DeviceNet/PROFINET IO Gateway

GT100-PN-DM

User Manual

V2.0

REV A

SST Automation

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WWW. SSTCOMM.COM

Catalog

1 Introduction

1.1 About This Document

This document describes every parameter of the gateway GT100-PN-DM and provides using methods and some announcements that help users use the gateway. Please read this document carefully before using the gateway.

1.2 Copyright Information

1.3 Related Products

The related products include:

GT200-PN-3RS：Universal Serial/PROFIBUS IO Gateway

GT200-DP-DM：DeviceNet/PROFIBUS DP Gateway

If you want to get more information about related products, please visit www. sstcomm. com.

1.4 Terms

GT100-PN-DM: DeviceNet/PROFINET Gateway

SST-TD-CFG: Gateway configuration software(Embedded in DNetStart）

DNetStart: DeviceNet Network configuration software

1.5 Revision History

Revision	Date	Chapter	Description
V1.2 REV A	08/13/2018	ALL	V1.2_Rev A new release, Added "only one DeviceNet slave station" to product functions; added application

			examples; modified main version to product version.
V1.4 REV A	02/20/2019	Chapter 3	Remove the three-pin power interface, and change the color of the gateway to cyan.
V2.0 REV A	11/27/2019	ALL	Added DeviceNet slave configuration mode and description.

2 Product Overview

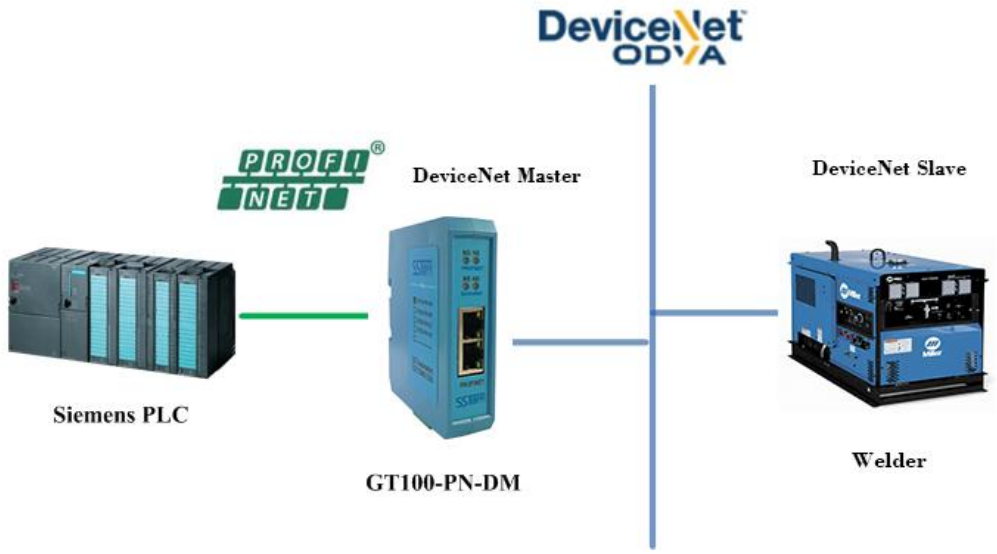
2.1 Product Function

The product supports devices with a DeviceNet interface to connect to a PROFINET network. This module is a slave on the PROFINET side and a master or slave on the DeviceNet side.

Application examples:

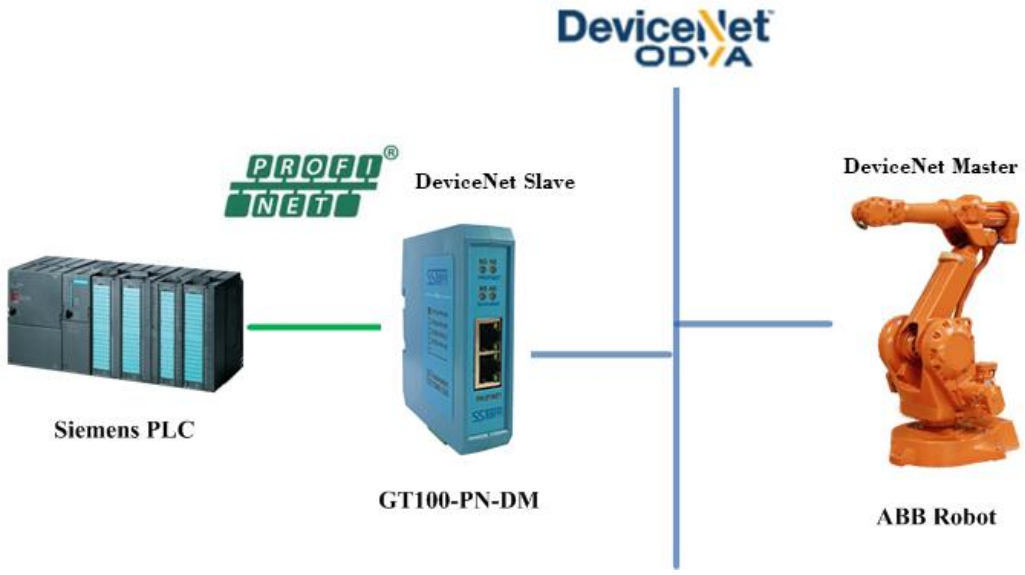
[1] PROFINET slave to DeviceNet master application

Under the DeviceNet master mode, data exchange can be achieved between welder that supports the DeviceNet slave protocol and Siemens PLC that supports the PROFINET master protocol.



[2] PROFINET slave to DeviceNet slave application

Under the DeviceNet slave mode, data exchange can be achieved between robots that support the DeviceNet master protocol and Siemens PLC that supports the PROFINET master protocol.



2.2 Product Features

- Wide application: Support as a DeviceNet master to connect a DeviceNet device to the PROFINET network or itself as a DeviceNet and PROFINET device to the two ends of the 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.

2.3 Technical Specifications

[1] DeviceNet supports two working modes: master station and slave station. DeviceNet master station supports pre-operation mode and operation mode;

(A) DeviceNet Master--Pre-operation mode

- Support device search, namely online scanning DeviceNet slave through DNetStart software

- Support one-click application scan to DeviceNet slave I/O parameter configuration
- Support reading and writing configuration
- Support Direct jump to operation mode after writing configuration
- Support DeviceNet baud rate: 125K, 250K, 500K
- Support reading and writing DeviceNet slave parameters
- Support reading and writing DeviceNet I/O data(polling)
- Support reading cos commands (COS) (up to 14 bytes)
- Support reading and writing product information

(B) DeviceNet Master--Operation mode

- Support DeviceNet baud rate: 125K, 250K and 500K
- Support PROFINET Master communication
- Single DeviceNet slave maximum support input: 128 bytes; Output: 112 bytes
- Support connecting only one DeviceNet slave, and GT200-PN-DM supports connecting multiple slave. and input timeout clearing and holding function of DeviceNet (optional)
- DeviceNet supports data no-exchange, two-byte exchange, four-byte exchange

（C）DeviceNet slave

- Support DeviceNet baud rate: 125K, 250K and 500K
- DeviceNet supports up to 224 bytes of input and 224 bytes of output, 8, 16, 32, 96, 48, 64, 112, 72, 160, 192, 224 bytes are optional
- DeviceNet supports DeviceNet I / O Poll scanning
- DeviceNet supports data no-exchange, two-byte exchange, four-byte exchange
- DeviceNet supports input timeout clearing and holding function of DeviceNet (optional)

[2] Support standard RROFINET I/O protocol;

[3] PROFINET supports up to 32 slots, The maximum number of input bytes is 384 and the maximum number of output bytes is 384. The length available to the user is limited by the specific PLC and PDU size of the communication module)The length of input and output data blocks set in PROFINET master should be the same as that configured in SST-TD-CFG;

[4] The types of PROFINET modules supported 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**
- **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] Working environment:

- Relative Humidity: 5% to 95%(No condensing)
- Temperature: -40℉~185℉(-40℃ ~ 85℃)
- Installation site elevation does not exceed 2000 meters
- Pollution level: 3

[6] Power supply: 24VDC (11V ~ 30V);

[7] Operation temp: -4℉~140℉(-20℃~60℃), Humidity: 5%~ 95% (non-condensing);

[8] Built-in electrostatic protection: 15 KV ESD; Communication interface isolation: 3KV;

[9] External dimensions (W*H*D): 0. 98 in*3.94 in *3.54 in (25mm*100mm*90mm);

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

[11] Protection level: IP20.

3 Hardware Descriptions

3.1 Product Appearance

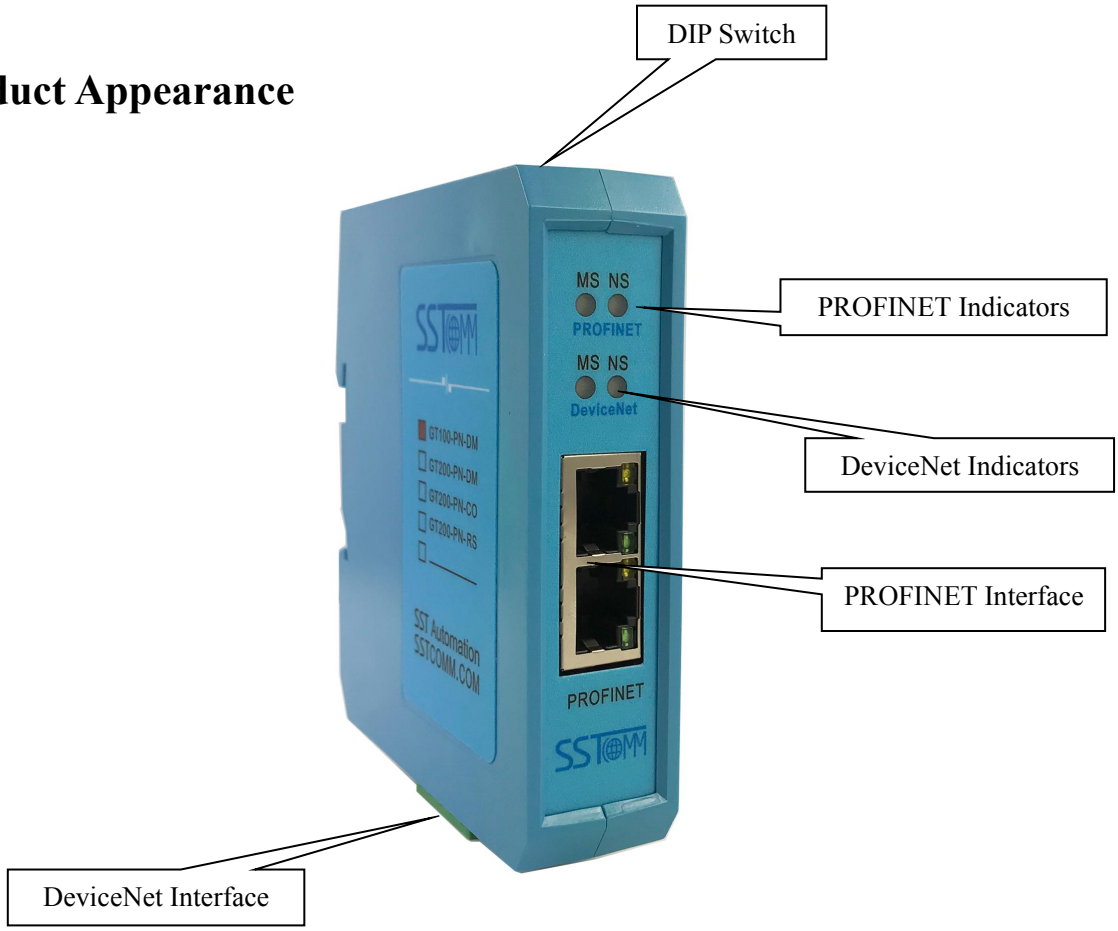


Figure 1 Product Appearance (only for reference)

3.2 Indicators

PROFINET LED Indicators

MS	NS	Description
Always Red	Off	Module is running and initialization has not yet completed
Always Green	Red blinking	Initialization completed, no connection with PLC; Or in the normal communication with PLC, the network line is pulled out or dropped off.

Always Green	Always Red	No plug-in network cable
Always Green	Always Green	Connect with PLC and communicate normally

DeviceNet LED Indicators

DeviceNet Master--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 slave
Always Green	Always Green	Connection has been established with slave
Always Green	Always Red	Disconnected with slave

DeviceNet Master--Operation mode:

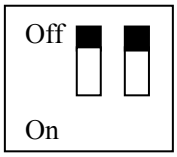
MS	NS	Description
Always Green	Off	Module is running and initialization has not yet been completed
Always Green	Green blinking	Initialization completed, The master is online, but no connection has been established with the slave
Always Green	Always Green	Connection has been established with slave
Always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

DeviceNet slave:

MS	NS	Description
Always Green	Off	Module is running and initialization has not yet been completed
Always Green	Always Red	DeviceNet network error
Always Green	Red blinking	DeviceNet initialization
Always Green	Green blinking	Initialization completed, but no connection established
Always Green	Always Green	DeviceNet connect normally

3.3 Configuration Switch

Total 2 bits, function as follows:

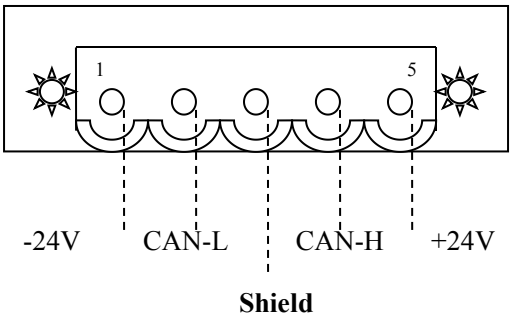


Mode(bit 1)	Function(bit 2)	Description
Off	Off	Operation mode(Support SST-TD-CFG configuration)
Off	On	Pre-operation mode(Support SST-TD-CFG configuration)
On	Off	NA
On	On	NA

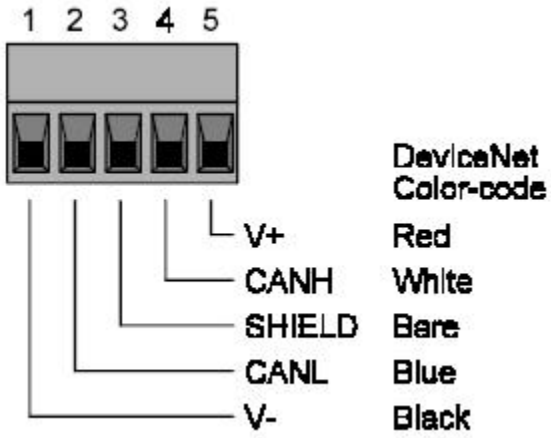
3.4 Communication Port

3.4.1 DeviceNet Interface

5-pin connector:



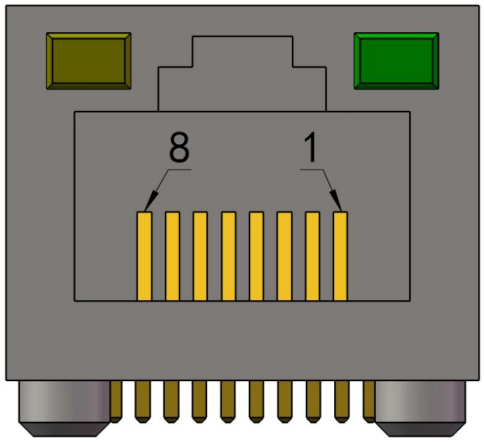
Open 5-pin connector at the side of DeviceNet:



GT100-PN-DM supplies power through DeviceNet port

Pin	Wiring
1	GND(24V-)
2	CAN-L
3	shield
4	CAN-H
5	+24V

3.4.2 Ethernet Interface



Ethernet interface uses RJ-45 plug-in; its pin (standard Ethernet signal) is defined as below:

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

4 Use Method

4.1Quick Start Guide

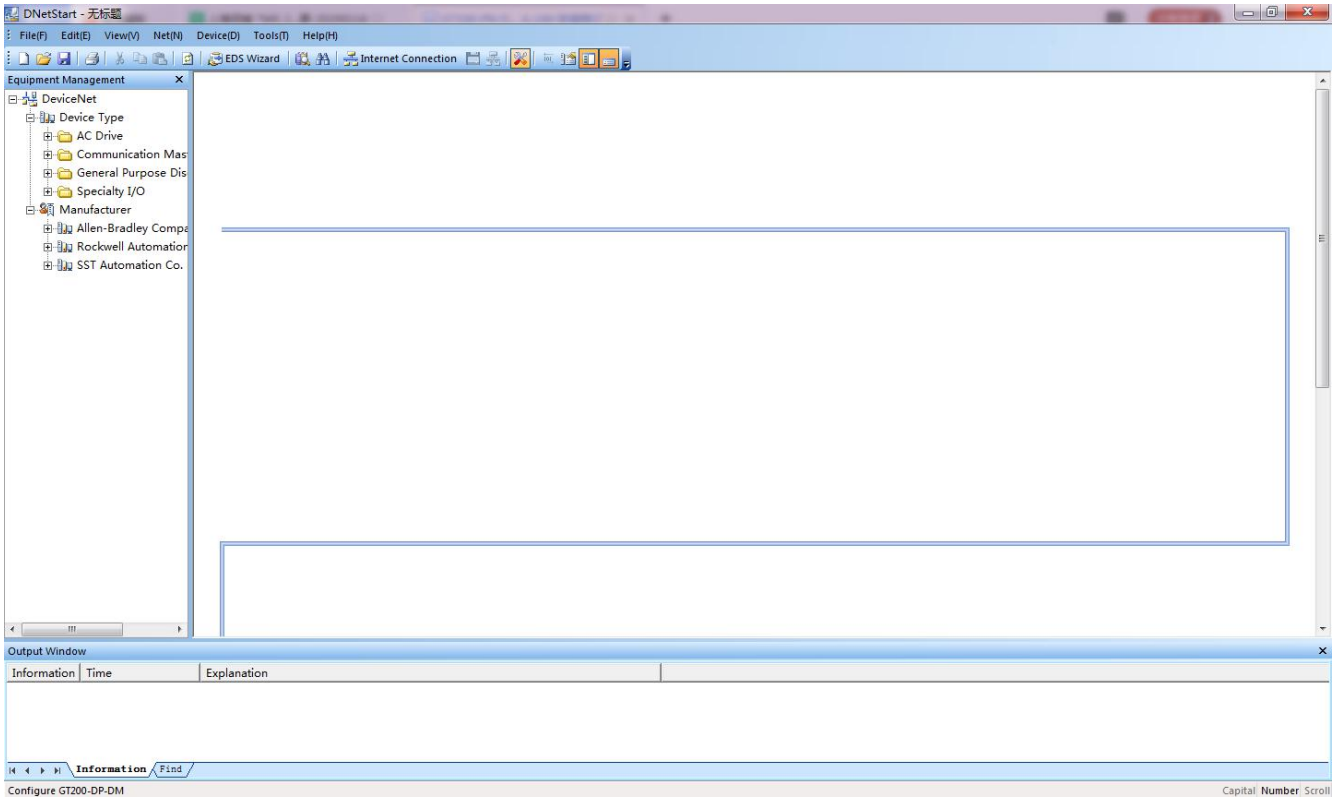
The gateway supports two modes of pre-operation and operation. Pre-operation mode is used to scan slave devices in DeviceNet, debug or upload and download the GT100-PN-DM configuration; Operating mode for normal communication. Using DIP switch to select mode. , please refer to 3.3 Configuration switch.

4.1.1 Pre-operation Mode-Scan and Debug Slave Devices from DeviceNet Network

Application: when the I/O parameter of the slave from DeviceNet is uncertain.

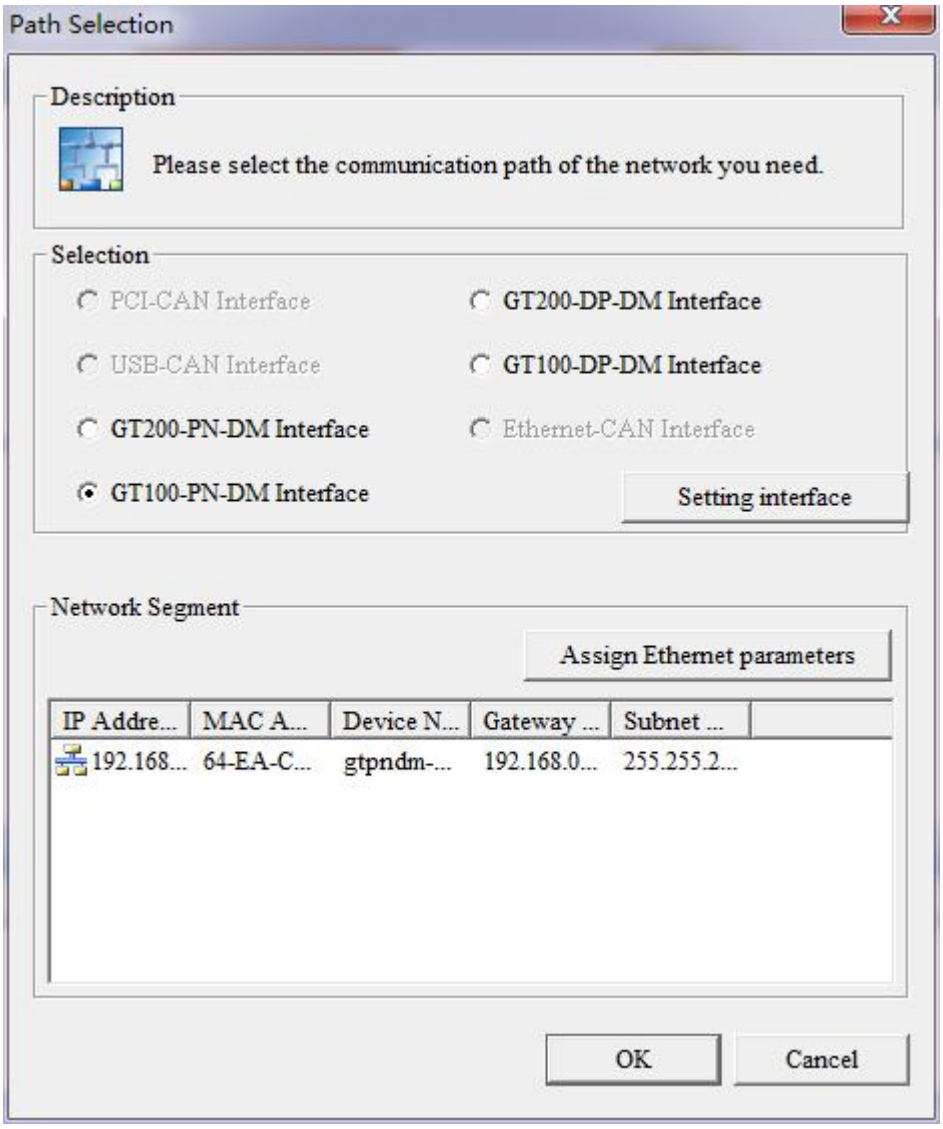
1.Please turn the first bit to OFF, turn the second bit to ON, connect the DeviceNet port of GT100-PN-DM to slave devices, power on the GT100-PN-DM and use network cable to connect it (one of Ethernet port of GT100-PN-DM) and connect the other end to PC or PC's switch.

2.Double-click the DNetStart software , which has installed on the PC, as shown below:



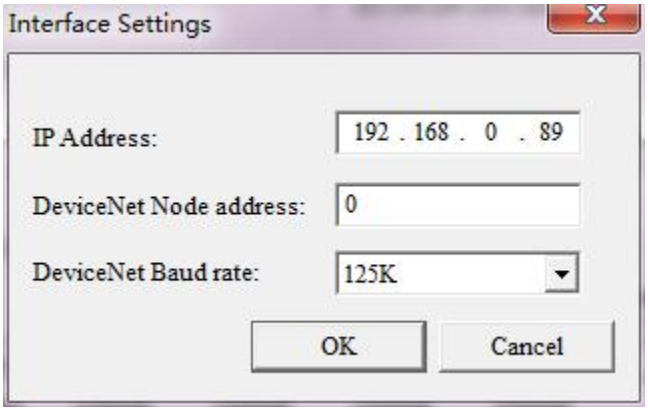
3.Click the EDS Wizard , and follow the prompt to import the EDS of the slave devices.

4.Click toolbar "Internet connection", Select the GT100-PN-DM configuration interface shown as below.



