

DeviceNet / PROFINET Gateway

GT200-PN-DM

User Manual

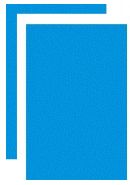
V3.2



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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1 Product Overview

1.1 Product Function

GT200-PN-DM is a gateway which can connect device with DeviceNet interface to the PROFINET network. It acts as a device station on the PROFINET side and a scanner on the DeviceNet side.

1.2 Product Features

- Wide application: Supports connecting multiple DeviceNet devices to the PROFINET network. Such as: Robots with DeviceNet interfaces, inverters, motor starting protection devices, intelligent high and low voltage appliances, intelligent field measurement equipment and PLCs, etc., the PROFINET end is connected to PLCs such as Siemens S7-300 / 400/ 1200/ 1500.
- Easy configuration: Users don't need to know the technical details of PROFINET and DeviceNet, only refer to this manual and the application cases provided, complete configuration according to requirements, the network can be connected in a short time.
- Transparent communication: According to the mapping relationship between PROFINET communication data area and DeviceNet communication data area, users can realize data transparent communication between DeviceNet network and PROFINET network.

1.3 Technical Specification

[1] supports pre-operation mode and operation mode.

A. Pre-operation Mode

- Support device search, online scanning of DeviceNet adapter through SST-DNET-COM software.
- Support one-click application of scanned DeviceNet adapter I/O parameter configuration.
- Support reading and writing configuration.
- Support automatic switching to running mode after writing configuration.
- Support DeviceNet baud rate: 125K, 250K, 500K.
- Support reading and writing DeviceNet adapter parameters.
- Support reading and writing DeviceNet I/O data(polling).
- Support reading cos commands (COS) (up to 14 bytes).
- Support reading and writing product.

B. Operation Mode

- Support DeviceNet baud rate: 125K, 250K, 500K.
- Support communication with PROFINET master (Siemens S7-300 / 400/ 1200/ 1500 PLCs, etc.)
- One DeviceNet adapter supports maximum input: 128 bytes, output: 112 bytes.
- Support connect up to 63 adapter devices, supporting a maximum input/output of 1440 bytes.
- Support PROFINET side monitoring of DeviceNet adapter connection status. After enabling, the status information will take up 8 bytes.
- DeviceNet supports input timeout clearing and holding function of DeviceNet (optional).
- DeviceNet supports data no-exchange, two-byte exchange, four-byte exchange.

[2] Support RT and IRT protocols of standard PROFINET.

[3] PROFINET supports up to 32 slots, the maximum number of input bytes is 1440 and the maximum number of output bytes is 1440. (The length available to the user is limited by the specific PLC and PDU size of the communication module. When configuration the slot, each slot will take up 1 or 2 bytes of status bit information, so it can actually store up to 1428 bytes of valid data, 512+512+256+128+16+4) Slots can be configured in the PLC.

[4] The supported PROFINET module types are as follows:

- **Input 001 byte**
- **Input 002 bytes**
- **Input 004 bytes**
- **Input 008 bytes**
- **Input 016 bytes**
- **Input 032 bytes**
- **Input 064 bytes**
- **Input 128 bytes**
- **Input 256 bytes**
- **Input 512 bytes**
- **Output 001 byte**
- **Output 002 bytes**
- **Output 004 bytes**
- **Output 008 bytes**
- **Output 016 bytes**
- **Output 032 bytes**
- **Output 064 bytes**
- **Output 128 bytes**

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- **Output 256 bytes**
- **Output 512 bytes**
- **Input / Output 001 byte**
- **Input / Output 002 bytes**
- **Input / Output 004 bytes**
- **Input / Output 008bytes**
- **Input / Output 016 bytes**
- **Input / Output 032 bytes**
- **Input / Output 064 bytes**
- **Input / Output 128 bytes**
- **Input / Output 256 bytes**
- **Input / Output 512 bytes**

[5] Power: 24 VDC (11~30 VDC), 90mA(24VDC).

[6] Operating temperature: -40°F~158°F(-40°C~70°C). Humidity: 5%~ 95% (non-condensing).

[7] Built-in electrostatic protection: 15 KV ESD. Communication interface isolation: 3KV.

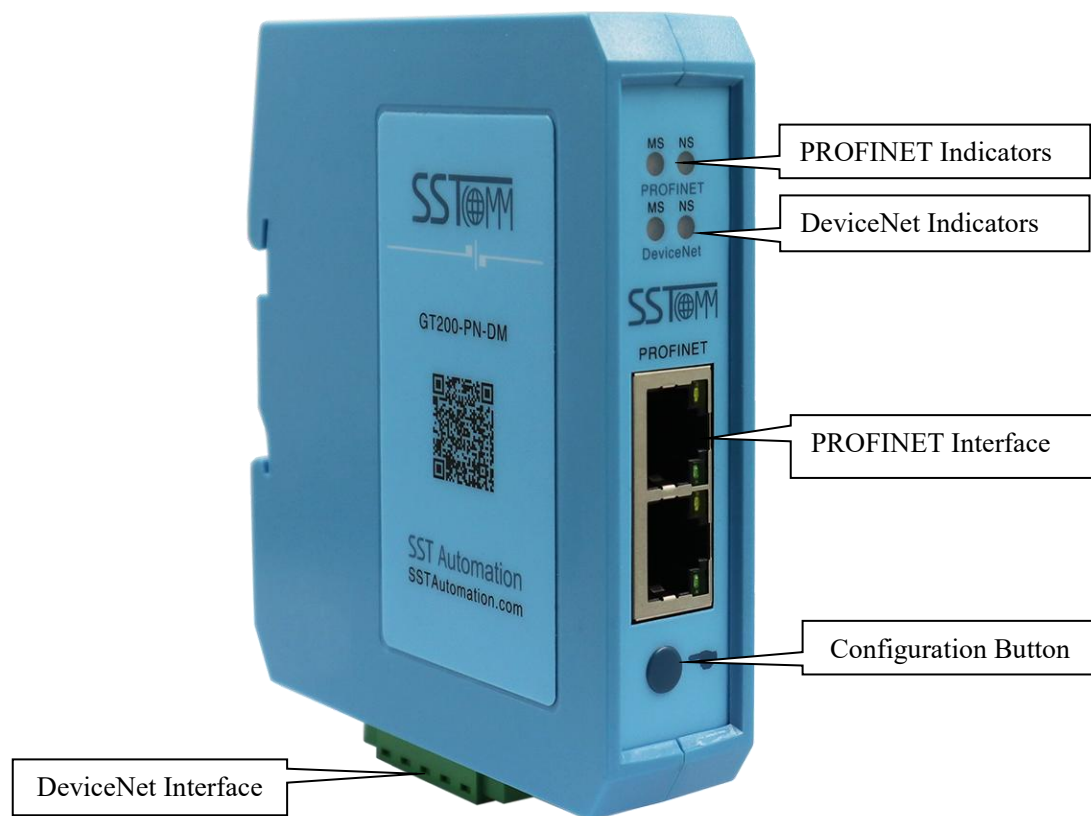
[8] Dimensions (W*H*D): 1.0 in *4.0 in *3.6 in (25mm*100mm*90mm).

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

[10] Protection level: IP20.

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

1. PROFINET LED Indicators

MS	NS	Description
Always Red	Off	Module is running and initialization has not yet completed.
Always Green	Red blinking(1Hz)	Initialization completed, no connection with PLC
	Red blinking(2Hz)	Physical connection in IRT mode does not match the configuration
Always Green	Always Red	No plug-in network cable
Always Green	Always Green	Connect with PLC and communicate normally

2. DeviceNet LED Indicators

(1) DeviceNet Scanner--Pre-operation mode:

MS	NS	Description
Green blinking	Off	Initialization completed. searching not started yet.
Always Green	Green blinking	The master is online, but no connection has been established with the adapter.
Always Green	Always Green	Connection has been established with adapter.
Always Green	Always Red	Disconnected with adapter.

(2) DeviceNet Scanner--Operation mode:

MS	NS	Description
Always Green	Off	Module is running and initialization has not yet been completed.
Always Green	Green blinking	Initialization completed, The master is online, but no connection has been established with the adapter.
Always Green	Always Green	Connection has been established with adapter.
Always Green	Red blinking	The adapter is disconnected from the scanner.
Always Green	Always Red	There is no adapter on CAN network, Address Duplication Detection Conflict, CAN Network error.

2.3 Configuration Button

After the gateway is started, it enters the operation mode by default. The mode can be switched by pressing the button. After each key operation is successfully recognized, the MS and NS lights on the DeviceNet side will flash orange once. The functions are as follows:

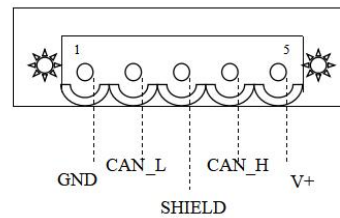
Operation	Function Description	Exit Operation
Press and hold the button for 3 seconds	DeviceNet scanner operation mode switches to operation mode	Press and hold the button again for 3 seconds, the device will exit the operation mode and restart
After double-clicking the button, press and hold for 3 seconds (if there is no action within 10 seconds after double-clicking, the operation will be cancelled)	Reset	After the key operation is successful, the gateway will restart itself and use the default configuration. Default parameters: 192.168.0.83, device name:gt200pnrs
Press and hold the button before powering on	Enter bootloader Mode	Restart the gateway

2.4 Communication Interface

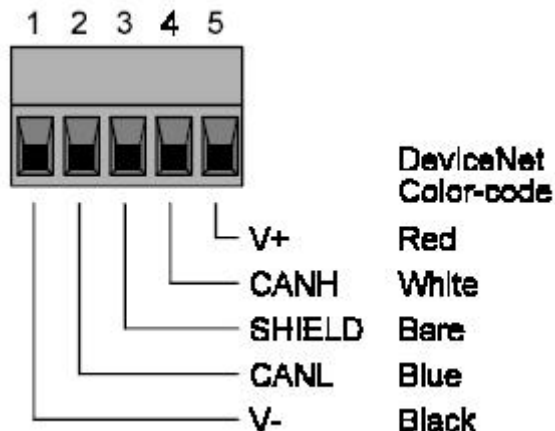
2.4.1 DeviceNet Interface

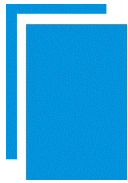
GT200-PN-DM supplies power through DeviceNet port, DeviceNet and power terminal, as shown below:

Pin	Wiring
1	GND(Power GND)
2	CAN L
3	SHIELD
4	CAN H
5	V+(24VDC+)



The DeviceNet side uses an open five-core connector:

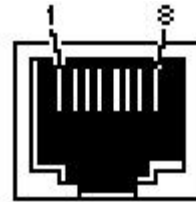




2.4.2 Ethernet Interface

The Ethernet interface uses RJ45 interface, follows the IEEE802.3u 100BASE-T standard. Its pin (standard Ethernet signal) is defined as below:

Pin	Signal description
S1	TXD+
S2	TXD-
S3	RXD+
S6	RXD-
S4,5,7,8	Reserved



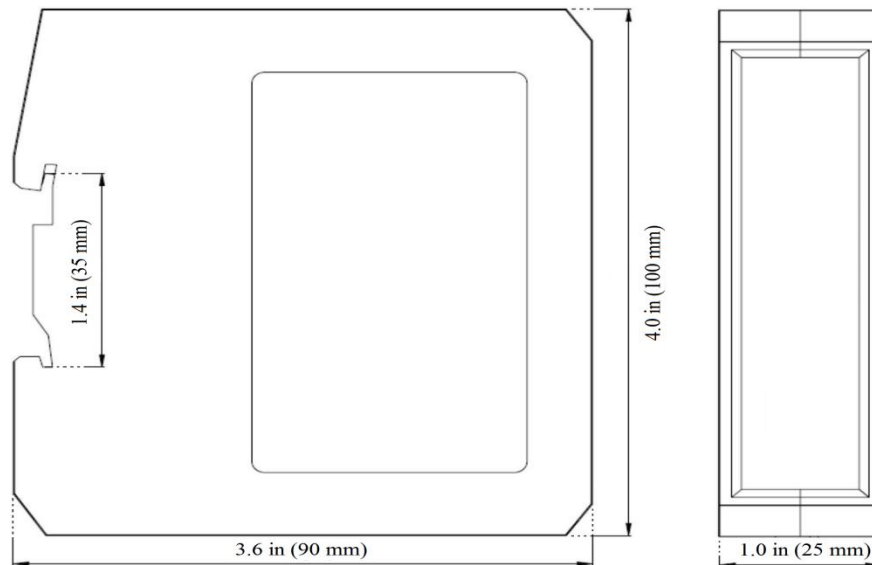
RJ-45 port

3 Hardware Installation

3.1 Mechanical Dimensions

Size (width * height * depth):

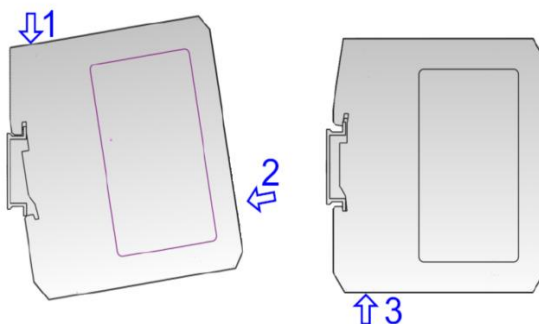
1.0 in * 4.0 in * 3.6 in (25 mm * 100 mm * 90 mm)



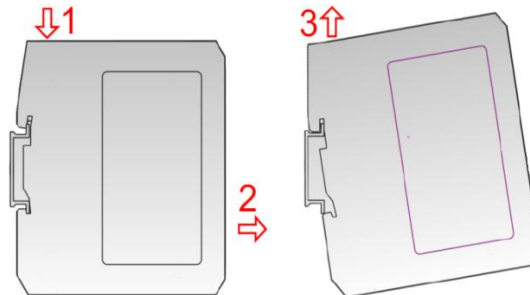
3.2 Installation Method

Using 1.4 in (35mm) DIN RAIL.

