

HANYOUNGNUX CO.,LTD.

Temperature Controller

- NX/PX/UX100/RT9/NP100/NP200 Series

PC Link Driver

Supported version

TOP Design Studio

V1.0 or higher



CONTENTS

We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

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Describes the devices required for connection, the setting of each device, cables, and configurable systems.

2. External device selection [Page 3](#)

Select a TOP model and an external device.

3. TOP communication setting [Page 4](#)

Describes how to set the TOP communication.

4. External device setting [Page 9](#)

Describes how to set up communication for external devices.

5. Cable table [Page 10](#)

Describes the cable specifications required for connection.

6. Supported addresses [Page 12](#)

Refer to this section to check the addresses which can communicate with an external device.

1. System configuration

The system configuration of TOP and "HANYOUNGNUX CO.,LTD – Temperature Controller Series" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
NP200	NP200-□1 NP200-□3	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.1. Cable table 1
NP100	NP100-□2 NP100-□3	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.1. Cable table 1
NX	NX9-□1	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.1. Cable table 1
	NX7-□1 NX3-□2 NX2-□2	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.2. Cable table 2
PX	PX9-□1	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.1. Cable table 1
	PX7-□1 PX7-□2	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.2. Cable table 2
RT9	RT9-□□3 RT9-□□4 RT9-□□5	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.2. Cable table 2
UX100	UX100-□1	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1	5.2. Cable table 2

■ Connectable configuration

- 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422/485 communication.



- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422/485 communication.



2. Select external devicesetting

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

Settings		Contents					
TOP	Model	Check the TOP display and process to select the touch model.					
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "Hanyoung Nux".					
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: black; color: white;">Model</th> <th style="background-color: black; color: white;">Interface</th> <th style="background-color: black; color: white;">Protocol</th> </tr> </thead> <tbody> <tr> <td>Temperature Controller Series</td> <td>Computer Link</td> <td>PC Link</td> </tr> </tbody> </table>	Model	Interface	Protocol	Temperature Controller Series	Computer Link
Model	Interface	Protocol					
Temperature Controller Series	Computer Link	PC Link					

