PN4-GW2MR Integrated PROFINET to 2-Port Modbus-RTU Gateway

User Manual

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Contents

1 Introduction

1.1 About the manual

This manual describes the parameters, specific usage and precautions of the gateway PN4-GW2MR for the convenience of engineering personnel. Please read this manual carefully before using the gateway.

1.2 Copyright statement

Product-related data and application cases mentioned in this manual may not be reproduced or quoted without authorization.

1.3 Nomenclature

Modbus: A serial communication protocol, published by Modicon for use in PLC communications, Modbus has become the industry standard for communication protocols in the industrial sector.

PROFINET: Introduced by the international profibus organization, PROFINET is a new generation of automation bus standard based on industrial ethernet technology.

2 Product overview

2.1 Product functions

This product realizes data communication between PROFINET network and Modbus RTU network, connects two Modbus networks to PROFINET network separately, and supports different Modbus communication baud rates and other settings. It converts Modbus devices into PROFINET devices.

2.2 Product features

- Wide range of applications: This product is widely used in inverters, intelligent high and low voltage appliances, power measuring devices, intelligent field measuring devices, meters, PLC, DCS, FCS and so on that support serial communication interfaces.

- Simple configuration: Users do not need to know the details of Modbus and PROFINET, they only need to refer to the manual and configure the gateway according to the requirements, no complex programming is required, and the connection function can be realized in a short time

2.3 Technical indicators

- The PN4-GW2MR is a PROFINET slave on the PROFINET side and a Modbus master station or Modbus slave station on the serial side.
- Supports standard PROFINET I/O protocols
- PROFINET supports up to 16 slots with a maximum input byte count of 1440 bytes and a maximum output byte count of 1440 bytes. Bytes, length of input and output bytes set by TIA PORTAL
- Supported module types

- 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 byte

- Supports two serial communication ports, which can be plugged into different Modbus networks.

- Supports Modbus master station and Modbus slave station

- Serial communication parameter specifications:

  Serial interface type: RS485, RS232, RS422

  Support baud rate: 1200bit/s, 2400bit/s, 4800bit/s, 9600bit/s, 19200bit/s, 38400bit/s, 57600bit/s, 115200bit/s other baud rates can be customized.
  Operating mode: Half-duplex, full-duplex
  Verification method: None, odd, even
  Data bits: 7, 8, 9
  bits Stop bits: 1 bit,
  2bits

- Function codes: As a Modbus master station, supports 01h, 02h, 03h, 04h, 05h, 06h, 0fh, 10h;

- Power supply: 24VDC (±5%), maximum power 3.5W

- Working environment temperature: -25 ~ 55 ℃, humidity ≤ 95%

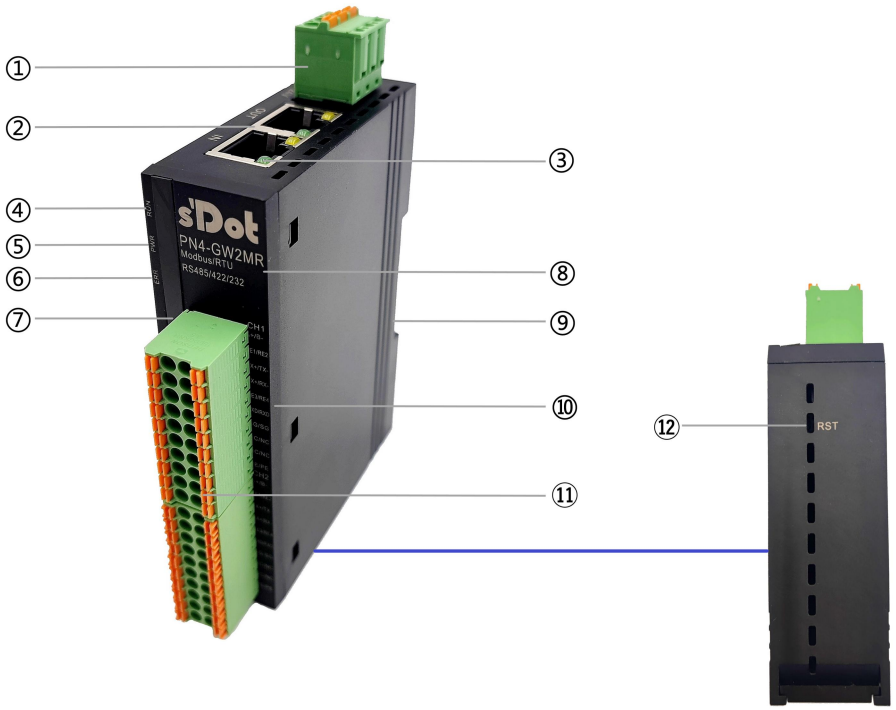
- Overall dimensions: 25mm (width) x 102mm (height) x 72mm (thickness)

- Mounting: 35mm rail

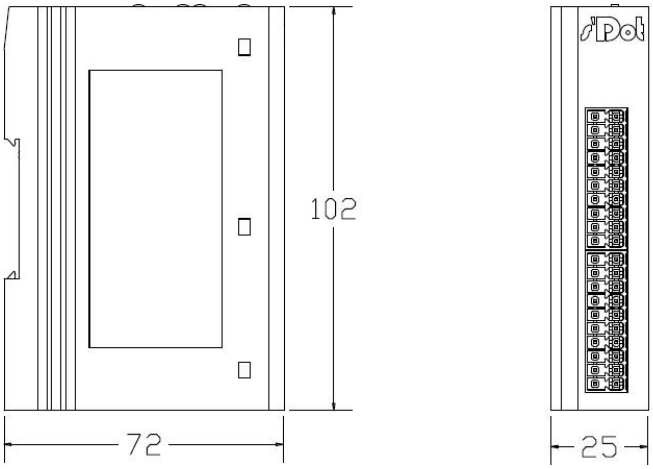
- Protection class: IP20

3 Product appearance

3.1 Product appearance



Number	Name	Description
①	Power connector	3P terminal
②	Bus interface	2×RJ45
③	Network port indicator	Link and data sending and receiving status
④	Operation indicator light	Module operational status
⑤	Power indicator	Module power status
⑥	Warning indicator	Indicates module alarm status
⑦	Channel signal indicator	Indicates the corresponding channel status
⑧	Module identification	Marking module model, function
⑨	Guideway slot	Fixed modules
⑩	Channel marking	Signal corresponding channel identification
⑪	Channel interface	2×20p Terminal
⑫	Clear gateway configuration switches	Press and hold then power up for 2 seconds and release to clear the gateway configuration



DIN 35mm rail, snap-on installation

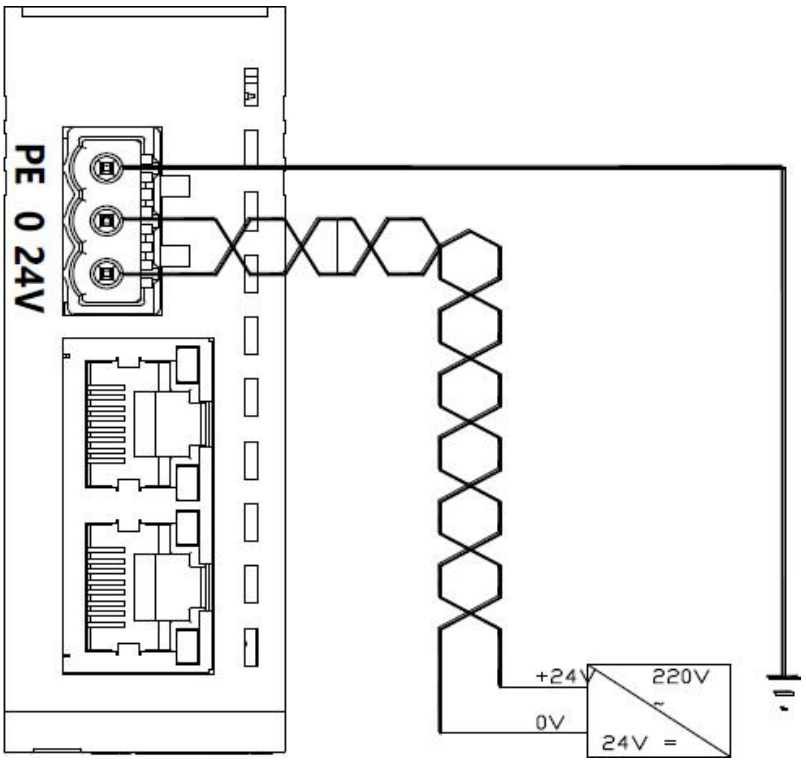
3.2 Indicator definition

Indicators are defined as follows:

Status \ Light	PWR	RUN	ERR	TX	RX
ON	Power on	PN communication is normal	PN communication abnormality	--	--
OFF	Power supply failure	--	--	--	--
FLASHING	--	--	PN communication not connected successfully	Send data	Receive data

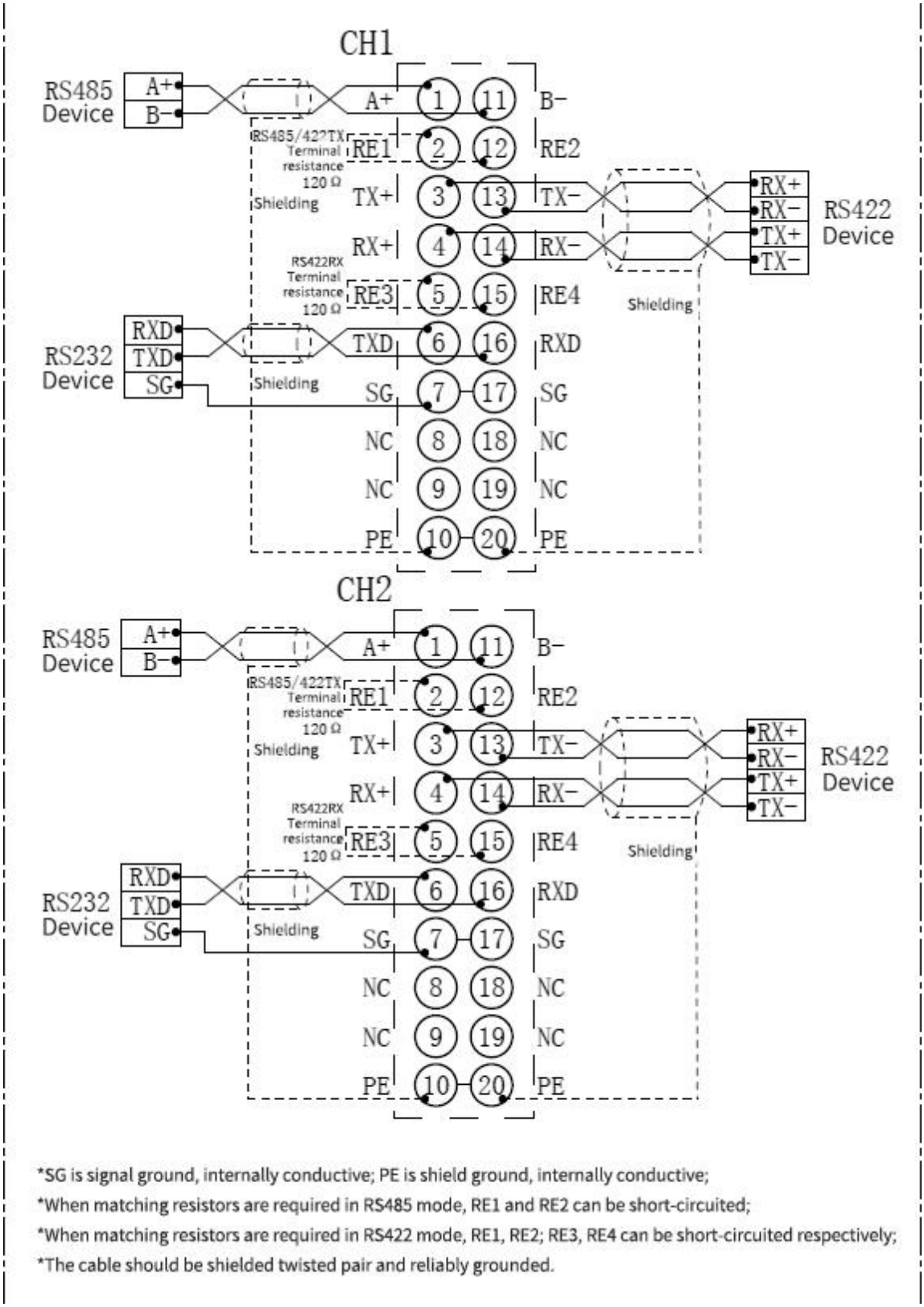
3.3 Communication port

3.3.1 Power port (of a computer)



Pin	Functionality
1	Power supply 24 VDC (18V~30V)
2	0V
3	PE, ground

3.3.2 Serial communications port



*SG is signal ground, internally conductive; PE is shield ground, internally conductive;

*When matching resistors are required in RS485 mode, RE1 and RE2 can be short-circuited;

*When matching resistors are required in RS422 mode, RE1, RE2; RE3, RE4 can be short-circuited respectively;

*The cable should be shielded twisted pair and reliably grounded.

Serial communication transmission technology features:

- Network topology: Linear bus with active bus termination resistors at both ends;
- Transmission rate: 1200bit/s~115200bit/s;
- Medium: Shielded twisted pair cable, shielding can also be removed, depending on environmental conditions (EMC)
- Number of stations: 32 stations per segment (without trunking) up to 127 stations (with trunking);
- Plug connection: 20pin pluggable terminal;

Installation points for serial communication transmission equipment:

- The module supports a total of two serial communication networks, each serial communication port can be configured separately in the configuration software;
- A bus termination resistor at each of the furthest ends of the bus ensures reliable network operation.

4 Operation

4.1 Configuration modules

1. Connect the power supply correctly and power up the PN4-GW2MR by connecting the PN4-GW2MR to the PC through the RJ45 port;
2. Open the configuration software and configure it in the configuration software according to your needs (please refer to how to use the configuration software)
3. Click the "Download" Button in the toolbar to download the configuration to the PN4-GW2MR;
4. When the download is complete, re-power the gateway if the gateway ip address is changed;
5. Configure the appropriate configuration in TIA PORTAL, including the module to be configured, the IP address of the target device (PN4-GW2MR) and the device name;

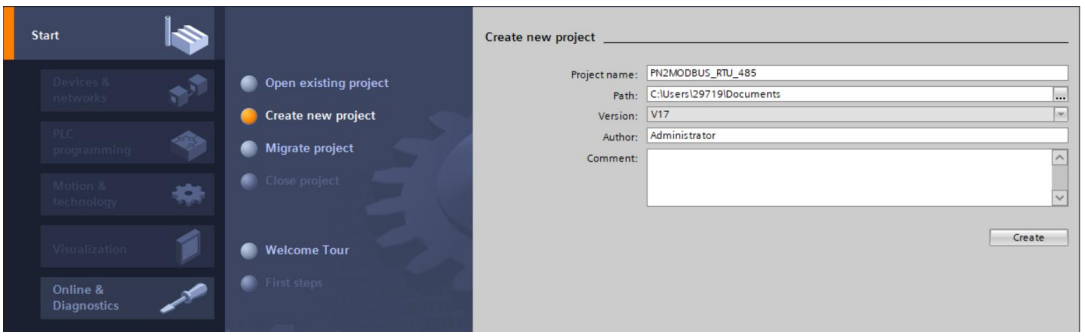
6. Download the configuration of TIA PORTAL to the PLC;

7. Wait approximately 10 seconds for a connection to be established between the PN4-GW2MR and the PLC and the RUN indicator light will be on.

4.2 PLC module parameter setting procedure

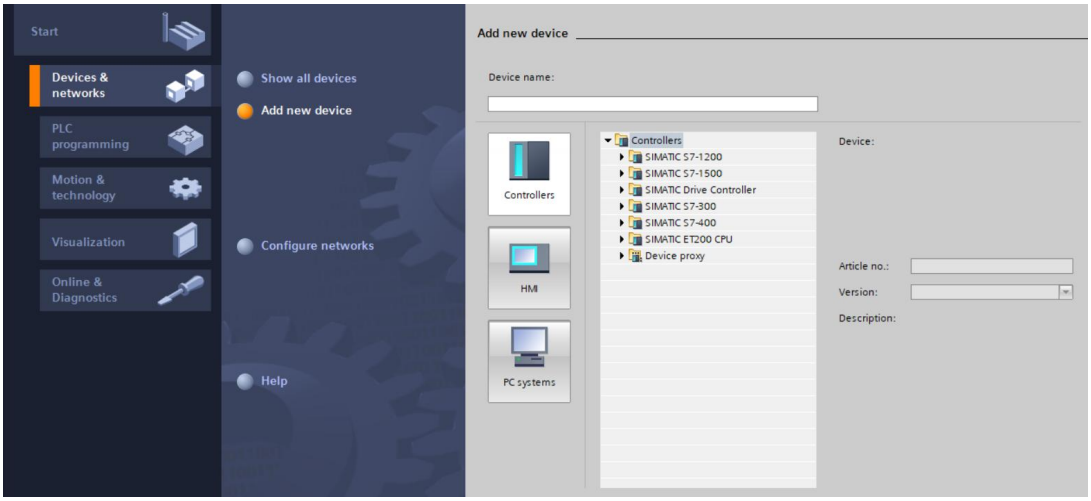
4.2.1 Create project

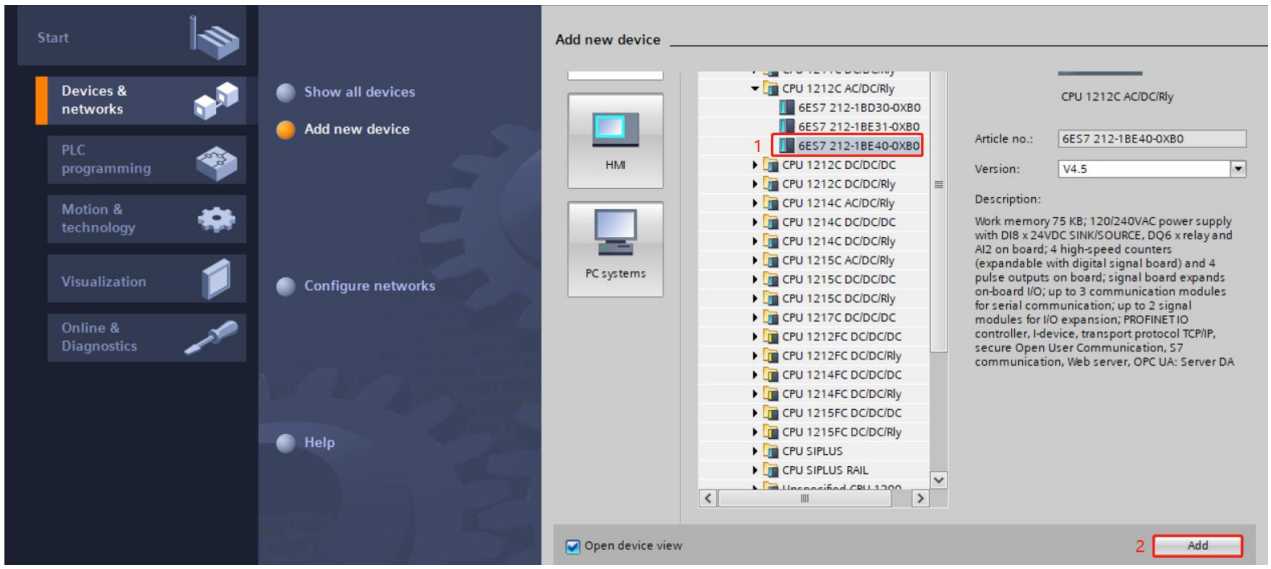
Open TIA PORTAL, select “create new project”, enter the project name, select the path and other information, and then click “create”, as shown in the following figure.