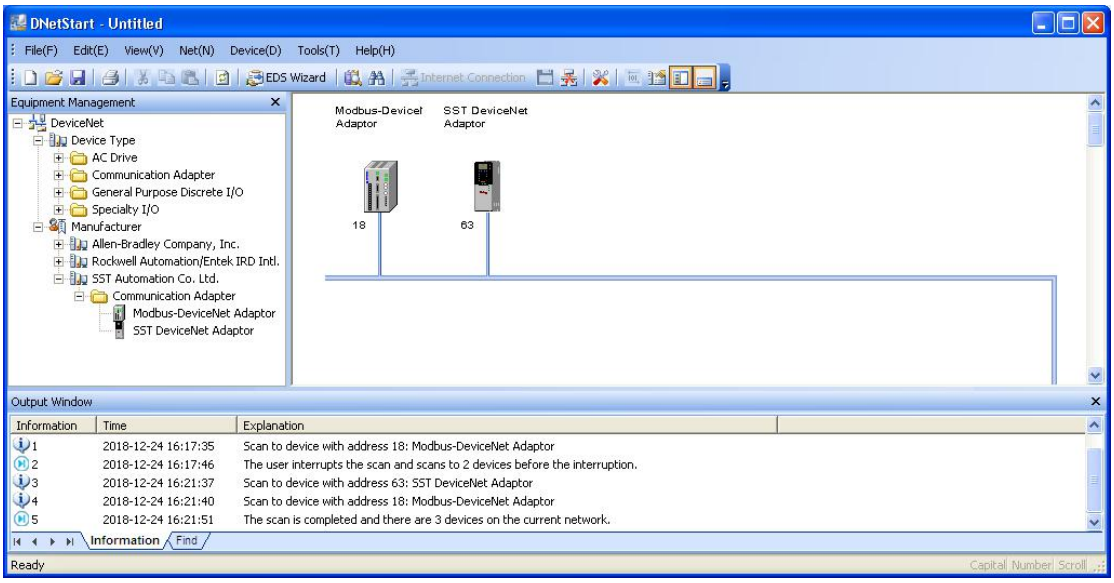
5.Click the "setting interface", the "setting interface" dialog box appears, software will scan GT100-PN-DM automatically in the network. (if no devices are scanned, please click "Refresh"to try again), then to click "selected".

6.Now the following dialog box appears, the IP address is read only. "DeviceNet node address"and "DeviceNet Baud rate"can be set. DeviceNet node address refers to the node address in the DeviceNet bus of GT100-PN-DM, and DeviceNet Baud rate refers to the Baud rate used by the DeviceNet network. After setting, click "OK".

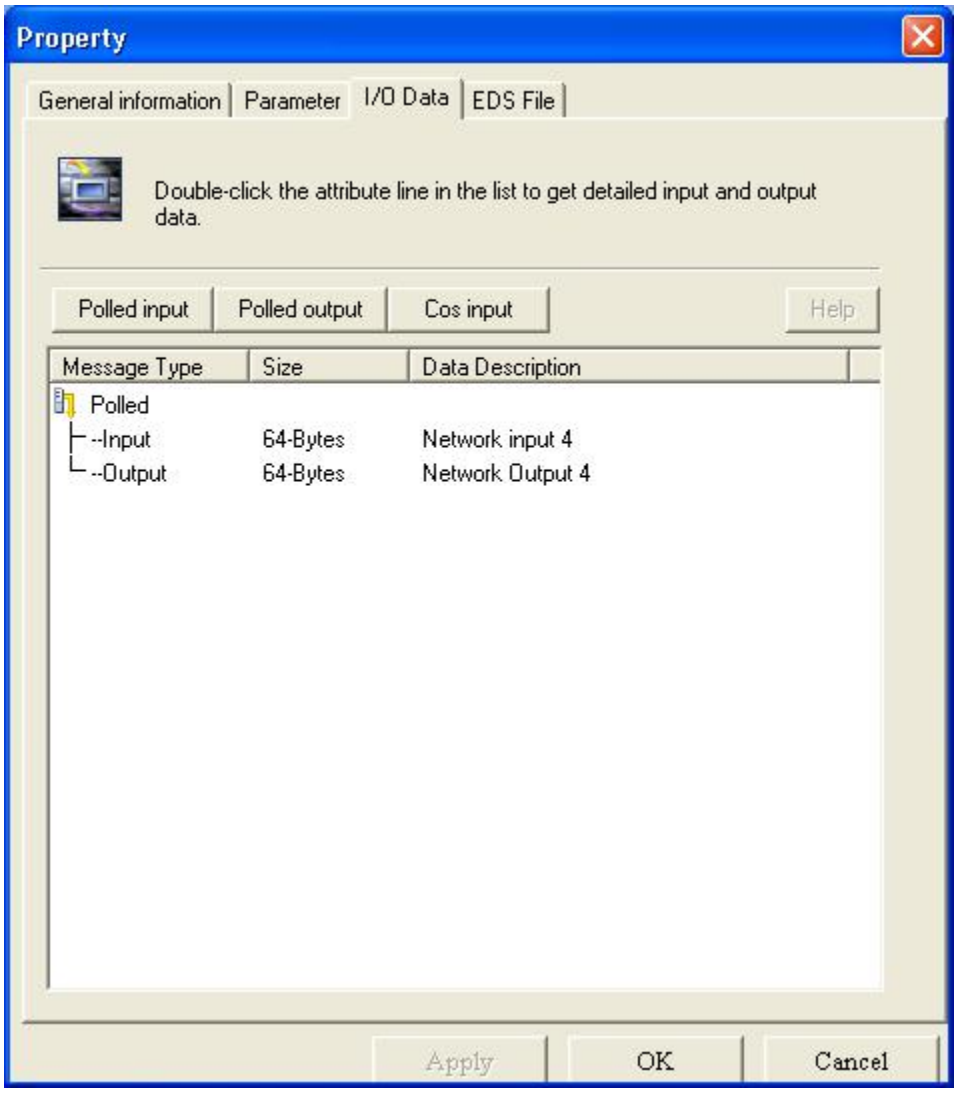


7. Return to the "route selection", and click "OK"to start scanning for devices on the DeviceNet network.

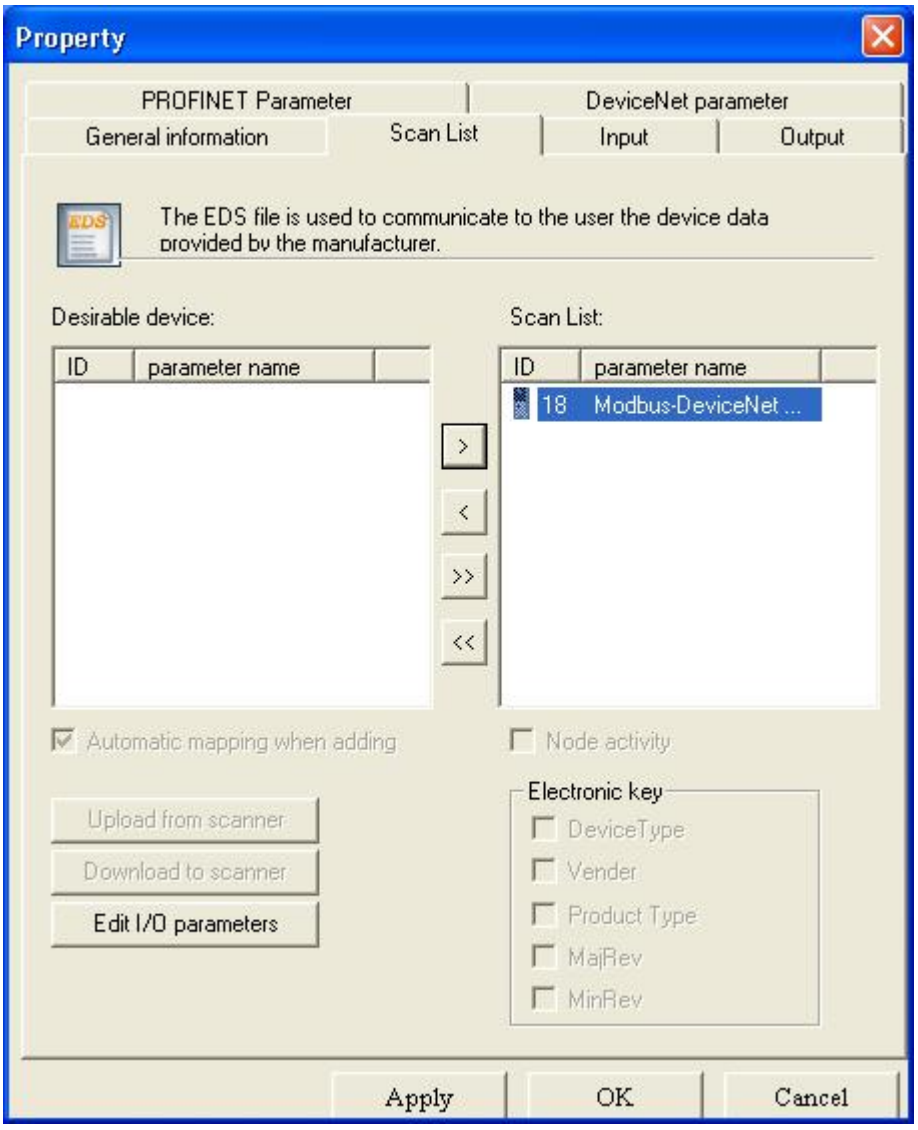
8. After scanning the slave devices, as shown blew.

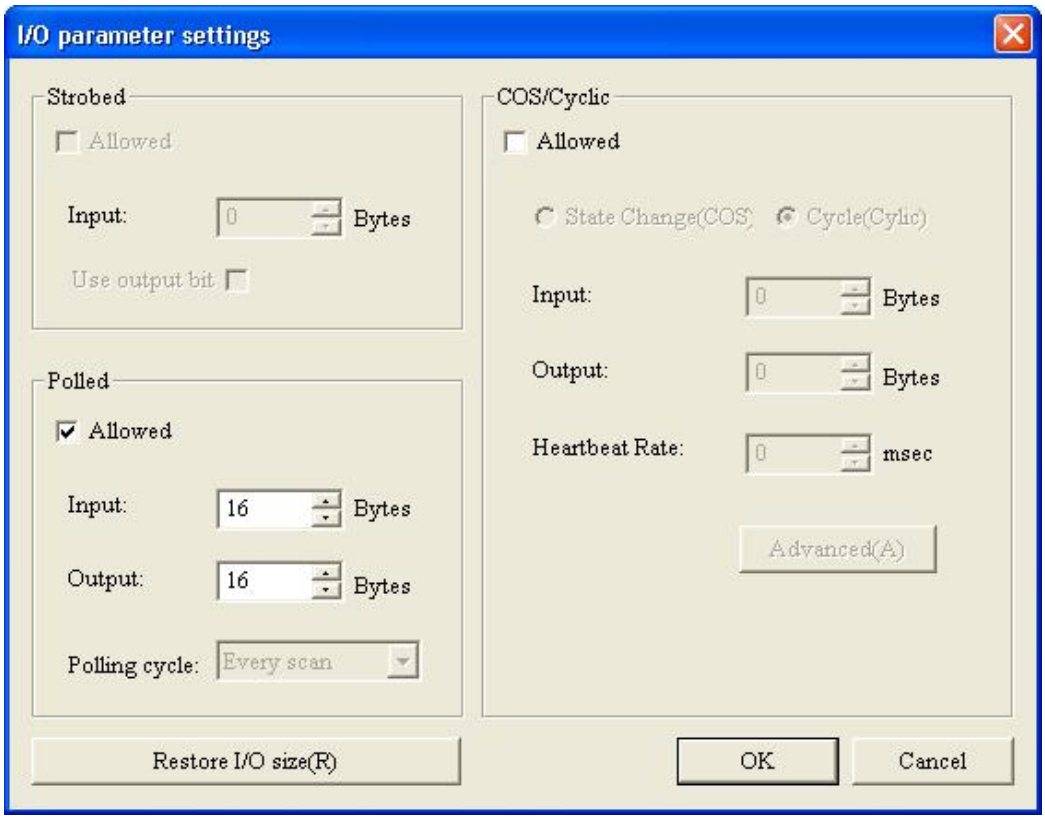


9. Double click the slave devices, look the I/O parameter of the slave devices, as shown blew.



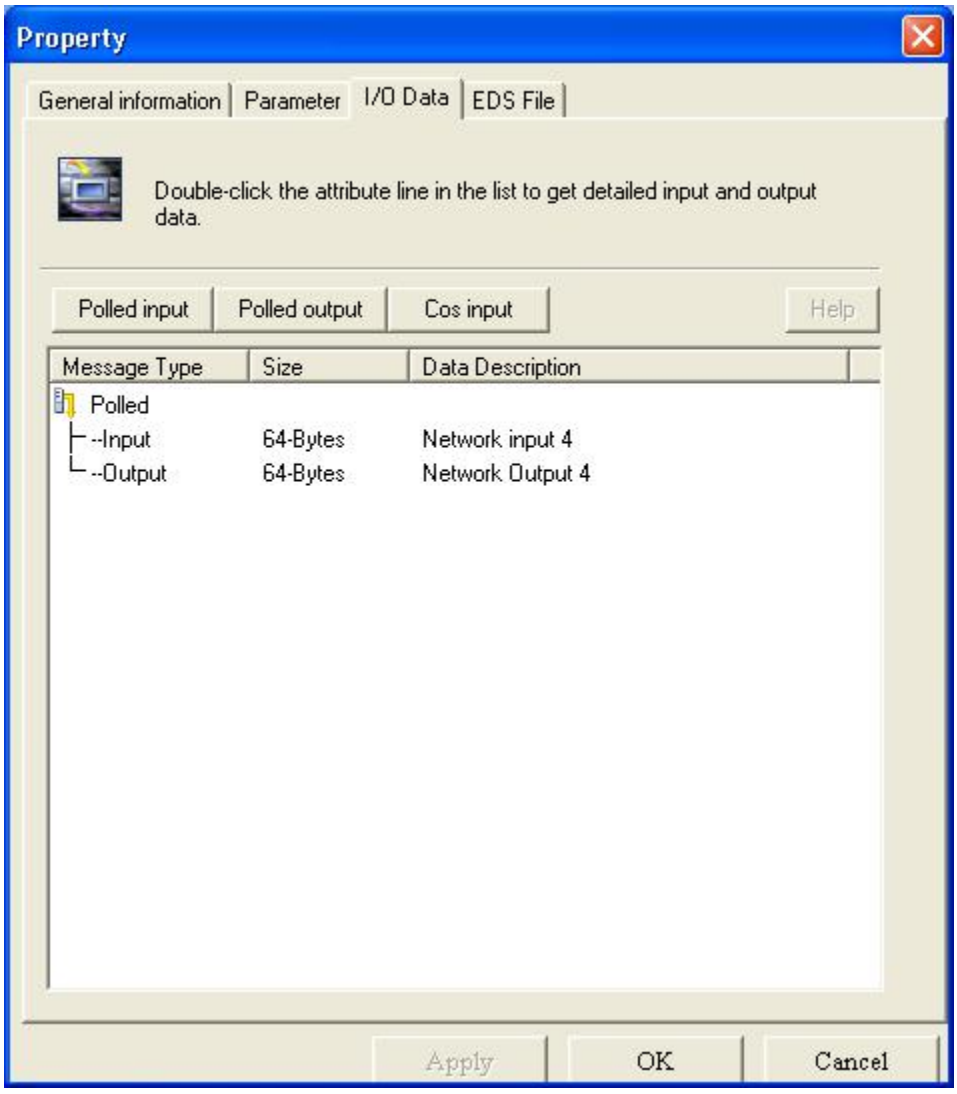
10. Double click the master icon (the node of this example is 63), Pop-up "Property"box. Click"Scan List",Move desirable device from left to right scan list, double-click to edit I/O parameter, Set the length of the slave I/O parameters, Then click ok; Configure the mapped address of input and output data in"Input" and"Output". In"PROFIBUS Parameter", the input and output block size of PROFINET can be set. The corresponding DeviceNet network parameters can be set in "DeviceNet Parameter"(see 4.3 DNetStart configuration software for detailed usage.


Property
PROFINET Parameter
DeviceNet parameter
General information
Scan List
Input
Output
The EDS file is used to communicate to the user the device data provided by the manufacturer.
Desirable device:
Scan List:
ID
parameter name
ID
parameter name
18 Modbus-DeviceNet ...
>
<
>>
<<
Automatic mapping when adding
Node activity
Electronic key
DeviceType
Vender
Product Type
MajRev
MinRev
Upload from scanner
Download to scanner
Edit I/O parameters
Apply
OK
Cancel



11.Click"Apply" to save the configured parameters in the GT100-PN-DN. At this time, prompt "Successful application"will pop up. Click"OK"to return to the main interface

12.About debugging, you can skip this process if you don't need debugging, If you need debugging, double-click the slave icon (node 13 in this example)In"Parameter", you can upload the relevant parameters of the slave device,In "I/O Data", You can read and write data from the slave station. (See 4.3 DNetStart Configuration Software for detailed software.)

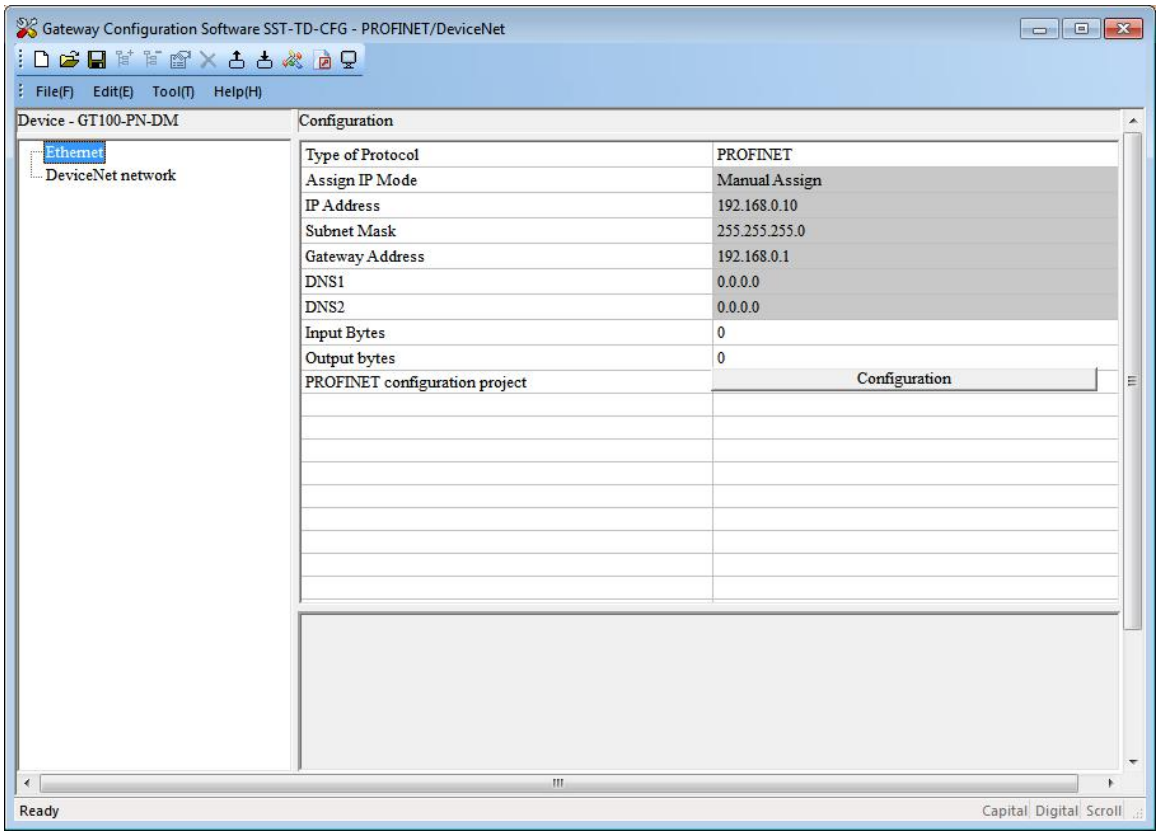


4.1.2 Pre-operation Mode-Upload and Download the Configuration of GT100-PN-DM

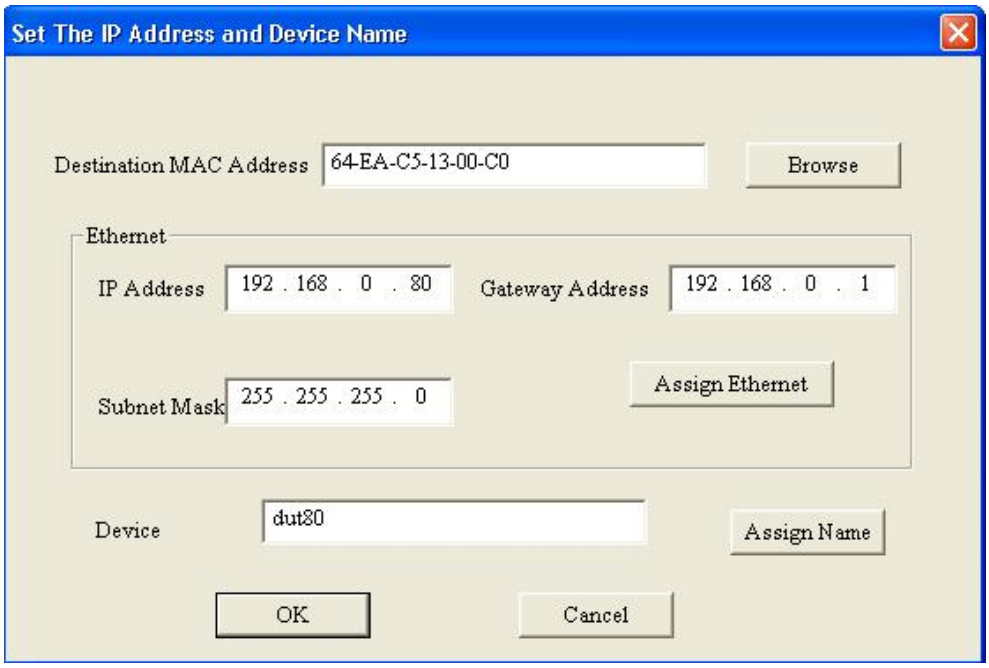
Applicable scene: View the existing configuration on the GT100-PN-DM device, determine the parameters of the slave, directly set the relevant parameters in the SST-TD-CFG software and download the configuration to the GT100-PN-DM device.

1）Click the "  " configuration icon in the DNetStart toolbar, choose GT200-PN-DM/GT100-PN-DM, then choose"GT100-PN-DM". The "Gateway configuration software SST-TD-CFG-PROFINET/DeviceNet" box will pop up. Click "Upload configuration" in the toolbar to view the configuration saved in GT100-PN-DM, and click

"Download Configuration" to download the set configuration into GT100-PN-DM, (Please refer to 4.2 for SST-TD-CFG instructions)



2）If you want to modify the PROFINET device name and IP address. Click "Tool" in the toolbar->"Assign Ethernet Parameters", Click "Browse"in the pop-up box to select the device and click "Log In", As shown in the figure below, you can modify the IP address and device name at this time, click "OK" to complete the modification.



4.1.3 Operating Mode

1) Set the first bit of the DIP switch to OFF and the second bit to OFF

2) Using a network cable, one end is connected to the GT100-PN-DM, and one end is connected to a PLC or a switch connected to the PLC(please download the configuration to the PLC)

3) Connect GT100-PN-DM to DeviceNet network.

4) Power on the GT100-PN-DM. At this time, the GT100-PN-DM will establish communication with the slave devices in the DeviceNet network.

5) The PROFINET side will establish communication with the PLC(Whether a connection is established, please refer to 3.2 to judge according to the status of the indicator)

The normal communication between GT100-PN-DM and PLC(PROFINET master station)requires the following three conditions to be met at the same time:

1. The name of the PROFINET device is the same as the device name in the PLC configuration.
2. The IP address of the PROFINET device is the same as the device IP address in the PLC configuration.
3. The configuration module of PROFINET device (configured through GT100-PN-DM) is consistent with the data block configured on the PLC configuration page.

If you encounter any problems during configuration and operation, please send emails to support: support@sstcomm. com.

