SIEMENS AG.

SIMETIC S7 Series

MPI with PC adapter 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

TOP와 "SIEMENS AG. - System structure of SIMETIC S7 Series MPI with PC adaptor" is as follows.

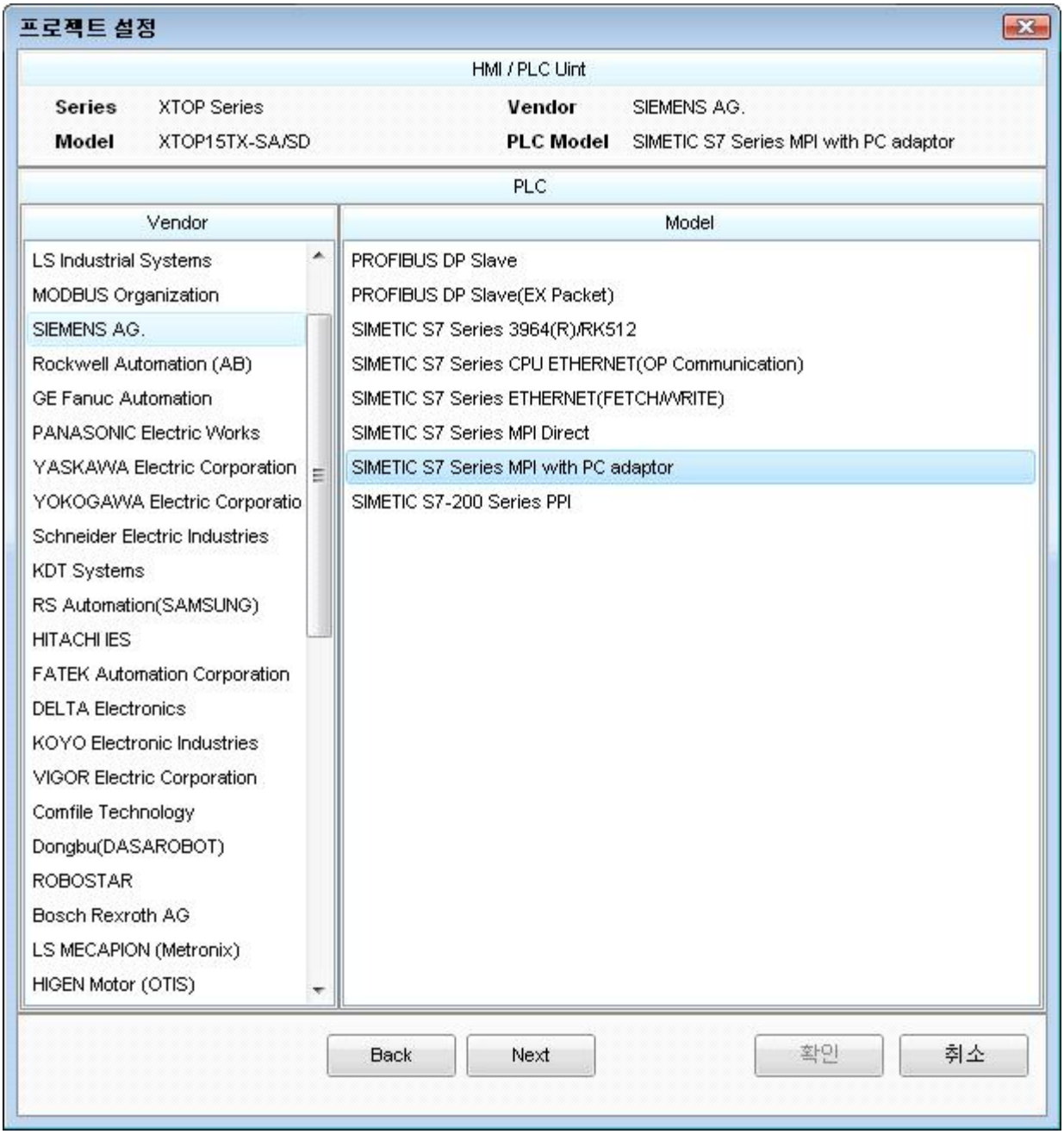
Series	CPU	Link I/F	Method	System settings	Cable
SIMATIC S7-300	CPU312IFM CPU313 CPU314 CPU314IFM CPU315 CPU315-2 DP CPU316 CPU316-2 DP CPU318-2	MPI Port + PC adapter	RS-485 (2 wire)	Setting Example 1 (Page 4)	Cable Diagram 1 (Page 10)
SIMATIC S7-400	CPU412-1 CPU412-2 DP CPU413-1 CPU413-2 DP CPU414-1 CPU414-2 DP CPU414-3 DP CPU416-1 CPU416-2 DP CPU416-3 DP CPU417-4				

■ 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.