Install



Uninstall



4 Instructions

4.1 Quick Start Guide

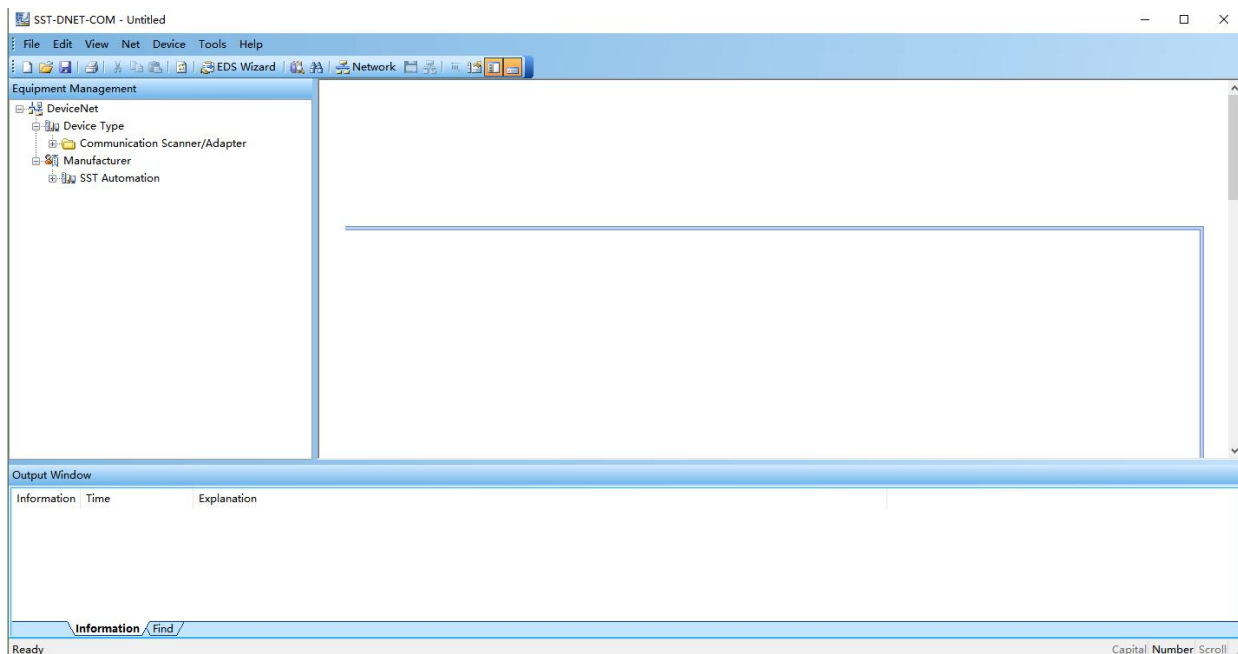
The gateway supports two modes: Pre-operation and operation. Pre-operation mode is used to scan adapter devices in the DeviceNet network, debug or upload/download GT200-PN-DM configuration. Operation mode is used for normal communication. The gateway's Mode can be selected through the configuration button, please refer to Chapter 2.3.

4.1.1 Pre-operation Mode-Scanning and debugging adapter devices in DeviceNet network

Applicable scene: When the I/O parameters of the adapter in the DeviceNet network are uncertain.

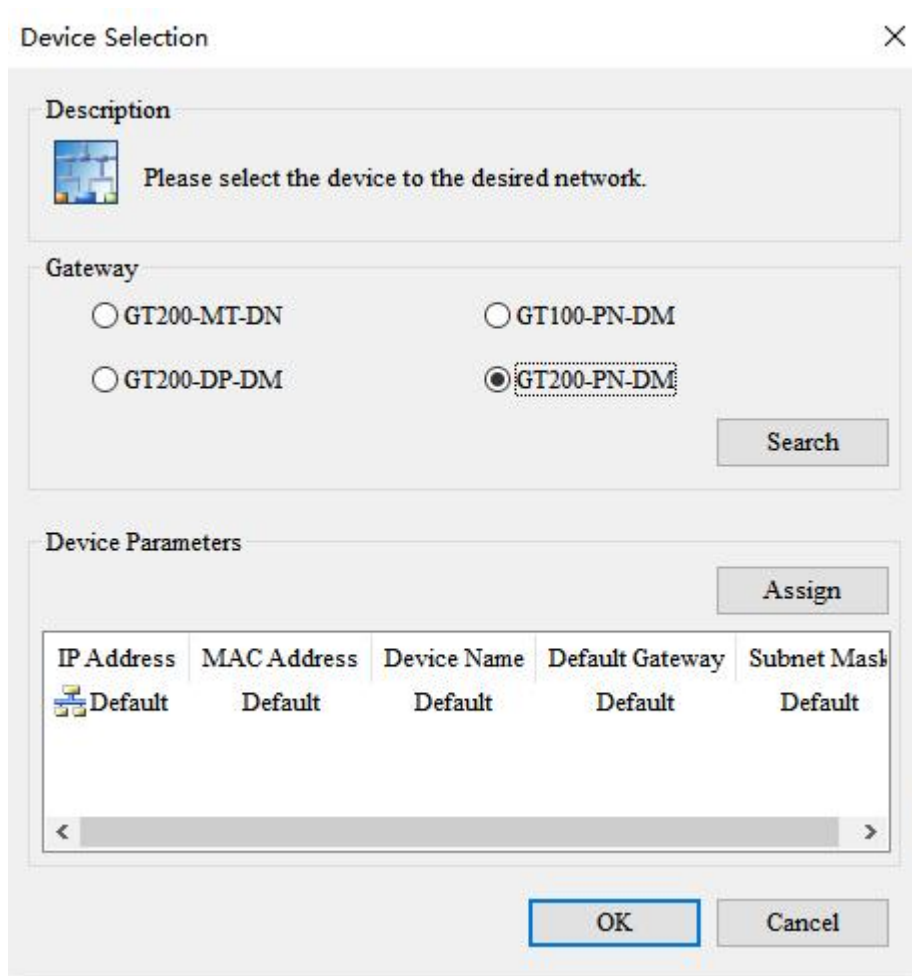
Connect GT200-PN-DM and PC via cable, then power on the gateway. Wait until 4 lights on the gateway are on. Press and hold the button for 3 seconds, release the button when MS and NS indicators on the DeviceNet side flash orange once, indicating switching to operating mode.

Double-click the SST-DNET-COM software installed on the PC, as shown in the figure below:



1. Click the EDS wizard and follow the prompts to import the EDS file of the connected DeviceNet adapter device.
2. Click "Network Connection" on the toolbar and select the GT200-PN-DM configuration interface in the following

pop-up box.



The "Device Selection" dialog box is shown. It has a title bar with a close button (X). The dialog is divided into three main sections: "Description", "Gateway", and "Device Parameters".

Description: Contains a small icon of a network and the text "Please select the device to the desired network."

Gateway: Contains four radio buttons for selecting a gateway: "GT200-MT-DN", "GT100-PN-DM", "GT200-DP-DM", and "GT200-PN-DM". The "GT200-PN-DM" option is selected and highlighted with a dashed border. A "Search" button is located to the right of these options.

Device Parameters: Contains an "Assign" button and a table with the following columns: "IP Address", "MAC Address", "Device Name", "Default Gateway", and "Subnet Mask". The table has one row with the values "Default", "Default", "Default", "Default", and "Default". Below the table is a horizontal scrollbar.

At the bottom of the dialog are "OK" and "Cancel" buttons.

3. Click "Search" and "Search Device" window will pop up. The software will automatically scan the GT200-PN-DM devices on the network and select the gateway that need to be configured (if the device is not scanned, please click refresh to try again), and then Click "Sign In".

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Search ×

IP Address	MAC Address	Device Name	Default Gateway	Subnet Mask
192.168.0.83	64-EA-C5-13-14-0A	gt200pndm	192.168.0.83	255.255.255.0

Online Refresh Cancel

Search

4. The "DeviceNet Settings" window will pop up after click sign in. The IP address is a read-only item, and the scanner address and Scanner baud rate are setttable items. Scanner address refers to the node address of GT200-PN-DM on the DeviceNet bus, and Scanner baud rate refers to the baud rate used by the DeviceNet network. After setting, click "OK".

DeviceNet Settings ×

IP Address: 192 . 168 . 0 . 83

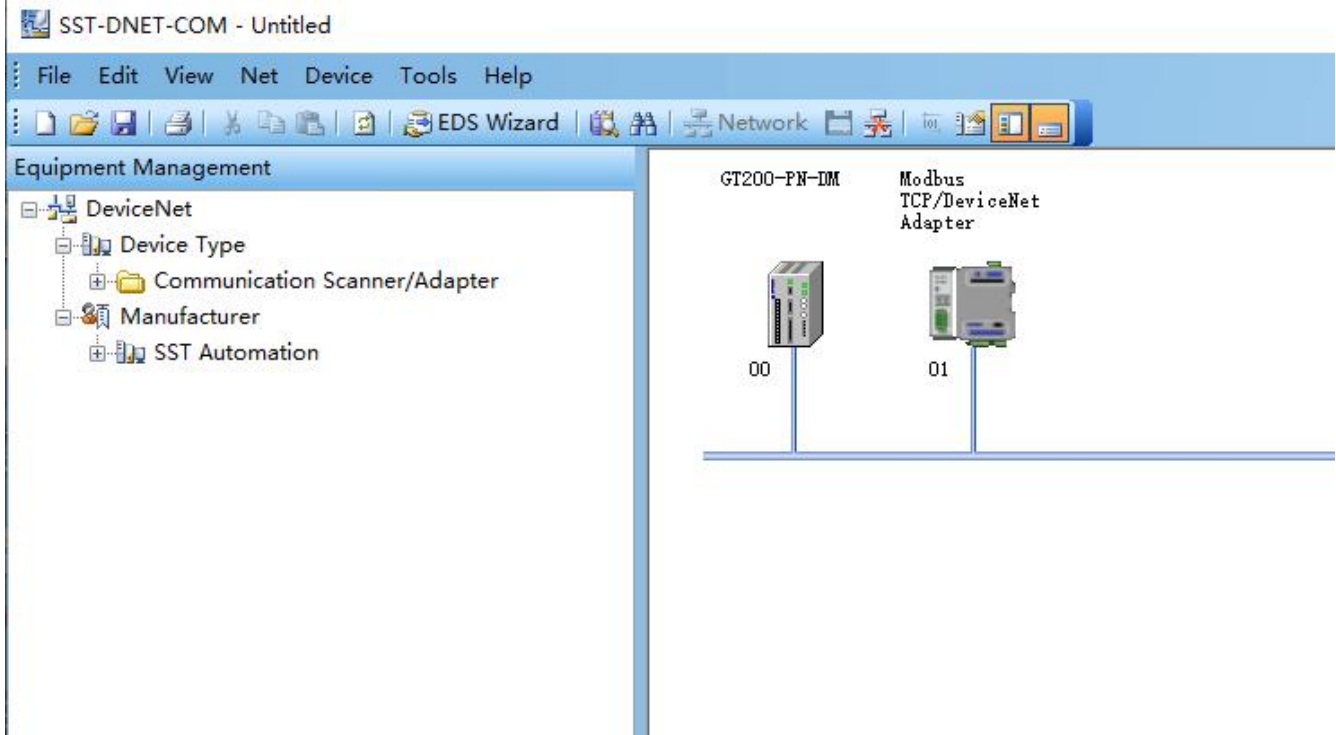
Scanner Address: 0

Scanner Baud Rate: 250k ▼

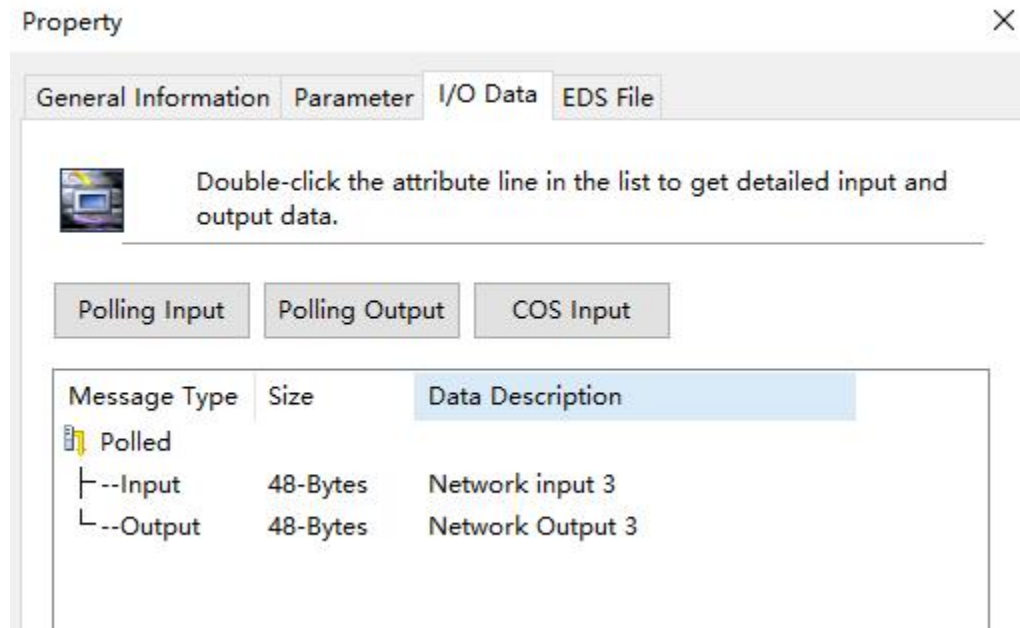
OK Cancel

5. Click "OK" to start scanning devices in the DeviceNet network.
6. After scanning to the adapter device, it is as shown in the figure below.

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7. Double-click the adapter station to view the I/O parameters of one of the adapter stations, as shown below:



8. Double-click the scanner icon (node 0 in this example), and the "Property" window will pop up. Click "Scan List", move the available devices from the left to the right scan list, double-click to edit the I/O parameters, set the byte length to read the adapter I/O parameters, and then click OK. In "Input" to Configure the mapping addresses of input

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and output data in "Output". The corresponding DeviceNet network parameters can be set in "DeviceNet Parameter Settings". (For detailed usage, please check Chapter 4.3 SST-DNET-COM configuration software)

Property

General Information

PROFINET Parameters

DeviceNet Parameters

Scan List

Input

Output

Available Devices:

ID	Device Name
----	-------------

Scan List:

ID	Device Name
1	Modbus TCP/DeviceNet A...