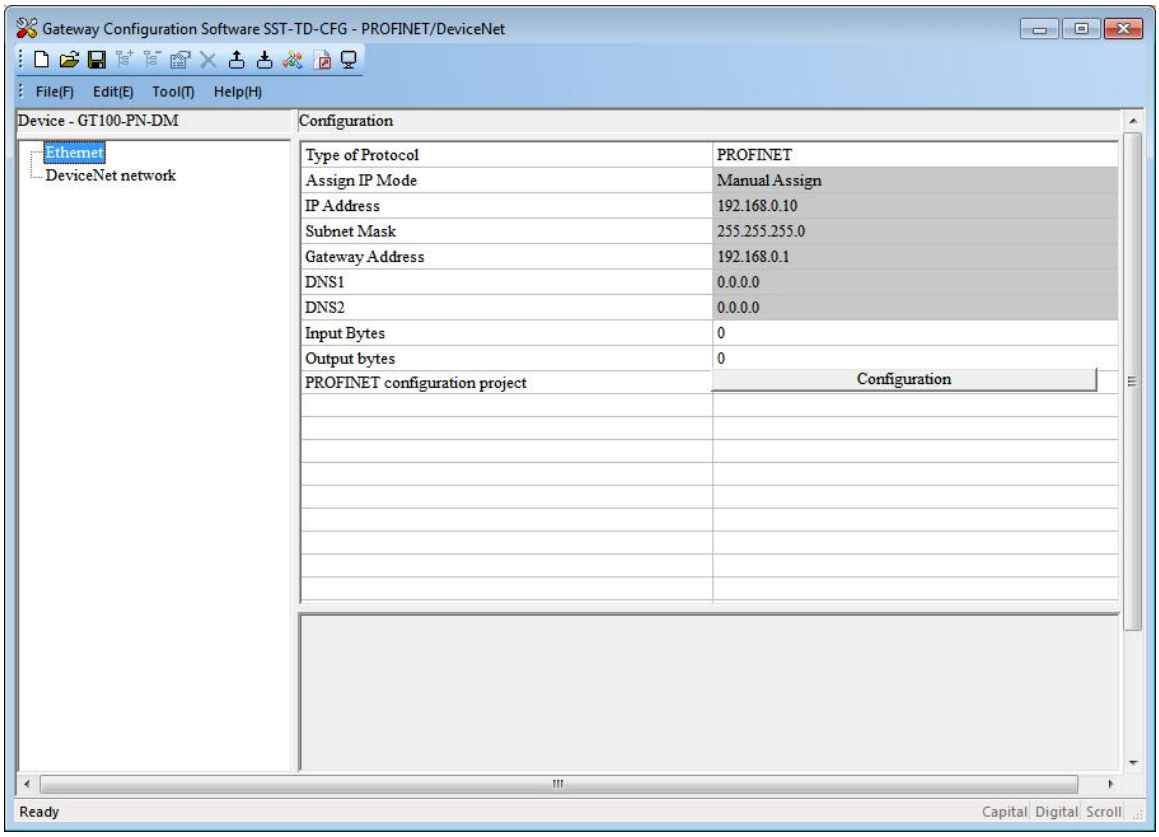
4.2 SST-TD-CFG Software Configuration

4.2.1 Pre-configuration Considerations

SST-TD-CFG is a software based on Windows platform. It is mainly used to view configuration information and configure related parameters and commands of DeviceNet.

Just open DNetStart and Enter the interface for selecting the corresponding product model. to select GT100-PN-DM.

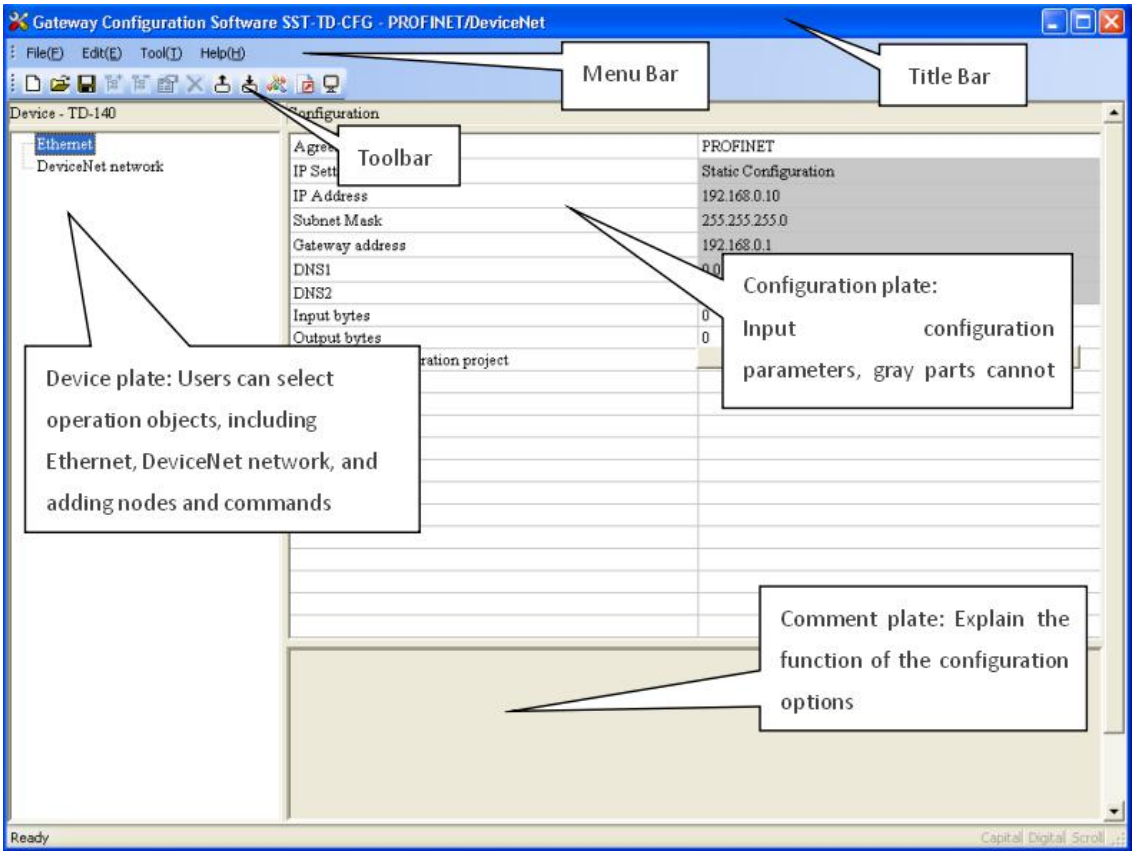
Take GT100-PN-DM as an example, click OK to pop up the following interface:



4.2.2 User Interface

The interface of SST-TD-CFG includes: title bar, menu bar, toolbar, status bar, equipment section, configuration section and comment section.

Remark: In this software, all the gray parts are unchangeable items.



Tool bar:

Tool bar interface is shown as below:

The functions from left to right are: New, open, save, Add Node, Delete Node, Increase mapping, Delete Mapping, Upload Configuration, Download Configuration, Automatic calculation of Mapping Address, Document Output, and monitor.

 New: Create a new configuration project

 Open: Open a configuration project

 Save: save the current configuration

 Add Node: add a DeviceNet slave node

 Delete Node: delete a DeviceNet slave node

 Increase Mapping: add a mapping type

 Delete Mapping: delete a mapping type

 Upload Configuration: Read configuration information from the module and display it in the software

 Download Configuration: Download configuration information from the software to the module

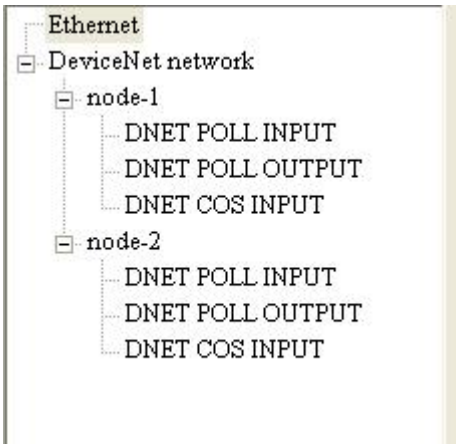
 Automatic calculation of Mapping Address: Calculate the mapped address of the configured mapping type inside the gateway

 Document Output: output the current configuration to the local hard disk, save it in . xls file format

 Monitor: Monitor gateway memory input buffer data

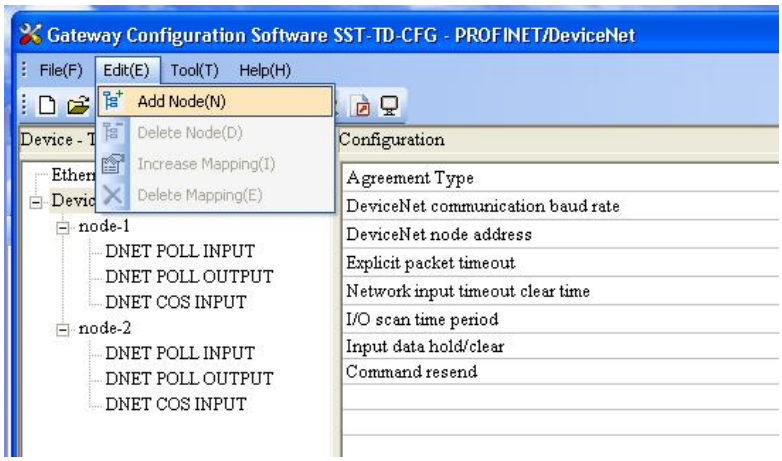
4.2.3 Device View Operation

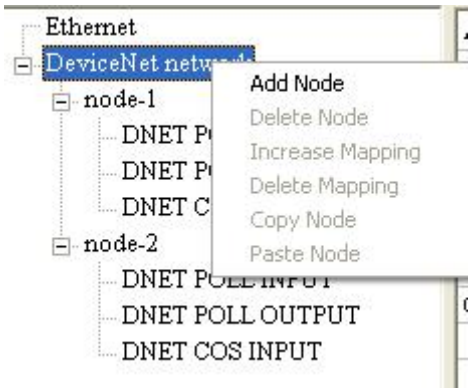
4.2.3.1 Device View Interface



4.2.3.2 Operation Mode of Device View

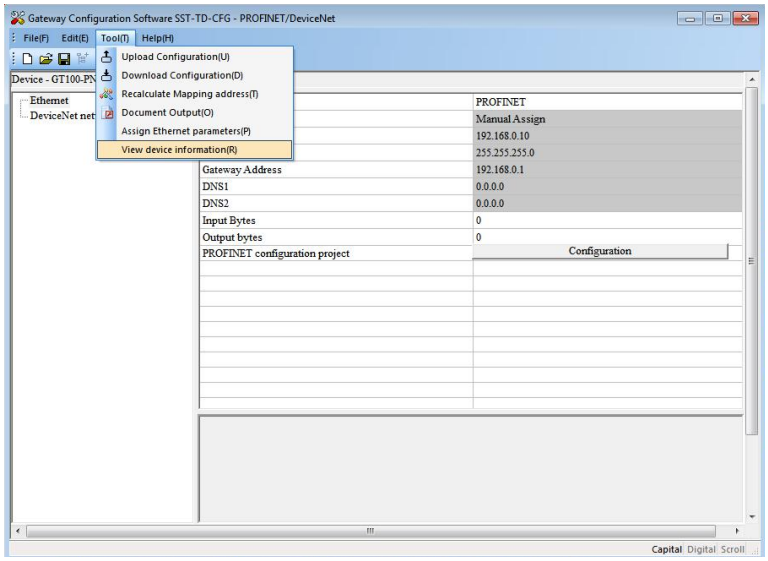
For the DeviceNet master device view, the following three modes of operation are supported: editing menu, editing toolbar and right-click editing menu.



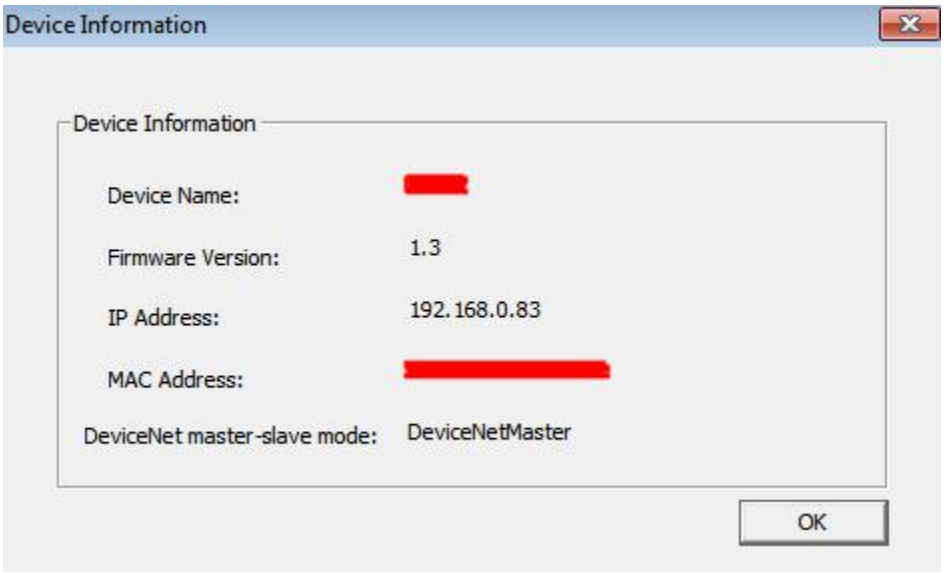


4.2.3.3 View Device Information

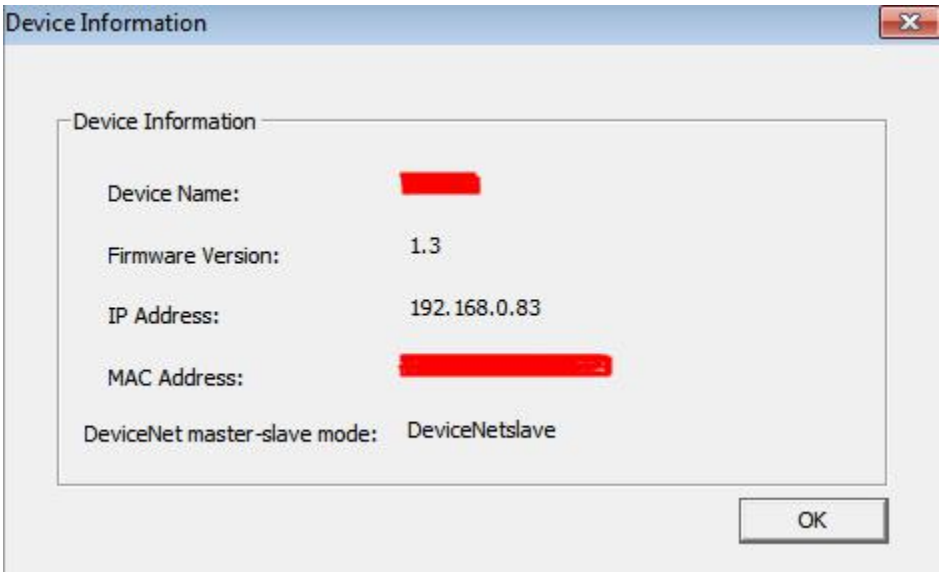
You can view the current device IP address, firmware version, MAC address, working mode and other related information by viewing the device information options.



DeviceNet master mode:



DeviceNet slave mode:



4.2.3.4Operation Types of Device View

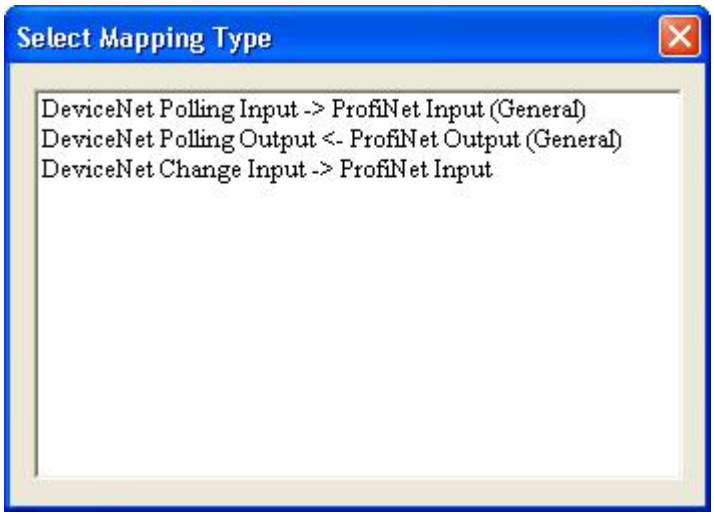
1) Add Node: Right-click on the DeviceNet network or an existing node, select the node, and then perform the add node operation. Add a node named "new node" under the DeviceNet network.

2) Delete Node: Right-click, select the node to be deleted, and then perform the delete node operation. The node and all commands under it are deleted.

3) Increase Mapping: Right-click on the node, and then perform an add mapping operation to add a mapping type for the node. The following selection of the mapping type dialog box is displayed for the user to select, as shown in the following figure. :

Current mapping type: DeviceNet polling input -> ProfiNet input (General); DeviceNet polling output <-ProfiNet output; DeviceNet variable input -> ProfiNet input; DeviceNet variable output -> ProfiNet output

Select mapping type: double-click mapping type

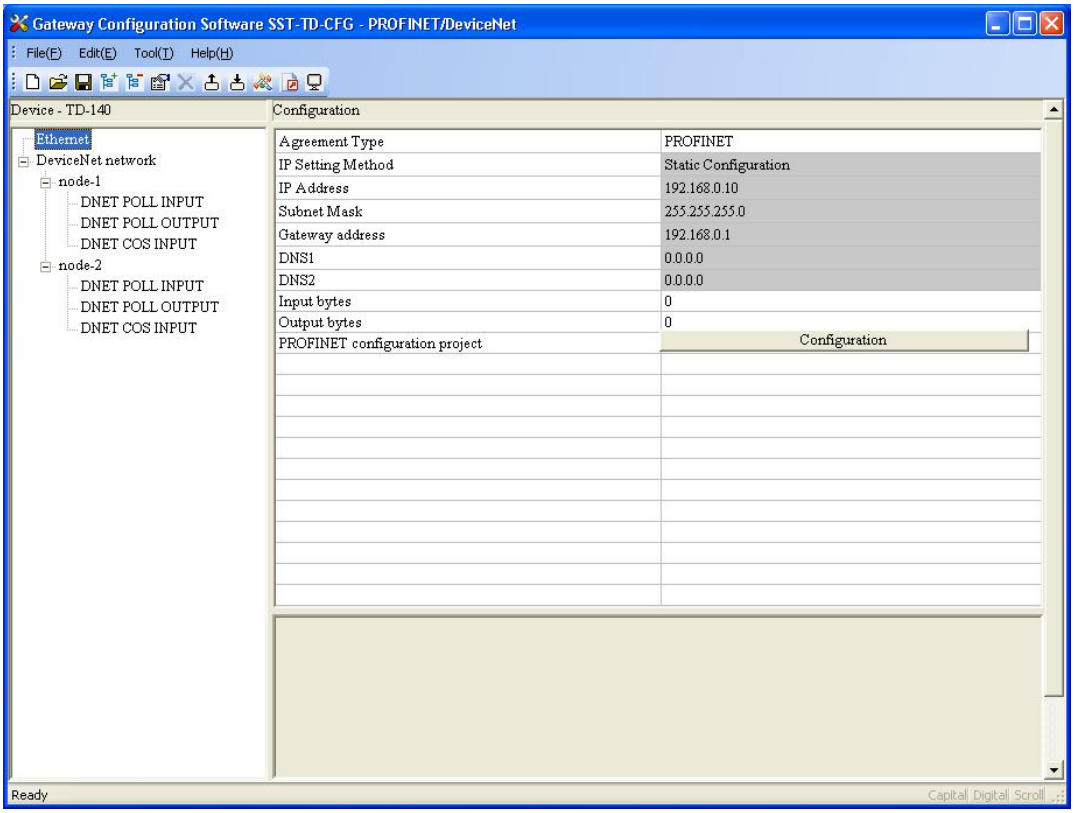


4) Delete Mapping: Right-click, select the mapping type to be deleted, and then perform the delete mapping operation. The map type is deleted.

4.2.4 Configuration View Operations

4.2.4.1 Ethernet Configuration View Interface

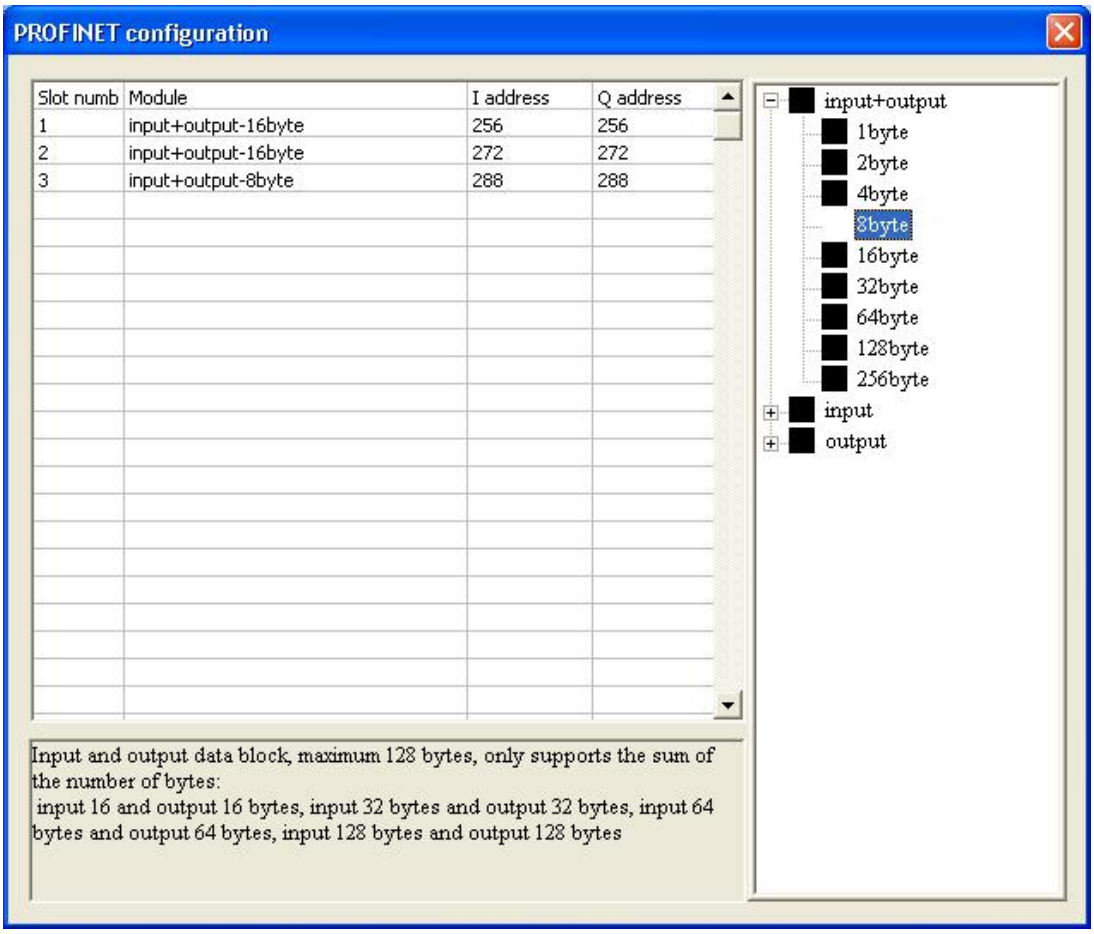
The configuration interface of Ethernet is as follow:



- **IP address:** Set the IP address of GT100-PN-DM.
- **Subnet mask:** Set the subnet mask.
- **Gateway address:** Set the gateway address of the LAN where GT100-PN-DM is located.
- **Input bytes:** Display the length of input data exchanged between GT100-PN-DM and PLC, the length is configured by the PROFINET project dialog
- **Output bytes:** Display the length of output data exchanged between GT100-PN-DM and PLC, the length is configured by the PROFINET project dialog
- **PROFINET configuration project:** Click to enter the interface for setting the GT100-PN-DM input and output data length.

Note: This configuration project must be the same as the data block configuration of the corresponding slot in the software and hardware configuration of the PROFINET master.

The PROFINET configuration project dialog is:



It can be seen that the above configuration has a total of three slots, respectively: 16 bytes of input and output, 16 bytes of input and output, 8 bytes of input and output.