<table>
<tr><th colspan="2">Setting details</th><th>Contents</th></tr>
<tr><td>TOP</td><td>Series</td><td>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.<table><tr><th>Series</th><th>Version name</th></tr><tr><td>XTOP / HTOP</td><td>V4.0</td></tr></table></td></tr>
<tr><td></td><td>Name</td><td>Select the model name of TOP product.</td></tr>
<tr><td>External device</td><td>Manufacturer</td><td>Select the manufacturer of external devices to be connected to TOP.
Select SIEMENS AG.</td></tr>
<tr><td></td><td>PLC</td><td>Select the model series of external devices to be connected to TOP.
Please choose SIMETIC S7 MPI(With PC Adapter).
Please check, in the “1. System configuration”, if the relevant external device is available to set a</td></tr>
</table>

		system configuration.

3. Example of system settings

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

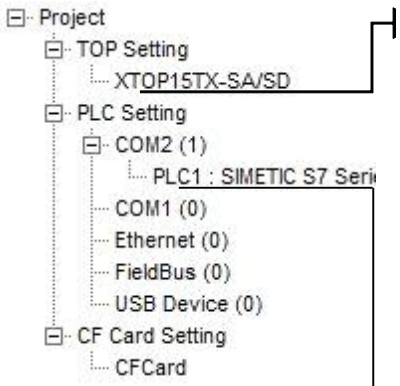
3.1 Example of settings 1

The system is set as below.

Details		TOP	"SIMETIC S7 Series"	Remark
Serial level (port/channel)		RS-232C (COM2)	RS-232C	User settings
Address(PLC Address)		—	1	User settings
Serial baud rate	[BPS]	38400		User settings
Serial data bit	[Bit]	8		User settings
Serial stop bit	[Bit]	1		User settings
Serial parity bit	[Bit]	ODD		User settings

((1) XDesignerPlus setup

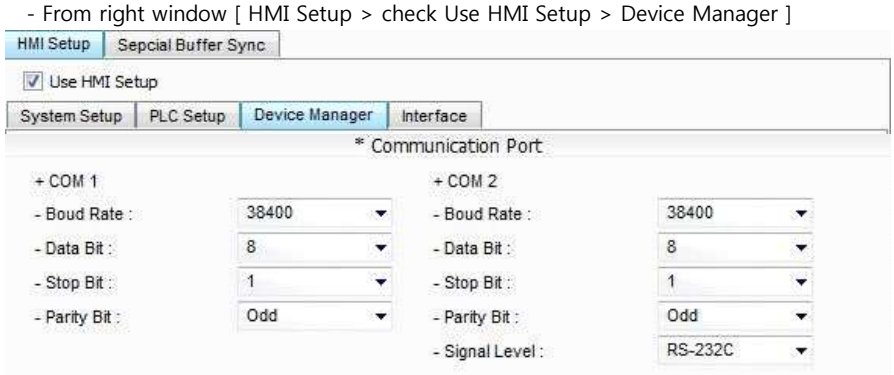
After setting the below details in [Project > Project Settings], download the detailed settings using TOP tool.



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

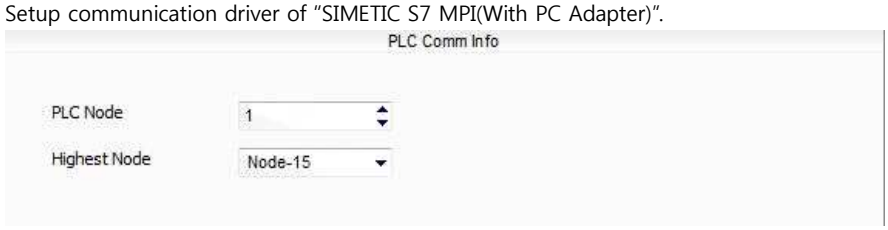
Set the communication interface of TOP tool.