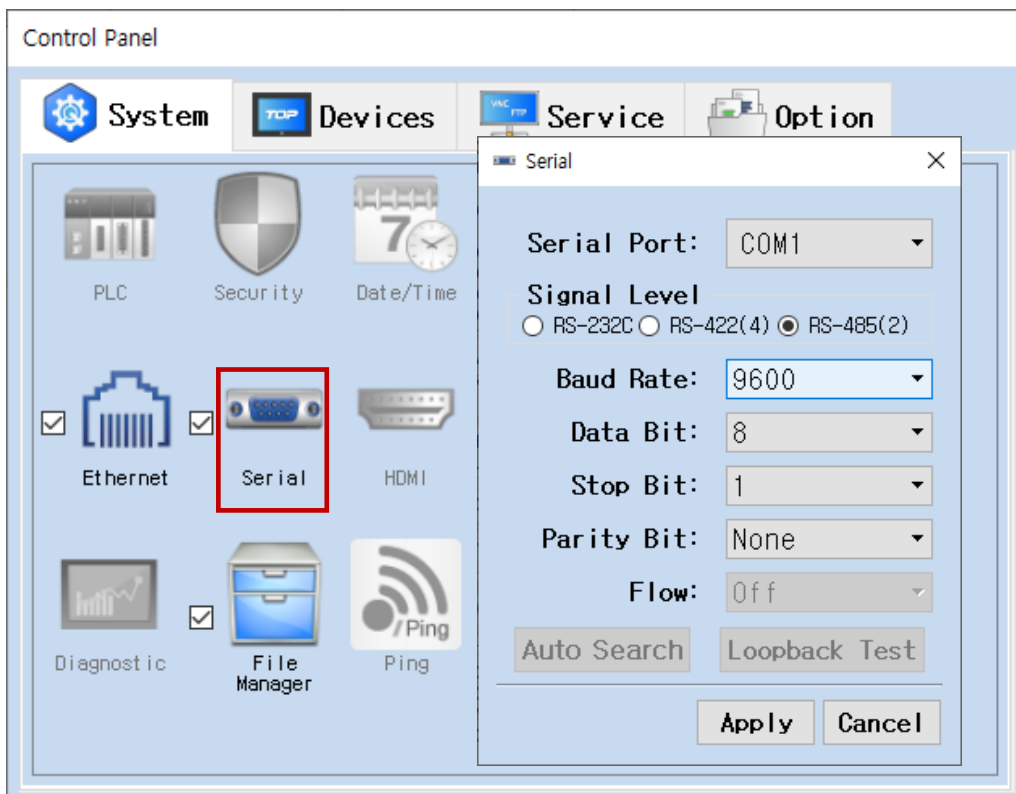
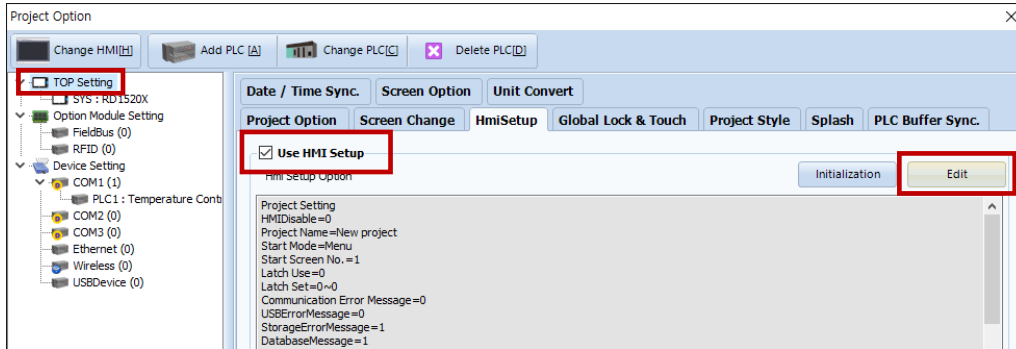
3. TOP communication setting

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 > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]
- Set the TOP communication interface in TOP Design Studio.



