

EtherNet MPI Adapter GT100-IE-MPI

User Manual

V 2.0

Rev F



SST Automation

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Important Information

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1 Product Overview

1.1 Product Function

The GT100-IE-MPI is an adapter designed to enable Ethernet communication for Siemens SIMATIC S7 series PLCs (including S7-200, S7-300, and S7-400) and Siemens CNCs (such as 840D and 840DSL). It also supports data monitoring.

1.2 Product Features

- Supports multi-master communication; the expansion port can connect to touch screens or other master devices.
- Features automatic baud rate detection.
- Automatically queries the master station address and displays the address list.
- Installs directly onto the PPI/MPI/PROFIBUS communication port of a PLC without requiring an external power supply.
- Supports Siemens S7 Ethernet communication drivers, including MicroWIN, STEP 7, WinCC, SIMATIC NET, and Kepware Server (formerly KEPServerEX).
- Supports connectivity to Node-Red.
- Supports up to 16 Ethernet TCP/IP connections, allowing 16 PCs to collect PLC data simultaneously.

1.3 Technical Specifications

[1] DB9 communication port:

- ◆ Interface type: TIA/EIA RS-485 compatible, ESD: $\pm 15\text{KV}$, up to 32 nodes.
- ◆ Supported protocols: Siemens S7 bus multi-master protocol (including PPI, MPI, and PROFIBUS).
- ◆ Baud rate (bps): 9600, 19200, 45450, 93750, 187500, 500K, 1.5M.

[2] Ethernet port:

- ◆ Network port type: 10/100 Mbps auto-sensing network port.
- ◆ Supported protocols: S7TCP, 16 TCP/IP connections, and Modbus TCP Server.

[3] Power: 24 VDC (11~30 VDC), 100mA(24VDC).

[4] Operating temperature: 32°F~140°F(0°C ~ 60°C). Humidity: 5%~90% (non-condensing).

[5] Dimensions (W*H*D): 0.67 in *2.56 in *1.29 in (17mm*65mm*33mm).

[6] Installation: Plugs directly into the DB9 communication port of a Siemens S7 PLC.

[7] Protection Level: IP20.

1.4 Related Products

Related products include the GT200-DP-RS, GT200-PN-RS, and GT200-PN-3RS.

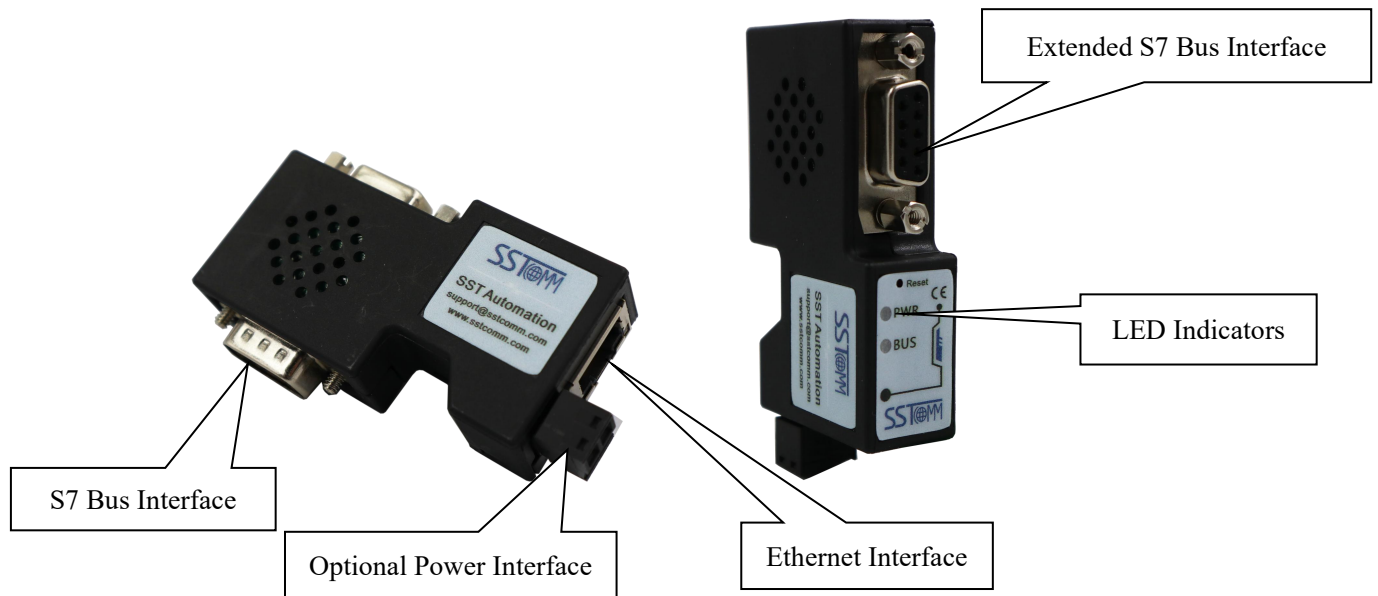
For more information about related products, please visit the SST Automation website: www.sstautomation.com.

1.5 Revision History

Revision	Date	Chapter	Description
V2.0, Rev F	3/13/2026	ALL	Optimize document descriptions
V2.0, Rev E	5/6/2024	Chapter 8	Added instructions for Modbus TCP communication
V2.0, Rev D	6/14/2023	Appendix B	Added instructions to connect Node-Red
V2.0, Rev C	6/9/2023	Appendix A	Added instructions to connect KEPServerEX
V2.0, Rev B	4/11/2023	Chapter 7	Added more details for STEP 7 modeling
V2.0, Rev A	4/3/2023	Chapter 7	Added STEP 7 modeling
V2.0	3/20/2021	ALL	New release

2 Hardware Description

2.1 Product Appearance



Note: The image is for illustrative purposes only. The actual product appearance may vary.

2.2 LED Indicators

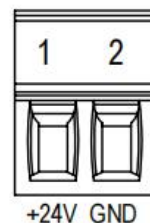
Indicator	States	Indication	Troubleshooting
PWR	ON	Power supply is normal	N/A
	OFF, Flashing	Power supply is abnormal	Check the power supply
BUS	ON	The baud rate is correct and the gateway is functioning normally	N/A
	Flashing (1s)	Station address conflict detected on the S7 bus	Modify the station address of the module through the web page
	Flashes twice at 1Hz after a few seconds interval	Baud rate not detected	Check the PLC communication port
	OFF	Gateway or indicator failure	Contact technical support
	Flashing	Communication response frequency	N/A
Link	ON	Network is connected	N/A
	OFF	Gateway or network failure	Check local and remote network connections
Active	Flashing	Communication is normal with remote devices	N/A
	OFF	No communication	N/A
	ON (not flashing)	Ethernet failure	Contact technical support

2.3 Interface

2.3.1 Power Interface

The power interface is optional and generally not required. It's not recommended to use it. The gateway is powered directly via the S7 bus interface when connected to the PLC. If the PLC itself cannot provide power, you can connect an external power interface to supply power.

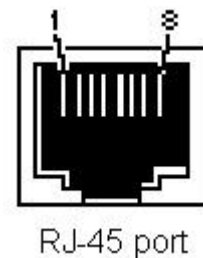
Pin	Function
1	+24V
2	GND



2.3.2 Ethernet Interface

The Ethernet interface uses an RJ-45 connector. The pinout (standard Ethernet signals) is defined as follows:

Pin	Description
S1	TXD+, Transmit Data+
S2	TXD-, Transmit Data-
S3	RXD+, Receive Data+
S4	Bi-directional Data+
S5	Bi-directional Data-
S6	RXD-, Receive Data-
S7	Bi-directional Data+
S8	Bi-directional Data-

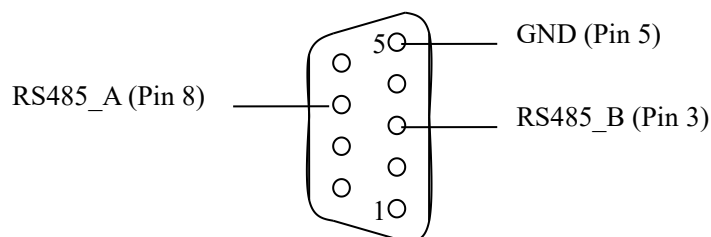


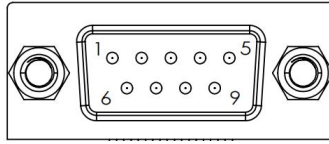
2.3.3 S7 Bus Interface

1) S7 bus interface X1

The X1 interface uses a DB9 male port, which can be plugged directly into the communication port (PPI port, MPI port or PROFIBUS port) of an S7 series PLC. The pin definition of the communication port is the same as that of the PLC, where Pin 3 is RS485 Line B, Pin 8 is RS485 Line A, and Pin 5 is Signal Ground (GND). Pin 7 is the positive of the 24VDC power supply of the PLC, and pin 2 is the ground of the 24VDC power supply. The 24VDC power supply of pin 2/7 is used as the default power supply input. The baud rates supported by the X1 interface include: 9.6K, 19.2K, 45.45K, 93.75K, 187.5K, 500K and 1.5Mbps.

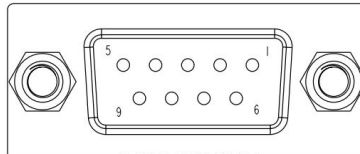
Pin	Function
2	GND of 24VDC
3	RS485, B
5	GND
7	24VDC
8	RS485, A





2) Extended S7 bus interface X2

The X2 interface uses a DB9 female port, which is used to connect Siemens communication equipment (such as Siemens touch screen, CP5611 communication card, etc.). The supported baud rates include 9.6K, 19.2K, and 187.5K.



2.3.4 Reset Button

The reset button is used to restore the gateway to factory settings. Press and hold the button for 5 seconds; release it once the BUS indicator turns solid green. Enter 192.168.1.188 in a web browser address bar to access the configuration interface.



3 Hardware Installation

3.1 Mechanical Dimensions

Size (width * height * depth):

0.67 in * 2.56 in * 1.29 in (17mm*65mm*33mm)

3.2 Installation Method

The GT100-IE-MPI is mounted by plugging it directly into the DB9 communication port of a Siemens S7 PLC.

4 Quick Start Guide

Basic steps when configuring G100-IE-MPI :

1. Wiring: Refer to [Chapter2.3 Interface](#) for wiring details.
 - 1) Plug the S7 bus interface into the PPI, MPI, or PROFIBUS port of the Siemens PLC.
 - 2) Connect the gateway's Ethernet port to your PC using a network cable to download the configuration.
 - 3) Power on the PLC and verify that the gateway's power indicator is active.
2. Configure the gateway using a web browser after connecting it via a network cable.

If the gateway cannot be discovered, please check the following:

- The default factory IP address of the GT100-IE-MPI is 192.168.1.188. Ensure that your computer and the gateway are on the same network segment.
 - Test the network connection using the Ping command. For detailed instructions, refer to "[How to Use the Ping Command](#)" on the Support page at www.sstautomation.com.
 - If you press and hold the Reset button for 5 seconds, the gateway will restore factory default configuration settings, and the IP address will revert to 192.168.1.188.
3. Enter 192.168.1.188 in your web browser's address bar to configure the gateway. For detailed configuration instructions, please refer to [Chapter 5](#).



5 Configuration Instructions

5.1 Configuration Interface Description

After connecting the gateway with a network cable, enter <http://192.168.1.188/> in your web browser to start the configuration.

Upon your first visit to the web configuration page, the interface shown below will appear.

The default password is "admin".



Language English ▾

Password

Default Password: admin

5.2 Home

The Home screen displays basic information and diagnostic data for your reference.



Industrial Communication Bridge

Home

Parameter
Settings

Device name:	Serial number:	00109583	Firmware version:	0.3.1.38
Bridge adapter type:	MAC address:	4E-45-54-01-AC-0F	Production date:	2021-11-26

Serial Interface Diagnostics

Protocol mode:	MPI M/S	X1 baudrate type:	Auto	X2 baudrate type:	Auto
Bus status:	Error	X1 baudrate:	9600	X2 baudrate:	9600
Bridge adapter address:	0	X1 request counts:	0	X2 request counts:	0
Bus highest address:	31	X1 response counts:	0	X2 response counts:	0
Gap factor:	10	X1 error counts:	0	X2 error counts:	0
Master address sheet:	0				
Slave address sheet:					

Ethernet Interface Diagnostics

IP address:	192.168.1.188	TCP connection counts:	0	TCP request counts:	0
Subnet mask:	255.255.255.0	S7TCP connection counts:	0	TCP response counts:	0
Gateway:	192.168.1.1	Modbus connection counts:	0	TCP error counts:	0
S7TCP target address:	2				
S7TCP target address by slot:	OFF				

5.3 Parameter Settings

5.3.1 Basic Settings

Click "Parameter Settings" in the left menu to access the configuration interface shown below:

Basic Settings

	Settings	Description
Device name:		Enter the name of the device to which the bridge is connected.
Password:		Change password.
Conform password:		Conform password.

Device name: Enter the name of the device to which the bridge is connected.

Password: Change the login password for the web configuration page.

Confirm password: Re-enter the password for verification.

5.3.2 Serial Interface Settings

Serial Interface Settings

	Settings	Description
Protocol mode	MPI M/S	Select the protocol mode of PLC.
Bridge adapter address	0	The default is 0, which cannot conflict with other station address on the bus.
Bus highest address	31	The default is 31.
Gap factor	10	Range: 1-100, the default is 10.
X1 baudrate	AUTOMATIC	X1 port connects to PLC, the baudrate can be set to be automatic or fixed baudrate.
X2 baudrate	AUTOMATIC	X2 port connects to HMI, the baudrate can be set to be automatic or fixed baudrate.

- Protocol mode:** Select the communication protocol used by the PLC. Select "PPI" to connect to the PPI port of an S7-200 PLC. For S7-300 or S7-400 PLCs, select "MPI M/S". If you want to connect PROFIBUS port, please select PROFIBUS.
- Bridge adapter address:** The default is 0. This address must not conflict with any other station addresses on the bus.
- Bus highest address:** The default is 31. Modification is generally not required.
- Gap factor:** The default is 10. Modification is generally not required.
- X1 baud rate:** Select the baud rate that matches your PLC. The X1 port, which connects to the PLC, supports both automatic detection and fixed baud rate settings.
- X2 baud rate:** Select the baud rate that matches your PLC. Similar to X1, the X2 port supports either auto-sensing or a fixed baud rate.

5.3.3 Ethernet Interface Settings

Ethernet Interface Settings

	Settings	Description
IP address:	192 . 168 . 1 . 188	IP address is 192.168.1.188 by default.
Subnet mask:	255 . 255 . 255 . 0	Subnet mask is 255.255.255.0 by default.
Gateway:	192 . 168 . 1 . 1	Gateway is 192.168.1.1 by default.
S7TCP target address by slot:	OFF ▼	When the status is ON,S7TCP target address is set by slot.
S7TCP target address:	2	The default is 2,valid when the status of S7TCP target address by slot is OFF.
Open TCP Port:	1099	The default is 1099.

- IP Address:** Configure the IP address of the GT100-IE-MPI.
- Subnet Mask:** Subnet mask is 255.255.255.0 by default.
- Gateway:** The default address is 192.168.1.1.
- S7TCP target address by slot:** When enabled (ON), the target address is defined by the PLC slot number.
- S7TCP target address:** The default value is 2. This field is active only when "S7TCP Target Address by Slot" is set to OFF.
- Open TCP Port:** The default is 1099.