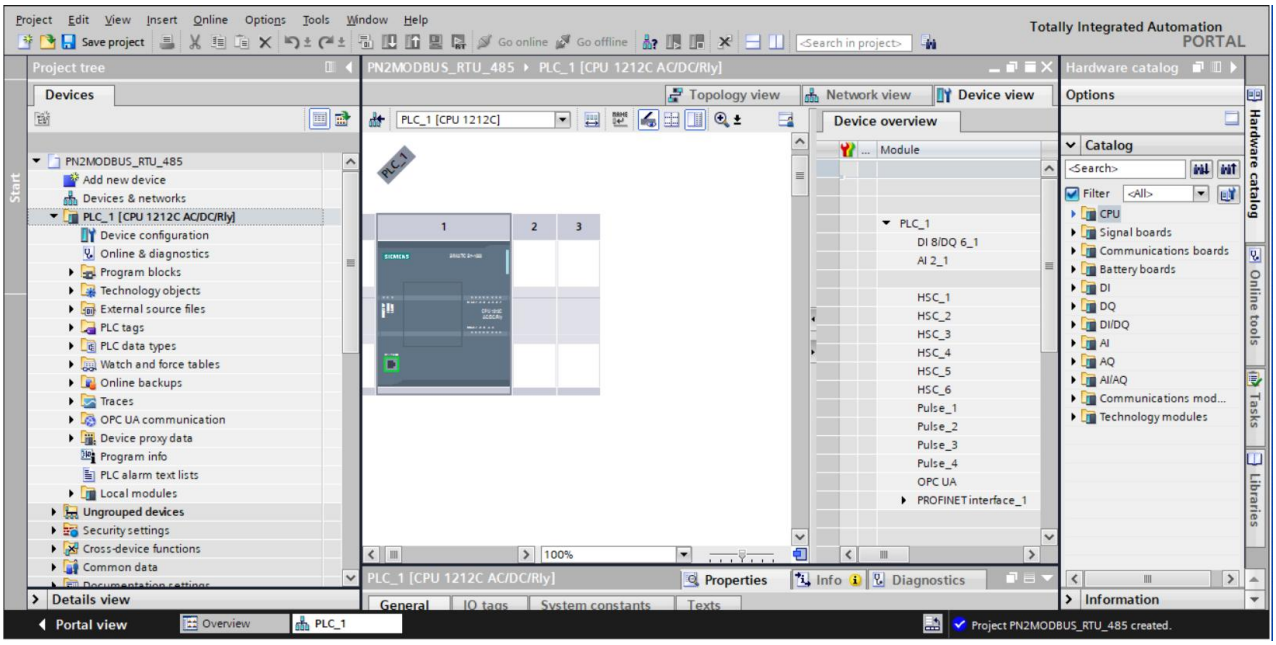


Insert the CPU into the project via the PORTAL view or the finished project view.

In the view, select "Devices and networks" And click "Add new device" (or double-click "Add new device" Under the project name in the project view), as shown below. In the "Add new device" Dialog box, add a controller that supports the PROFINET interface, such as 6ES7 212-1BE40-0XB0.

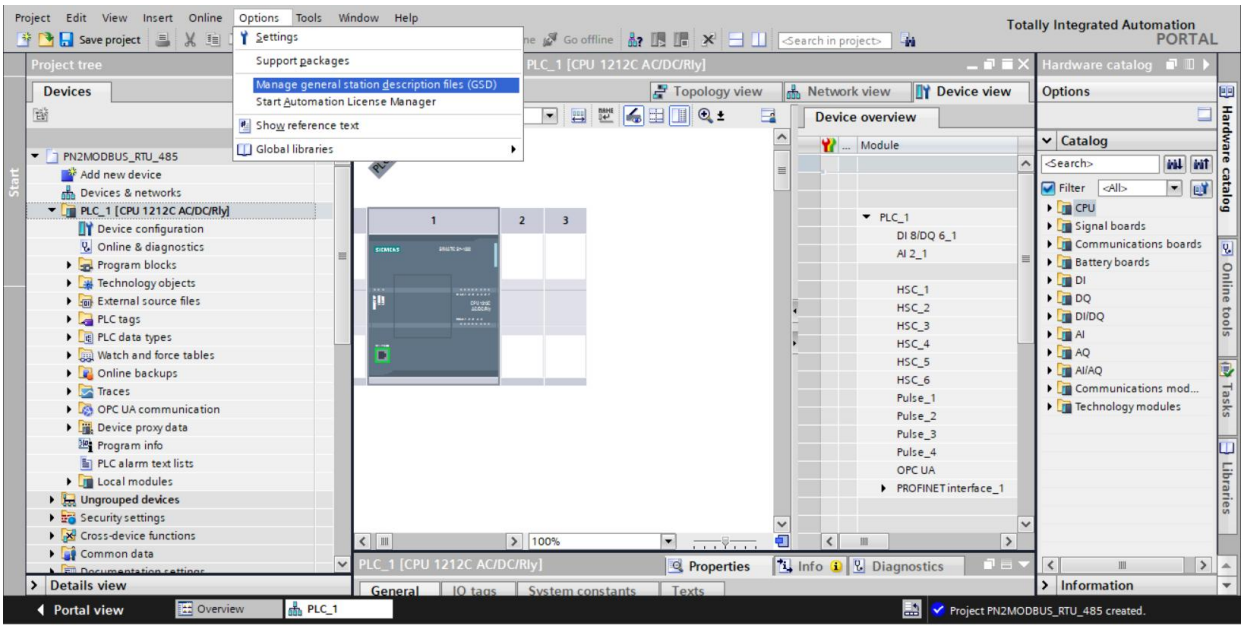




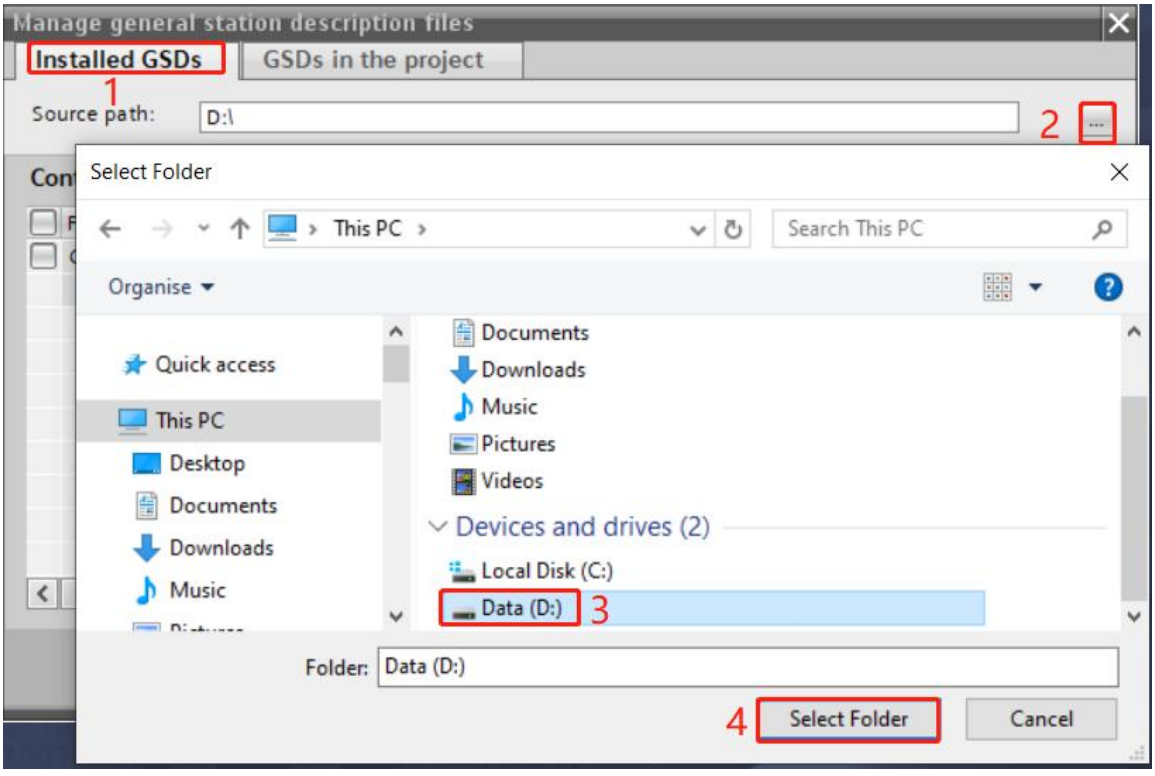


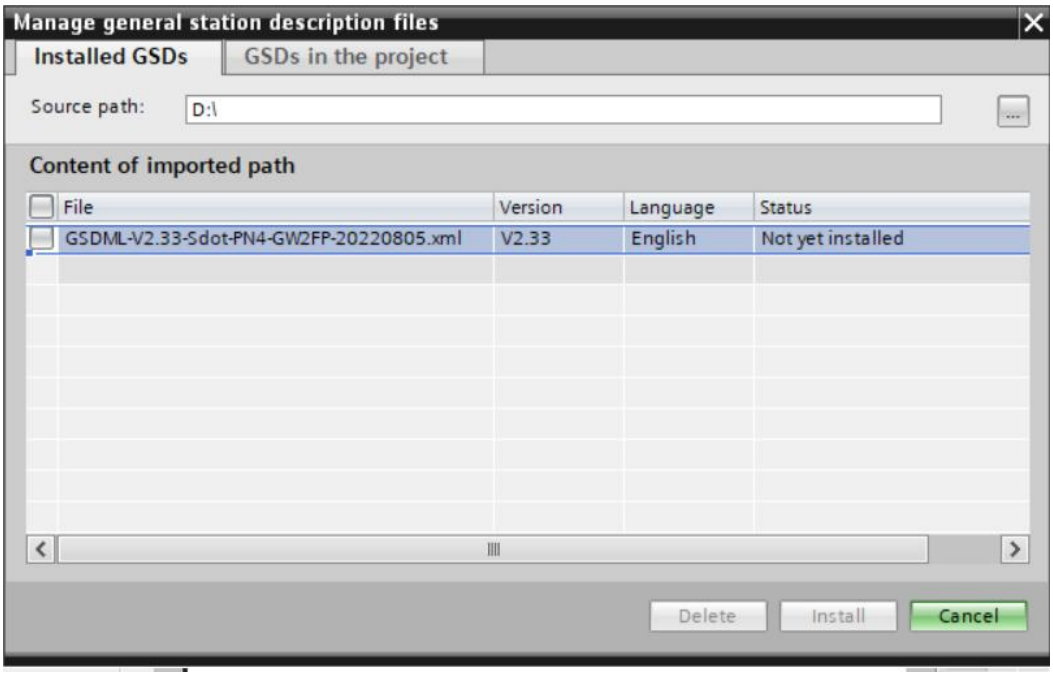
4.2.2 GSD installation

In the TIA PORTAL menu bar, click options > manage general station description files, as shown in the following figure:

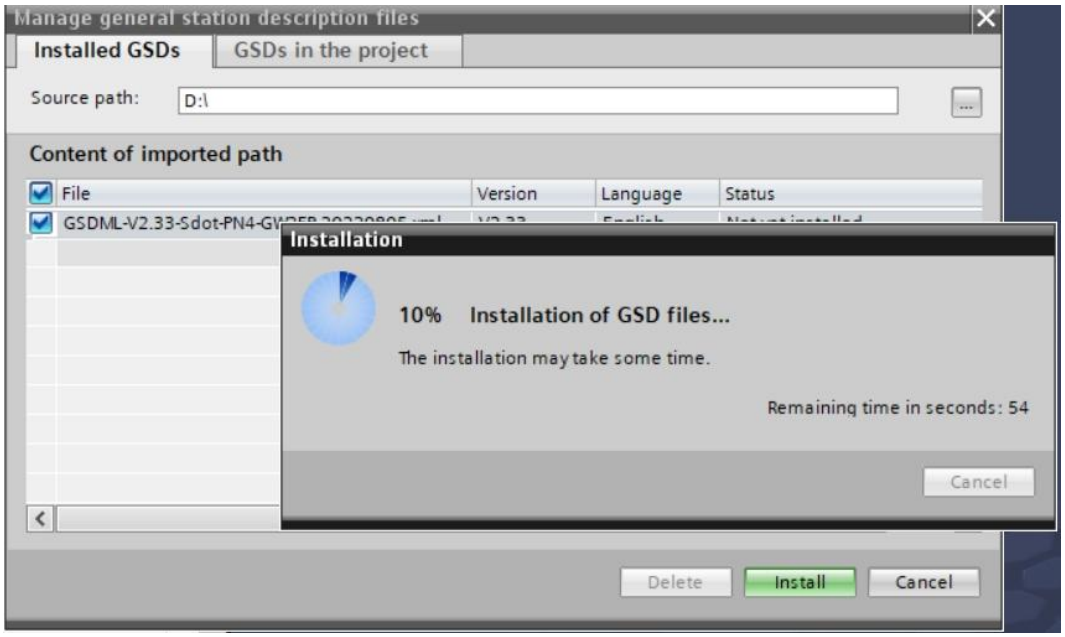


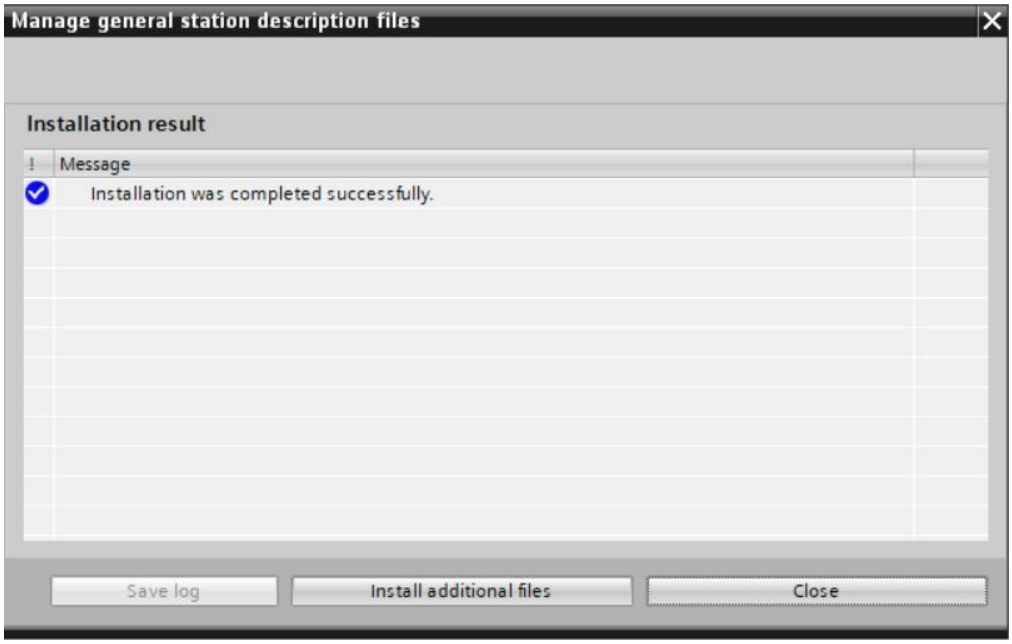
In the pop-up dialog box, select the "Installed GSD" Tab, click the source path selection button, and in the pop-up browse folder dialog box, find and select the path to the folder where the GSD file "GSDML-v2.33-SDOT-PN4-GW2FP-20220805" Is located and select it. In the browse folder dialog box, find the path to the folder where the GSD file "GSDML-V2.33-SDOT-PN4-GW2FP-20220805" Is located and select it, Just click confirm.



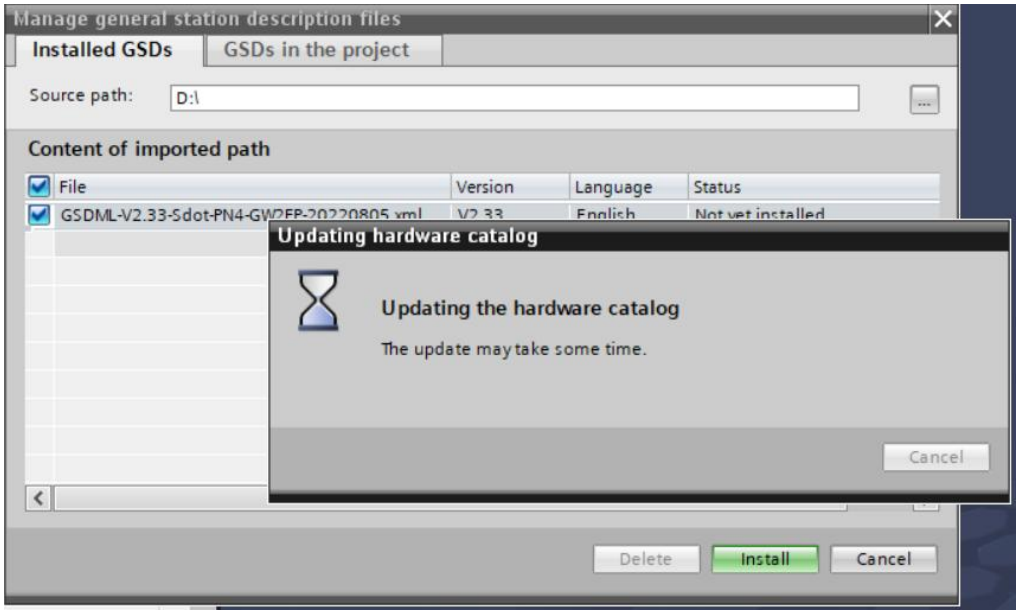


Select the imported GSD file and click install until the installation is complete.



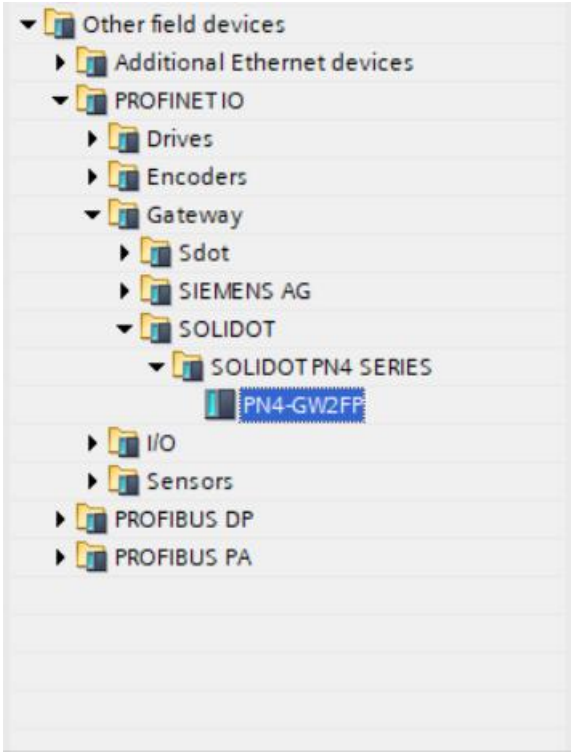


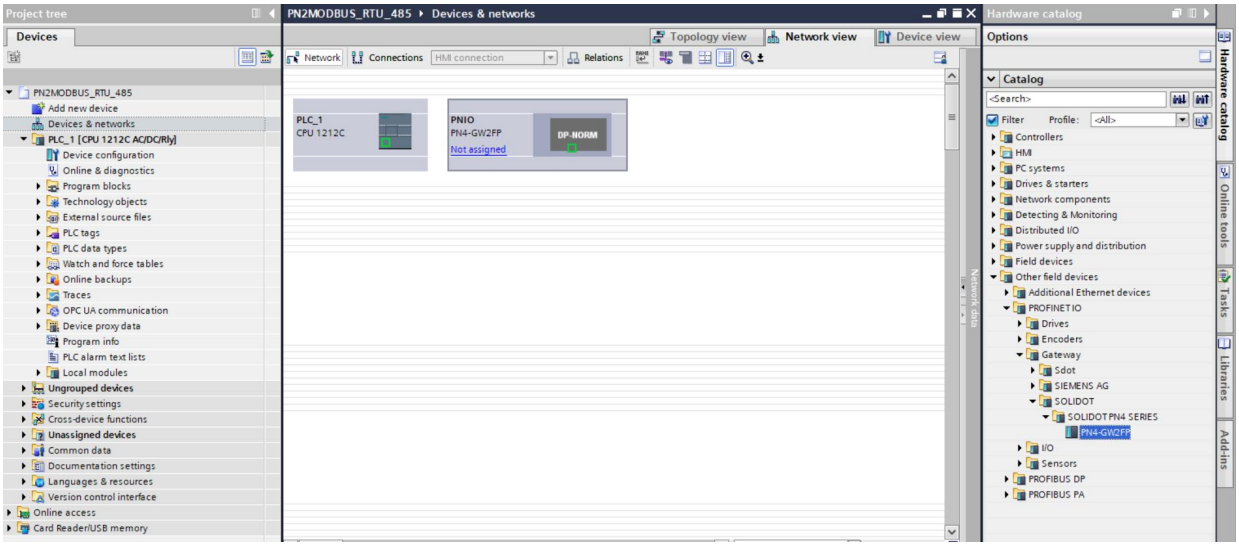
The software updates the hardware catalog.