☒ Automatic Mapping When Adding

☐ Node Activity

Upload From Scanner

Download to Scanner

Edit I/O Parameters

Electronic key

☐ DeviceType

☐ Vender

☐ Product Type

☐ MajRev

☐ MinRev

Apply

OK

Cancel

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I/O Parameter Settings

Strobed
☐ Allowed
 Input: 0 Bytes
 Use Output Bit ☐

Polled
☒ Allowed
 Input: 48 Bytes
 Output: 48 Bytes
 Polling Cycle: Every scan

COS/Cyclic
☐ Allowed
☒ State Change(COS) ☐ Cycle(Cylic)
 Input: 0 Bytes
 Output: 0 Bytes
 Heartbeat Rate: 250 msec
 Advanced(A)

Restore I/O Size(R) OK Cancel

Property

General Information PROFINET Parameters

DeviceNet Parameters Scan List Input Output

Node	Type	Size	Map
1 Modbus TCP/Device...	Polled	48 Bytes	MI:1.0.0

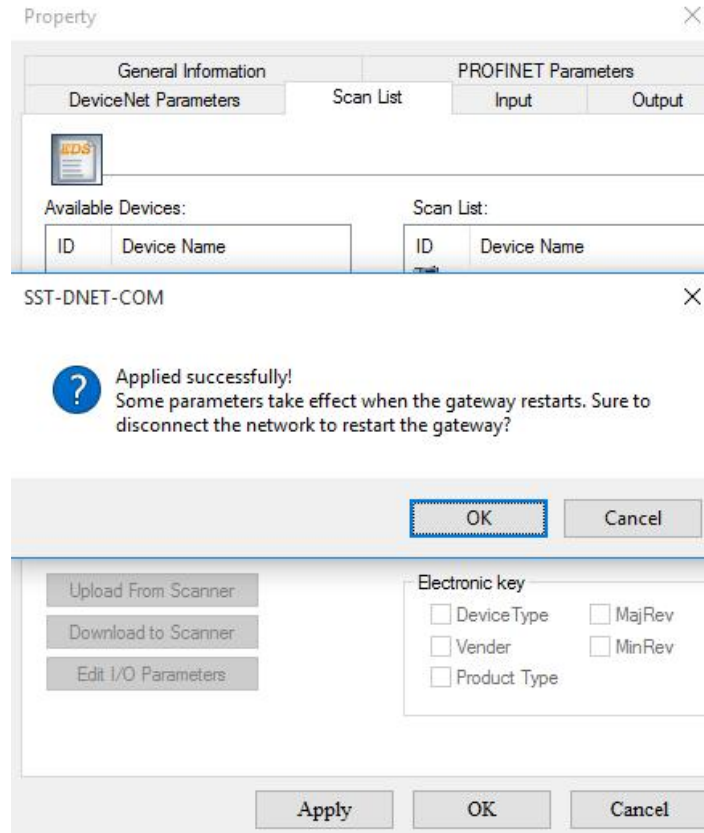
Map(M)
Unmap(R)
Advanced(A)
Options(O)

Buffer Memory: M File Start: 0

Bits	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MI:1.0																	
MI:1.1																	
MI:1.2																	
MI:1.3																	
MI:1.4																	
MI:1.5																	
MI:1.6																	
MI:1.7																	
MI:1.8																	

Apply OK Cancel

9. Click "Apply" to download the parameters into GT200-PN-DM. At this time, the prompt window "Download Successful" will pop up. Click "OK" to return to the main interface.



10. About debugging, if debugging is not required, please skip this process. If debugging is required, double-click the adapter icon (node 1 in this example). In "Parameters", you can upload the relevant parameters of the adapter device. In "I/O data", you can read and write data from the adapter device. (For detailed usage, please check Chapter 4.2 SST-DNET-COM configuration software).

4.1.2 Operation Mode-Upload or Download Configuration to GT200-PN-DM

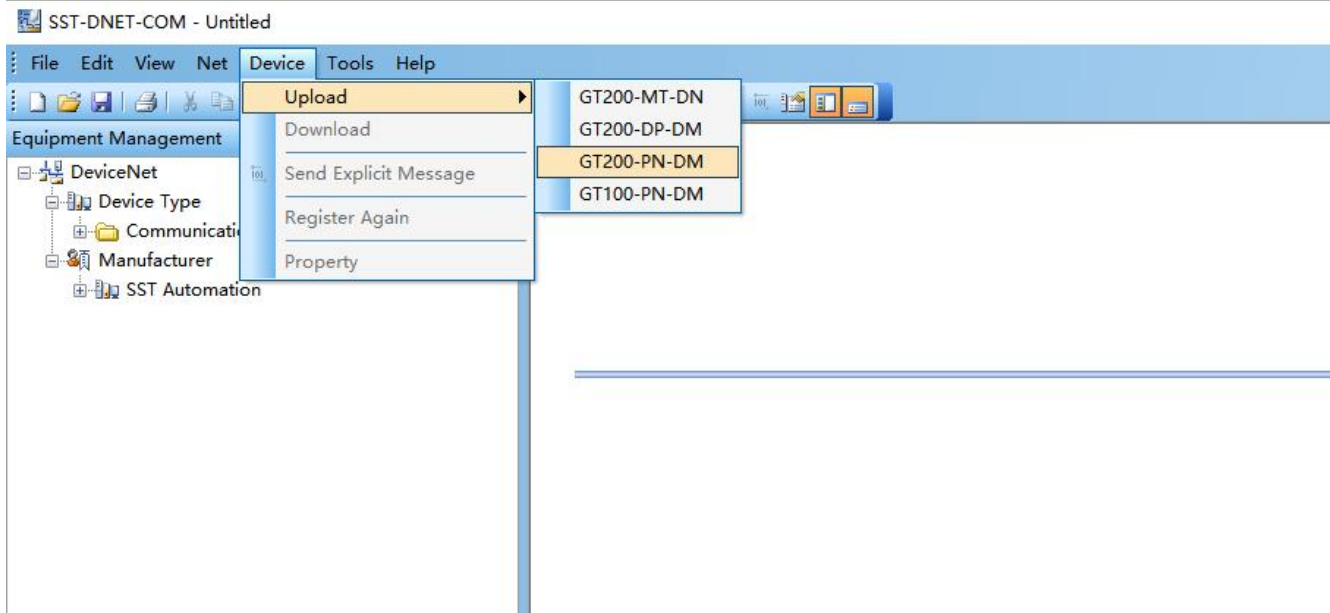
Applicable scene: Check the configuration in the GT200-PN-DM, confirm the parameters of the adapter, directly configure the parameters in SST-DNET-COM and download it into the GT200-PN-DM.

1. Click "Device" in the SST-DNET-COM menu bar, select "Upload " from the drop-down menu, and select

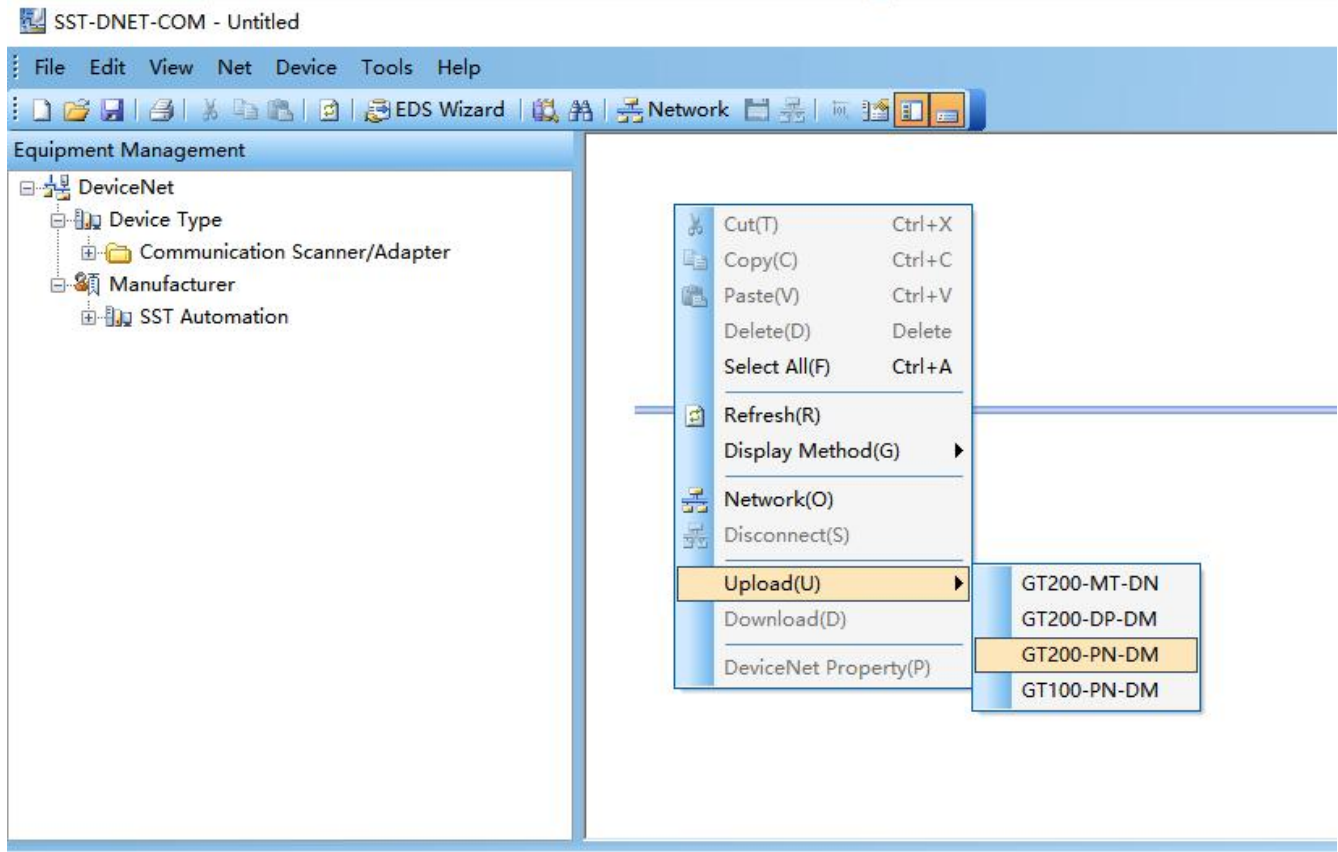
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“GT200-PN-DM”, or right-click "Upload" in the blank space of the configuration interface and select “GT200-PN-DM”. “Upload” is used to view the configuration saved in GT200-PN-DM. Click "Download" to download the configuration into GT200-PN-DM.



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2. If modify the name and IP address on the PROFINET side, click “Network” in the toolbar, select “Assign”, click “Browse” in the pop-up window to select the gateway and click "Sign In". As shown in the figure below, now we can modify the IP address and device name , click “OK” to complete the modification.

Set the IP address and device name

Destination MAC Address: 64-EA-C5-13-14-0A [Browse]

Ethernet

IP Address: 192 . 168 . 0 . 83 Subnet Mask: 255 . 255 . 255 . 0

Default Gateway: 192 . 168 . 0 . 83

Device Name: gt200pndm

[OK] [Cancel]

4.1.3 Operation Mode

1. Press and hold the button for 3 seconds, on DeviceNet side MS and NS will orange flash once and then release, which means switching from Pre-operation mode to operation mode.
2. Use a network cable, connect GT200-PN-DM to the PLC.(please download the configuration to the PLC)
3. Connect GT200-PN-DM to the DeviceNet network
4. Power on the GT200-PN-DM. At this time, the GT200-PN-DM will establish communication with the adapter in the DeviceNet network.
5. The PROFINET side will establish communication with the PLC. (Whether a connection is established, please refer to Chapter 4.2 and judge based on the status of the indicator light)

Normal communication between GT200-PN-DM and PLC (PROFINET master station) requires the following two conditions to be met at the same time:

1. The IP address settings of the gateway here must be consistent with those set in the PROFINET master configuration software.
2. The Device Name settings of the gateway here must be consistent with those set in the PROFINET master configuration software.

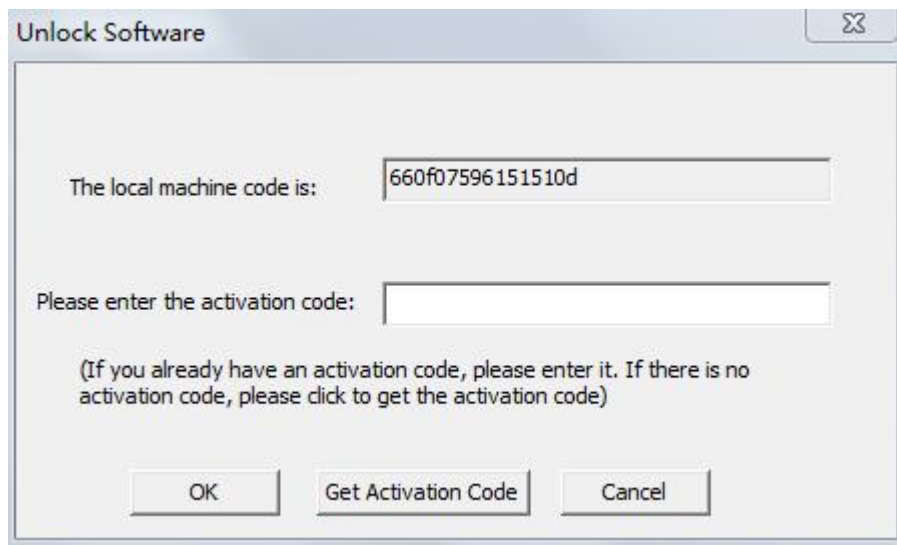
4.2 SST-DNET-COM Software Instructions

4.2.1 Note before configuration

Power on the GT200-PN-DM, until 4 lights of the gateway are on, press and hold the button for 3 seconds, on DeviceNet side MS and NS will orange flash once and then release. The gateway switches to operation mode, and now we can use SST-DNET-COM software to Configure I/O parameters for adapter devices on the network.

4.2.2 Software Interface Description

Please open the SST-DNET-COM software and click the icon  on the toolbar. The following figure pops up: For the first time to use the SST-DNET-COM software, it requires activation code.