5.4 Download

Once parameter settings are complete, click the "Download" button to apply the configuration to the GT100-IE-MPI. A confirmation prompt will appear after clicking "Download"; the new configuration will then take effect.

The parameters are set successfully,the device will restart in 6 seconds.

6 TIA Portal Programming

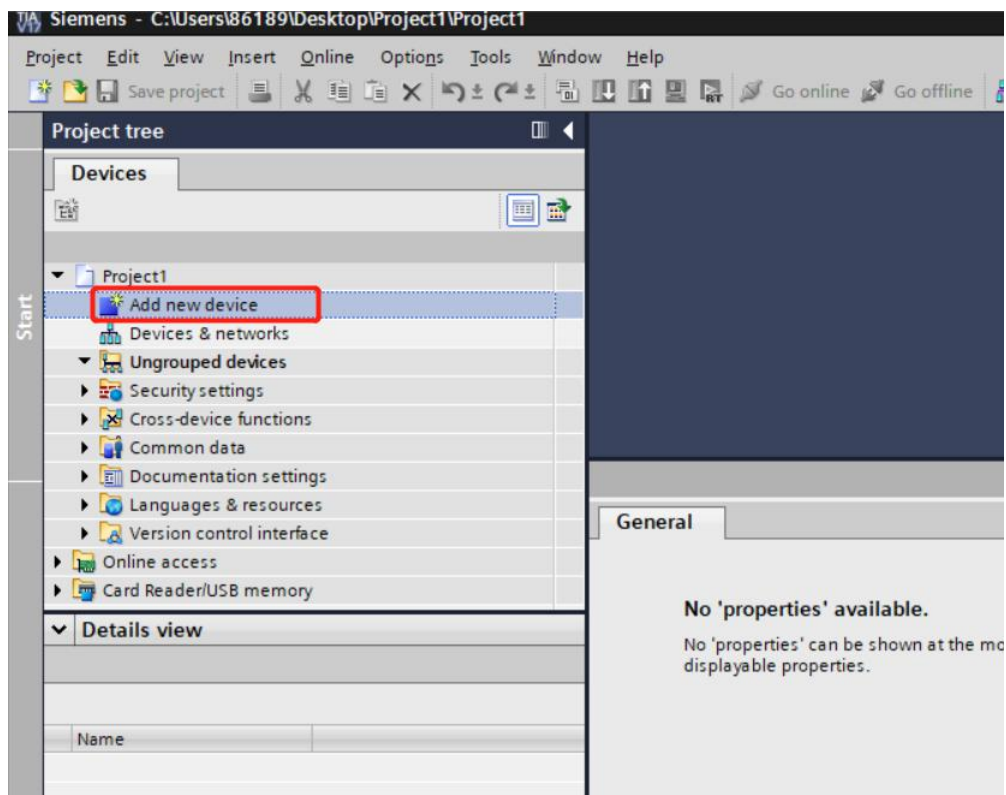
6.1 System Requirements

To program your PLC with TIA Portal using the GT100-IE-MPI, TIA Portal must first be installed on your system. Please refer to Siemens for instructions on how to install TIA Portal.

6.2 Programming

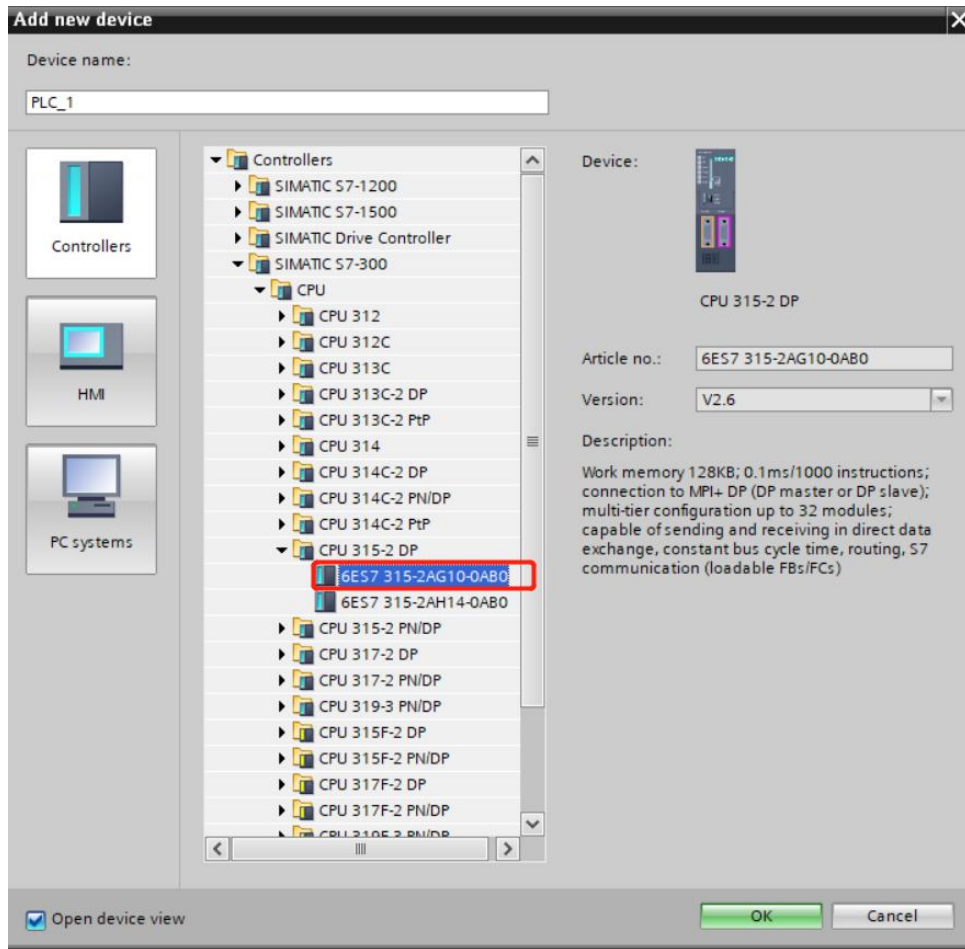
Refer to the following instructions to configure the GT100-IE-MPI in TIA Portal.

1. Open a new project.
2. Double-click "Add new device".



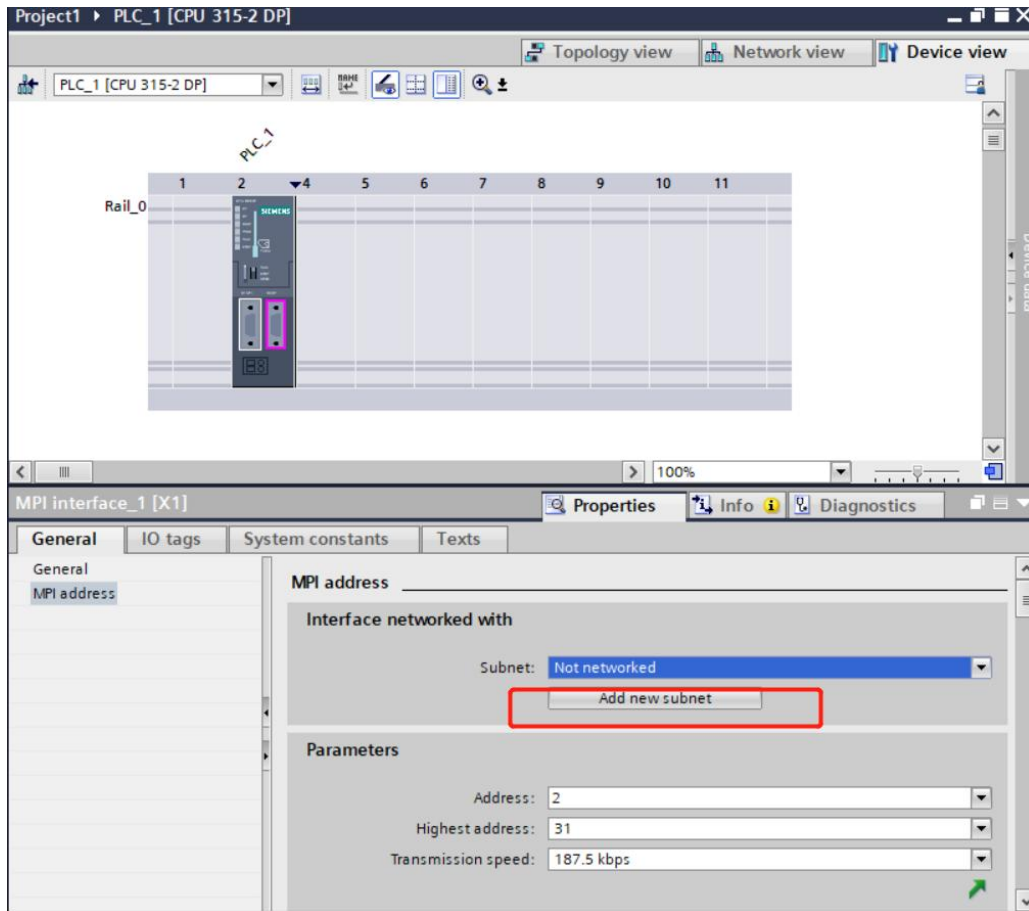
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- Expand the "Controllers" tree and expand the "CPU" folder under "SIMATIC S7 300", then select the actual PLC model you want to connect. Then click "OK".

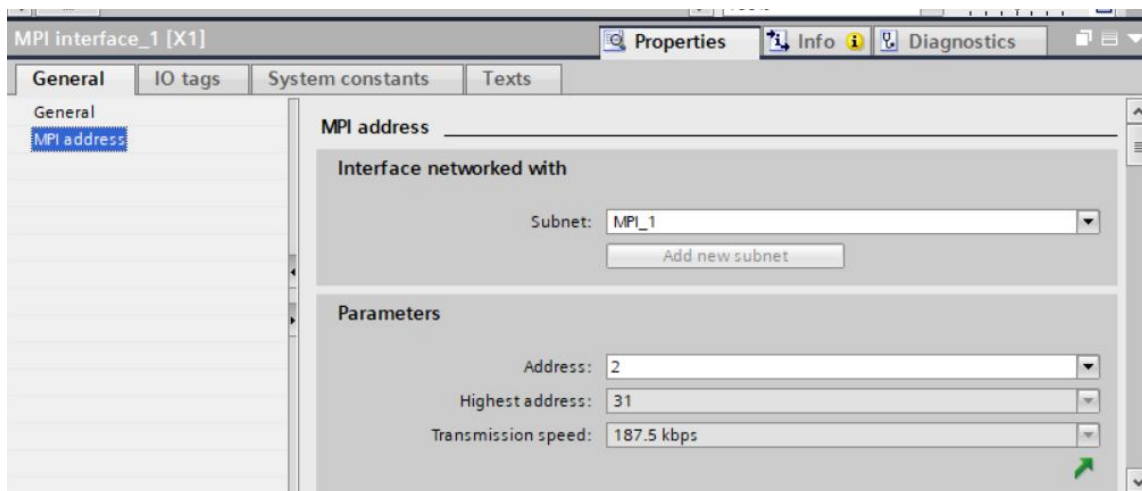


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4. Double-click "MPI address", configure it and click "Add new subnet".

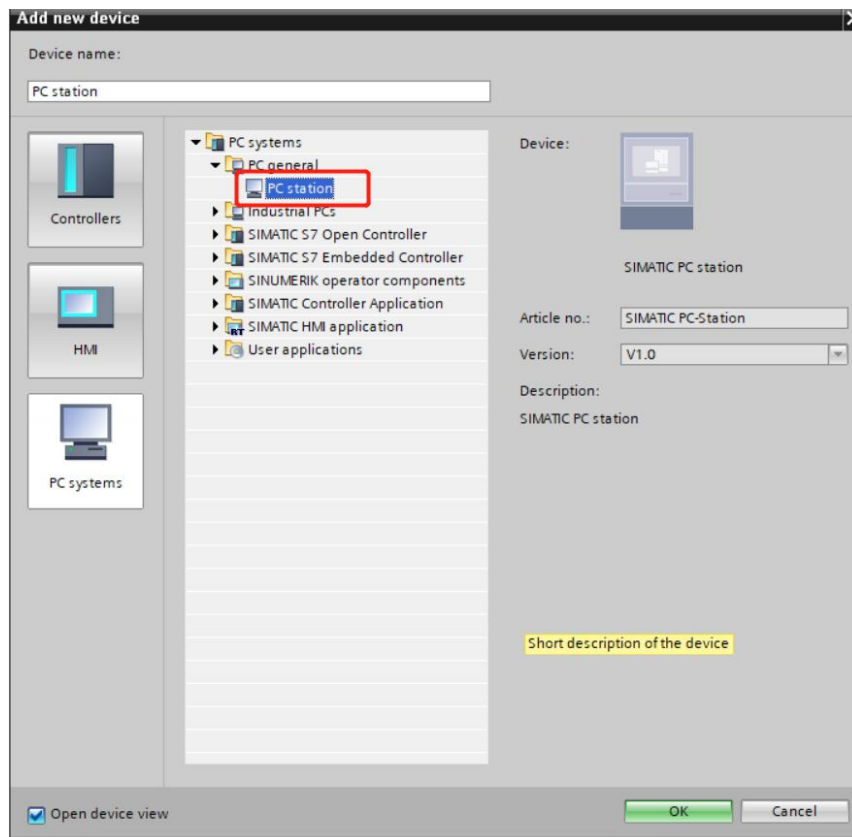


5. It will generate "MPI_1" network. The "Address" should match the MPI address of PLC. The default is 2.

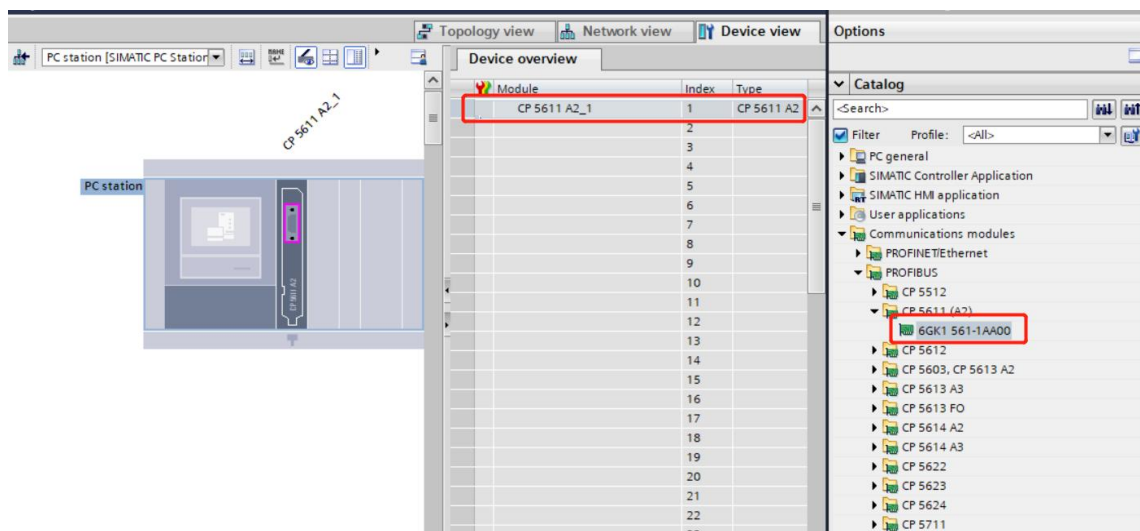


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6. Then select "Add new device", select the "PC station" option under the "PC general" folder within the "PC systems" tree. Then click OK.

