

Universal Serial to PROFINET Gateway

GT200-PN-RS485

User Manual

V 6.2

Rev A



SST Automation

Email: support@sstautomation.com

www.SSTAutomation.com



Important Information

Disclaimer

No part of this document may be reproduced without the express written permission of SST Automation. SST Automation reserves the right to make changes to the product described in this manual at any time without notice.

The examples and diagrams in this manual are provided solely for illustrative purposes and are not intended as a substitute for determining the suitability of the product for specific user applications. Users are responsible for ensuring that all operations, evaluations, and testing comply with applicable laws, regulations, codes, standards, and safety requirements. SST Automation shall not be responsible or liable for any misuse of the information contained herein.

Copyright

Copyright © 2026 by SST Automation Co., Ltd. All rights reserved.

Trademark

SSTCOMM™ and the SSTCOMM logo are trademarks of SST Automation Co., Ltd., doing business as SST Automation. All other trademarks are the property of their respective owners.

Technical Support

Website: www.sstautomation.com

E-mail: support@sstautomation.com

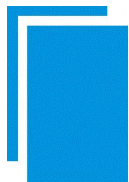
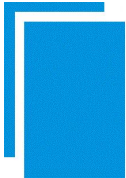


Table of Contents

1 Product Overview	3
1.1 Product Function	3
1.2 Product Features	3
1.3 Technical Specification	3
1.4 Related Products	5
1.5 Revision History	5
2 Hardware Descriptions	6
2.1 Product Appearance	6
2.2 Indicators	6
2.3 Interface	7
2.3.1 Power Interface	7
2.3.2 Serial RS485	7
2.3.3 Pull-Up and Pull-Down Resistor Switch	8
2.3.4 Standard RS485 characteristics	8
2.3.5 Ethernet Interface	8
2.3.6 Button Function	8
3 Installation	10
3.1 Machine Dimension	10
3.2 Installation Method	10
4 Quick Start Guide	12
5 Software Instructions	13
5.1 Software Interface Description	13
5.2 Device View	14
5.2.1 Ethernet Configuration View	15
5.2.2 Subnet Configuration View - Modbus Master	15
5.2.3 Subnet Configuration User Config Protocol	22
5.3 Tools	23
5.3.1 Upload and Download	23
5.3.2 Conflict Detection	26
5.3.3 Export EXCEL	28
5.3.4 Assign Ethernet Parameters	28
5.3.5 Debug	34
5.3.6 Automap	36
6 Work Principle	37
6.1 Data Exchange	37
6.1.1 PROFINET Device	37
6.1.2 Modbus Master	37
6.1.3 User Config	37
6.2 Command execution instructions	37
6.2.1 IO Status Word	37
6.2.2 Byte-swap	38
6.2.3 Command Output Mode	41
6.2.4 Response Timeout Handling for Master Protocol	42
6.3 User Config	43
6.3.1 Definition	43

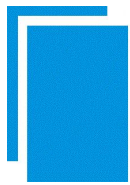


GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual

6.3.2 Communication Message Format	44
7 Troubleshooting	45
7.1 Gateway Cannot Be Discovered on Network	45
7.2 PROFINET Connection Issues	45
7.3 Serial Communication Issues	45
7.4 IP Address Conflict Recovery	46
8 Frequently Asked Questions	47



1 Product Overview

1.1 Product Function

The GT200-PN-RS485 gateway provides a seamless connection between PROFINET networks and Modbus devices. It enables RS485-based devices to communicate with PROFINET controllers, supporting up to four Modbus RS485 slave connections.

1.2 Product Features

1. **Ring Network Redundancy:** Supports PROFINET MRP media redundancy, enhancing network reliability and gateway stability.
2. **High-Capacity Data Processing:** The PROFINET interface provides strong data processing capability, supporting up to 1440 bytes of input and output to meet large data transmission requirements.
3. **Flexible Serial Port Configuration:** RS-485 interface termination resistors can be configured via DIP switch.
4. **Professional Configuration Software:** Equipped with SST-TS-CFG configuration software, which supports bidirectional data monitoring, command status words, and control words for efficient control...
5. **Convenient Device Debugging and Maintenance:** Features a one-click restore function, simplifying device maintenance and debugging.
6. **Isolated Power Supply:** Uses an isolated power supply to enhance anti-interference capability.

1.3 Technical Specification

- [1] At PROFINET side GT200-PN-RS485 is PROFINET Device and acts as Modbus Master at serial side.
- [2] Supports standard PROFINET RT and IRT protocol.
- [3] Supports MRP(Media Redundancy Protocol).
- [4] PROFINET: Supports up to 32 slots, input/output data buffer is up to 1440 bytes (the usable length is limited by the specific PLC and the PDU size of the communication module), the length of input/output bytes can be set by configuration software of PROFINET Controller such as TIA Portal or STEP 7.
- [5] The supported module types are as follows:
 - **Input 001 byte**
 - **Input 002 bytes**
 - **Input 004 bytes**
 - **Input 008 bytes**
 - **Input 016 bytes**

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual

- **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 008 bytes**
- **Input / Output 016 bytes**
- **Input / Output 032 bytes**
- **Input / Output 064 bytes**
- **Input / Output 128 bytes**
- **Input / Output 256 bytes**
- **Input / Output 512 bytes**

[6] With 1 serial port: It includes one RS485 serial port, supporting up to four RS485 slave connections. A 120-ohm terminal resistor is built-in, which is configured via the terminal resistor switch.

[7] Built-in pull-up and pull-down resistors improve compatibility with a wider range of devices.

[8] The protocol type serial ports support: Modbus Master, User Config.

[9] Serial port parameters:

- ◆ Operation mode: Half-duplex.
- ◆ Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps optional.
- ◆ Data bits: 7, 8 optional.

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual

- ◆ Parity: None, Odd, Even, Mark and Space optional.
- ◆ Stop bits: 1,2 optional.

[10] Modbus Master:

- ◆ Function code: 01H, 02H, 03H, 04H, 05H, 06H, 0FH and 10H.
- ◆ Format: RTU and ASCII.
- ◆ Function: Cycle output, Forbidden output, Change of value output of write command and Output once
- ◆ Each Master supports up to 4 nodes, and can configure up to 100 Modbus commands.
- ◆ Supports IO state bytes
- ◆ Supports input data timeout clear/hold setting
- ◆ Supports automatic demotion, configuration of automatic demotion and the recovery time is flexible and easy to configure.
- ◆ Supports fast scan
- ◆ Supports Two-Byte Swap, Four-Byte Swap, and Four-Byte Big-Endian/Little-Endian Swap.
- ◆ Supports control word functions, with options to Disable, All Commands, Only Write Commands.

[11] User config

- ◆ Control mode:time interval between characters,frame length,delimiter
- ◆ Support Cycle output and Change of value output of write command
- ◆ Support automatic addition of CRC check, command serial counts and display of data length.

[12] Power: 24VDC (9~30VDC). 250mA (24VDC).

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

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

[15] Dimensions (W*H*D): 1.0 in*3.9 in*3.5 in (25mm*100mm*90mm).

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

[17] Protection level: IP20.

1.4 Related Products

The related products include: GT200-PN-RS, GT200-PN-3RS.

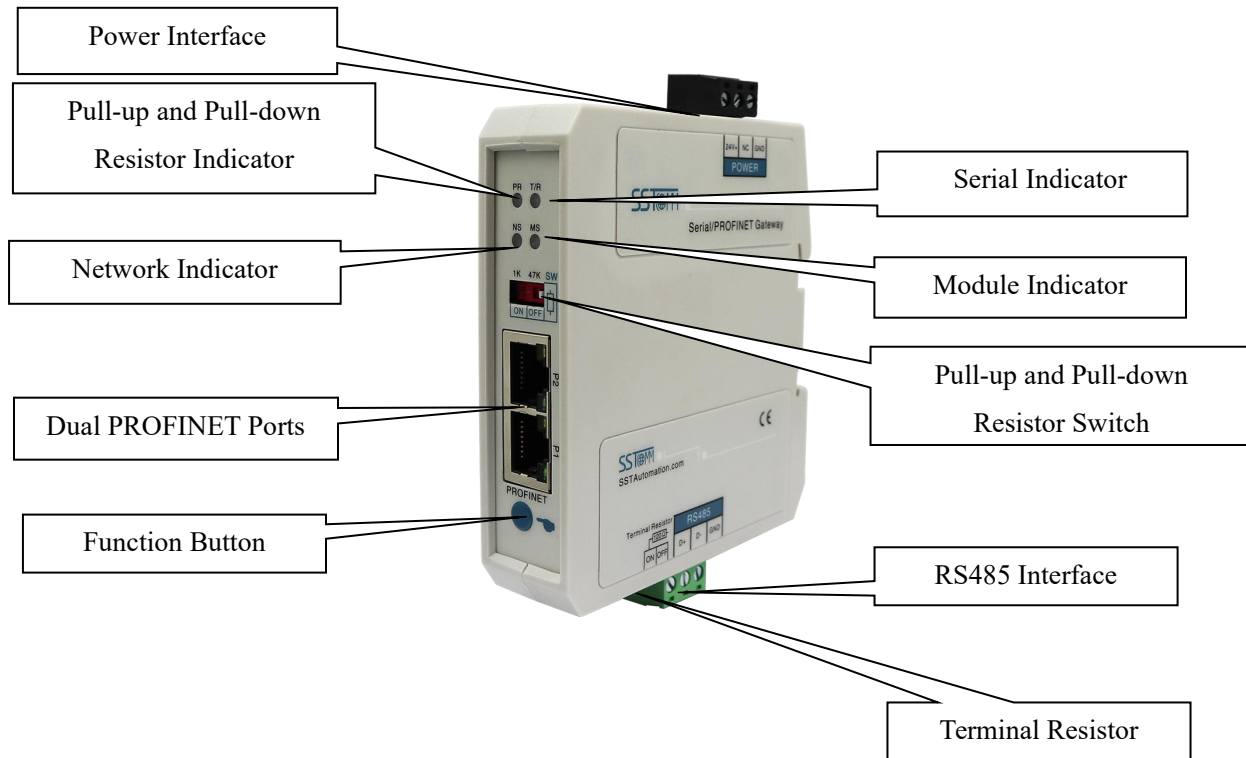
To get more information about related products, please visit SSTCOMM website: www.sstautomation.com.

1.5 Revision History

Revision	Date	Chapter	Description
V6.2	2/1/2025	ALL	New release
V6.2 Rev A	5/15/2025	PART	Terminology standardization, added Troubleshooting, and FAQ

2 Hardware Descriptions

2.1 Product Appearance



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

2.2 Indicators

Indicators	State	Description
T/R Indicator	Green Blinking	Serial port data is being sent/received
	OFF	No data is being sent/received
PR Indicator	Green Blinking	pull-up and pull-down resistor switch to 1 kΩ
	OFF	pull-up and pull-down resistor switch to 47 kΩ
MS		See table below
NS		See table below

Module indicator and network indicator:

GT200-PN-RS485

Universal Serial/PROFINET Gateway

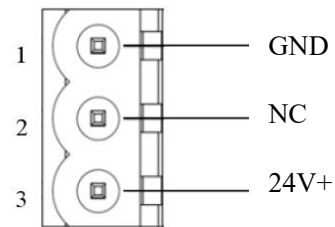
User Manual

Module indicator state MS	Network indicator state NS	Description
OFF	Red blinking	Start-up state, waiting to initialize
Green on	Red blinking	Initialize complete, no connection with PLC
Green on	Red on	Network cable unplugged
Green on	Green on	PLC connected (normal operation)
Other	Other	Undefined state

2.3 Interface

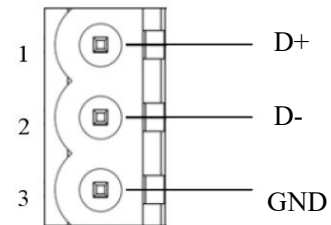
2.3.1 Power Interface

Pin	Function
1	Power GND
2	NC (Not Connected)
3	24V+, DC



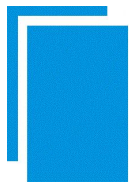
2.3.2 Serial RS485

Pin	Function
1	D+, RS485 Data Positive
2	D-, RS485 Data Negative
3	GND



The basic characteristics of RS485 transmission technology:

- Network topology: Linear bus, there are active bus terminal resistors at both sides. If the communication quality is unstable, users can turn on the terminal resistor (120Ω, 1/2W) switch on the gateway.
- Media: Shielded twisted-pair cable and also can cancel the shielding, depending on environmental conditions (EMC).
- Node count:
When the serial port is configured as a Modbus master, it supports up to 4 slave nodes.



2.3.3 Pull-Up and Pull-Down Resistor Switch

Function	Description
OFF	Select the 47 k Ω resistor
ON	Select the 1 k Ω resistor

2.3.4 Standard RS485 characteristics

Characteristics of Transmission:

1. Network topology: Linear bus with active termination resistors at both ends.
2. Transmission rate: 300 bit/s~115.2Kbit/s.
3. Medium: Shielded twisted pair cable, also can be unshielded twisted pair cable, up to the environment condition of Electromagnetic Compatibility(EMC).
4. Node number: Supports up to 4 nodes.
5. Port connection: 3-pin pluggable terminal, a 120 Ω terminal resistor nearby the port can be enable or disable.