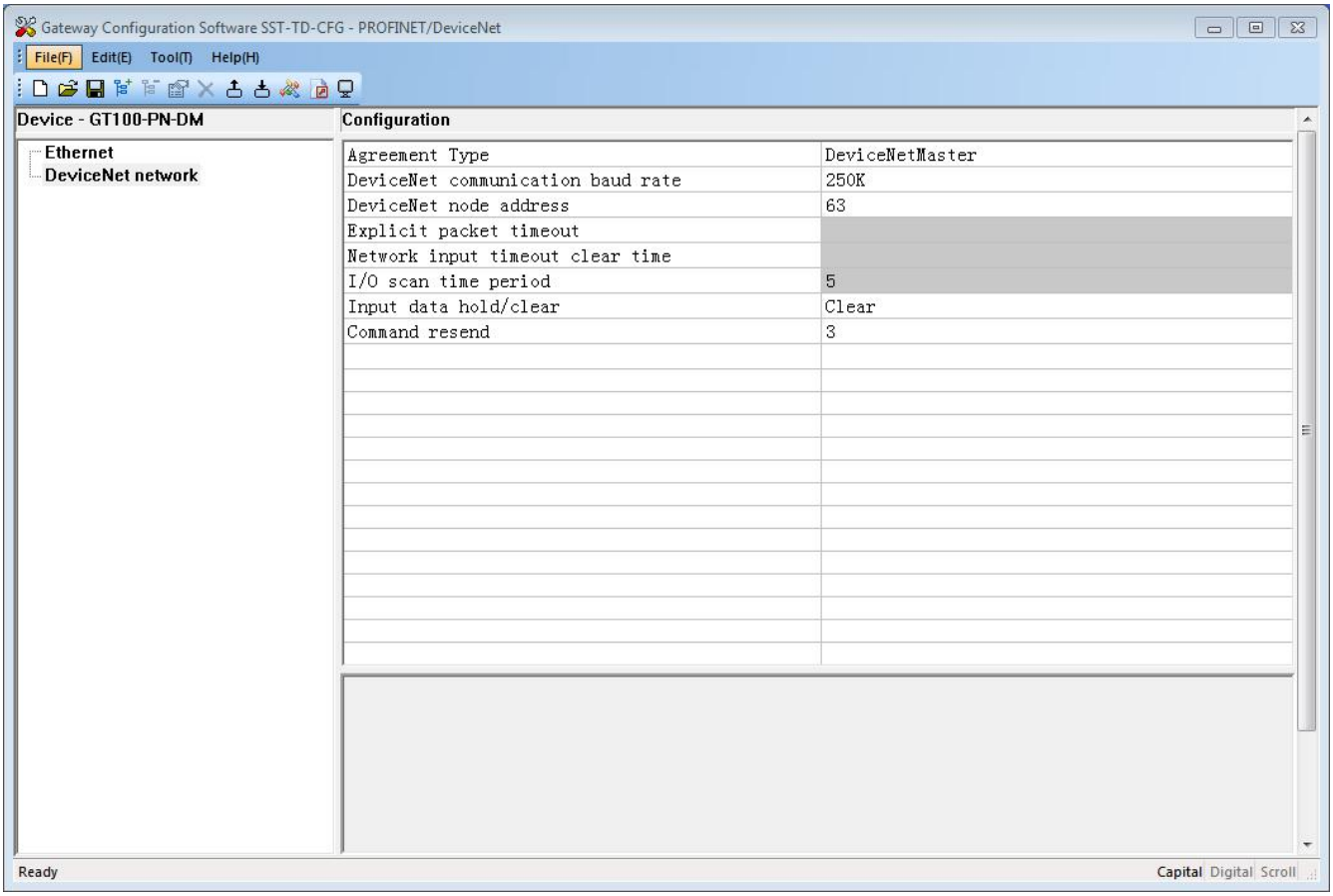
As with the modules in the PROFINET master software, you can drag the module from the box on the right into the slot on the left.

Note: The slots and modules in the PROFINET project must match the slots and modules in the PROFINET master software!

4.2.4.2 DeviceNet Master Network Configuration View Interface

Protocol type is DeviceNet Master. The configuration parameters are: DeviceNet Baud Rate, DeviceNet Node Address, How to Action after N successive Response Timeout, Commend Resend

The configuration view interface is displayed as follows:



DeviceNet Baud Rate: 125, 250 and 500KBPS optional

DeviceNet Node Address: The node address of the gateway on the DeviceNet network, 0~63 optional

Explicit packet timeout: DeviceNet explicit packet timeout time setting, in units of 10ms, up to 2.5s

Clear Data Time for Network Input: DeviceNet network input timeout time setting. If this time value is exceeded, the DeviceNet slave node does not respond and the corresponding data mapping area is cleared. In units of 10ms, the maximum is 2.5s

I/O Scan Time Period: DeviceNet network I/O scan cycle, in units of 10ms, up to 500ms

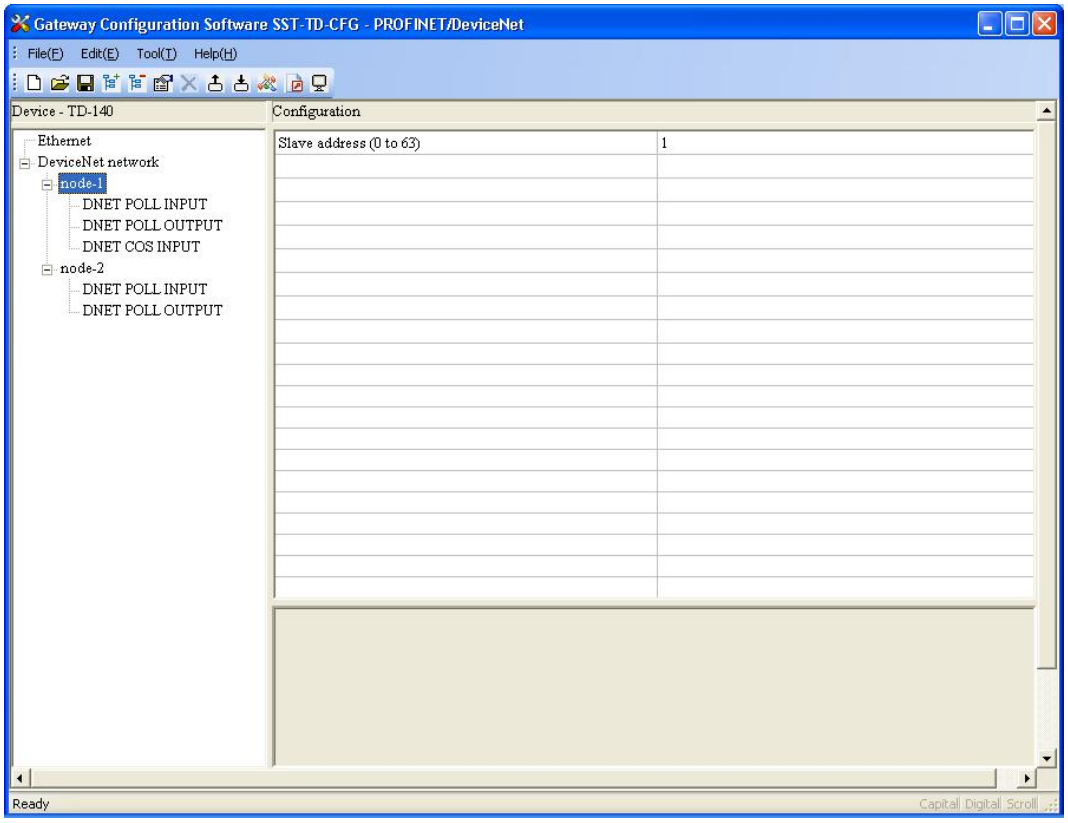
How to Action after N successive Response Timeout: When the number of DeviceNet command response errors reaches the number of Modbus command retransmissions, the corresponding DeviceNet input data is cleared.

Select "clear", DeviceNet input data is cleared;

Select "Hold", DeviceNet input data keeps the correct data received last time.

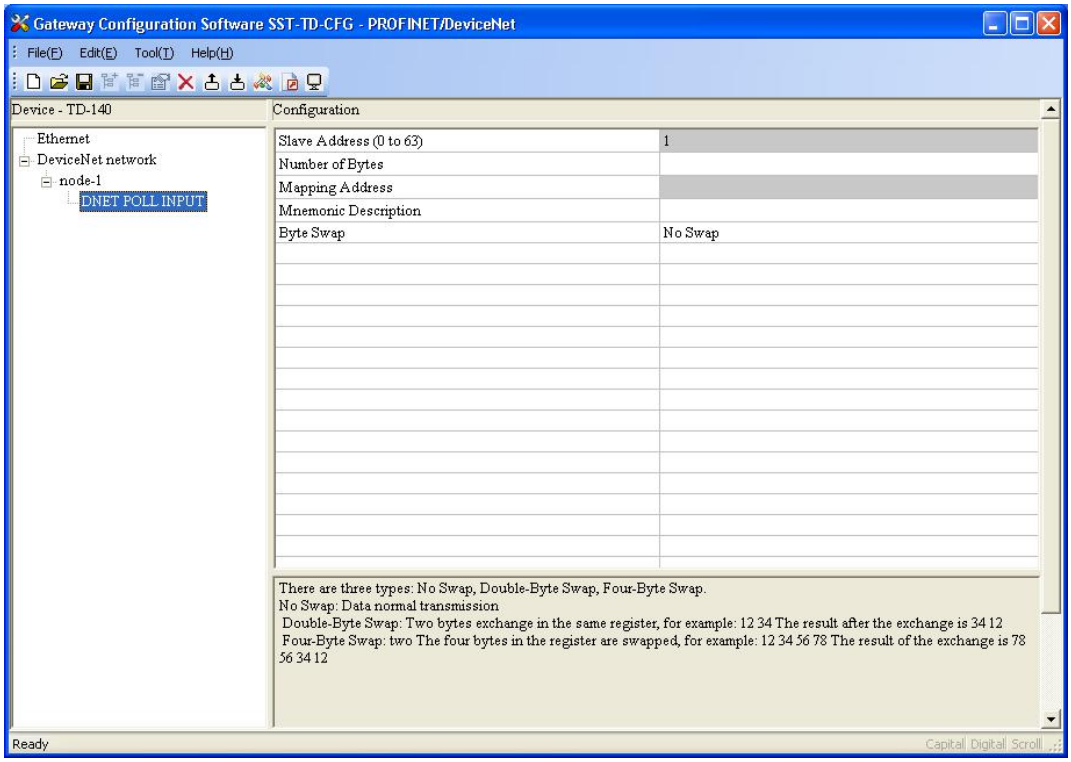
4.2.4.3 Node Configuration View Interface

On the device view page, click the node. The configuration view is displayed as follows.



4.2.4.4 Command Configuration View Interface

In the device view interface, Click DeviceNet network->node->mapping type, The configuration view interface is displayed as follow:



Slave address: cannot be changed, the same as node address.

Number of byte: Bytes numbers mapped, 1~128 bytes for input bytes and 1~112 bytes for output bytes.

Mapping address: Memory address mapped to the gateway, starting from 0

Mnemonic description: Users can input descriptive notes here, these are not downloaded into gateway.

Byte Swap: There are three types: No Swap, Double-Byte Swap, Four-Byte Swap.

4.2.4.5 DeviceNet slave network configuration view interface

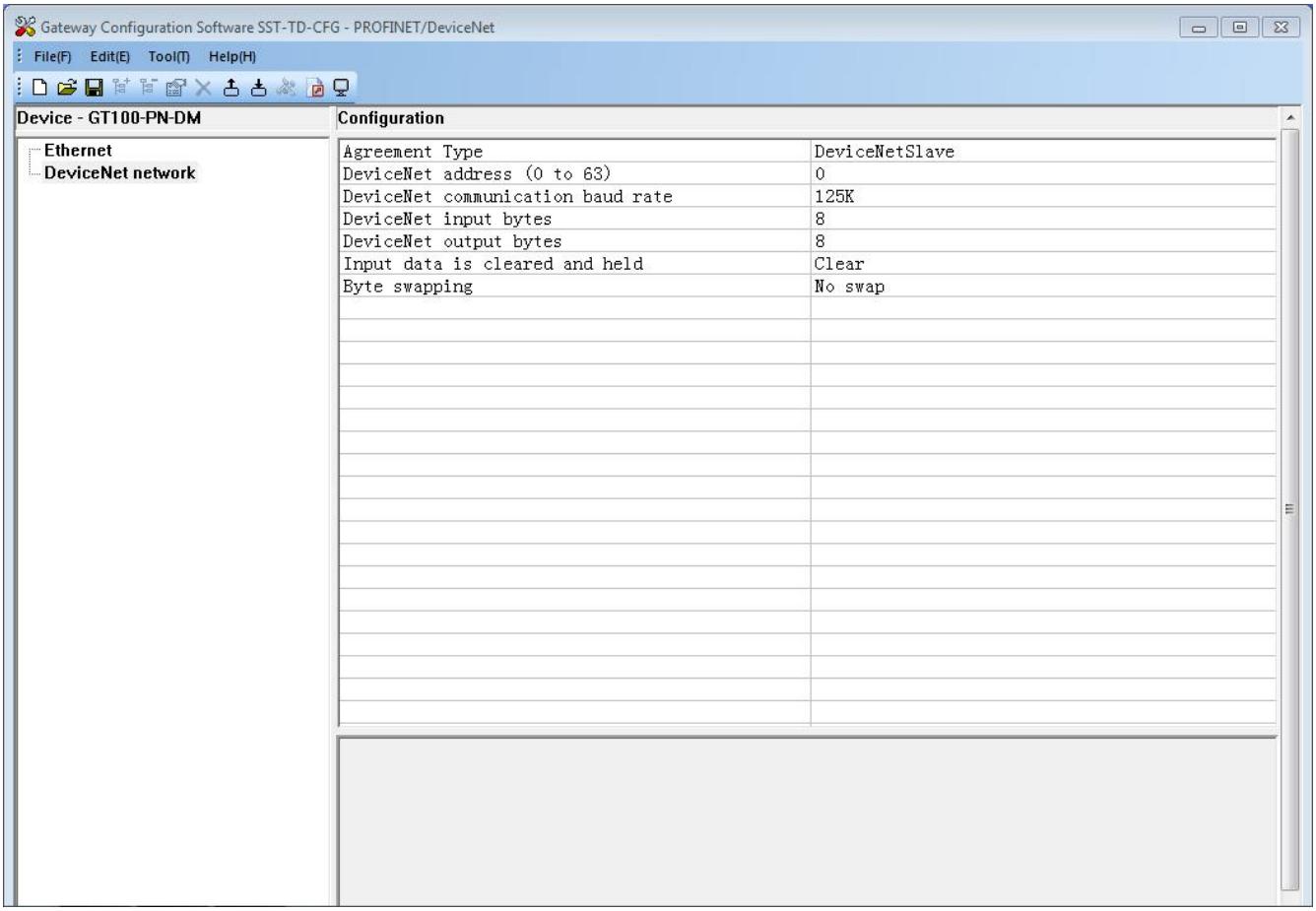
The Type of Protocol is DeviceNet slave. The configurable parameters are: DeviceNet communication baud rate, DeviceNet address, DeviceNet input and output bytes, input data hold / clear and byte swap.

Select DeviceNet slave in the protocol type drop-down option.

Configuration

Agreement Type	DeviceNetSlave
DeviceNet address (0 to 63)	0
DeviceNet communication baud rate	125K
DeviceNet input bytes	8
DeviceNet output bytes	8
Input data is cleared and held	Clear
Byte swapping	No swap

The configuration view interface is displayed as follows:



DeviceNet communication baud rate: 125, 250, 500K optional

DeviceNet node address: The node address of the gateway on DeviceNet is 0 to 63. The default value is 0.

DeviceNet input bytes: 8, 16, 32, 96, 48, 64, 112, 72, 160, 192, 224 bytes optional

DeviceNet output bytes: 8, 16, 32, 96, 48, 64, 112, 72, 160, 192, 224 bytes optional

Input data hold / clear: Whether the corresponding DeviceNet input data is held or cleared when the DeviceNet master actively disconnects from the slave. (Under normal circumstances, the default is to keep)

Select "Clear": DeviceNet input data is cleared

Select "Hold": DeviceNet input data keeps the last correct data received

Byte exchange: non-exchange, two-byte exchange, four-byte exchange optional

4.2.5 Comment View

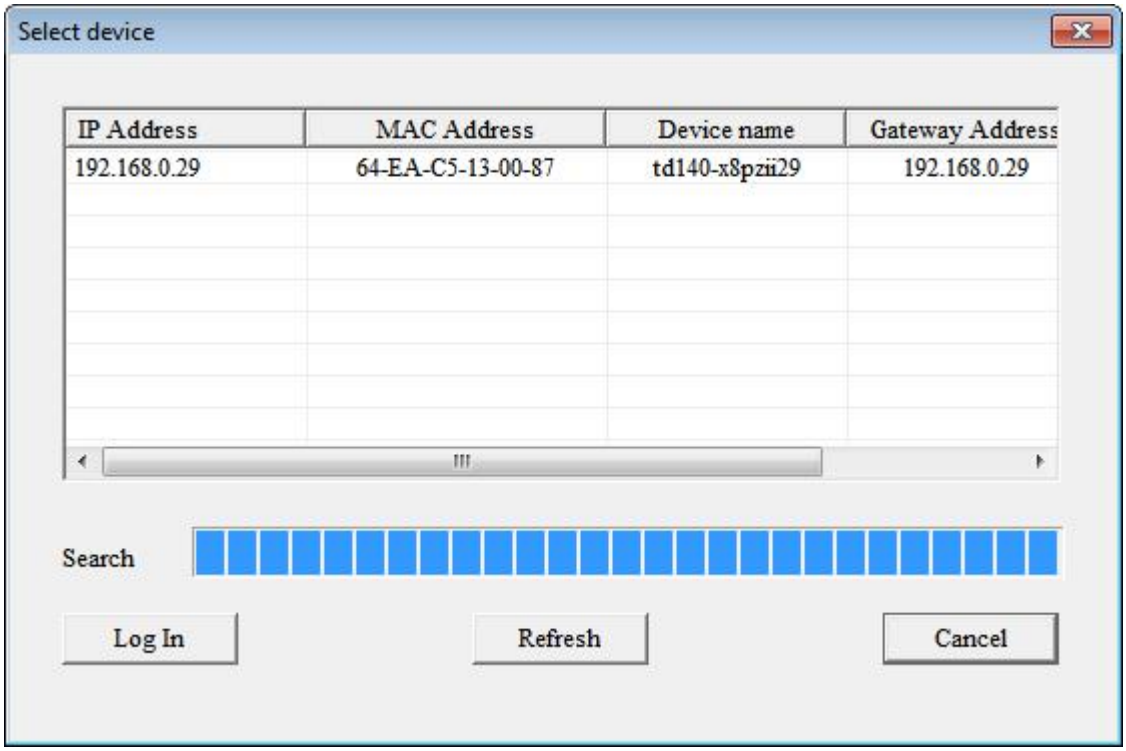
Comment interface displays the explanation of relevant configuration item. When the configuration item is "DeviceNet network", the comment interface is shown as below:

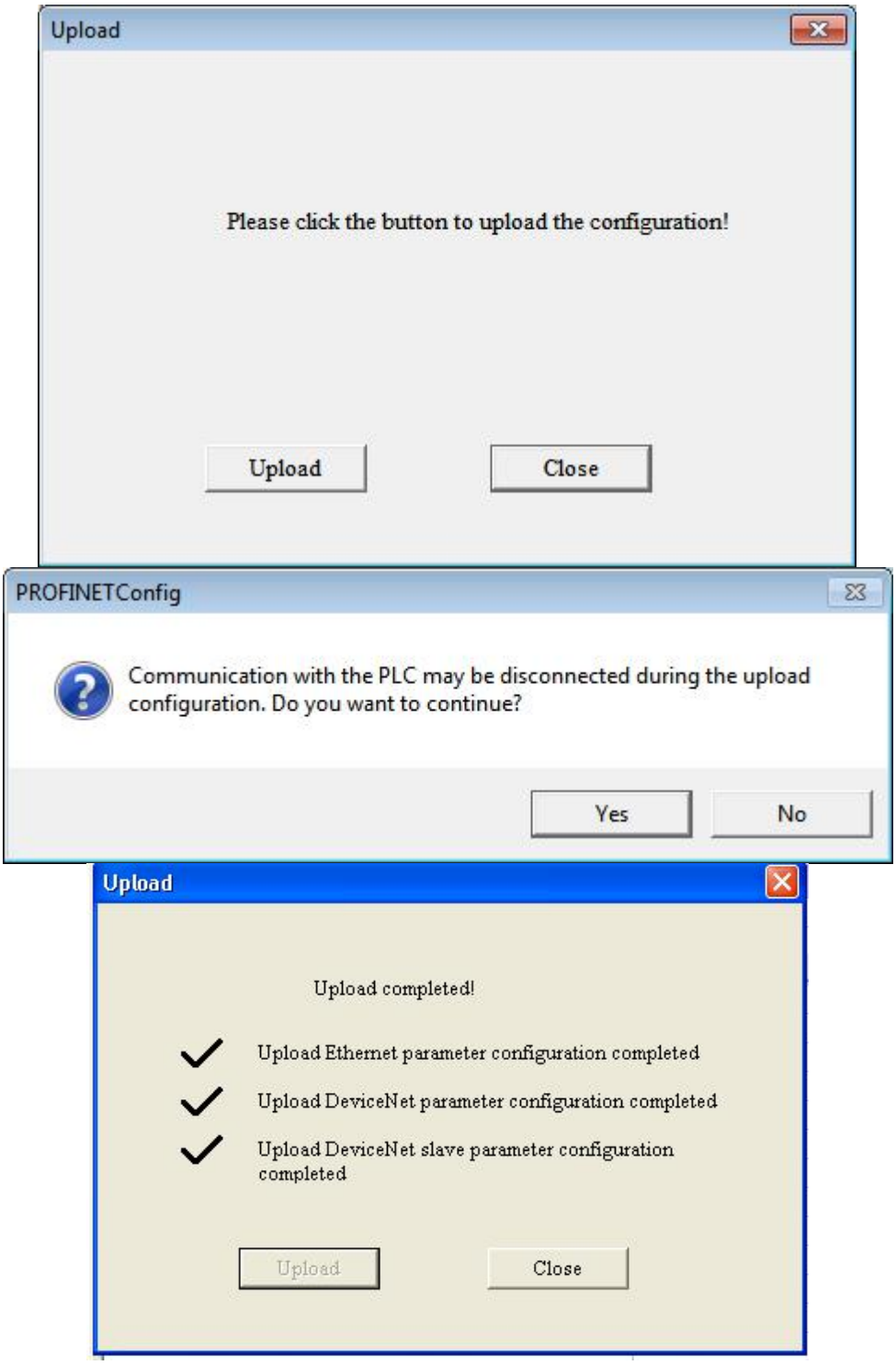
Select DeviceNet baud rate. The default value is 250K.