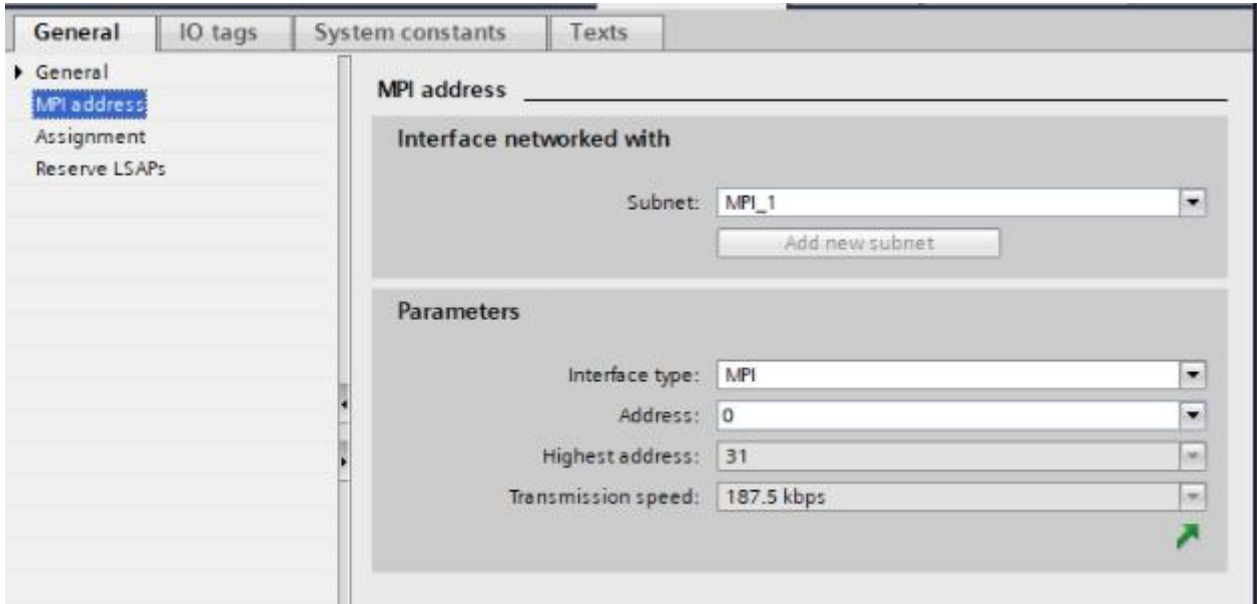


7. Select "Communications modules"->"PROFIBUS"->"CP5611(A2)", and drag it to the No.1 slot of PC station.

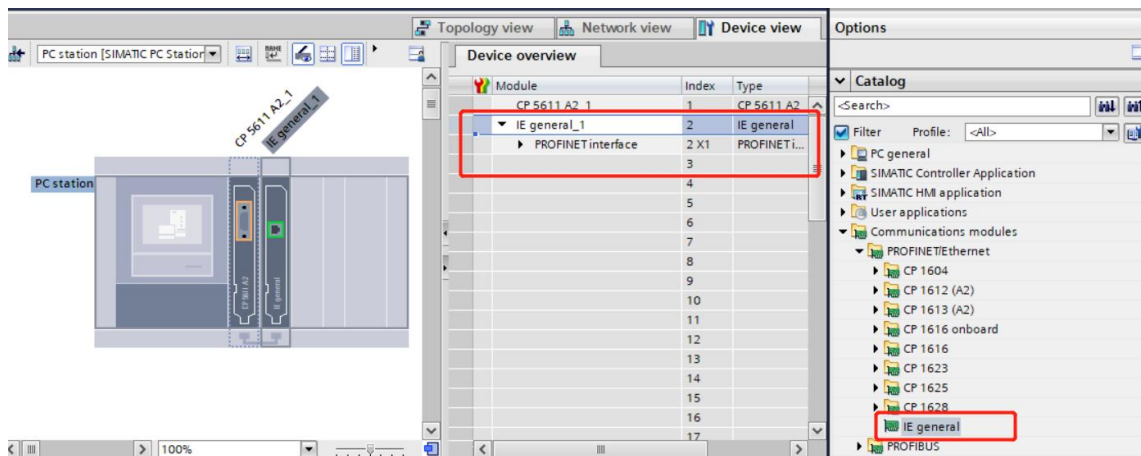


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8. Double-click "CP5611A2_A" to start configuring the serial interface parameters. Choose "MPI" for Interface type. Choose "MPI_1" for Subnet, then set the "Address" to the GT100-IE-MPI Module address (The default is 0, and it must not conflict with any other station address on the bus).

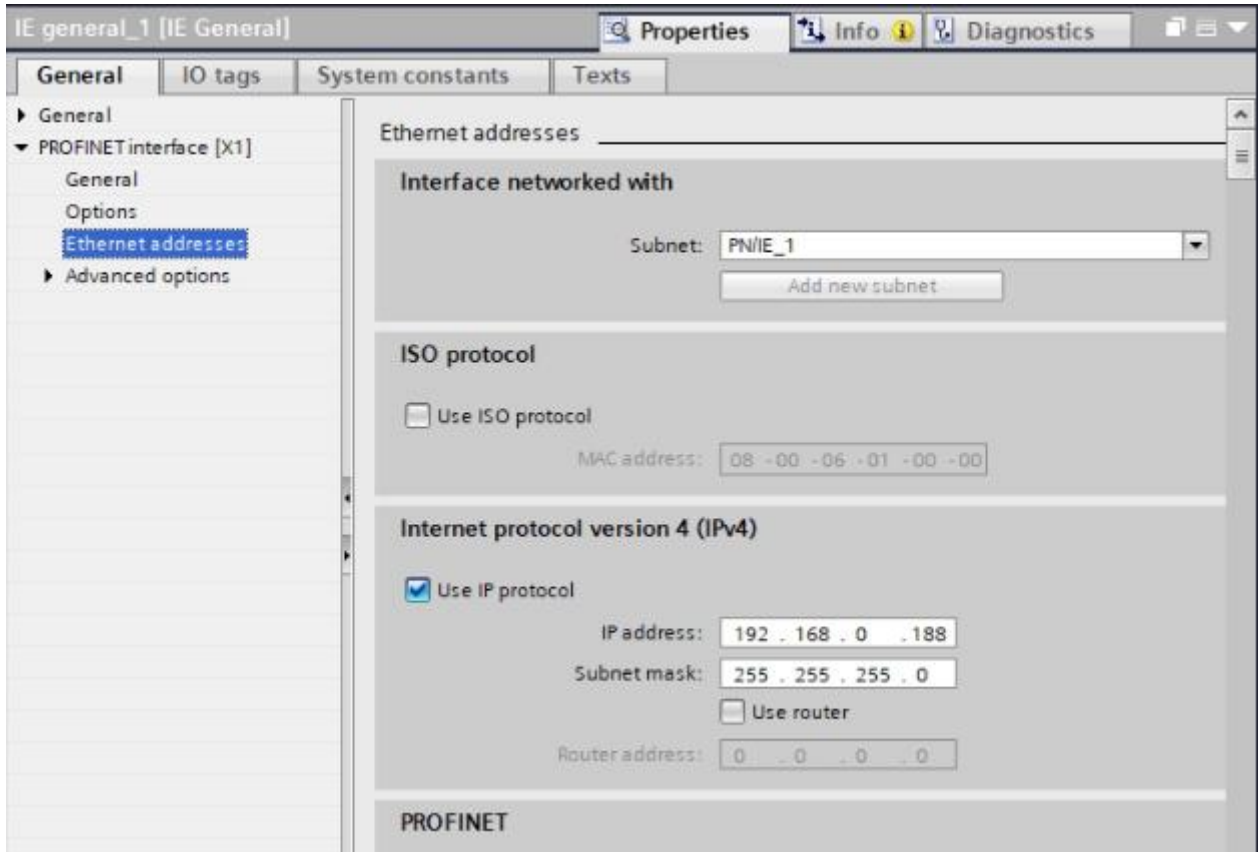


9. Select "Communications modules" -> "PROFINET/Ethernet" -> "IE general", drag it to the No.2 slot.



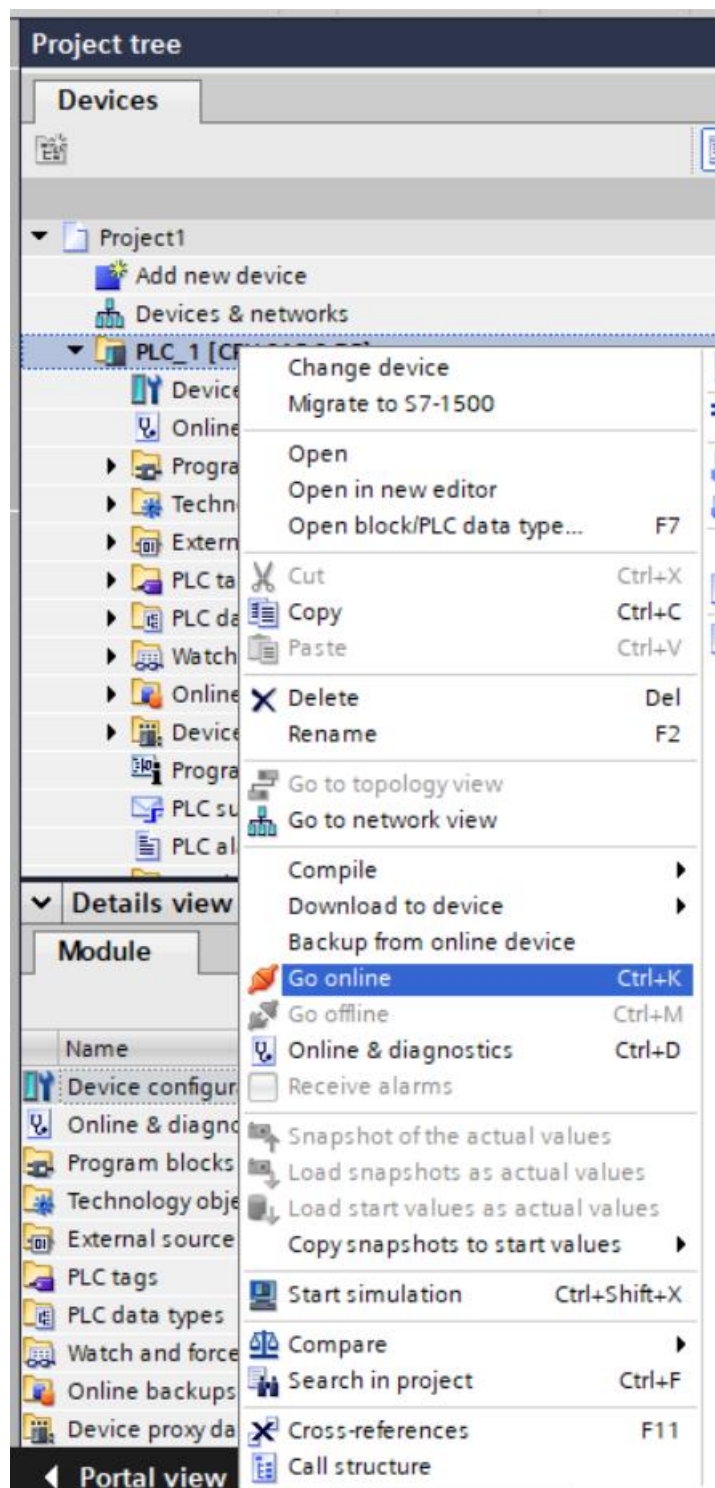
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10. Double-click "IE general_1" to start configuring the ethernet interface parameters. Click "Add new subnet" and it will automatically generate "PN/IE". Fill in the IP address and Subnet mask of the GT100-IE-MPI (The default, IP address is 192.168.1.188).



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11. Right-click "PLC" and select "Go online". In the pop-up window, select "PN/IE" for "PG/PC" interface type, select local network card for "PG/PC Interface". Click "Start search" to locate the PLC. Click "Go online".



12. Right-click "Program blocks", select "Upload from device (software)", then start uploading and downloading the PLC program.

7 STEP 7 Programming

7.1 System Requirements

To program your PLC with STEP 7 using the GT100-IE-MPI, STEP 7 must first be installed on your system. Please refer to Siemens for instructions on how to install STEP 7.

Additionally, please install the STEP 7 driver (Run as administrator) which is available on the [GT100-IE-MPI product page](#).

7.2 Programming

The following procedure will show you how to program your PLC using STEP 7.

1. Set PG/PC interface

- a. Using a web browser, go to the "S7 Bus Interface Parameters" page of the GT100-IE-MPI (See [Chapter 5.1](#)). Under 'Serial Interface Settings', set the 'Module address' to the desired MPI address for the GT100-IE-MPI (default is 0). This MPI address must be unique and cannot be the same as the PLC's MPI address.

Serial Interface Settings

	Settings
Protocol mode:	MPI M/S ▼
Module address:	0
Bus highest address:	31
Gap factor:	10
X1 baudrate:	187500 ▼
X2 baudrate:	187500 ▼

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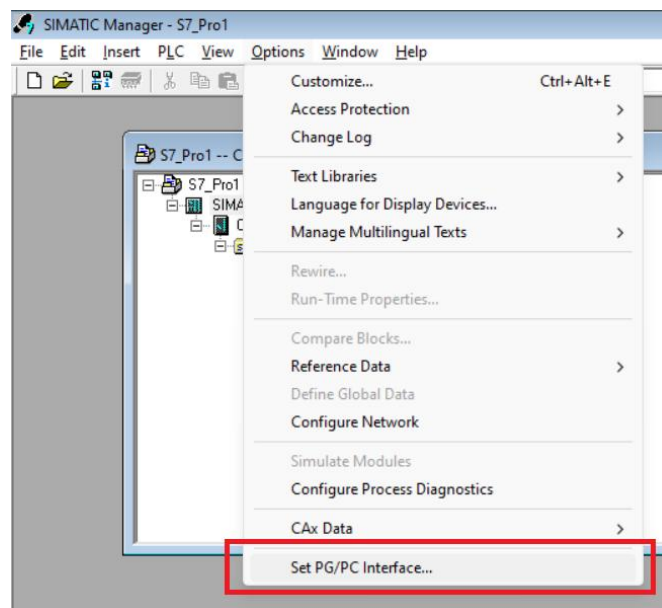
Under 'Ethernet Interface Settings', set the 'S7TCP target address' to the actual PLC's MPI address (default is 2), and click the "Download" button to save the changes.

Ethernet Interface Settings

	Settings
IP address:	192 . 168 . 1 188
Subnet mask:	255 . 255 . 255 0
Gateway:	192 . 168 . 1 1
S7TCP target address by slot:	OFF ▾
S7TCP target address:	2
Open TCP Port:	1099

Download

b. Open the STEP 7 programming software, select the menu "Options -> Set PG/PC Interface...".