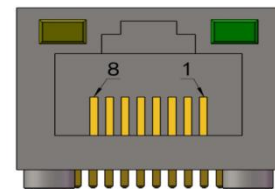
Installation requirement of transmission equipment:

1. All devices are correctly connected to the RS485 bus.
2. Each end of the bus has a termination resistor (120 Ω , 1/2W) to ensure reliable network operation.
3. The serial port uses a 3-pin pluggable terminal. Users can connect the cable according to the faceplate labeling.

2.3.5 Ethernet Interface

The Ethernet interface uses RJ45 interface, follows the IEEE802.3u 100BASE-T standard, 10/100M adaptive. its pin (standard Ethernet signal) is defined as below:

Pin	Signal Description
1	TXD+, Transmit Data+
2	TXD-, Transmit Data-
3	RXD+, Receive Data+
6	RXD-, Receive Data-
4,5,7,8	reserved



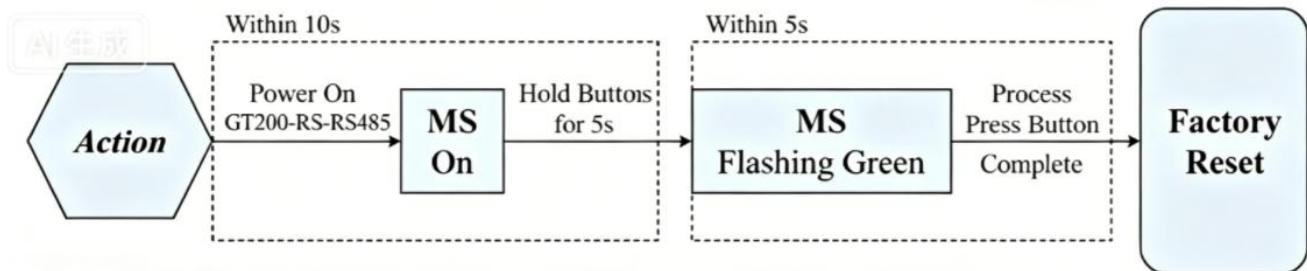
2.3.6 Button Function

This button is used to restore default settings and device firmware update.

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

Factory Reset

Operating Procedure: Within 10 seconds after the gateway is powered on and the MS indicator illuminates, press and hold the button for more than 5 seconds until the MS indicator blinks green. Press the button again within 5 seconds to restore the gateway to its default configuration.. After the default configuration is restored, the gateway's IP address will be reset to 0.0.0.0, and a new IP address will need to be assigned.

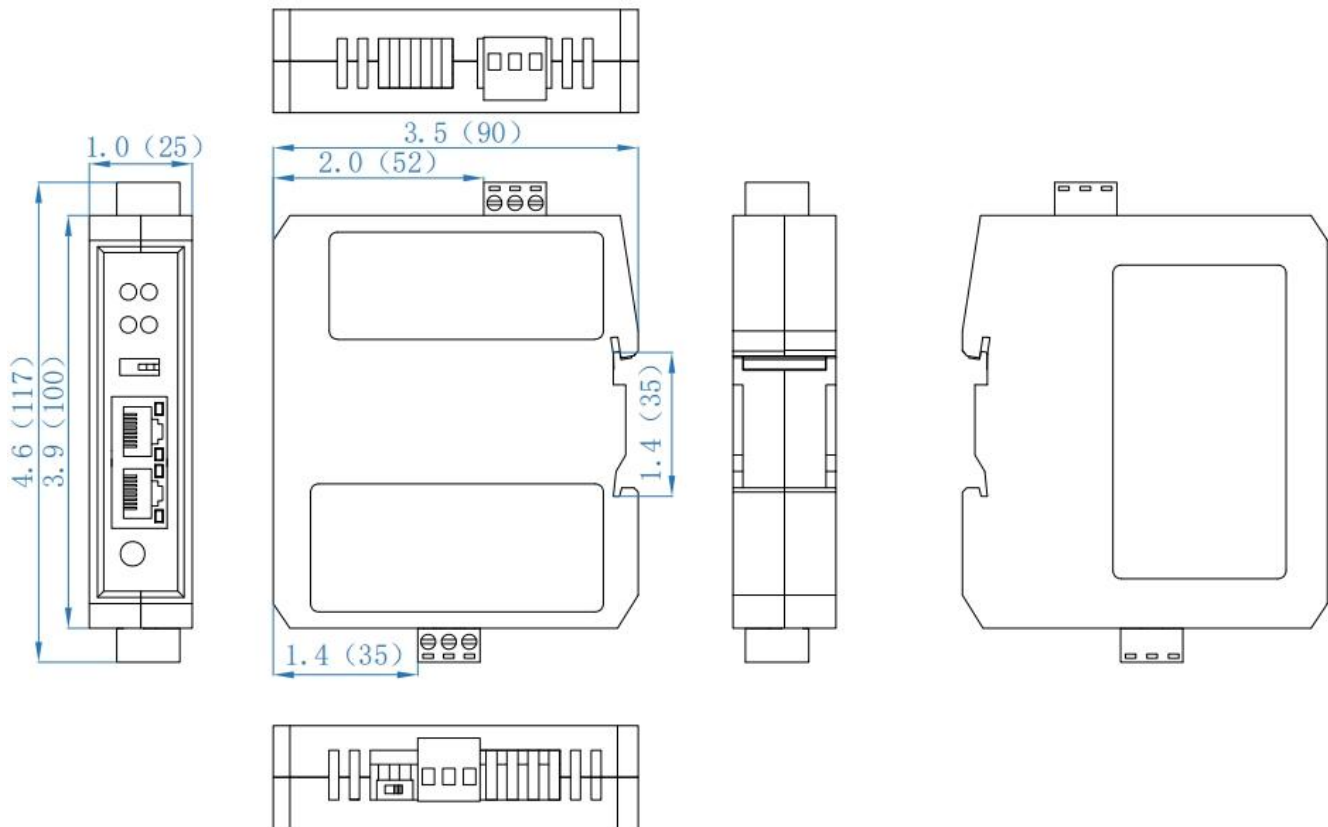


3 Installation

3.1 Machine Dimension

Size (width * height * depth):

1.0in * 3.9in * 3.5in (25mm * 100mm * 90mm)

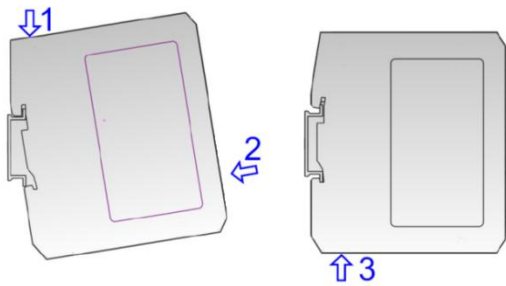


3.2 Installation Method

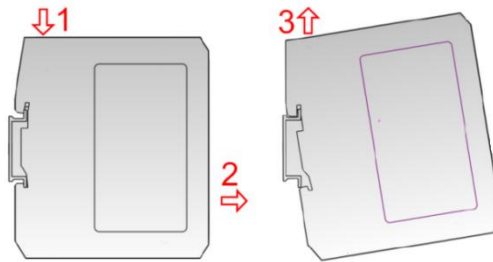
Using 1.4 in (35mm) DIN RAIL.

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

Install



Uninstall



4 Quick Start Guide

Basic steps when configuring GT200-PN-RS485 :

1. Wiring: See also [Chapter 2.3 Interface](#).
 - (1) Connect the network port of the gateway to the PC with a network cable for downloading the configuration. Another network port can be connected to PROFINET controller equipment such as PLC for data communication.
 - (2) Connect the serial port of the gateway to the serial device for communication with the serial port device.
 - (3) Connect the gateway power supply and power on.
2. Download SST-TS-CFG software from www.sstautomation.com/Download1/ and install it.
3. Download the latest device description file for GT200-PN-RS485 from www.sstautomation.com/Download1/.
4. Build your configuration using SST-TS-CFG and download it to the gateway. For more details, see [Chapter 5](#).
When the download is complete, the software will prompt "whether to restart the gateway". Click "Yes".
5. Install the appropriate device description file in the PROFINET configuration tool.
6. Configure the PROFINET network as required. Make sure that the configuration matches the configuration present in the GT200-PN-RS485.

When GT200-PN-RS485 establishes a connection with the PROFINET controller, the gateway will display: NS green on, MS green on.

Please note the following two points:

The gateway configuration in SST-TS-CFG must be consistent with the settings of configuration software of PROFINET Master station.

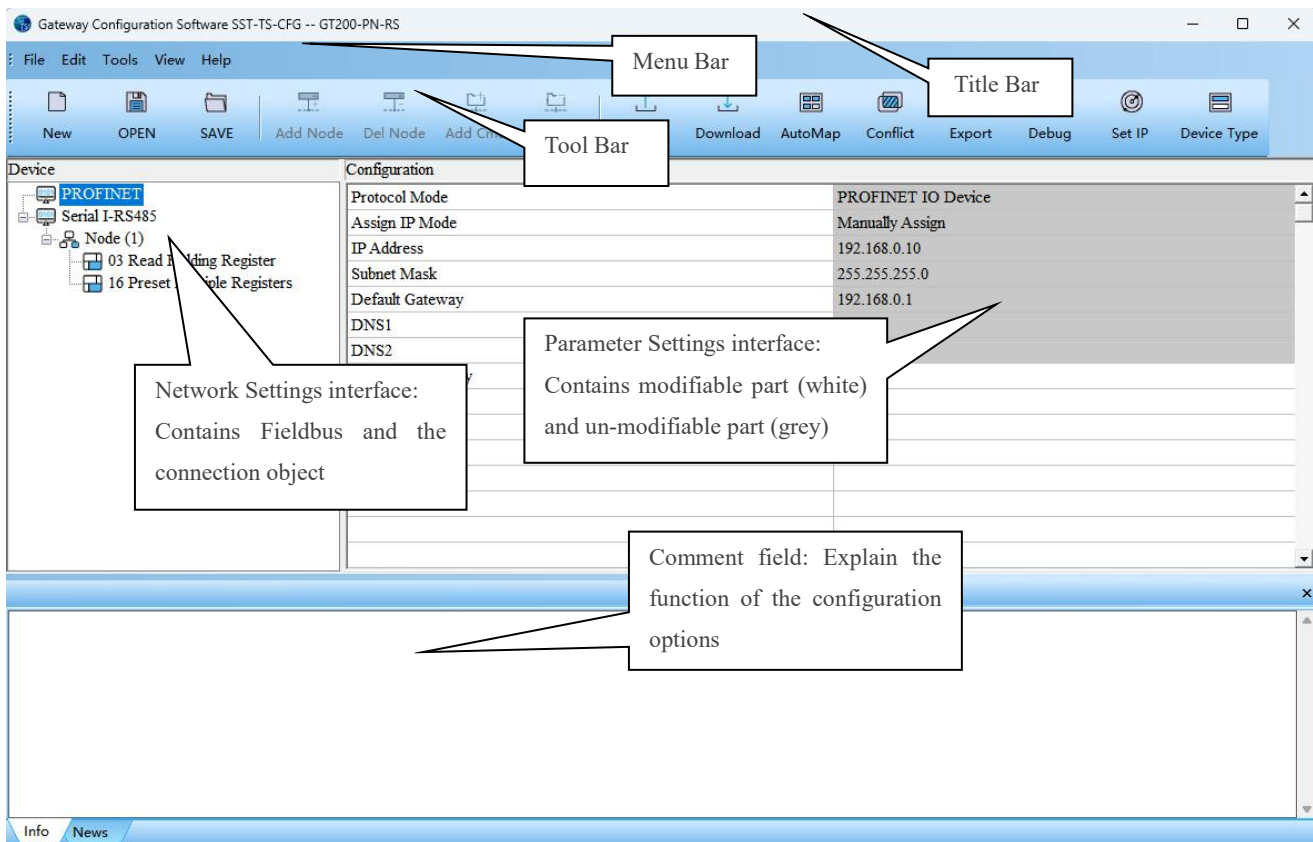
- 1) Device IP Address. Also see [Chapter 5.3.4](#).
- 2) Device Name. Also see [Chapter 5.3.4](#).

For TIA Portal modeling assistance, please refer to [the Siemens TIA Portal documentation](#).

5 Software Instructions

5.1 Software Interface Description

SST-TS-CFG is the configuration software based on Windows, and used to configure GT200-PN-RS485 through network interface. Double click software icon ,select GT200-PN-RS485, enter the main interface of software:



Tool bar interface is shown as below:



New: Create a new configuration project.



Save: Save the configuration project.



Open: Open the configuration project.

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual



Add Node: Add a Modbus slave node.



Delete Node: Delete a Modbus slave node.



Add Command: Add a Modbus command.



Delete Command: Delete a Modbus command.



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



Download: Download the configuration file to the gateway.



AutoMap: Used to automatically calculate the mapped memory address without conflict by each command.



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



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



Debug: Monitor or modify the gateway memory buffer data.



Set IP: Used to assign the IP, subnet and gateway information on the LAN.