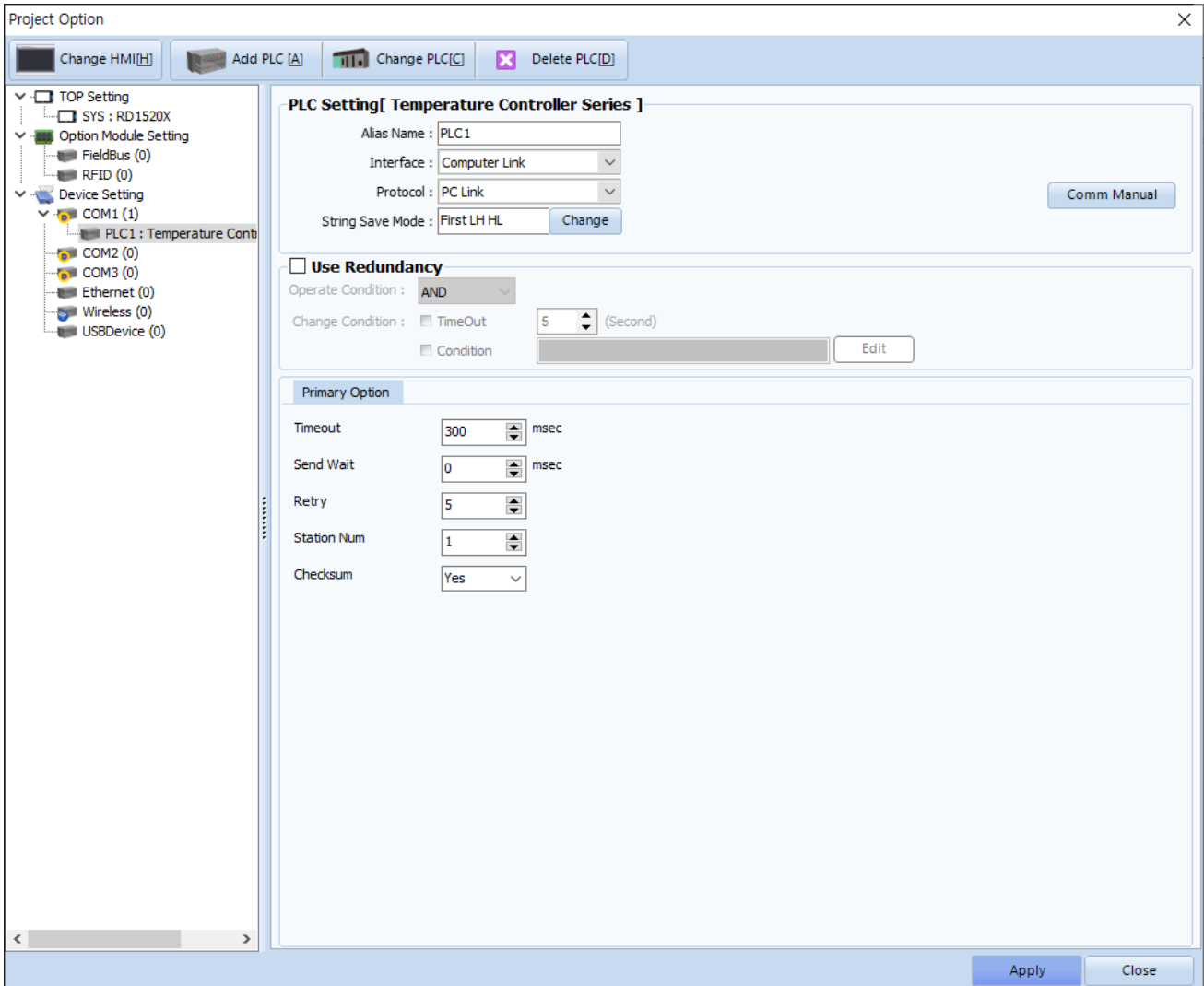
Items	TOP	External device	Remarks
Signal Level (port)	RS-485	RS-485	
Baud Rate		9600	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

* The above settings are examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.

(2) Communication option setting

- [Project > Project Property > PLC Setting > COM > "PLC1 : Temperature Controller Series"]
 - Set the options of the Temperature Controller Series communication driver in TOP Design Studio.



Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External device selection".
Protocol	Select the communication protocol between the TOP and an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Station No	Enter the prefix of an external device.	
Checksum	Select Checksum use status.	

3.2. Communication setting in TOP

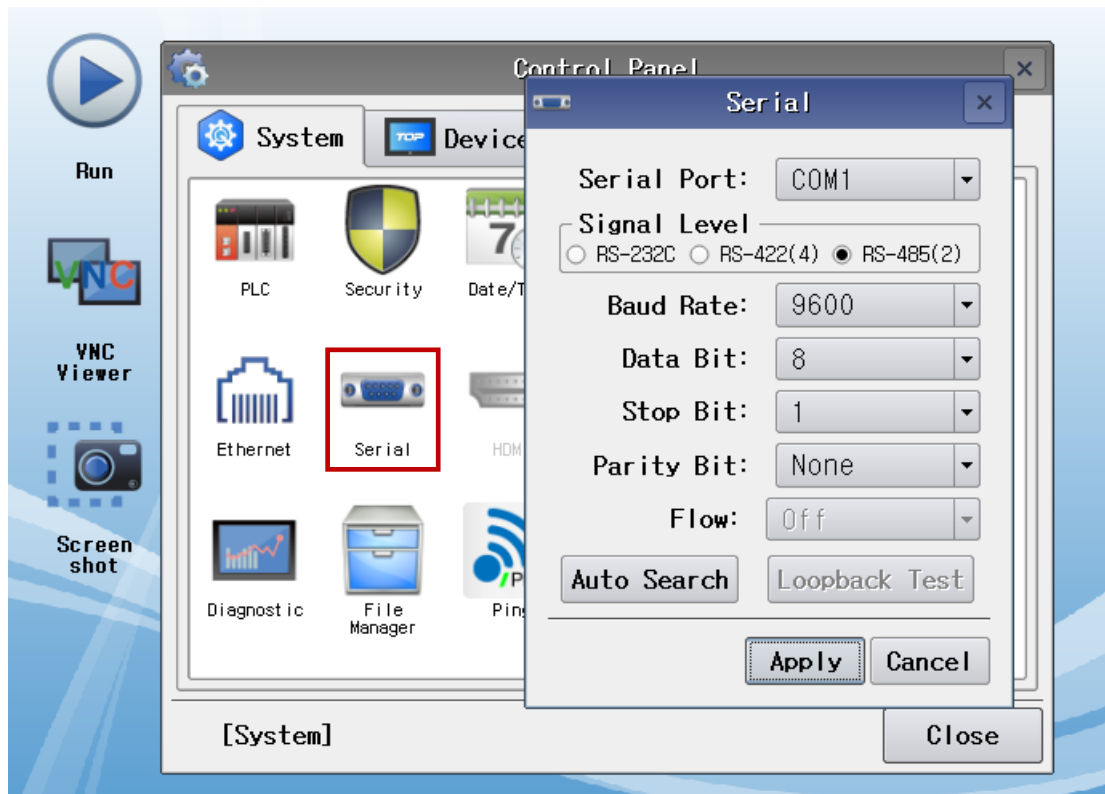
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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

