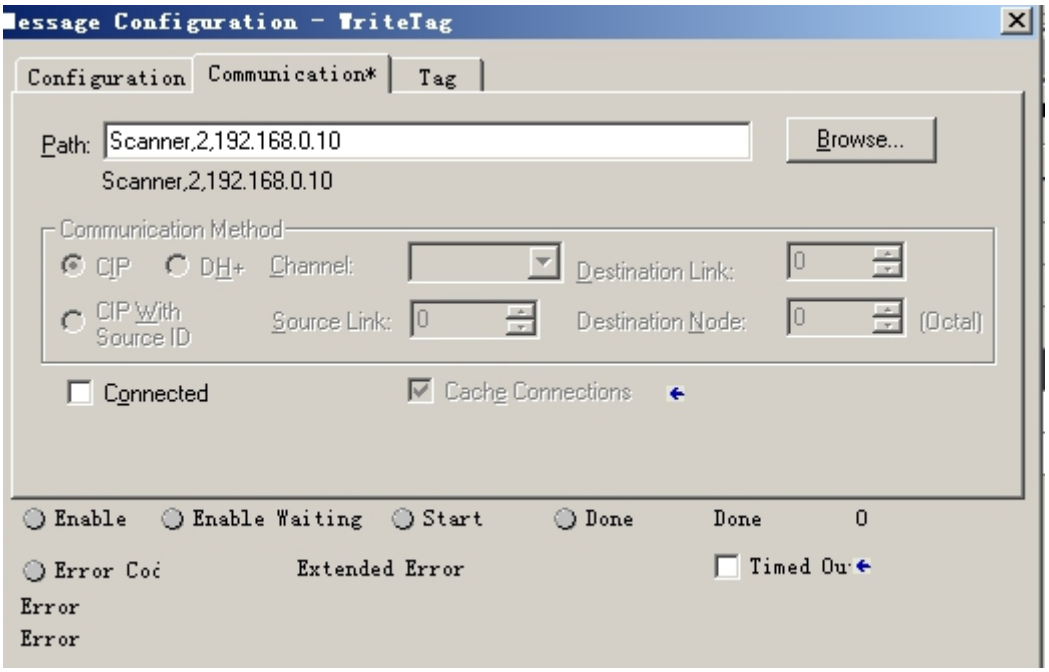
Attribute: 3 (Hex)

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.



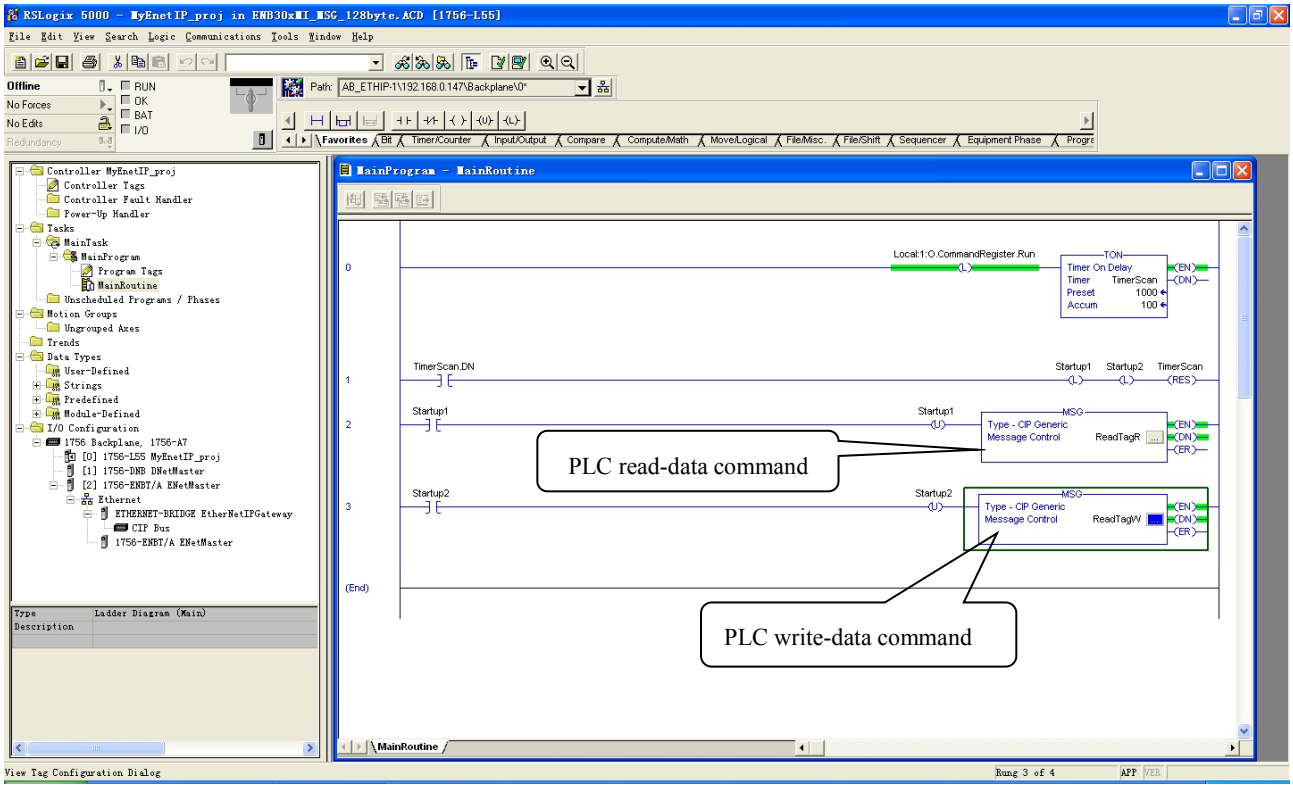
Choose "Communication" label, input the relevant path of connecting EtherNet/IP adapter in the blank space behind the Path, the path format is: EthetNet IP hostname, EtherNet/IP scanner slot No., IP address of EtherNet/IP adapter, after setting the path, click "Apply", "Confirm". As is shown below:



In this instance, EtherNet/IP hostname is "Scanner", EtherNet/IP scanner slot No. Is "2", EtherNet/IP adapter (SST Gateway) is "192.168.0.10". IP address of SST Gateway is the address which is configured by the configuration software.

Add a "MSG" command in "MainRoutine" under the "MainProgram" and choose "WriteTag" as "Message

Control", as shown below:



Download PLC program to the PLC and set PLC to "Online" state, the data in "WriteData" will be outputted to EtherNet/IP adapter (SST Gateway).