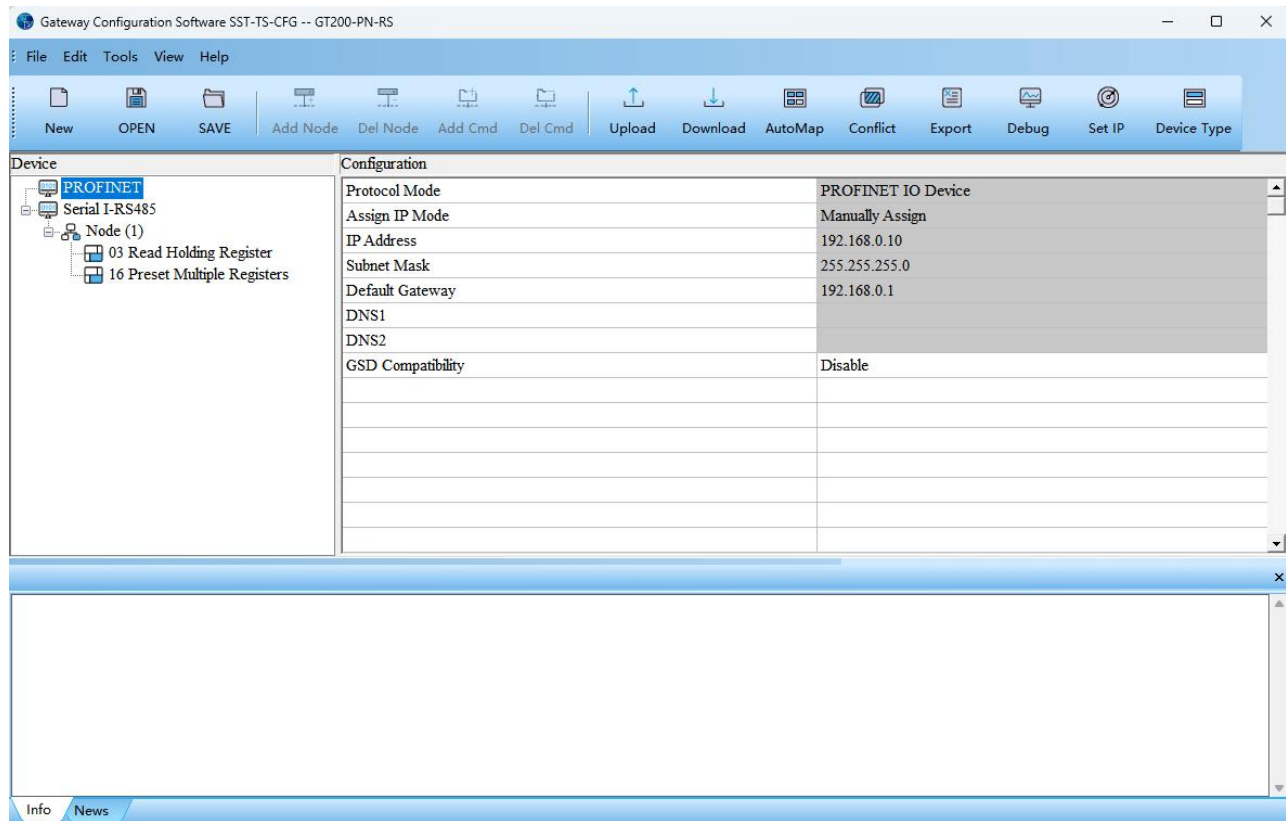
Device Type: Select another gateway configuration

5.2 Device View

Ethernet is used to configure PROFINET network parameters. Subnet is used to configure serial port parameters.

5.2.1 Ethernet Configuration View

The Ethernet configuration interface is shown as below:



IP Address: IP address of GT200-PN-RS485.

Subnet Mask: Subnet mask of GT200-PN-RS485.

Default Gateway: Gateway address GT200-PN-RS485 is located in LAN.

GSD Compatible: Default:Disable. If Enabled, the new version GT200-PN-RS485 can use GSDML files from V4.X.

5.2.2 Subnet Configuration View - Modbus Master

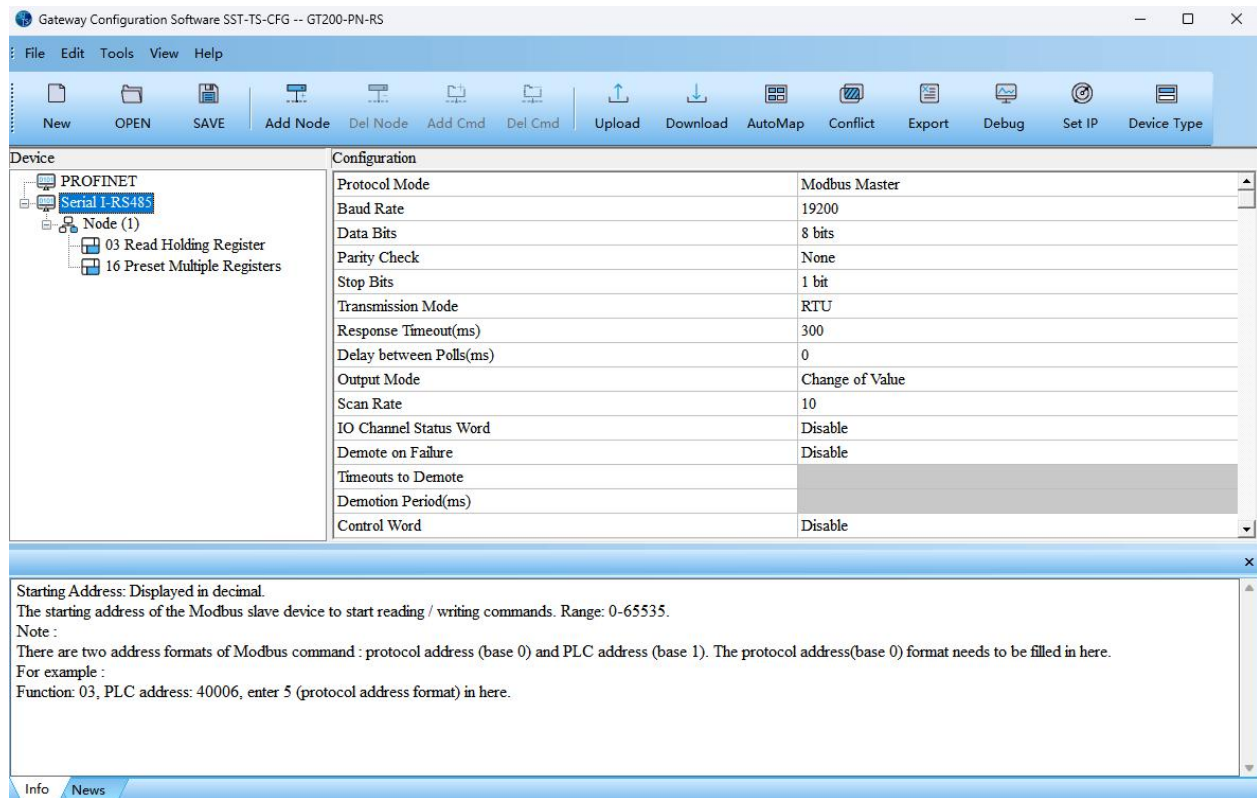
1. Modbus Master configuration view

The “Modbus Master” configuration interface of “Protocols Select” is shown as below:

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual



Baud Rate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps optional.

Data Bits: 7,8.

Parity Check: None, Odd, Even, Mark and Space optional.

Stop Bits: 1, 2.

Transmission Mode: RTU, ASCII.

Response Timeout(ms): After the Modbus Master sends request, it waits the Modbus slave's response time. Range: 300 ~ 60000ms.

Delay between Polls(ms): Delay between a response has been received and sending next request, the range is 0~ 2500ms.

Output Mode: Modbus write command (Output Mode) supports four output modes: Cycle, Forbidden, Change of Value and Output Once.

- Cycle: The write command will be sent periodically. When the Modbus command scan mode is set to slow scan, it will be sent cyclically according to the scan rate.
- Forbidden: The write command won't be sent.
- Change of Value: When the output data change, the write command will be sent.
- Output Once:

1. **Control Word Off + Output Once.** When the output data corresponding to the write command changes, it will only be output once, and will not be output afterwards (until the power restarts).
2. **Control Word is On + Output once,** write command control bit 1 to send the corresponding write command, set to 0 and then set to 1 to resend the corresponding write command (do not detect whether the output data corresponding to the write command has changed).

Scan Rate: Scan Rate is the ratio of fast scan cycle to slow scan cycle. If this parameter value is set to 10 then every fast scan command will be sent 10 times and those slow scan commands will be sent once.

IO Channel Status Word: In Modbus Master , each command uses a bit to indicate the execution status of the command. If the execution is successful, the corresponding bit is set to 1, otherwise it is set to 0.

Demote on Failure: Supports Disable and Enable. Default value is Disable.

When Demote on Failure is Enable, after N times of command response failures (errors), if the command is a fast scan, it will be demoted to a slow scan. This parameter is valid for Modbus reading command and cycle writing command.

Timeouts to Demote: After N times successive incorrect Response the command will be demoted a slow scan command. The range of the parameter value is 1 to 255. Default value is 3.

Demotion Period(ms): The Demotion Period determines how long a demoted command remains in a demotion state. If the demotion time is up, the commands in the demotion state will automatically revert to the original non-demote state. Range: 100-3600000ms. Default value is 10000ms.

Control Word: Generate a control word at the front of the output data buffer, one command corresponds to one bit, and the command takes effect by setting the corresponding position; there are disable, all commands, and only write commands optional.

Output Mode + Control Word:

- **Change of Value + All Commands** = Each command corresponds to 1 bit, according to the control bit is set to 1 and 0 to control the sending of the corresponding command. The function of the status word is equivalent to a switch. Setting the address to 1 means that the corresponding command allows communication, and 0 means that communication is forbidden.
- **Change of Value + Only Write Command** = Same as above, read command communicates normally, only when the write command control bit is 1, the write command can output data change, the control bit is 0, the write command cannot be output.
- **Cycle+ All Commands** = Each command corresponds to 1 bit, according to setting the control bit to 1 or 0, to control the sending of the corresponding command. The function of the status word is equivalent to a switch. Setting the address to 1 means that the corresponding command allows communication, and 0 means communication is forbidden.
- **Cycle + Only Write Command** = Same as above, read command communicates normally, only for write

GT200-PN-RS485 Universal Serial/PROFINET Gateway

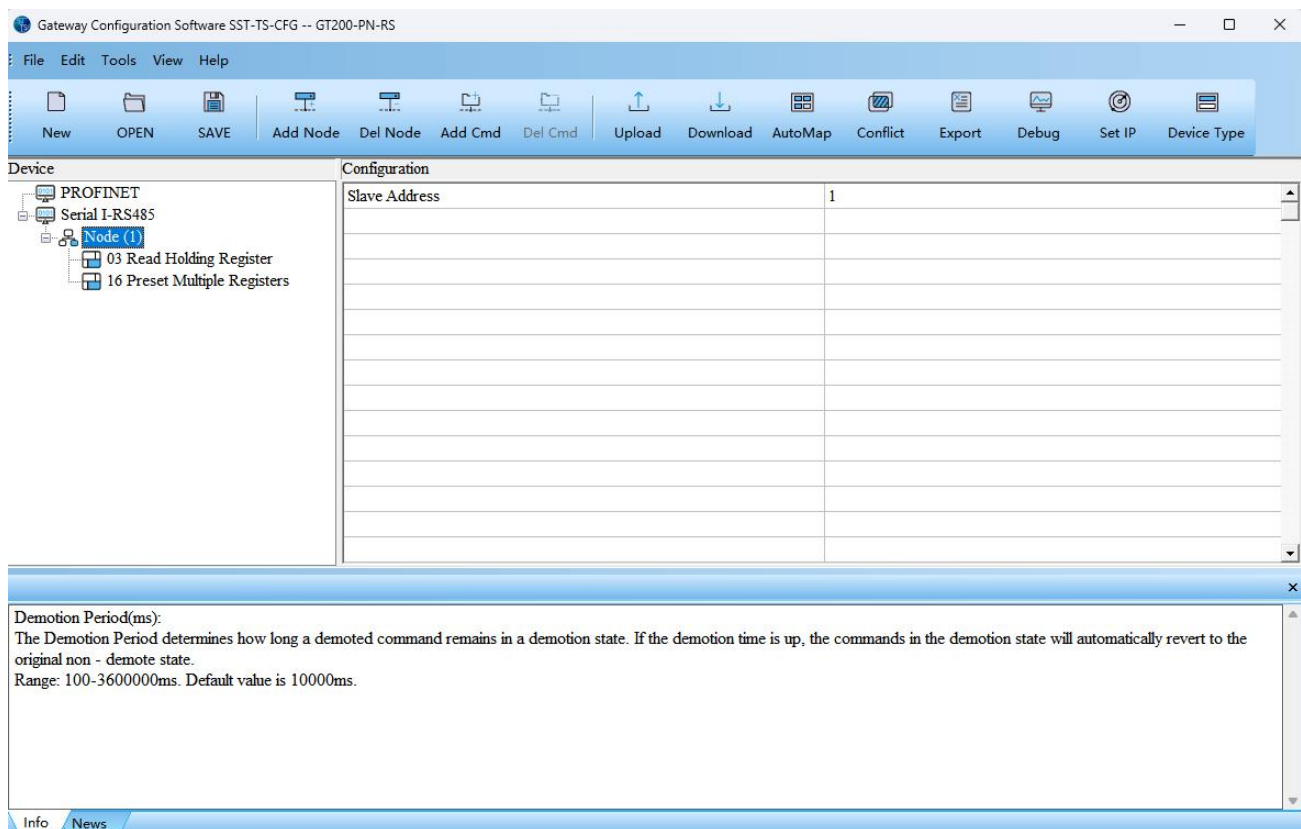
User Manual

command, when the corresponding control bit is 1, write command can be output continuously.