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



■ External device settings

Setup communication driver of "SIMETIC S7 MPI(With PC Adapter)".



- PLC Node Number : External Device Setting Number
- The Highest node : Input Highest Node Address.

(2) External device settings

Setup as below using SIEMTIC S7 Ladder Software STEP 7. Please refer the PLC user manual for more detailed information if you need.

> Setup PLC node address lower than "Highest Node Address".

1. Create a new project in [New Project] at upper bar of main menu of [SIMETIC Manager].

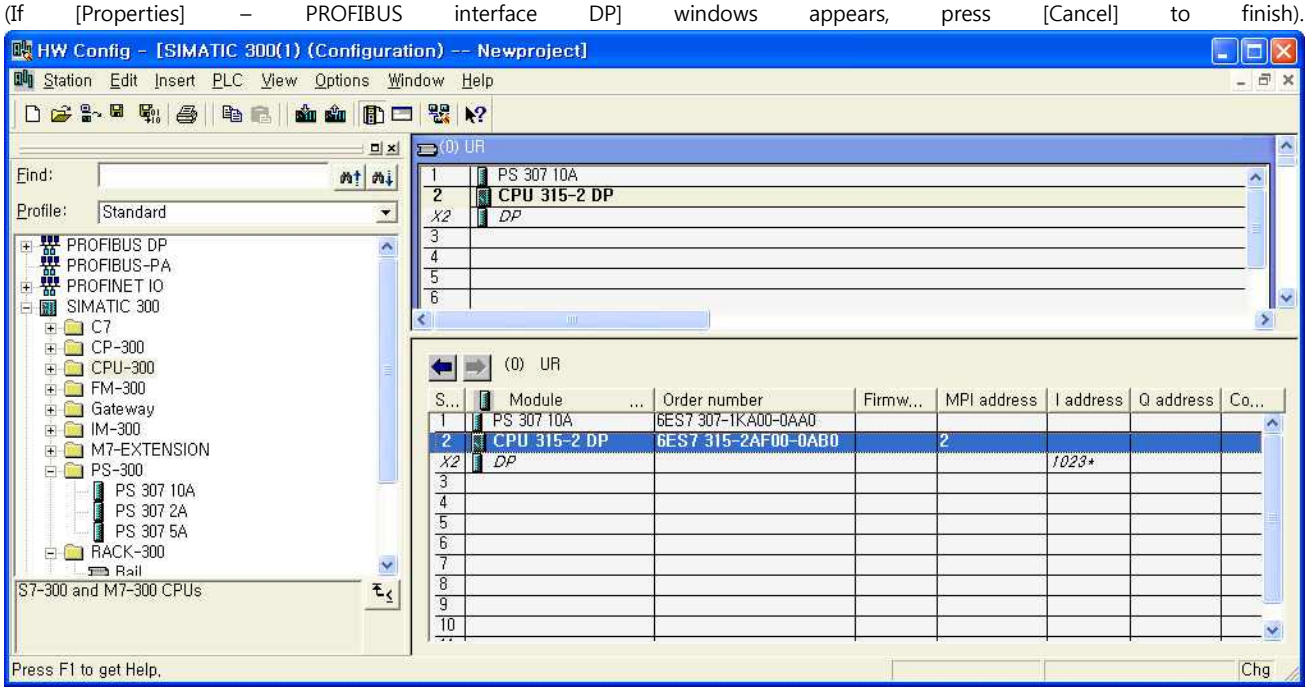
2. Select menu [Insert] > [Station] > [1 SIMETIC 400 Station] or [2 SIMETIC 300 Station]. → Add CPU

3. Double click added "[SIMETIC 400(1)]" or [SIMETIC 300(1)] CPU > Relevant CPU [Hardware] → New [HW Config] window appears.

4. Open "[SIMATIC 400] > [RACK-400]" or "[SIMATIC 300] > [RACK-300]" at left tree window in [HW Config], select Base unit model, and register it using Drag & Drop to the right bottom.

5. Select [SIMATIC 400] > [PS-400] or [PS-300] and then appropriate power supply unit, and drag & drop it to the current Rack.