4.2.6 Upload and Download Configuration

1.Upload configuration

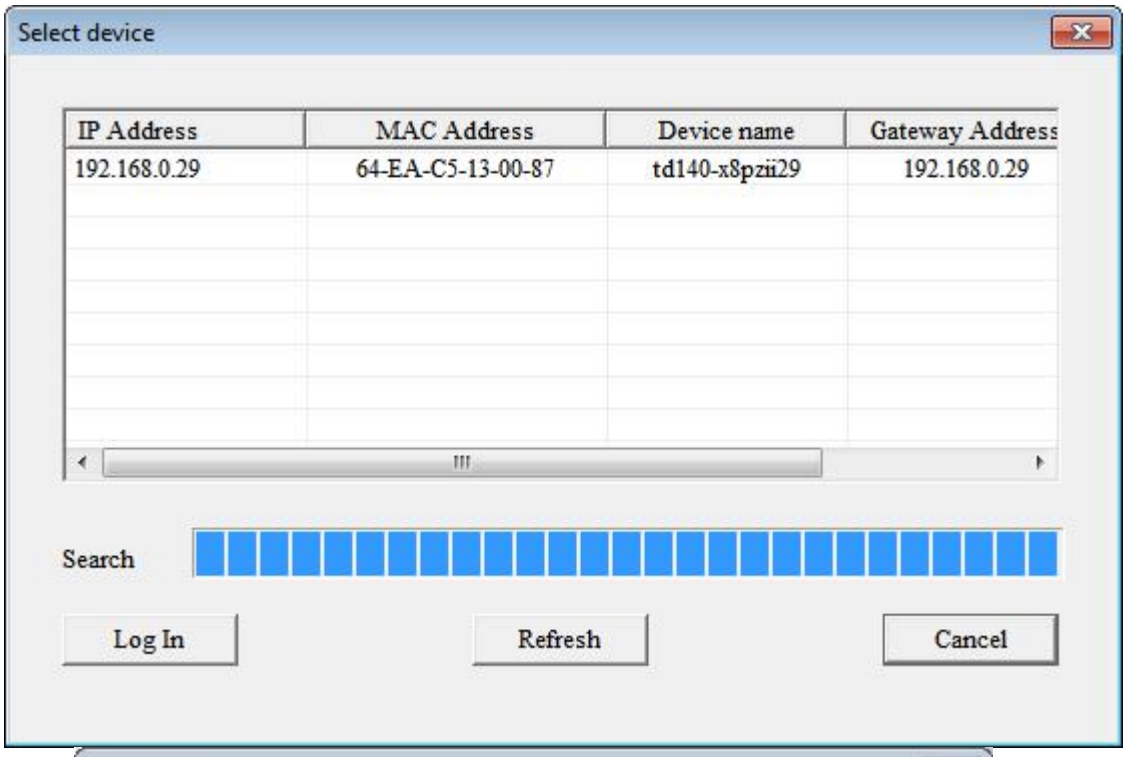
Select Upload Configuration to upload configuration information from the device to the software. The display interface is as follows:

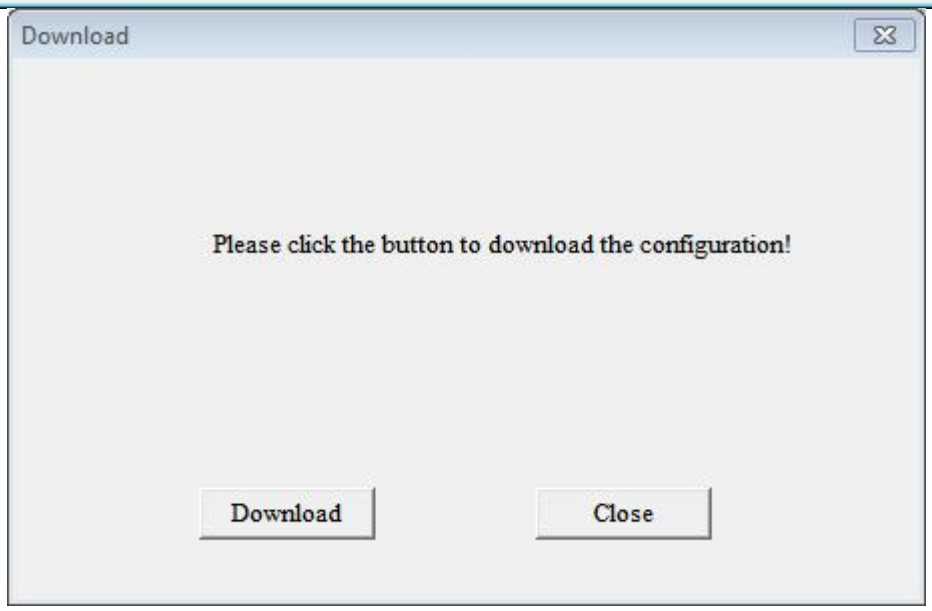


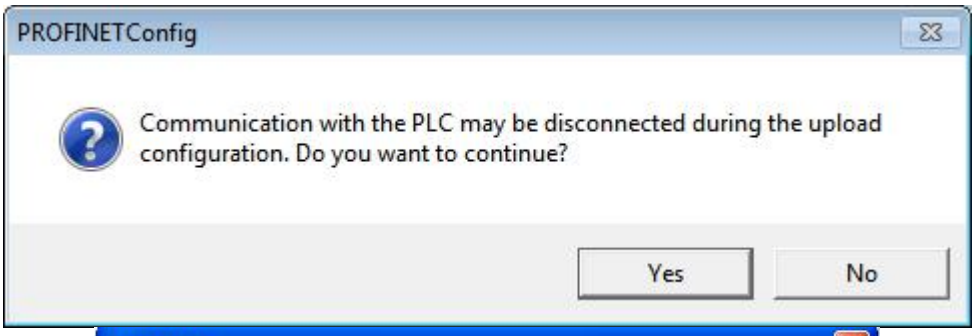


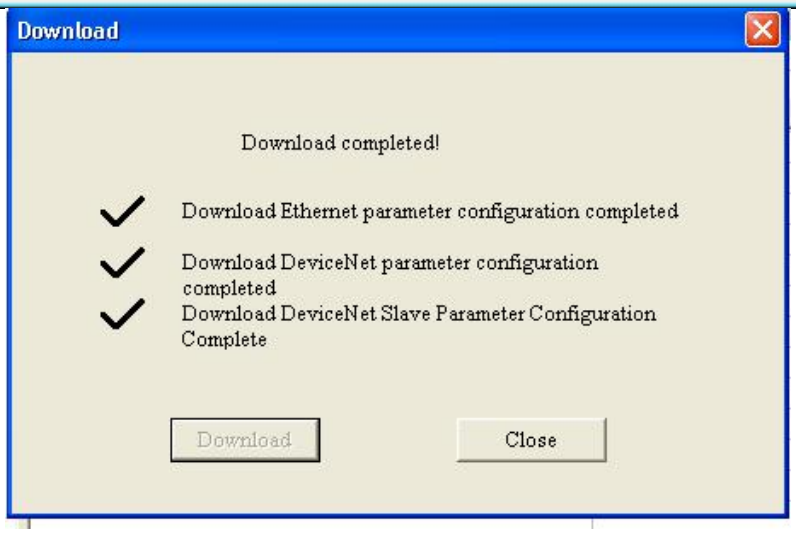
2.Download configuration

Select download configuration, download the configured information to device, the display interface is as follows:

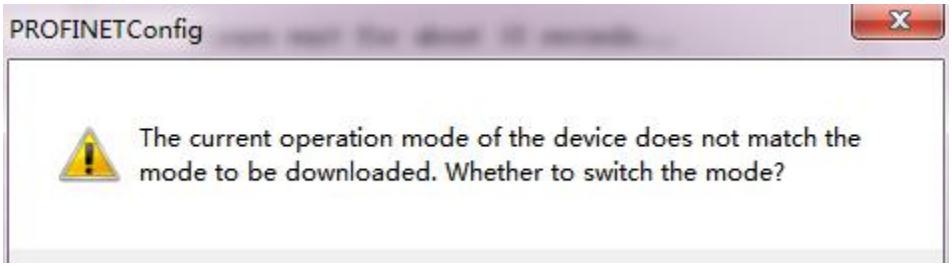

Select device
IP Address
MAC Address
Device name
Gateway Address
192.168.0.29
64-EA-C5-13-00-87
td140-x8pzii29
192.168.0.29
Search
Log In
Refresh
Cancel


Download
Please click the button to download the configuration!
Download
Close





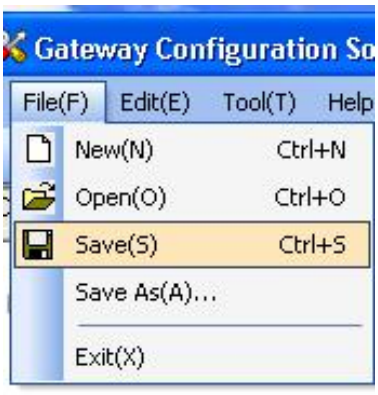
When the DeviceNet protocol type selected in the configuration software is not the same with the internal gateway's current operating mode, the configuration software will prompt the need to switch the gateway mode and wait for the gateway to restart to complete the configuration download in the normal mode.

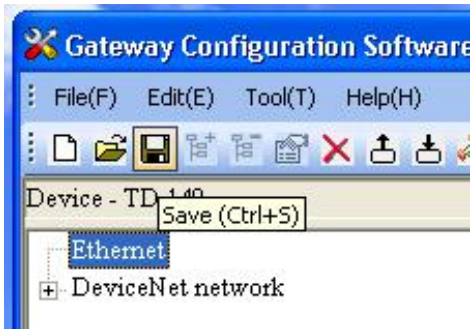


4.2.7 Save and Load Configuration

1.Save Configuration Project

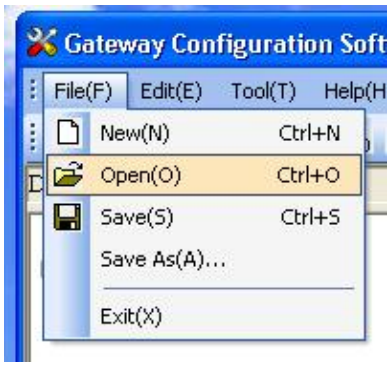
Select "Save" or "Save as", you can save the configuration project with chg as its extension. There are two ways:

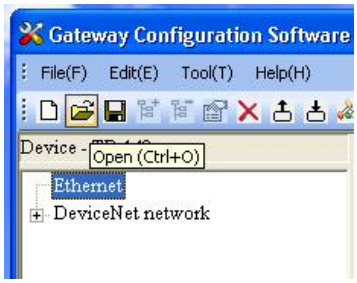




2.Load Configuration Project

Select "Open", you can open a project which is saved in . chg format. There are two ways:

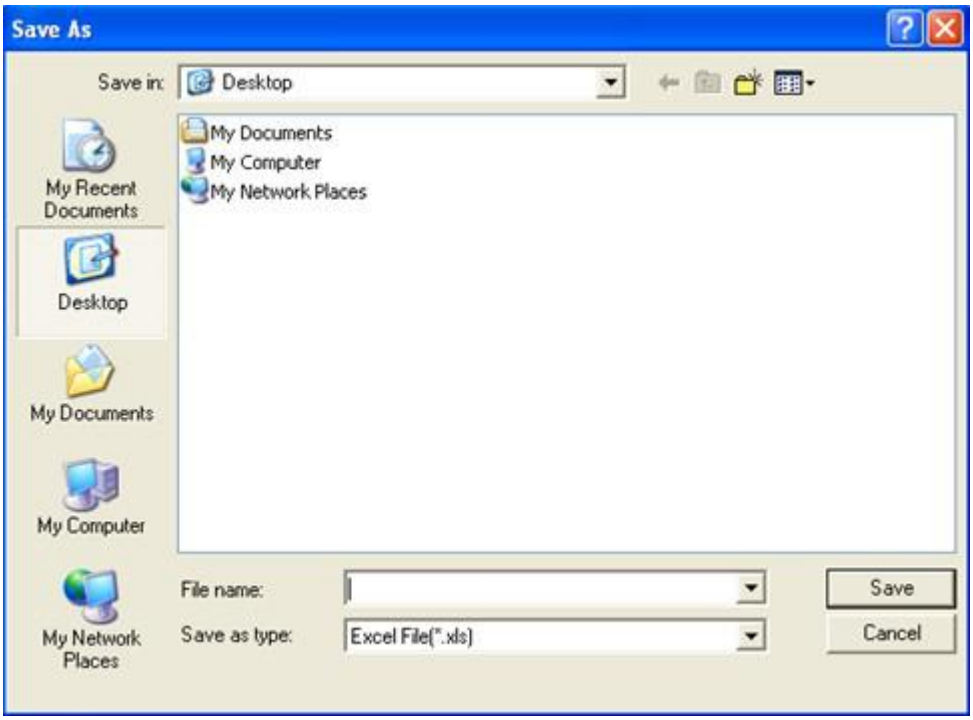




4.2.8 Excel Document Output

Users can use the function to check the gateway configurations.

Click icon on the tool bar you can save the configuration with . xls as its extension. Please choose the proper location to save, as the following:



4.2.9 Monitor

This feature has been integrated into DNetStart configuration software.

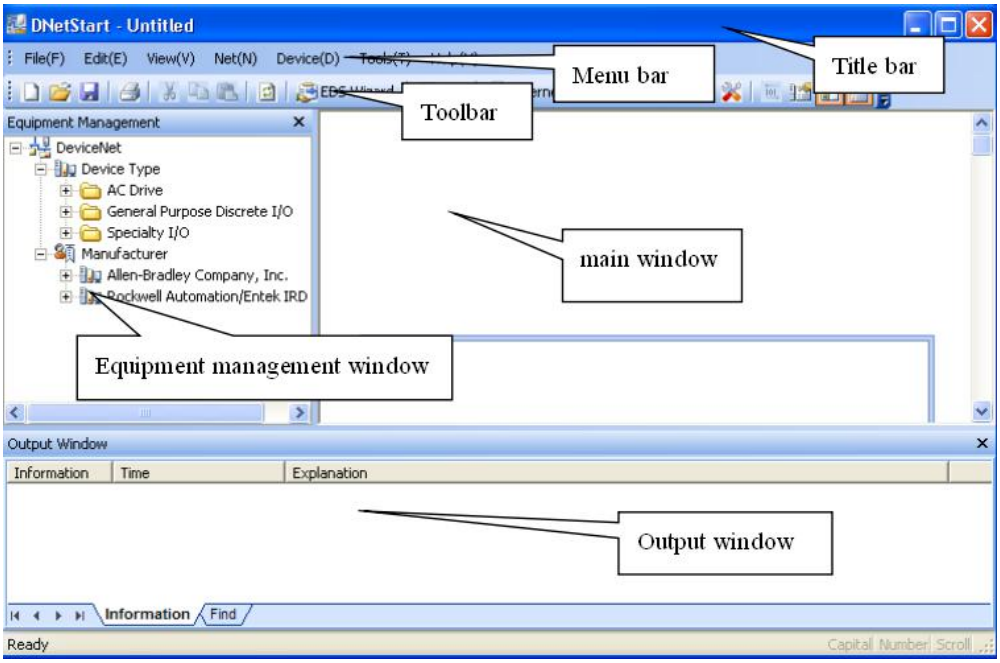
4.3 DNetStart Software Configuration

4.3.1 Pre-configuration Notes

When GT100-PN-DM's DIP switch "2ON 1OFF", The gateway is in **pre-operation mode**, the DNetStart software can be used to configure the I/O parameters of the slave devices on the DeviceNet network.

4.3.2 Software Main Interface

After installation, double-click the icon to enter the main interface



Main window: After establishing the internet connection, display the online device and modify the address and parameters of the device online, check the input and output data; In the offline state, you can view device properties by dragging the device icon to the window.

Equipment management window: Displays registered DeviceNet devices in different ways: device type, manufacture. Under different manufacturers, different devices are displayed separately according to the device type.

Output window: Dynamic display of network scanning information, registered device information, delete device information, etc. display the results of "find devices", "find next".

4.3.3 Toolbar

Toolbar is show:

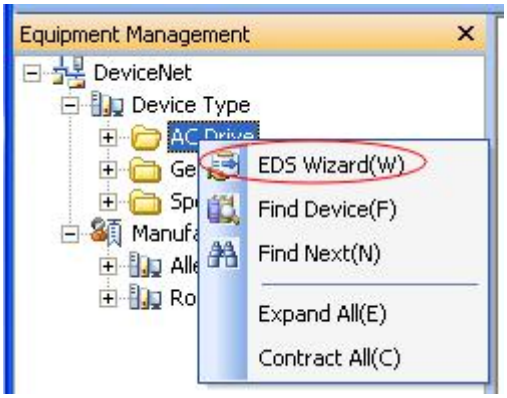
Functions separately from left to right are: new, open, save, print, cut, copy, paste, refresh viewport, EDS Wizard, find devices in the device library, find next, Internet Connection, one-click save, disconnect, configure, send explicit message, property, device management, output.

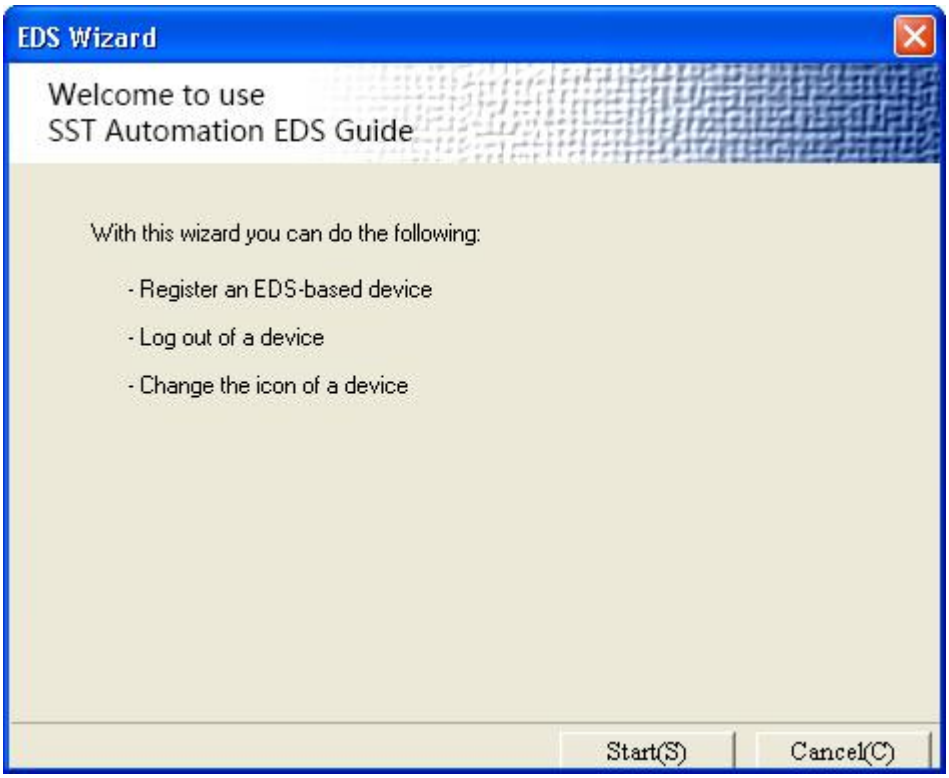
4.3.4 DeviceNet Master Mode Device Network Configuration

- EDS Registration Wizard

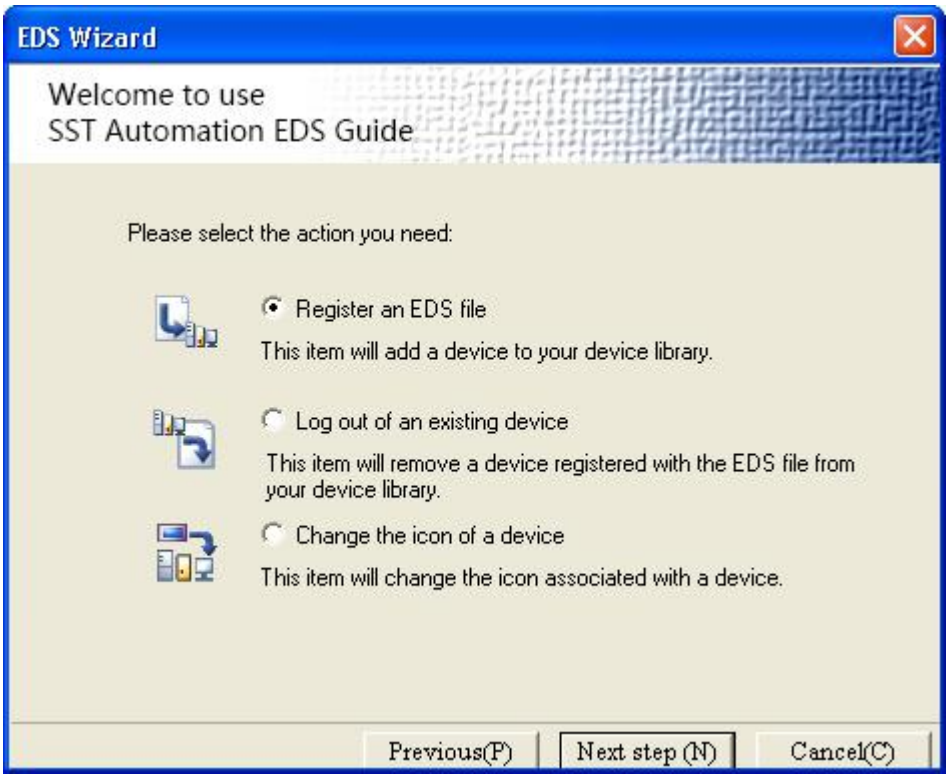
Users can configure different DeviceNet devices by registering new EDS files. Register the new EDS file, select

"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:





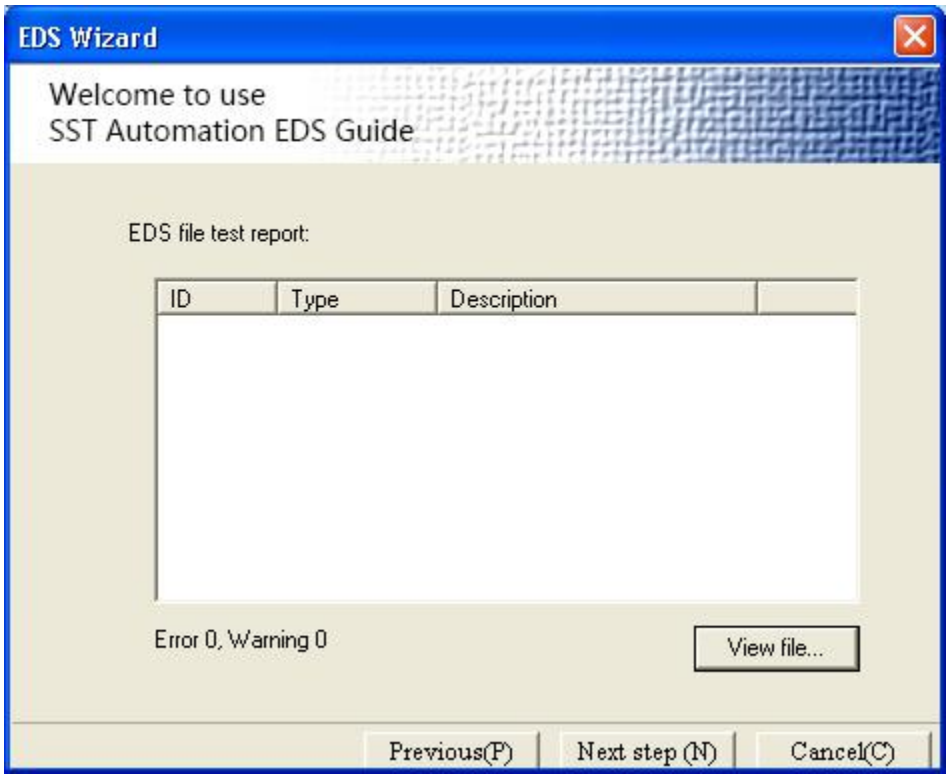
Select "Start "and pop up the following interface:

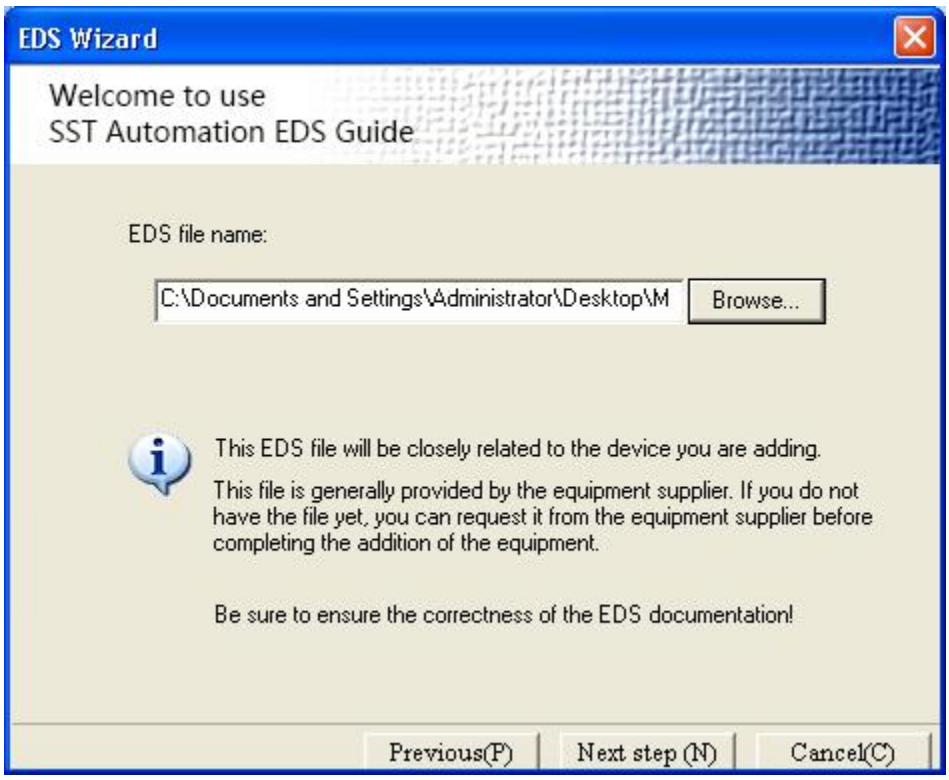


In this interface, users can choose to register an EDS file, log out of an existing device, and change the icon of a device.

