SIEMENS AG.

SIMETIC S7-200 Series

PPI Driver

Compatible version	OS	Over 4.0
	XDesignerPlus	Over 4.0.0.0

CONTENTS

Thank you for using M2I's "Touch Operation Panel(M2I TOP) Series". Please read out this manual and make sure to learn connection method and process of TOP – External device"

1. System configuration

The system configuration of TOP and "SIEMENS AG. - SIMETIC S7-200 PPI" is as below.

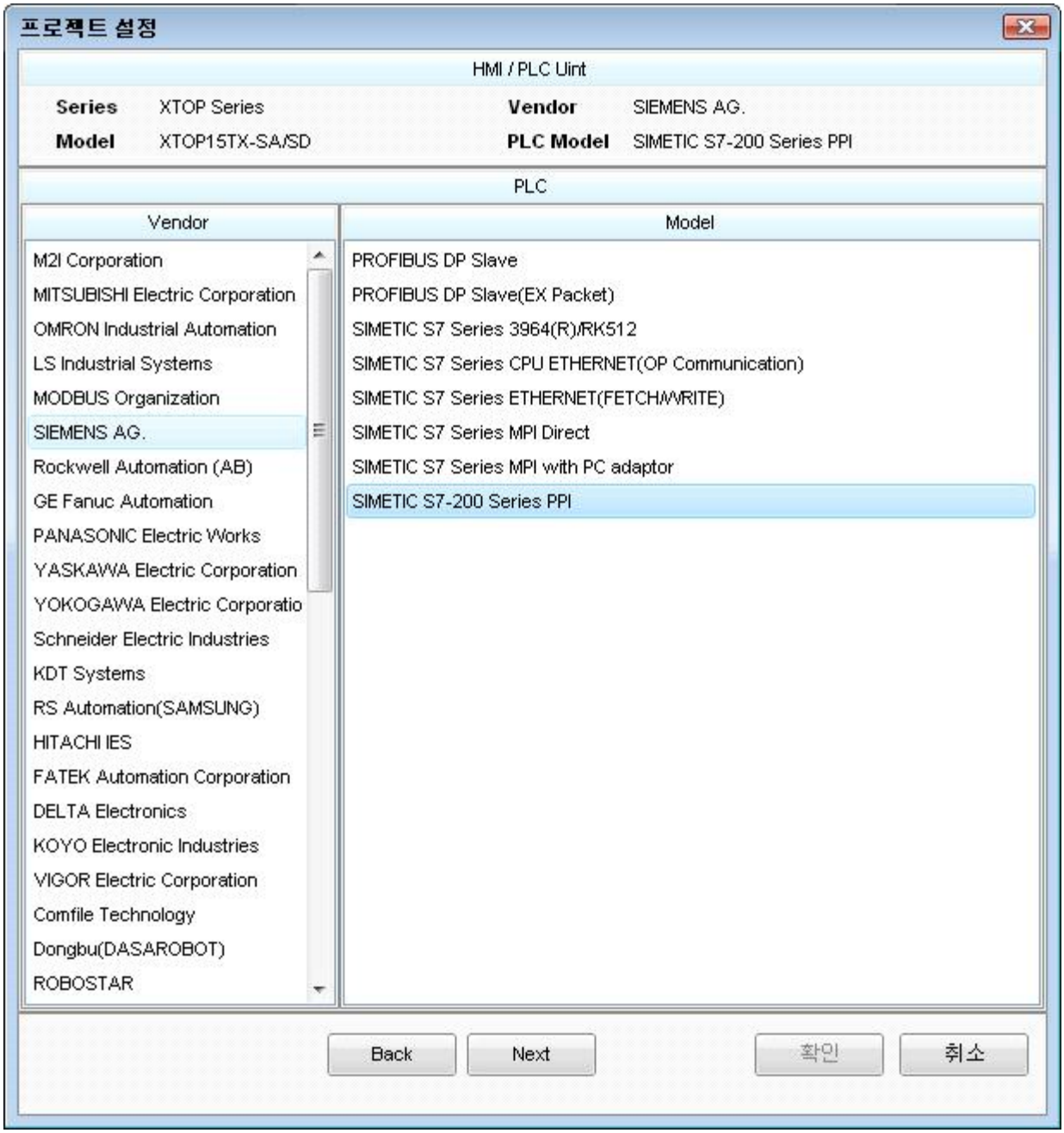
Series	CPU	Comm.	Method	System settings	Cable
SIMETIC S7-200	CPU214 CPU215 CPU216 CPU221 CPU222 CPU224 CPU226	CPU Integrated Port 0/1	RS-485 (2 wire)	Setting Example 1 (Page 4)	Cable Diagram 1 (Page 9)

■ Connection configuration

・1:1 connection (TOP 1 vs. external device)

2. Selecting TOP model and external devices

Select the external devices to connect to TOP.