- Forbidden+ All Commands = The function of the status word is useless, the write command is forbidden and the communication of the reading command is normal.
- Forbidden + Only Write Command = same as above.
- Output once + All Commands = When it is enable, the value of the control word must be set to 0 first, and then set to 1, now a read command or write command can be issued. After the communication is finished, it needs to be set to 0 first, and then set to 1 to execute the next command.
- Output once + Only Write Command = Same as above, read command communicates normally, only for write command.
- Output once + Disable = Write command starts from the gateway power on, as long as the output data is not 0, it will only output once, and then no longer output, unless the gateway is reset or restarted.

2. Serial Configuration

Under the “Modbus Master” mode, left click on a node and then the configuration interface is shown as below:



● Parameter Description:

- (1) When the Serial protocols Mode is selected as “Modbus Master”, the node is the Modbus slave station address,

GT200-PN-RS485

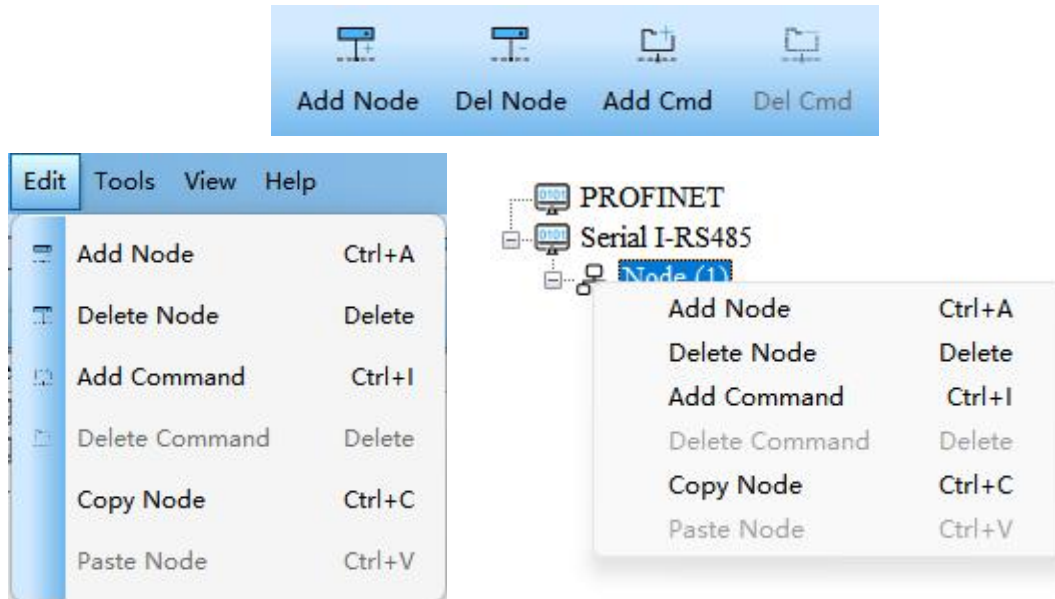
Universal Serial/PROFINET Gateway

User Manual

ranging from 1 ~ 247.

(2) When configuring serial as the Modbus Master, it can configure up to 4 nodes.

- Instructions: For device view, the software supports three kinds of operation modes: edit menu, edit toolbar, and right-click edit menu.



(1) Add Node: Left click on subnet or existing nodes, and then perform the operation of adding a new node. Then there is a new node named “The new node” under subnet.

(2) Delete Node: Left click on the node to be deleted, and then perform the operation of deleting node. The node and all commands will be deleted.

(3) Copy Node: Select an existing node and copy the node. The commands under the node will be copied at the same time.

(4) Paste Node: Select the Subnet or an existing node and paste the node. The pasted node has the same parameters with the copied node.

3. Command Configuration

- Parameter Description: Function codes. supported: 01H, 02H, 03H, 04H, 05H, 06H, 0FH, 10H..
- Instructions: The Command Configuration view supports three types of operation: Edit Menu, Edit Toolbar and Right click edit Menu.

(1) Add commands: Left click on the node, and then perform the operation of adding command to add a command for the node.

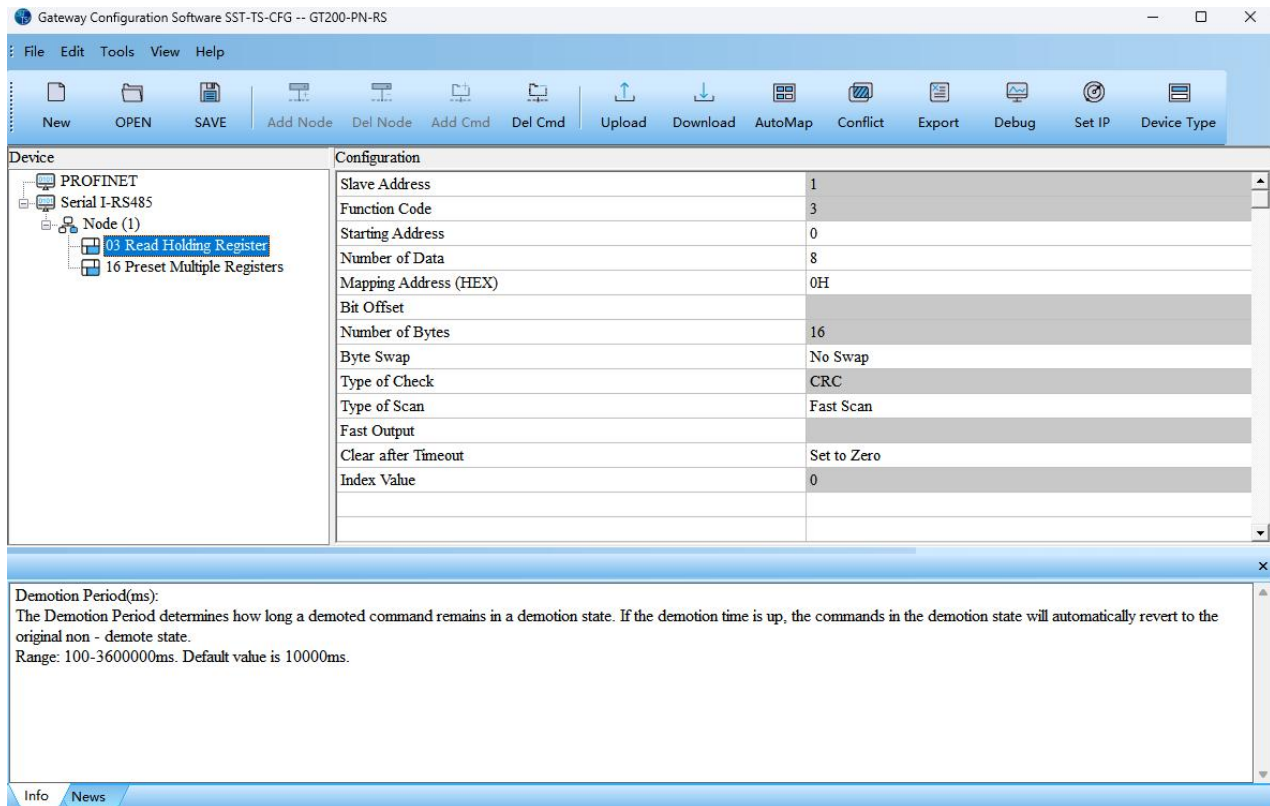
GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual

(2) Delete commands: Left-click on the command and perform the operation of deleting command.

Under the “Modbus Master” mode, left click on a command and then the configuration interface is shown as below:



Starting Address: The starting address of the register/switching value/coil in Modbus slave device, the range of the parameter value is 0 to 65535.

Number of Data: The number of registers/coils to read or write from the Modbus slave device.

Mapped Address (HEX): Starting address of data in the module.

The address range of data mapping in the module memory:

Read command (1, 2, 3, 4): 0x0000~0x0593

Write command (5, 6, 15, 16): 0x0000~0x0593.

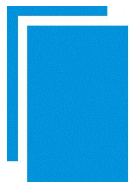
Bit Offset (0~7): For bit operation commands, specifies the position of the start bit within the byte., Range: 0~7.

Byte Swap: There are four types: No Swap, Two Bytes Swap, Four Bytes Swap and Four Bytes Big - Endian and Little - Endian Swap.

No Swap: No byte order exchange.

Two Bytes Swap: The high and low bytes of the 2 bytes are exchanged. For example : 0x1234, convert to 0x3412.

Four Bytes Swap: The first 2 bytes and the last 2 bytes of the 4 bytes are exchanged. For example: 0x12345678, convert to 0x56781234.



GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

Four Bytes Big - endian and Little - endian Swap: The high and low bytes out of the 4 bytes are exchanged, and the second high and second low bytes are exchanged. For example: 0x12345678, convert to 0x78563412.

Type of Scan: There are two ways, fast and slow scan. Every Modbus command can be set to fast scan or slow scan. The gateway will send Modbus command according to the "Scan Rate". Scan Rate is ratio of fast scan to slow scan (configured in the subnet configuration interface).

Fast Output: Supports Disable and Enable.

Disable: When there is a change in the buffer data corresponding to the write command, poll and output the write command according to the configured read and write commands.

Enable: When there is a change in the buffer data corresponding to the write command, the write command is immediately output.

Clear after Timeout: Specifies how the gateway handles the case when no response is received within the "Response Timeout" period configured in the subnet settings.

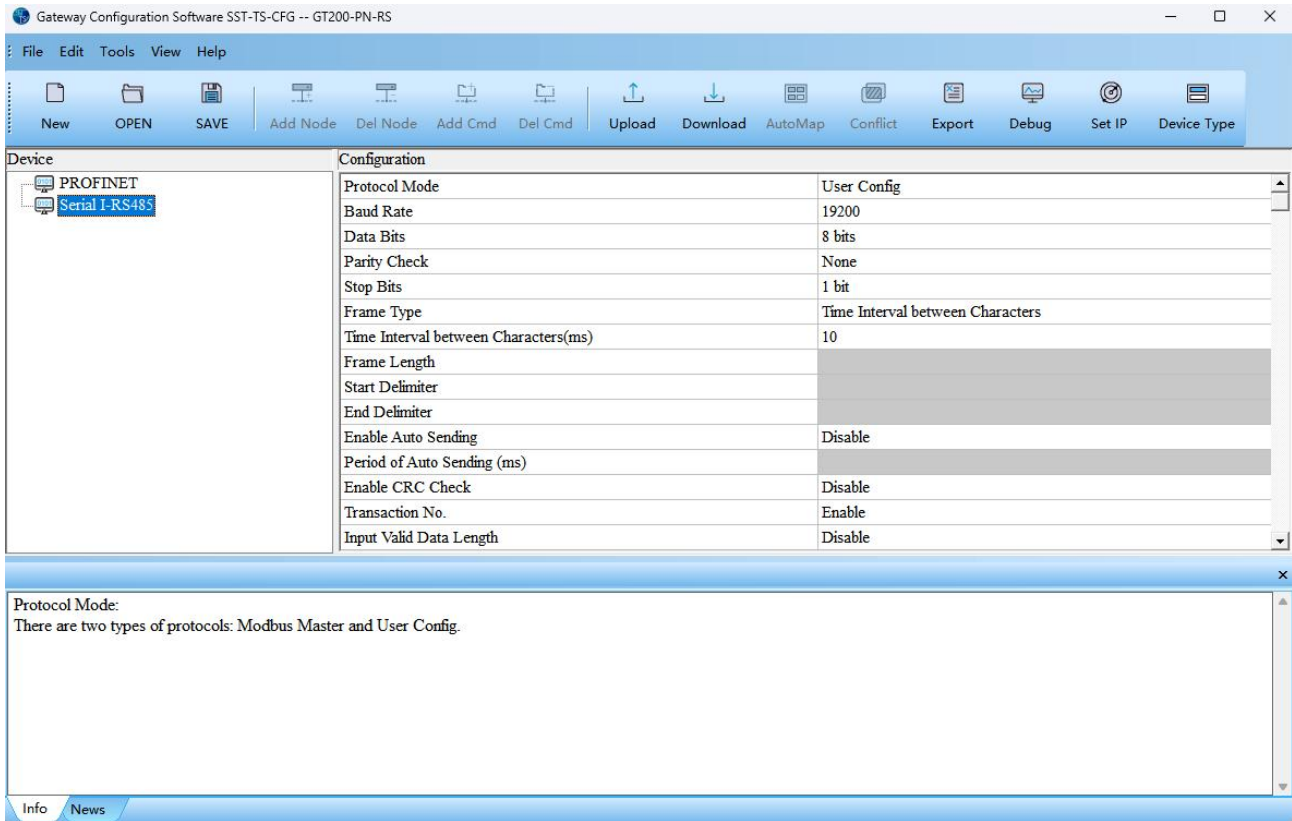
Set to Zero: Resets the response data in the input buffer to zero.

