SIEMENS AG.

SIMATIC S7-1200/1500 Series

Ethernet Driver

Supported version TOP Design Studio V1.0 or higher

CONTENTS

We want to thank our customers who use the Touch Operation Panel.

1. System configuration

The system configuration of TOP and "SIEMENS AG. – S7-1200/1500 Series Ethernet" is as follows.

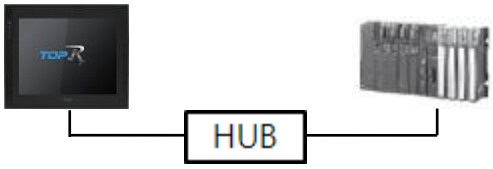
Series	CPU	Link I/F	Communication method	System setting	Cable
SIMATIC	S7-1200 S7-1500	PROFINET Interface on CPU	Ethernet (TCP)	3. TOP communication setting 4. External device setting	Twisted pair cable*Note 1)

*Note 1) Twisted pair cable

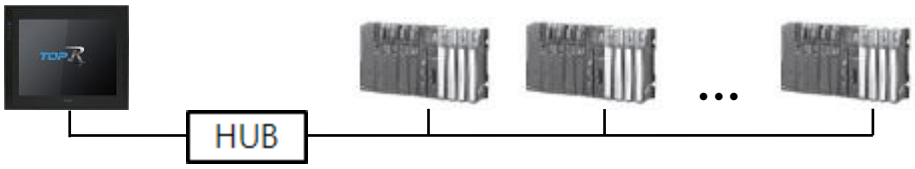
- Refer to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.
- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

■ Connectable configuration

・1:1 connection

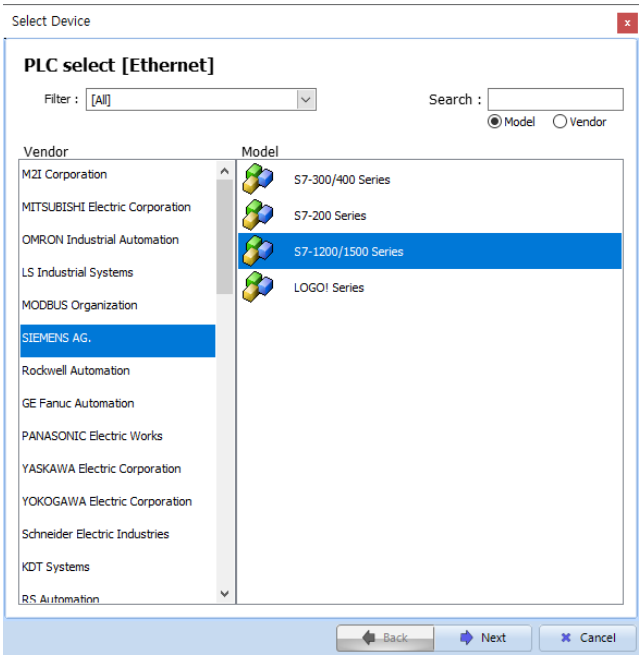


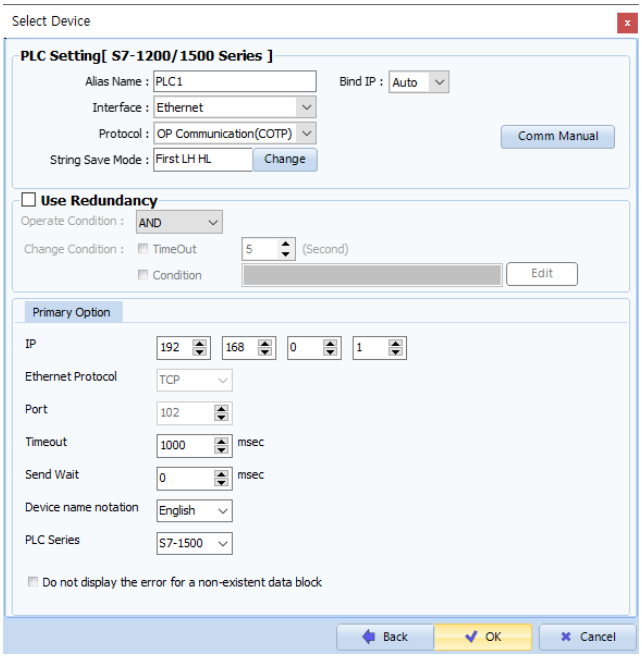
・1:N connection



2. External device selection

■ Select a TOP model and a port, and then select an external device.





Settings		Contents
TOP	Model	Check the display and process of TOP to select the touch model.
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "SIEMENS AG."
	PLC	Select the external device to be connected to the TOP. **Model** / **Interface** / **Protocol** S7-1200/1500 Series / Ethernet / OP Communication(COTP) Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.