Setting details		Contents
TOP	Series	Select the name of a TOP series that is to be connected to PLC. Before downloading the settings, install the OS version specified in the table below according to TOP series. Series: XTOP / HTOP — Version name: V4.0
	Name	Select the model name of TOP product.
External device	Manufacturer	Select the manufacturer of external devices to be connected to TOP. Select "SIEMENS AG".
	PLC	Select the model series of external devices to be connected to TOP. Please select "SIMETIC S7-200 Series PPI". Please check, in the "1. System configuration", if the relevant external device is available to set a system configuration.

3. Example of system settings

The setup of communication interface between TOP and SIEMTIC S7 is recommended as below.

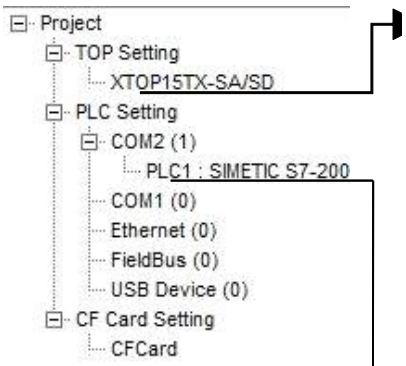
3.1 Example of settings 1

The system is set as below.

Details		TOP	"SIMETIC S7-200 Series"	Remark
Serial level (port/channel)		RS-485 (2 wire, COM2)	RS-485 (PORT 1)	User settings
Address(PLC Address)		1	2	User settings
Serial baud rate	[BPS]	187500		User settings
Serial data bit	[Bit]	8		Fixed Value
Serial stop bit	[Bit]	1		Fixed Value
Serial parity bit	[Bit]	Even		Fixed Value

(1) XDesignerPlus setup

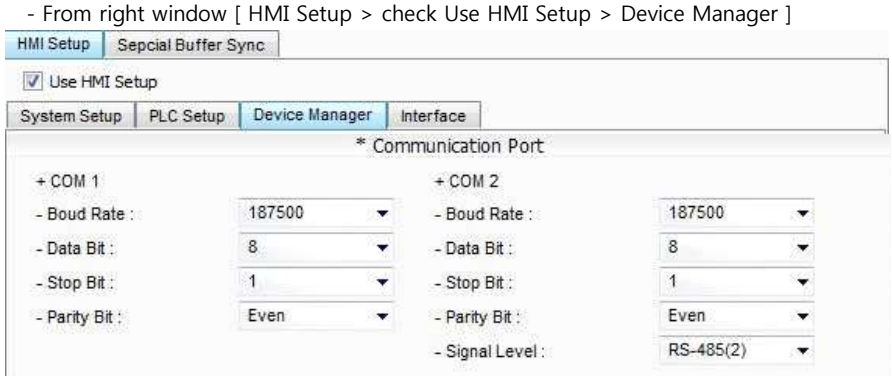
After setting the below details in [Project > Project Settings], download the detailed settings using TOP tool.



■ [Project > Project property > Project > Settings > TOP Name]

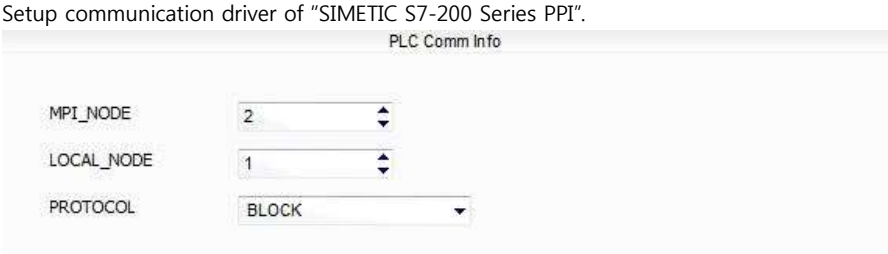
Set the communication interface of TOP tool.