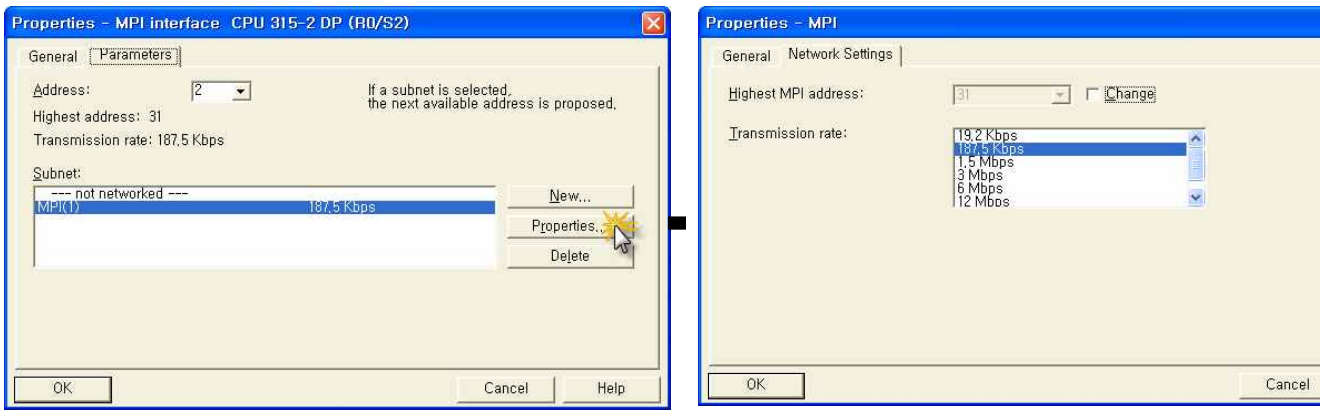
6. Select [SIMATIC 400] > [CPU-400] or [CPU-300] and then appropriate CPU unit and drag& drop it to the current Rack.
(If [Properties] – PROFIBUS interface DP] windows appears, press [Cancel] to finish).



7. Double click registered CPU name. → A new relevant CPU [Properties] window appears.

8. Select [Interface] > [Properties] at [General] tap in [Properties] to popup [Properties - MPI interface CPU xxx-xxx] window.

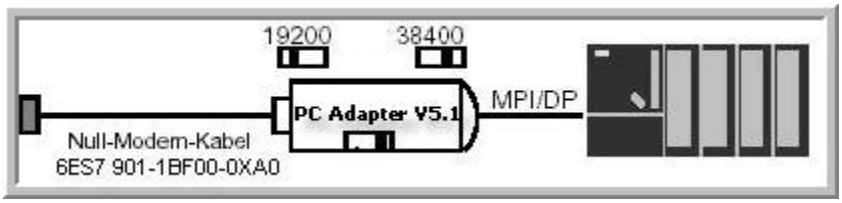
9. Setup MPI port station [Address] and [Transmission rate] as below at [Properties - MPI interface CPU xxx-xxx] window's [Parameter] tap. (Transmission speed change: Click [Properties] > [Properties] window [Network Settings] tap)



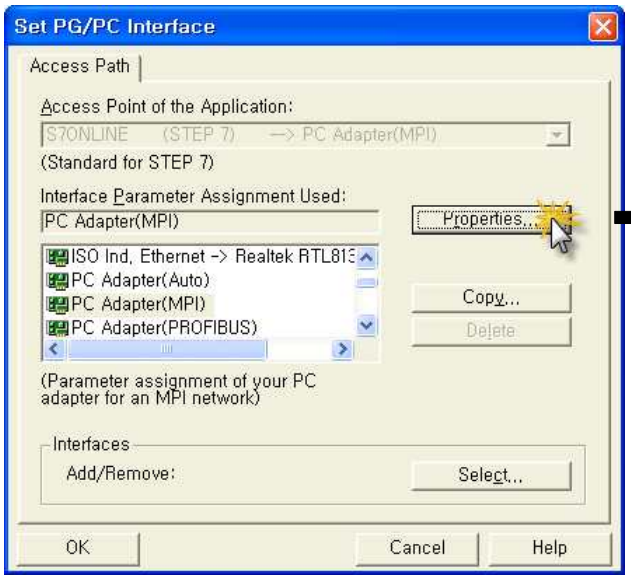
Details	Contents
Staion number	2
Transmission rate	187500bps

10. Click "OK" to save the setting information until now.

11. Connect PC - PLC after setting DIP Switch of PC adapter as below.



12. STEP 7 From Main Menu [Options] > [Set PG/PC Interface] > [PC Adapter] > set [Local Connection] Tap.



Details	Contents
Connection to	COM1 (Serial Port that recognized the PC Adapter in STEP 7)
Transmission rate	38400

13. Save all the information by clicking "OK" and compile by selecting [Station] > [Save and Compile], and download setup details into PLC. (PLC Setup is up to this part.)