- [Main Screen > Control Panel > Serial]



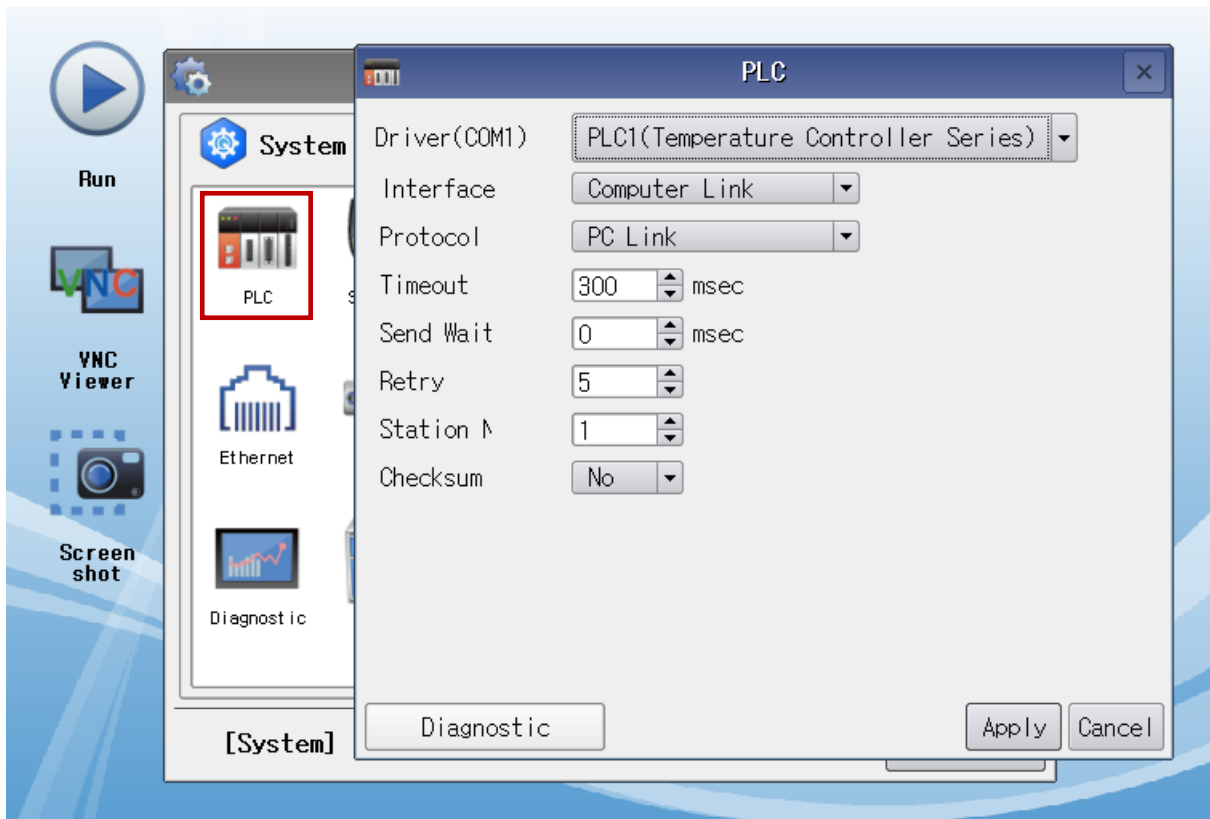
Items	TOP	External device	Remarks
Signal Level (port)	RS-485	RS-485	
Baud Rate	9600		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