3. TOP communication setting

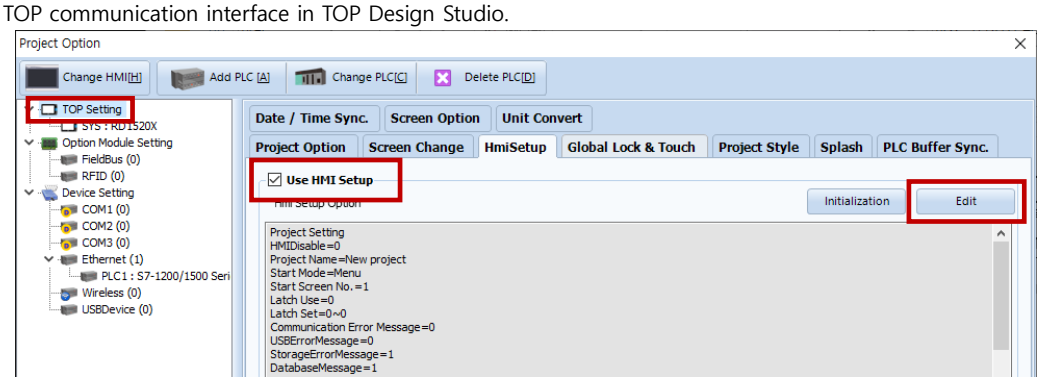
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

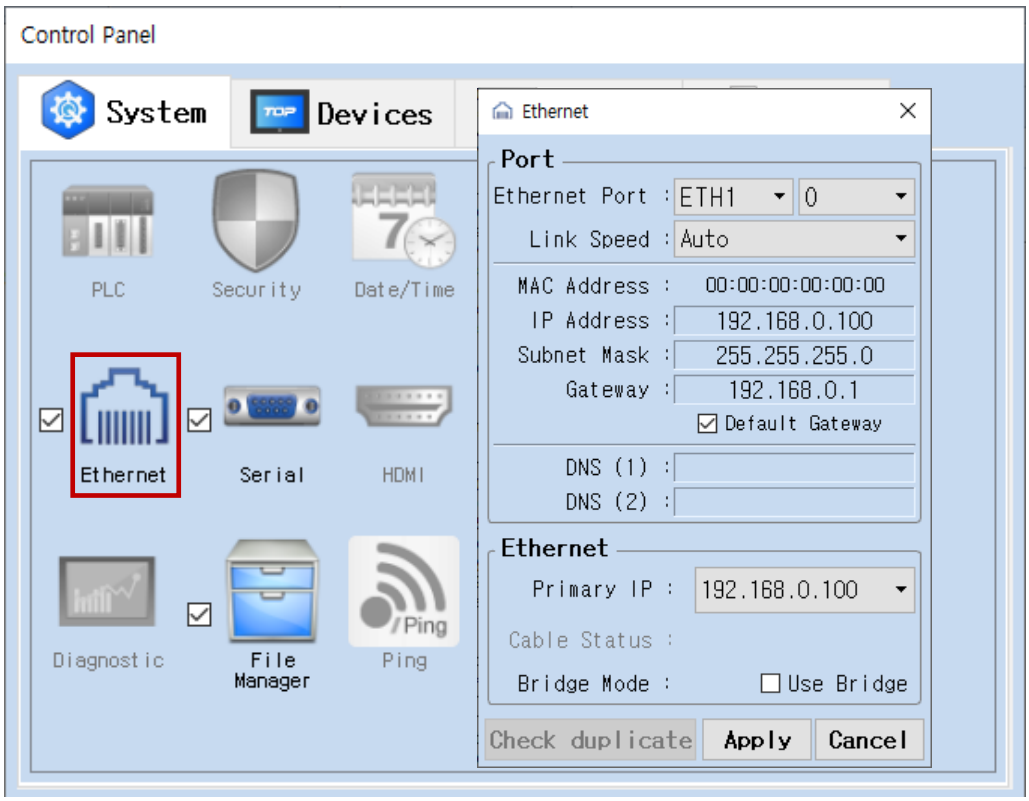
3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project] → [Property] → [TOP Setting] → [HMI Setup] → [Use HMI Setup Check] → [Edit] → [Ethernet]

– Set the TOP communication interface in TOP Design Studio.