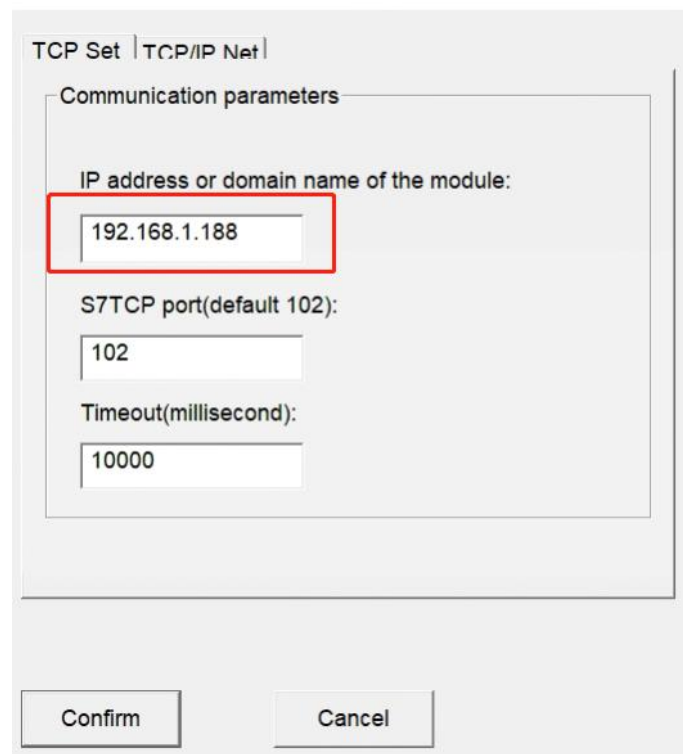
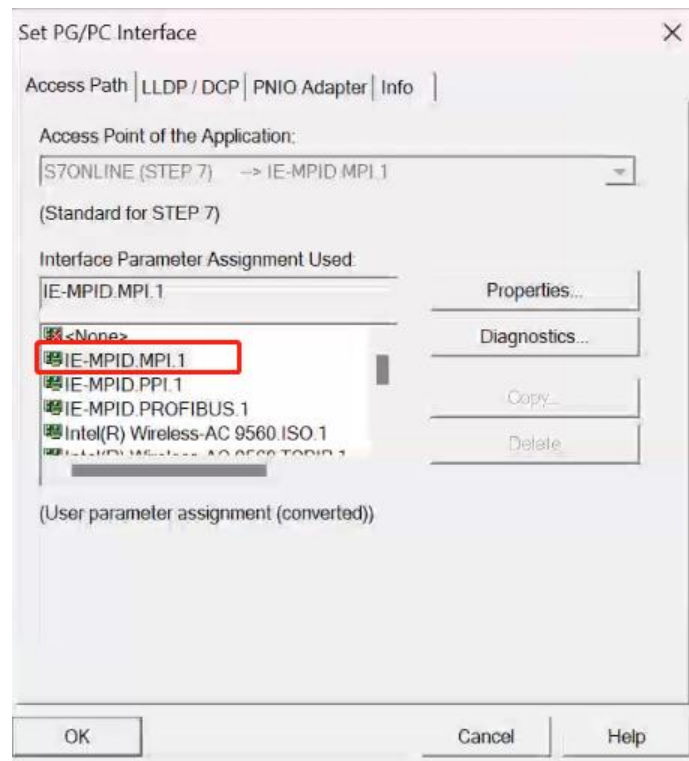


GT100-IE-MPI

EtherNet MPI Adapter

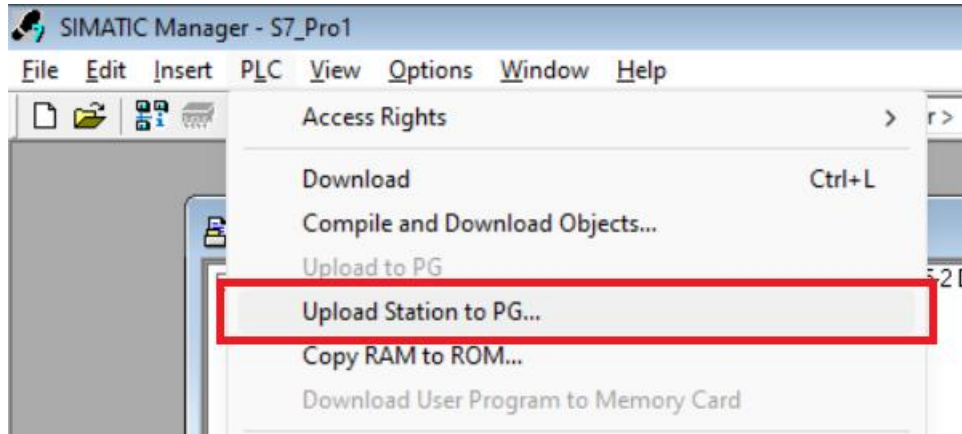
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- c. Select IE-MPID.MPI.1 in the pop-up dialog box, and then click on Properties to change its IP address so that it is in the same IP subnet as the PC.



2. Upload Program

- a. Select the menu "PLC -> Upload Station to PG..." in the main window of STEP 7 software.



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- b. Click the "View" button to check the type of the PLC, and then click the "OK" button to upload the program from the PLC.

Select Node Address

Which module do you want to reach?

Rack: 0

Slot: 0

Target Station: ☒ Local ☐ Can be reached by means of gateway

Enter connection to target station:					
IP address	MAC...	Module type	Station name	Module name	Plant c
192.168.1.188		CPU 315-2 DP			

Accessible Nodes

Update

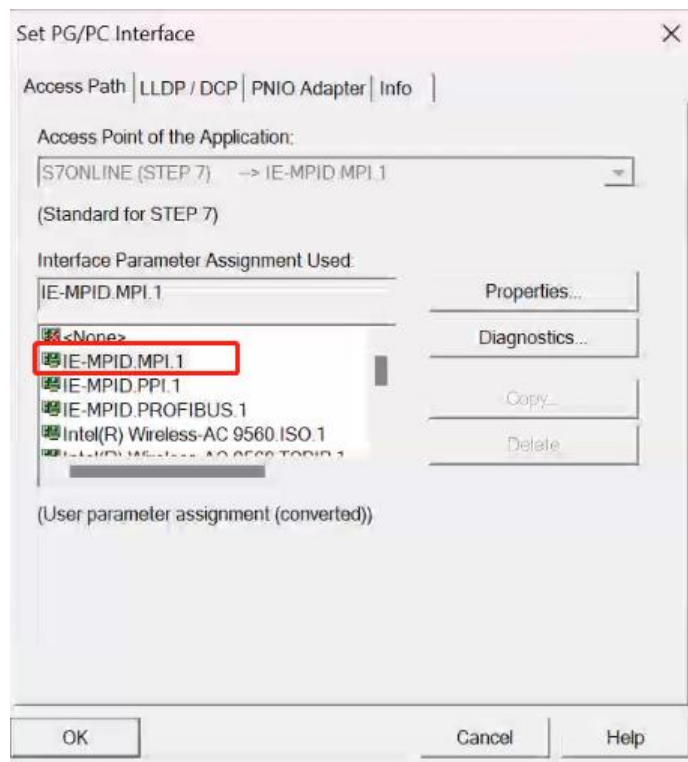
 Devices connected to an enterprise network or directly to the internet must be appropriately protected against unauthorized access, e.g. by use of firewalls and network segmentation. For more information about industrial security, please visit: <http://www.siemens.com/industrialsecurity>

OK Cancel Help

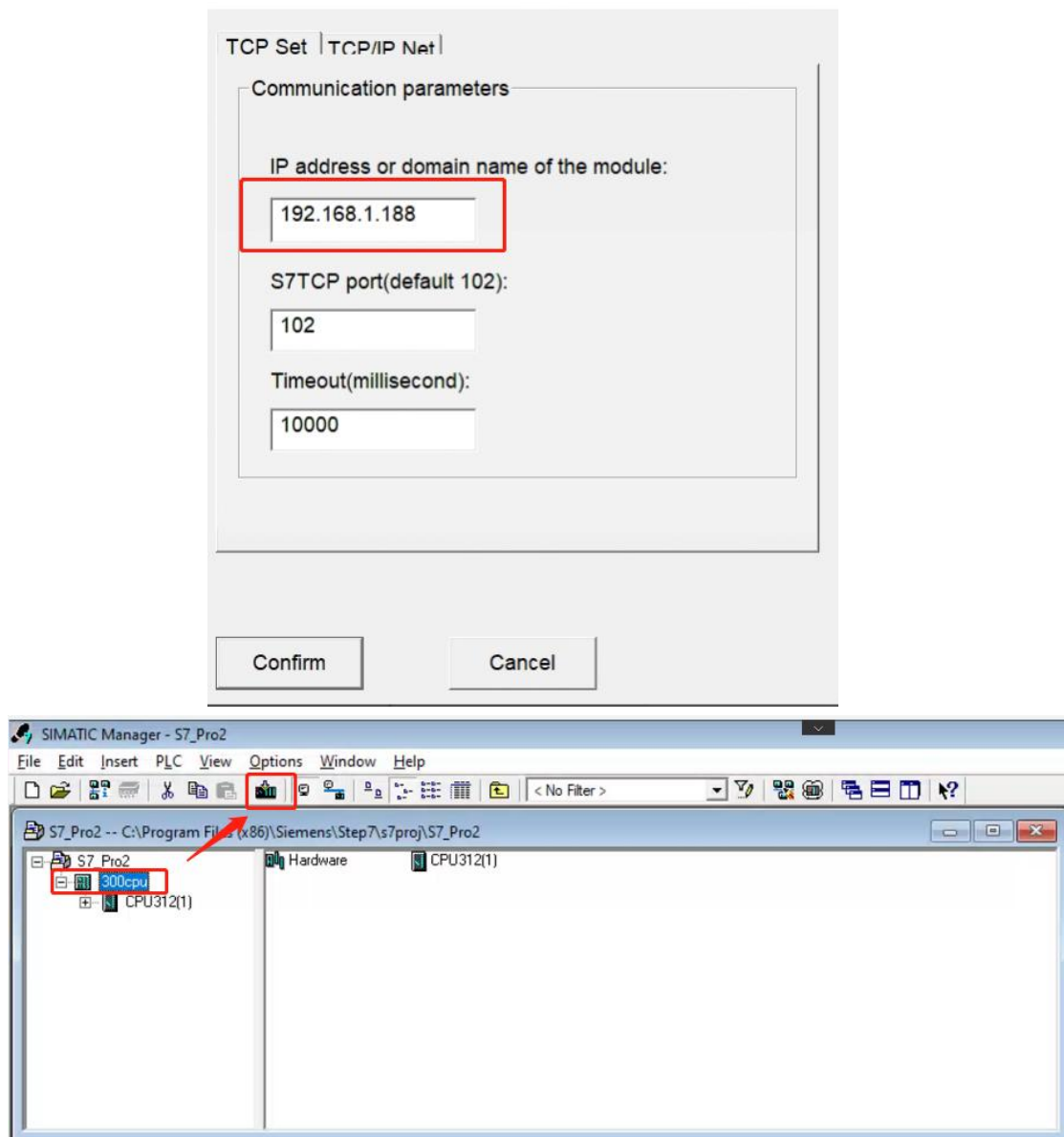
3. Download Program

STEP 7 software will automatically check whether there is an Ethernet connection in the hardware configuration of the current S7-300 Station when performing a download and when monitoring the Network communication interface.

- a. Since the GT100IE-MPI driver has already been installed and "IE-MPID.MPI.1" has been selected in the PG/PC settings, you only need to select the S7-300 Station project and click "Download".



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- b. After clicking on download, a download progress bar will be displayed to confirm that the GT100-IE-MPI connection is working properly.

4. Conclusion

After the S7-300 Station is established, you can start using the GT100-IE-MPI to download and monitor the program (Operate on the S7-300 Station of the STEP 7 project).

Note:

- a. You should run as administrator to install the STEP 7 driver and run STEP 7 software.
- b. The IP address of IE General in S7-300 Station rack should be the IP address of GT100-IE-MPI.
- c. The address parameter of the STEP 7 programming station for GT100-IE-MPI should be pre-set to the MPI station address of the current PLC (the default is 2).

8 Modbus TCP Communication

The GT100-IE-MPI can be configured to function as a Modbus TCP Server, which can be enabled using the Exclink configuration software. This feature is supported on S7-200, S7-300 and S7-400 PLCs. The PLC's Q output area is mapped starting at 0x0001, the I input area is mapped starting at 1x0001, and the M memory area is mapped starting at 3x0001. On S7-300 and S7-400 PLCs, the DB memory area blocks are mapped starting at 4x0001. On S7-200 PLCs, the V memory area is mapped starting at 4x0001.

The mapping address table is listed as below.

Modbus Register Starting Address	S7 Series PLC Starting Address	Data Type	Calculation	Function Code
0x0001	Q0.0	Bit	$Qm.n = 0x0001 + m*8 + n$	FC1 (Read Coil Status) FC5 (Write Single Coil)
1x0001	I0.0	Bit	$Im.n = 1x0001 + (m * 8) + n$	FC2 (Read Discrete Input)
3x0001	MW0	Word (2 bytes)	$MWm = 3x0001 + m/2$ Where m is an even number.	FC4 (Read Input Registers)
4x0001	DBx.DBW0 (S7-300 and S7-400)	Word (2 bytes)	$DBx.DBWm = 4x0001 + m/2$ Where m is an even number. (x is set through the Exclink configuration software)	FC3 (Read Holding Registers) FC16 (Write Multiple Registers)
	VW0 (S7-200)		$VWm = 4x0001 + m/2$ Where m is an even number (The V memory area in the Exclink configuration software is configured as DB1)	FC6 (Write Single Register)

Note: Modbus register addresses are expressed in Base-1 notation. If the Modbus TCP Client uses Base-0 notation, then the addresses will need to be offset by one.

Note: Please make sure your PC is configured on the same subnet as the GT100-IE-MPI adapter. For example, if the adapter's IP address is 192.168.1.188, then your PC should be configured to 192.168.1.XXX.