Click “Get Activation Code” and it will jump to sstautomation.com for activation.

products

» Exit Member Center



4.3 Toolbar

Toolbar is shown as below:

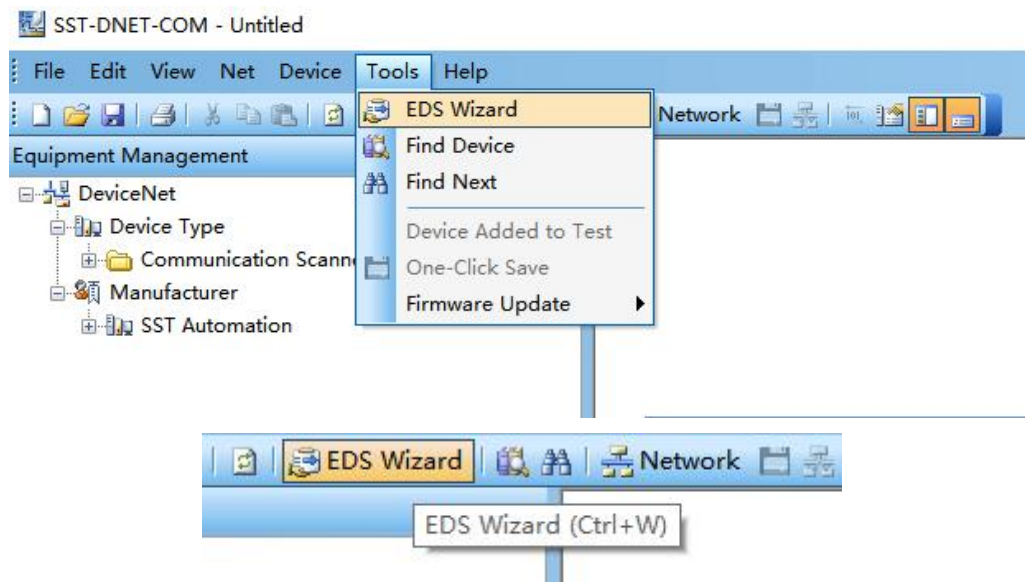


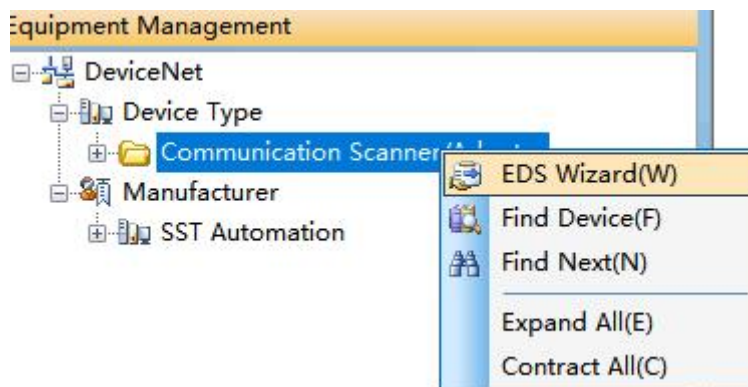
Functions separately from left to right are: New, Open, Save, Print, Cut, Copy, Paste, Refresh viewport, EDS Wizard, Find devices in the device library, find next, Internet Connection, One-Click Save, Disconnect, Send Explicit Message, Property, Device Management, Output.

4.4 DeviceNet Device Network Configuration

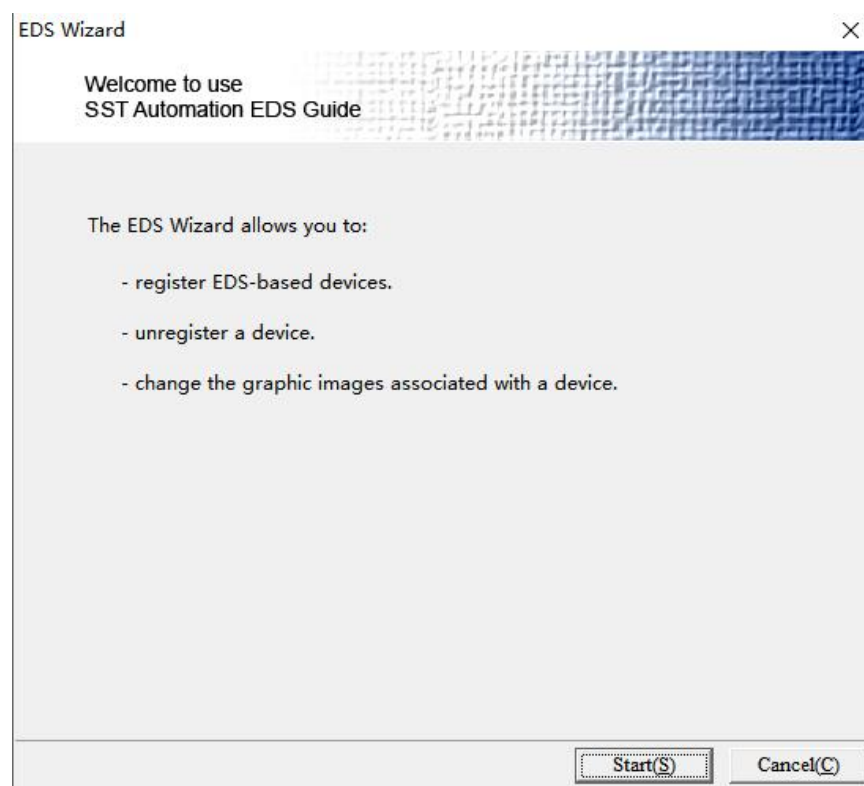
➤ EDS Registration Wizard

Users can configure different DeviceNet devices by registering new EDS files. To register a new EDS file, select "Tools" -> "EDS Wizard", or click "EDS Wizard" button in the toolbar. Or directly click the right button in the Equipment management window and select "EDS Wizard" which will pop up the EDS Wizard interface. The three ways are as follows:

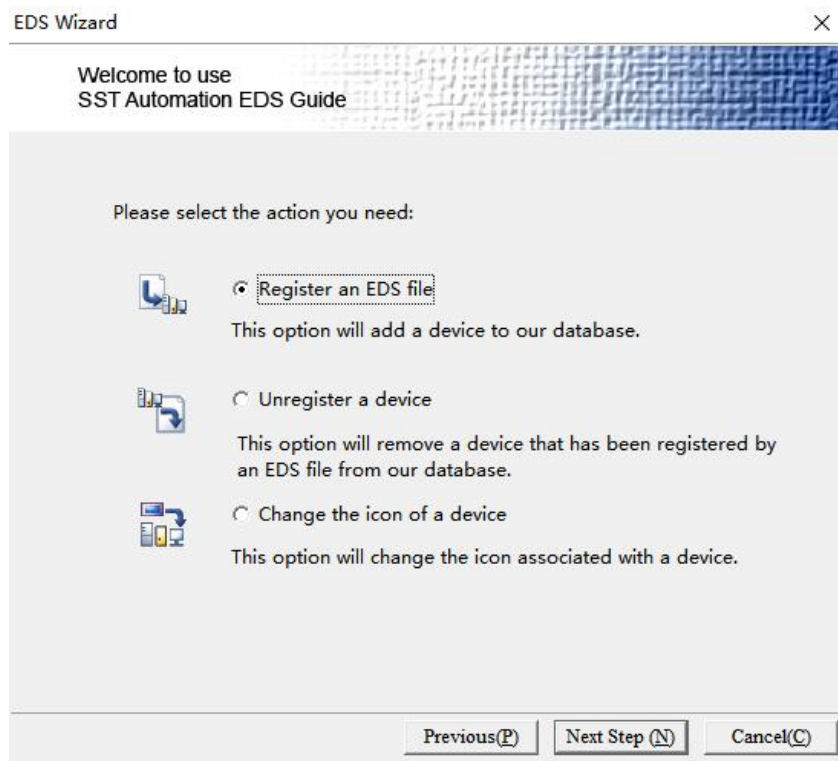




EDS Wizard interface is shown in the following figure:



Select "Start" and pop up the following interface:



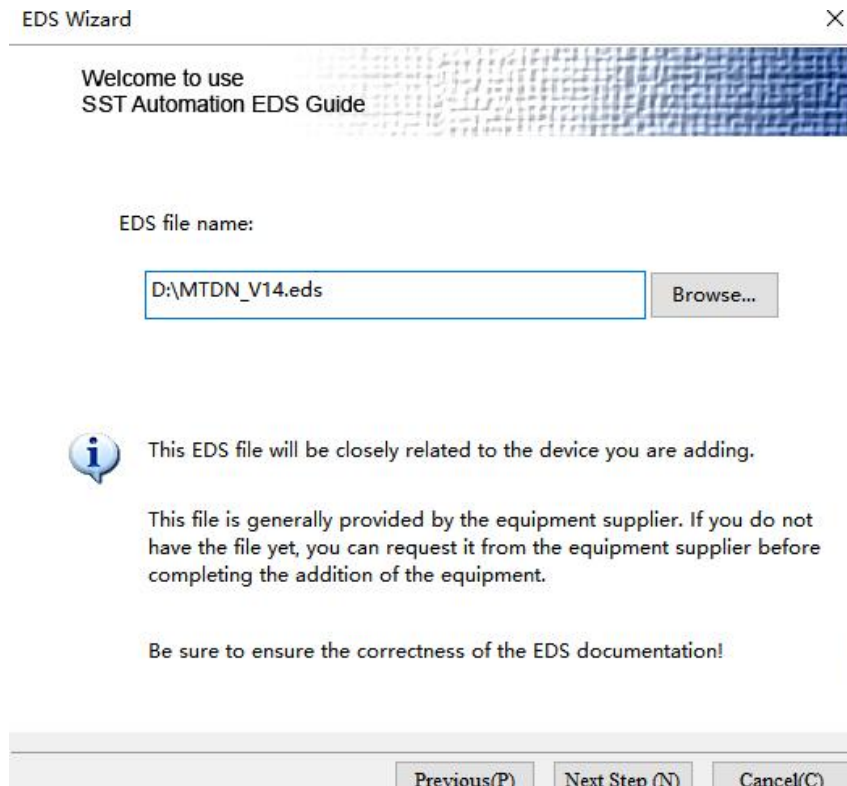
In this interface, users can choose to register an EDS file, log out of an existing device, and change the icon of a device.

Take "Register an EDS file" as an example to introduce the following steps for registering a new EDS file:

After selecting "Register an EDS file", click "Next Step" and select the storage path of EDS file you want to register in the pop-up interface, as shown in the figure below:

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EDS Wizard

Welcome to use
SST Automation EDS Guide

EDS file name:

D:\MTDN_V14.eds Browse...

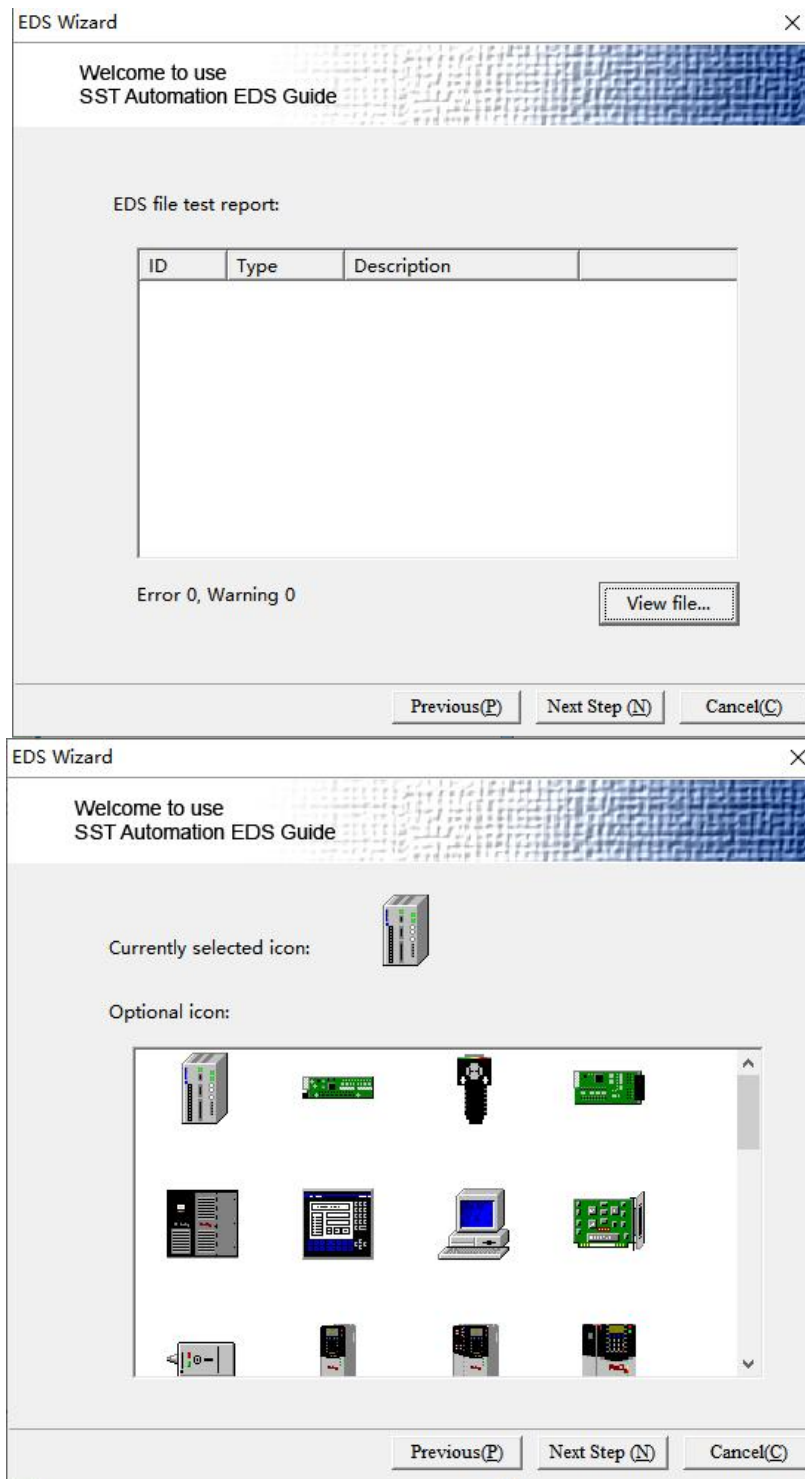
 This EDS file will be closely related to the device you are adding.

This file is generally provided by the equipment supplier. If you do not have the file yet, you can request it from the equipment supplier before completing the addition of the equipment.

Be sure to ensure the correctness of the EDS documentation!

Previous(P) Next Step (N) Cancel(C)

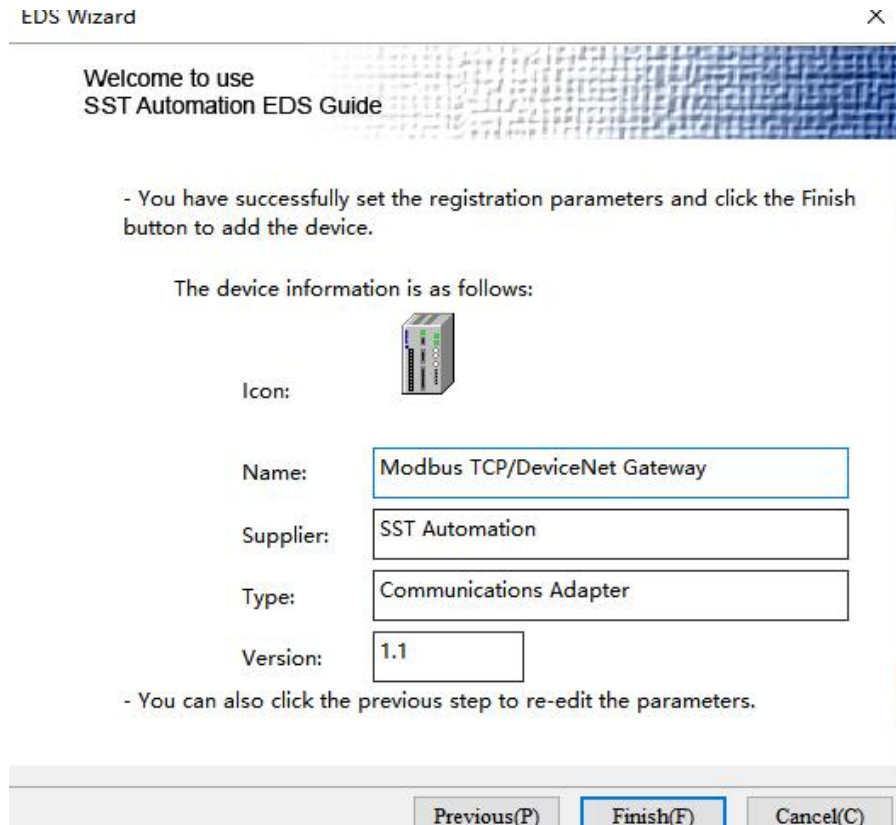
Click "Next Step" to pop up the EDS file test report interface. If there is an error in the EDS file, the error message will be displayed in the interface, and there is no "Next Step" operation. If there is no error in the file, continue the "Next Step" operation, pop-up selection device icon interface as follows:



After selecting a device icon, click "Next Step" to pop up the factory information of the registered device, as shown in the figure below:

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Click "Finish" and the EDS file registration step is over. At this time, you can see the newly registered device in the equipment Management Window.