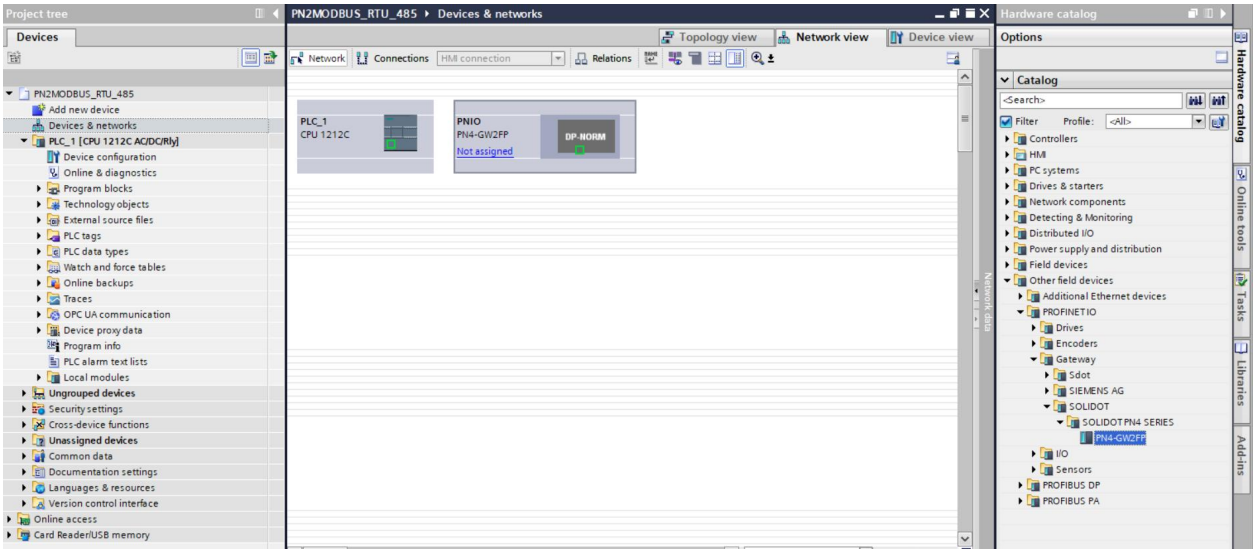
4.2.3 Device configuration

Double-click “devices&networks” to add the PN4-GW2MR device module in the hardware catalog > other field devices > PROFINET IO > GATEWAY > SOLIDOT > SOLIDOT PN4 SERIES > PN4-GW2FP, as shown below:



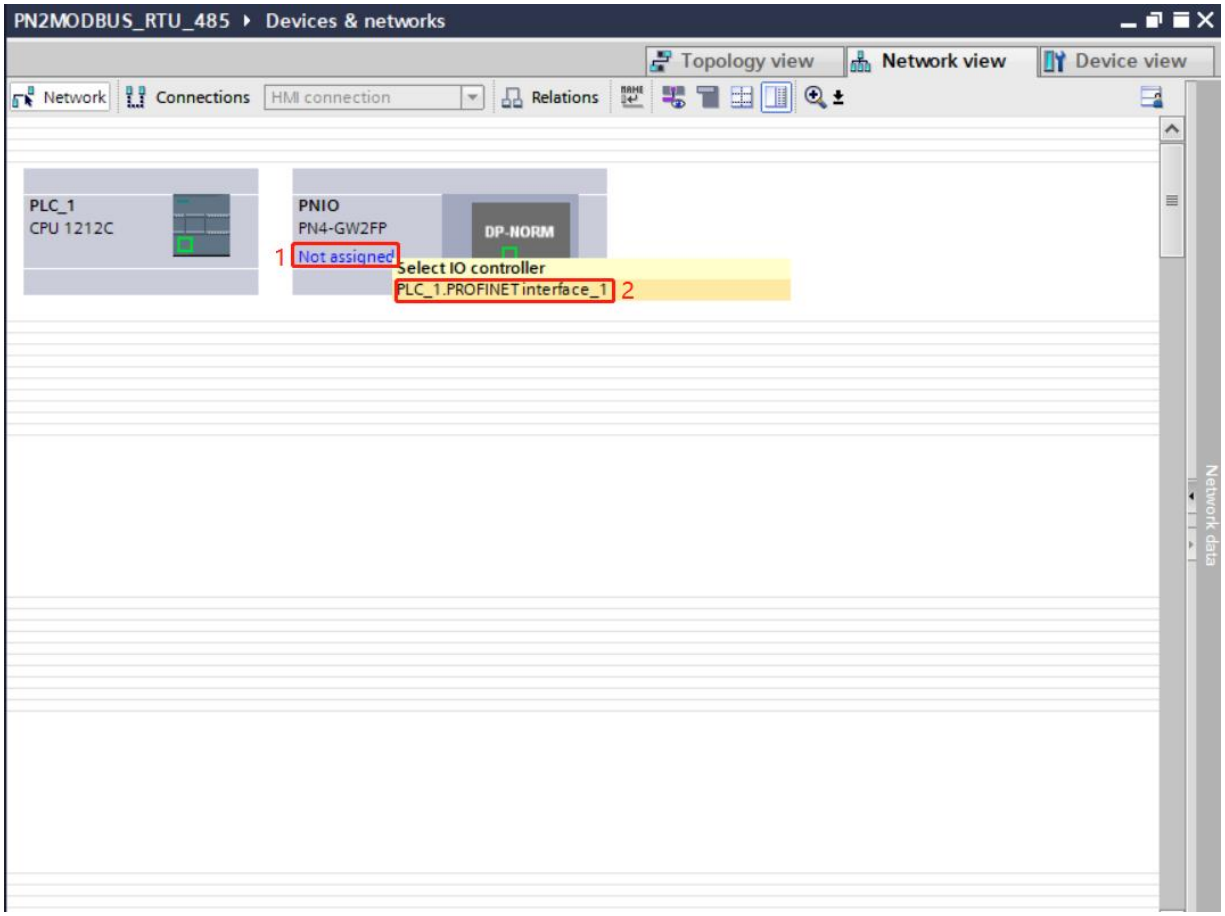


After adding the device module, as shown below

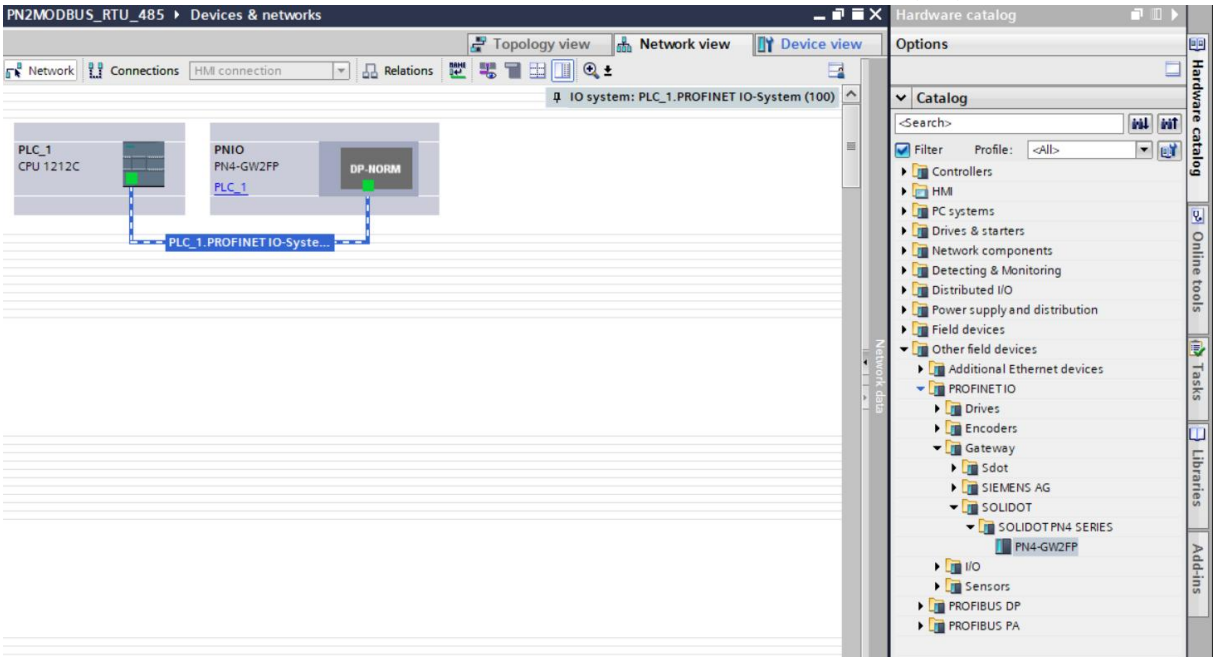


Use the Network View of the Device Configuration to create network connections between the devices in the project. After creating a network connection, use the “Properties” tab of the tour window to configure the parameters of the network.

Select “Network View” to display the devices to be connected. Select the PROFINET port of the PN4-GW2MR and drag the connection to the PROFINET port of the PLC_1 module and release the mouse button to create the network connection.

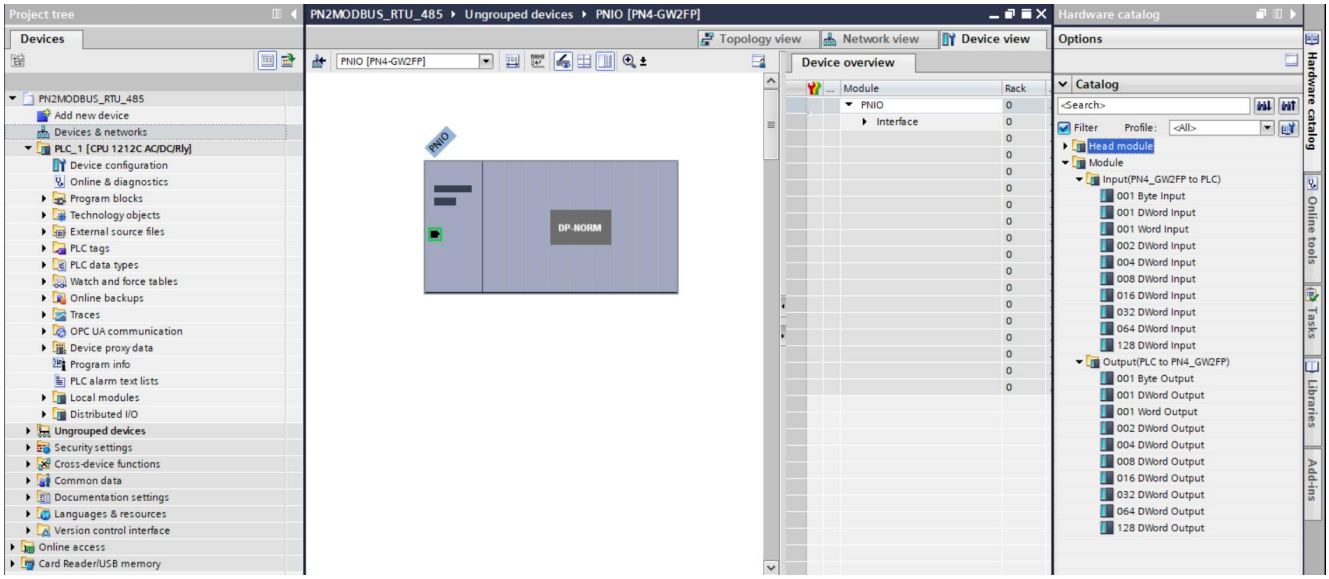


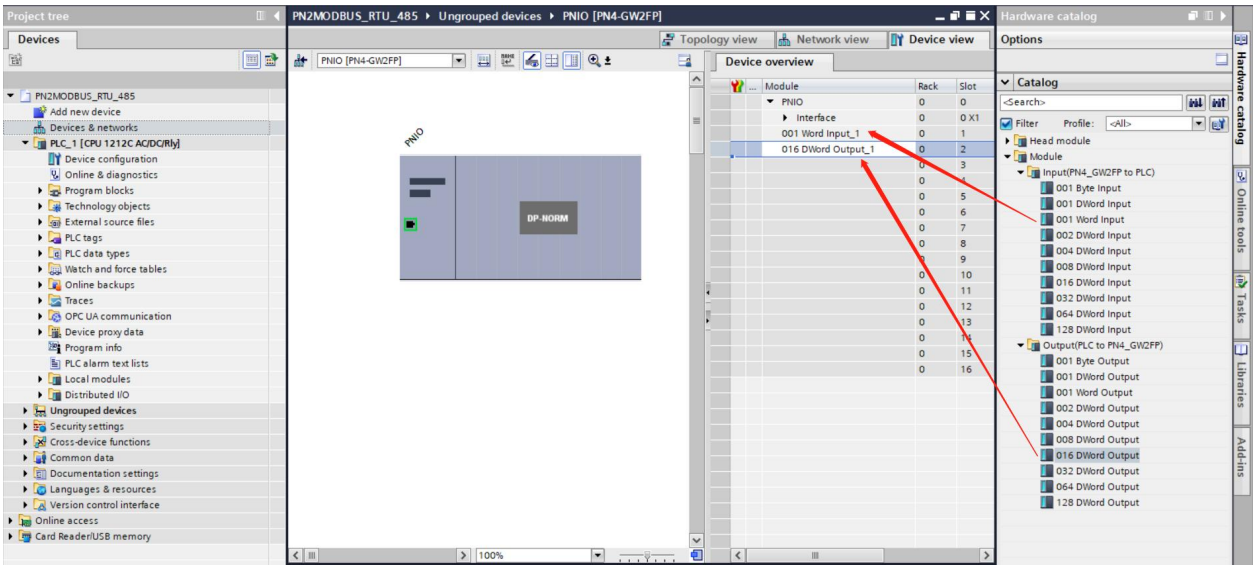
The PROFINET network is created successfully, as shown in the following figure:



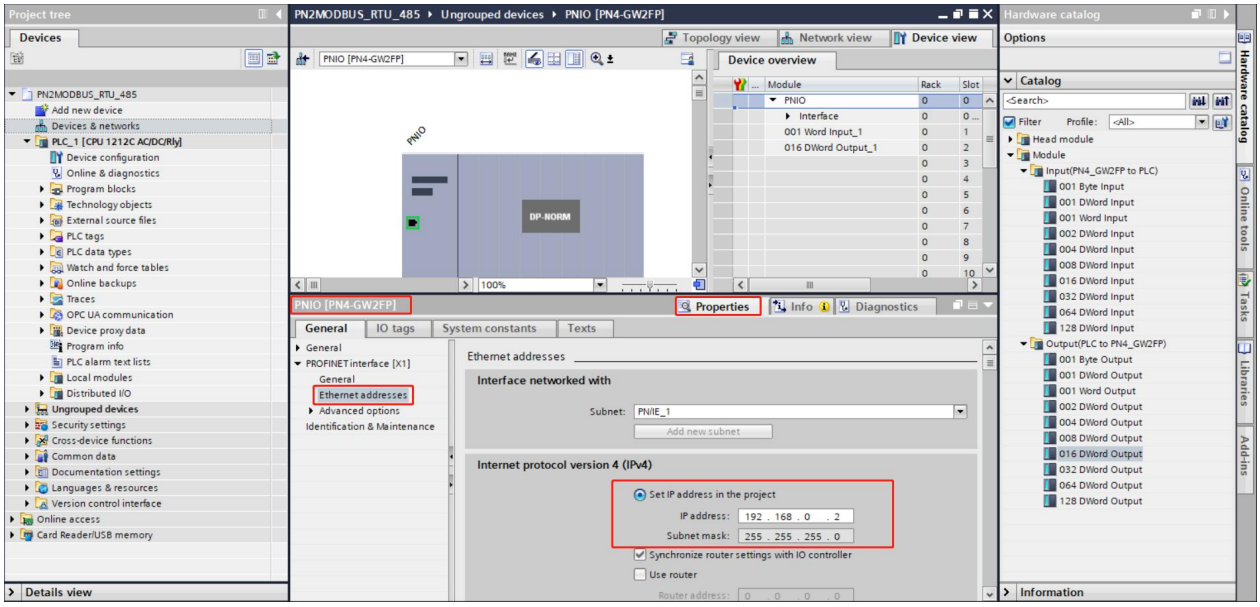
Double-click on the PN4-GW2MR device and configure all necessary modules and submodules.