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

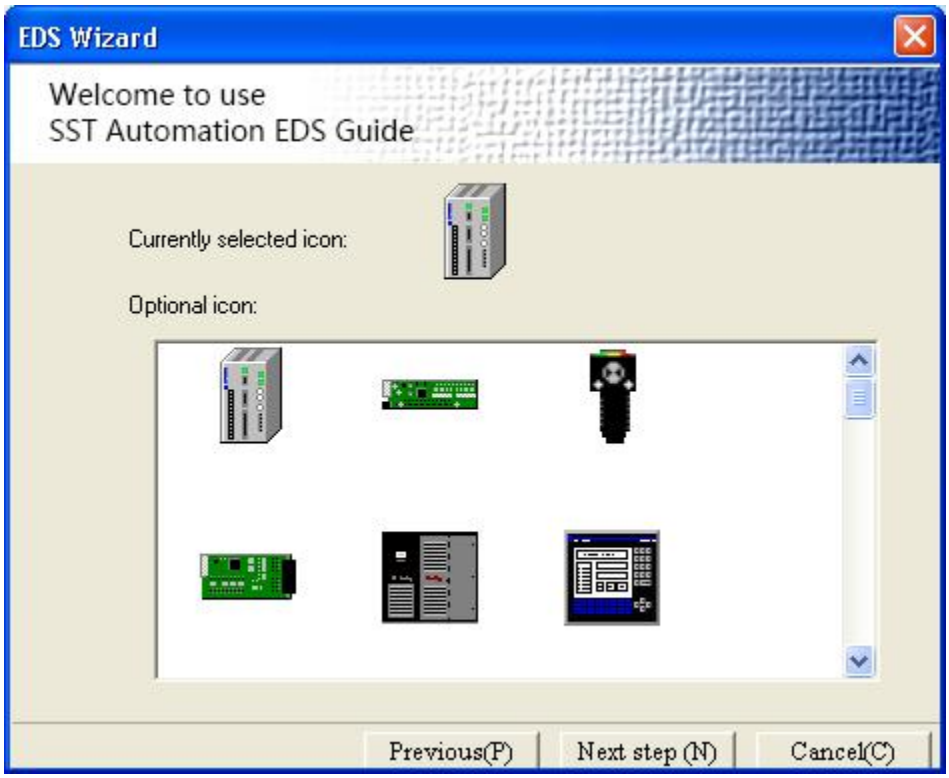
After selecting "Register an EDS file", click "Next step" and select the storage path of EDS file you want to register in the pop-up interface, as shown in the figure below:

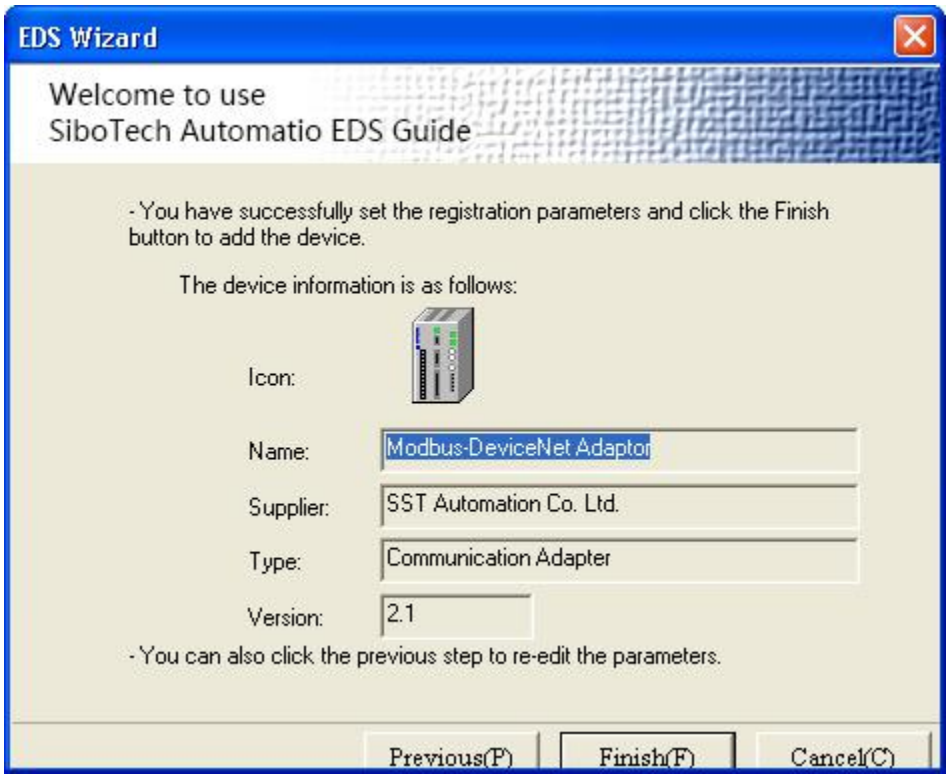




Click "Next step" to pop up the EDS file test report interface. If there is an error in the EDS file, the error

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:





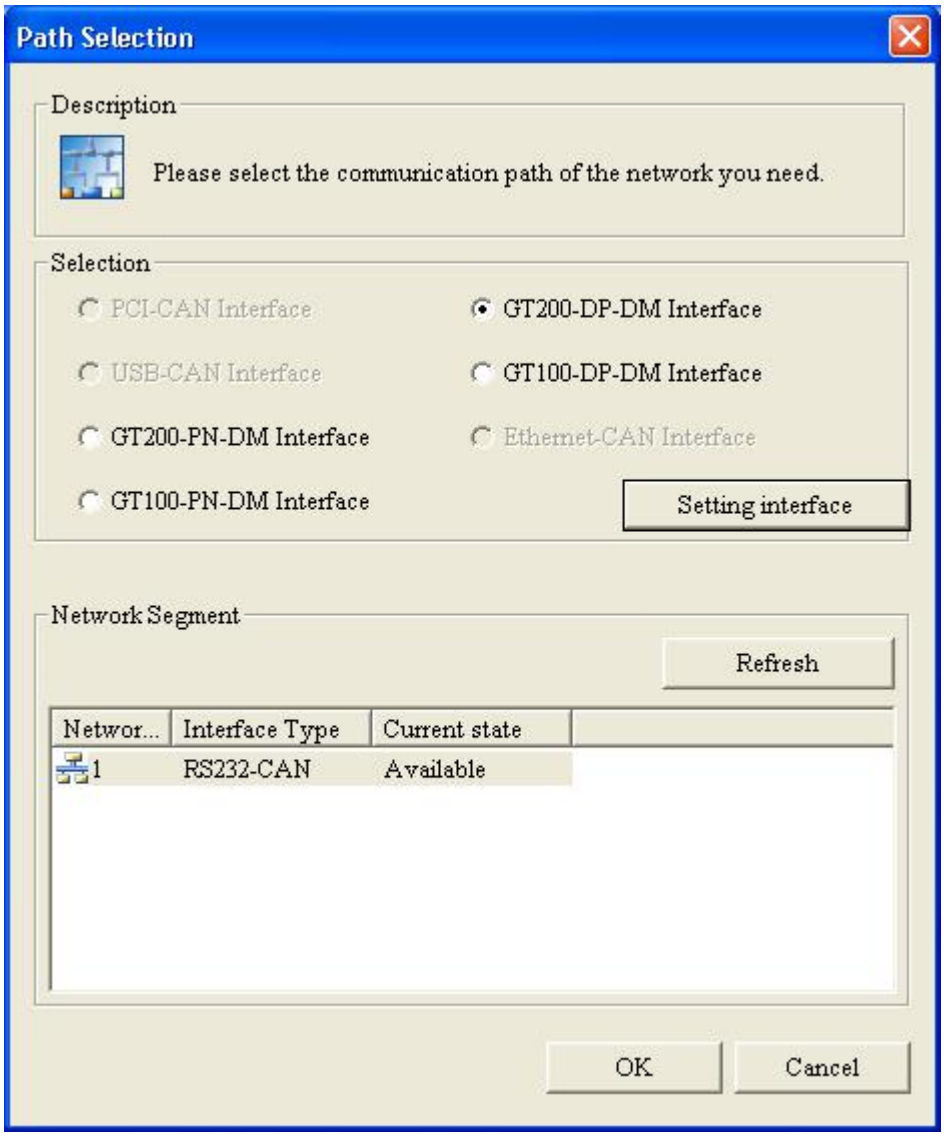
Click "Finish" and the EDS file registration step is over. At this time, you can see the newly registered device in the equipment Management Window.

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.

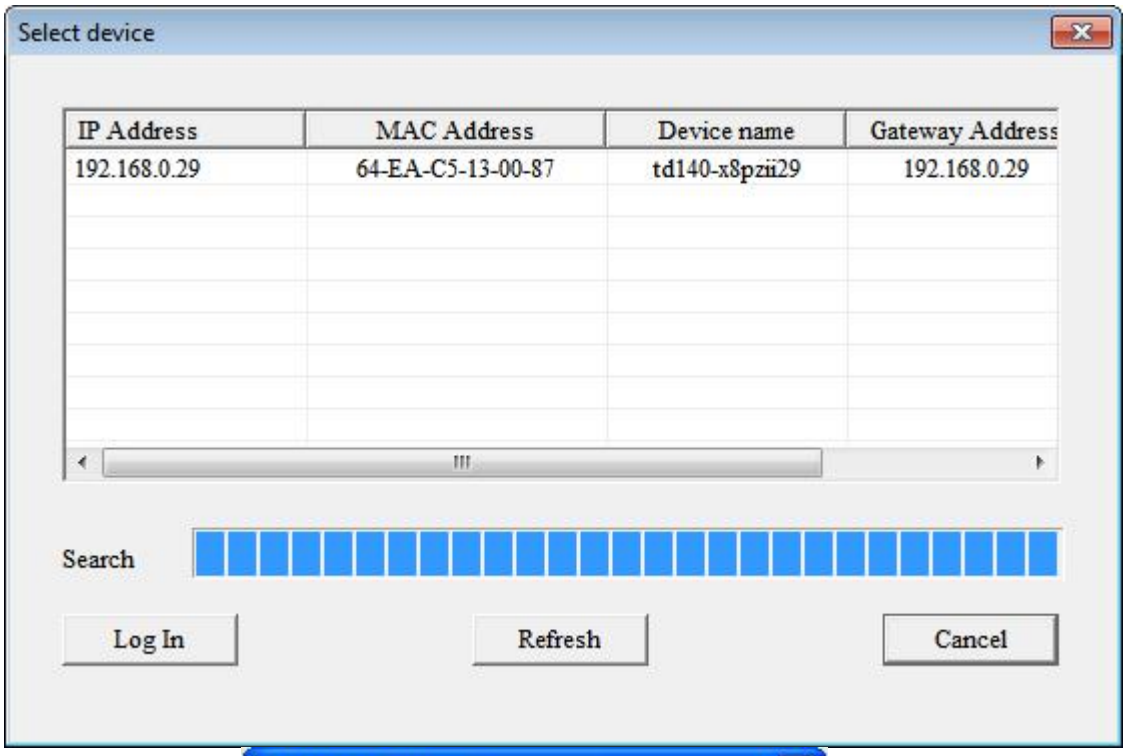
- PC-DeviceNet Interface Setting

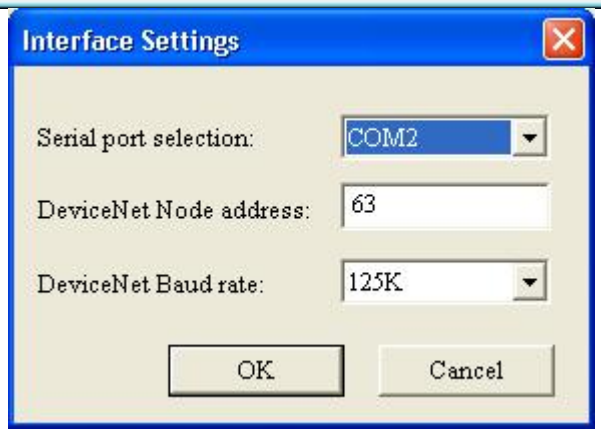
DNetStart software needs to be used together with the DeviceNet master module. First, connect the Ethernet port of the GT100-PN-DM to the network, Then, the DeviceNet port of GT100-PN-DM and the DeviceNet device of the user are connected to the DeviceNet network. Power on GT100-PN-DM with power supply 24V.

Power on after correctly connecting to power supply, the connection of DeviceNet network can be established by "Internet Connection" in the menu bar or toolbar. Click "Internet Connection", and pop-up path selection interface, then click interface configuration



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

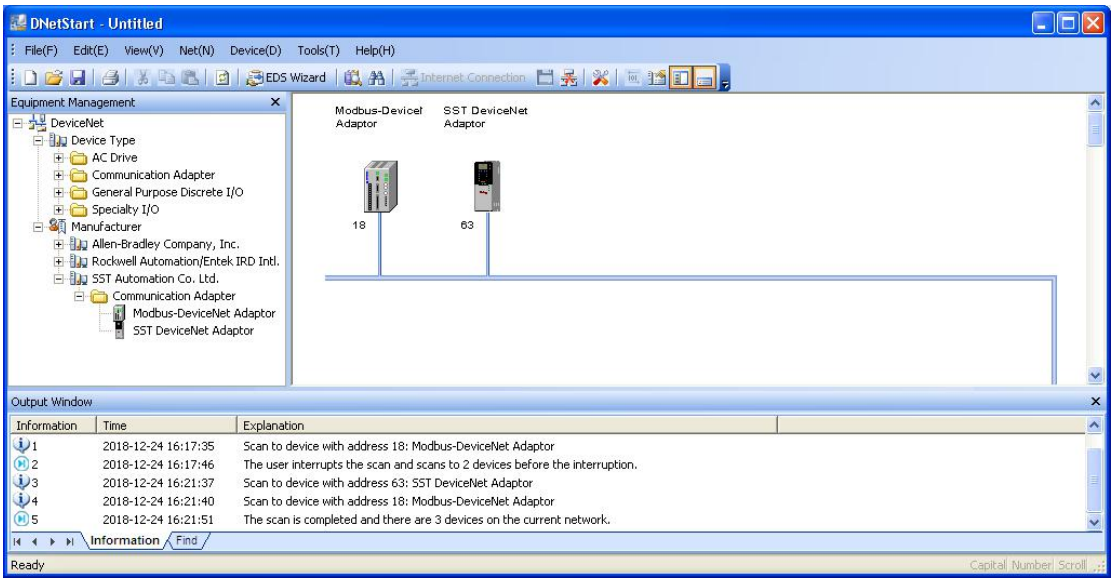




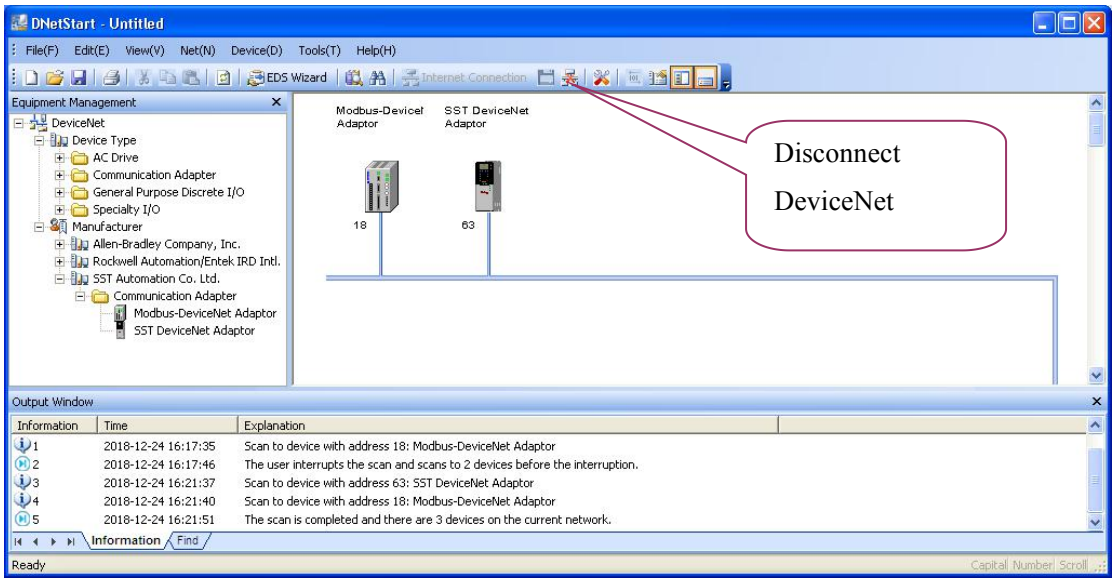
Note the interface settings configuration, "Serial port selection" Selects the Serial Port currently in use, "DeviceNet Node address" is the address of DeviceNet Master Module, Set any value between 0 and 63, which is not allowed to be conflict with other node addresses on the bus, "DeviceNet Baud rate" is the baud rate of DeviceNet master module, 125K, 250K, 500K, Keep Bus Baud Rate Consistent. The node address of DeviceNet master module can only be modified here.

4.3.5 DeviceNet Network Scanning

After the interface is set up, the network scanning interface pops up:



After power on, DeviceNet master module will first carry out self-inspection, and then scan the network when both green LED lights are on .

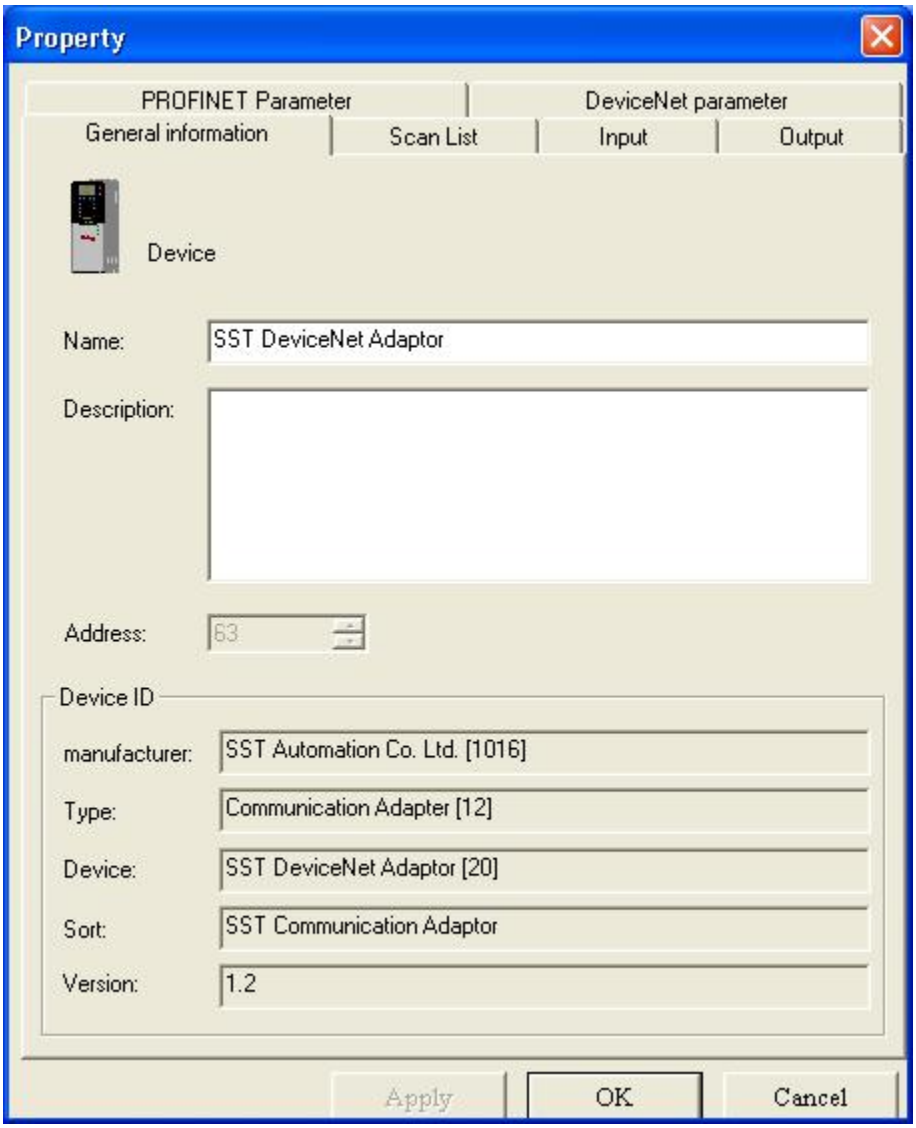


4.3.6 Equipment Parameter Modification and I/O Data Test

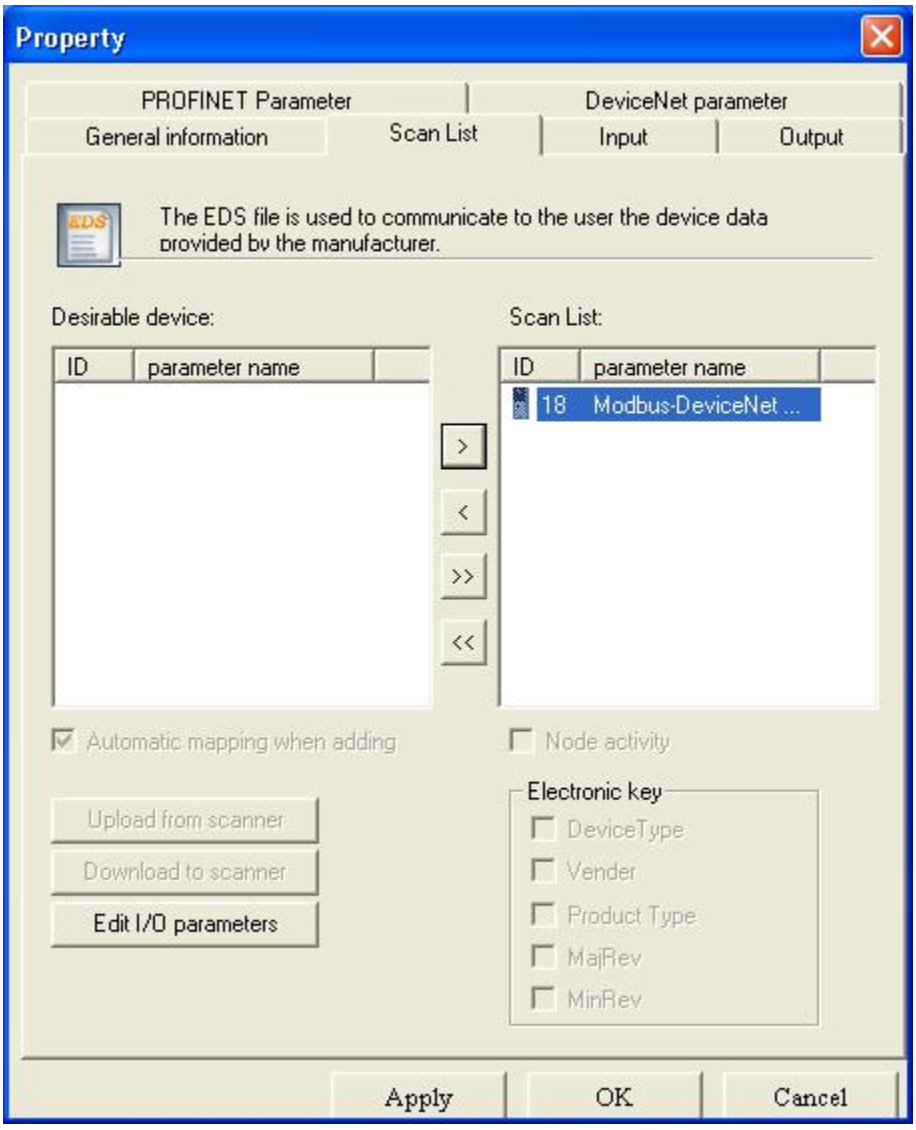
Double-click the scanned network node and appear the device property page.

