

SIEMENS AG.

SIMETIC S7-1200 Series

ETHERNET(OP Communication) Driver

Support version OS V3.0
XDesignerPlus 2.6.34.0



Introduction



Please read this manual carefully to know connection methods and procedures of "TOP to External device

1. System configuration **Page 2**



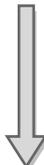
A section for showing connectable external devices, serial signal types, connection configurations. Refer this section to select the right system configuration .

2. Selection of TOP, External device **Page 3**



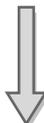
A section for selecting a Top model and the external device .

3. Example of system setting **Page 4**



A section for explaining examples to connect communications of TOP to External Device.
Select the correct example in your case according to "1. System configuration .

4. Communication setting **Page 6**



A section for Communication setting.
The setting should be the same with the external device .

5. Usable address **Page 8**

A section for usable address to communicate with external device .

1. System configuration

System configuration of TOP and "SIEMENS AG – SIEMETIC S7 1200 Ethernet Series".

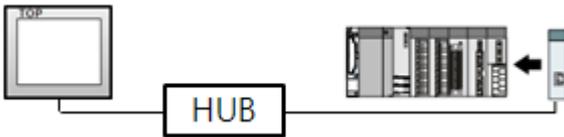
Series	CPU	Link I/F	Comm. type	System setting	Cable
SIMATIC S7-1200	CPU1211C CPU1212C CPU1214C	PROFINET Interface on CPU	Ethernet TCP	3.1 Setting Example 1 (Page 4)	Twisted Pair Cable* Note1)

***Note1)** Twisted Pair Cable

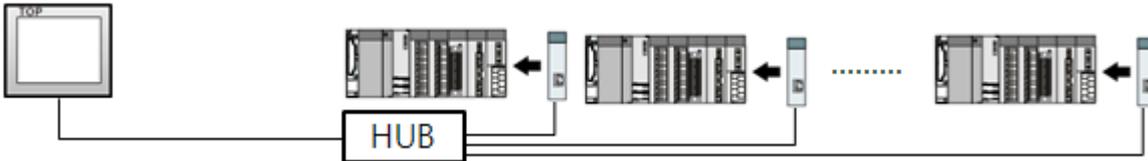
- STP(Shield Twisted Pair Cable) or UTP(Unshield Twisted Pair Cable) category 3, 4, 5.
- Connection to Herb, Trans receiver is available, and must use direct cable for this configuration.

■ Connection configuration (TOP number : External number)