– In the hardware catalog, expand the modules container.
– Double-click or drag the module type under input modules / output modules. This is shown in the figure below:

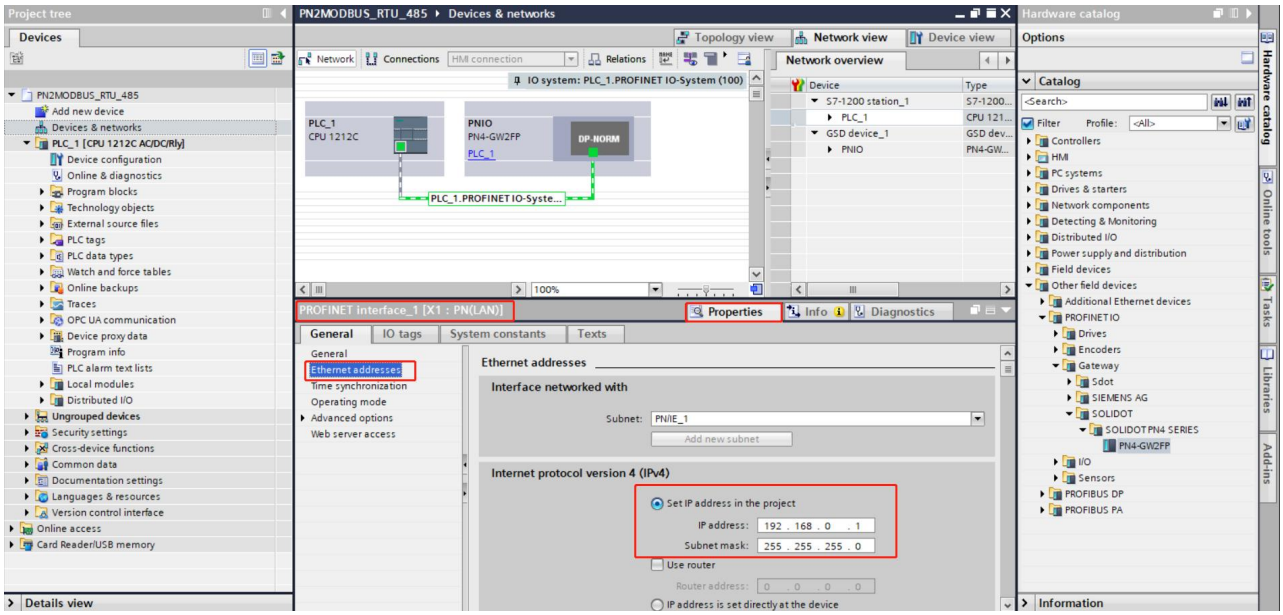




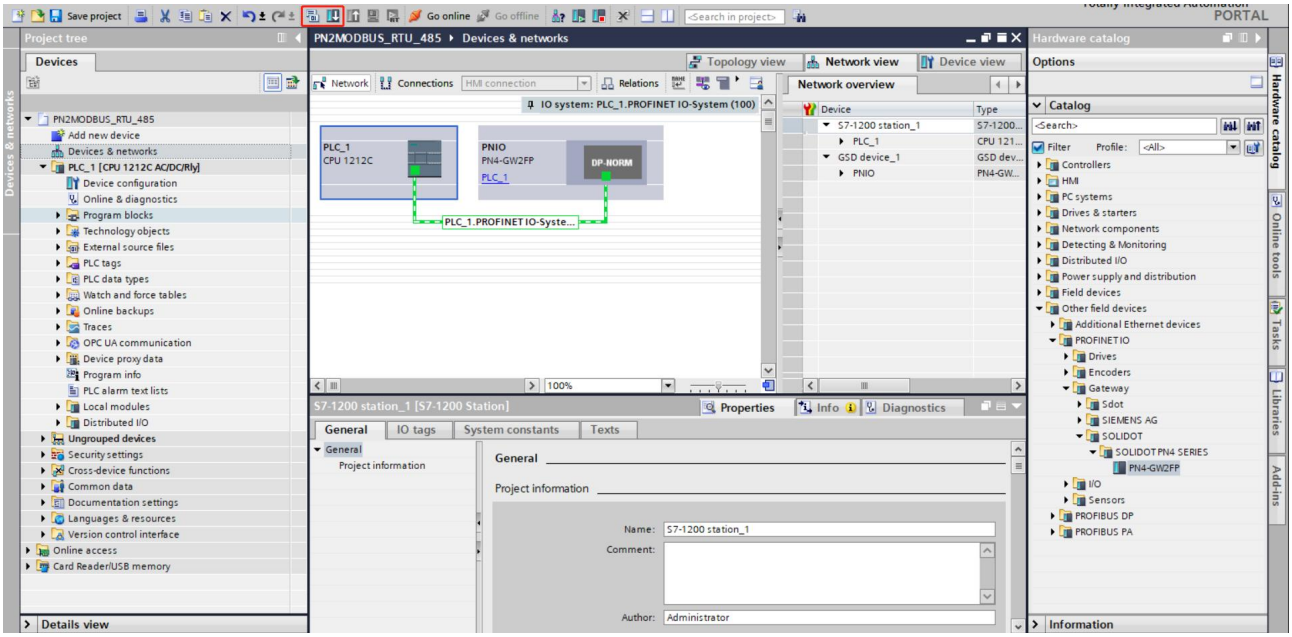
To configure the PROFINET interface of the PN4-GW2MR, select the green PROFINET box on the device. The "Properties" Tab in the tour window will show the PROFINET port, select "Ethernet address" From "Properties > PROFINET interface" In the tour window, and set the IP address in the IP protocol as shown below. Select "Ethernet address" Under "Properties > PROFINET interface" In the tour window, and set the IP address in IP protocol as shown in the following figure:



To configure the PROFINET interface of PLC_1, select the green PROFINET box on the CPU. The "Properties" Tab in the viewing window will show the PROFINET port, select "Ethernet address" In "Properties > PROFINET interface" In the viewing window, and set the IP address in the IP protocol as shown below.

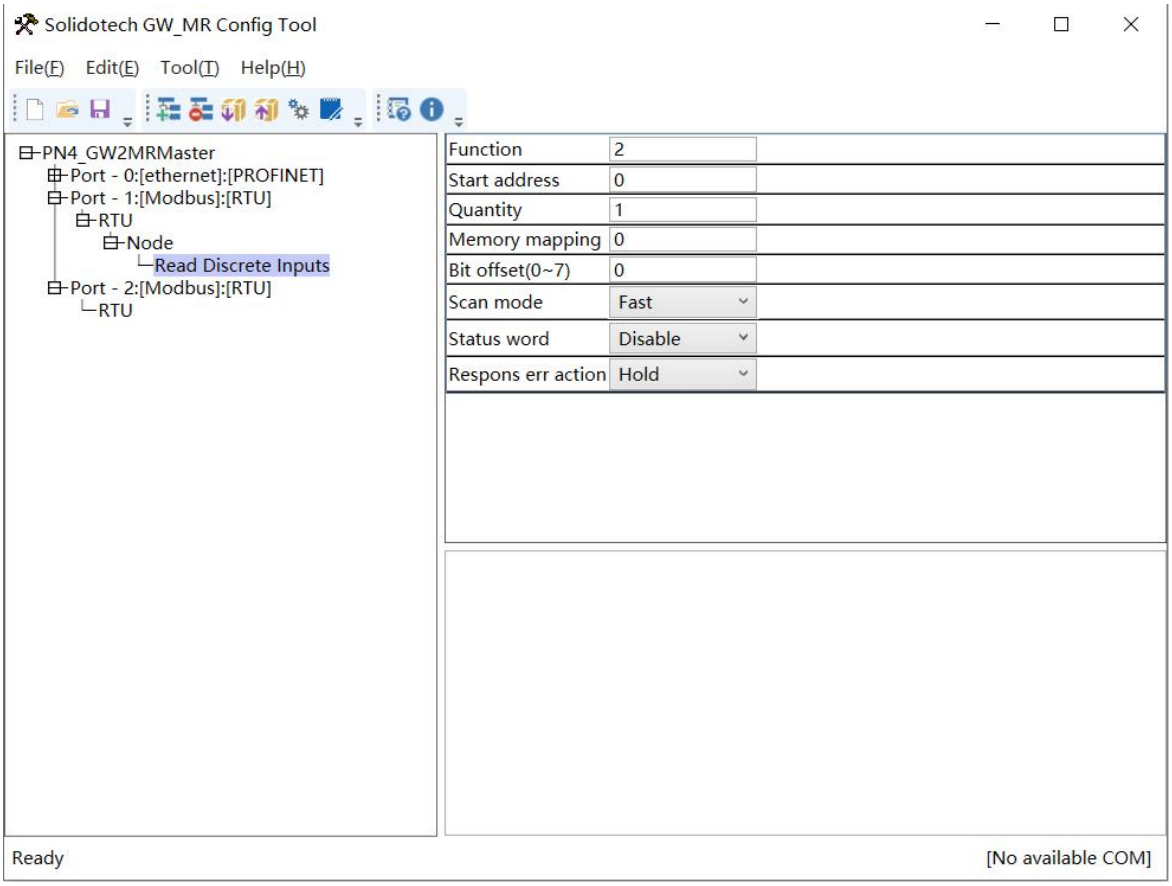


Perform compilation and download



4.3 Solidotech GW_MR Config tool configuration software

The configuration module requires configuration software, which can be obtained and installed from the CD-ROM or website. Users can easily complete the configuration of PN4-GW2MR using the gateway configuration software, including device IP address, subnet mask, gateway address and device name, serial port baud rate, parity, stop bit, communication protocol selection and protocol parameters, etc., and the conflict detection of the gateway memory mapping data can also be performed. The main interface is shown below:



4.4 Operation

4.4.1 Data exchange

The data conversion between the PROFINET network and the serial port of the PN4-GW2MR is established through a "mapping" relationship. There are two data buffers in the PN4-GW2MR, one is the input buffer (1500 bytes) with the address range of 0x000-0x5DB, and the other is the output buffer (1500 bytes) with the address range of 0x5DC-0xBB7.

4.4.2 PROFINET Slave Station

Assuming that the user configures the length of the input data to be L1 and the length of the output data to be L2, the PN4-GW2MR will send the data in the address range of [0x000,L1] to the PROFINET network, and when the data is received from the PROFINET network, the PN4-GW2MR will write the data to the address range of [0x5DC,0x5DC+L2].

4.4.3 Modbus Master Station

When a serial port is running the Modbus master protocol, for all write register, write coil commands supported by the PN4-GW2MR, data can be fetched from the address range of 0x000-0x5DB, 0x5DC-0xBB7 and sent to the Modbus slave Station. For all Read Register, Read Coil commands supported by the PN4-GW2MR, the PN4-GW2MR will write the data returned from the Modbus slave to the 0x000-0x5DB range.

Note: The configurable number of commands per Modbus master is 32, and each command can read a set of consecutive Modbus registers.

4.4.4 Modbus Slave Station

When a serial port runs the Modbus slave protocol, no command needs to be configured. The module takes data from the address range of 0x000-0x5DB, 0x5DC-0xBB7 and sends it to the Modbus master.

4.4.5 Free port protocol

This version does not support

4.4.6 General mode - Q&A

When a serial port is running the general-purpose mode - question-and-answer protocol, the command request portion can be taken from any position in the buffer 0x000-0x5DB, 0x5DC-0xBB7, and then sent out to the slave serial device. When the slave device gives a response, the PN4-GW2MR will write the data portion of the response into the 0x000-0x5DB range if there is any data portion in the response, depending on the user's configuration.

4.4.7 General mode - receiving

When a serial port is running the general purpose mode-receive protocol, one of the PN4-GW2MR's serial ports only receives the data sent by the user's serial master device and does not respond in any way. In this mode the PN4-GW2MR writes the received data to a segment of the 0x000-0x5DB address range.

4.4.7.1 Command output method

The content of this section applies only to the Modbus master protocol and the general mode-question-and-answer protocol. Command execution process:

1. The timeout retransmission count is set to 0;
2. Sends a request frame for the command. After sending is complete, the response timeout timer starts timing;
3. Wait for a response frame to the command;
4. If a response frame is received within the response timeout period, a response is considered to be available, and whether the response is correct or not depends on the specific response format. If the response frame is correct, the command execution ends. If no response frame is received within the response timeout period, the response is considered to have timed out. In case of response error and response timeout, go to step 5;
5. Determine whether the retransmission count is 3, if it is 3, the command execution ends, otherwise, the timeout retransmission count is increased by one, and go to step 2.

Continuous output mode:

In the master protocol, each command has a unique command index number within each subnet.

When the master protocol operates in the continuous output mode (output command polling mode), it is executed in the following manner:

1. Execute nth command;
2. After the nth command is executed, n is increased by one, and if it is greater than the

maximum number of commands, n is set to 0. Re-enter step 1.

Varying output mode:

When the master station protocol works in the varying output mode, it is executed as follows:

1. If command n is a read command, execute command n. Otherwise, detect whether there is any change in the memory data mapping data contained in the request frame of command n, and execute command n if there is a change;
2. If command n is executed, wait for the completion of command n, n is increased by one, and if it is greater than the maximum number of commands, n is set to 0. Go to step 1 again.

4.4.7.2 Byte exchange method

There are 4 types of byte exchange: No exchange, 2-byte exchange, 4-byte register exchange, and 4-byte big endian and little endia exchange.

2-byte exchange: When using 2-byte exchange, the number of bytes exchanged must be an integer multiple of 2. 2-byte exchange is done in units of 2 bytes, and the exchange method is shown in the following table:

Before exchange		After exchange	
byte index	byte value	byte index	byte value
0	0x12	0	0x34
1	0x34	1	0x12

4-byte register swap:

When using 4-byte register exchange, the number of bytes to be exchanged must be an integer multiple of 4. 4-byte register exchange is performed in units of 2 registers, and the exchange method is shown in the following table:

Before exchange		After exchange	
Byte index	Byte value	Byte index	Byte value
0	0x12	0	0x56
1	0x34	1	0x78
2	0x56	2	0x12
3	0x78	3	0x34

4 byte big endian and little endia exchange:

When using 4-byte big endian and little endia exchange, the number of bytes to be exchanged must be an integer multiple of 4. 4-byte big endian and little endia exchange is performed in units of 4 bytes, and the method of exchange is shown in the following table:

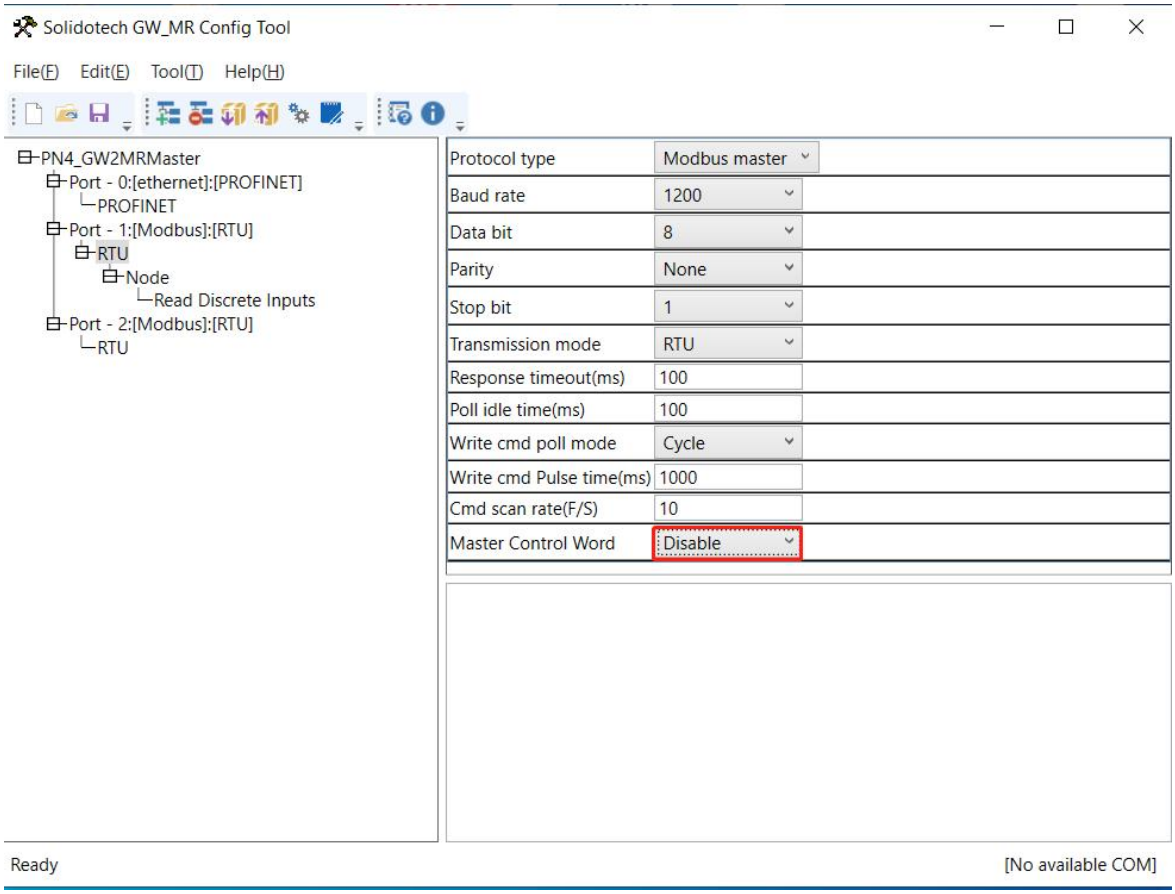
Before exchange		After exchange	
byte index	byte value	byte index	byte value
0	0x12	0	0x78
1	0x34	1	0x56
2	0x56	2	0x34
3	0x78	3	0x12

4.4.7.3 Control word

In order to enable the user to control the Modbus network through PROFINET, the concept of control word is introduced in the configuration of Modbus. If the control word is enabled, the control word occupies 2 words in the output data of PROFINET, as shown in the table below:

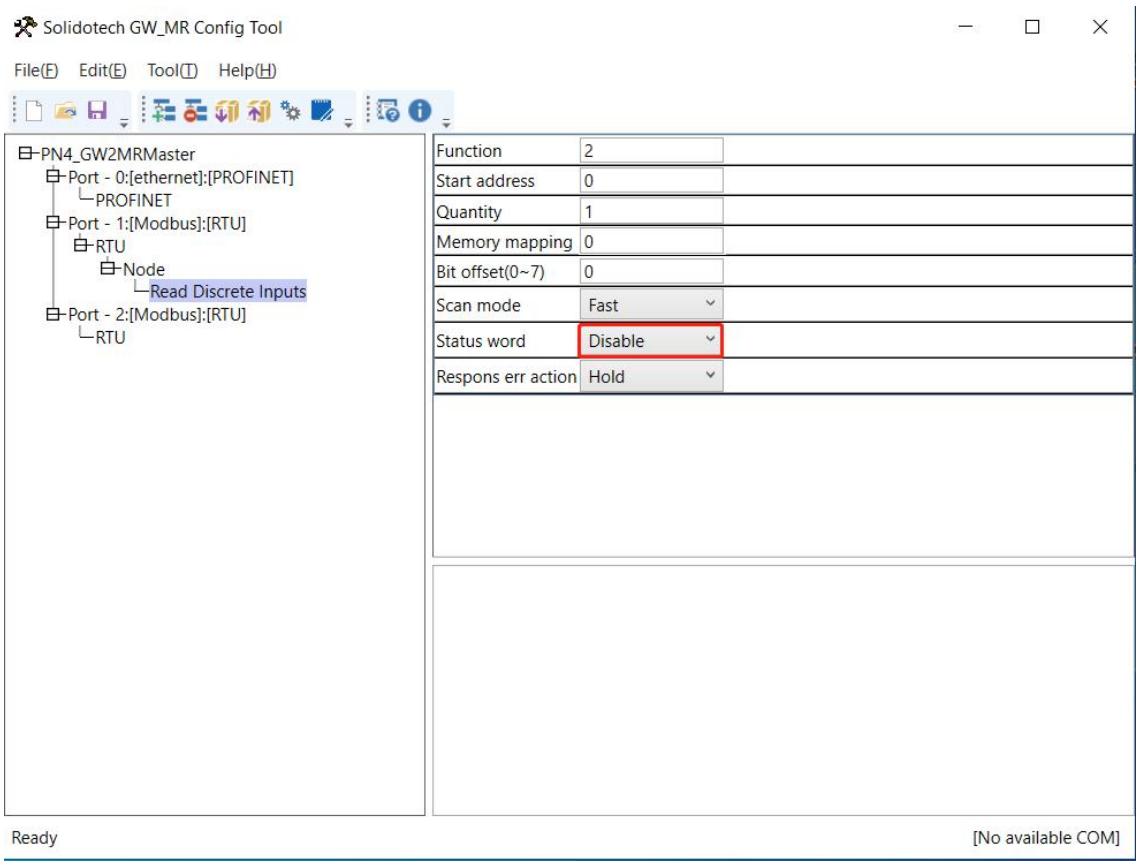
Word1	High byte	Low byte
	Port2 control bit	Port1 control bit
Word2	High byte	Low byte
	Reserve	Port3 control bit

Portx control bit: 0, Modbus master of this port is not activated, 1, Modbus master of this port is activated;



4.4.7.4 Status word

In order to easily obtain the execution status of each command under each master, a status word is introduced, which is specific to the Modbus master station protocol only.