Items	TOP	External device	Remarks
IP Address	192.168.0.100	192.168.0.51	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

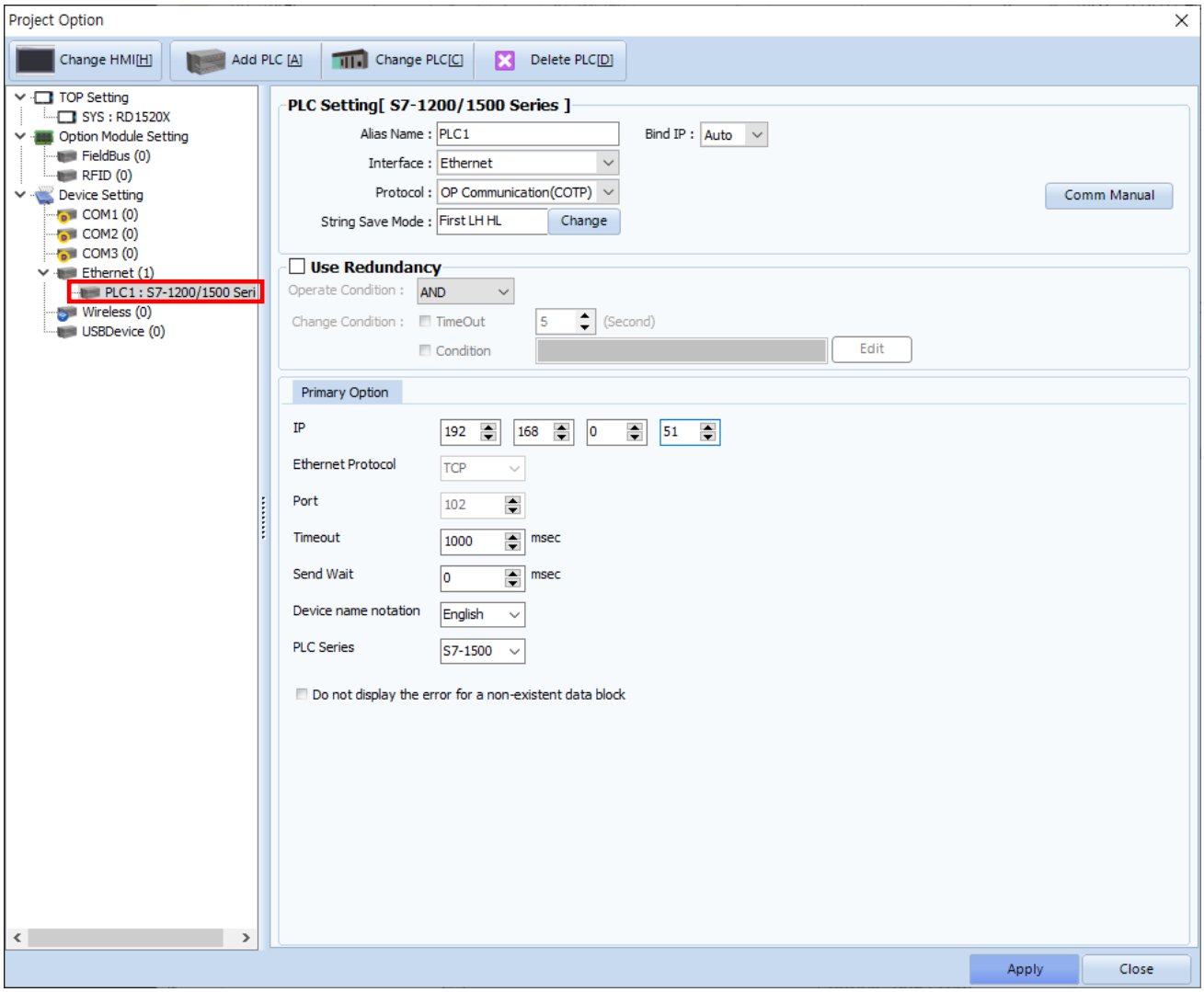
※ The above setting is an example.

Items	Description
IP Address	Set the IP address of the TOP.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.

(2) Communication option setting

■ [Project] → [Project properties] → [PLC settings > Ethernet > S7-1200/1500 Series]

– Set the options of the communication driver of S7-1200/1500 Series Ethernet in TOP Design Studio.



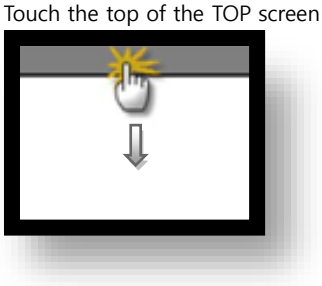
Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select the communication protocol between the TOP and an external device.	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of the external device.	
Timeout	Set the time for the TOP to wait for a response from an external device.	
Send Wait	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Device name notation	Select an address entry notation.	
PLC Series	Select the CPU series of the external device.	
Do not display ...	Negative response received when requesting to read/write DB that is not registered in PLC is not displayed as an error.	*Note 1)

*Note 1) It can be used in the following cases. After PLC power is turned on, if TOP requests data while loading, the PLC responds negatively that it is an incorrect memory access. Check this option not to display this response as a communication error. Remark) In this situation, other normal data may not be displayed as well.