4.3.6.1 DeviceNet Master Module (Some function is not open yet)

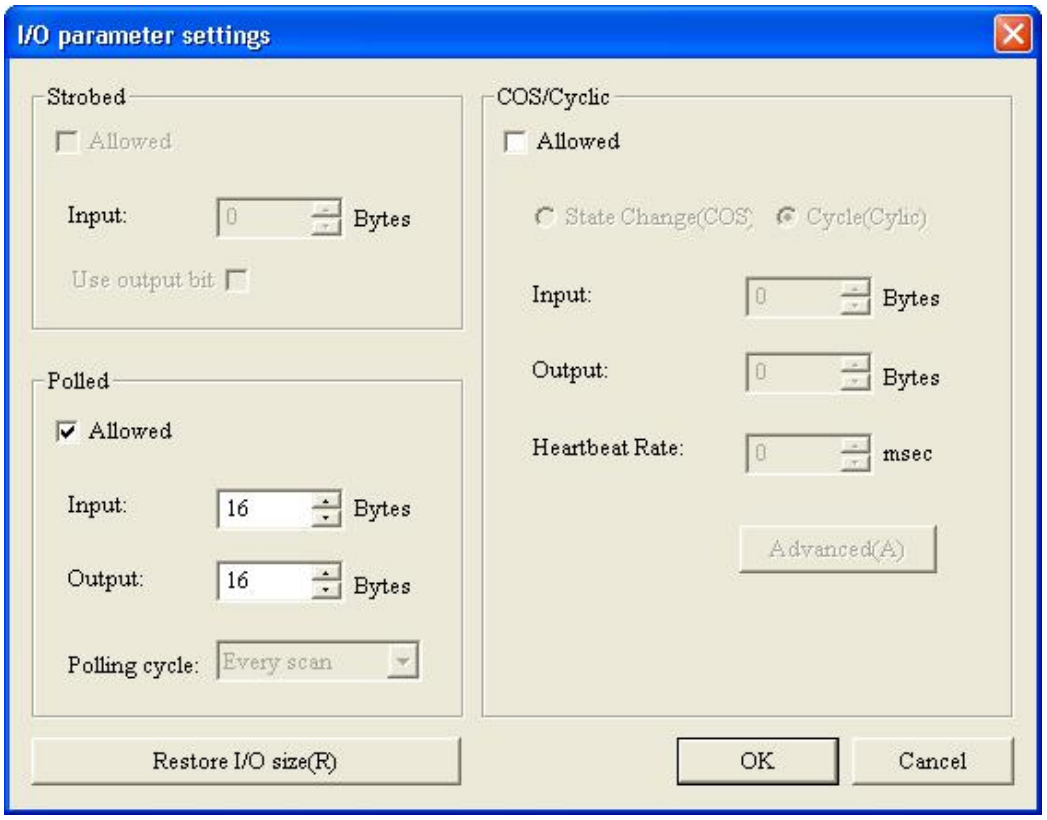
In "General information" options Interface, DeviceNet master module address cannot be modified here. It can only be modified in the interface settings, as specified in Chapter 5.2 of this manual, "Device ID" displays the information of the device manufacturer, type, device, sort and version. If you choose to configure GT200-PN-DM/GT100-PN-DM, after setting all the parameters, you can click the "Apply" button to download.



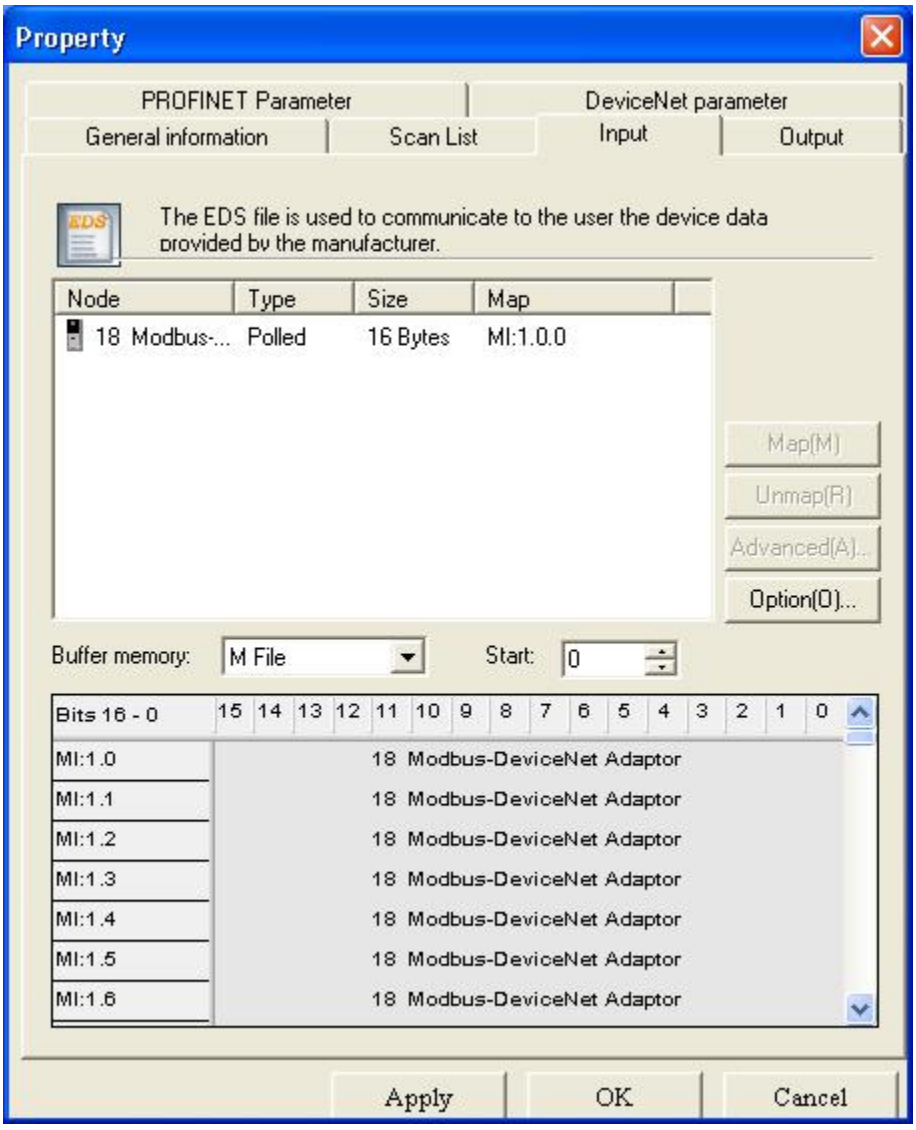
In the "Scan List" option interface, users can select devices to add to the "Scan List" of the master and set its I/O parameters:



Add slave station 13 to the master station mapping list, and then select slave station 13 in the "Scan List". After selecting it, click "Edit I / O parameters". This interface sets the number of input and output bytes of the slave (refer to 4.1):



In the "Input", "Output" options interface, The user can map the address of the device added to the master 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.



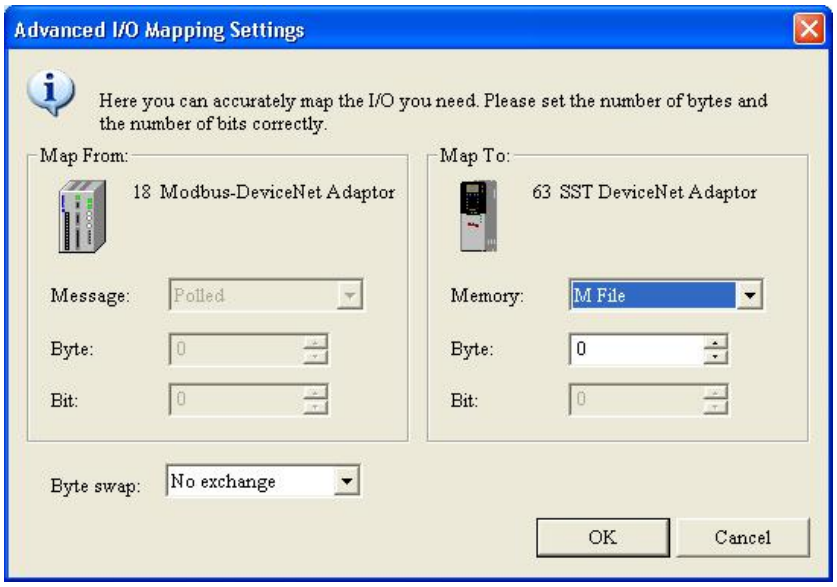
If users need to map manually, they can also click the "Advanced" button to set the starting address in the dialog box shown below.

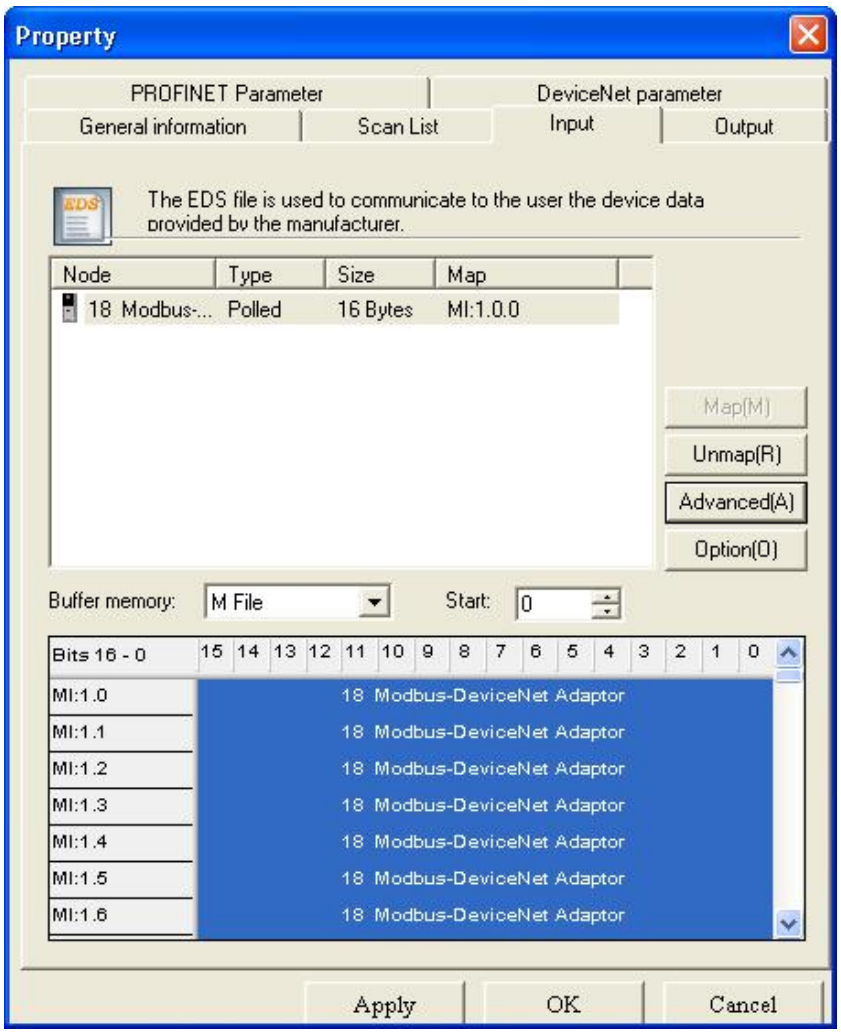
In the advanced Settings interface, the user can also set the byte exchange mode of this slave device. There are three types of byte exchange: no-exchange, two-byte exchange, and four-byte exchange. The meanings are as follows:

no-exchange: data transfer normally

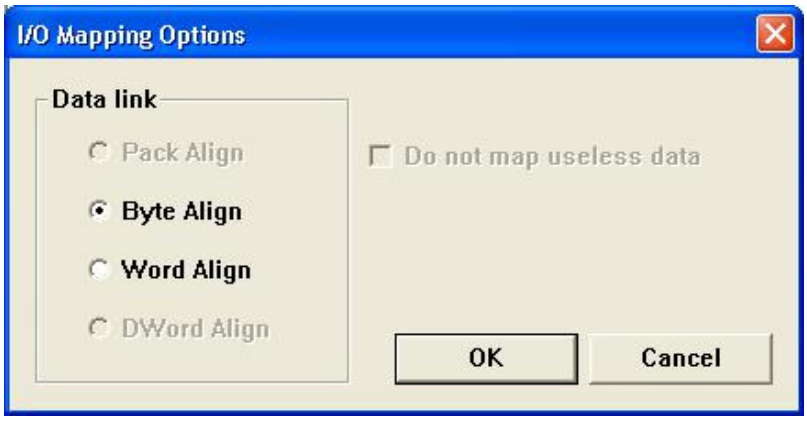
Two-byte exchange: Two-byte exchange in the same register, for example, the result after 1234 swapping is 3412

Four-byte exchange: Four-byte exchange in two registers, for example, after 12, 34, 56, 78 swap, the result is 78, 56, 34, 12

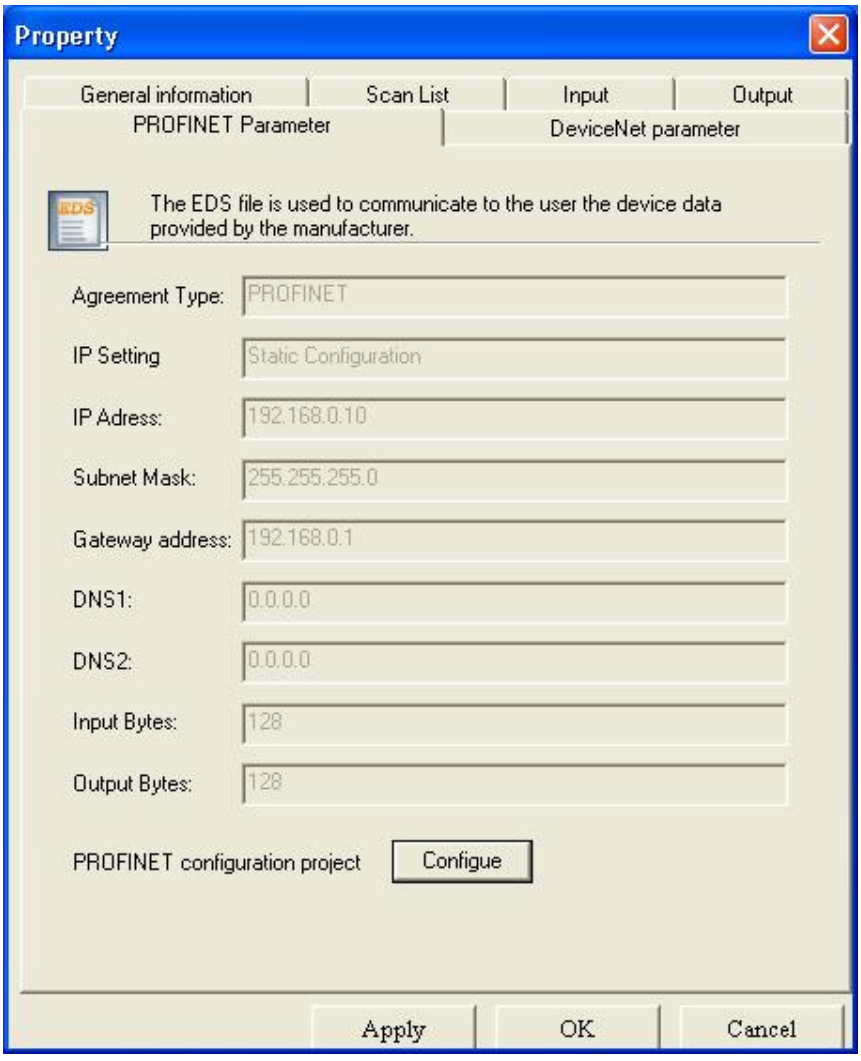

Advanced I/O Mapping Settings
Here you can accurately map the I/O you need. Please set the number of bytes and the number of bits correctly.
Map From:
18 Modbus-DeviceNet Adaptor
Message:
Polled
Byte:
0
Bit:
0
Map To:
63 SST DeviceNet Adaptor
Memory:
M File
Byte:
0
Bit:
0
Byte swap:
No exchange
OK
Cancel


Property
PROFINET Parameter
DeviceNet parameter
General information
Scan List
Input
Output
The EDS file is used to communicate to the user the device data provided by the manufacturer.
Node
Type
Size
Map
18 Modbus-...
Polled
16 Bytes
MI:1.0.0
Map(M)
Unmap(R)
Advanced(A)
Option(O)
Buffer memory:
M File
Start:
0
Bits 16 - 0
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
18 Modbus-DeviceNet Adaptor
Apply
OK
Cancel

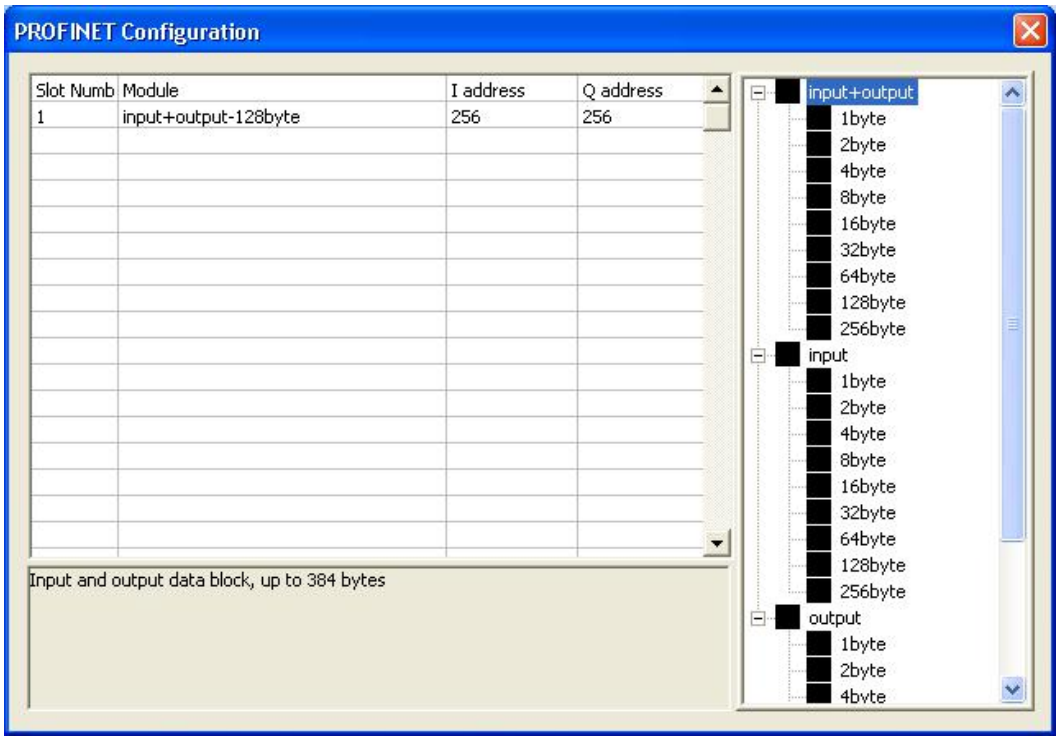
If you need to set the unit that maps the starting address in "advanced I/O mapping Settings", click "option" button to set it. As shown in the figure below, "Byte Align" means in one byte and "Word Align" means in two bytes:



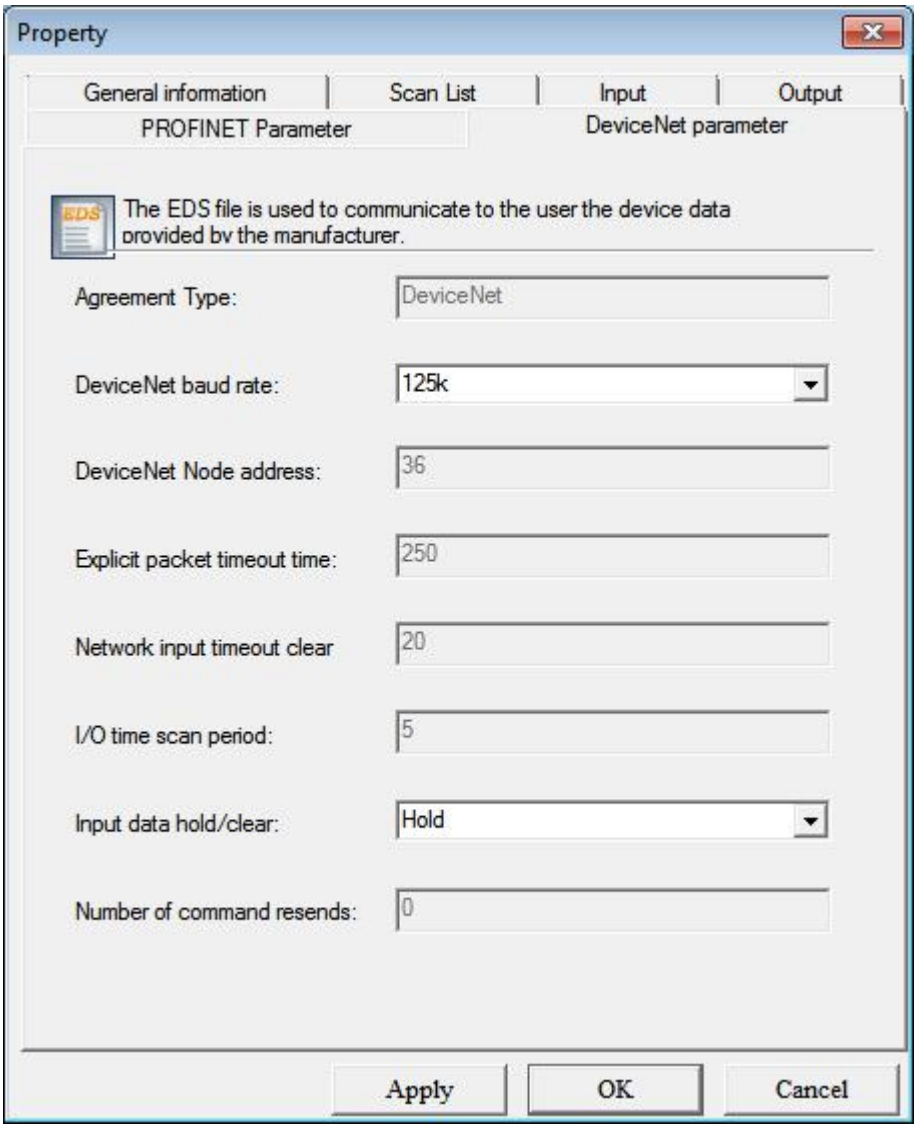
In the "PROFINET parameter " interface, users can set PROFINET parameters:



Click "Configure" button to set the input and output maximum number of bytes for the PROFINET master in the pop-up interface. In the interface shown below, you can double-click the tree node to add the number of input/output bytes you need to add:

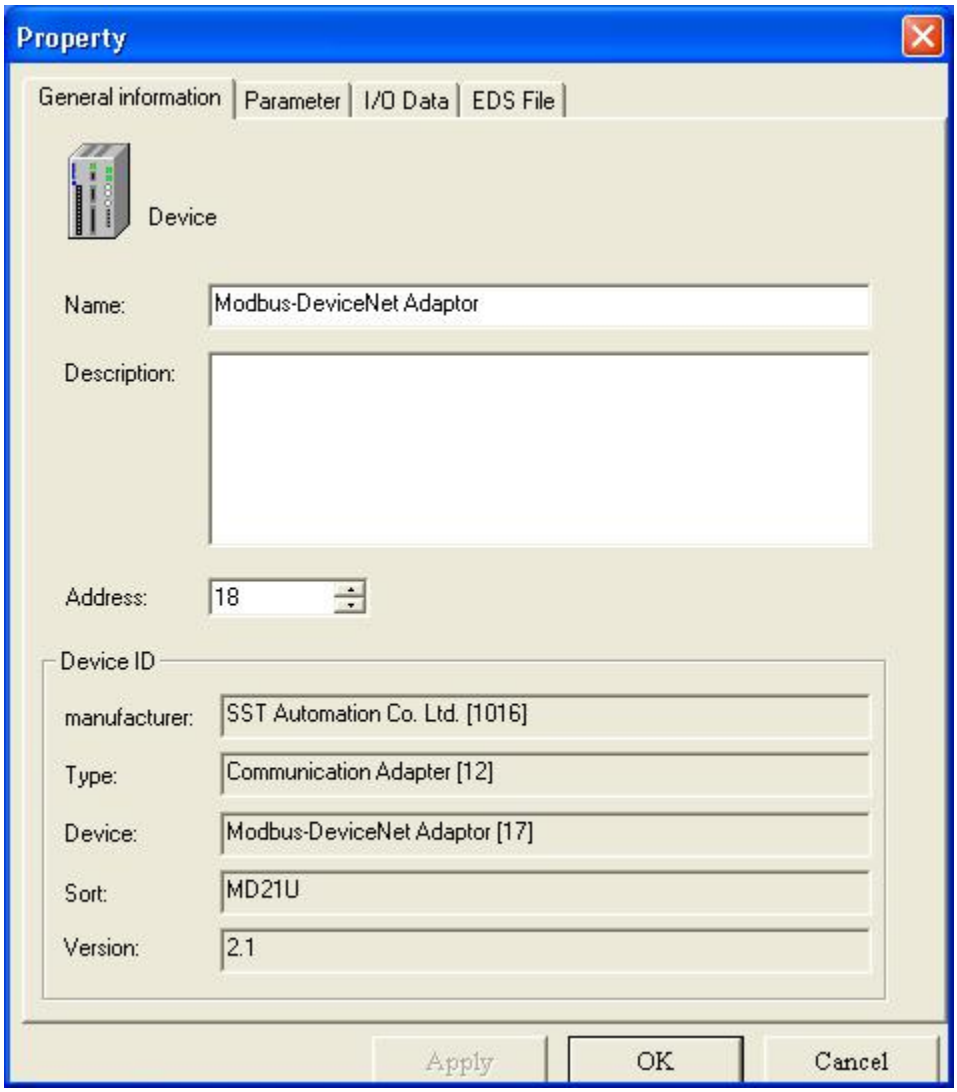


In the "DeviceNet parameter" interface, users can set PROFINET parameters. "Input Data Hold/clear" means whether the corresponding DeviceNet input data is cleared when the number of DeviceNet command response errors reaches the number of DeviceNet command retransmissions. Select "clear", DeviceNet input data is cleared, select "hold", DeviceNet input data keep the correct data received last time. "Number of command resends" means that when DeviceNet command responds incorrectly, the number of the command Resends ranges from 2 to 254 and the default value is 3.