The status word uses each bit to indicate the success or failure of each command. When the command is executed successfully, the corresponding bit is set to 1, otherwise it is set to 0.

If the status word of a command is enabled, space is allocated for the input data of that command in the PROFINET, one bit per command. The status word is allocated in words, and the number of input data areas occupied (words) = (number of commands with the status word enabled + 15) / 16.

For example, two nodes are added, and 9 commands are added to each node, for a total of 18 commands.

- For example, if all commands on node1 and node2 enable the status word, the number of input data areas occupied =(18+15)/16 = 2, i.e., two words are needed

		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Word1	Low Byte	Node1_ cmd8	Node1_ cmd7	Node1_ cmd6	Node1_ cmd5	Node1_ cmd4	Node1_ cmd3	Node1_ cmd2	Node1_ cmd1
	High Byte	Node2_ cmd7	Node2_ cmd6	Node2_ cmd5	Node2_ cmd4	Node2_ cmd3	Node2_ cmd2	Node2_ cmd1	Node1_ cmd9
Word2	Low Byte	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Node2_ cmd9	Node2_ cmd8
	High Byte	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve

- For example, if command 1, command 4 and command 8 of node1 enable the status word, and command 3 and command 7 of node2 enable the status word, and the other commands are not enabled, the number of input data areas occupied =((3+2)+15)/16 = 1, i.e., 1 word is required.

		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Word1	Low Byte	Reserve	Reserve	Reserve	Node2_ cmd7	Node2_ cmd3	Node1_ cmd8	Node1_ cmd4	Node1_ cmd1
	High Byte	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve

If all commands do not have an enable status word, no input data space is occupied.

Pre-configuration notes:

The configuration software is based on Windows platform and is used to configure the parameters and commands related to PN-TRU/RS485.

4.5 Software installation

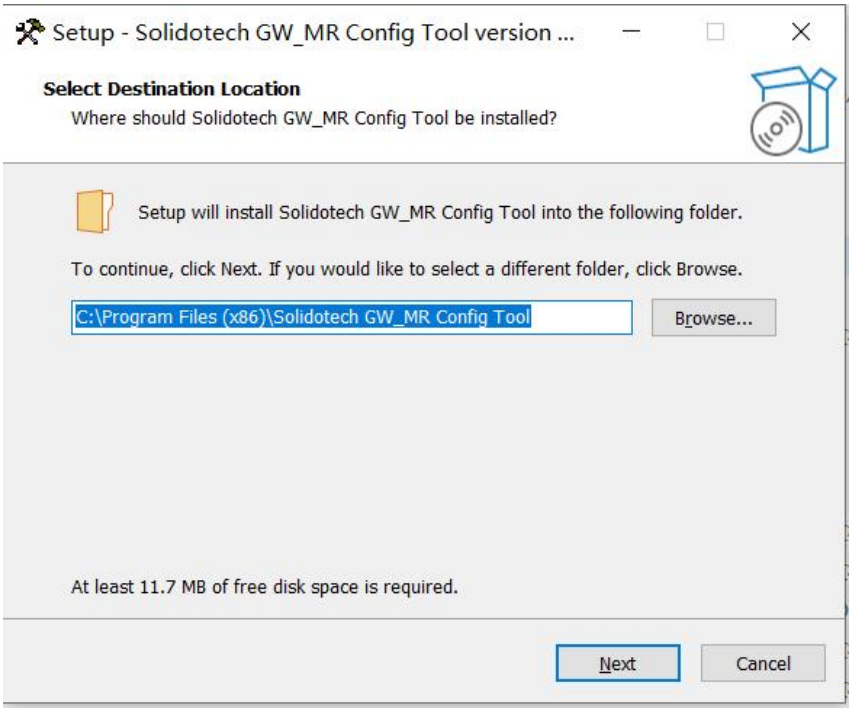
The recommended computer configuration for installing the solidotech GW_MR Config tool (hereafter referred to as SCT) software is shown in the table below.

Environment	Type	Model
Hardware environment	Monitor	Color CRT
	Input and output	Standard keyboard, mouse
	Usb interface	At least one 2.0 interface
	Display card	Resolution support 1280×1024
	CPU	Intel pentium 2.4GHz or above
	Memory	512M or more
	Hard disk	10G or more
Software environment	Operating system	Windows 7
	Application software	Solidotech GW_MR Config Toolv2.0.5.10

The main steps for installing the SCT software are described below

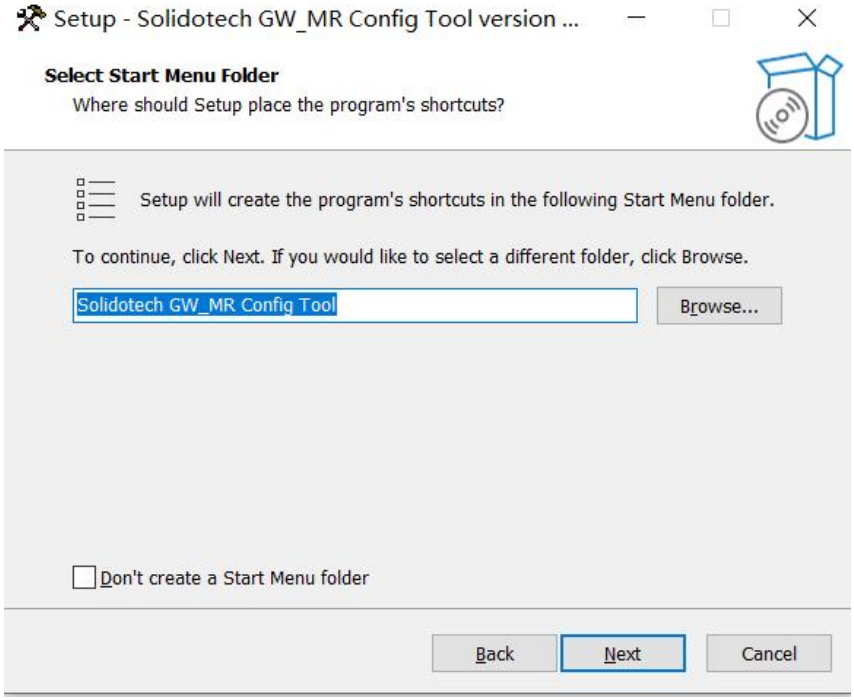
Step 1 start the installation instruction

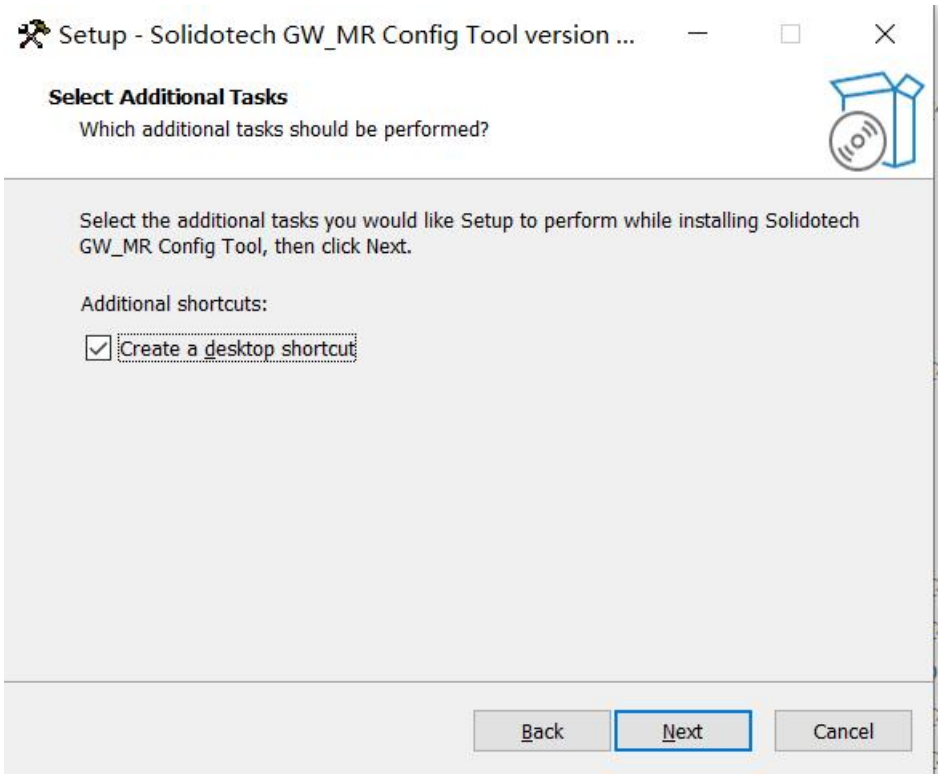
Double-click the installation package, the following figure will pop up, select the installation location and click next:

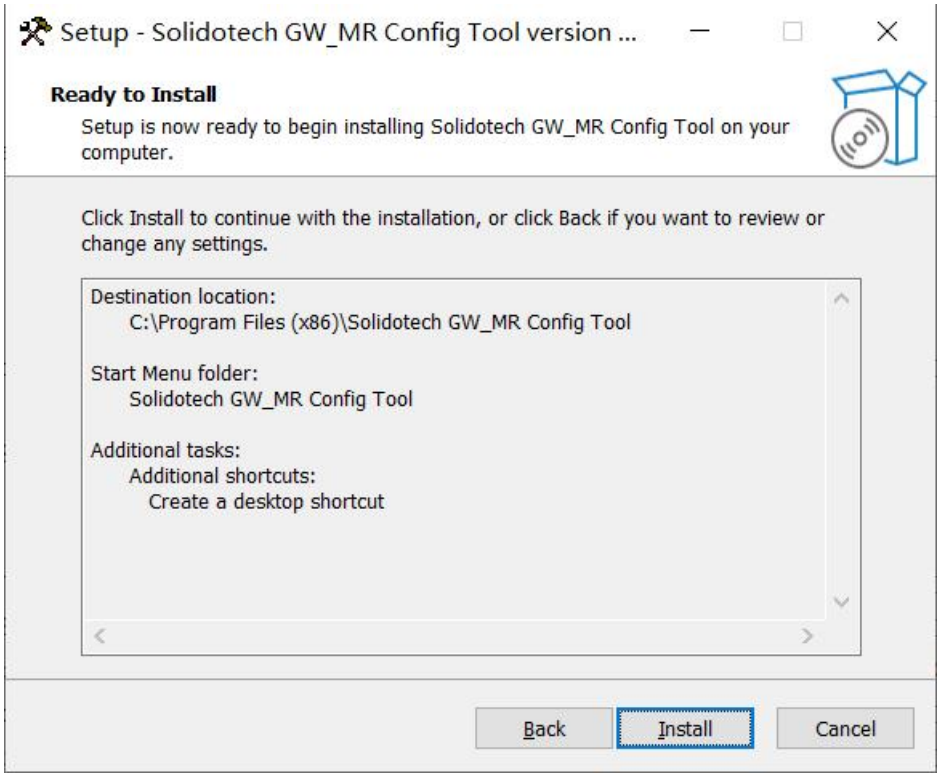


Step 2 select additional tasks

Select additional tasks pop-up window, select whether to "Create a desktop shortcut", and then left mouse click "Next", as shown in the figure.

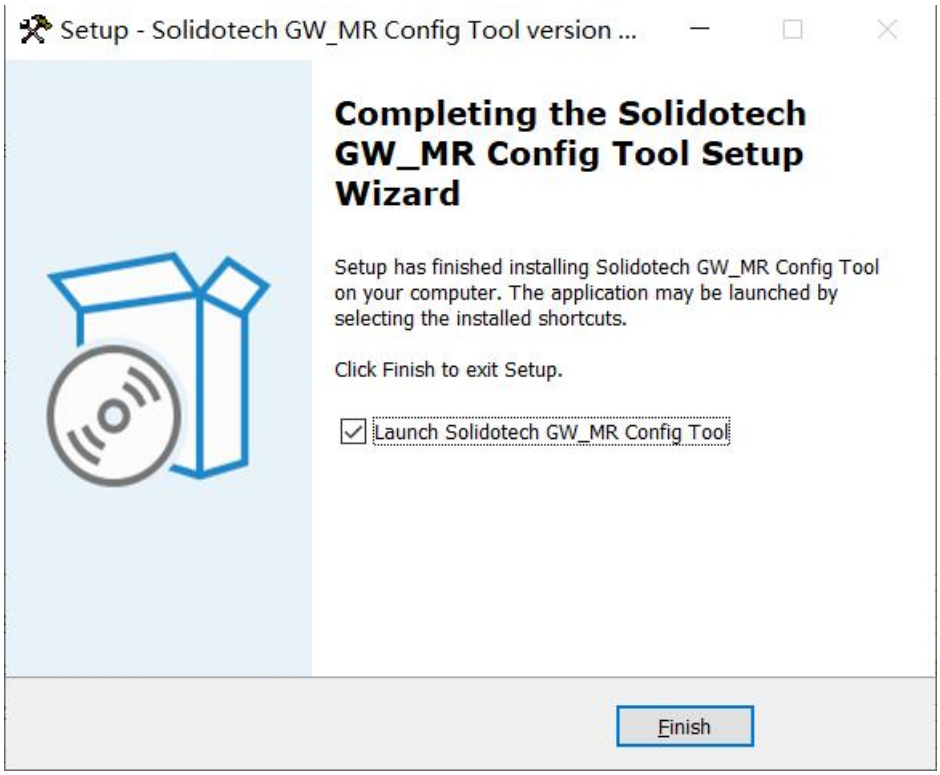






Step 3 installation completion prompt

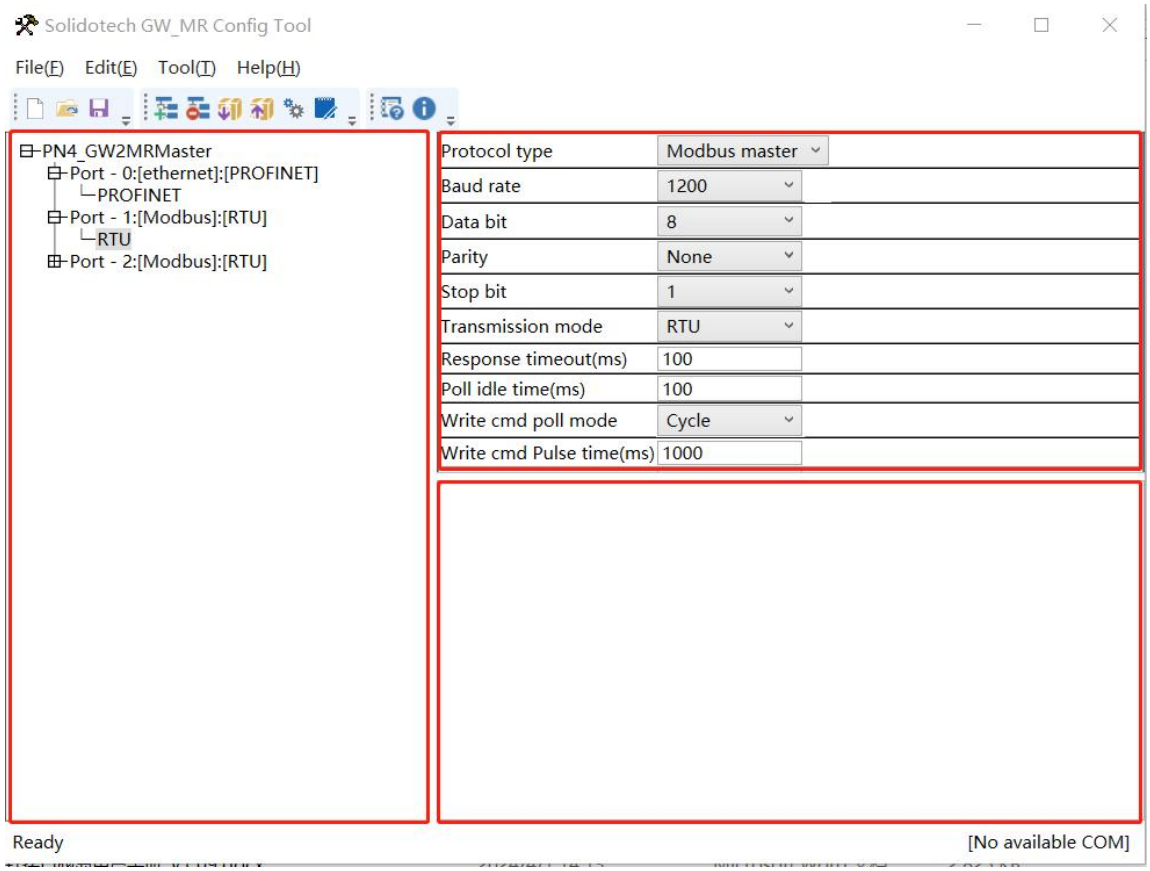
When the installation is complete, the "SCT installation completion wizard" Window will pop up. Left click on "Finish" To run SCT immediately, as shown in the figure.



4.6 User interface introduction

The user interface has three main components, as shown below:

- Device window: Used to enumerate device information, including: Ports, protocols, commands, etc;
- Configuration window: Used to configure parameters;
- Description window: Used to display description information.

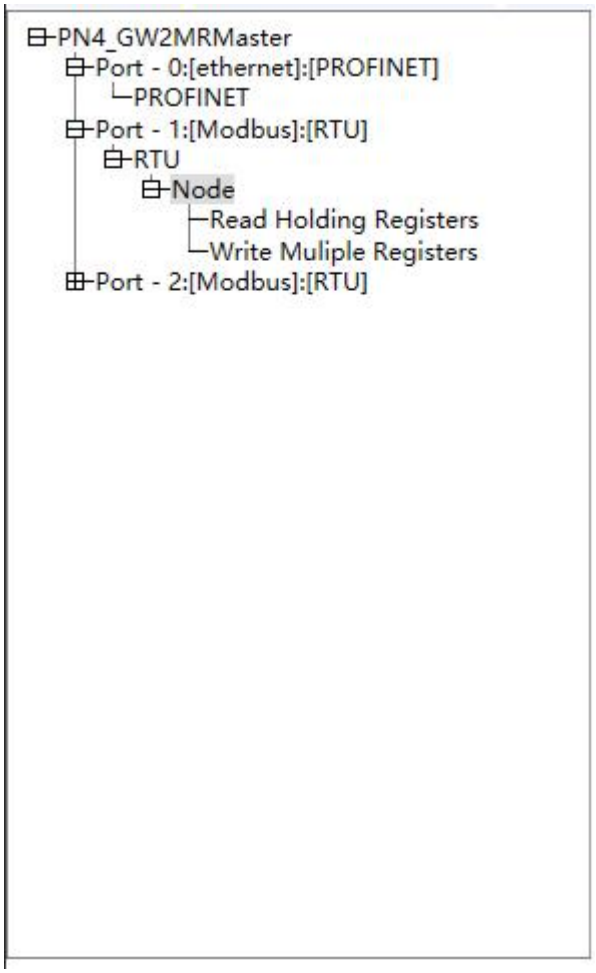


4.7 Device window

4.7.1 Introduction to the device window

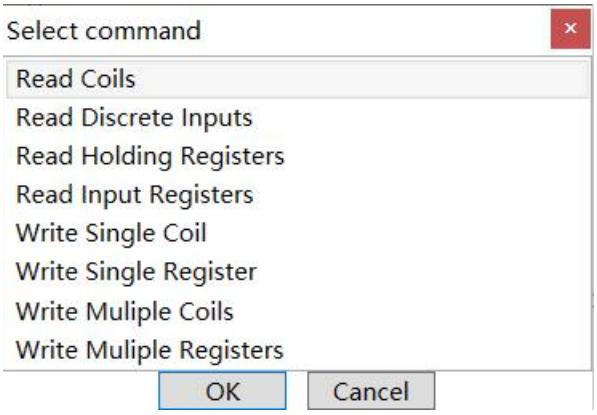
The device window adopts a tree structure, the root node is the selected gateway device, each actual physical interface of the gateway device corresponds to each port of the device's child node, each port child node corresponds to the type of protocol supported by this port, and according to the different protocols you can continue to the next sub or the protocol is used as a leaf node (tail node).