- 1 : 1(TOP 1 unit to External device 1 unit) connection

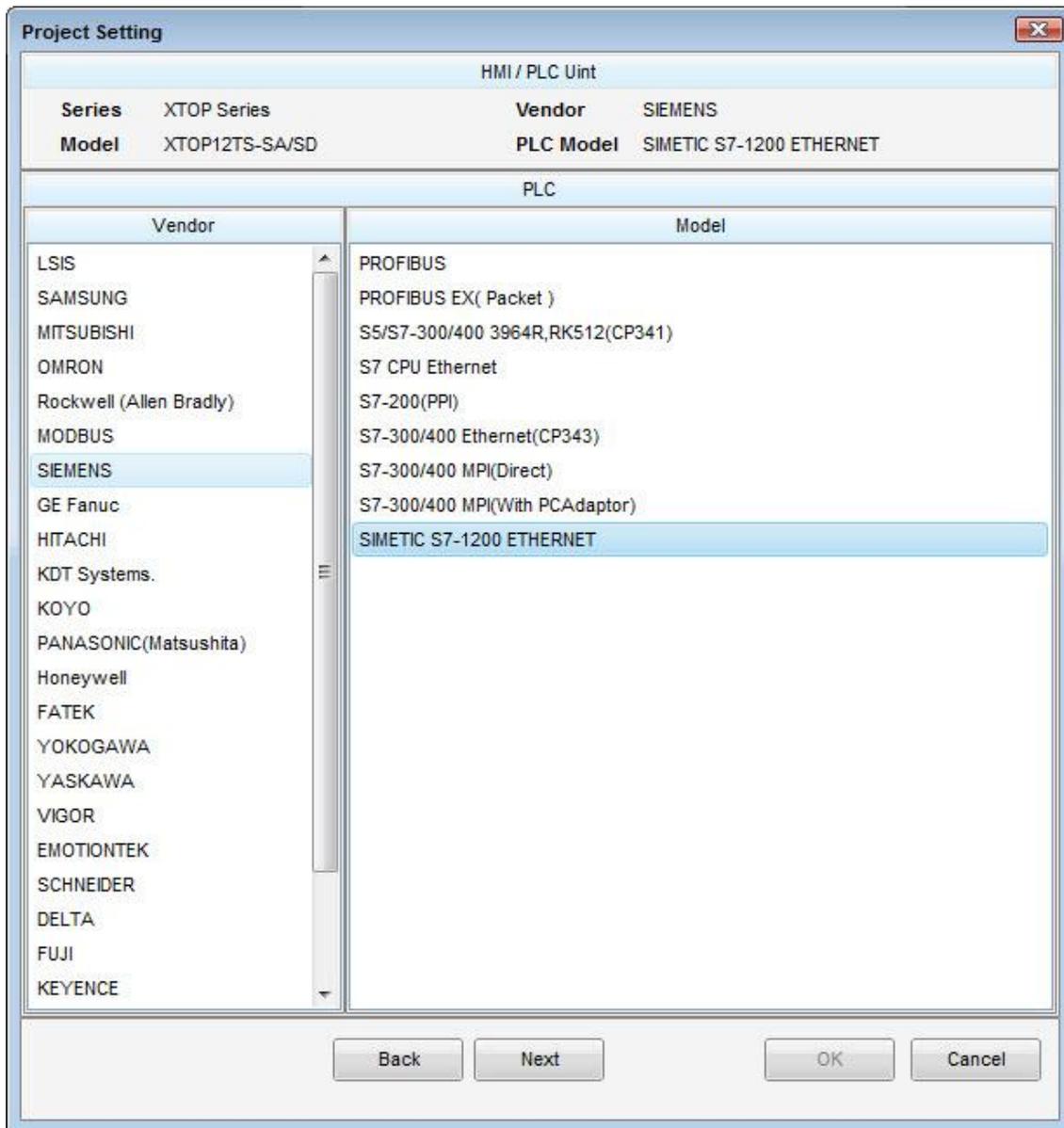


- 1 : N(TOP 1 unit to External device several units) connection



2. Selection of TOP, External device

Select a external device which is communicated to the TOP.



Setting Items		Description				
TOP	Series	<p>Select a TOP series which is communicated with external device. Install an OS file v3.1 as diagram below before download a project file you have made.</p> <table border="1"> <thead> <tr> <th>Series</th> <th>OS Version</th> </tr> </thead> <tbody> <tr> <td>XTOP / HTOP</td> <td>V3.1</td> </tr> </tbody> </table>	Series	OS Version	XTOP / HTOP	V3.1
	Series	OS Version				
XTOP / HTOP	V3.1					
Name	Select a TOP model which is communicated with external device.					
External Device	Vendor	Select vendor of the external device which is communicated with TOP. Select "SIEMENS AG".				
	PLC	Select a model name of the external device which is communicated with TOP. Select "SIEMENS S7-1200 ETHERNET". Check whether the external device you want to use is connectable or not in "1. System configuration.				

3. Example of system setting

Set Communication interface of TOP and external device as below.

3.1 Example 1

Set your system as below.

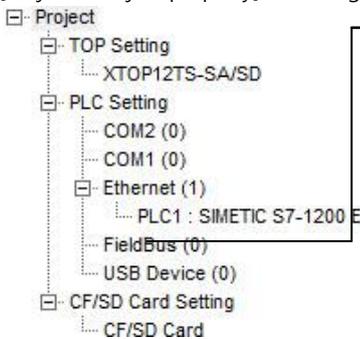
Set Name	TOP	S7 1200 Series		Note
IP Address* Note1 / Note2)	192.168.0.50	192.168.0.51		User Set
Subnet Mask	255.255.255.0	255.255.255.0		User Set
Protocol	TCP	TCP		User Set
Port	2000	Read Port	102	User Set
		Write Port	102	

*[Note1](#)) The first 3 classes of external device's IP and TOP should be same.