3.2. Communication setting in TOP

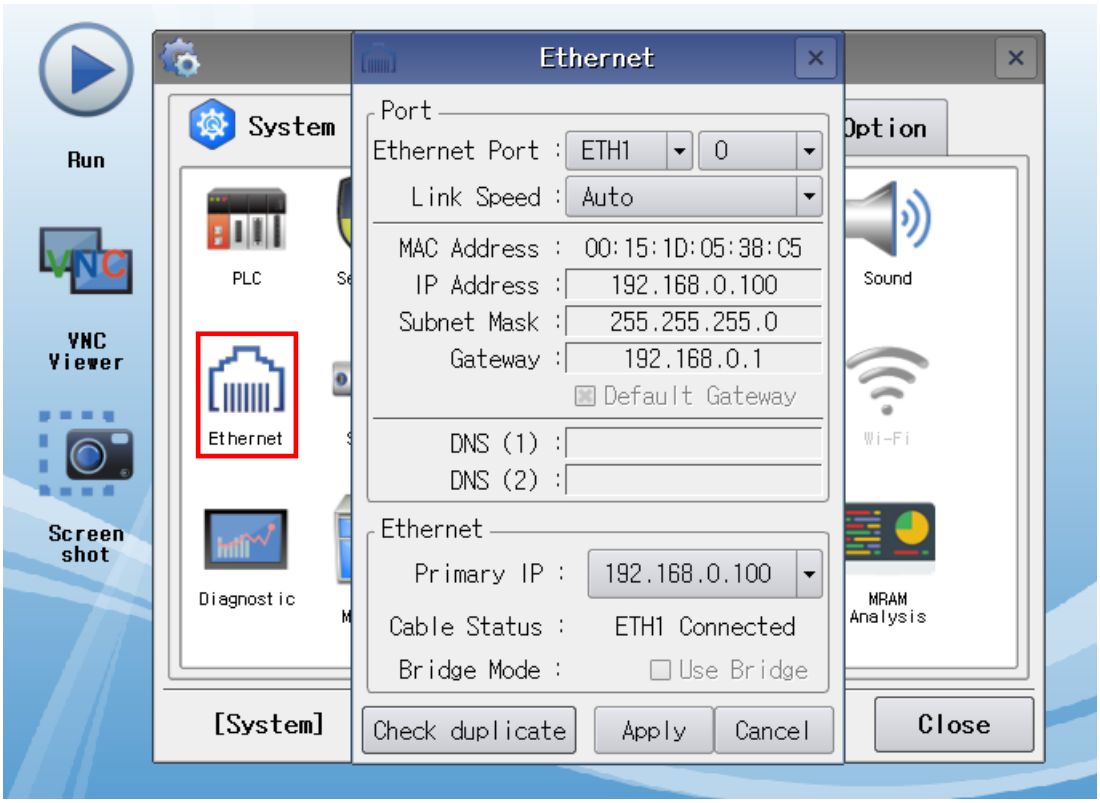
※ This is a setting method when "Use HMI settings" in "3.1 Communication setting in TOP Design Studio" is not checked.

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Control Panel] → [Ethernet]



※ The above setting is an example.