If you want to change EDS file for the same device, please first find the device in the device management library and right click. After logging out, re-register the new EDS file, or complete the logout operation through the EDS operation.

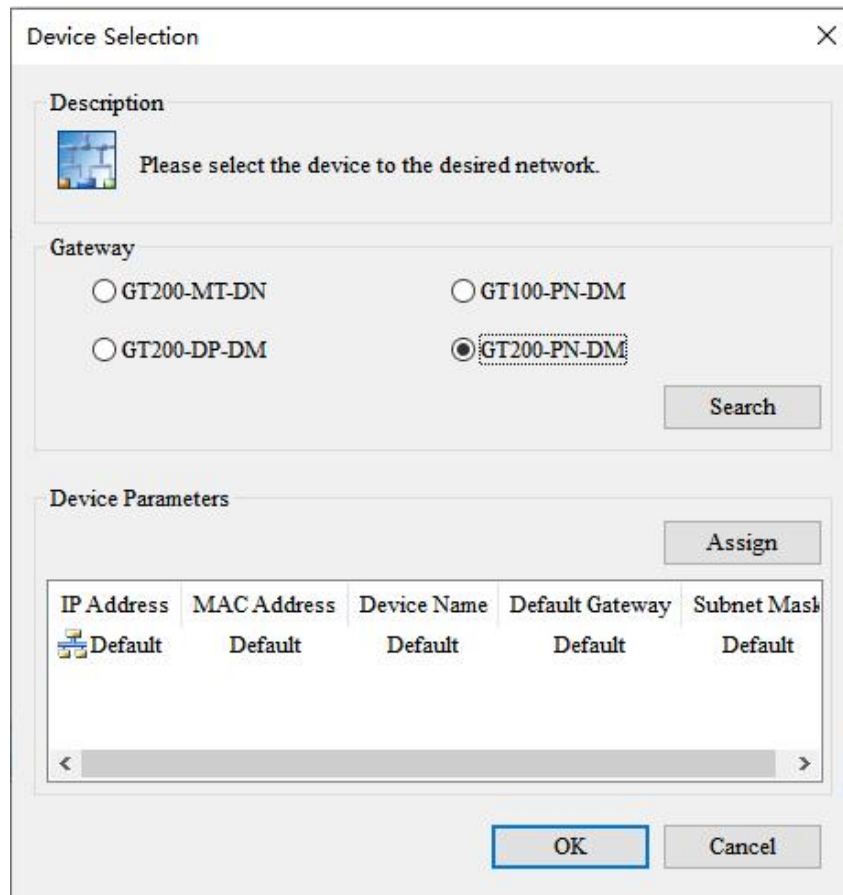
➤ PC-DeviceNet Interface Setting

SST-DNET-COM software needs to be used together with the DeviceNet scanner module. First, connect GT200-PN-DM to Ethernet, and then connect GT200-PN-DM's DeviceNet port and user's DeviceNet device to the DeviceNet network. Power Supply of GT200-PN-DM is 24VDC.

Power on After correctly Connecting to Power Supply, until 4 lights of the gateway are on, press and hold the button for 3 seconds, on DeviceNet side MS and NS will orange flash once and then release. The connection of DeviceNet network can be established by "Internet Connection" in the menu bar or toolbar. Click "Internet Connection" and pop up the path selection interface:

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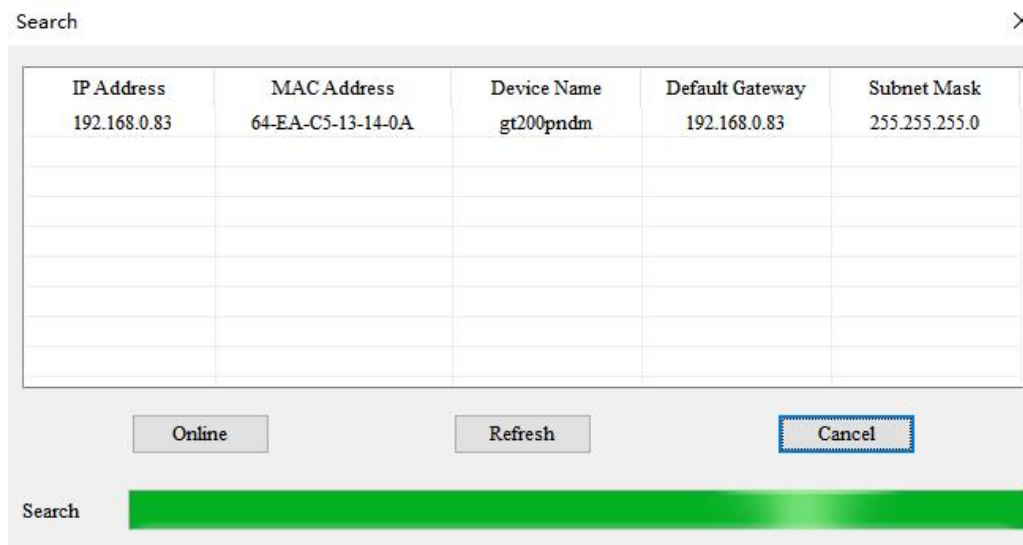


The "Device Selection" dialog box contains the following sections:

- Description:** A message box with a network icon and the text "Please select the device to the desired network."
- Gateway:** Four radio buttons for device selection:
 - ☐ GT200-MT-DN
 - ☐ GT100-PN-DM
 - ☐ GT200-DP-DM
 - ☒ GT200-PN-DMA "Search" button is located to the right of these options.
- Device Parameters:** A table with the following columns: IP Address, MAC Address, Device Name, Default Gateway, and Subnet Mask. The first row contains "Default" values for each column. An "Assign" button is to the right of the table. Below the table is a horizontal scrollbar.

At the bottom of the dialog are "OK" and "Cancel" buttons.

Then click the "Search", the software will display the searched device in the list, select the scanner station to be configured for the interface setting:



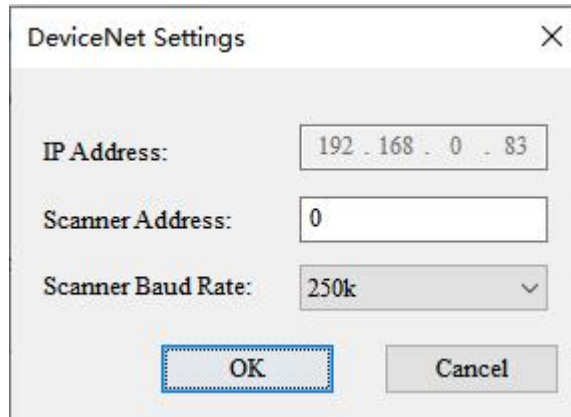
The "Search" dialog box displays a table of search results:

IP Address	MAC Address	Device Name	Default Gateway	Subnet Mask
192.168.0.83	64-EA-C5-13-14-0A	gt200pndm	192.168.0.83	255.255.255.0

Below the table are three buttons: "Online", "Refresh", and "Cancel". At the bottom, there is a "Search" label and a green search bar.

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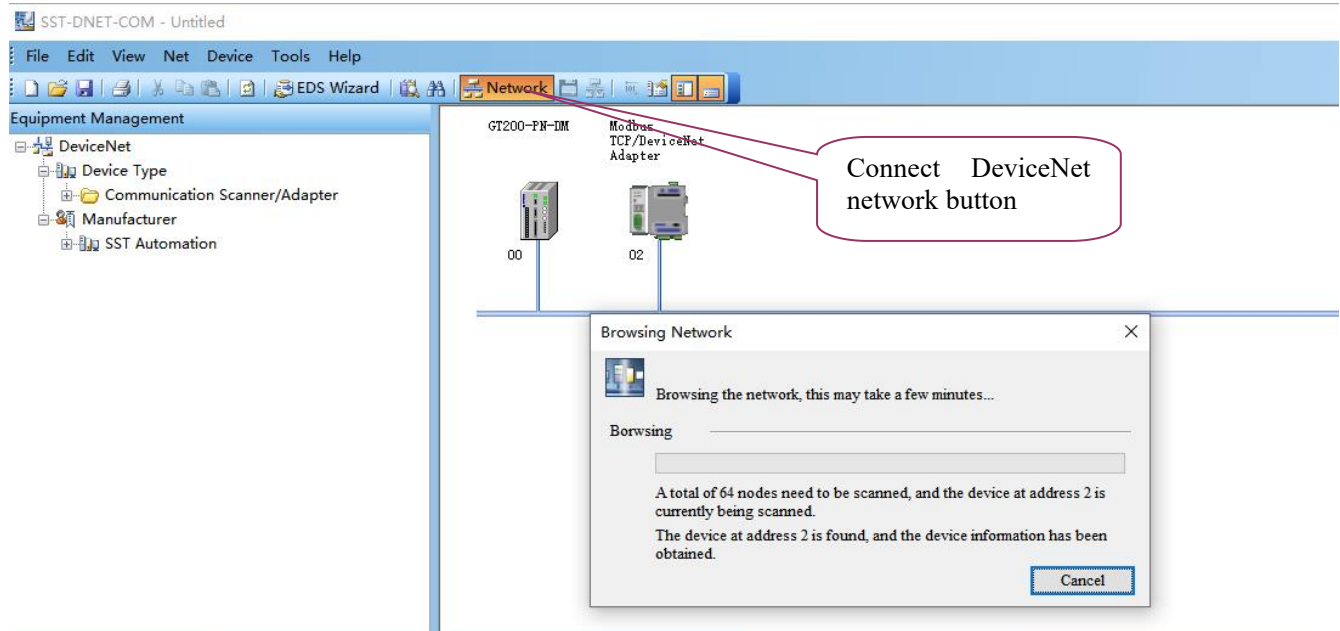
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Note: In the interface settings configuration, "IP address" is the IP of the device selected at the time of search. "Scanner Address" is the Address of DeviceNet Scanner Module. Set any value between 0 and 63, which can't conflict with other node addresses on the bus. "Scanner Baud Rate" is the baud rate of DeviceNet scanner module, and has 125K, 250K, and 500K options. Keep Bus Baud Rate Consistent.

4.5 DeviceNet Network Scanning

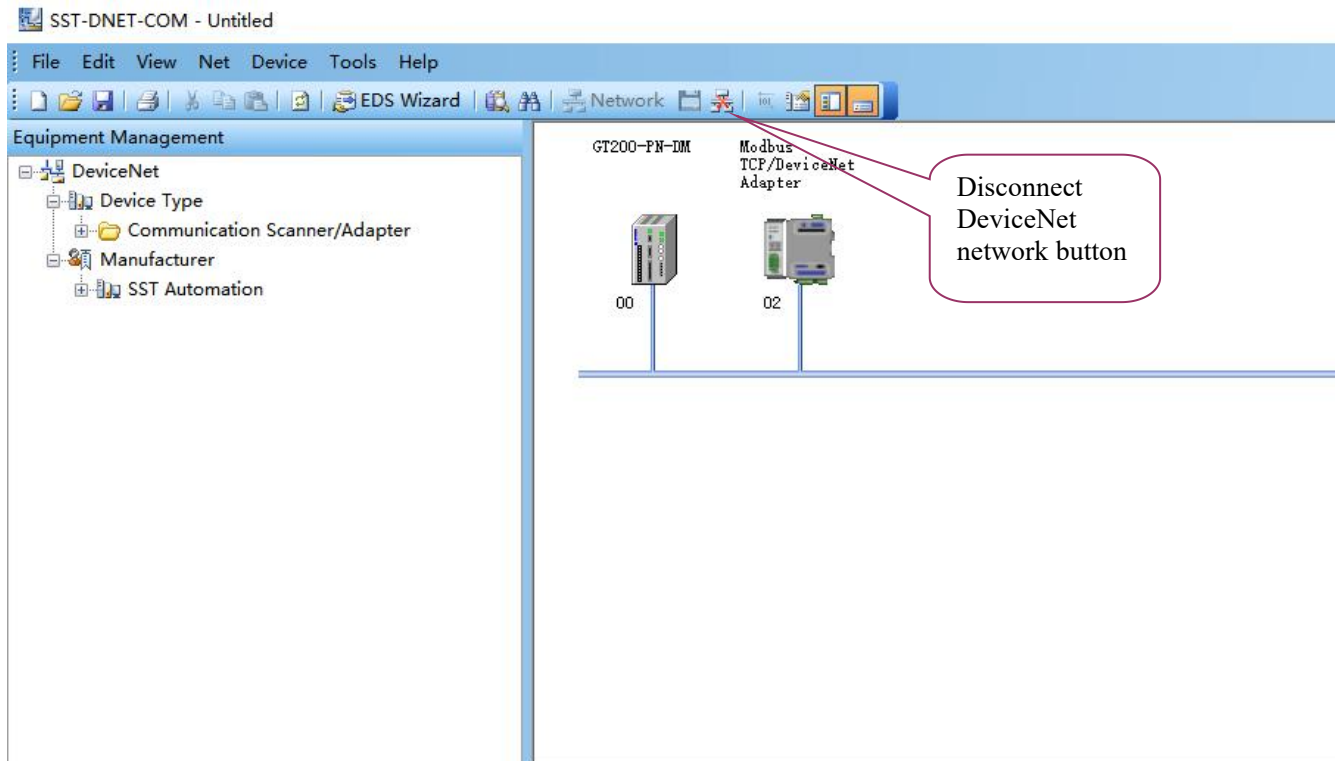
After the interface is set up, the network scanning interface will pop up:



After powering on, the DeviceNet master module will first perform a self-test. When both green LED lights light up, it can start scanning the network. When the DeviceNet network is connected, the user can "Disconnect the network" through the toolbar button, as shown in the figure below:

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4.6 Equipment Parameter Modification and I/O Data Test

Double-click the scanned network node and appear the device property page.