- From right window [HMI Setup > check Use HMI Setup > Device Manager]



■ External device settings

Setup communication driver of "SIMETIC S7-200 Series PPI".



- MPI NODE : Node Number of S7-200
- LOCAL NODE : Node Number of TOP
- PROTOCOL : Select the protocol method for TOP to approach S7-200.

(2) External device settings

After executing the details below from S7-200 series ladder software "STEP 7 Micro/WIN 32", Download through "File > Download". Please refer the PLC user manual for more detailed information if you need.

Please do not use the same node address in the same network.

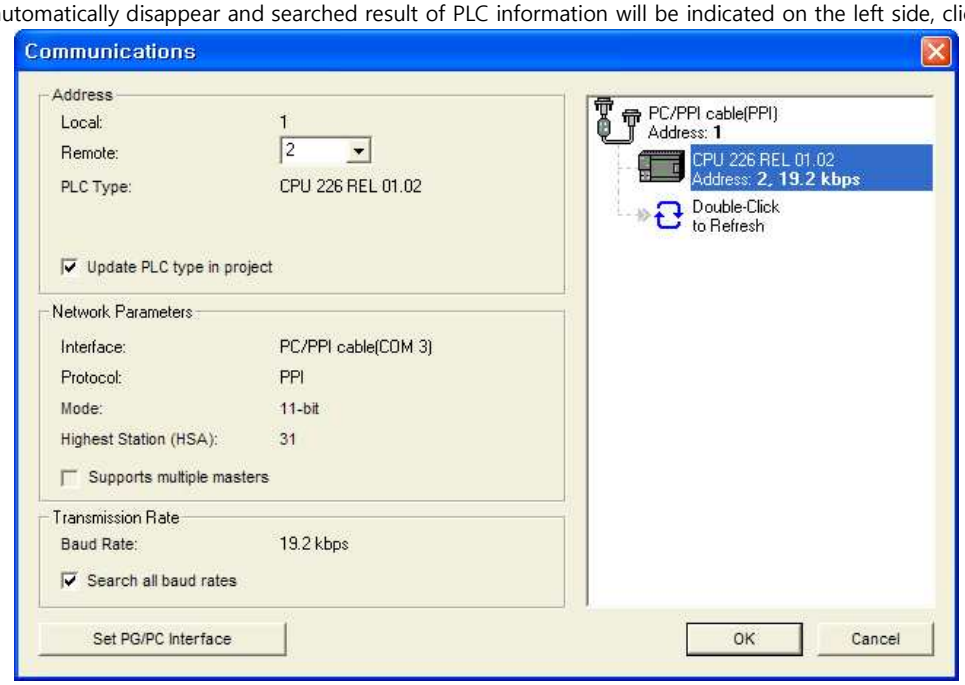
■ PLC CPU type setting

1. Select [Type] menu after right click on [PLC] from the left project window.

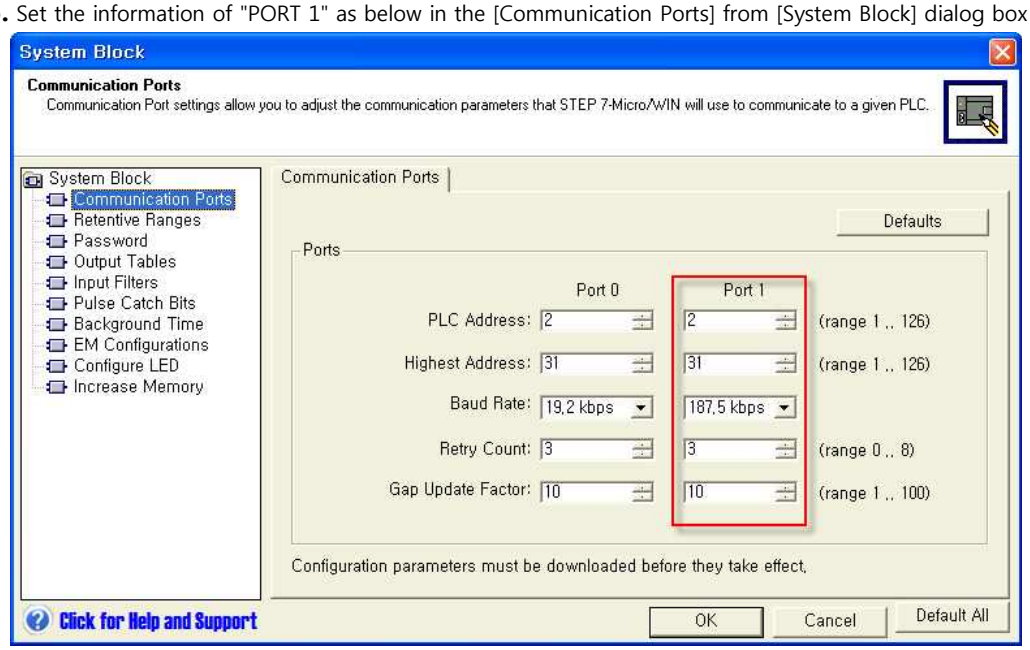
2. Click "OK" after selecting type of PLC which is connected with [PLC Type] window.