Modbus TCP IP Address: The same IP address as the GT100-IE-MPI
Default: 192.168.1.188

Modbus TCP Slave ID: The same as the station address of your PLC
Default: 2

GT100-IE-MPI

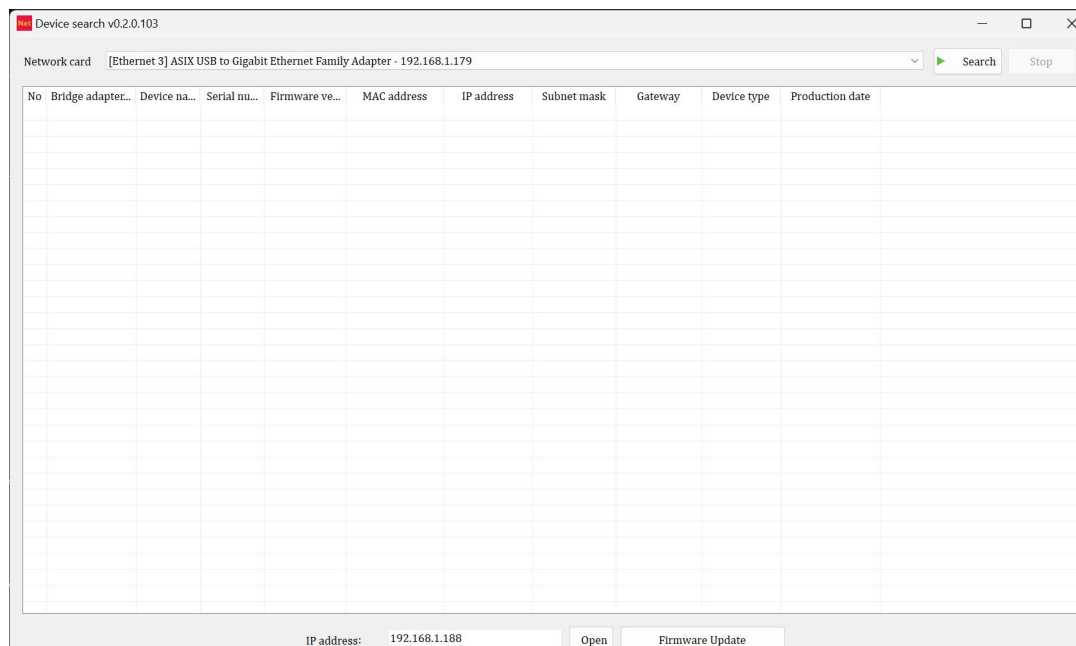
EtherNet MPI Adapter

User Manual

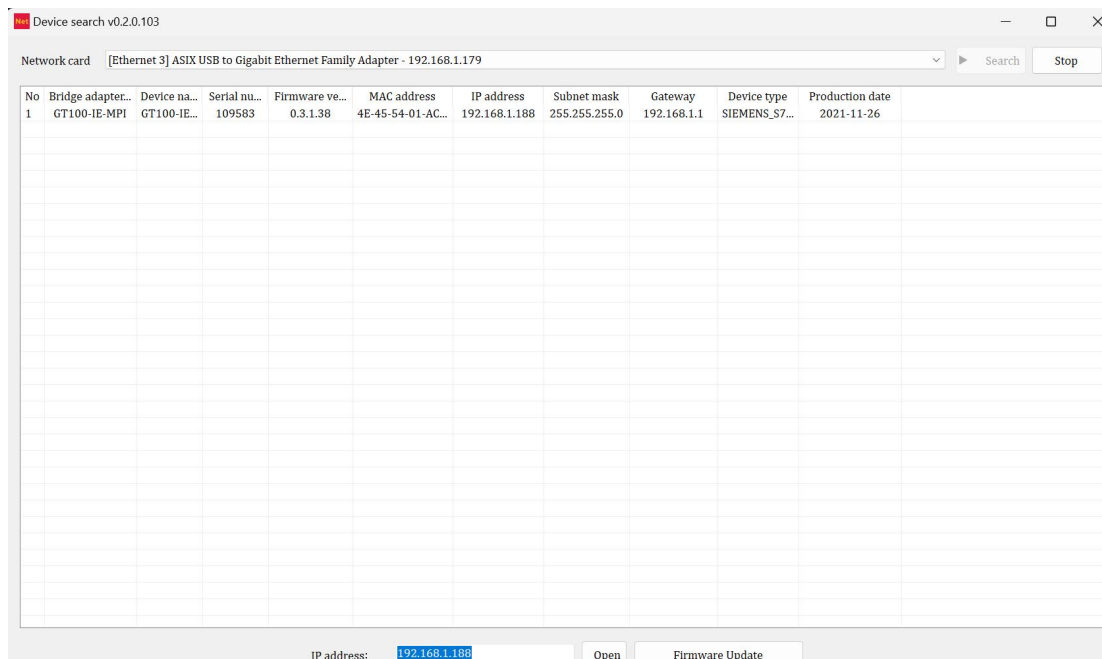
The following example will show how to access data from S7-300 PLC.



1. Open the Exlink software
2. Click the "Search" button.



The GT100-IE-MPI is found.



GT100-IE-MPI EtherNet MPI Adapter User Manual

3. Double-click the GT100-IE-MPI to enter into the configuration interface.

The screenshot shows the 'Configuration tool[GT100-IE-MPI] - 192.168.1.188' window. The 'Device Information' tab is active, displaying fields for Model (GT100-IE-MPI), IP address (192.168.1.188), Serial number (109583), Subnet mask (255.255.255.0), Firmware version (0.3.1.38), Gateway (192.168.1.1), Device type (SIEMENS_S7300), and MAC address (4E-45-54-01-AC-0F). Buttons for Export, Import, Clear log, Refresh, Download, Upload, Restart, and Firmware Update are visible. Below this, the 'Parameter configuration' section has tabs for Modbus slave, Communication diagnosis, and Communication test. The 'Modbus slave' tab is selected, showing fields for Device name (GT100-IE-MPI), Protocol mode (MPI M/S), X2 mode (HMI), IP address (192.168.1.188), Module address (0), X2 baudrate (Auto), Subnet mask (255.255.255.0), Bus highest address (31), X2 databit (8), Gateway (192.168.1.1), X1 baudrate (Auto), X2 parity (None), S7TCP target address (2), Gap factor (10), X2 stopbit (1), S7TCP target address by slot (OFF), OpenTcp port (1099), and Web display (ON). A log window at the bottom shows connection and configuration status messages.

4. Click the Modbus slave Tab.

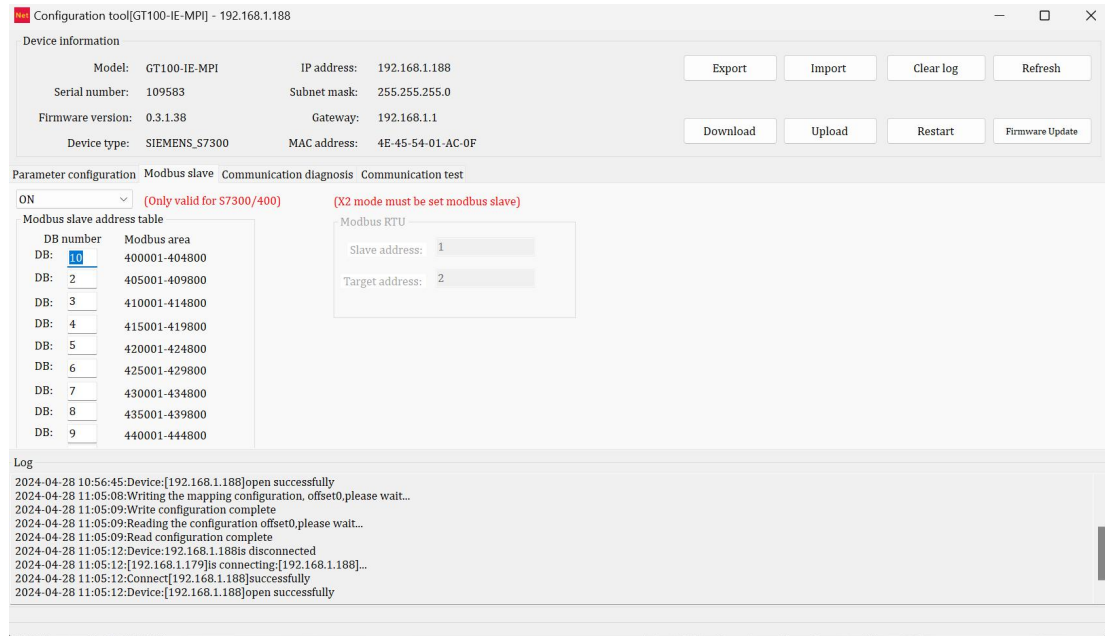
The screenshot shows the same configuration tool window, but now the 'Modbus slave' tab is selected under 'Parameter configuration'. The 'Modbus slave address table' is displayed, showing a list of DB numbers and their corresponding Modbus areas. A red warning message states '(X2 mode must be set modbus slave)'. The 'Modbus RTU' section shows fields for Slave address (1) and Target address (2). The log window at the bottom shows updated messages indicating successful connection and configuration.

DB number	Modbus area
DB: 1	400001-404800
DB: 2	405001-409800
DB: 3	410001-414800
DB: 4	415001-419800
DB: 5	420001-424800
DB: 6	425001-429800
DB: 7	430001-434800
DB: 8	435001-439800
DB: 9	440001-444800

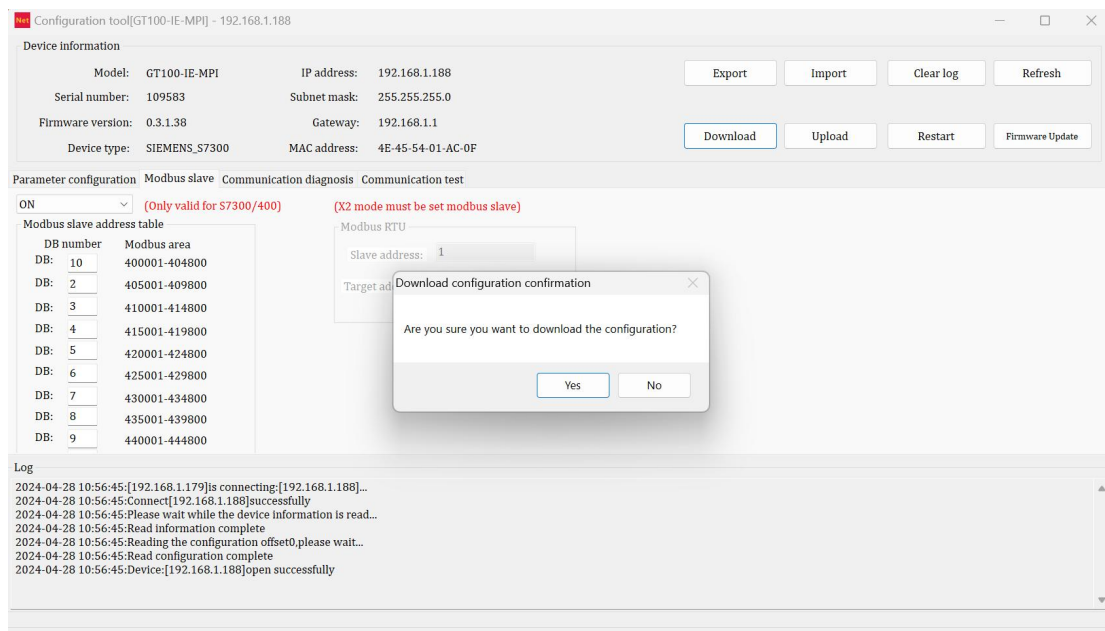
GT100-IE-MPI EtherNet MPI Adapter User Manual

Set the drop-down option to "ON" to enable Modbus TCP, then configure the DB block numbers for the Modbus slave addresses to be mapped to the PLC. In this example, the DB10 block will be mapped to 400001-404800.

Note: Before enabling Modbus TCP, first add the data blocks, such as DB1 and DB2, to the S7 PLC program.



- When the configuration is done, please click the "Download" button to download the configuration to the GT100-IE-MPI adapter.

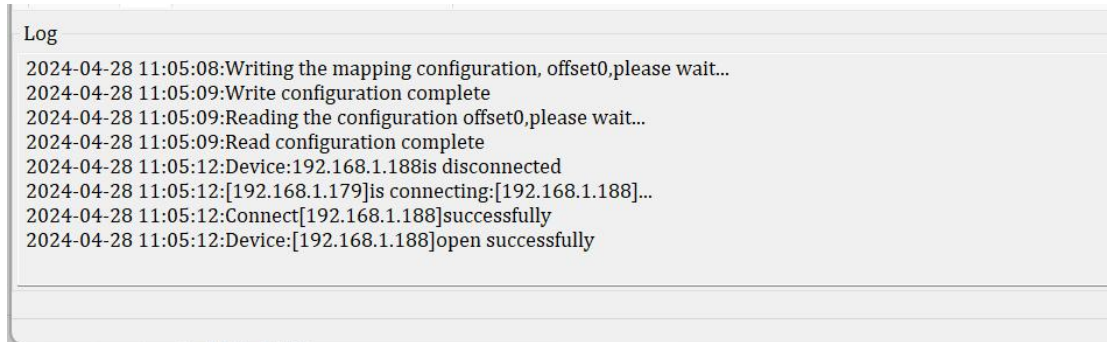


GT100-IE-MPI

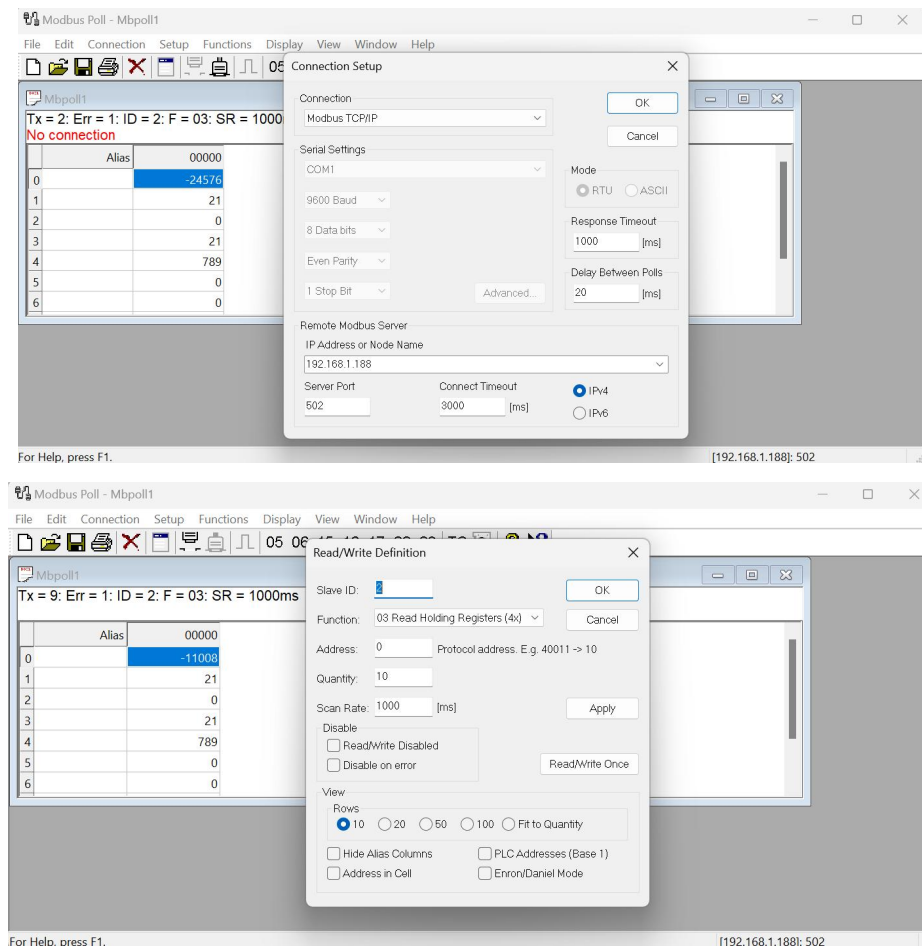
EtherNet MPI Adapter

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Click "Yes" to execute. The log at the bottom will show the configuration is downloaded successfully.



- Use a Modbus TCP Client to connect to the GT100-IE-MPI and read the data.
In this example, the Modbus Poll acts as a Modbus TCP Client to read the data.
Connect to IP address 192.168.1.188 and Slave ID 2.