Keep: Retains the previous data in the input buffer unchanged.

For specific communication instructions, please see [Chapter 6](#).

5.2.3 Subnet Configuration User Config Protocol

The “User Config” configuration interface of “Protocols Select” is shown as below:



Baud Rate: 300,600,1200,2400,4800,9600,19200,38400,57600 and 115200 bps optional.

Data Bits: 7, 8.

Parity Check: None, Odd, Even, Mark and Space optional.

Stop Bits: 1,2.

Frame Type: There are three methods for deciding how to determine the end of a serial frame

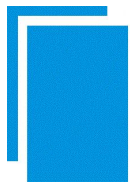
Timer interval between Characters: Determine the end of a frame of serial data by measuring the time interval between characters.

Frame Length: Determine the end of a frame of serial data by measuring the length of the frame data.

Delimiter: Determine the end of a frame of serial data by setting a start delimiter and an end delimiter.

Time Interval between Characters(ms): The maximum time interval between characters that is used to determine the end of a frame. Range: 10-60000ms. Default value is 10ms.

Frame Length: The length of a frame's data that is used to determine the end of a frame. Range: 1-254. Default value is 111. (This is a typical frame length for common serial protocols; adjust according to your device.)



Start Delimiter: Displayed in decimal. The starting character of the received data frame.

End Delimiter: Displayed in decimal. The ending character of the received data frame.

Enable Auto Sending: Supports "Disable" and "Enable". Default is "Disable".

Enable: The gateway will send data periodically according to the "Period of Auto Sending" parameter.

Disable: Send serial data only when there is a change in the data to be sent.

Period of Auto Sending (ms): The time interval between each cycle for automatically sending serial port data. This setting is only valid when "Enable Auto Sending" is enabled.

Enable CRC Check: Supports "Disable" and "Enable". Default value is "Disable". If enabled, it will automatically add two bytes of CRC check to serial data. The serial port can automatically determine whether the CRC check is correct when receiving data, and automatically remove two bytes of CRC check from PROFINET input data.

Transaction No.: Add a byte at the frame header to represent the transaction sequence number, which identifies the data frame, with a cycle of 0-255.

Input Valid Data Length: The first byte in PROFINET input data indicates the length of serial receiving data frame.

5.3 Tools

The "Tools" tab on the menu bar contains the following functions:

- Upload Config
- Download Config
- Conflict Detection
- Export EXCEL
- Assign Ethernet Parameters

5.3.1 Upload and Download

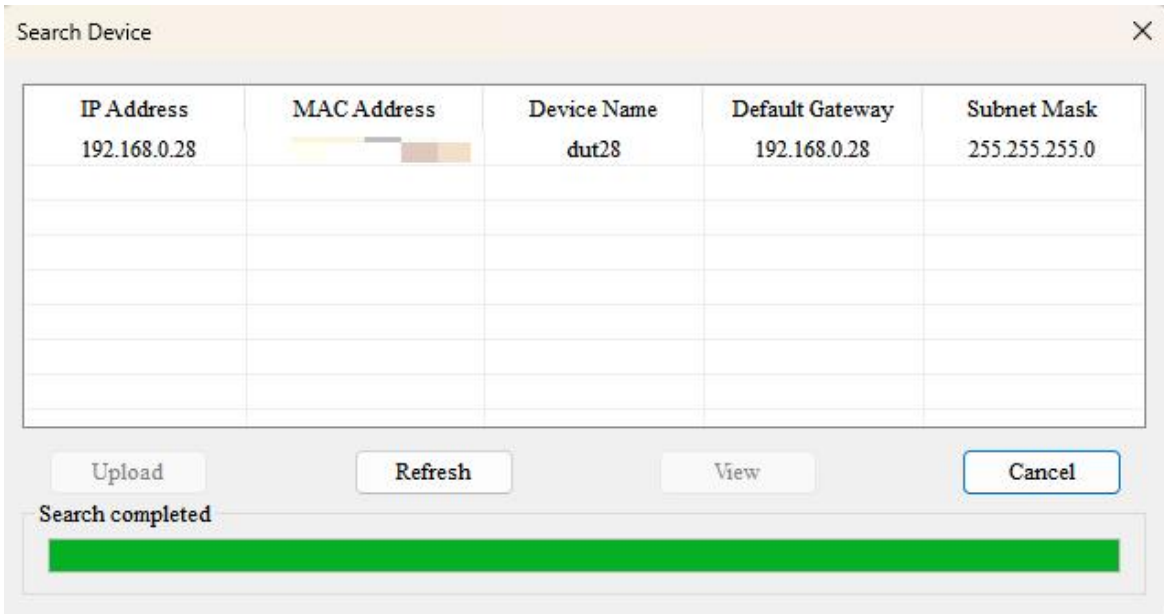
The gateway upload and download via a network cable.

After configuration, click "Upload" or "Download" on the tool bar, it will pop up the following interface:

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual



The 'Search Device' window displays a table with the following data:

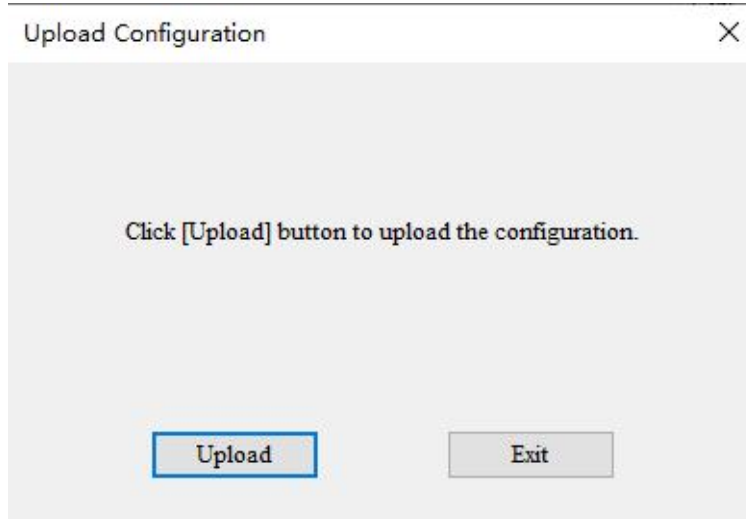
IP Address	MAC Address	Device Name	Default Gateway	Subnet Mask
192.168.0.28		dut28	192.168.0.28	255.255.255.0

Buttons: Upload, Refresh, View, Cancel

Search completed

If scanning no device, please click “Refresh”. In the above picture, GT200-PN-RS485 shows, first select the device and click “Log In”.

Select “Upload”, it will read configurations form the gateway, and the interface is shown as below:

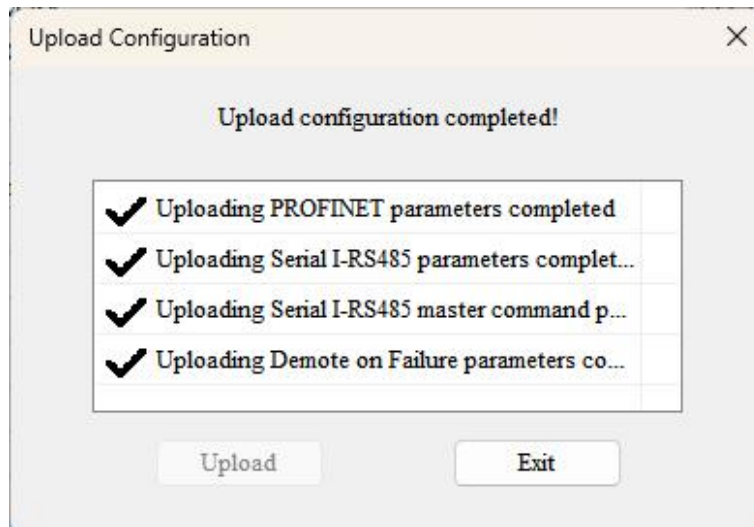


The 'Upload Configuration' window displays the following text:

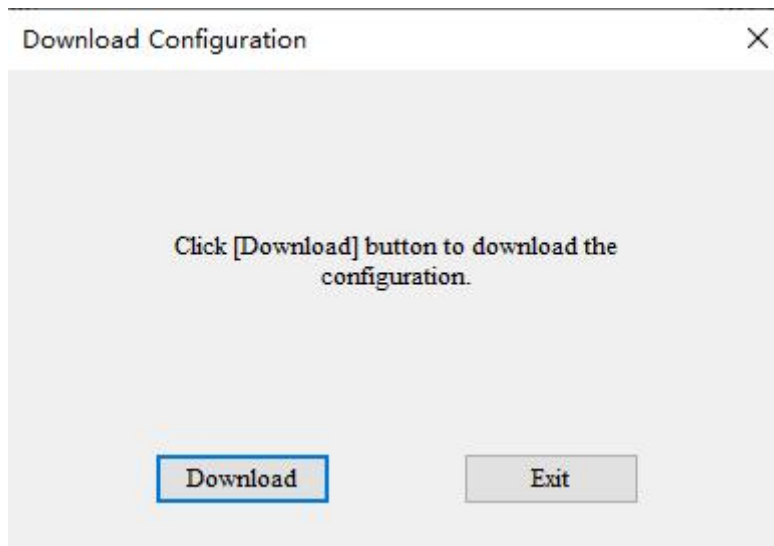
Click [Upload] button to upload the configuration.

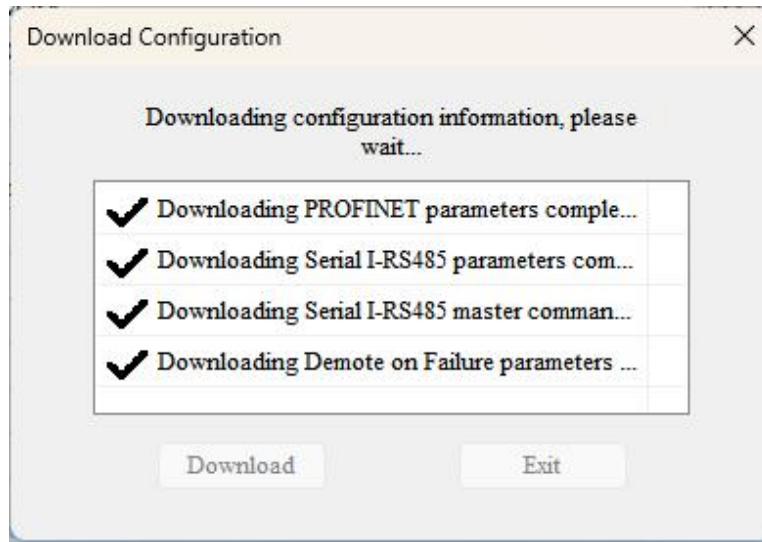
Buttons: Upload, Exit

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual



Select “Download”, it will download configurations to the gateway, and the interface is shown as below:





Remark: Please confirm the configurations are correct before downloading configurations.

If the gateway cannot be searched:

- Please check whether the computer and gateway are in the same network segment. When using the gateway for the first time, the gateway is in the 192.168.0.X network segment.
- Please test the network connection first. Please refer to the note “[How to Use the Ping Command](#)” located on our Support page on the sstautomation.com website.

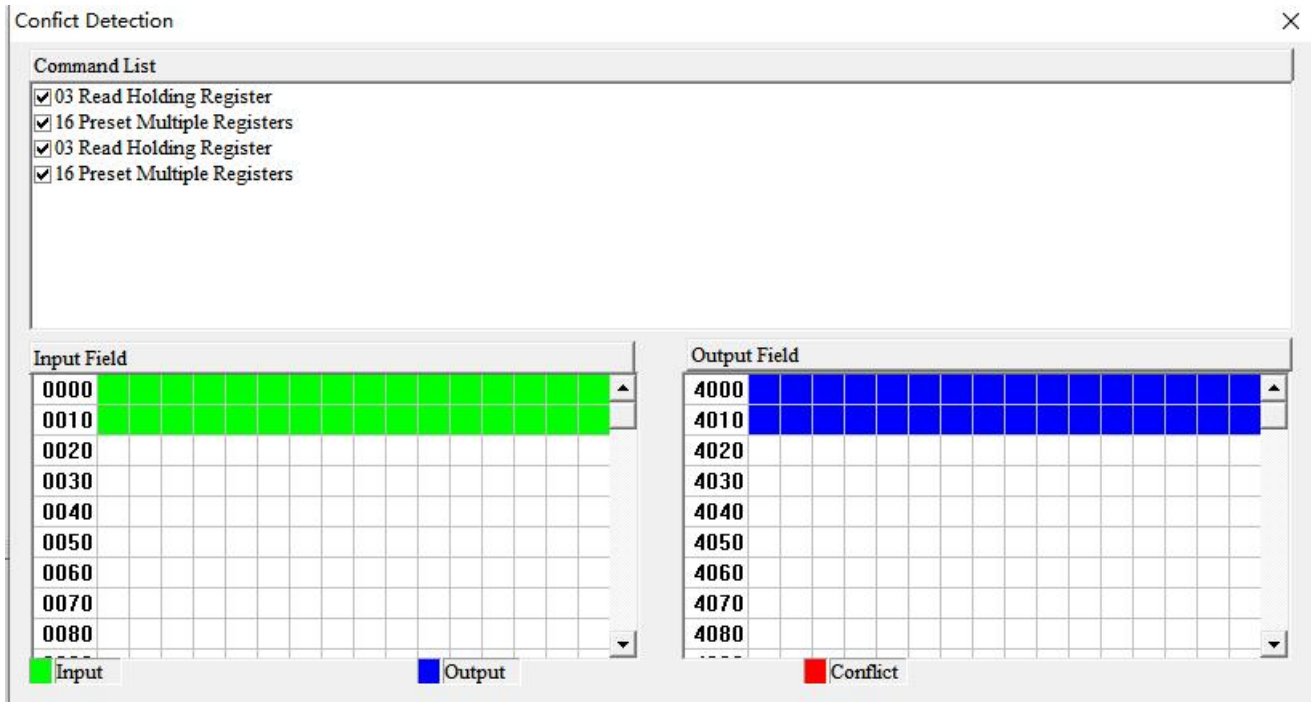
5.3.2 Conflict Detection

It is used to check whether there are conflicts in the "memory mapping data". If users find confliction, it can be adjusted in time. The interface is shown below:

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual



(1) Command List Operation

It shows configured command in the command list interface. Check box before each command is used to check the position of this command in memory mapping area. Click one command and check the box, it will show the position where relevant commands occupy in the memory mapping area. Click the command again and uncheck the box, the command will not be shown in the mapping area. This function will be used for conflict detection among commands in memory mapping area.