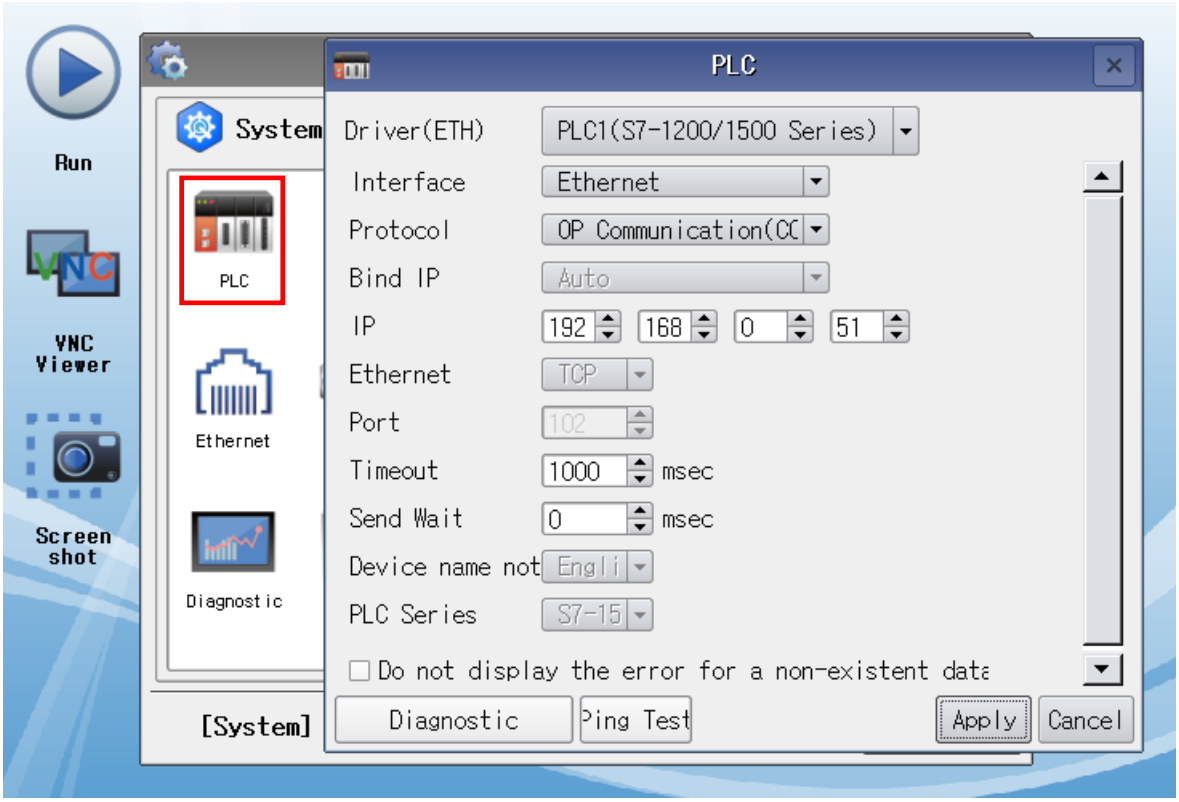
Items	TOP	External device	Remarks
IP Address	192.168.0.100	192.168.0.51	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

※ The above setting is an example.

Items	Description
IP Address	Set the IP address of the TOP.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.

(2) Communication option setting

■ [Control Panel] → [PLC]



Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External device selection".
Protocol	Select the communication protocol between the TOP and an external device.	
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of the external device.	
Timeout	Set the time for the TOP to wait for a response from an external device.	
Send Wait	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Device name notation	Select an address entry notation.	
PLC Series	Select the CPU series of the external device.	
Do not display ...	Negative response received when requesting to read/write DB that is not registered in PLC is not displayed as an error.	*Note 1)

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3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check that the settings of the connected ports in [Control Panel] → [Ethernet] are the same as the settings of the external device.

■ Diagnosis of whether the port communication is normal or not

- Touch "Communication diagnostics" in [Control Panel] → [PLC].
- Check whether communication is connected or not.

Communication diagnostics succeeded	**Communication setting normal**
Error message	**Communication setting abnormal** - Check the cable, TOP, and external device settings. (Refer to Communication diagnostics sheet.)

■ Communication diagnostics sheet

- If there is a problem with the communication connection with an external device, please check the settings in the sheet below.

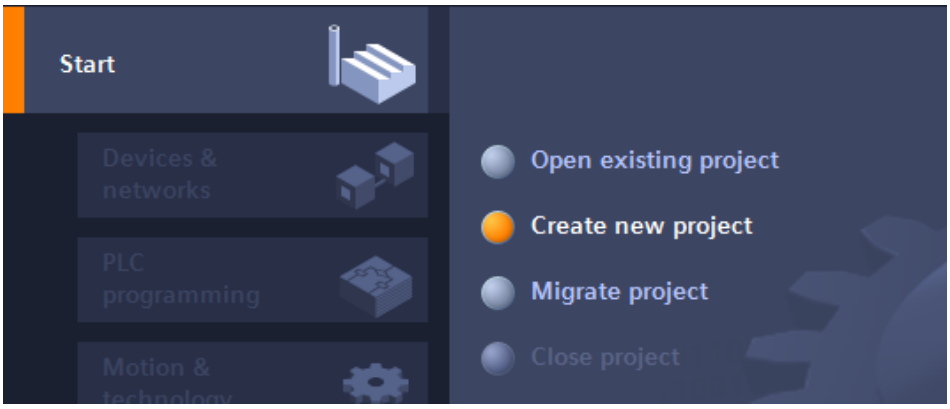
Items	Contents		Check		Remarks
System configuration	How to connect the system		OK	NG	1. System configuration
	Connection cable name		OK	NG	
TOP	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	2. External device selection
		Communication diagnostics	OK	NG	3. TOP communication setting
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
External device	CPU name		OK	NG	
	Communication port name (module name)		OK	NG	
	Protocol (mode)		OK	NG	
	Setup Prefix		OK	NG	
	Other detailed settings		OK	NG	4. External device setting
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
	Check address range		OK	NG	5. Supported addresses