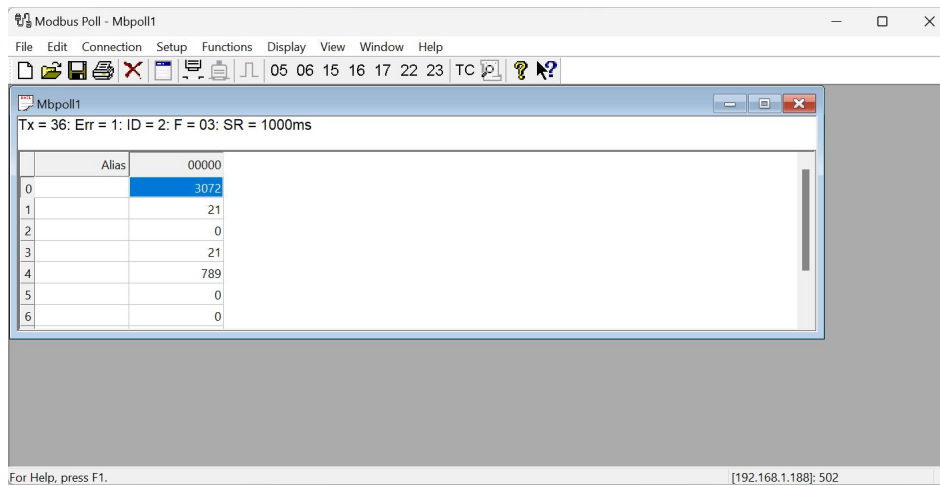


GT100-IE-MPI

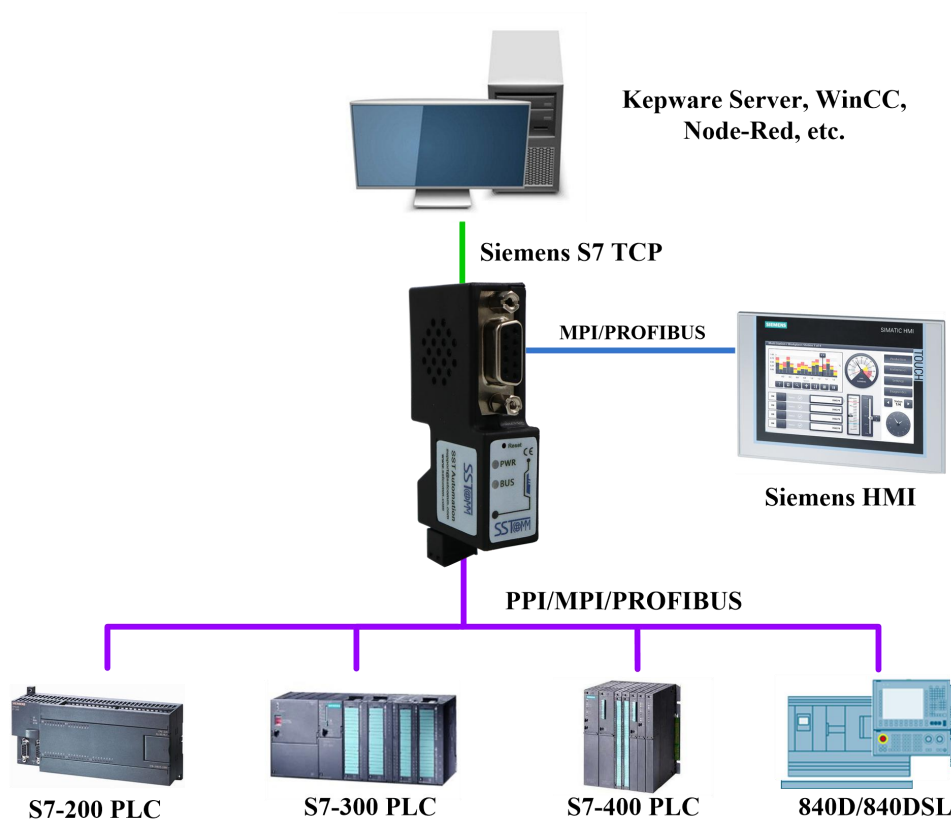
EtherNet MPI Adapter

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The data can now be read from the S7 PLC using Modbus TCP. Function codes FC6 or FC16 can also be used to write register values to the PLC.



9 Use Case



Appendix

A. How to connect GT100-IE-MPI to KEServerEX

Firstly, please set S7TCP target address to 2 or other number, and set the IP address on the same subnet as the PC running KEServerEX. Keep other parameters as default.



Industrial Communication Bridge

Home

Parameter
Settings

Device name:	Serial number:	00109583	Firmware version:	0.3.1.38
Bridge adapter type:	MAC address:	4E-45-54-01-AC-0F	Production date:	2021-11-26

Serial Interface Diagnostics

Protocol mode:	MPI M/S	X1 baudrate type:	Auto	X2 baudrate type:	Auto
Bus status:	Error	X1 bandrate:	9600	X2 baudrate:	9600
Bridge adapter address:	0	X1 request counts:	0	X2 request counts:	0
Bus highest address:	31	X1 response counts:	0	X2 response counts:	0
Gap factor:	10	X1 error counts:	0	X2 error counts:	0
Master address sheet:	0				
Slave address sheet:					

Ethernet Interface Diagnostics

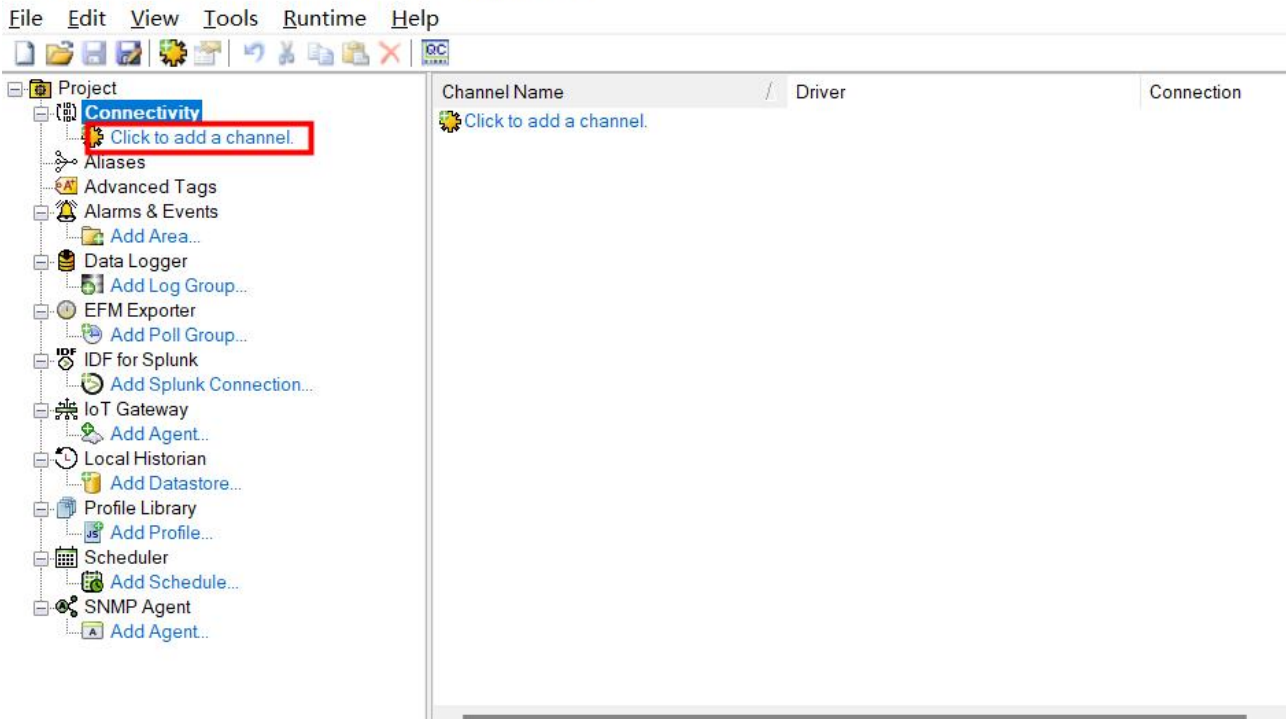
IP address:	192.168.1.188	TCP connection counts:	0	TCP request counts:	0
Subnet mask:	255.255.255.0	S7TCP connection counts:	0	TCP response counts:	0
Gateway:	192.168.1.1	Modbus connection counts:	0	TCP error counts:	0
S7TCP target address:	2				
S7TCP target address by slot:	OFF				

GT100-IE-MPI EtherNet MPI Adapter User Manual

Then start configuring KEPServerEX.

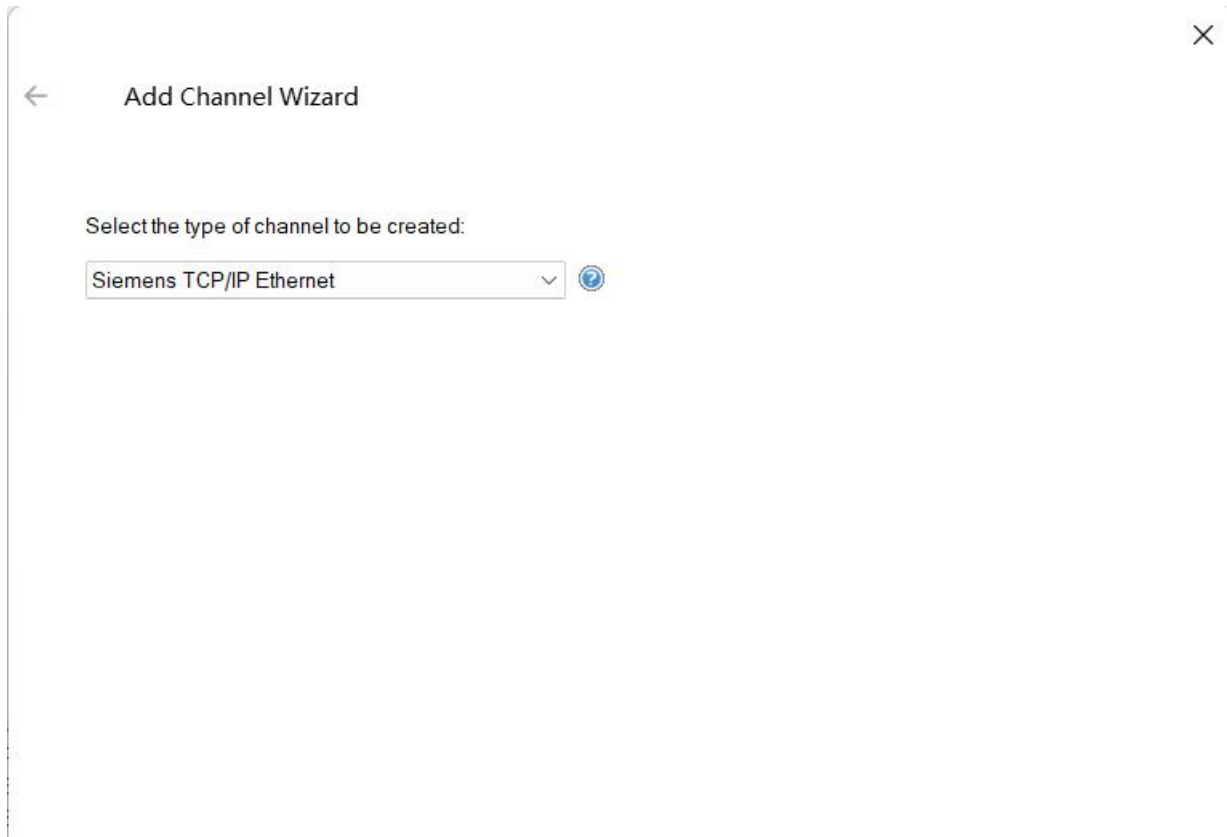
1. Create a new channel.

 [Connected to Runtime] - KEPServerEX 6 Configuration

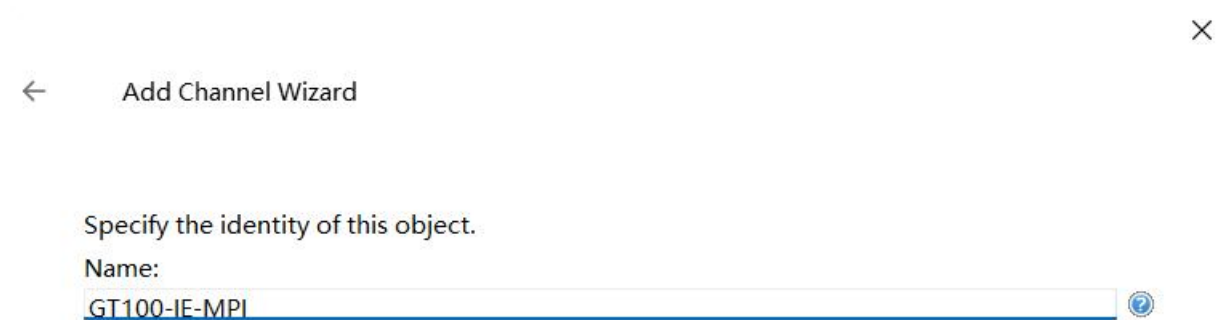


GT100-IE-MPI EtherNet MPI Adapter User Manual

2. Select Siemens TCP/IP Ethernet driver.

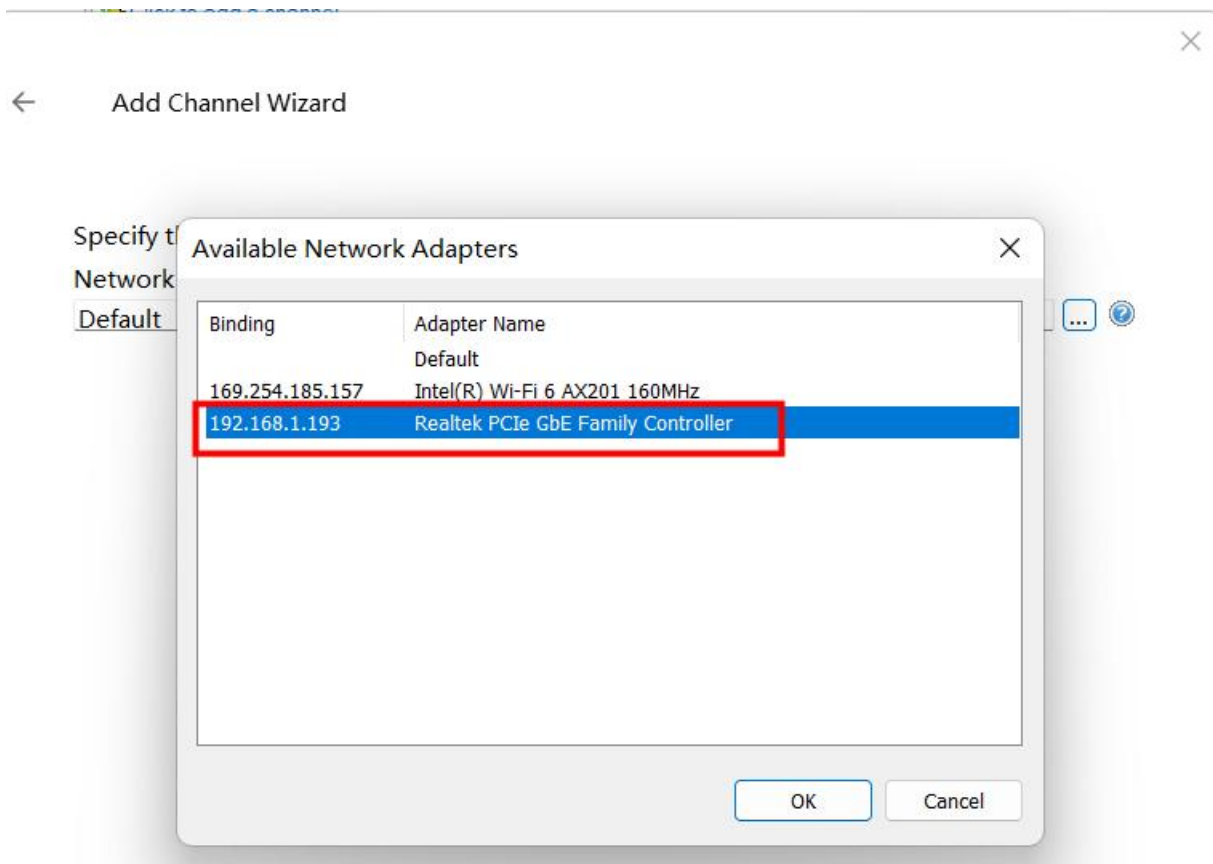


3. Enter a name for the Channel.



GT100-IE-MPI EtherNet MPI Adapter User Manual

4. Select the network adapters communicating with the GT100-IE-MPI.



GT100-IE-MPI

EtherNet MPI Adapter

User Manual

Keep other parameters as default.