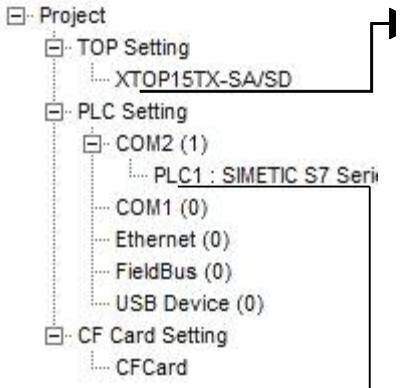
14. Please execute the communication check by connecting to TOP with the connecter that is connected to PC.

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

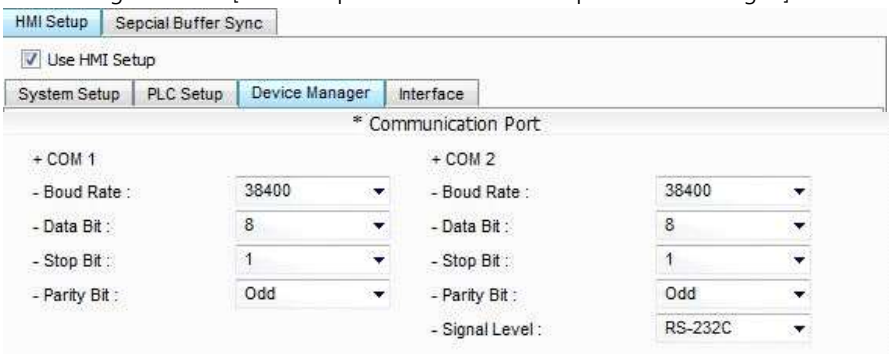
Select [Project > Project property] to show the below window.



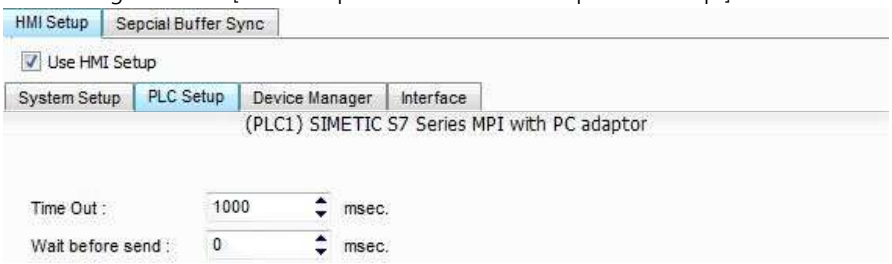
■ [Project > Project property > Project > Settings > TOP Name]

Set the communication interface of TOP tool.

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

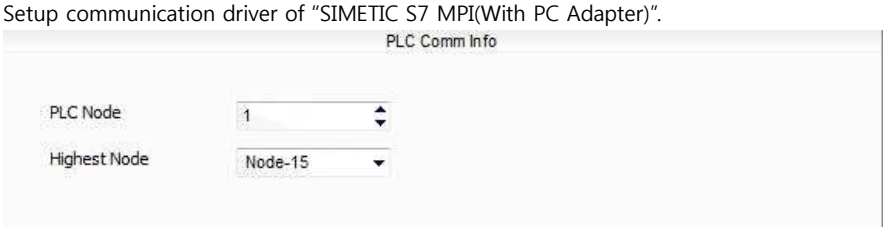


- From right window [HMI Setup > check Use HMI Setup > PLC Setup]



■ External device settings

Setup communication driver of "SIMETIC S7 MPI(With PC Adapter)".