4.6.1 DeviceNet Scanner Module

In the "General Information" options Interface, the DeviceNet scanner module address cannot be modified here. It can only be modified in the interface settings. "Device ID" displays the information of the device manufacturer, type, device, sort and version. If you choose to configure GT200-PN-DM, after setting all the parameters, you can click the "Apply" button to download.

Property

DeviceNet Parameters Scan List Input Output

General Information PROFINET Parameters

Device

Name: GT200-PN-DM

Description:

Address: 0

Device ID

Manufacturer: SST Automation [1016]

Type: Communication Scanner/Adapter [12]

Device: GT100-PN-DM / GT200-PN-DM / GT200-DP-DM [20]

Sort: SST Communication Scanner

EDS Version: 1.2

Apply OK Cancel

In the "Scan List" option interface, users can select devices to add to the "Scan List" of the scanner and set its I/O parameters:

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The first screenshot shows the 'Property' dialog box with the 'Scan List' tab selected. The 'Available Devices' list contains one entry: '2 Modbus TCP/DeviceNet A...'. The 'Scan List' is currently empty. A red box highlights the right arrow button between the two lists.

The second screenshot shows the same dialog box after the device has been added. The 'Scan List' now contains the entry '2 Modbus TCP/DeviceNet A...'. The 'Available Devices' list is empty. A red box highlights the 'Edit I/O Parameters' button at the bottom of the dialog.

Property [X]

General Information | PROFINET Parameters

DeviceNet Parameters | Scan List | Input | Output

Available Devices:

ID	Device Name
2	Modbus TCP/DeviceNet A...

Scan List:

ID	Device Name
----	-------------

☒ Automatic Mapping When Adding ☐ Node Activity

Upload From Scanner

Download to Scanner

Edit I/O Parameters

Electronic key

☐ DeviceType ☐ MajRev

☐ Vender ☐ MinRev

☐ Product Type

Apply OK Cancel

Add adapter station 2 to the scanner station mapping list, and then select adapter station 2 in the "Scan List". After

selecting it, click "Edit I / O parameters". This interface sets the number of input and output bytes of the adapter:

The screenshot shows the "I/O Parameter Settings" dialog box with a close button (X) in the top right corner. The dialog is divided into two main sections: "Strobed" and "Polled".

Strobed Section:

- ☐ Allowed
- Input:** 0 Bytes
- Use Output Bit ☐

Polled Section:

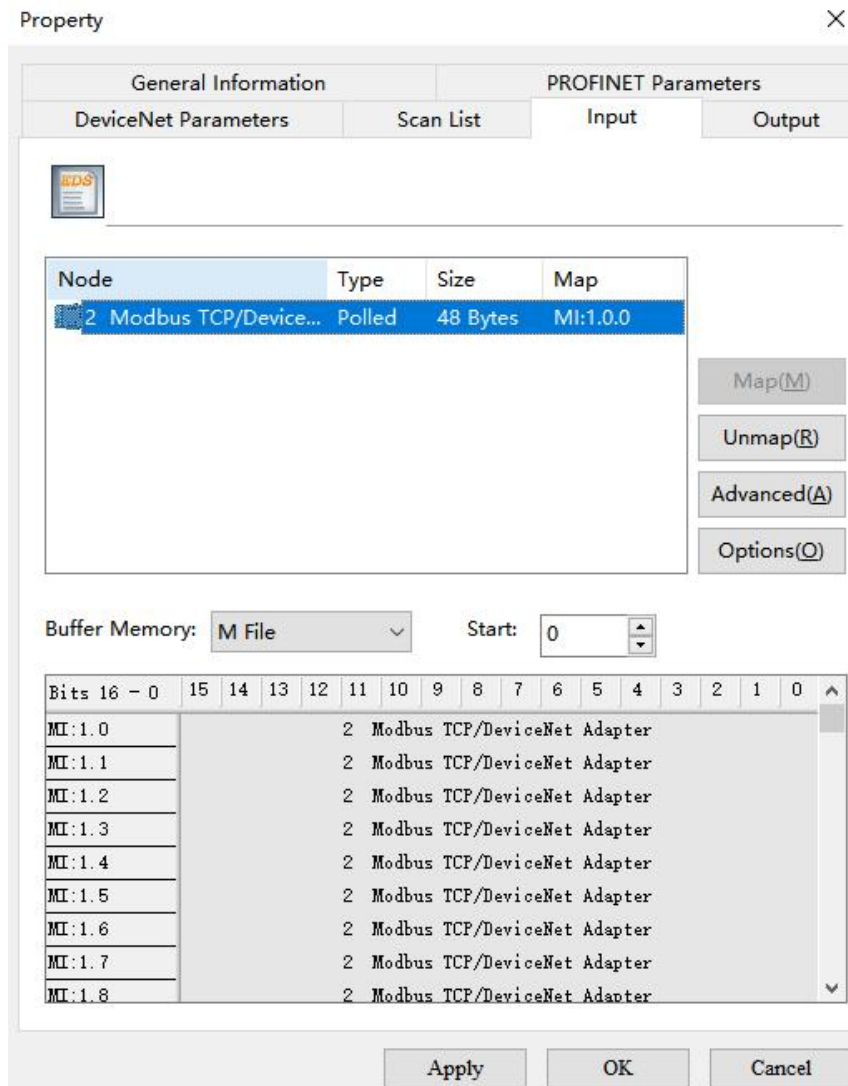
- ☒ Allowed
- Input:** 48 Bytes
- Output:** 48 Bytes
- Polling Cycle:** Every scan

COS/Cyclic Section:

- ☐ Allowed
- ☒ State Change(COS) ☐ Cycle(Cylic)
- Input:** 0 Bytes
- Output:** 0 Bytes
- Heartbeat Rate:** 250 msec
- Advanced(A)

At the bottom of the dialog, there are three buttons: "Restore I/O Size(R)", "OK", and "Cancel".

In the "Input", and "Output" options interface, the user can map the address of the device added to the scanner and select automatic mapping. In the figure below, the "start" edit box parameter is the starting address of the automatic mapping. The automatic mapping will start with the address set here, where one unit is two bytes, that is, when the "Start" edit box parameter is "1", the automatic mapping will start with the third byte.



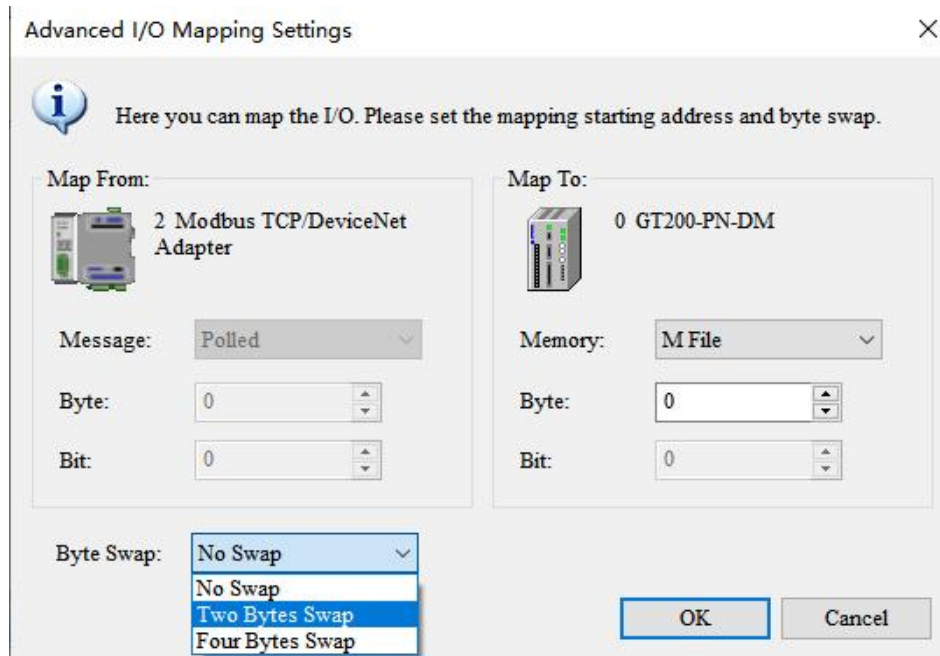
If users need to map manually, they can also click the "Advanced" button to set the starting address in the dialog box shown below.

In the advanced Settings interface, the user can also set the byte exchange mode of this adapter device. There are three types of byte exchange: no-exchange, two-byte exchange, and four-byte exchange. The meanings are as follows:

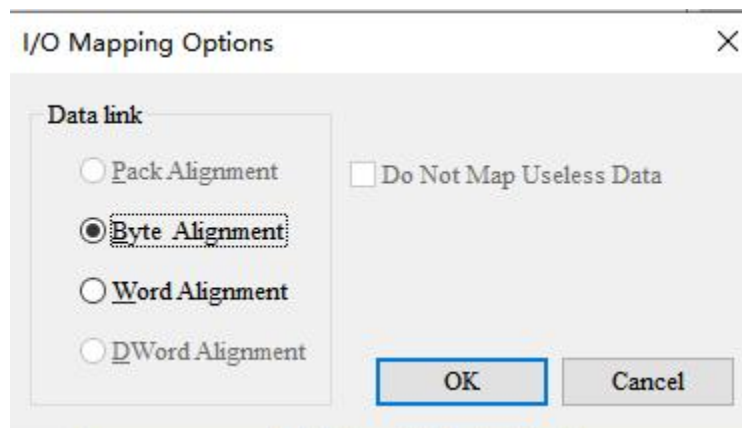
No Swap: Data transfers normally.

Two Bytes Swap: Two-byte exchange in the same register. For example, the result for 1234 after byte swapping is 3412.

Four Bytes Swap: Four-byte exchange in two registers. For example, after byte swapping 12, 34, 56, 78, the result is 78, 56, 34, 12.



If you need to set the unit that maps the starting address in "Advanced", click the "Options" button to set it. As shown in the figure below, "Byte Alignment" means in one byte and "Word Alignment" means in two bytes:



The settings of the PROFINET side input/output data blocks are set in master station configuration software such as TIA Portal or STEP 7.

In the "DeviceNet Parameter" interface, users can set PROFINET parameters. "Input Data Hold/Clear" indicates whether the corresponding DeviceNet input data is cleared when the number of DeviceNet command response errors reaches the number of DeviceNet command resends. Select "Clear" to clear the DeviceNet input data. Select "Hold" to keep the DeviceNet input data as the last correct data received. "Number of command resends" indicates the number of times the command is resent when the DeviceNet command response error occurs. The input range is 2 to 254, and the default value is 3.

Property

General Information PROFINET Parameters

DeviceNet Parameters Scan List Input Output

Agreement Type: DeviceNet

DeviceNet Baud Rate: 250k

DeviceNet Node Address: 0

Explicit Packet Timeout Time: 250

Network Input Timeout Clear Time: 20

I/O Poll Rate: 10

Input Data Hold/Clear: Clear

Number of Command Resends: 3

Status Word: Disable

Apply OK Cancel

Status word: When Enable, you can monitor the connection status of DeviceNet devices. After Disable, 8 bytes are reserved at the front of the PROFINET input buffer. Each bit of the 8 bytes represents the status of a adapter station. Bit0 of byte 0 represents DeviceNet adapter station No. 0, bit1 represents DeviceNet adapter station No. 1, bit2 represents DeviceNet adapter station No. 2, and so on. And when the bit value is 1, it means that the DeviceNet adapter station communicates normally, and when the bit value is 0, it means that the DeviceNet adapter station is offline.

4.7 DeviceNet Adapter Module Property Introduction

Double-click the device module on the bus and appear the device property page.

(1) General information

In the “General information” interface, you can modify the address. After the address needs to be changed successfully, the adapter device of the modified address will restart and the network needs to be reconnected. “Device

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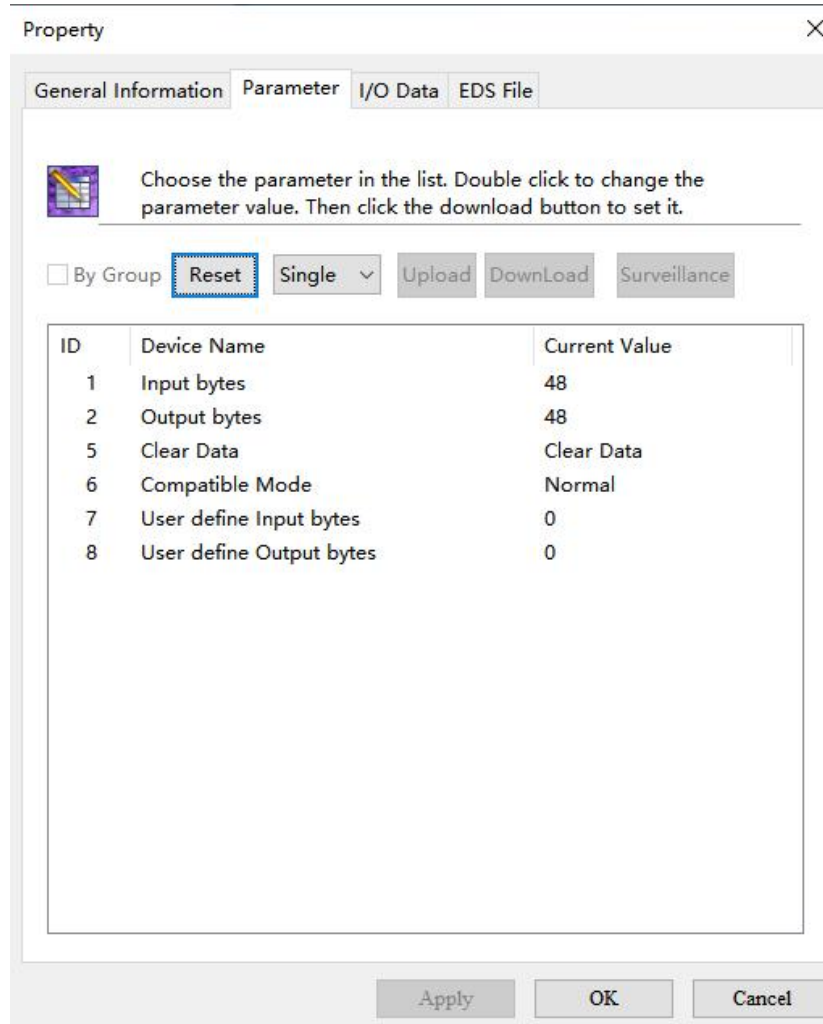
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ID” shows the information of the device manufacturer, type, device, sort and version.