(2) Memory Mapping Area Operation

Memory mapping area divides into input area and output area.

Input mapping address range: 0x0000 ~ 0x0593.

Output mapping address range: 0x0000 ~ 0x0593.

Each grid represents one byte address.

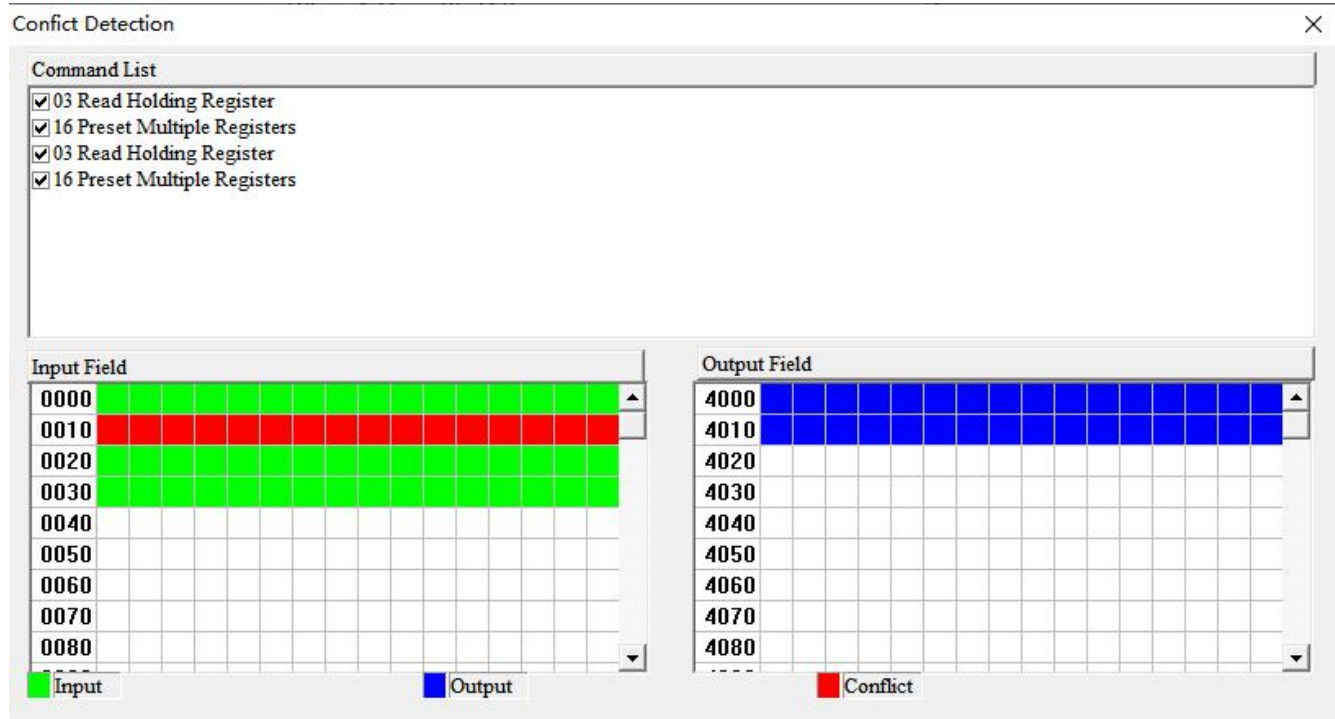
Green: Read command is shown in input mapping area, it will be in green without conflict.

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

Red: In input area or output area, different command occupied on the same byte, this byte area will be in red.

For bit operation command, the above grid displaying meaning works the same.

Click input/output area grids, each bit of relevant byte in the grid will show whether each bit is occupied. As is shown below:



5.3.3 Export EXCEL

Users can use the function to check the gateway configurations.

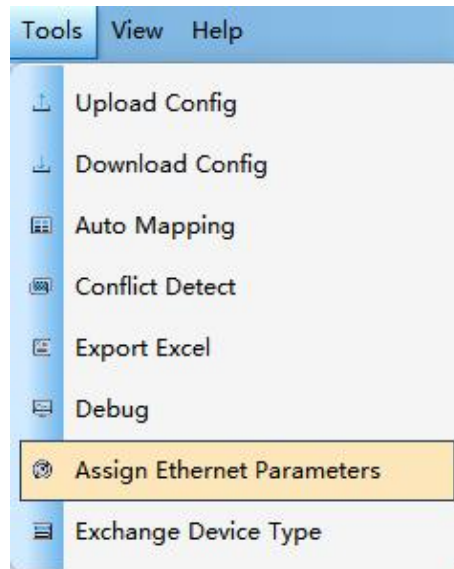
Click icon  on the tool bar you can save the configuration with .xls as its extension.

5.3.4 Assign Ethernet Parameters

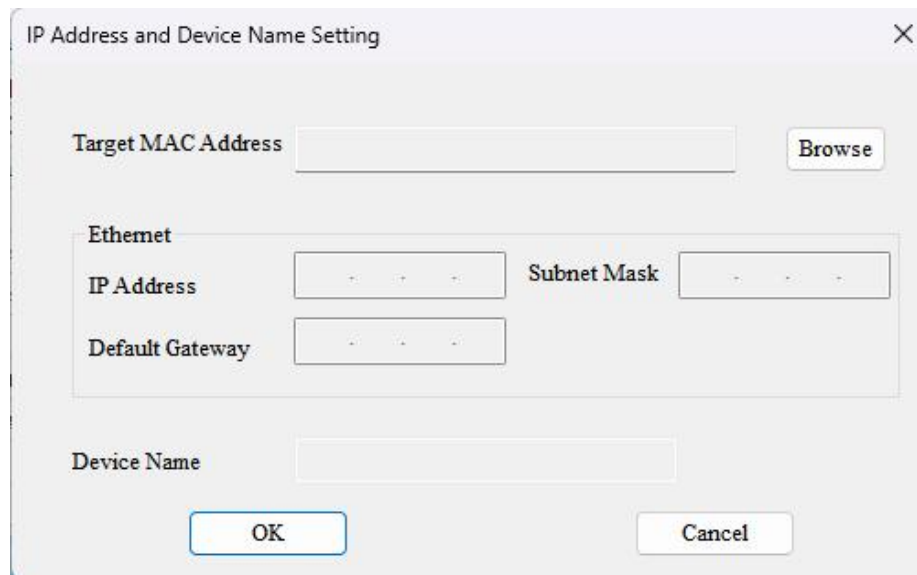
1. Scan Devices on LAN

- 1) Open SST-TS-CFG and click Tools on the menu bar, shown as below:

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual



2) Click “Assign Ethernet Parameters” will pop up below interface:

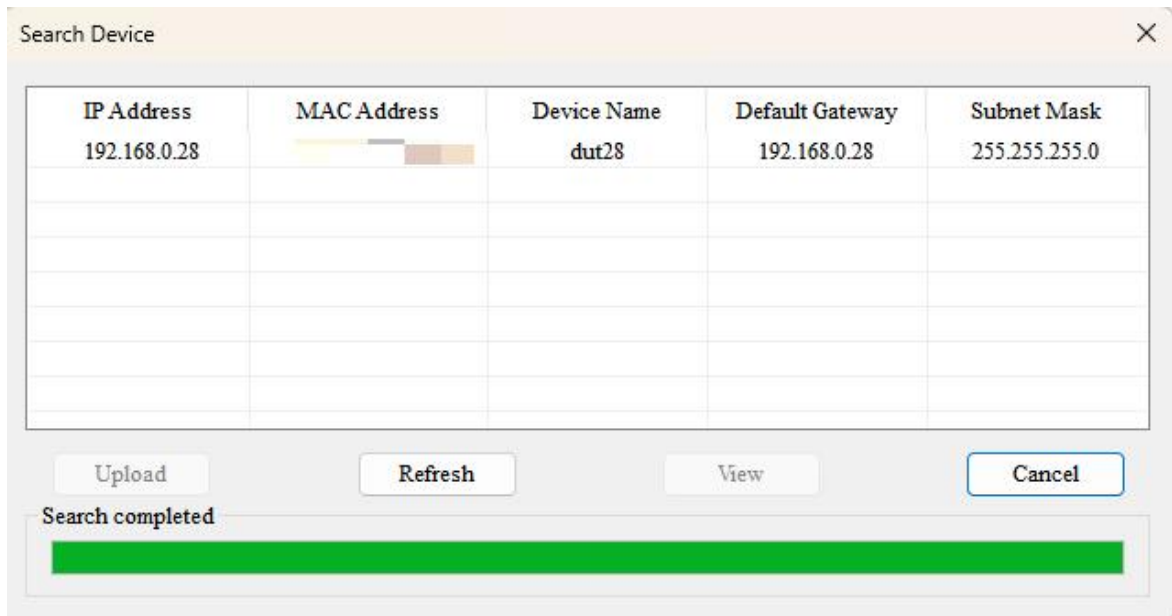


3) Click “Browse”, the dialog box will be shown as below:

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual



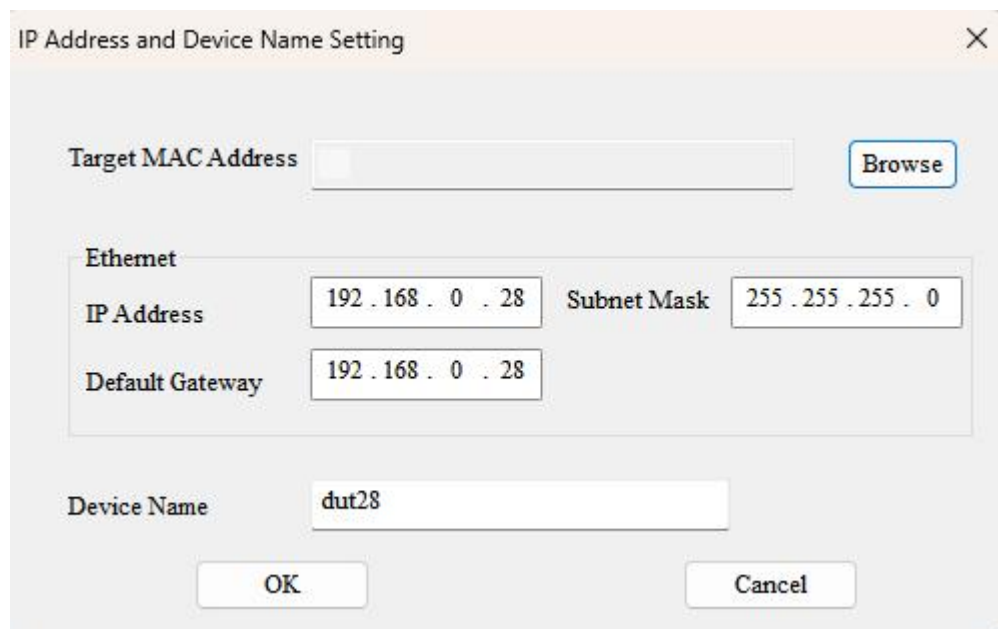
Search Device

IP Address	MAC Address	Device Name	Default Gateway	Subnet Mask
192.168.0.28		dut28	192.168.0.28	255.255.255.0

Upload Refresh View Cancel

Search completed

Please select the gateway you want to modify and click “Login”. You will see the Ethernet information of the device, for example:



IP Address and Device Name Setting

Target MAC Address Browse

Ethernet

IP Address Subnet Mask

Default Gateway

Device Name

OK Cancel

“Target MAC Address” : Shows MAC address of GT200-PN-RS485 (unmodified).