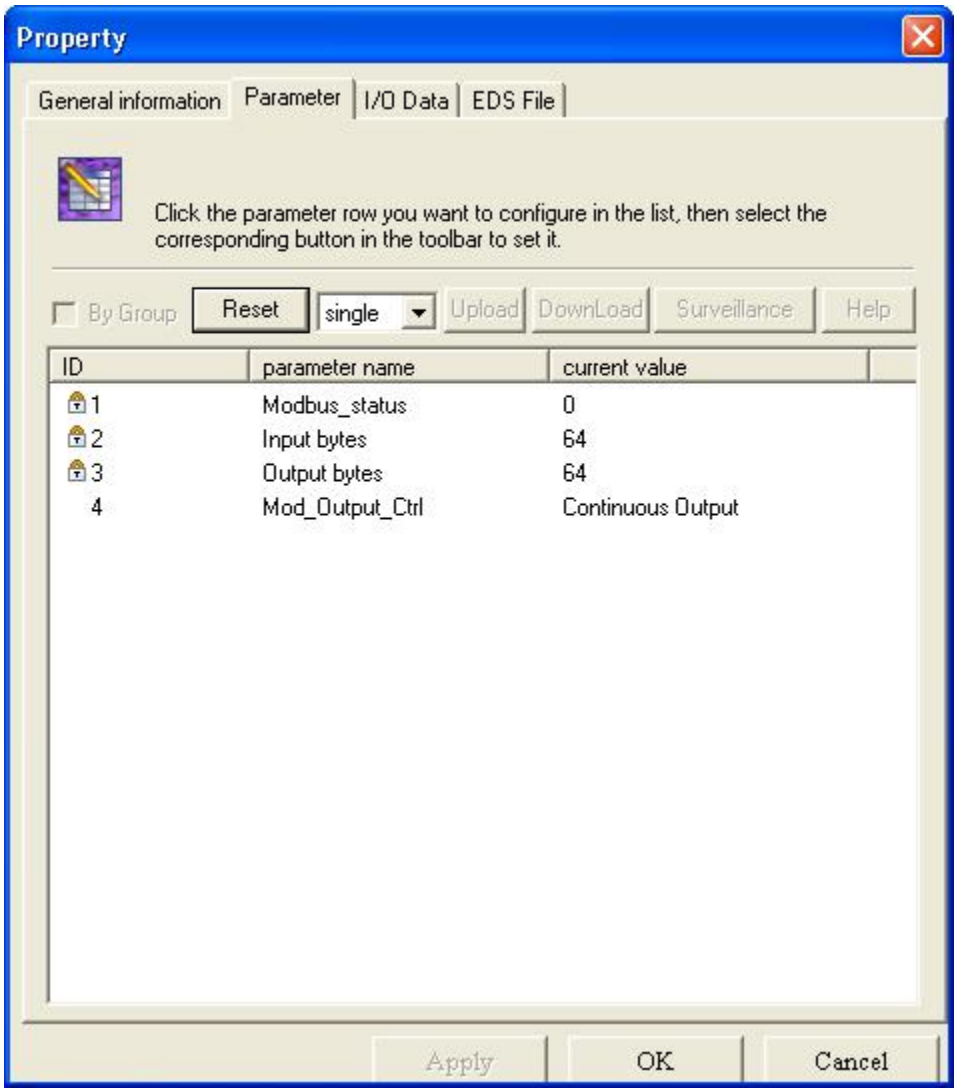


4.3.6.2 DeviceNet Slave Module

As shown in the figure below, in the "General" option interface, you can modify the address. After the address needs to be changed successfully, the slave device of the modified address will restart and the network needs to be reconnected. "Device ID" shows the information of the device manufacturer, type, device, sort and version.



The parameter interface is shown in the figure below. In this interface, the user can upload and download the parameters of the device to facilitate online modification of the device parameter values.



The "Reset" button can restore the default value of the parameters, and can only "Reset" for a single parameter.

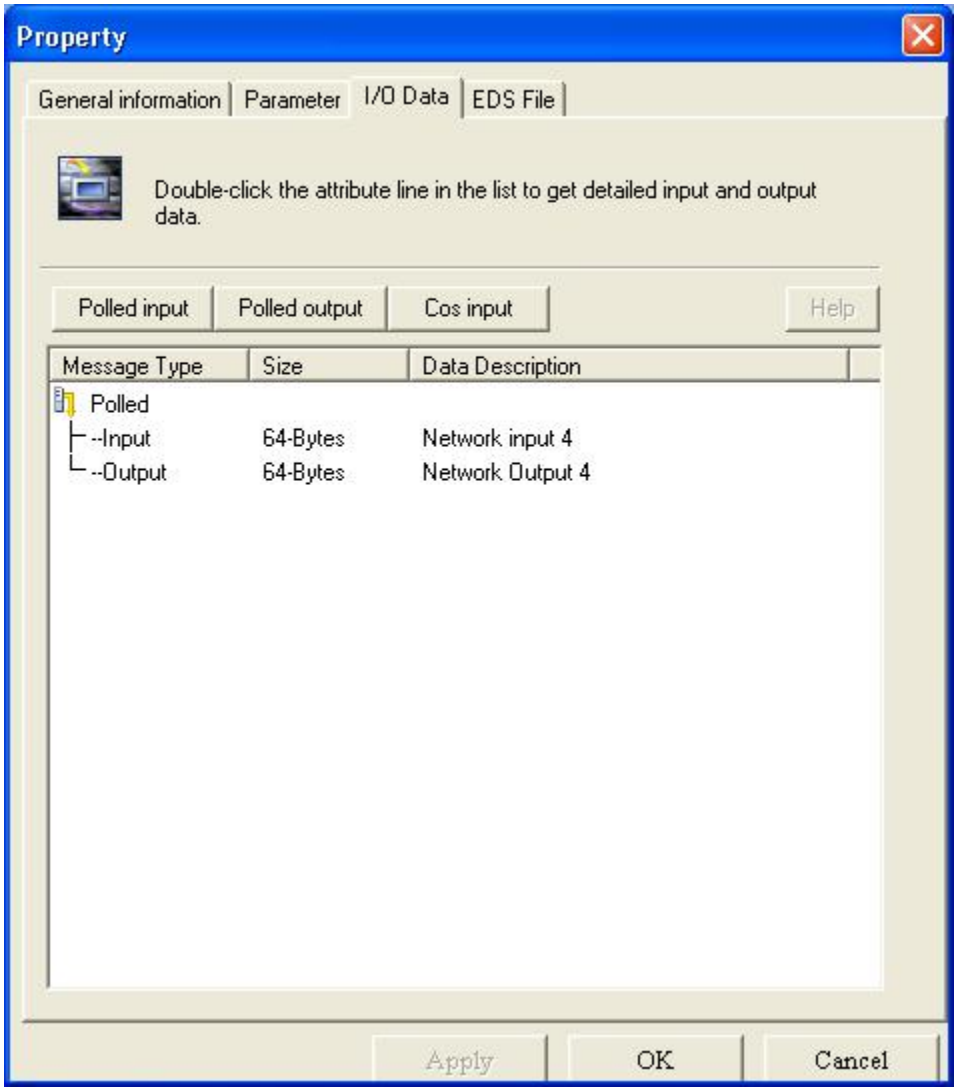
The "Upload" button supports single and full parameter operation. After clicking "Upload", the interface will display the actual parameter value of the current online slave DeviceNet device.

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, DNetStart 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.

The I/O data interface 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.



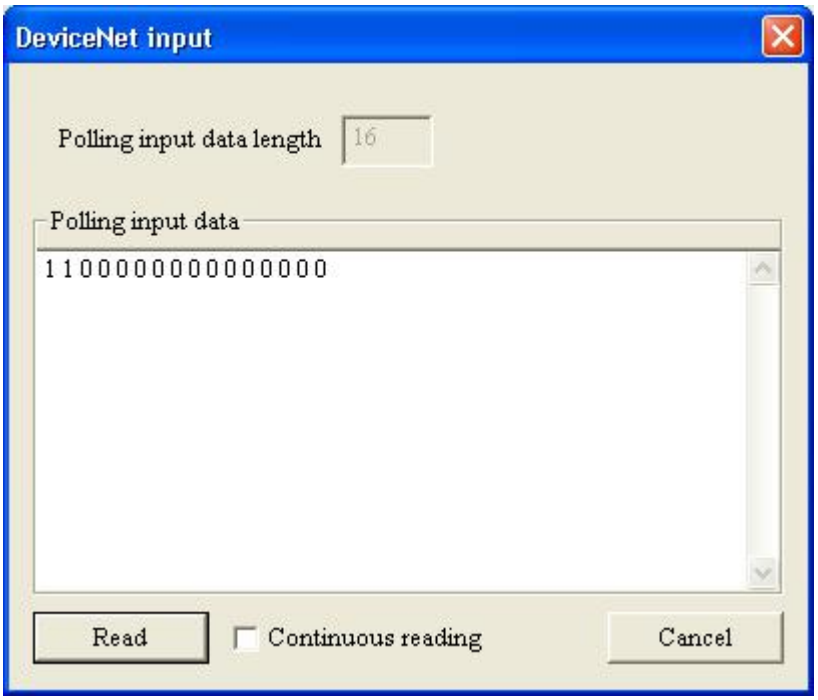
The number of bytes in/out of DNetStart software can also provide this information.

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.

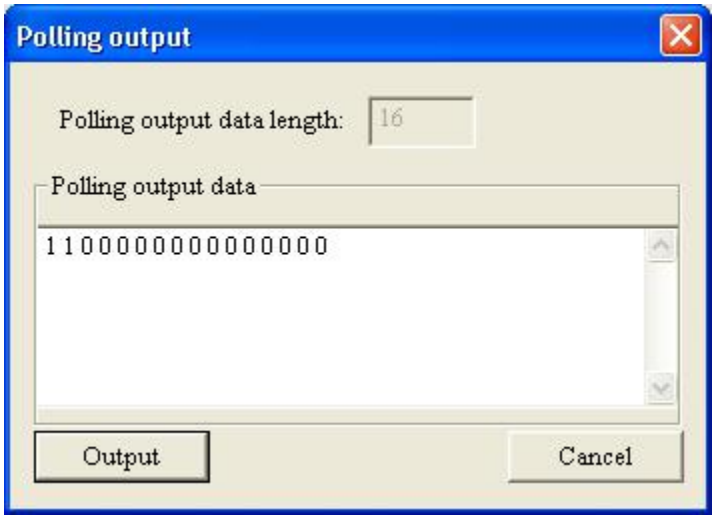
The maximum number of input bytes supported by DNetStart software is 128, and the maximum number of output bytes is 112.

Take "Polled Input" and "Polled Output" as examples:

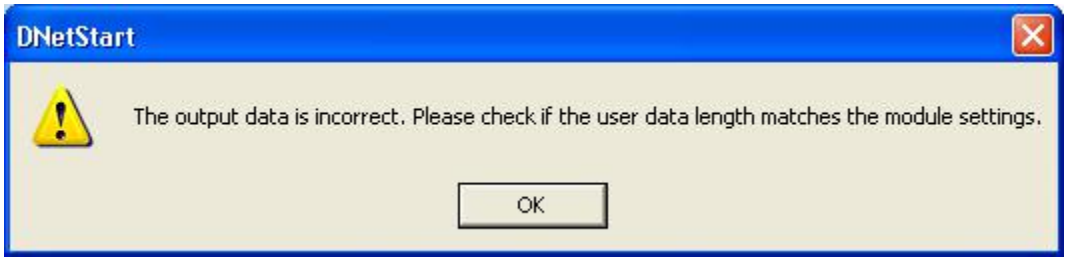
Click the "Polled Input" button, and then click the "Read" button, DeviceNet software will read the network input data. If the user selects the "Continuous reading" check box, DNetStart software will continuously read the network input data of the field DeviceNet device. As shown in the figure below:



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.

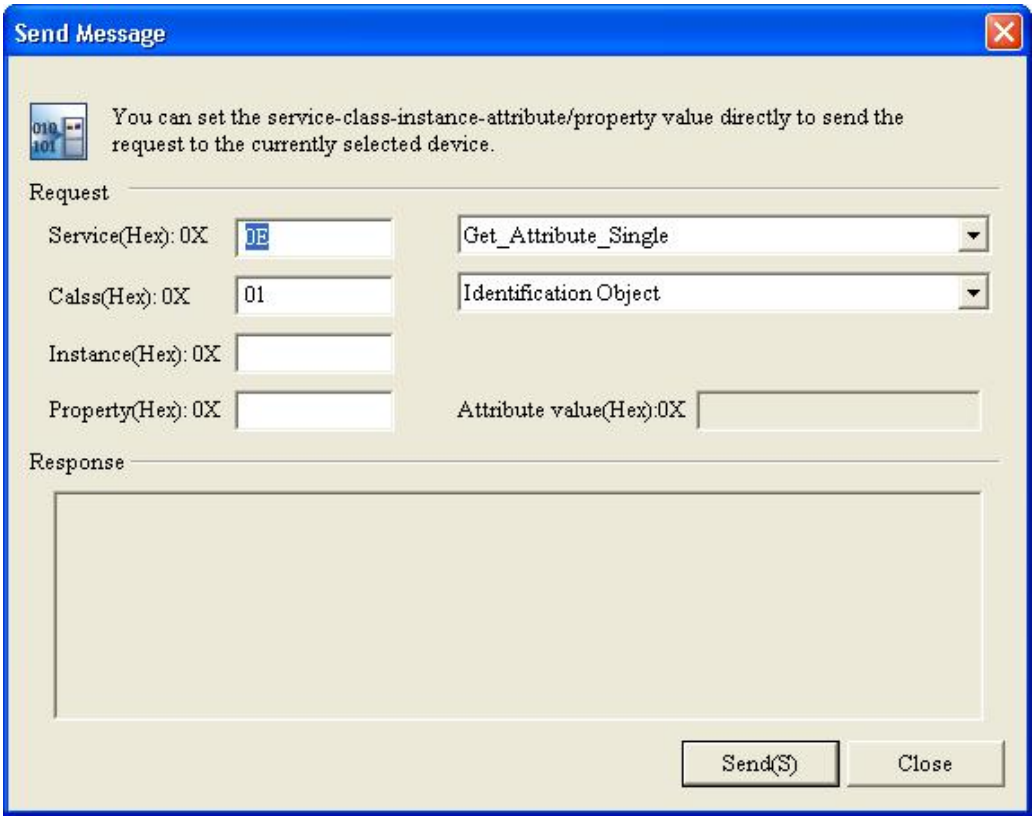


If the output data length is incorrect, it will be displayed:



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 DNetStart's "Internet Connection" and re-establish the internet connection.

4.3.7 Send the Explicit Message



Through explicit message modification, it is the advanced function of DeviceNet network. Users need to have a better understanding of DeviceNet network.

After the device is online, click the right button to "send an explicit message". The interface pops up as shown in the figure above. Users can set and obtain properties to facilitate online debugging of the device.

With this function, users can directly read or set the corresponding parameters of the device without passing through the EDS file of the device.

Service ID, class ID, instance ID, Property ID, attribute value data format are hexadecimal, where class ID and instance ID can be one or two bytes, bytes and bytes are separated by spaces. All ID are low bytes first, high bytes after.

Supported service ID: 0x0E Get_Attribute_Single Read parameter attribute values;
0x10 Set_Attribute_Single Write parameter attribute values.

Supported class ID: Support standard class ID 0x01-0x27 and custom class

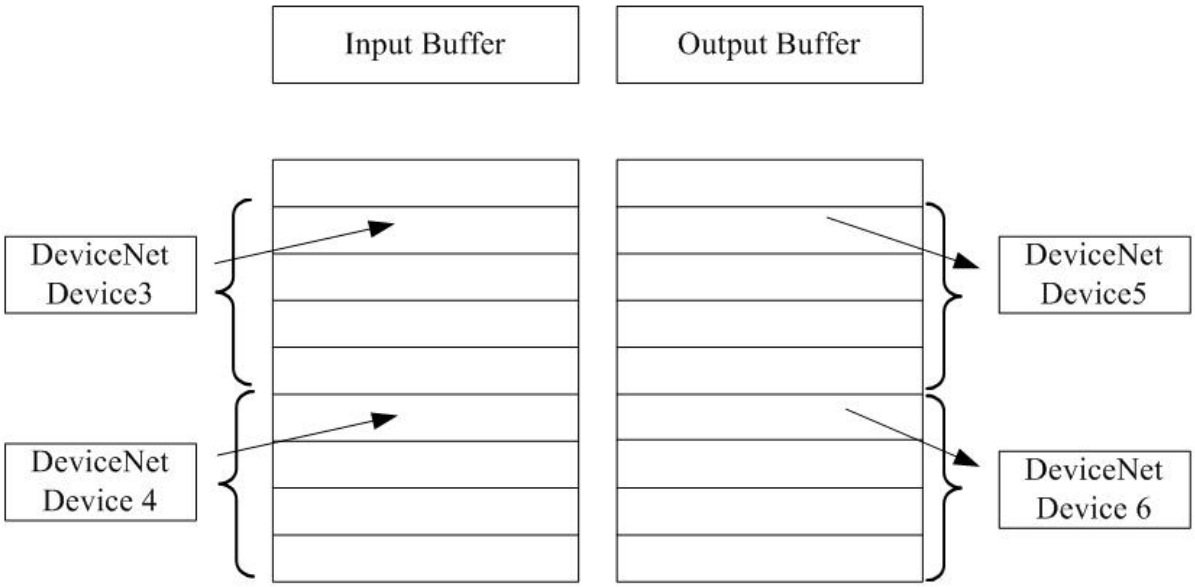
The corresponding service ID or class ID on the left can be determined by selecting the service content or object

name on the right; When you are a custom class, you can enter the class ID directly. At this point, the class ID is not corresponding to the object on the right, and the manually entered class ID shall prevail.

4.4 Run

How the DeviceNet networks work:

The data conversion between GT100-PN-DM's DeviceNet and PROFINET is established through a "mapping"relationship. There are two data buffers in GT100-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.

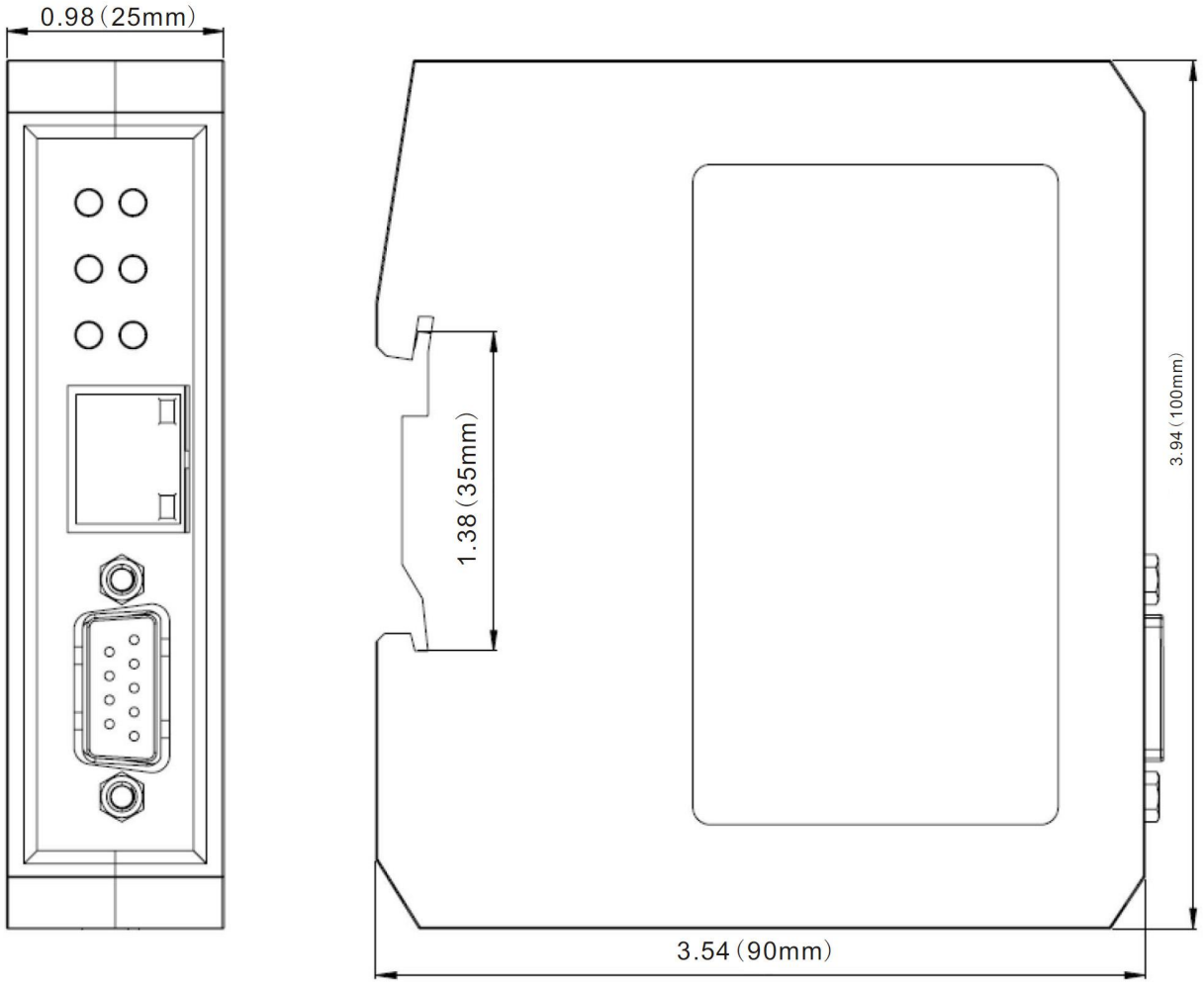


When the DeviceNet port is used as a master station, the module GT100-PN-DM supports only one DeviceNet slave device.

5 Installation

5.1 Mechanical Dimensions

Size: 0. 98 in (width)*3.94 in (height)*3.54 in (depth)



5.2 Installation Method

Using 35mm DIN rail