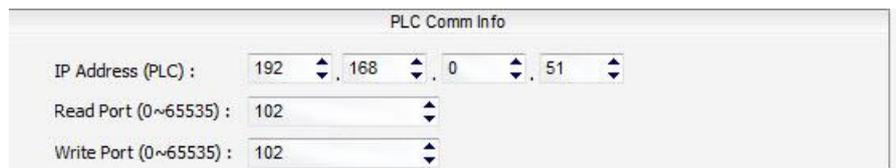
*[Note2](#)) Do not use the same IP in one network.

(1) XDesignerPlus Setting

[Project > Project property] of XDesignerPlus as below and download it to TOP machine.



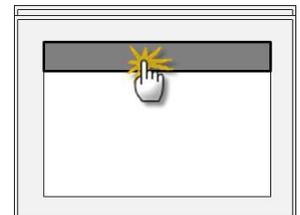
■ [Project > Project Property > Project > TOP Setting > PLC Name]
Set communication interface of "SIEMETIC S7 1200 Series Ethernet"



- IP Address (PLC) : Input appropriate and usable IP address.
- Read / Write Port : Choose the port No., that will be used in..

(2) 2 Set TOP Main Menu

[In to the Main Menu] While the power of TOP is turned on and the buzzer beeps once, Touch the screen's upper part under the TOP logo on the front sheet..



■ [Main Menu > Comm Setup]

Comm Setup	
20. IP Address : 192.168.000.050	Ethernet Port Communication Setup
21. Subnet Mastk : 255.255.255.000	
22. Gateway : 192.168.000.001	
23. Port (0~9999): 2000	
24. Protocol : TCP	
25. Ethernet Station Num. In Diag (0~31) : 00	
26. Ethernet Timeout : 10 * 100 [mSec]	
27. Ethernet Send Wait : 00 * 10 [mSec]	

(2) External device setup

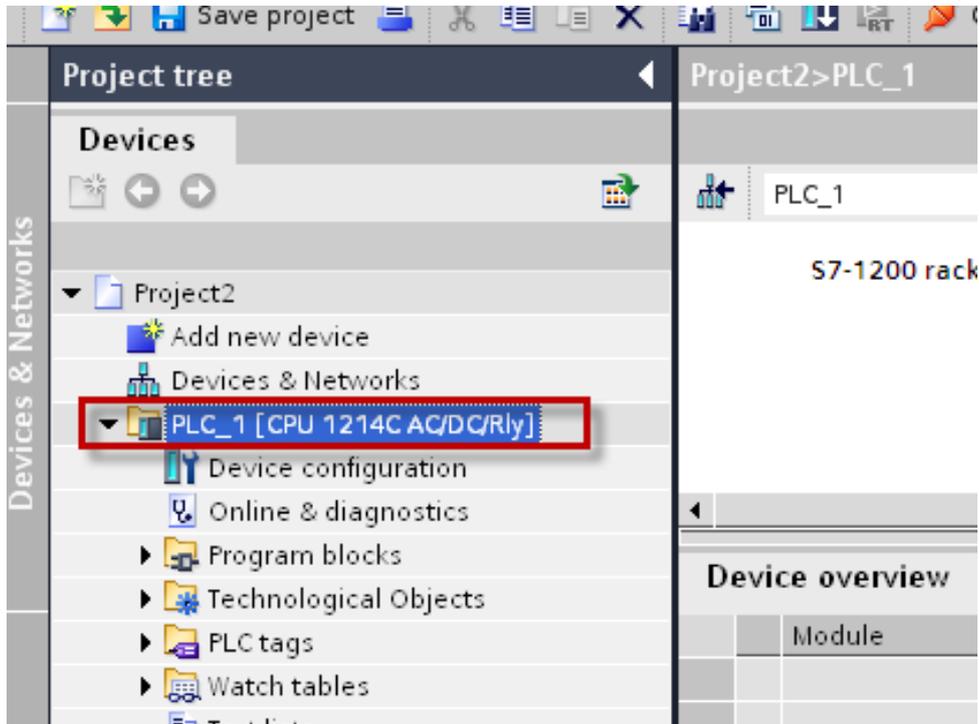
Please set using SIEMENS SW "Totally Intergrated Automation Portal V10".
 For further information of settings, please refer to your PLC manual.



Do not use same IP address in one network area.