3. Connect "PORT0 of PLC" with PC through "PC/PPI cable"(S7-200 ladder cable). Double click [Double-Click to Refresh] from [Communication] Dialog box in the Project.

4. As [Search for Addresses] Dialog box comes out, automatically search the PLC. When search is over, dialog box will be automatically disappear and searched result of PLC information will be indicated on the left side, click "OK".



5. Set the information of "PORT 1" as below in the [Communication Ports] from [System Block] dialog box in the Project.



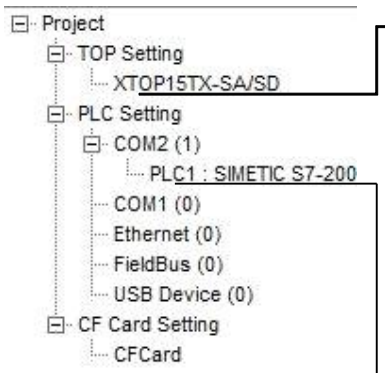
6. Download setting information to PLC.

4. Communication settings details

Communication settings are available at XDesignerPlus or TOP main menu. Communication settings must be identical with the external devices.

4.1 XDesignerPlus settings details

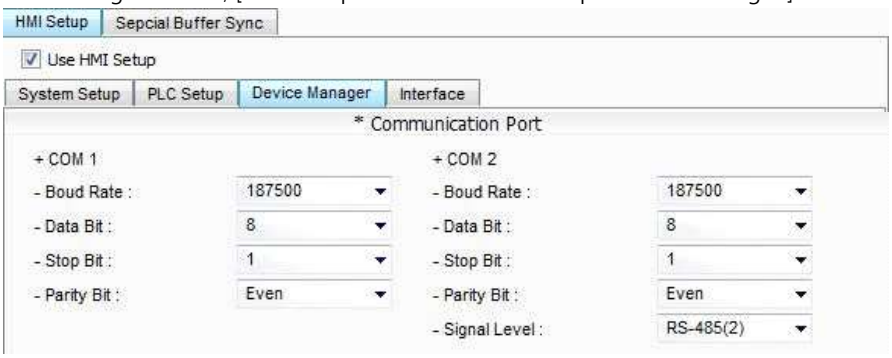
Select [Project > Project property] to show the below window.



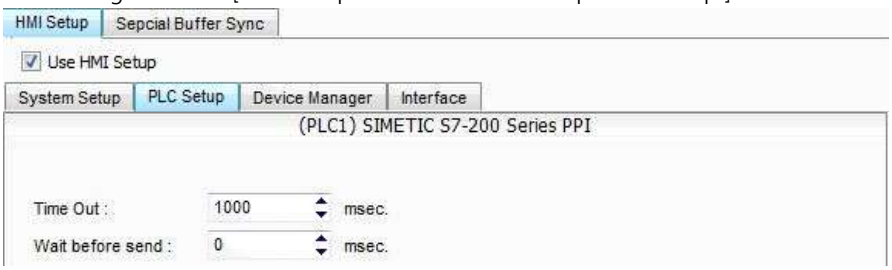
■ [Project > Project property > Project > Settings > TOP Name]

Set the communication interface of TOP tool.