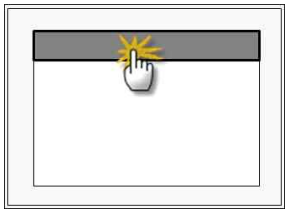
■ Communication Interface Settings

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 : 01 Timeout : 1000 [mSec] Delay time of transmission : 0 [mSec] TOP COM 2/1 : RS – 232C , 38400 , 8 , 1 , ODD 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 : 38400 [BPS] - Data bit : 8 [BIT] - Stop bit : 1 [BIT] - Parity Beat : ODD [BIT] - Signal level : RS – 232C	COM 1 Port Communication Interface Settings
+ COM-2 Port - Baud rate : 38400 [BPS] - Data bit : 8 [BIT] - Stop bit : 1 [BIT] - Parity Beat : ODD [BIT] - Signal level : RS – 232C	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.

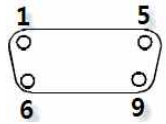
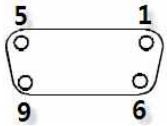
Designer Version		O.S Version				
Details	Contents				Confirm	
System configuration	Name of CPU				OK	NG
	Name of confront port that is communicating				OK	NG
	System Connection Method	1:1	1:N	N:1	OK	NG
Connection Cable	Name of Cable				OK	NG
PLC setup	Setup address				OK	NG
	Serial baud rate	[BPS]			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

5.1 Cable diagram 1

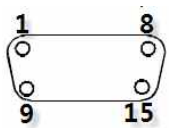
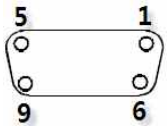
■ 1 : 1 Connection

(A) XTOP COM 2 Port (9 pin)

XTOP COM2			Cable Connection	PC Adaptor		
pin arangement * caution 1)	Name of Signal	Pin Number		Pin Number	Name of Signal	**pin arangement * caution 1)**
 Front View of D-SUB 9 Pin male (Male, convex)	CD	1		1	CD	 Front View of MINI-DIN 9 Pin (female, concave)
	RD	2		2	RD	
	SD	3		3	SD	
	DTR	4		4	DTR	
	SG	5		5	SG	
	DSR	6		6	DSR	
	RTS	7		7	RTS	
	CTS	8		8	CTS	
		9		9		

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

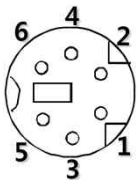
(B) XTOP COM 2 Port (15 pin)

XTOP COM2			**Cable Connection**	**PC Adaptor**		
pin arangement * caution 1)	Name of Signal	Pin Number		Pin Number	Name of Signal	**pin arangement * caution 1)**
 Front View of D-SUB 15 Pin male(Male convex)	CD	1		1	CD	 Front View of MINI-DIN 9 Pin (female, concave)
	RD	2		2	RD	
	SD	3		3	SD	
	DTR	4		4	DTR	
	SG	5		5	SG	
	DSR	6		6	DSR	
	RTS	7		7	RTS	
	CTS	8		8	CTS	
		9		9		

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

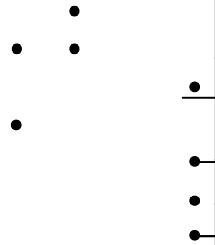
(C) XTOP/ATOP COM 1 Port (6 Pin)

XTOP/ATOP COM 1 Port			Cable Connection	PC Adaptor		
pin arangement * caution 1)	Name of Signal	Pin Number		Pin Number	Name of Signal	**pin arangement * caution 1)**

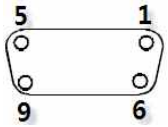


Front View of
D-SUB 6 Pin male
(Male, convex)

	1
RD	2
SG	3
	4
	5
SD	6



1	CD
2	RD
3	SD
4	DTR
5	SG
6	DSR
7	RTS
8	CTS
9	



Front View of
MINI-DIN 9 Pin
(female, concave)

*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.

	Bit address		Word address		32 bits	Remark
Input Relay * caution1)	I00000.0 – I00127.7	E00000.0 – E00127.7	IW00000 – IW00126	EW00000 – EW00126		—
Output Relay * caution2)	Q00000.0 – Q00127.7	A00000.0 – A00127.7	QW00000 – QW00126	AW00000 – AW00126		—
Data Block	DB00001 : DBX00000 – DB65535 : DBX65533.7		DB00001 : DBW00000 – DB65535 : DBW65532		**H/L** *caution4caution5)	—
Internal Memory	M00000.0 – M00511.7		MW00000 – MW00510			—
Timer*caution3)	—		T00000 – T00255			Not writable
Counter*caution3)	—		C00000 – C00255	Z00000 – Z00255		Not writable

*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 32BIT address is being used.