4. External device setting

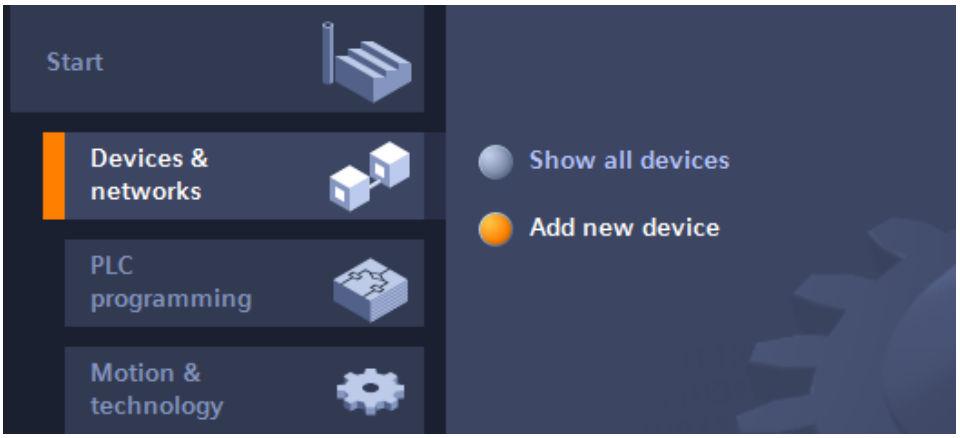
Set as follows in TIA Portal.

For more details than the followings, refer to the manufacturer's user manual.

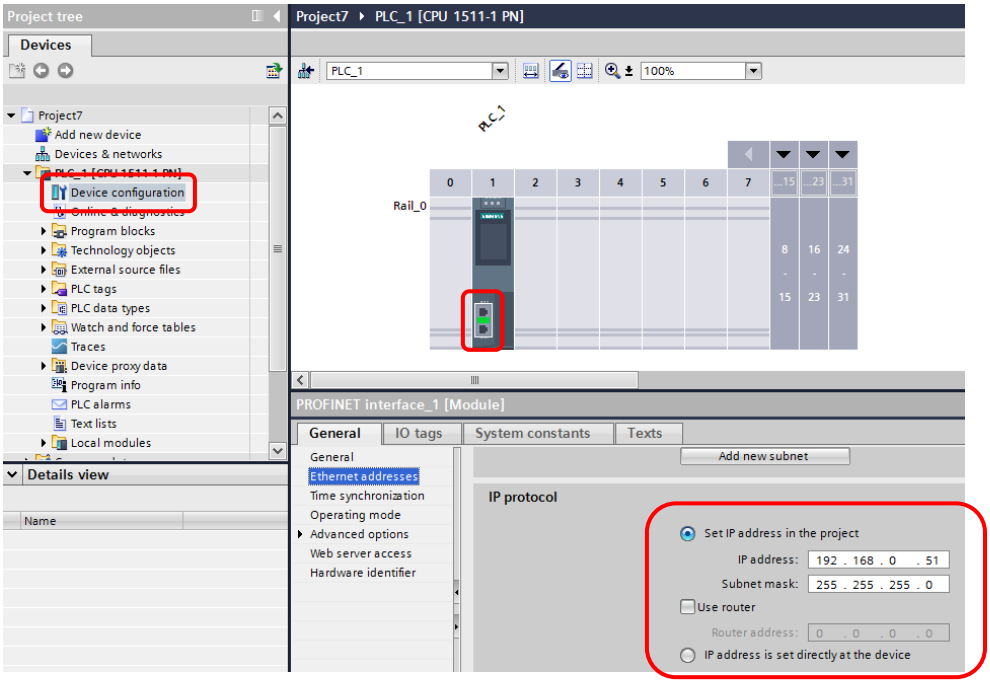
Step 1. Create a new project.



Step 2. Select Add new device in the Device & networks to add a device.