For example, in the case of the Modbus-RTU protocol, when acting as a master, the child nodes are the individual Modbus slaves under this master, and the child nodes of the slaves are in turn the commands configured for this slave. If you want to set the parameters of each hierarchical node, you can click on this node, and in the configuration window on the right, you can realistically set its parameters. The device window is shown below:



4.7.2 Device window operation

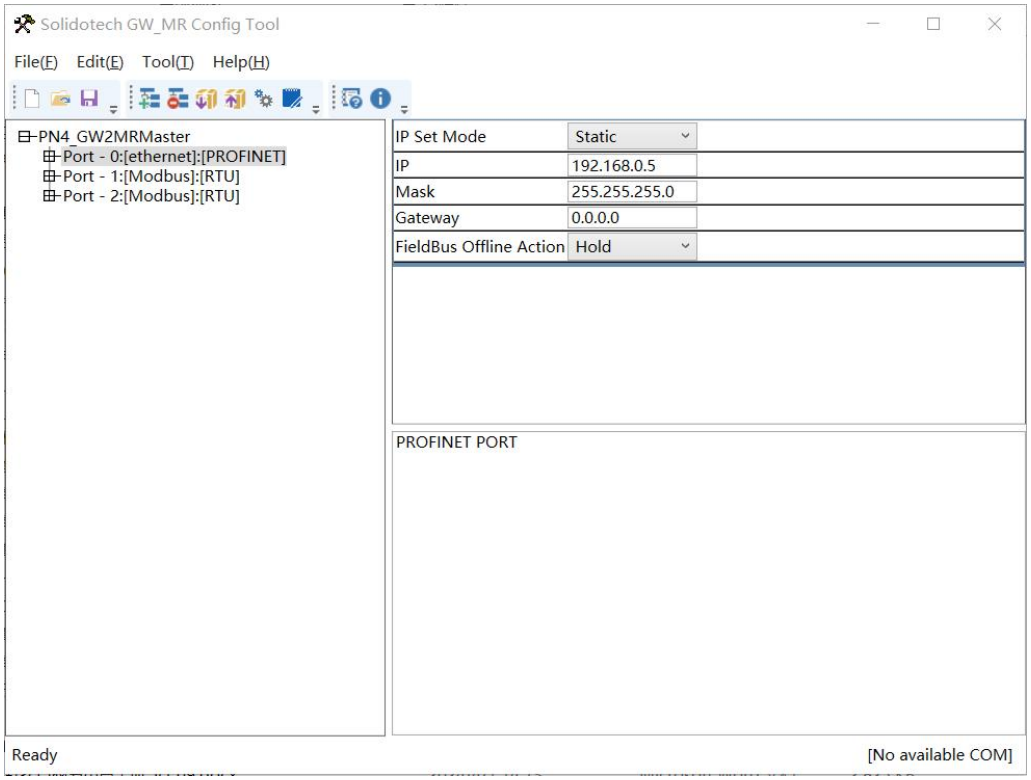
- Add node operation: Click the left mouse button on a subnet or node, select the node, and then perform the add node operation. Add a node with the name "Node" To the subnet;
- Delete node operation: Click the left mouse button, select the node to be deleted, and then execute the delete node operation. The node and its command nodes are all deleted;
- Add command operation: Click the left mouse button on the node, and then execute the add command operation to add commands for the node, and the select command dialog box will pop up for the user to choose as shown in the following figure:



- Delete command operation: Click the left mouse button, select the command to be deleted, and then execute the delete command operation, the command is deleted.

4.8 Configuration window

4.8.1 PROFINET configuration

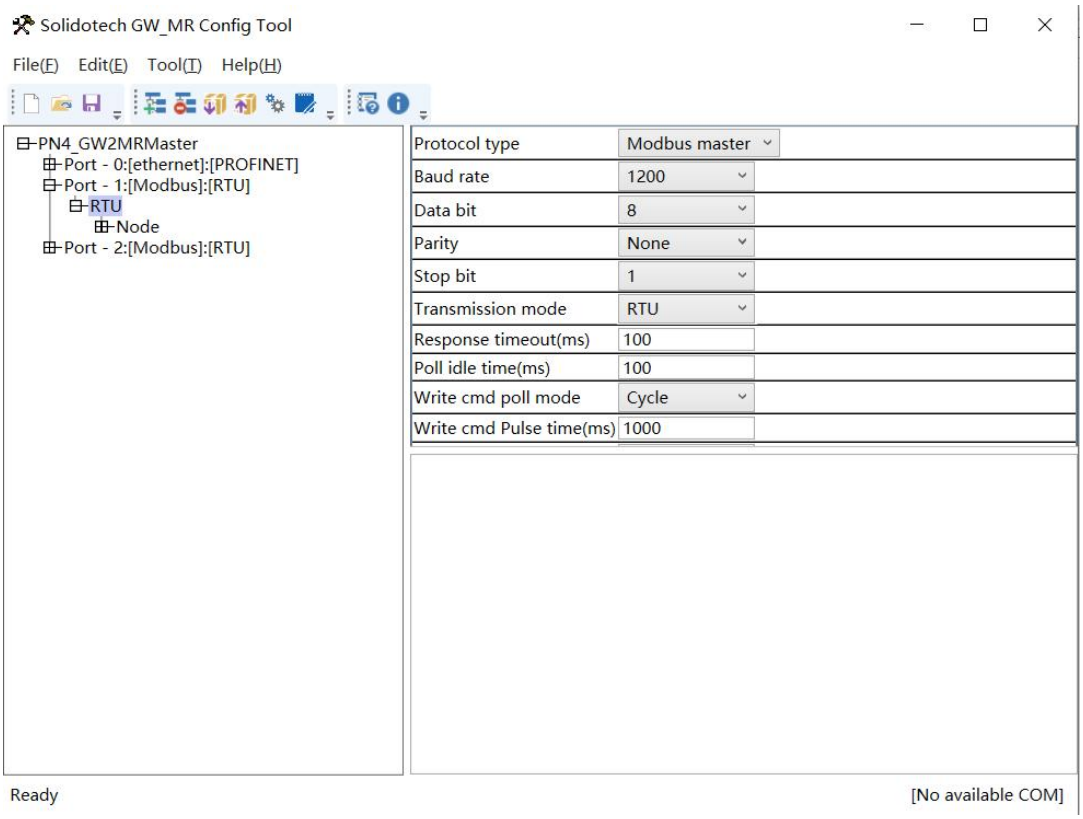


The above parameters are described below:

- Ip address: Ip address of the device; (note: Must be the same as the ip address set by the TIA PORTAL software)
- Subnet mask: Device subnet mask;
- Gateway address: The address of the gateway on the LAN;

4.8.2 Modbus master station

Configurable parameters are: Modbus communication baud rate, data bits, parity mode, stop bit, communication transmission mode, response waiting time, polling delay time, output command polling mode, pulse output time, scanning ratio, and master control word, and the configuration interface is as follows:



- Modbus communication baud rate: 1200bit/s, 2400bit/s, 4800bit/s, 9600bit/s, 19200bit/s, 38400bit/s, 57600bit/s, 115200bit/.
- Data bits: 7, 8, 9.
- Parity mode: None, odd, even.
- Stop bit: 1 bit, 2 bits.
- Communication transmission mode: RTU.
- Response waiting time: When Modbus master sends a command, wait for the slave to respond, range: 100ms~50000ms.
- Polling delay time: When the Modbus master sends a command and receives a correct response or a response times out, the delay time before sending the next Modbus command ranges from 0 to 2500m.
- Output command polling mode: Modbus write command, there are four output modes: Continuous output, prohibit output, variable output and pulse output.
  Continuous output: Same as Modbus read command output, scanning output according

to scanning ratio;

Prohibit output: Prohibit output of Modbus write command;

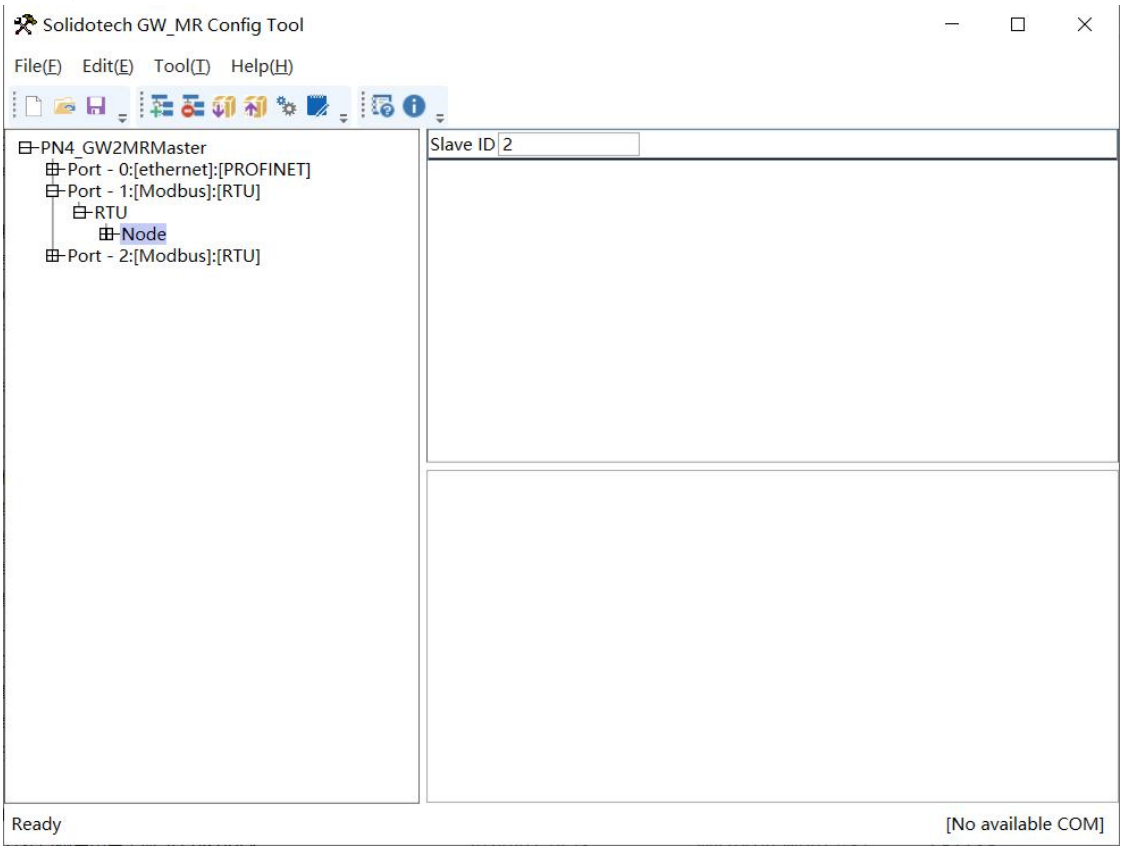
Variable output: Outputs the write command when there is a change in the output data and stops the output after receiving the correct response data;

Pulse output: Outputs the write command in accordance with the pulse period.

- Pulse output time: Pulse time of the pulse output method.
- Scanning ratio.
- Status word: Status word switch, enable it to configure status word for this subnet, disable it to not configure status word for this subnet.
- Control word: Control word switch, enable it to configure control word for this subnet, disable it to not configure control word for this subnet.

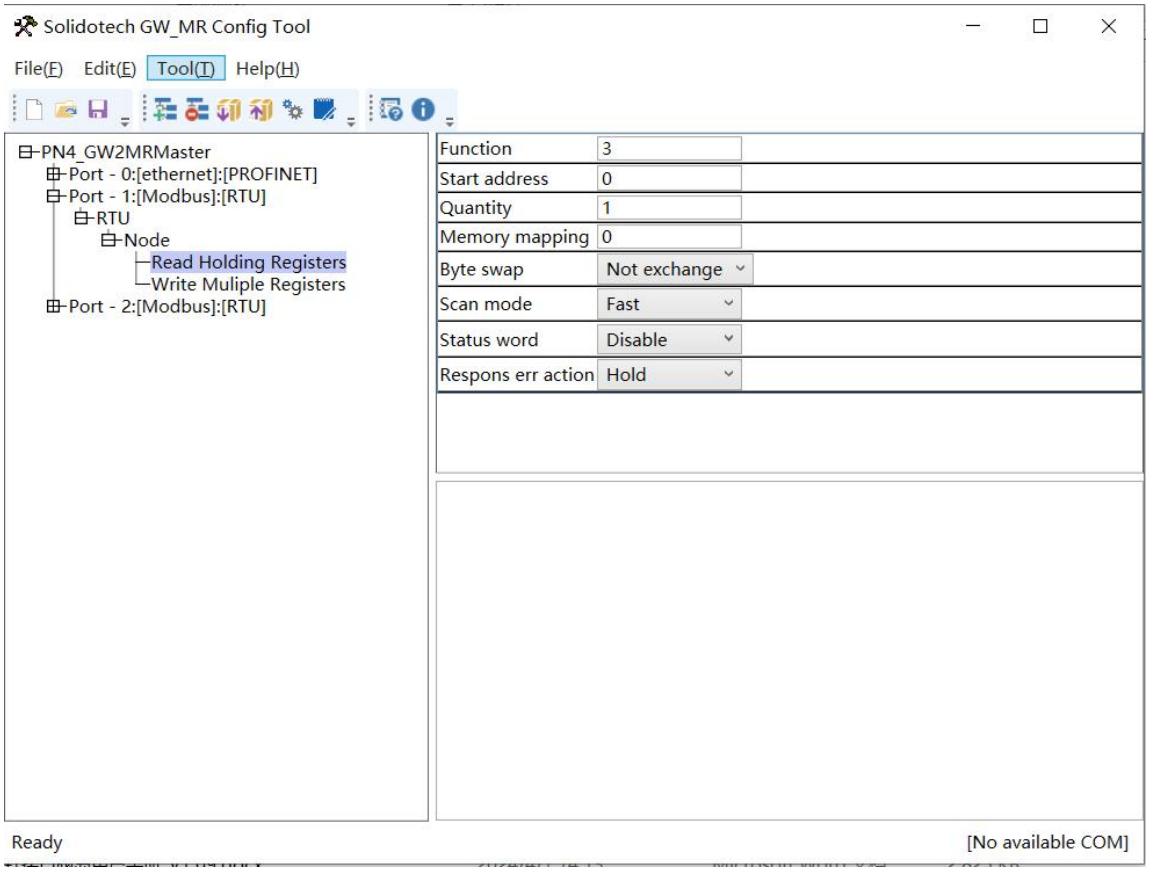
4.8.3 Node configuration

In "Modbus master" Mode, in the device window interface, click on the node, and the configuration window interface will be displayed as follows:



4.8.4 Command configuration interface

In the device window interface, when Modbus master is selected for protocol type, click the new command, and the configuration window interface is displayed as follows:



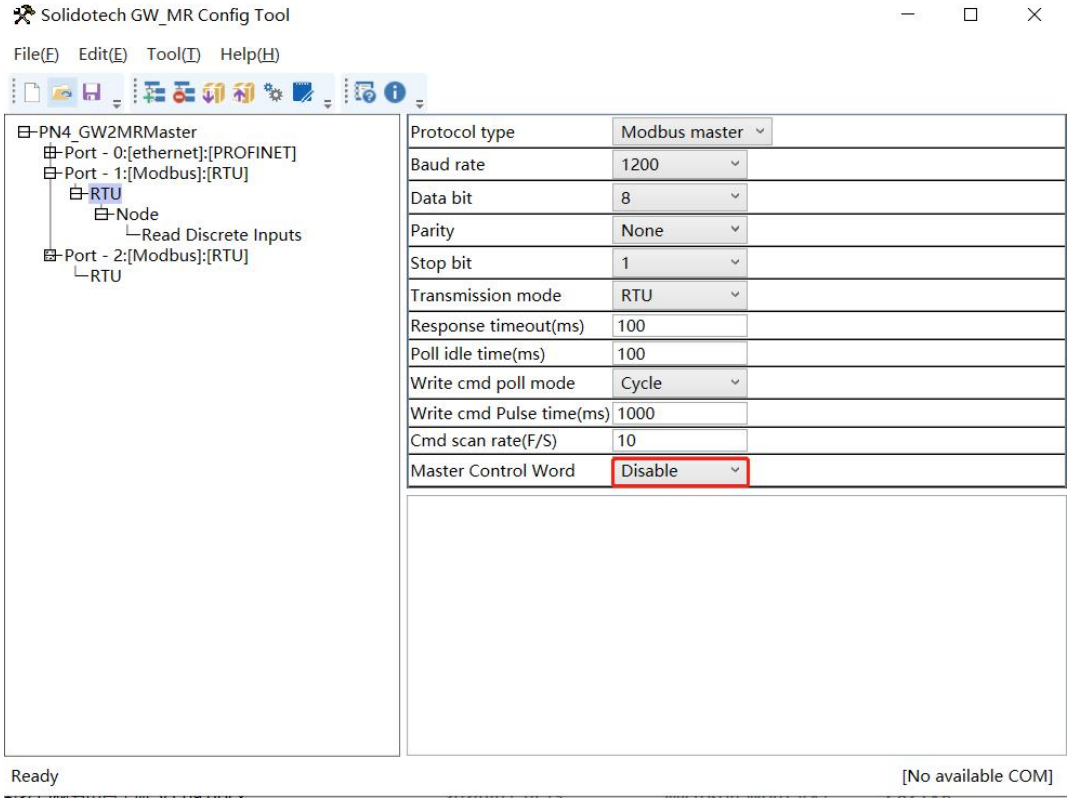
- Modbus register starting address: Starting address of registers, switches, coils, etc. In Modbus slave devices, range: 0 to 65535;

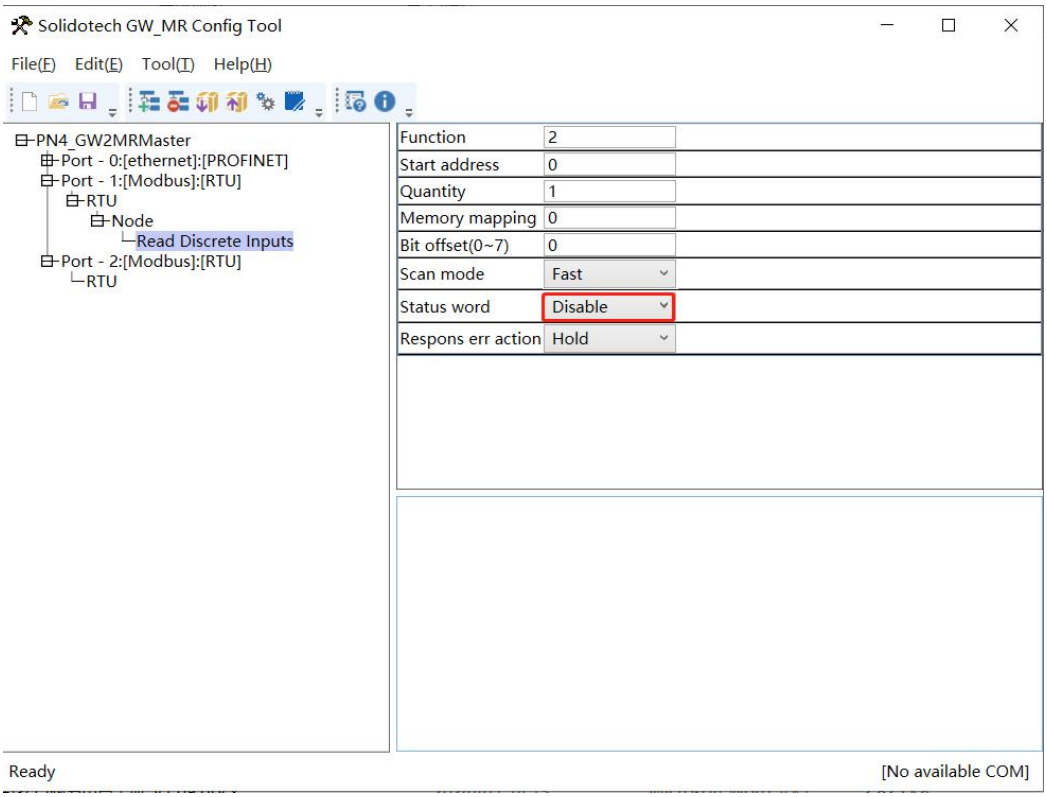
- Number of registers: The number of registers, switches, and coils in the Modbus slave device;