■ Project

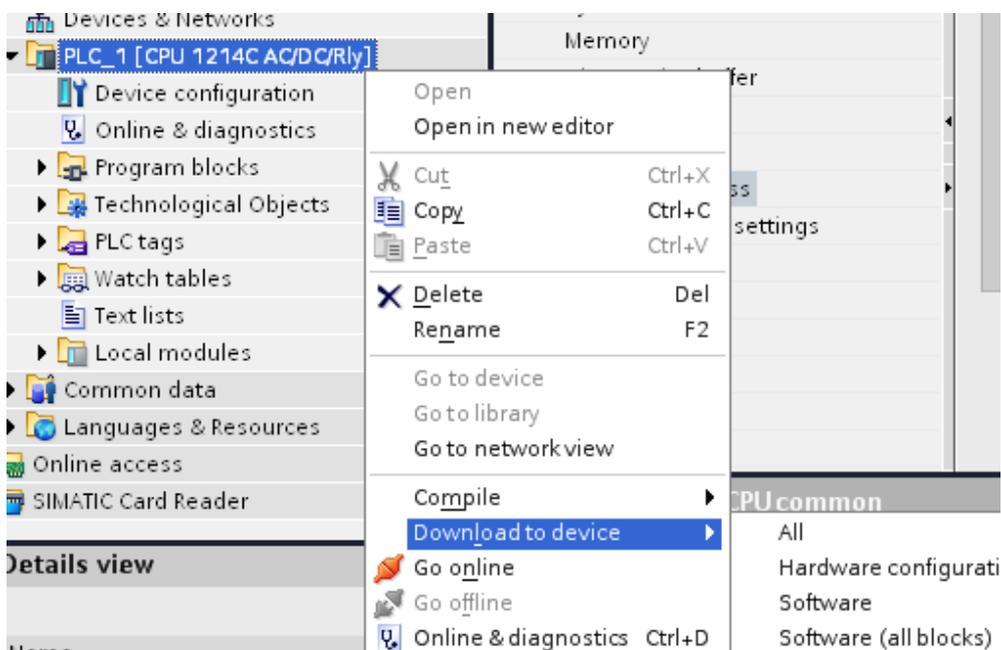
1. Create "New Project" in "Totally Intergrated Automation"
2. Select "Add new device" in "Project tree".



3. Added device in "Project tree" needed to be set. (Program blocks, Technological Objects, ...)

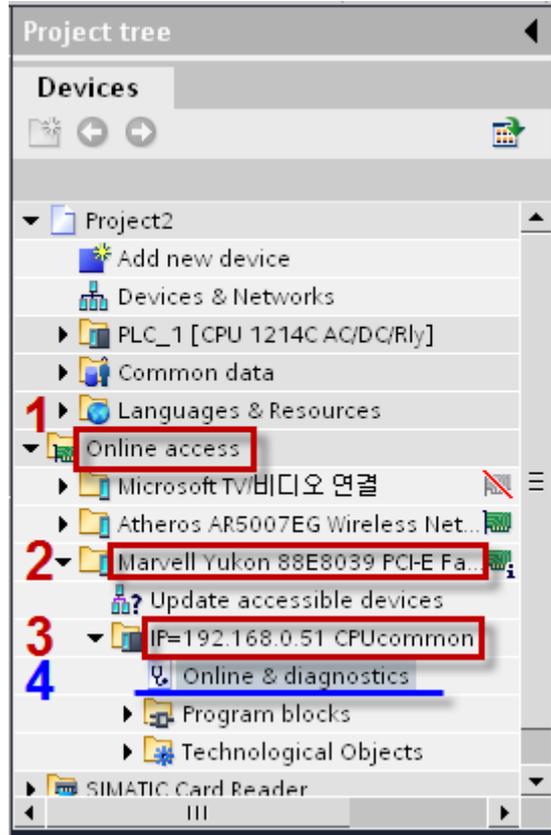
(Note) Check 'Symbolic access only' check when DB(Data Block) set.

4. Run the 'Compile' after sets for error diagnosis.
5. After Compile, right click on the device name set in section 2 above, and select "Download to device".