- From right window, [HMI Setup > check Use HMI Setup > Device Manager]

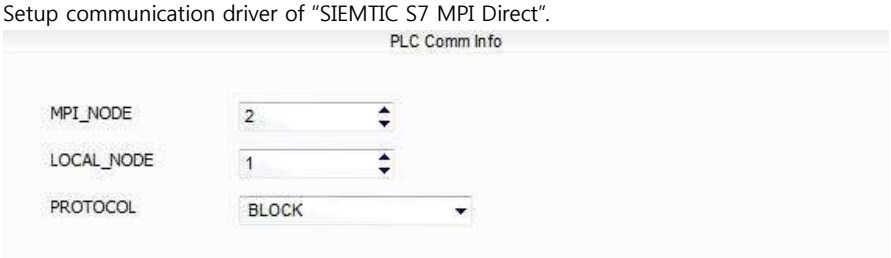


- From right window [HMI Setup > check Use HMI Setup > PLC Setup]



■ External device settings

Setup communication driver of "SIEMTIC S7 MPI Direct".



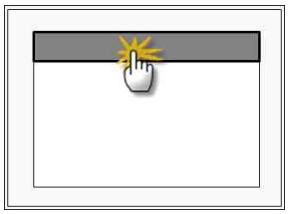
■ Communication Interface Settings

Details	Contents
Signal level	External device – select serial communication method between TOPs. (COM1 supplies RS-232C only)
Baud rate	External device – select serial communication speed between TOPs.
Data bit	External device – select serial communication data bit between TOPs.
Stop bit	External device – select serial communication stop bit between TOPs.
Parity bit	External device – select serial communication parity bit check method between TOPs.
Time out [x100 mSec]	Set up TOP's waiting time from external device at [0 - 5000] x 1mSec.
Transmitting Delay Time [x10 mSec] Receiving Wait Time [x10	Set up TOP's waiting time between response receiving – next command request transmission from external device at [0 – 5000] x 1 mSec.

mSec]	
PLC address [0~65535]	Address of other device. Select between [0 - 65535].

4.2 TOP main menu setup item

- When a buzzer is on during the power reset, touch 1 spot at the upper LCD to move to "TOP Management Main" display.
- Set up driver interface at TOP according to below **Step1 → Step2**.
  (Press "TOP COM 2/1 setup" in **Step 1** to change setup at **Step 2**.)



Step 1. [PLC setup] .Setup driver interface.

PLC setup	
PLC Address : 00 Timeout : 1000 [mSec] Delay time of transmission : 0 [mSec] TOP COM 2/1 : RS - 485 , 187500 , 8 , 1 , EVEN TOP COM 2/1 setup communication test	Communication Interface Settings

Step 1–Reference.

Details	Contents
PLC address [0~65535]	Address of other device. Select between [0 - 65535].
Timeout [x1 mSec]	Set up TOP's waiting time from external device at [0 - 5000] x 1mSec.
Delay time of transmission [x1 mSec]	Set up TOP's waiting time between response receiving – next command request transmission from external device at [0 – 5000] x 1 mSec.
TOP COM 2/1	TOP's Interface setup to external device.

Step 2. [PLC setup] >[TOP COM2/COM1 setup] – Setup relevant port's serial parameter.

Port Settings	
* Serial communication + COM-1 Port - Baud rate : 187500 [BPS] - Data bit : 8 [BIT] - Stop bit : 1 [BIT] - Parity bit : EVEN [BIT] - Signal level : RS – 232C	COM 1 Port Communication Interface Settings
+ COM-2 Port - Baud rate : 187500 [BPS] - Data bit : 8 [BIT] - Stop bit : 1 [BIT] - Parity bit : EVEN [BIT] - Signal level : RS – 485	COM-2 Port Communication Interface Settings

Step 2–Reference.

Details	Contents
Baud rate	External device – select serial communication speed between TOPs.
Data bit	External device – select serial communication data bit between TOPs.
Stop bit	External device – select serial communication stop bit between TOPs.
Parity bit	External device – select serial communication parity bit check method between TOPs.
Signal level	External device – select serial communication method between TOPs.

4.3 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.
- Confirms if Port [COM 2 or COM 1] setting that is willing to use in [Communication Settings] matches with the setting of external devices.

■ Diagnosis of error of communication status

- PLC Setup > TOP [COM 2 or COM 1] click "Communication Diagnosis" button.
- Diagnosis dialog box will pop up on the screen, you can judge by following information that are shown on box no. 3 section.

OK!	**Communication setting succeeded**
Time Out Error!	Communication setting error - Error in the setting situation of Cable and TOP / External device **(reference : Communication Diagnosis sheet)**

■ Communication Diagnosis Sheet

- Please refer to the information below if you have a problem between external devices and communication connection.