Notes:

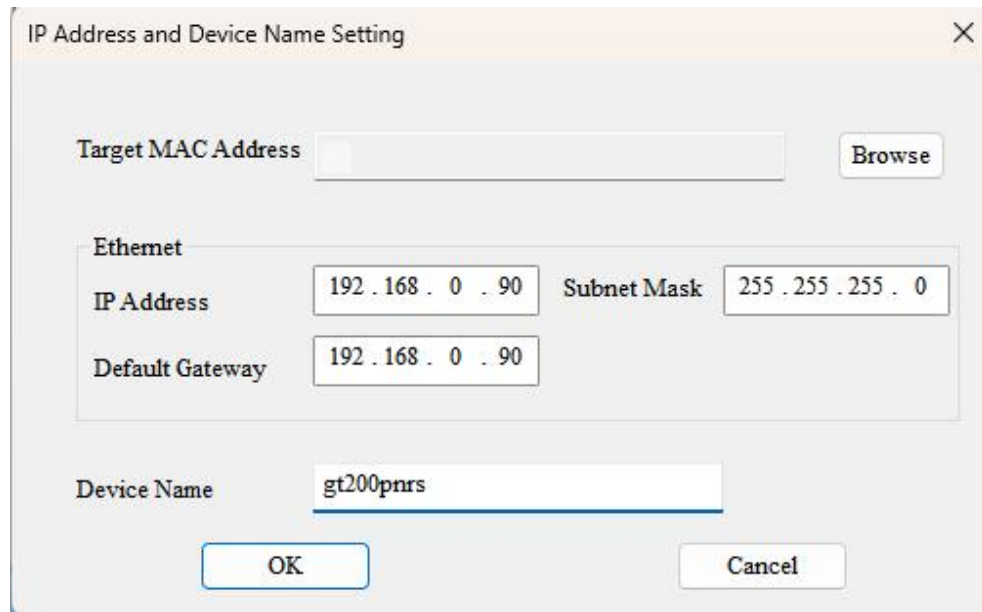
- ① Make sure that the GT200-PN-RS485 and your computer are in the same network segment. When using the gateway for the first time, the gateway is in the 192.168.0.X network segment.

② If no gateways are discovered, please test the network connection first. Please refer to the note “[How to Use the Ping Command](#)” located on our Support page on the sstautomation.com website.

2. Set IP Address and Device Name

1) Example of Ethernet parameter and Device Name setting:

Modify IP address to “192.168.0.90”, gateway address to “192.168.0.1” and Subnet Mask to “255.255.255.0”, Change Device Name to “gt200pnrs”, shown as below:



Click "OK" to apply the Ethernet parameters and Device Name.

Note:

- The IP address and Device Name settings of the gateway here must be consistent with those set in the PROFINET controller configuration software.
- The device name of GT200-PN-RS485, which supports only a combination of lowercase letters and numbers, and must begin with a lowercase letter.

The following are legal names: dut90, dut90nn32.

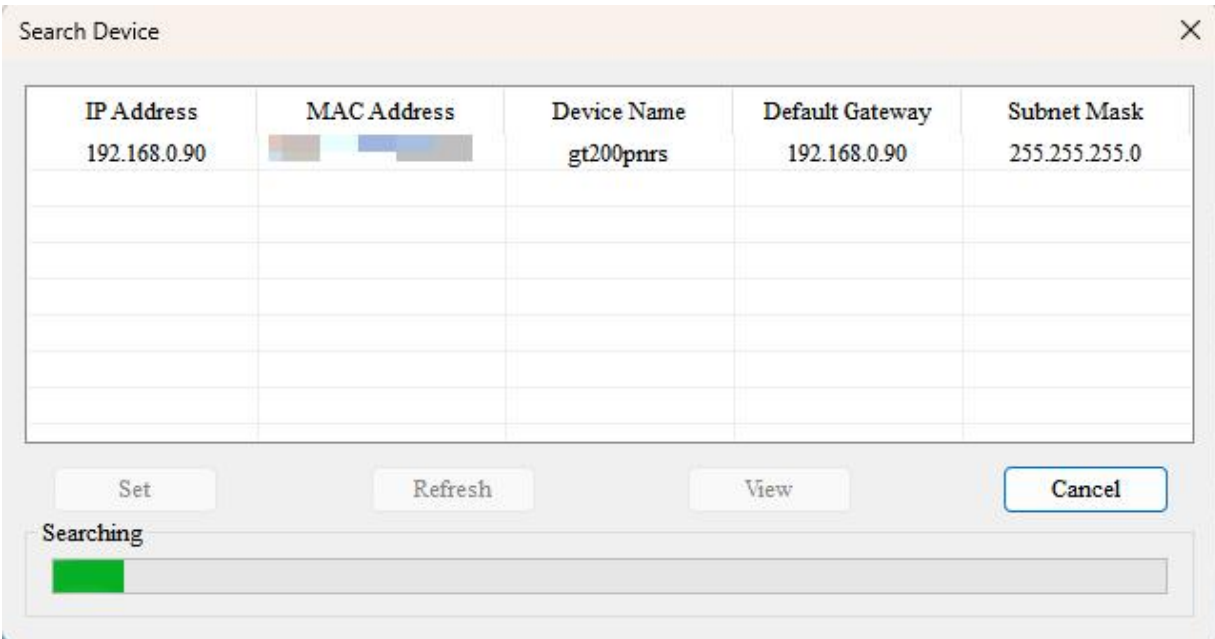
The following are illegal names: 90dut, dut90\$, dut90+uu.

2) Click again “Browse” will lead to scanning device again. See picture, below:

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual



You can see that IP address has been modified “192.168.0.90”, Device Name is “gt200pnrs”.

3. IP Address Conflict Resolution

According to the specification of PROFINET protocol, acting as a PROFINET slave, GT200-PN-RS485 must obey the rule that there can't be more than 1 PROFINET device which has the same IP address and name on the same LAN when connecting many GT200-PN-RS485 devices.

If there are conflicts of IP address and device name, users can change IP address and name of GT200-PN-RS485 according to chapter “Set IP Address and Device Name” and ensure that others IP address and name are different (Notes: After the changes are complete, the corresponding updates must also be made in the PLC project configuration. Users must ensure the IP address and name of GT200-PN-RS485 is the same with that of PLC modeling).

For example:

When it happens to IP address conflict, IP address, subnet mask and gateway address of GT200-PN-RS485 will be reset to “0.0.0.0”. Now, users can't use “Upload” or “Download” to scan GT200-PN-RS485 and only use chapter “Scan Devices on LAN” to scan the device, the scanning result is shown as below:

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

Search Device ×

IP Address	MAC Address	Device Name	Default Gateway	Subnet Mask
0.0.0.0			0.0.0.0	0.0.0.0

Search completed

You can see the IP address is reset to “0.0.0.0”, choose the device and log in, the dialog box is shown as below:

IP Address and Device Name Setting ×

Target MAC Address

Ethernet

IP Address Subnet Mask

Default Gateway

Device Name

Set “IP”, “Subnet” and “Gateway” to “192.168.0.28”, “255.255.255.0” and “192.168.0.1” and you will see the below picture:

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

IP Address and Device Name Setting

Target MAC Address Browse

Ethernet

IP Address Subnet Mask

Default Gateway

Device Name

OK Cancel

Click “OK”.

5.3.5 Debug

This feature is used to monitor I/O data and network status. The interface display is as follows:

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

Debug - GT200-PN-RS

Buffer selection

☒ Input Buffer ☐ Output Buffer

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0x0000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x00A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x00B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x00C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Write Input Buffer Data

Address H

Data

Position According to Address(Hex):

Fill in the correct address and data, click the "Write" button.

GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

Debug - GT200-PN-RS

Buffer selection
☐ Input Buffer ☒ Output Buffer

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0x0000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0040	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0050	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x0090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x00A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x00B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x00C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Write Output Buffer Data

Address: 0000 H Write

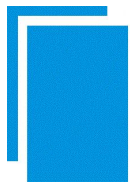
Data: 11 22 33 44

Position According to Address(Hex): Position

Save Data Stop Debuging Exit

5.3.6 Automap

Click "Automap" to automatically calculate the non-conflicting mapped memory address for each command.



6 Work Principle

6.1 Data Exchange

The data conversion between PROFINET network and serial of GT200-PN-RS485 is established by "mapping". GT200-PN-RS485 has two data buffers:

Input buffer: 1440 bytes (address range of 0x0000-0x059F.), of which 12 bytes are reserved for status indicators.

Output buffer: 1440 bytes (address range of 0x0000-0x059F.), of which 12 bytes are reserved for status indicators..

6.1.1 PROFINET Device

Presuming the input data length users have configured is N1, output data length is N2. GT200-PN-RS485 will periodically send the data within the address range of [0x0000, N1-1] to PROFINET network. When receiving data from PROFINET network, GT200-PN-RS485 will write the data to the address range of [0x0000, N2-1].

6.1.2 Modbus Master

When one serial runs Modbus master protocol, for all write registers, write coils command GT200-PN-RS485 supports, GT200-PN-RS485 can get data from address range 0x0000-0x0593 and send them to the Modbus slave. For all read registers, read coils command, GT200-PN-RS485 can write the data returned from Modbus slave to address range 0x0000-0x0593.

Notes: Each Modbus master can be configured with up to 100 commands, and each command can access one continuous range of Modbus registers.

6.1.3 User Config

When the serial port runs in User Config mode (request-response), the request portion of the command can fetch data from any address in the output buffer range 0x0000-0x00FD and send it to the serial slave device. When serial slave devices didn't give any response (if they did), if there exists data in response, GT200-PN-RS485 will write them to the address range of 0x0000-0x00FD. The specific data size will depend on users' configuration.

6.2 Command execution instructions

6.2.1 IO Status Word

This content is applicable to the four modes of the gateway.

In order to easily obtain the state of the execution of each command under each master station, the IO state word is introduced.

➤ Modbus Master protocol

Both of these protocols are the master protocol and are also based on command. We use a bit to indicate whether the execution of each command is successful or not. When the command execution is successful, the corresponding bit is set to 1, otherwise it is set to 0. When a subnet is configured as a master protocol, the number of bytes occupied by the IO status word of the subnet is calculated using the following formula:

The number of bytes occupied by the IO status word is calculated as follows:

$$\text{IO_Status_Bytes} = \text{FLOOR}((\text{Command_Count} + 15) / 16) \times 2$$

This formula rounds up the result of Command_Count / 16 to the nearest integer, then multiplies by 2.

For example:

$$15 \text{ commands} \rightarrow \text{FLOOR}((15+15)/16) \times 2 = \text{FLOOR}(30/16) \times 2 = 1 \times 2 = 2 \text{ bytes.}$$

So the IO status of these 15 commands takes up 2 bytes. The specific IO status indication information is as follows:

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Command 7 indicate bit	Command 6 indicate bit	Command 5 indicate bit	Command 4 indicate bit	Command 3 indicate bit	Command 2 indicate bit	Command 1 indicate bit	Command 0 indicate bit
Byte 1		Command 14 indicate bit	Command 13 indicate bit	Command 12 indicate bit	Command 11 indicate bit	Command 10 indicate bit	Command 9 indicate bit	Command 8 indicate bit

6.2.2 Byte-swap

This section is applicable to the following modes of the gateway: Modbus Master/Custom Protocol.

1. Byte swap introduction

There are four types: No Swap, double-byte swap, four-byte register swap and Four-Byte Big-endian and Little-endian Swap.

➤ Two-Byte Swap

When using double-byte swap, the number of bytes exchanged must be 2 times integer.

Two-Byte Swap is 2 bytes for unit exchange, and the exchange mode is shown in the following table:

Before exchange		After exchange	
Byte index	Byte value	Byte index	Byte value
0	0x12	0	0x34

GT200-PN-RS485

Universal Serial/PROFINET Gateway

User Manual

1	0x34	1	0x12
---	------	---	------

➤ Four-Byte Register Swap

When using Four-bByte Register Swap, the number of bytes exchanged must be 4 times integer.

Four-bByte Register Swap is 2 registers for unit exchange, and the exchange mode 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

➤ Four-Byte Big-Endian and Little-Endian Swap

When using Four-Byte Big-Endian and Little-Endian Swap, the number of bytes exchanged must be 4 times integer.

Four-Byte Big-Endian and Little-Endian Swap is 4 bytes for unit exchange, and the exchange mode is shown in the following table:

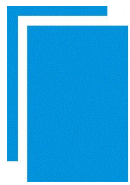
Before exchange		After exchange	
Byte index	Byte value	Byte index	Byte value
0	0x12	0	0x78
1	0x34	1	0x56
2	0x56	2	0x34
3	0x78	3	0x12

2. Bytes Exchange Way in Various Protocols

The schematic diagram is as follows:



As you can see from the figure, the byte-exchange program is only a process between the buffer and the request or



GT200-PN-RS485 Universal Serial/PROFINET Gateway User Manual

response frame of the command, without changing the length of the total data, only changes the organization way of the data.

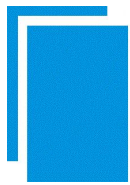
Command execution mode:

- (1) Read a certain length of data from the buffer (input or output) and put it in the frame buffer of the command. Then, send the command.
- (2) When the command has a response, the data is separated from the response frame of the command and copied to the buffer.