- Memory mapped starting address: The starting address of the data in the module memory buffer, the address range of the data mapped in the gateway memory:
  Read command: 0x000~0x5db (0~1499)
  Write command: 0x5dc~0xbb7 (1500~2999)
  The write command can also be used as a local data exchange: 0x000~0x5db (0~1499)

4.8.5 Control and status words

The device supports control word and status word, which are used to control whether the Modbus port works or not and get the status of each Modbus command respectively. The controller and status words are not enabled by default, and users can choose to enable them through the configuration software, as shown below:

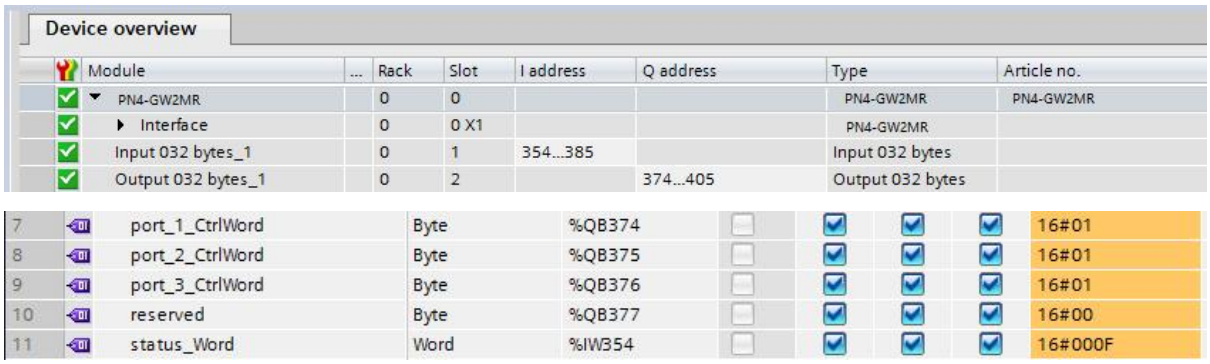




After the user enables the control word and status word, the user can control the port through the control word and check the status of each Modbus command through the status word in TIA.

For example, the gateway module PN4-GW2MR maps the output address: QB374-405 and the input address: IB354-385. in the configuration software, the PN4-GW2MR enables the port1, port2, and port3 control words: port_1_CtrlWord occupies QB374, port_2_CtrlWord occupies QB375, and port_3_CtrlWord occupies QB376; and port_3_CtrlWord occupies QB376; and port_3_CtrlWord occupies QB376. port_1_CtrlWord occupies QB374, port_2_CtrlWord occupies QB375, port_3_CtrlWord occupies QB376;

Enable the status words of commands 1-4 (one node is inserted into each of port1 and port2, two commands are inserted into each node, and the status word occupies one word), as follows:

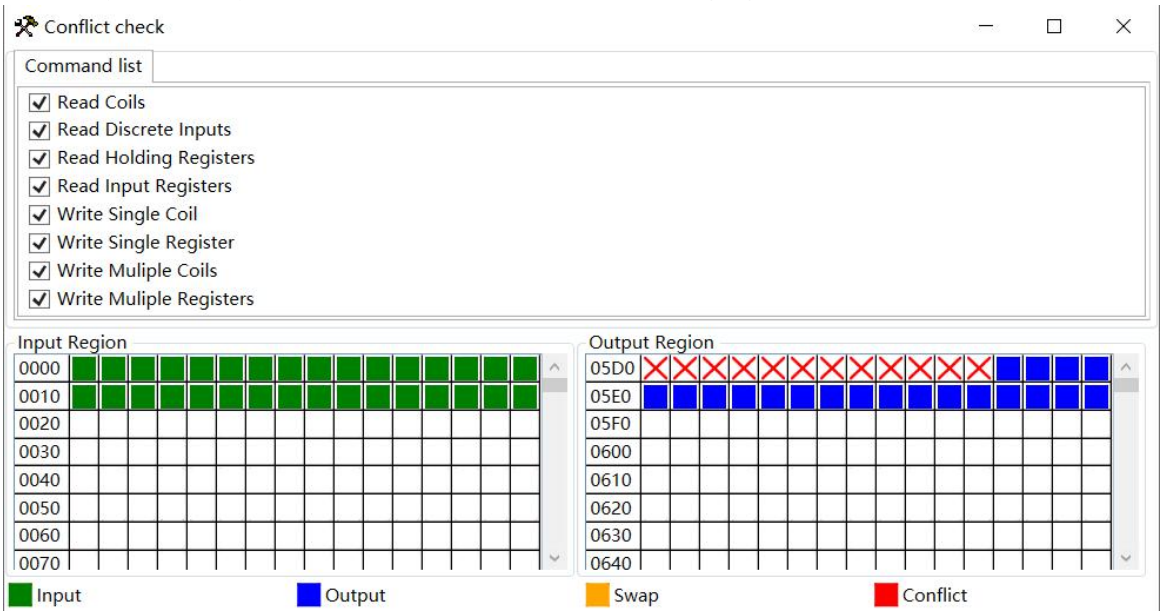


The control word is accessed by byte, when the control word of a port is 0, the port is working normally, when it is 1, the port stops working.

The status word is accessed by bit. When the status word of a command is 0, it means that the communication of the command is wrong, and when it is 1, the communication of the command is normal.

4.9 Conflict detection

Select "Check" In "Tools" To detect if there is any conflict in the memory mapped data, if there is conflict, you can adjust it in time, as shown in the following figure:



4.9.1 Command list operation

The command list lists all supported commands, the check box before each command is used to check each type of command, it is checked by default, if unchecked, this type of command will not participate in the memory mapping check. As shown in the following figure:

4.9.2 Memory-mapped operation

Memory mapping distinguishes between input and output areas, with each square representing a byte address.

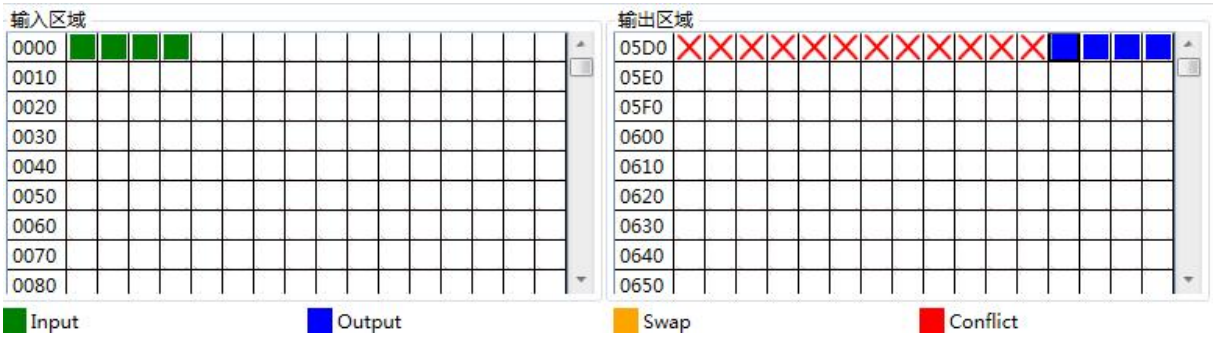
Input : The read command is displayed in the input mapping area, and is shown in green when there is no conflict;

Output : Blue color is displayed when the address mapping area is located in the output area and there is no conflict;

Swap : The write command displays yellow when the address mapping area is in the input area

and there is no conflict;

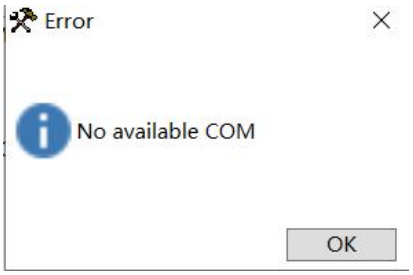
Conflict : In the input area or output area, different commands occupy the same byte address, the byte area is displayed in red.



4.10 Communication configuration

4.10.1 Download serial port settings

Select "Communication settings" In "Tools", the software will automatically search for available serial ports on the PC, if the PC does not search for available serial ports, a dialog box will pop up, as shown below:



If you select tcp interface, the communication settings dialog box will be displayed, click "Search" To search the ethernet information of the corresponding gateway, and then click "Select" Button.

4.10.2 Download configuration

Select download configuration to download the configured gateway information to the gateway device;

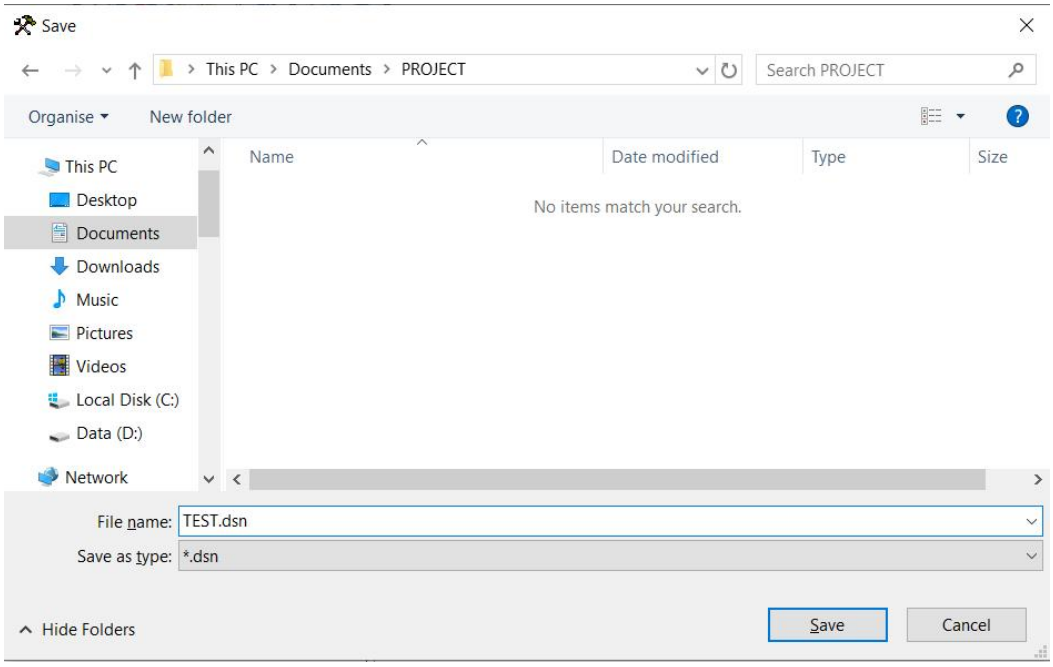
4.10.3 Upload configuration

Select upload configuration to upload the gateway configuration information from the device to the configuration software;

4.11 Loading and saving configurations

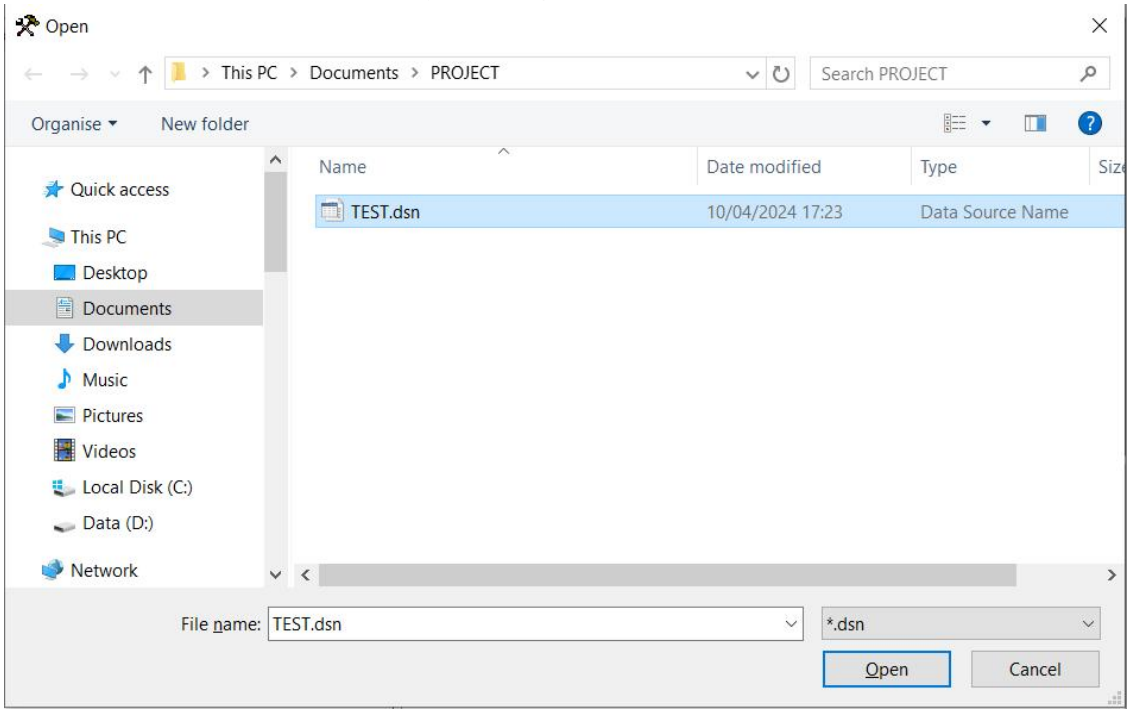
4.11.1 Save configuration project

Select "Save" In "File" To save the configured project as a .dsn file, as shown below:



4.11.2 Load configuration project

You can open a saved .dsn file by selecting "Open" In "File".



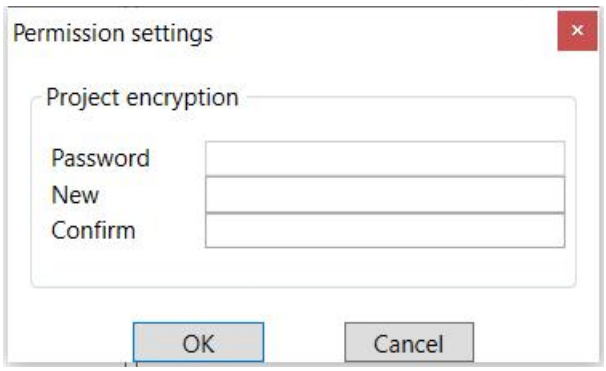
4.11.3 Engineering encryption

Set or change your password as follows:

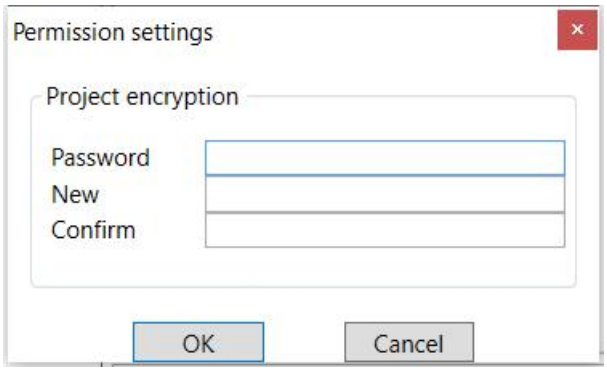
1. In the SCT interface, add "Permission settings" To "Tools" In the menu;

2. Click "Permission settings" To bring up the "Permission settings" Dialog box;

3. If encrypted for the first time the current password column is grayed out and not editable;



4. If it is not the first time to encrypt the password, you have to enter the current password for comparison first, and only when the comparison is successful and the two new passwords are the same, can you change the password successfully;



5. If you set the password successfully and then download the project, the project stored in the gateway is encrypted;

6. If you click the "Tools" Menu "Upload" Item, if you have not set the project password, it will be opened directly, if you have set the project password, first of all, the pop-up dialog box to enter the password, enter the password, you can open the project.