← Add Channel Wizard

Choose how write data is passed to the underlying communications driver when more than one write exists in the write queue.

Optimization Method:

Write Only Latest Value for All Tags

Specify the ratio of write operations to read operations, based on one read per configurable number of writes.

Duty Cycle:

10

← Add Channel Wizard

Choose how to send invalid floating-point numbers to the client.

Floating-Point Values:

Replace with Zero

GT100-IE-MPI

EtherNet MPI Adapter

User Manual

←

Add Channel Wizard

×

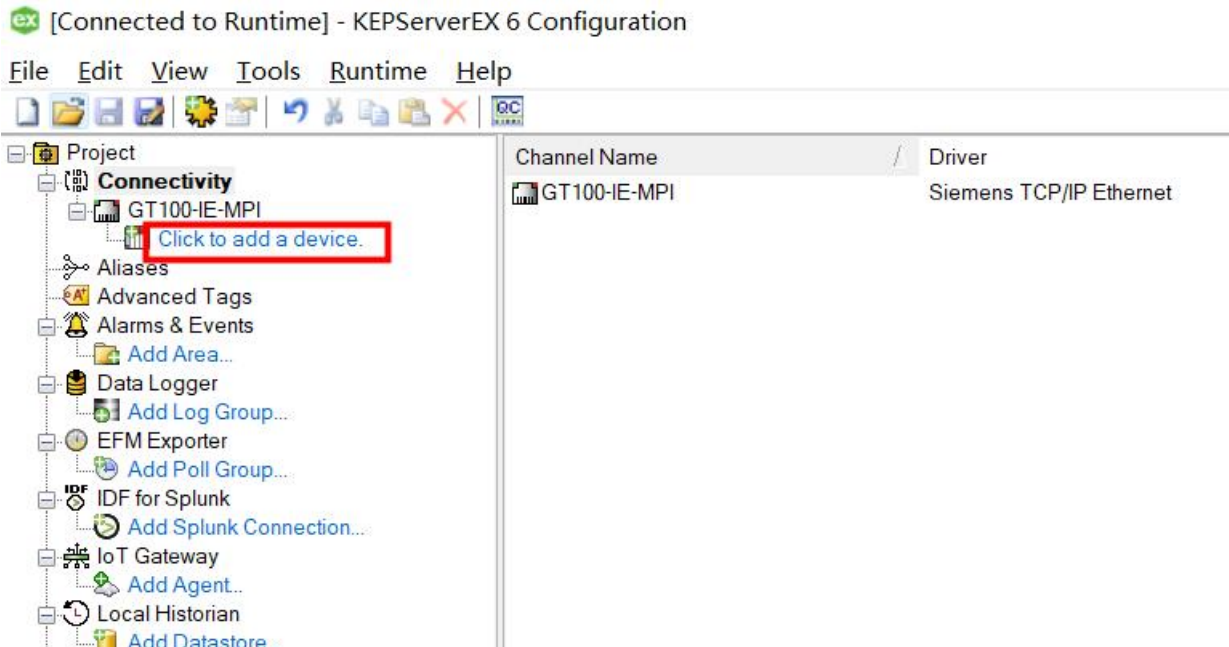
[-] Identification	
Name	GT100-IE-MPI
Description	
Driver	Siemens TCP/IP Ethernet
[-] Diagnostics	
Diagnostics Capture	Disable
[-] Tag Counts	
Static Tags	0
[-] Ethernet Settings	
Network Adapter	Realtek PCIe GbE Family Controller
[-] Write Optimizations	
Optimization Method	Write Only Latest Value for All Tags
Duty Cycle	10
[-] Non-Normalized Float Handling	
Floating-Point Values	Replace with Zero

The channel is created successfully.

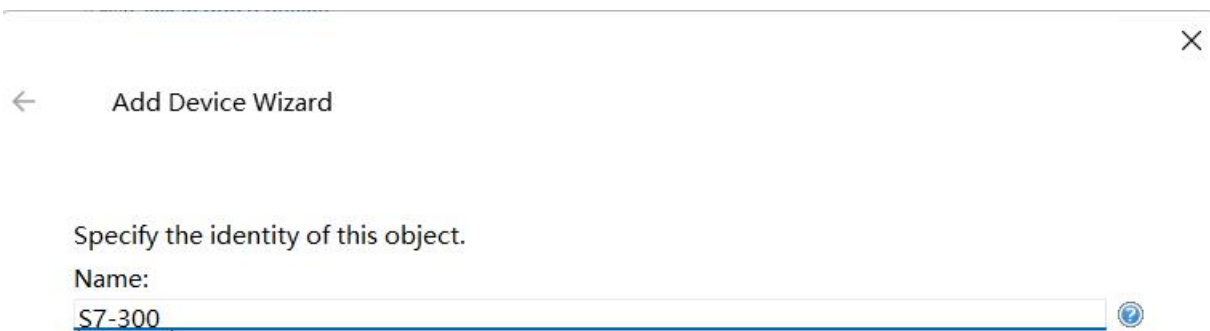
GT100-IE-MPI EtherNet MPI Adapter User Manual

Then you need to add a device.

5. Click to add a device.



6. Enter a name for the device.



GT100-IE-MPI EtherNet MPI Adapter User Manual

7. Select the actual S7 PLC model. GT100-IE-MPI only supports connecting S7-200, S7-300 and S7-400.

← Add Device Wizard

Select the specific type of device associated with this ID. Options depend on the type of communications in use.

Model:

A screenshot of a software window titled 'Add Device Wizard'. It shows a 'Model:' label followed by a dropdown menu. The dropdown menu is open, showing a list of S7 PLC models. A red rectangle highlights the first four options: S7-200, S7-300, S7-400, and S7-1200. The S7-300 option is currently selected and highlighted in blue. Below the dropdown, the text 'NetLink: S7-300' and 'NetLink: S7-400' is visible. A question mark icon is located to the right of the dropdown menu.

S7-300
S7-200
S7-300
S7-400
S7-1200
S7-1500
NetLink: S7-300
NetLink: S7-400

8. Enter a IP address for the GT100-IE-MPI.

← Add Device Wizard

Specify the device's driver-specific station or node.

ID:

192.168.1.188

Keep other parameters as default.

← Add Device Wizard ×

Specify the method for determining how often tags in the device are scanned.

Scan Mode:

Respect Client-Specified Scan Rate ▾ ⓘ

Provide the first updates for new tag references from stored (cached) data rather than polling devices immediately.

Initial Updates from Cache:

Disable ▾ ⓘ

GT100-IE-MPI EtherNet MPI Adapter User Manual



← Add Device Wizard

Define the maximum amount of time, in seconds, allowed to establish a connection to a remote device. Connection time is often longer than communication request time for a

Connect Timeout (s):

3

Specify an interval, in milliseconds, to determine how long the driver waits for a response from the target device to indicate completion.

Request Timeout (ms):

2000

Indicate how many times the driver sends a communications request before considering the request to have failed and the device to be in error.

Attempts Before Timeout:

2

Define how long, in milliseconds, the driver waits before sending the next request to the target device.



← Add Device Wizard

Automatically remove the device from the scan due to communication failures.

Demote on Failure:

Disable



Add Device Wizard

Select the automatic tag generation action to be taken on device startup.

On Device Startup:

Do Not Generate on Startup 

Indicate the preferred method of avoiding creation of duplicate tags.

On Duplicate Tag:

Delete on Create 

Indicate a tag group name for new generated tags. If empty, generated tags are added at the device level.

Parent Group:



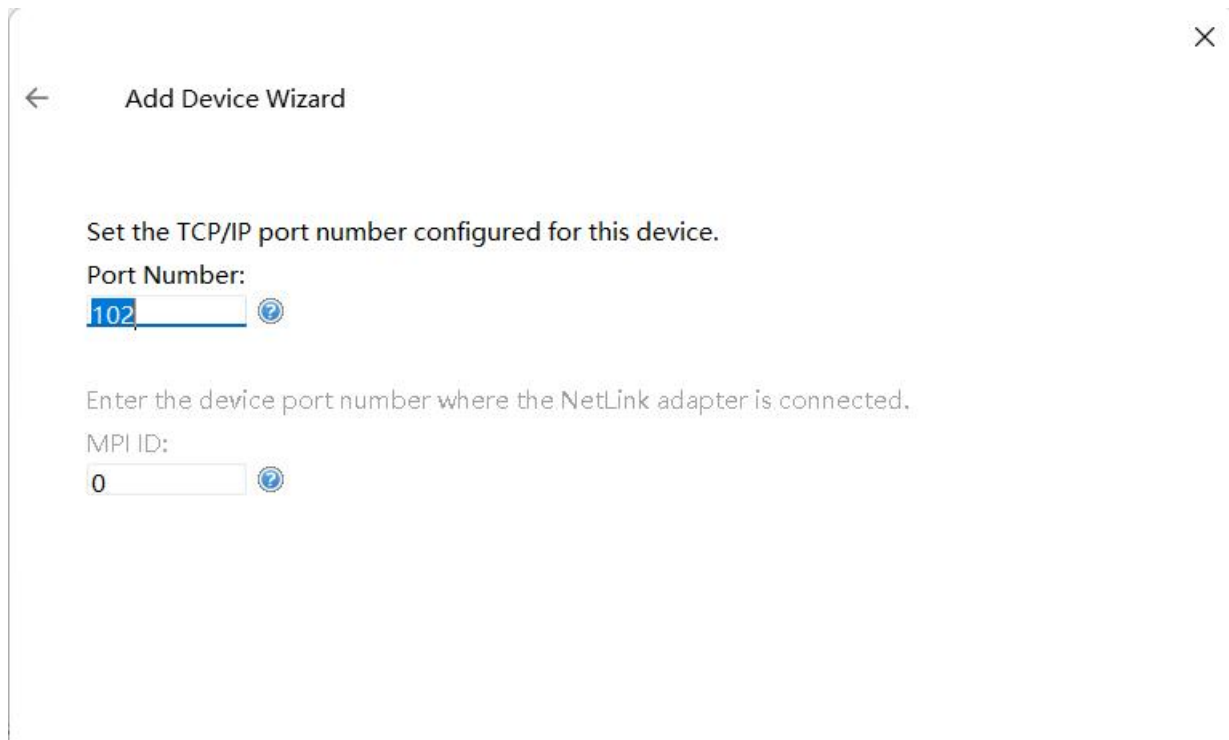
Instruct the server to automatically create sub groups for automatically generated tags.

Allow Automatically Generated Subgroups:

Enable 

GT100-IE-MPI EtherNet MPI Adapter User Manual

9. Keep the default port as 102. Since it is fixed in S7 communication port in the S7-200/S7-300/S7-400 PLC.



← Add Device Wizard

Set the TCP/IP port number configured for this device.

Port Number:
 ?

Enter the device port number where the NetLink adapter is connected.

MPI ID:
 ?

GT100-IE-MPI EtherNet MPI Adapter User Manual

10. Fill in the same address as configured in the S7TCP target address in GT100-IE-MPI. Here is 2.

← Add Device Wizard

4D57

Specify the remote (device) unique address for this connection in hexadecimal.
Remote TSAP:
4D57

Select the type of connection link to be used in communications.
Link Type:
PC

Enter the rack number where this CPU resides.
CPU Rack:
0

Enter the slot number where this CPU resides.
CPU Slot:
2

Keep other parameters as default.

×

← Add Device Wizard

Select the byte order for 16-bit and 32-bit values. Big Endian (Motorola) is the default byte order for Siemens S7 controllers; Little Endian (Intel) is also available.
Byte Order:
Big Endian

11. You can import Step 7 project to generate the tags or do not import and manually create the tag later.



Add Device Wizard

Select the source for tag import.

Tag Import Type:

Step 7 Project File 

Locate and select the Siemens Step 7 project file from which to import tags.

Step 7 Project (*.S7P):

Select the PLC program within the Step 7 project for which tags should be generated.

Program Path:

GT100-IE-MPI EtherNet MPI Adapter User Manual

12. Then the device is created successfully. Click ok to close.



Add Device Wizard

Identification	
Name	S7-300
Description	
Driver	Siemens TCP/IP Ethernet
Model	S7-300
Channel Assignment	GT100-IE-MPI
ID	192.168.1.188
Operating Mode	
Data Collection	Enable
Simulated	No
Tag Counts	
Static Tags	0
Scan Mode	
Scan Mode	Respect Client-Specified Scan Rate
Initial Updates from Cache	Disable
Communication Timeouts	
Connect Timeout(s)	3
Request Timeout(ms)	2000
Attempts Before Timeout	2

Then you should create the tags or auto generate the tags.

Manually click to add a tag.

[Connected to Runtime] - KEServerEX 6 Configuration

File Edit View Tools Runtime Help

Tag Name	Address
Click to add a static tag. Tags are not required, but are browsable by OPC clients.	

GT100-IE-MPI EtherNet MPI Adapter User Manual

The address should be in the Step 7 project.

Property Editor - GT100-IE-MPI.S7-300

Property Groups General Scaling	Identification	
	Name	test
	Description	
	Data Properties	
	Address	DB10.W0
	Data Type	Default
	Client Access	Read/Write
	Scan Rate (ms)	100

Or, you can select a Step 7 Project file. And move to "Tag Generation" to auto create the tags.