The screenshot shows a 'Property' dialog box with a close button (X) in the top right corner. It has four tabs: 'General Information', 'Parameter', 'I/O Data', and 'EDS File'. The 'General Information' tab is active. Inside this tab, there is a 'Device' section with a small icon of a device. Below the icon are fields for 'Name' (containing 'Modbus TCP/DeviceNet Adapter'), 'Description' (empty), and 'Address' (containing '2'). Below these is a 'Device ID' section with fields for 'Manufacturer' (containing 'SST Automation [1016]'), 'Type' (containing 'Communication Scanner/Adapter [12]'), 'Device' (containing 'Modbus TCP/DeviceNet Adapter [21]'), 'Sort' (containing 'GT200-MT-DN'), and 'EDS Version' (containing '1.1'). At the bottom of the dialog are three buttons: 'Apply', 'OK' (which is highlighted with a blue border), and 'Cancel'.

(2) Parameter

In the “Parameter” interface, the user can upload and download the parameters of the device to facilitate online modification of the device parameter values.



- Reset: The “Reset” button can restore the default value of the parameters, and can only “Reset” for a single parameter.
- Upload: The “Upload” button supports single and full parameter operation. After clicking “Upload”, the interface will display the actual parameter value of the current online adapter DeviceNet device.
- Download: The “Download” button only supports single parameter operation, through which the parameters of online devices can be modified. Whether the parameters support the “Download” operation can be seen from the “ID” number of the interface. If there is an  icon before the ID, the parameter cannot be modified online by the configuration software. Whether the parameters support online modification is determined by the EDS file that is registered.
- The display of the property interface also includes: Parameter ID, parameter name and the current value of the parameter. SST-DNET-COM software supports relevant linear operations on parameters defined in EDS files. The current value shows the result of the operation, and the user can set the relevant operation factor as required.

(3) I/O Data

It is shown in the figure below. After the DeviceNet network device is connected, the byte length of network output and network input is determined. How does the user know the length of the input and output? You can learn from EDS.

Message Type	Size	Data Description
Polled		
└--Input	48-Bytes	Network input 3
└--Output	48-Bytes	Network Output 3

The number of bytes in/out of SST-DNET-COM software can also provide this information.

In the figure above, the input and Output 64-Bytes bytes provided under the “Polled” project are the default input and output data byte lengths.

The maximum number of input bytes supported by SST-DNET-COM software is 128, and the maximum number of output bytes is 112.

Take “Polled Input” and “Polled Output” as examples:

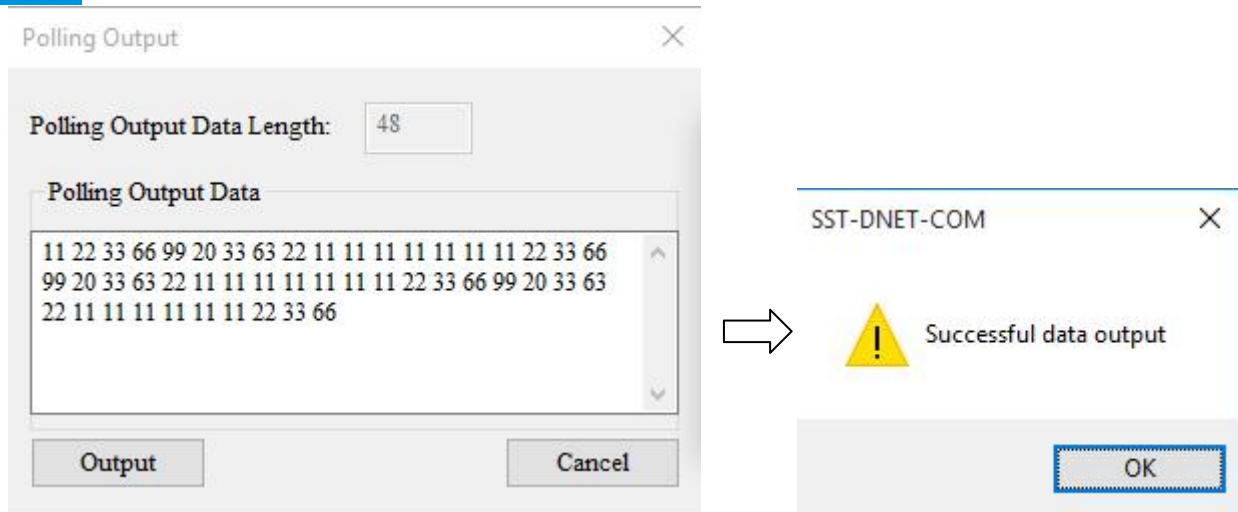
① Click the “Polled Input” button, and then click the “Read” button, DeviceNet software will read the network input data. If the user selects the “Continuous reading” check box, SST-DNET-COM software will continuously read the network input data of the field DeviceNet device. As shown in the figure below:

The screenshot shows a Windows-style dialog box titled "Polling Input". It has a close button (X) in the top right corner. Inside the dialog, there is a label "Polling Input Data Length:" followed by a text input field containing the number "48". Below this is another section labeled "Polling Input Data" which contains a large text area displaying two rows of hexadecimal values: "11 22 33 44 55 66 77 00" on the first row and "00 00" on the second row. A vertical scrollbar is visible on the right side of the text area. At the bottom of the dialog, there are three buttons: "Read", "☐ Continuous Reading", and "Cancel". The "Continuous Reading" checkbox is currently unchecked.

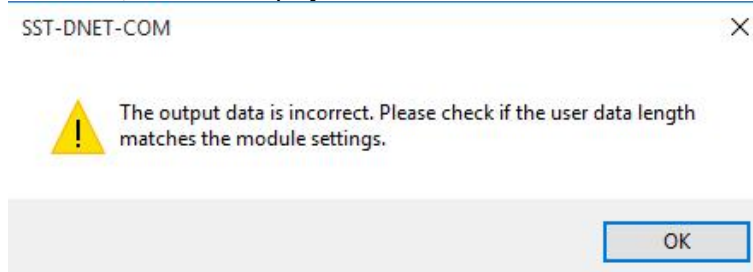
② Similarly, by clicking the “Polled Output” button, users can see the network output data dialog box. The user must type in all the output data, otherwise the output data is incomplete (the number of bytes is incorrect), and the output will not succeed.

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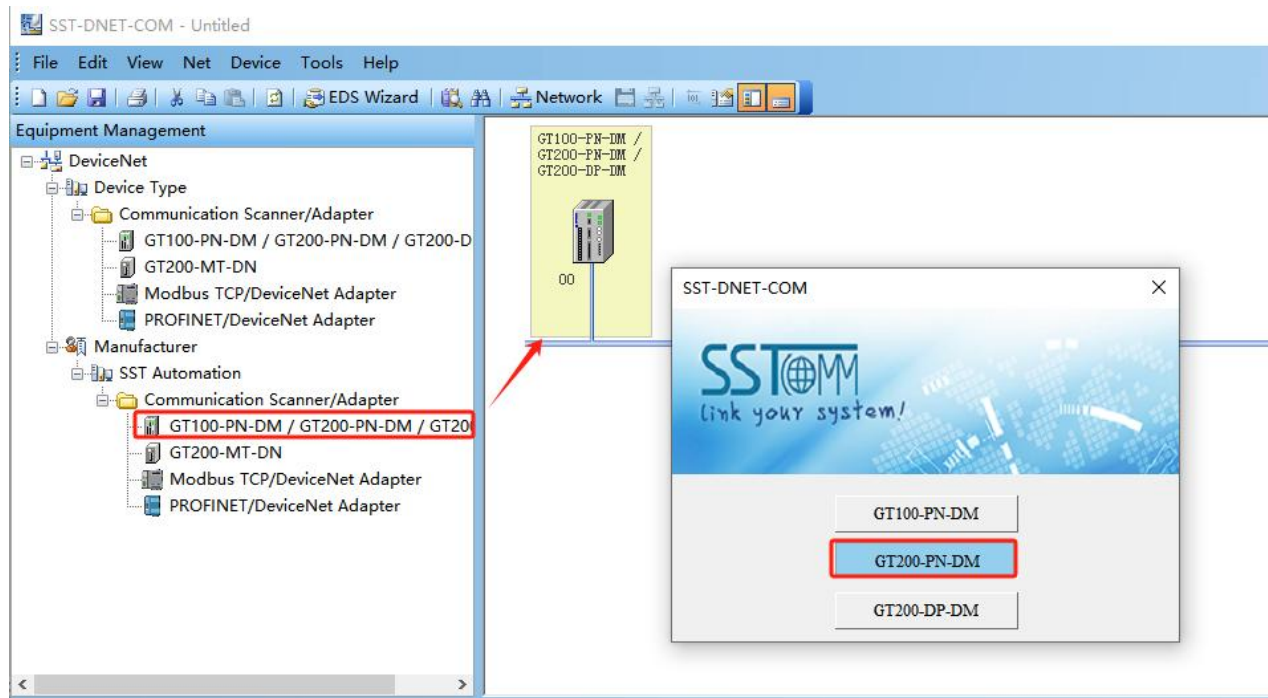
If the output data length is incorrect, it will be displayed:



Note that after the address is changed in the general interface, because the device with the modified address will be restarted and the DeviceNet internet connection has been disconnected. At this time, the I/O data input and output operation will not be able to see the data. You need to disconnect SST-DNET-COM's "Internet Connection" and re-establish the internet connection.

4.8 SST-DNET-COM software offline configuration

Select “GT100-PN-DM/GT200-PN-DM/GT200-DP-DM” from the left and drag it to the bus on the right, Select GT200-PN-DM and double-click the gateway icon to modify the DeviceNet address of the gateway. similarly, drag the DeviceNet adapter device to the bus on the right and modify the DeviceNet device address to be consistent with the actual one, as shown in the following figure:



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Property ✕

DeviceNet Parameters	Scan List	Input	Output
General Information		PROFINET Parameters	

 Device

Name:

Description:

Address: ▲ ▼

Device ID

Manufacturer:

Type:

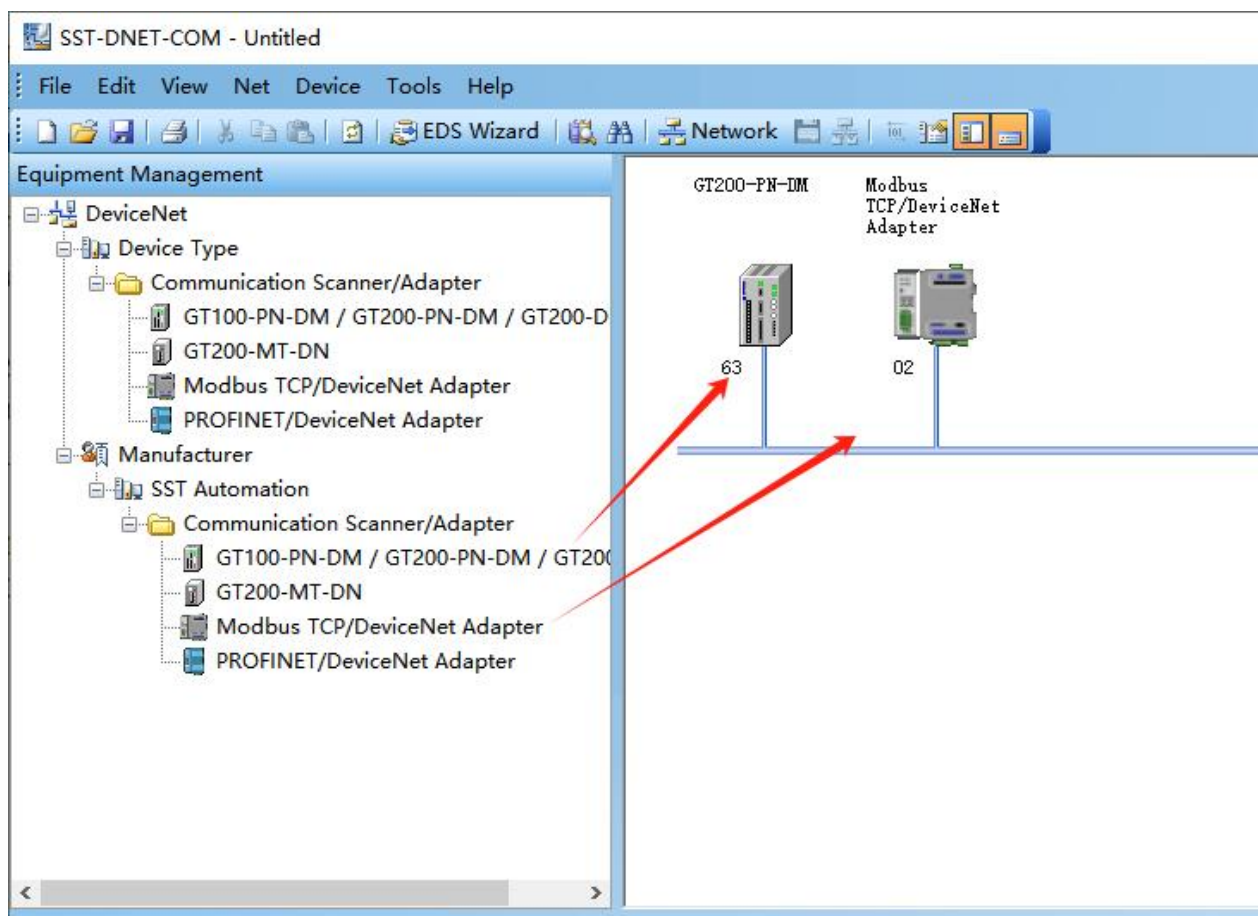
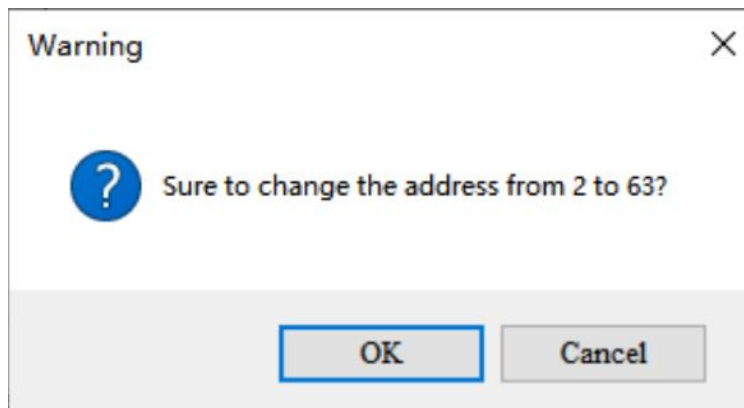
Device:

Sort:

EDS Version:

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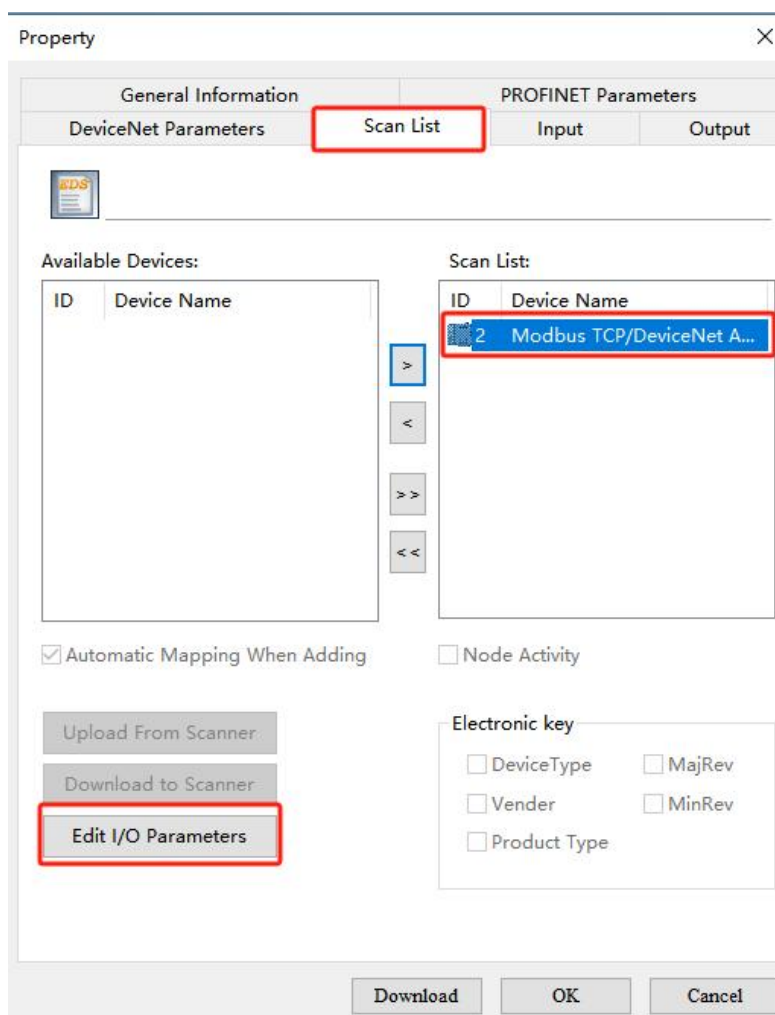
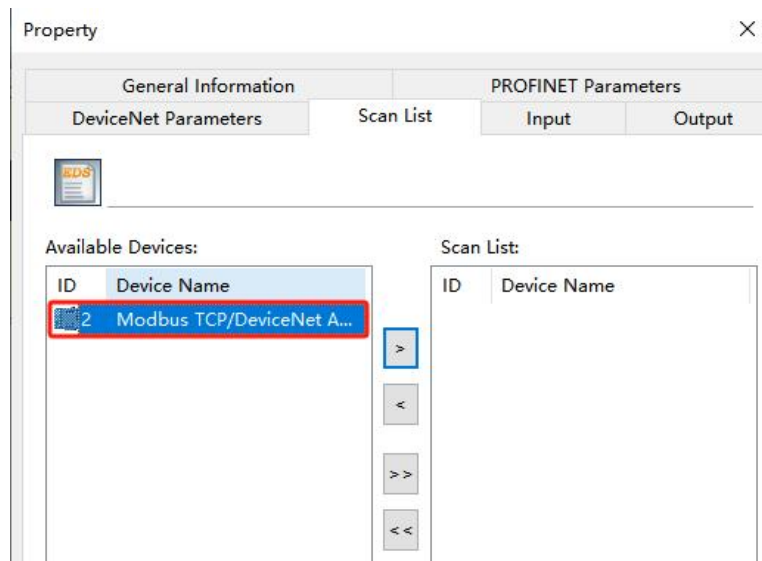
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Double-click the GT200-PN-DM gateway icon, click “Scan List” in the properties interface, select the DeviceNet device to the scan list side on the available devices side, click “Edit I/O Parameters”, and set the actual I/O data length of the device. As shown below:

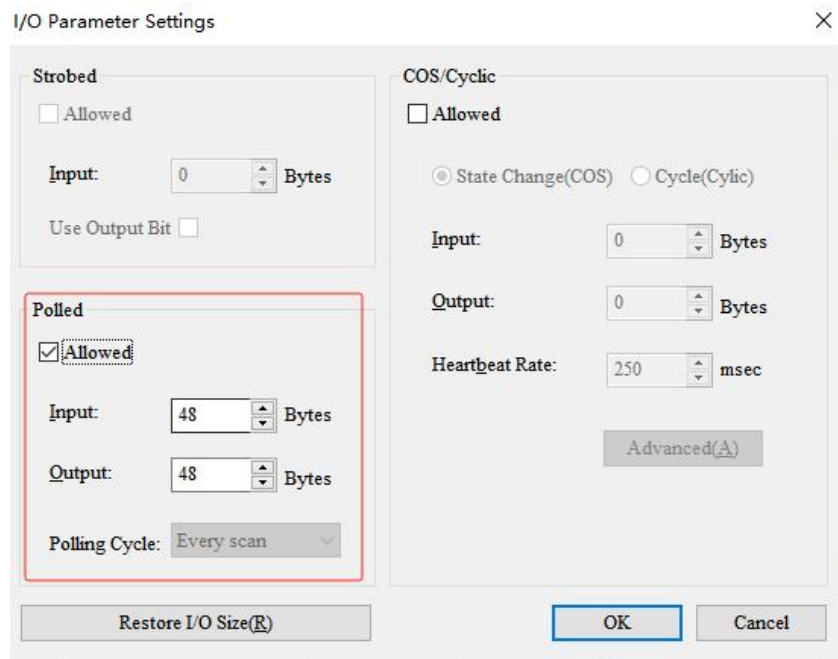
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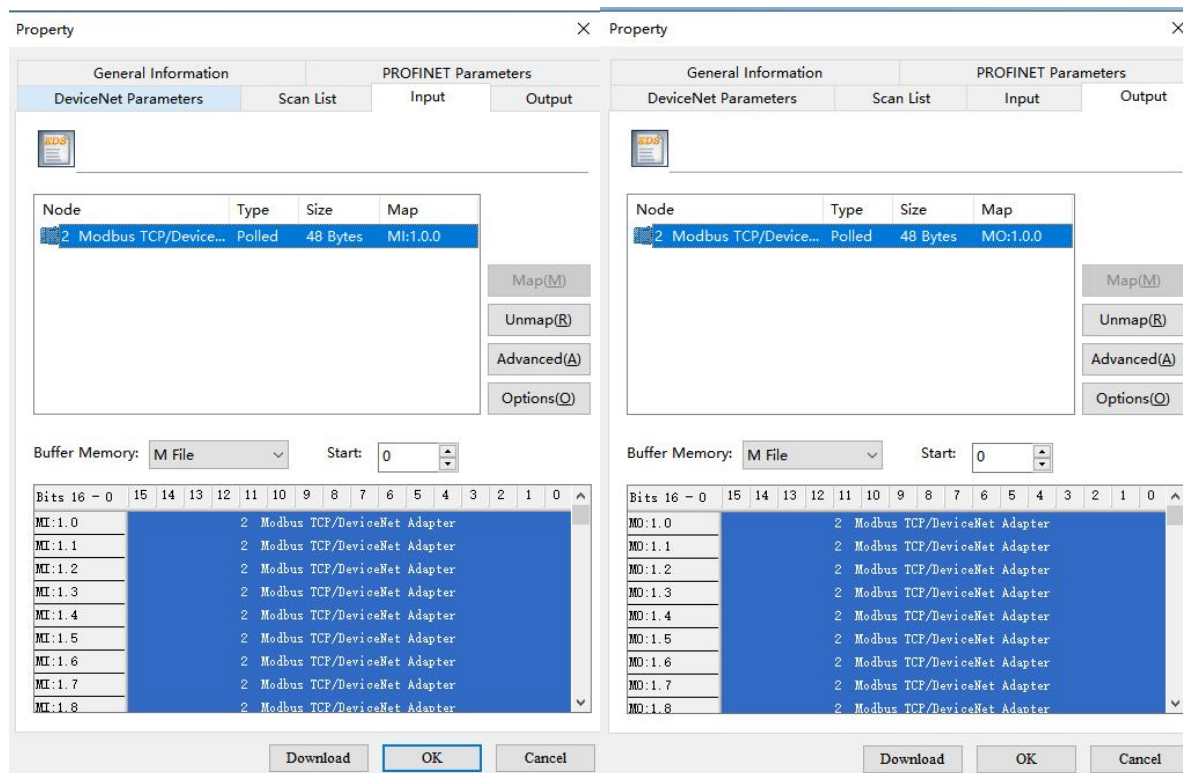
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The I/O Parameter Settings dialog box is divided into two main sections: Strobed and Polled. The Strobed section has an 'Allowed' checkbox which is unchecked. Below it, the 'Input' is set to 0 Bytes, and there is an unchecked 'Use Output Bit' checkbox. The Polled section, which is highlighted with a red border, has an 'Allowed' checkbox checked. Below it, both 'Input' and 'Output' are set to 48 Bytes, and the 'Polling Cycle' is set to 'Every scan'. To the right of the Polled section is the COS/Cyclic section, which has an 'Allowed' checkbox unchecked. Below it, there are radio buttons for 'State Change(COS)' (selected) and 'Cycle(Cylic)'. The 'Input' is set to 0 Bytes, the 'Output' is set to 0 Bytes, and the 'Heartbeat Rate' is set to 250 msec. At the bottom of the dialog are buttons for 'Restore I/O Size(R)', 'OK', and 'Cancel'. An 'Advanced(A)' button is also present in the COS/Cyclic section.

After configuring the DeviceNet device I/O data length, click the input and output interface to map the data. Select the device and click “Map (M)” to map the input/output data, as shown in the following figure:



The DeviceNet Parameters mapping interface consists of two side-by-side windows. Each window has tabs for 'General Information', 'PROFINET Parameters', 'DeviceNet Parameters', 'Scan List', 'Input', and 'Output'. The 'DeviceNet Parameters' tab is selected. It shows a table with columns: Node, Type, Size, and Map. The table contains one entry: Node 2, Modbus TCP/Device..., Polled, 48 Bytes, M1:1.0.0. Below the table are buttons for 'Map(M)', 'Unmap(R)', 'Advanced(A)', and 'Options(O)'. At the bottom, there is a 'Buffer Memory' section with a dropdown set to 'M File' and a 'Start' value of 0. Below this is a table with columns 'Bits' (16 to 0) and 'Data'. The 'Data' column contains the text '2 Modbus TCP/DeviceNet Adapter'. At the bottom of each window are buttons for 'Download', 'OK', and 'Cancel'.

In the “DeviceNet Parameters” setting interface, users can set DeviceNet parameters. “Input Data Hold/Clear”

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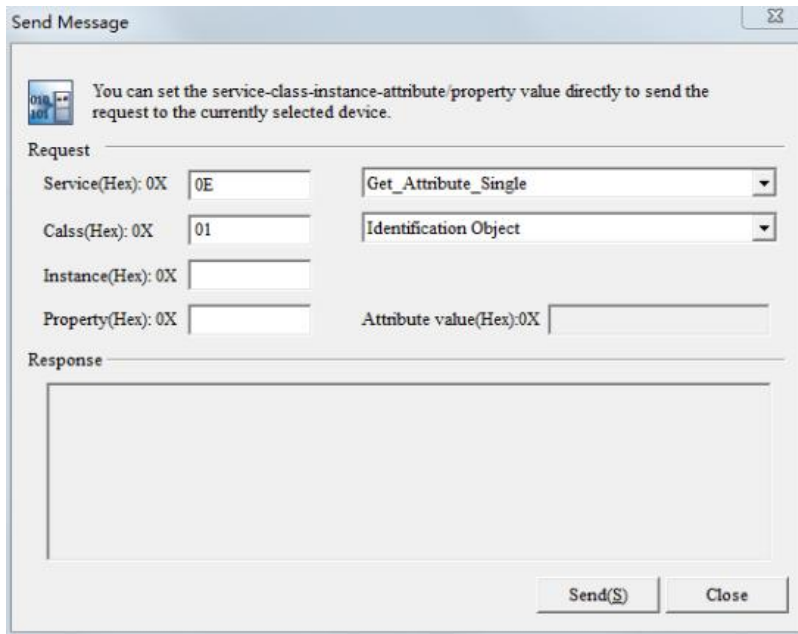
indicates whether the corresponding DeviceNet input data is cleared when the “number of Command Resends” errors reaches the set value. Select “Clear” to clear the DeviceNet input data. Select “Hold” to keep the DeviceNet input data as the last correct data received. “Number of Command Resends” indicates the number of times the command is resent when the DeviceNet command response error occurs. The input range is 2 to 254, and the default value is 3.

The screenshot shows a 'Property' dialog box with a close button (X) in the top right corner. The dialog is divided into two main sections: 'General Information' and 'PROFINET Parameters'. Under 'General Information', there is a 'DeviceNet Parameters' tab, which is currently selected. This tab contains several configuration fields: 'Agreement Type' (set to 'DeviceNet'), 'DeviceNet Baud Rate' (set to '250k'), 'DeviceNet Node Address' (set to '63'), 'Explicit Packet Timeout Time' (set to '250'), 'Network Input Timeout Clear Time' (set to '20'), 'I/O Poll Rate' (set to '5'), 'Input Data Hold/Clear' (set to 'Clear'), 'Number of Command Resends' (set to '3'), and 'Status Word' (set to 'Disable'). The 'DeviceNet Baud Rate', 'Input Data Hold/Clear', and 'Number of Command Resends' fields are highlighted with red boxes. At the bottom of the dialog, there are three buttons: 'Download', 'OK', and 'Cancel'.

General Information		PROFINET Parameters	
DeviceNet Parameters		Scan List	Input
			
Agreement Type:	DeviceNet		
DeviceNet Baud Rate:	250k		
DeviceNet Node Address:	63		
Explicit Packet Timeout Time:	250		
Network Input Timeout Clear Time:	20		
I/O Poll Rate:	5		
Input Data Hold/Clear:	Clear		
Number of Command Resends:	3		
Status Word:	Disable		

Download OK Cancel

After the configuration is completed, click “Download” to download the configuration.





5 Working Principle

How the DeviceNet networks work:

The data conversion between GT200-PN-DM's DeviceNet and PROFINET is established through a “mapping” relationship. There are two data buffers in GT200-PN-DM, one is PROFINET network input buffer, and the other is PROFINET network output buffer. The DeviceNet read command writes the read data to the network input buffer for PROFINET network reading. DeviceNet write register commands take data from the network output buffer, and output to the corresponding DeviceNet device through the POLL I / O write command.