* The above settings are setting examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.

(2) Communication option setting

■ [Main Screen > Control Panel > PLC]



Items	Settings	Remarks
Interface	Configure the communication interface between the TOP and an external device.	Refer to "2. External device selection".
Protocol	Configure the communication protocol between the TOP and an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Station No	Enter the prefix of an external device.	
Checksum	Select Checksum use status.	

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 if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.

- Diagnosis of whether the port communication is normal or not
 - Touch "Communication diagnostics" in [Control Panel > PLC].
 - The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

OK	Communication setting normal
Time Out Error	Communication setting abnormal - Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

- Communication diagnostics sheet
 - If there is a problem with the communication connection with an external terminal, 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	2. External device selection 3. Communication setting	
	Port in use	OK	NG		
	Driver name	OK	NG		
	Other detailed settings	OK	NG		
	Relative prefix	Project setting	OK		NG
		Communication diagnostics	OK		NG
	Serial Parameter	Transmission Speed	OK		NG
Data Bit		OK	NG		
Stop Bit		OK	NG		
Parity Bit		OK	NG		
External device	CPU name	OK	NG	4. External device setting	
	Communication port name (module name)	OK	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings	OK	NG		
	Serial Parameter	Transmission Speed	OK		NG
		Data Bit	OK		NG
		Stop Bit	OK		NG
Parity Bit		OK	NG		
Check address range	OK	NG	6. Supported addresses (For details, please refer to the PLC vendor's manual.)		

4. External device setting

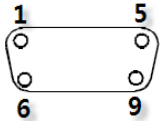
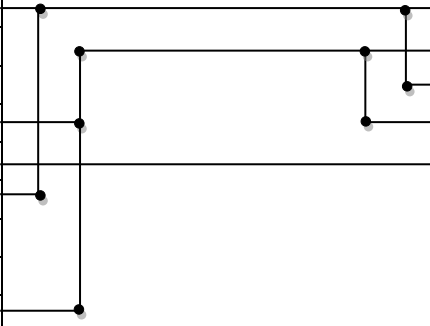
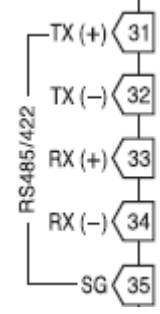
Configure the communication setting of the external device by referring to its user manual.

5. Cabletable

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.
 (The cable diagram described in this section may differ from the recommendations of "Hanyoung Nux - Temperature Controller Series")

4.1 Cable table 1

■ 1:1 connection

COM			Cable connection	Temperature Controller	
Pin arrangement*Note 1)	Signal name	Pin number		Signal name	Pin arrangement
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	RDA	1		SDA	
		2		SDB	
		3		RDA	
	RDB	4		RDB	
	SG	5		SG	
	SDA	6			
		7			
		8			
	SDB	9			

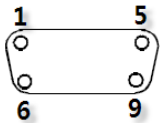
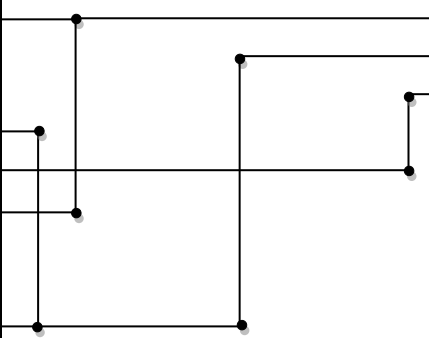
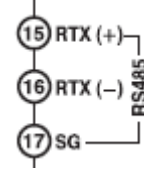
*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ 1:N connection – Refer to 1:1 connection to connect in the following way.