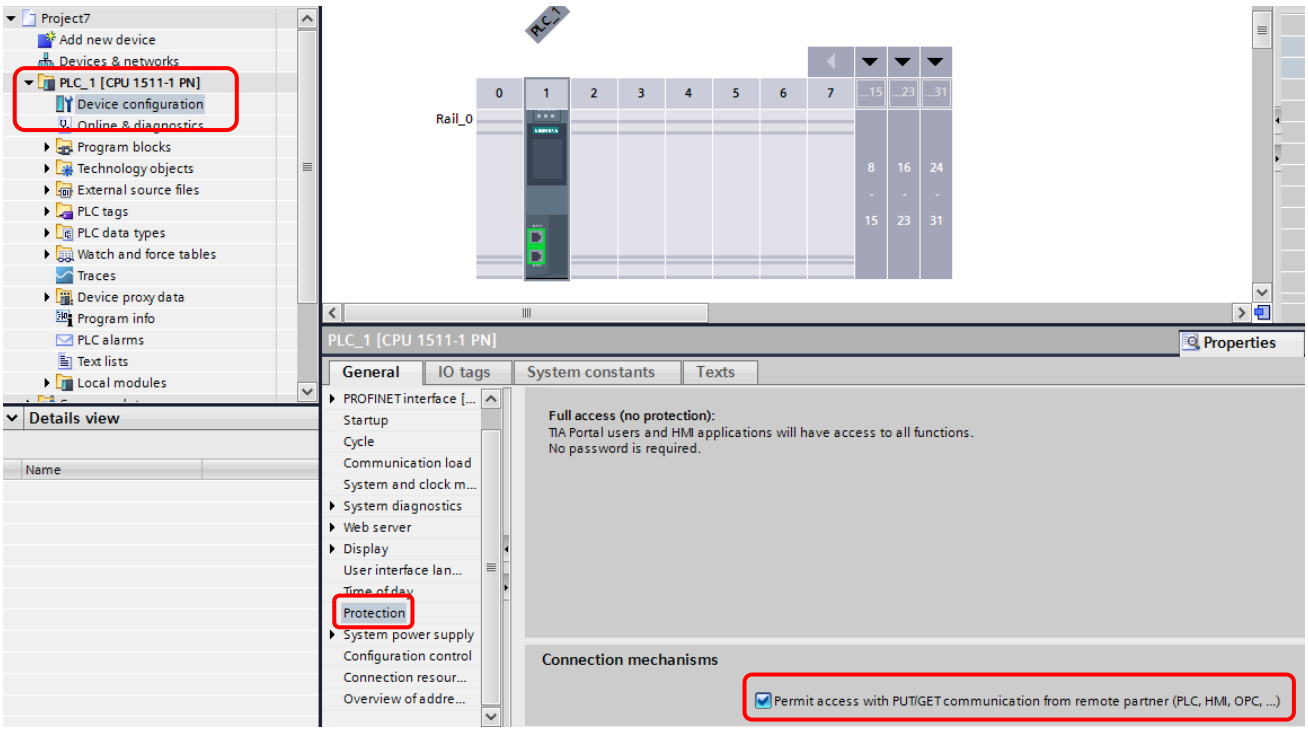


Step 3. Set the IP address.