After adding byte swap processing:

- (1) Read a certain length of data from the buffer (input or output), byte swap processing, then put it in the frame buffer of the command, and finally send the command.
- (2) When the command has a response, the data is separated from the response frame of the command ,byte swap processing, then copied to the buffer.

Note: When the byte swapping process is performed, the data to be processed is divided according to a specific length. For example, when 2 bytes are exchanged, data is processed in units of 2 bytes. When 4 bytes are exchanged, data is processed in units of 4 bytes.



6.2.3 Command Output Mode

The content of this section is only applicable to MODBUS Master protocol.

Write command: The request frame contains commands for memory mapping area data of GT200-PN-RS485. For example, the 5, 6, 15 and 16 function codes of MODBUS master protocol are written commands. Read command: The command that is not written is read.

Command execution process:

1. The number of timeout retransmission is set to 0.
2. Request frame for sending commands. After sending, the response timeout timer begins.
3. Wait for the command response frame.
4. If a response frame is received within the response timeout period, a response is considered. Whether the response is correct depends on the specific response frame format. If the response frame is correct, the execution of the command ends. If a response frame is not received within the response timeout period, the response timeout is considered. Response error and response timeout, enter 5.
5. Determine whether the number of retransmission is 3. If 3, the execution of the command ends. Otherwise, the timeout retransmission times adds 1, enters 2.

➤ Cycle output mode

In the Master protocol, each command has a unique command index in each subnet.

The Master protocol works in Cycle output mode and is executed as follows:

1. Execute the command N.
2. Wait for “command delay time”, N plus 1. If N is greater than the number of command, N is 0. Execute order N.

➤ Change of Value output mode

The Master protocol works in Change of Value output mode and is executed as follows:

1. If command N is read, execute command N. Otherwise, check whether the memory mapping data contained in the request frame of command N is changed. If there is a change, execute the command N.
2. Wait for “command delay time”, N plus 1. If N is greater than the number of command, N is 0. Execute order N.

➤ Forbidden

Note: Do not output RS485 frame.

When the device is set in RS485 mode, all output commands will not be sent. That means the device acts a role of monitor.

➤ **Output Once**

When the Modbus master works in output primary mode (output command polling mode), it is executed in the following ways.

1. If command N is a read command, execute command N. Otherwise, check whether the memory mapping data included in the request frame of command N has changed, and if there is a change (the initial data of the memory mapping is 0, if the initial data of the PROFINET side is not 0 after the gateway is powered on, it is also considered that the data has changed), execute command N once, and then do not execute command N until the gateway is restarted.
2. If the command N is a write command, wait for the "command delay time", and add one to N. If N is greater than the number of commands, then N is 0. Execute command N.

The Master protocol works in Fast output mode and is executed as follows:

1. Check the commands in the "Quick Output Command" queue one by one, and execute the command if the data of a command changes. Until the data of all commands in the queue did not change.
2. Execute a command in the normal queue. An execution index in a normal queue plus one. If the number of commands in a normal queue is exceeded, the index value is 0. Enter 1.

As you can see from the above execution, Quick output is preferred to write commands, which is of great benefit to the transmission of control information as soon as possible at some low baud rates (≤ 19200), but this advantage is small for high baud rates.

6.2.4 Response Timeout Handling for Master Protocol

The content of this section is only applicable to MODBUS Master protocol .

The specific application scene is like this: After the master sends the request frame, it will wait for the response of the slave device within the limited time. If the slave does not respond within a limited time, the master protocol will trigger the response timeout processing. How to deal with this?

If the command is successfully executed the previous time, it will be retransmitted up to 3 times (a total of four times), In the process of retransmission, if any response is given from the slave, it will stop repeating and transferred to the next command. If the slave still has no response after three retransmission, the processing method given in the response timeout handling option is executed. Namely: Clear or Hold. It should be noted that the clear or hold here is for the data part of the slave response frame. Because GT200-PN-RS485 transformation between protocols is achieved by mapping, so the data part of each command's response frame will have a mapping area in the input buffer of GT200-PN-RS485. Our "clear or hold" is for this mapped data area. Specifically, if "clear" is selected, all data in

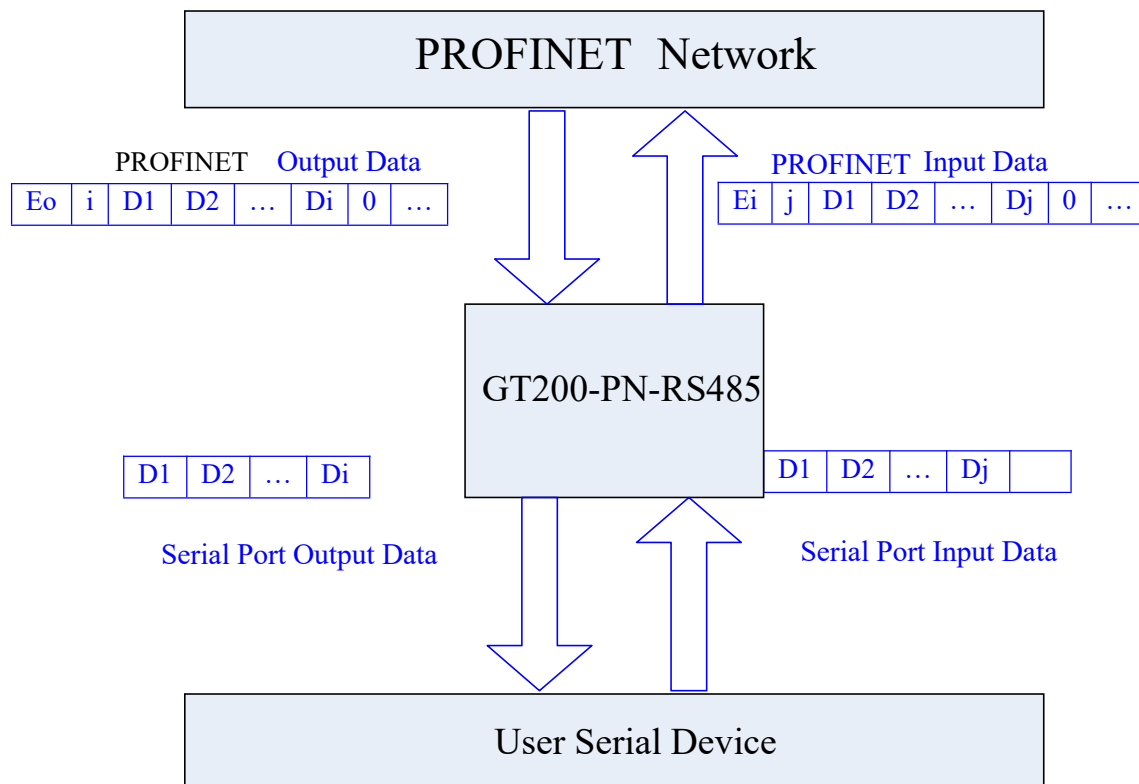
the map area will be set to 0 after the response timeout. if “hold”, the content of the map data area will not be changed after the response timeout.

If the command is unsuccessfully executed the previous time, re-transmission is not executed.

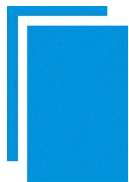
6.3 User Config

6.3.1 Definition

The GT200-PN-RS485 User Config protocol messages can be freely configured by the user, solving communication issues between non-Modbus serial protocol devices. The GT200-PN-RS485 universal mode enables data exchange between the PROFINET protocol and serial communication. The data conversion and transmission between PROFINET and serial data are bidirectional. PROFINET output data is sent to the serial bus via the serial port, and the data received by the serial port is placed into the PROFINET input data. The data exchange is shown in the diagram below:



" E_o " is the transaction number of PROFINET output data. " i " is serial data number included in output data being transmitted. " $D1$ " to " D_i " are data being transmitted by serial. " E_i " is transaction number of PROFINET input data. " j " is serial data number included in input data receiving form serial. " $D1$ " to " D_j " are data receiving form serial.



6.3.2 Communication Message Format

PROFINET output data format:

[Transaction number]	[Output data length n]	[Output data 1]... [Output data n]	[0x00] ... [0x00]
--	n	--	-- m --

Note:

The number of PROFINET output byte should be greater than or equal to $n + 2$.

M 0x00 are filling data (also for any number). $n + m + 2$ should be equal to the number of PROFINET output-byte.

Transaction number: When transmitting output data, the transaction number must add 1 to show a new frame data.

Example:

If users select the number of PROFINET input byte and output-byte is 8-byte input and 8-byte output, length of serial output-data is 3, data are 01 02 03. Current transaction number is 0.

The format of output-data is:

[01][03][01][02][03][00][00][00]

PROFINET input data format:

[Transaction number]	[Input data length n]	[Input data 1]... [Input data n]	[0x00] ... [0x00]
--	n	--	-- m --

Note:

The number of PROFINET input byte should be greater than or equal to $n + 2$.

M 0x00 are filling data (also for any number). $n + m + 2$ should be equal to the number of PROFINET input-byte.

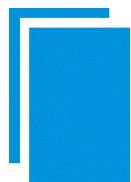
Transaction number: The transaction number adds 1 showing a new frame input data.

Example:

If users select the number of PROFINET input-byte and output byte is 8-byte input and 8-byte output, length of serial input-data is 3, data are 04 05 06. Current transaction number is 0.

The format of input data is:

[01][03][04][05][06][00][00][00]



7 Troubleshooting

7.1 Gateway Cannot Be Discovered on Network

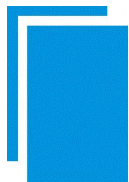
Symptom	Possible Caus	Solution
SST-TS-CFG cannot find the gateway	Gateway and PC are on different subnets	Ensure both are on the same network segment. The default gateway subnet is 192.168.0.X
	Wrong network adapter selected on PC	In SST-TS-CFG, select the correct wired Ethernet adapter (not the Wi-Fi adapter) that is connected to the gateway's network
Ping fails	Physical connection issue	Check Ethernet cable and switch connections
Multiple gateways with same IP	IP address conflict	Use "Assign Ethernet Parameters" to assign unique IPs (see Chapter 5.3.4)

7.2 PROFINET Connection Issues

LED State (MS/NS)	Meaning	Action
MS OFF, NS Red Blinking	Gateway in startup	Wait for initialization to complete
MS Green, NS Red Blinking	No PROFINET connection	Check Device Name matches PLC configuration; check Ethernet cable
MS Green, NS Red On	Network cable unplugged	Verify PROFINET port connection
Other combinations	See indicator table in Chapter 2.2	/

7.3 Serial Communication Issues

Symptom	Check
No serial data	Verify baud rate, data bits, parity, stop bits match slave device
Intermittent communication	Enable 120 Ω termination resistor; check RS485 wiring polarity (D+/D-)

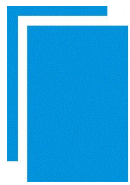


High error rate	Reduce baud rate; enable pull-up/pull-down resistors (set to 1 k Ω)
-----------------	---

7.4 IP Address Conflict Recovery

When an IP address conflict occurs, the gateway resets its IP to 0.0.0.0. To recover:

1. Use "Assign Ethernet Parameters" → "Scan Devices on LAN"
2. Select the gateway with IP 0.0.0.0
3. Assign a new unique IP address and Device Name



8 Frequently Asked Questions

Q1: How many Modbus slaves can the GT200-PN-RS485 connect to?

A: Up to 4 Modbus slave nodes can be configured on the single RS485 port.

Q2: What is the maximum PROFINET I/O data size?

A: Up to 1440 bytes of input and 1440 bytes of output data (subject to PLC and communication module PDU limits). Supports up to 32 slots.

Q3: Can I use the gateway with a non-Siemens PROFINET controller?

A: Yes. The gateway supports standard PROFINET RT and IRT protocols. Import the GSDML file into any PROFINET-capable engineering tool.

Q4: What does "Fallback on Failure" do?

A: When enabled, if a fast-scan command fails N consecutive times (N = Timeouts to Fallback), it is demoted to slow-scan. After the Fallback Period expires, it returns to fast-scan. This helps maintain overall communication efficiency when a specific slave is temporarily unreachable.

Q5: How do I restore factory settings?

A: Within 10 seconds after power-on, press and hold the button until MS blinks green (>5 seconds), then press again within 5 seconds. See [Chapter 2.3.6](#).

Q6: What baud rates are supported on the RS485 port?

A: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps.

Q7: What Modbus function codes are supported?

A: 01H (Read Coils), 02H (Read Discrete Inputs), 03H (Read Holding Registers), 04H (Read Input Registers), 05H (Write Single Coil), 06H (Write Single Register), 0FH (Write Multiple Coils), 10H (Write Multiple Registers).

Q8: What is the difference between "User Config" and "Modbus Master" mode?

A: Modbus Master mode is for standard Modbus RTU/ASCII devices. User Config mode allows you to define custom serial frame formats using time-interval, frame-length, or delimiter-based detection — useful for non-Modbus serial devices.

Q9: How do I update the gateway firmware?

A: The function button supports firmware update mode. Download the latest firmware from www.sstautomation.com and follow the firmware update guide provided with the download.

Q10: Does the gateway support redundant power?

A: No. The gateway has a single 24 VDC power input (range: 9 ~ 30 VDC).