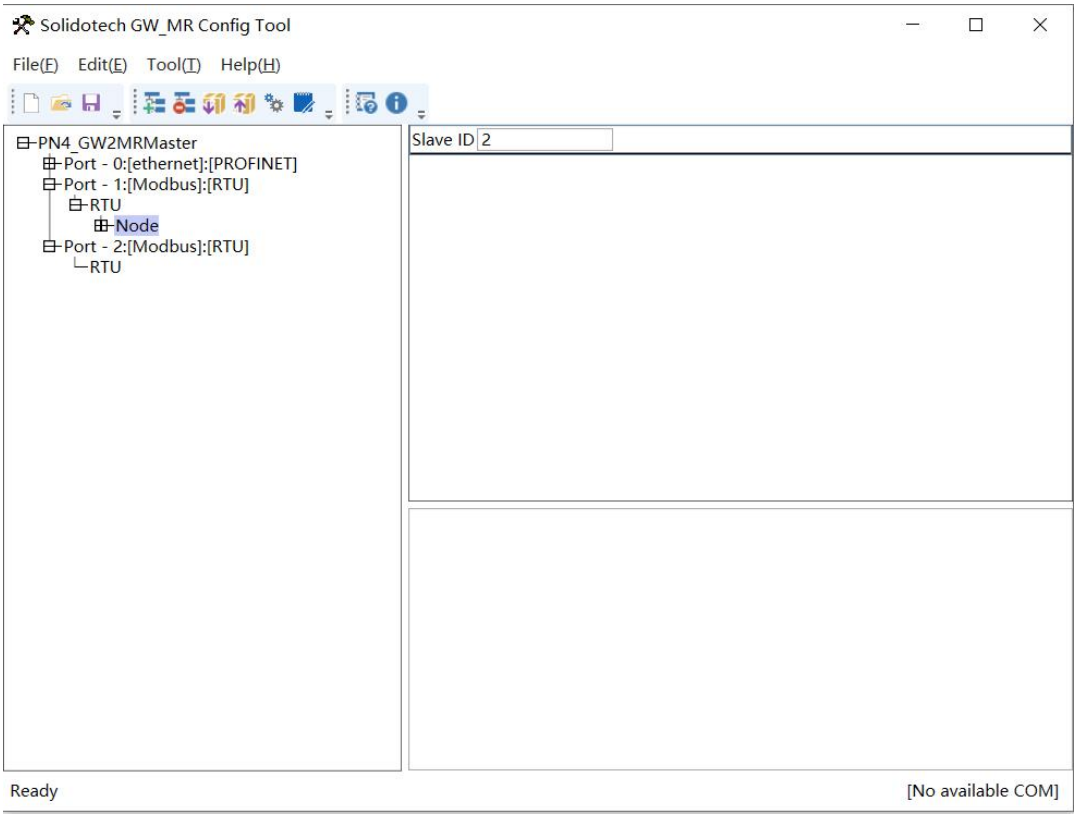
4.12 Example description

1. Parameterization

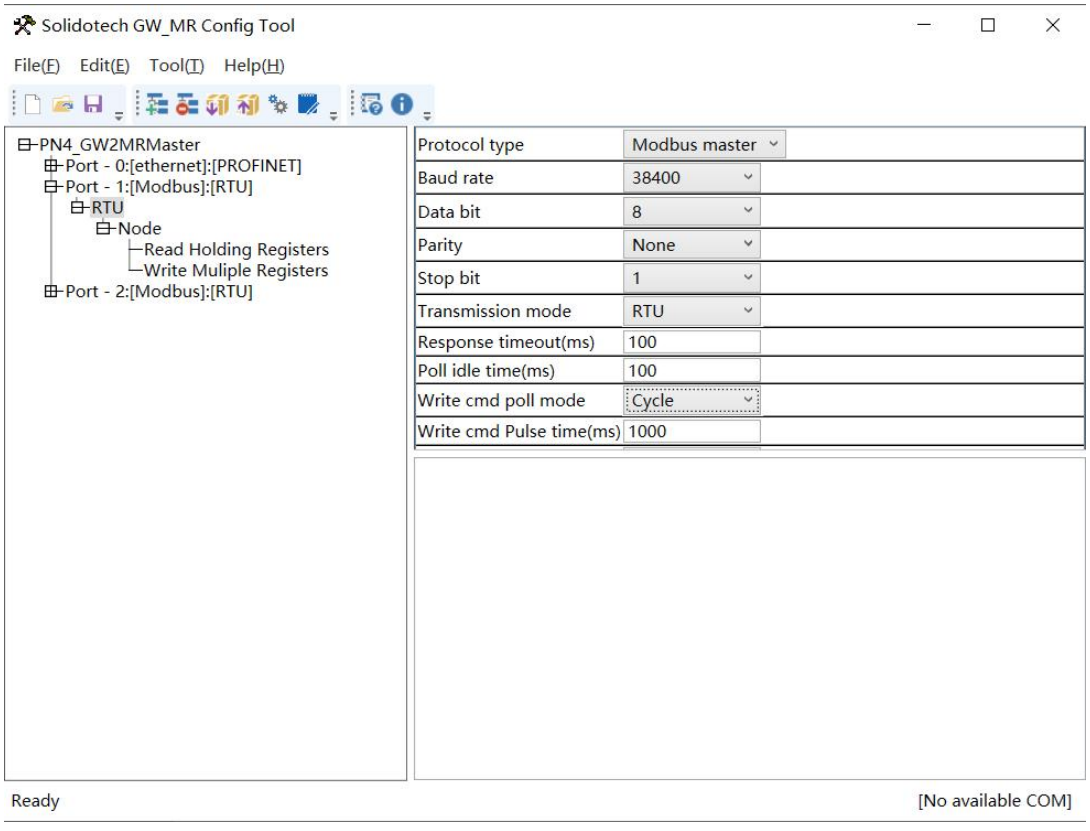
Slave device: Set slave address: 2, baud rate: 38400, data bits: 8, parity: None, stop bit: 1.

PN4-GW2MR gateway:

Slave address: 2, as follows



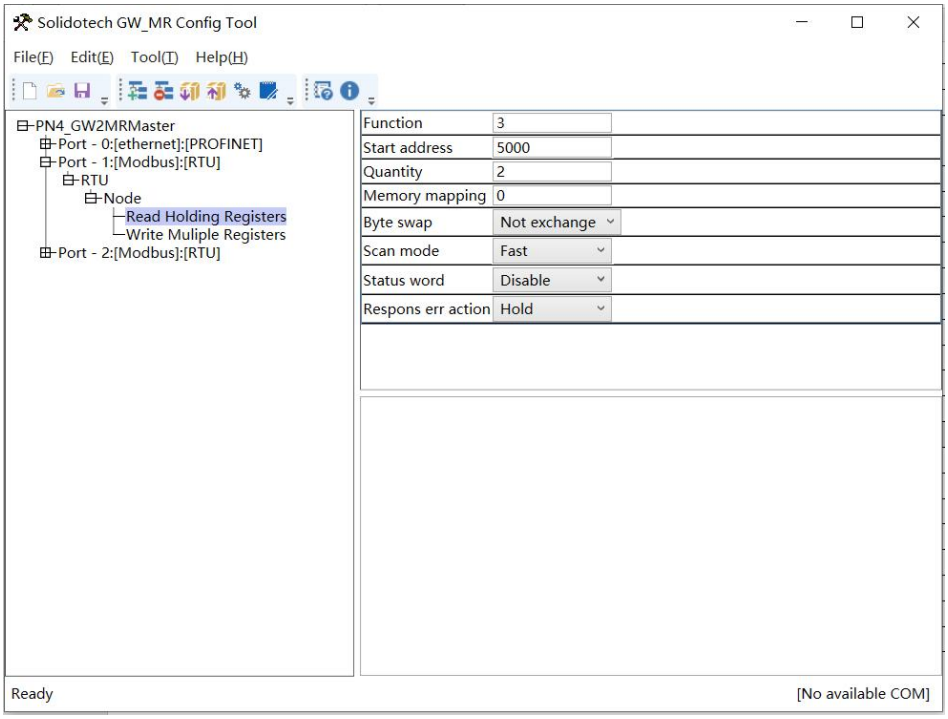
Serial port1 communication parameters:



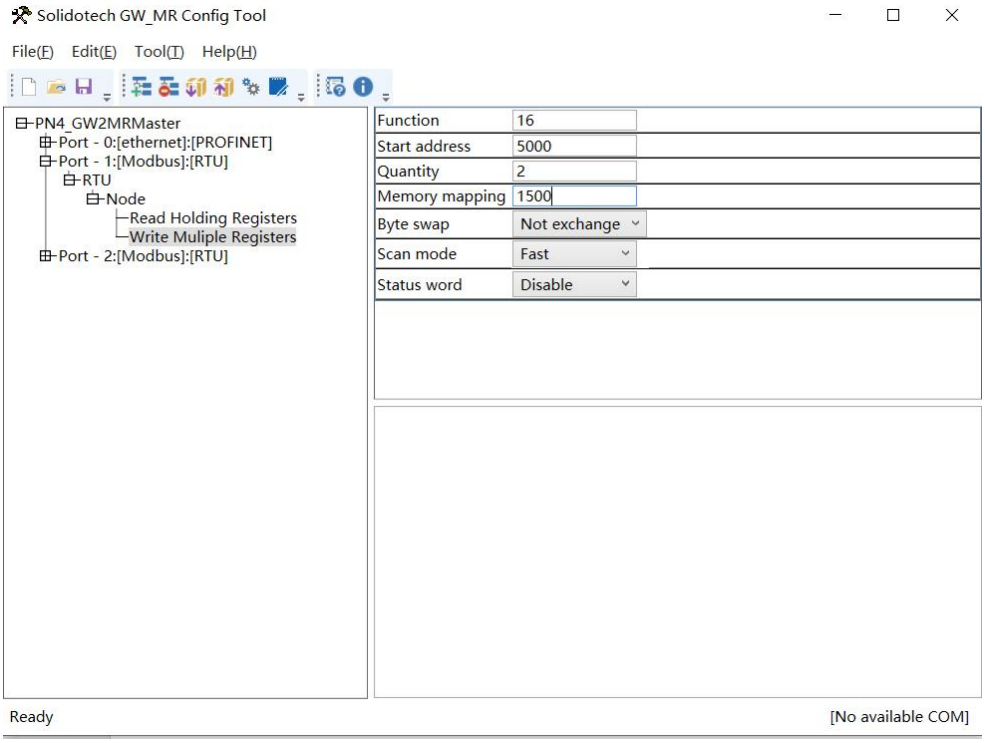
2. Data mapping

1) PN4-GW2MR gateway, insert the command as follows:

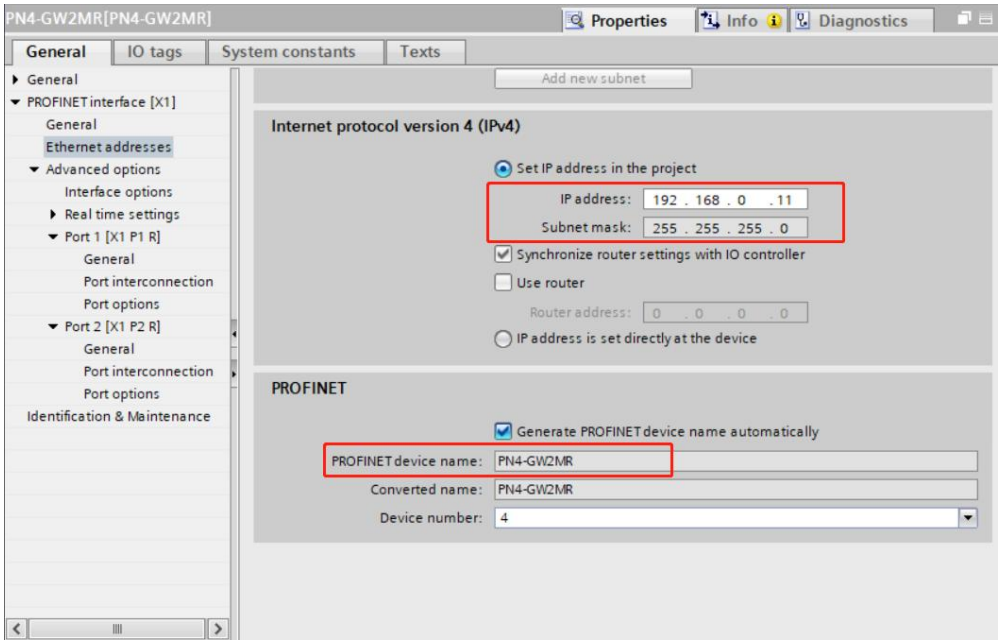
Read holding register starting address: 5000, length: 2, memory map starting address: 0;

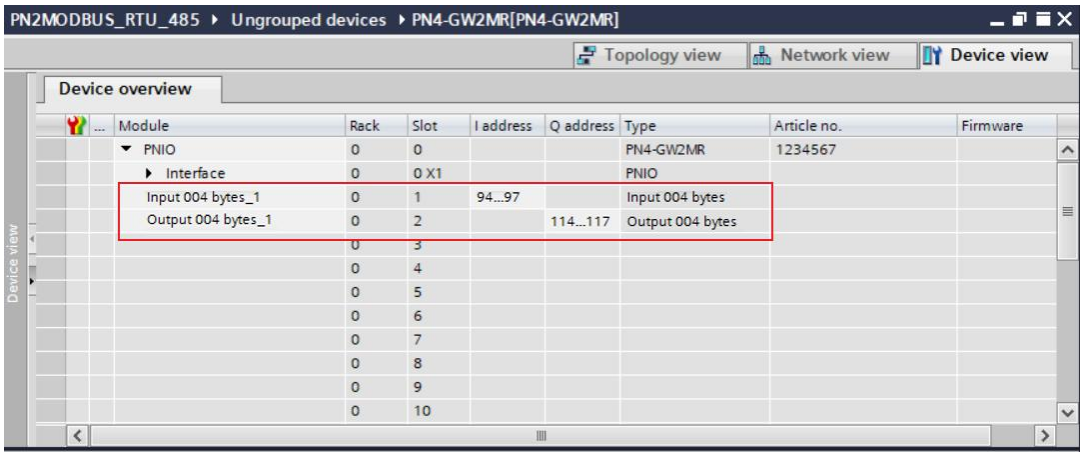


Write multiple registers starting address: 5002, length: 2, memory map starting address: 1500;



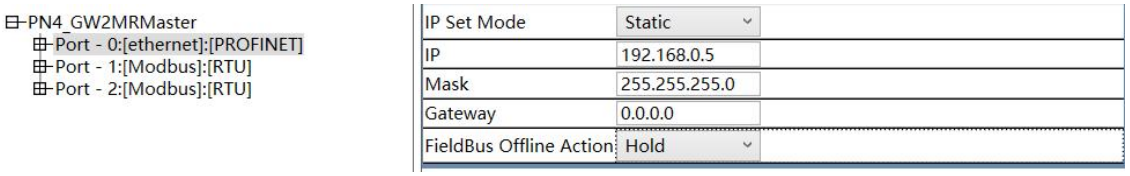
3. Set the ip address, device name, and submodule address of the gateway module in the portal as follows



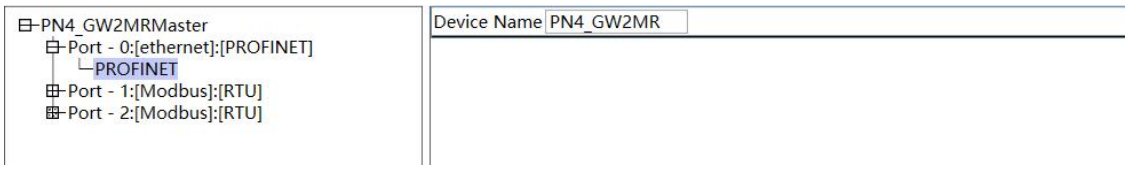


4. The PN4-GW2MR is configured in the configuration software with the same parameters as in the portal, including ip address and device name.

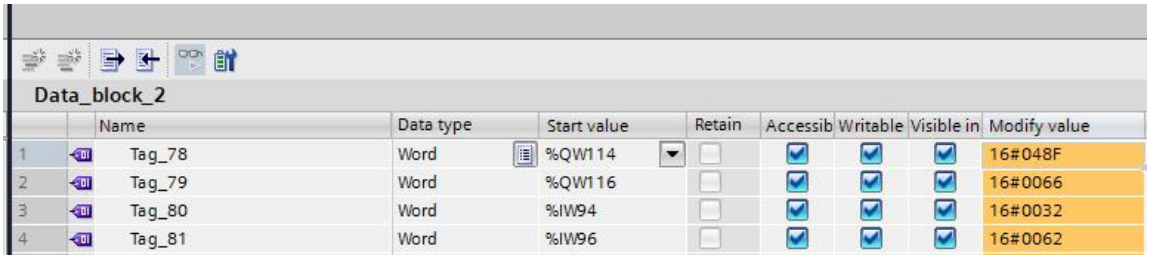
   Ip address:

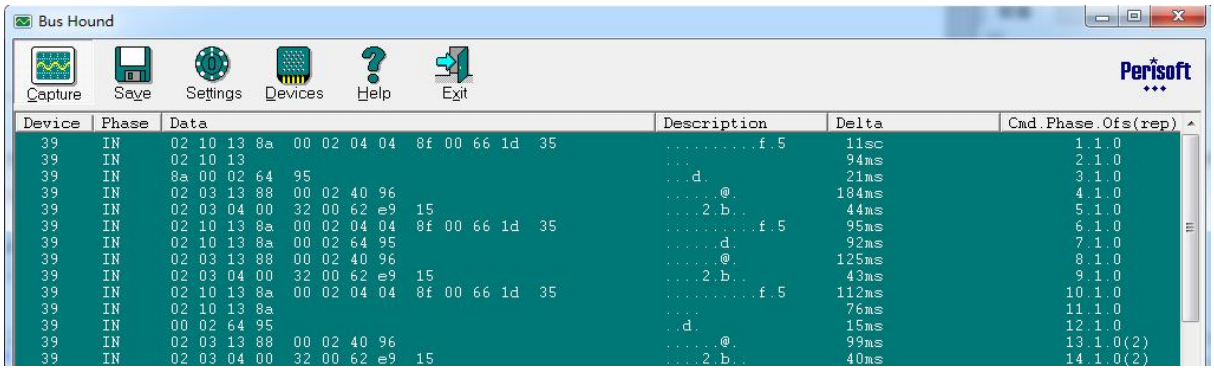


   Device name:

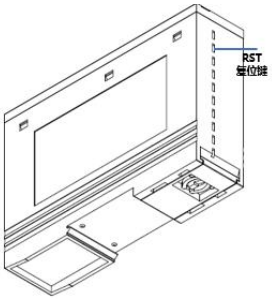


5. After downloading the configuration for each module, the monitoring data is as follows:





4.13 Clear gateway configuration



- **To clear the gateway configuration, you need to press and hold then power up 2s and release to clear the gateway configuration.**
- **Use an insulated tool with a diameter or thickness of less than 1.2mm for the reset tool.**

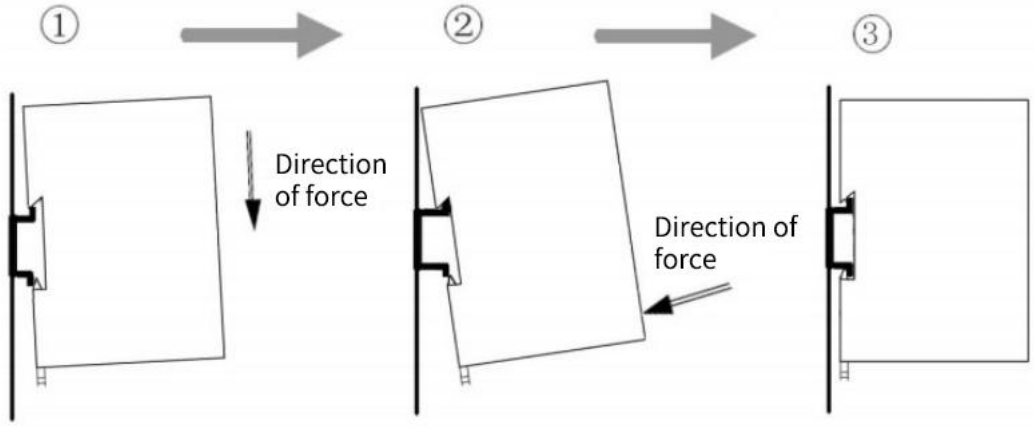
5 Mounting

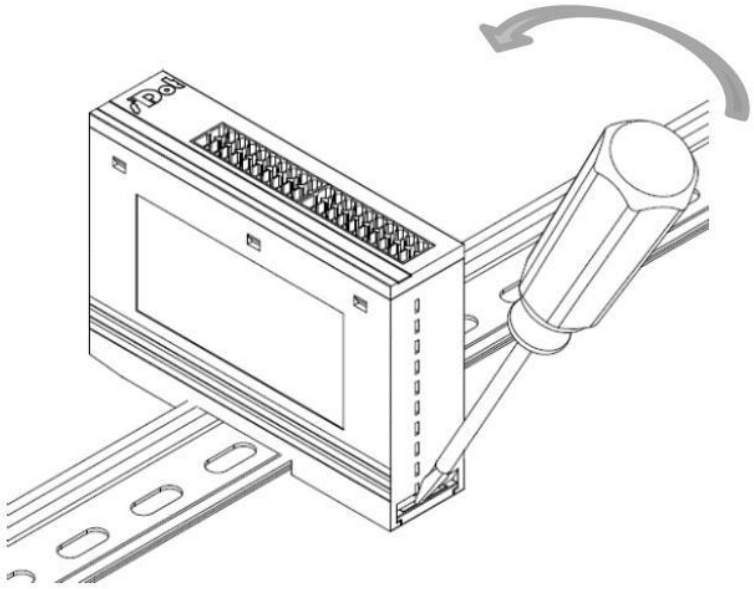
5.1 Mechanical dimensions

Size: 25mm (w) x 102mm (h) x 72mm (d)

5.2 Installation

35mm din rail mounting





6 Operation and maintenance and precautions

- Modules need to be protected from heavy pressure to prevent damage;
- The module needs to be protected from heavy impact to prevent damage to the device;
- The supply voltage is controlled within the requirements of the manual to prevent internal devices from burning out;
- The module prevents water ingress and damage to internal devices;
- Please check the wiring before powering up to prevent damage to the module by connecting it incorrectly.