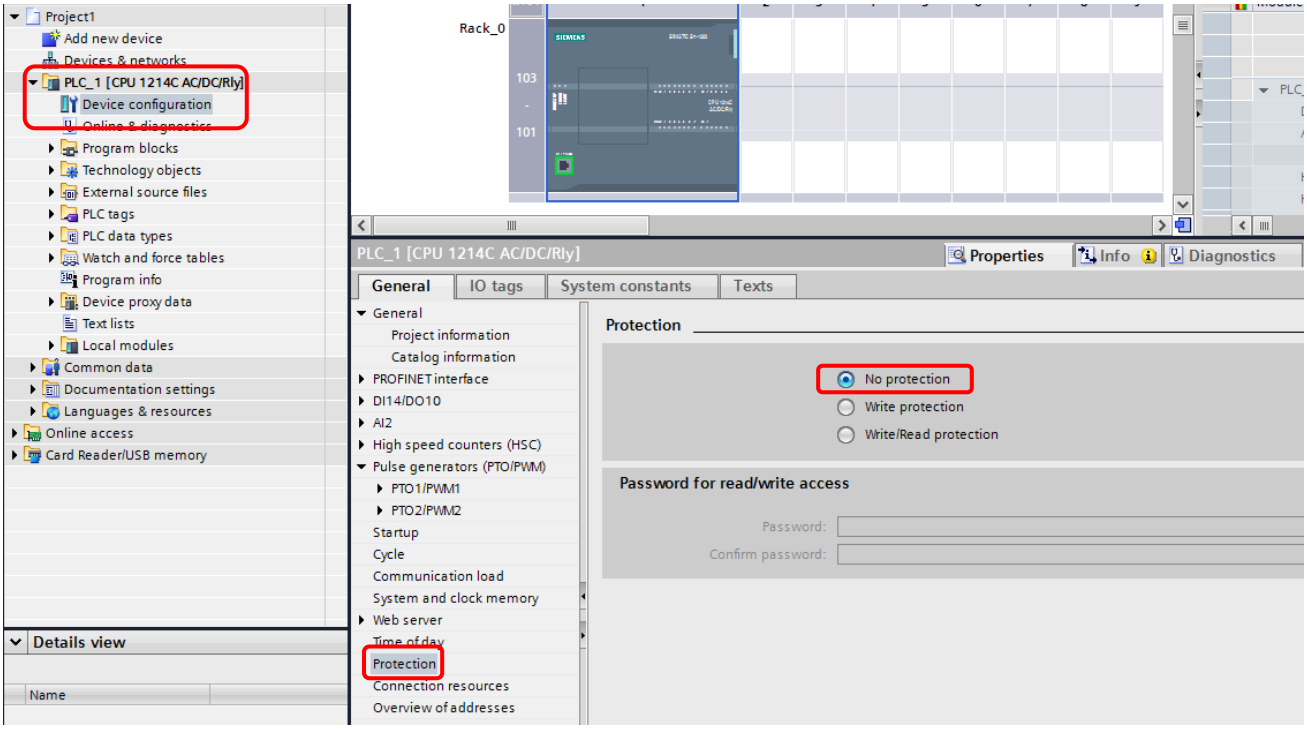


Step 4. Change the Protection & Security setting.

Check Device Configuration → General → Protection → Permit access with PUT/GET communication from remote partner.



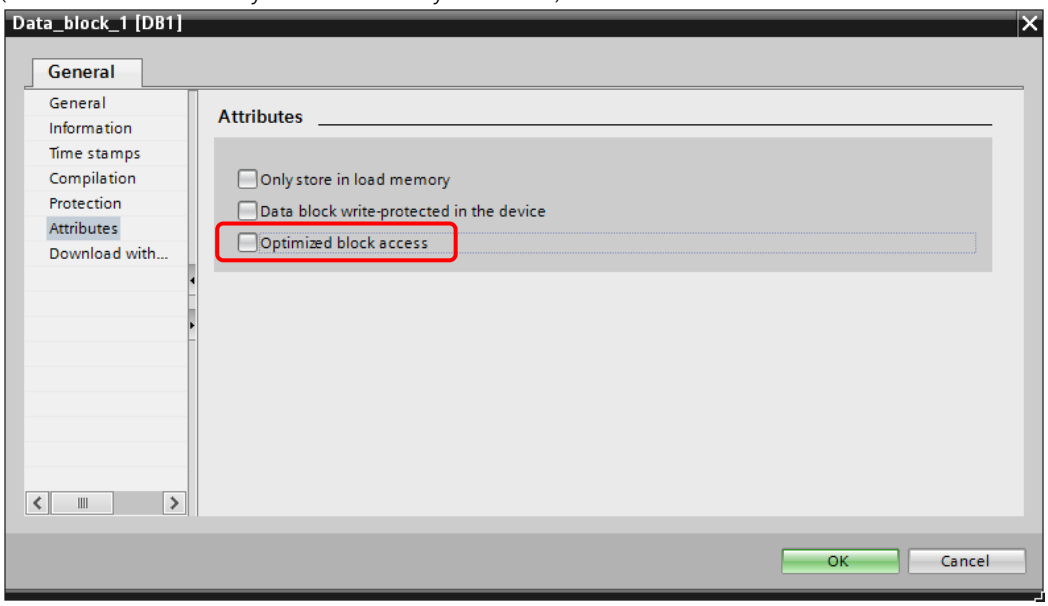
(S7-1200 Firmware v3.0 or lower Protection setting)



Step 5. Change the Data Block property.

Click the right of DB → Properties → Attributes → Uncheck Optimized block access

(TIA Portal v10 or lower. Symbolic access only unchecked)



5. Supported addresses

The addresses available in TOP are as follows:

Depending on the external device model, there are differences in the address range, presence, and access restrictions. Refer to the manufacturer's user manual for correct use.

Address	Bit	Word	Double word	Remarks
Input	I00000.0 ~ I32767.7	IW00000 ~ IW32766	ID00000 ~ ID32764	*Note 1)
Output	Q00000.0 ~ Q32767.7	QW00000 ~ QW32766	QD00000 ~ QD32764	*Note 2)
Marker	M00000.0 ~ M16383.7	MW00000 ~ MW16382	MD00000 ~ MD16380	
Data Block	DB00001.DBX00000.0 ~ DB65535.DBX65527.7	DB00001.DBW00000 ~ DB65535.DBW65526	DB00001.DBD00000 ~ DB65535.DBD65524	*Note 3)

*Note 1) Input is subordinated the embedded I/O depending on the CPU type, so there may be areas where Write input is not possible.

*Note 2) Output can enable Write values only during Run. In case of Stop, the output value is reset.

*Note 3) Offset address is used by unchecking the Optimized block access (TIA Portal v10 or lower Symbolic access only)among DB properties.

· Changes when address notation is in German

Input : E, EW, ED

Output : A, AW, AD

※ Precautions when registering variables in DB

TOP accesses DB in units of minimum words (16 bits).

To monitor a byte-unit variable with DBW, you need to register an arbitrary variable as many as 1 byte after the corresponding variable.