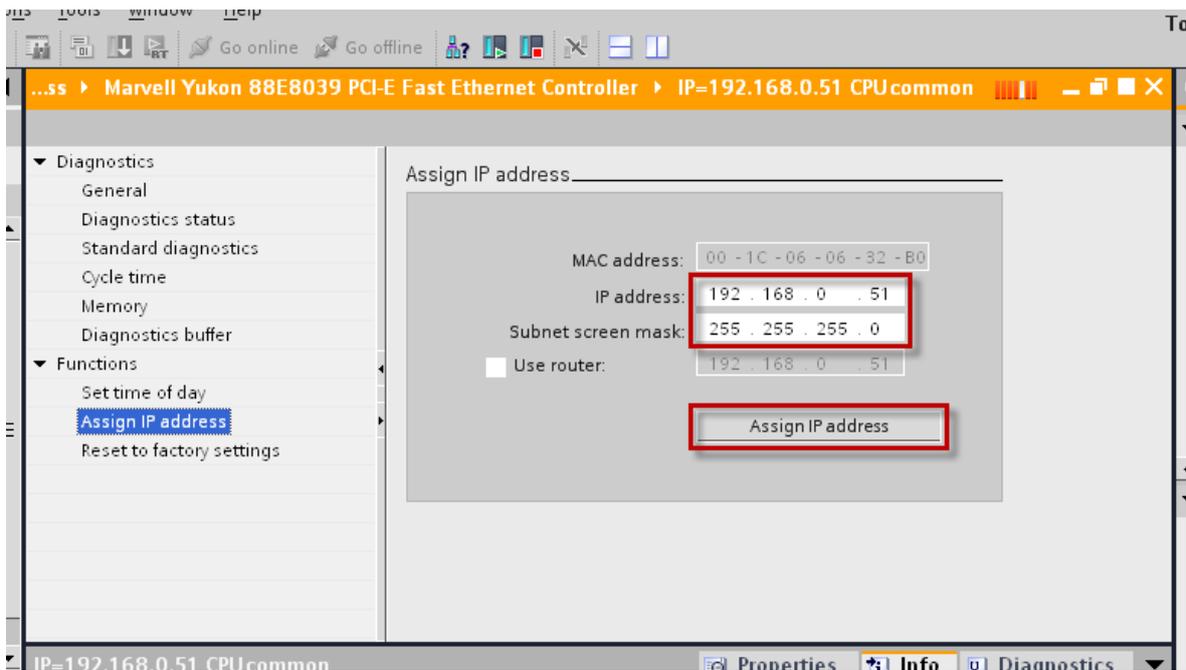


■ IP setting

1. Expand "Project tree" in "Online access", and click a connectable path.
2. Expand "Marvell Yukon 88E8039 PCI-E Fast Ethernet Controller"(LAN Port H/W). *Note1
(You can see current IP address and another tree.)
3. Expand "IP=xxx.xxx.x.xxx CPUcommon" and select "Online & diagnostics" for IP change.



4. After setup menu popup, click "Funtions → Assign IP address" and set IP address.



5. Click "Assign IP address" after IP setup.

*Note1) This sequence can be changed by device model. Refer to PLC manual for more detailed information.

4. Communication setting

Communication setup can be set on XDesignerPlus or TOP Main Menu. The setting should be the same with the external device.

(1) XDesignerPlus Setup

- Project
 - TOP Setting
 - XTOP12TS-SA/SD
 - PLC Setting
 - COM2 (0)
 - COM1 (0)
 - Ethernet (1)
 - PLC1 : SIEMETIC S7-1200 E
 - FieldBus (0)
 - USB Device (0)
 - CF/SD Card Setting
 - CF/SD Card

■ Setting external device

Set communication interface of "SIEMETIC S7 1200 Series Ethernet"

PLC Comm Info

IP Address (PLC) : 192 . 168 . 0 . 51

Read Port (0~65535) : 102

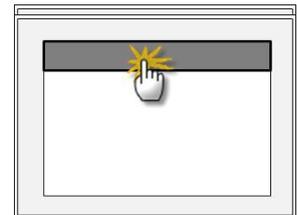
Write Port (0~65535) : 102

- IP Address (PLC) : IP address for external device.
- Read / Write Port : Input the port number for input and output

Contents	Description
IP Address	Input the IP number of external device.
Read Port / Write Port	Select port number of external device for communication.

(2) Setting TOP's Main Menu

[In to the Main Menu] While the power of TOP is turned on and the buzzer beeps once, Touch the screen's upper part under the TOP logo on the front sheet..