Property Editor - GT100-IE-MPI.S7-300

Property Groups General Scan Mode Timing Auto-Demotion Tag Generation Communication Parameters S7 Communication Parame... Addressing Options Tag Import Redundancy	Tag Import	
	Tag Import Type	Step 7 Project File
	Step 7 Project (*.S7P)	C:\ProgramData\Siemens\Automation\Step7\S7Proj\ts-180v1\test.s...
	Program Path	SIMATIC 300(1)\CPU 315-2 DP\S7 Program(1)

Property Editor - GT100-IE-MPI.S7-300

Property Groups General Scan Mode Timing Auto-Demotion Tag Generation Communication Parameters S7 Communication Parame... Addressing Options Tag Import Redundancy	Tag Generation	
	On Device Startup	Do Not Generate on Startup
	On Duplicate Tag	Delete on Create
	Parent Group	
	Allow Automatically Generated Subgroups	Enable
	Create	Create tags

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Then, the tags will be created under device S7-300.

ex [Connected to Runtime] - KEPServerEX 6 Configuration

File Edit View Tools Runtime Help

Tag Name	Address	Data Type
SendData[0]	DB10.WORD0	Word
SendData	DB10.WORD0[466]	Word Array
SendData[1]	DB10.WORD2	Word
SendData[2]	DB10.WORD4	Word
SendData[3]	DB10.WORD6	Word
SendData[4]	DB10.WORD8	Word
SendData[5]	DB10.WORD10	Word
SendData[6]	DB10.WORD12	Word
SendData[7]	DB10.WORD14	Word
SendData[8]	DB10.WORD16	Word
SendData[9]	DB10.WORD18	Word
SendData[10]	DB10.WORD20	Word
SendData[11]	DB10.WORD22	Word
SendData[12]	DB10.WORD24	Word
SendData[13]	DB10.WORD26	Word
SendData[14]	DB10.WORD28	Word
SendData[15]	DB10.WORD30	Word
SendData[16]	DB10.WORD32	Word
SendData[17]	DB10.WORD34	Word
SendData[18]	DB10.WORD36	Word
SendData[19]	DB10.WORD38	Word
SendData[20]	DB10.WORD40	Word

13. Click "QC" Quick Client in the tool bar to review the data.

OPC Quick Client - 无标题 *

File Edit View Tools Help

Item ID	Data Type	Value	Timestamp	Quality	Update Count
GT100-IE-MPI S7-300 test	Word	0	13:59:53.345	Good	1

Item ID	Data Type	Value	Timestamp	Quality	Update Count
GT100-IE-MPI S7-300 DB10 SendData	Word Array	[0, 0, 0, 0, ...]	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[0]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[1]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[2]	Word	0	13:59:53.303	Good	1
GT100-IE-MPI S7-300 DB10 SendData[3]	Word	0	13:59:53.303	Good	1
GT100-IE-MPI S7-300 DB10 SendData[4]	Word	0	13:59:53.303	Good	1
GT100-IE-MPI S7-300 DB10 SendData[5]	Word	0	13:59:53.303	Good	1
GT100-IE-MPI S7-300 DB10 SendData[6]	Word	0	13:59:53.303	Good	1
GT100-IE-MPI S7-300 DB10 SendData[7]	Word	0	13:59:53.303	Good	1
GT100-IE-MPI S7-300 DB10 SendData[8]	Word	0	13:59:53.314	Good	1
GT100-IE-MPI S7-300 DB10 SendData[9]	Word	0	13:59:53.314	Good	1
GT100-IE-MPI S7-300 DB10 SendData[10]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[11]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[12]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[13]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[14]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[15]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[16]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[17]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[18]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[19]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[20]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[21]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[22]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[23]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[24]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[25]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[26]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[27]	Word	0	13:59:53.293	Good	1
GT100-IE-MPI S7-300 DB10 SendData[28]	Word	0	13:59:53.293	Good	1

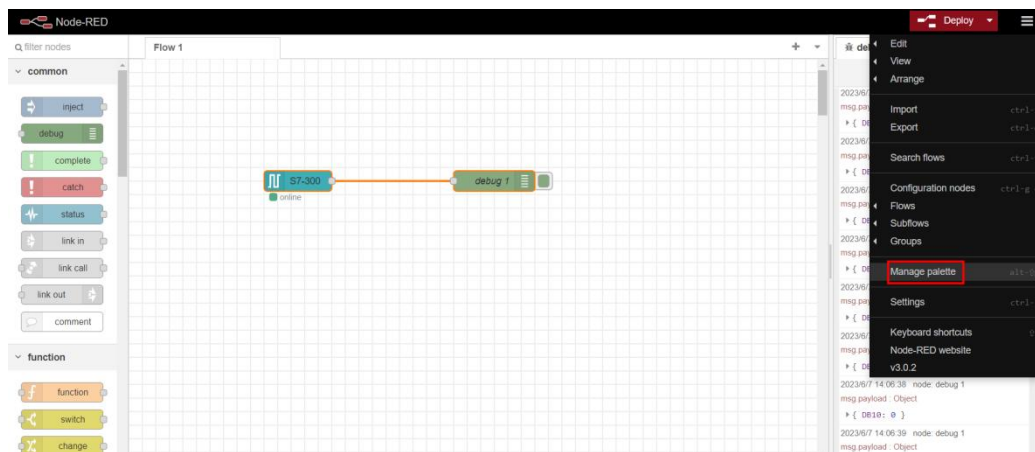
Date	Time	Event
2023-06-09	13:59:53	Connected to s...
2023-06-09	13:59:53	Added group 'G...
2023-06-09	13:59:53	Added group 'G...
2023-06-09	13:59:53	Added 502 item...
2023-06-09	13:59:53	Added group 'G...
2023-06-09	13:59:53	Added 502 item...
2023-06-09	13:59:53	Added group 'G...
2023-06-09	13:59:53	Added 12 items L...
2023-06-09	13:59:53	Added 1 items L...

Ready Item Count: 1017

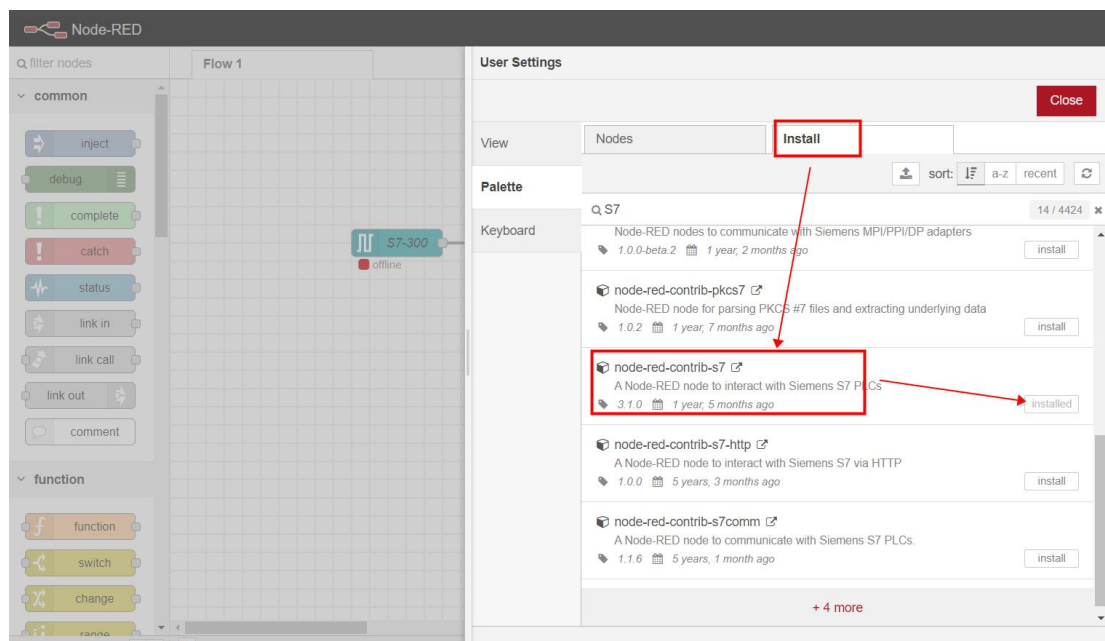
You can see the data value is 0 and Quality is Good. That means the connection is normal.

B. How to connect GT100-IE-MPI to Node-Red

Install the contrib-S7 module. Click the "Manage palette".

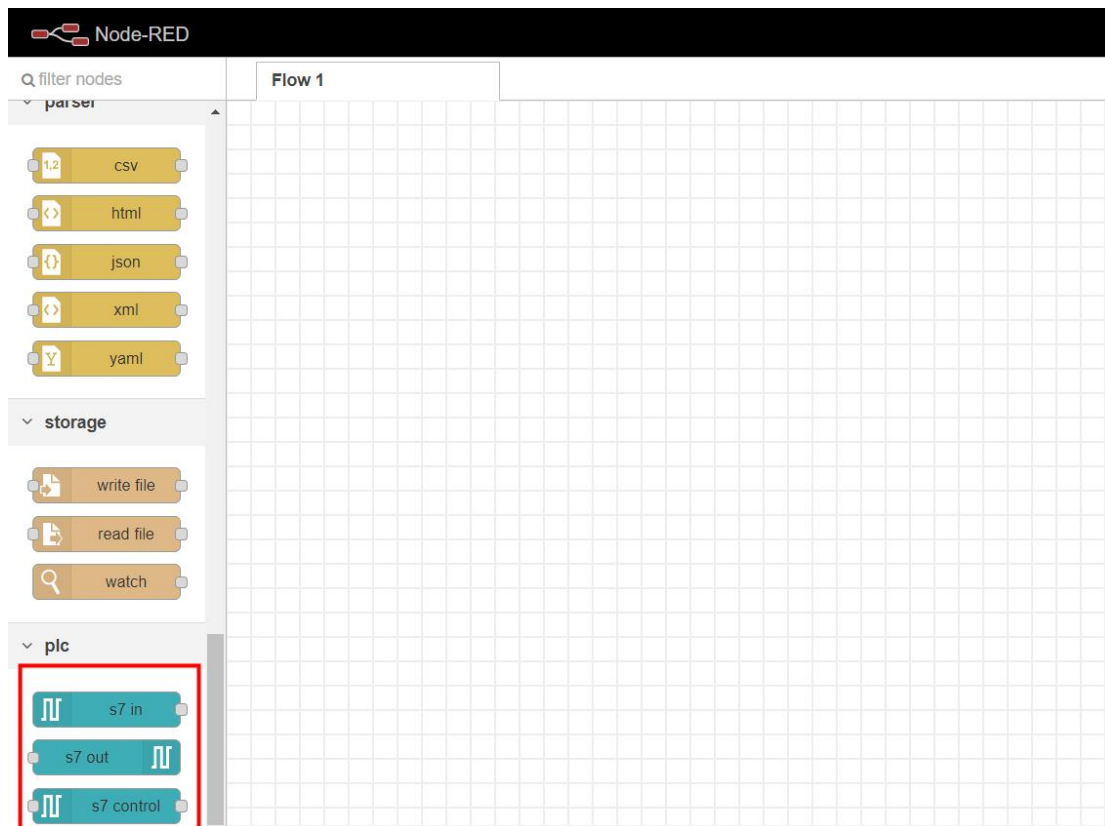


Search S7 in the "Install" area and install node-red-contrib-s7 module.



GT100-IE-MPI EtherNet MPI Adapter User Manual

After installation, you will see the new node.

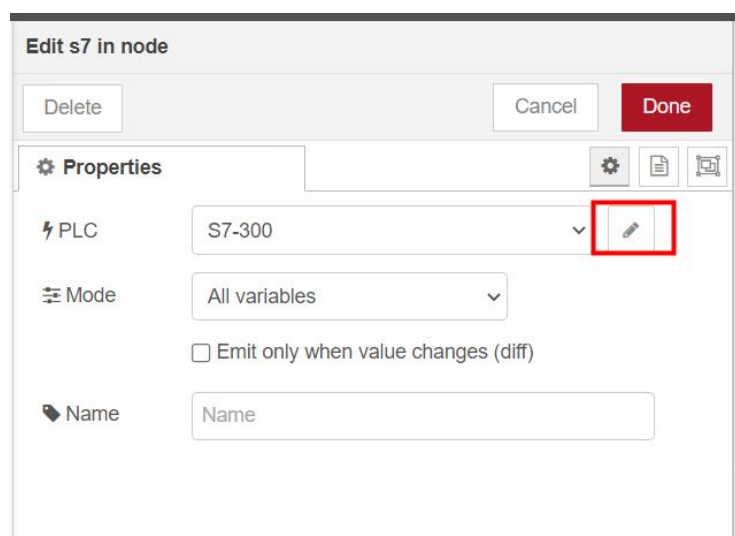
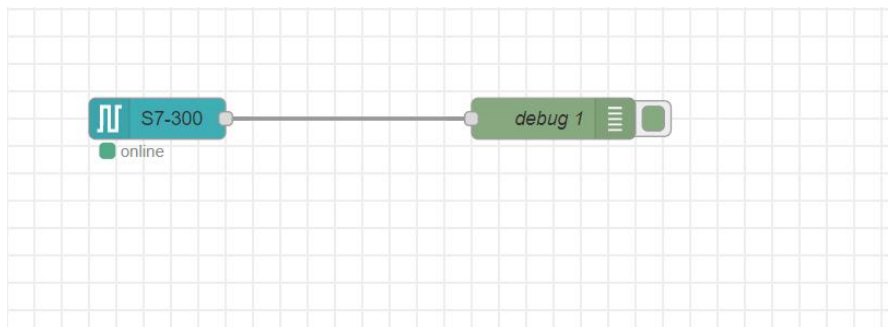


GT100-IE-MPI

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Drag the S7-In and debug module to the panel and connect them.



GT100-IE-MPI EtherNet MPI Adapter User Manual

Click the pen to create the new connection. Fill the same IP address and S7TCP target address (Slot 2 as default) as GT100-IE-MPI configuration web page.

Please make sure the S7TCP target address is the same as the actual MPI address of the Siemens PLC.

Edit s7 in node > **Edit s7 endpoint node**

Delete Cancel Update

Properties

Connection Variables

Transport: Ethernet (ISO-on-TCP)

Address: 192.168.1.188 Port: 102

Mode: Rack/Slot

Rack: 0 Slot: 2

Cycle time: 1000 ms

Timeout: 2000 ms

Name: S7-300

Serial interface settings

	Settings	Des
Protocol mode:	MPI/M/S	Sel
Bridge adapter address:	0	The
Bus highest address:	31	The
Gap factor:	10	Rar
X1 baudrate:	AUTOMATIC	X1
X2 baudrate:	AUTOMATIC	X2

Ethernet interface settings

	Settings	Des
IP address:	192 . 168 . 1 . 188	IP a
Subnet mask:	255 . 255 . 255 . 0	Sub
Gateway:	192 . 168 . 1 . 1	Gat
S7TCP target address by slot:	OFF	Whi
S7TCP target address:	2	The
Open TCP Port:	1099	The

GT100-IE-MPI EtherNet MPI Adapter User Manual

Click Variables, fill in the correct DB address.

Edit s7 in node > **Edit s7 endpoint node**

Delete Cancel Update

Properties

Connection Variables

Variable list

DB10,W0 DB10

+ Add Remove all Import Export

Uncheck the "Emit only when value changes" box to receive the data in cycle or check the box to receive the data when value changes.

Select All variables to read all the variables.

Edit s7 in node

Delete Cancel Done

Properties

PLC S7-300

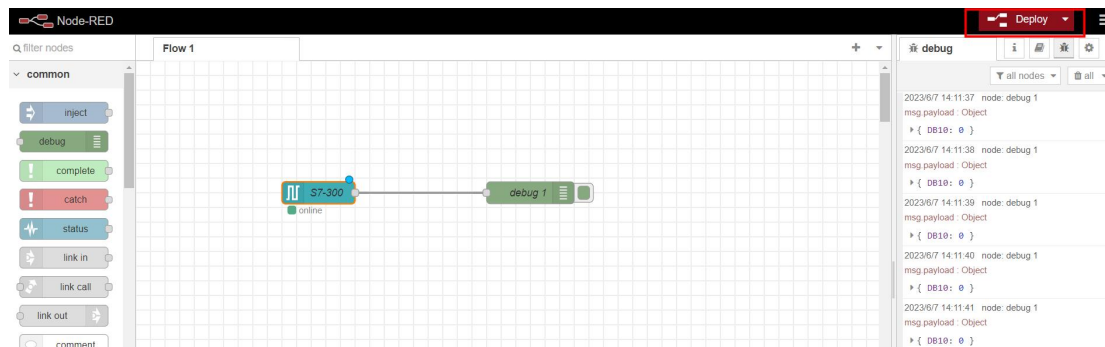
Mode All variables

☐ Emit only when value changes (diff)

Name Name

GT100-IE-MPI EtherNet MPI Adapter User Manual

Finally, click Deploy; Node-RED will receive the data cyclically.



Click the debug button, you will see the data.