Designer Version		O.S Version	

Details	Contents				Confirm	
System configuration	Name of CPU				OK	NG
	Name of confront port that is communicating				OK	NG
	System Connection Method	1:1	1:N	N:1	OK	NG
Connection Cable	Name of Cable				OK	NG
PLC setup	Setup address				OK	NG
	Serial baud rate	[BPS]			OK	NG
	Serial data bit	[BIT]			OK	NG
	Serial Stop bit	[BIT]			OK	NG
	Serial parity bit	[BIT]			OK	NG
	Assigned Address Limit				OK	NG
TOP setup	Setup port	COM 1	COM 2		OK	NG
	Name of Driver				OK	NG
	Confront Address	Project Property Setup			OK	NG
		Diagnosing Communication			OK	NG
	Serial baud rate	[BPS]			OK	NG
	Serial data bit	[BIT]			OK	NG
	Serial Stop bit	[BIT]			OK	NG
	Serial parity bit	[BIT]			OK	NG

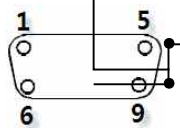
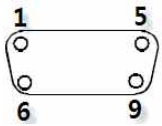
5. Cable diagram

This Chapter is to introduce the Cable diagram for regular communication between TOP and relative devices. (The Cable diagram which are going to be introduced in this chapter might be different than what "SIEMENS AG." recommends.)

5.1 Cable diagram 1

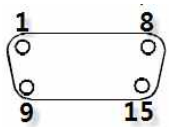
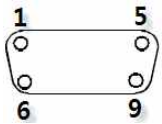
■ 1 : 1 Connection

(A) XTOP COM 2 Port (9 pin)

XTOP COM2			Cable Connection	External device		
pin arangement * caution 1)	Name of Signal	Pin Number		Pin Number	Name of Signal	**pin arangement * caution 1)**
	RDA	1		1		
		2		2		
		3		3	TRX+	
	RDB	4		4		
	SG	5		5	SG	
	SDA	6		6		
		7		7		
		8		8	TRX–	
Front View of D-SUB 9 Pin male (Male, convex)	SDB	9		9		Front View of D-SUB 9 Pin male (Male, convex)

1*Caution1) Pin arrangement is shown from connecting face in cable connection connecter.(2~9)

(B) XTOP COM 2 Port (15 pin)

XTOP COM2			**Cable Connection**	**External device**		
pin arangement * caution 1)	Name of Signal	Pin Number		Pin Number	Name of Signal	**pin arangement * caution 1)**
	–	1		1		
				2		
				3	TRX+	
	–	10		4		
	RDA	11		5	SG	
	RDB	12		6		
	SDA	13		7		
	SDB	14		8	TRX–	
Front View of D-SUB 15 Pin male(Male convex)	SG	15		9		Front View of D-SUB 9 Pin male (Male, convex)

*Caution1) Pin arrangement is shown from connecting face in cable connection connecter.

6. 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 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	Double Word address*C4*C5)	Property
Variables	V00000.0 - V05118.7	VW00000 - VW05118	VD00000 - VW05116	R/W
Input *caution1)	I00000.0 - I00015.7	IW00000 - IW00014	ID00000 - IW00012	R/W
Output *caution2)	Q00000.0 - Q00015.7	QW00000 - QW00014	QD00000 - QW00012	R/W
Internal Marker	M00000.0 - M00031.7	MW00000 - MW00030	MD00000 - MD00028	R/W
Timer *caution3)	-	T00000 - T00255	-	R
Counter *주3)	-	C00000 - C00255	-	R

R:read / W:write

*Caution1) Input Device (I,IW) might not be able to input read on the address of IW0 ~ IW2 because depends on the type of CPU, it becomes subordinate in the integrated I/O. Please refer to the PLC Manual.

*Caution2) Output Device (Q, QW, QD) can write value only in the Run Mode. Output value will be reset if it's STOP Mode.

*Caution3) Device Restricted to Read only

*Caution 4) Regarding on Word device, 32 but Data will be saved in the order of from High / Low, 16 bit each.
(Example) VW00000 (32bit data, 0x12345678) ➔ VW00000(16bit, 0x1234) VW00002(16bit, 0x5678)

*Caution5) Checks "Word Swap" function when Double word address is being used.