■ [Main Menu > Comm. Setup]

Communication setup	
20. IP Address : 192.168.000.050	Ethernet Port Communication Setup
21. Subnet Mastk : 255.255.255.000	
22. Gateway : 192.168.000.001	
23. Port (0~9999): 2000	
24. Protocol : TCP	
25. Ethernet Station Num. In Diag (0~31) : 00	
26. Ethernet Timeout : 10 * 100 [mSec]	
27. Ethernet Send Wait : 00 * 10 [mSec]	

항목	내용
20. IP Address	Setup the IP address that TOP receives in the network.
21. Subnet Mask	Input subnet mask of network
22. Gateway	Input subnet mask of network
23. Port	Port setup automatically when "S7-1200 Series" and TOP are connected
24. Protocol	Choose allowed protocol from "S7-1200 Series" and set port number.
25. Ethernet Station Num. In Diag (0~31) : 00	1:N communication, choose the station number you set in XDesignerPlus
26. Ethernet Timeout : 10 * 100 [mSec]	Waiting time for reply from external device : [0 - 99] x 100 mSec.
27. Ethernet Send Wait : 00 * 10 [mSec]	Time between receiving device's reply and sending next signal : [0 - 99] x 10 mSec

(3) Communication Diagnosis

■ TOP - Confirming interface setting condition between external devices

- Move to Menu by clicking the top side of LCD screen as resetting the power of TOP.
- [Main Menu >Communication setting] Confirm if detail in number 20~24 is identical to the setup information of "■Setup exercise 1".
- PLC Setup > Click the button in "Communication diagnosis" of TOP Ethernet.
- Diagnosis dialog box will pop up on the screen, you can judge by following information that is shown on box no. 3 section

OK! The communication status is good.

Time Out Error! The communication status is error.
- Error of the cable or Setting of TOP/External device (reference : communication Diagnosis Sheet)

■ Communication Diagnosis Sheet

- If you have problems of communication of TOP/External device, check your system with the sheet below.

Subject	Contents			Check			
TOP	Version Information	xDesignerPlus :	O.S :				
	Name of Driver				OK	NG	
	External device IP Address information (xDesignerPlus Project setting)	Subnet mask				OK	NG
		Gateway				OK	NG
		Protocol	UDP/IP	TCP/IP	OK	NG	
	TOP Information (Main Device Menu Setting)	IP Address				OK	NG
		Subnet mask				OK	NG
		Gateway				OK	NG
	Other specified setting info				OK	NG	
System configuration	System Connection Method	1:1	1:N	N:1	OK	NG	
	Name of cable (Hub usage)	Direct (Use Hub)	Cross (No Hub)		OK	NG	
External device	Name of CPU				OK	NG	
	Name of communication device				OK	NG	
	Protocol(mode)				OK	NG	
	Other specified setting info				OK	NG	
	IP Address	(Local)	(Destination)		OK	NG	
	Port number	(Local)	(Destination)		OK	NG	
	Subnet mask				OK	NG	
	Gateway				OK	NG	
Address range confirm (other docs)				OK	NG		

5. Support Address

Devices that are usable with TOP is as below.

There might be difference in the range of device (address) by type / series of CPU module TOP series supports the maximum address range that external device series use Please refer to each CPU module user manual carefully for devices that you desired to use to prevent not getting out of range.

Device	Bit Address		Word Address		32bit	Remarks
Input <i>*Note1)</i>	I00000.0 – I01023.7	E00000.0 – E01023.7	IW00000 – IW01022	EW00000 – EW01022	H/L <i>*Note3)</i>	
Output <i>*Note2)</i>	Q00000.0 – Q01023.7	A00000.0 – A01023.7	QW00000 – QW01022	AW00000 – AW01022		
Marker	M00000.0 – M08191.7		MW00000 – MW08190			
Data Registers	DB00001.DBX00000.0 – DB65535.DBX65535.7		DB00001.DBW00000 – DB65535.DBW65534			<i>*Note4)</i> <i>*Note5)</i>

**Note1)* Input Device(I, IW), CPU Type can affect to IW0-IW2 writing as CPU is slaved from I/O. Please refer to PLC manual for more detail.

**Note2)* Output Device(Q, QW, QD) can write only in Run Mode. STOP Mode make output data be reset.

**Note3)* 32BIT address using, check "Word swap" function.



**Note4)* When DB setting in TIA-Portal SW, 'Symbolic access only' must be checked.

**Note5)* TWhen setting Data type in DB using TIA-Portal SW, Bool shape must be 16bit.