TOP	Cable connection and signal direction	External device	Cable connection and signal direction	External device
Signal name		Signal name		Signal name
RDA	→	SDA	←	SDA
RDB	→	SDB	←	SDB
SDA	→	RDA	←	RDA
SDB	→	RDB	←	RDB
SG	→	SG	←	SG

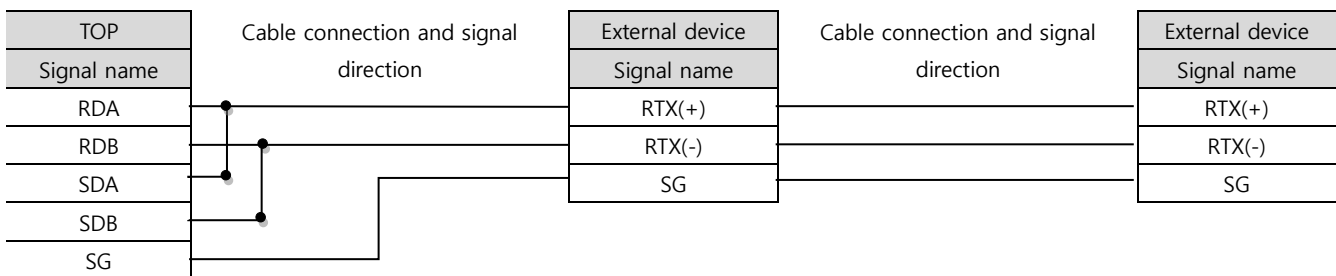
4.2 Cable table 2

■ 1:1 connection

COM			Cable connection	Temperature Controller		
Pin arrangement* Note 1)	Signal name	Pin number		Signal name	Pin arrangement	
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	RDA	1		RTX(+)		
		2				RTX(-)
		3				SG
	RDB	4				
	SG	5				
	SDA	6				
		7				
		8				
	SDB	9				

***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

■ 1:N connection – Refer to 1:1 connection to connect in the following way.



6. Supported Address

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Device	Bit Address	Word Address	Remarks
D Register	D0001.00 – D9999.15	D0001 – D9999	
I Register	I0000 – I9999	—	

Reference: D Register Configuration Overview (see the User's Manual distributed by Hanyoung Nux Co., Ltd.)

Register	Contents
	Configured as read-only range, user range
	0001(NPV) Current PV value
	0002(NSV) Current driving SV value
	0003(NRSV) Current Remote SV value
	0005(MVOUT) Current output value
	0006 - 0007(CH1,2OUT) HC-type output value
	0008(PIDNO) Current driving PID no.
0001 – 0099	0009(ALMSTS) Current alarm status (BIT information)
	0010(STEPNO) Current step no. for program drive
	0011(BRSEGM) Current step no. remaining time for program drive
	0014-0015(HC1,2_CUR) Heater Cut value
	0016(ADESTS) Input processing error information (bit information)
	0017(ERRSTS) Input and AT Error information (bit information)
	0018(MODSTS) Current drive status information (bit information)
	0050-0099 User section (Read/Write possible)
	Drive status confirm / Change element
0100 – 0199	0100 (OPMODE) 0 : Local, 1 : Program, 2 : Remote
	0101(PROG) 0 : Reset, 1 : Program Run
	0102(ZOM) 0 : Zone Off, 1 : Zone On
	0103(FUZY) 0 : Fuzzy Off, 1 : Fuzzy On
	0104(ARW) 0 : ARW Off, 1 : ARW On
	0106(DIS) Select DI
0200 – 0299	Programming
0300 – 0399	SV settings and PID settings
0400 – 0499	Alarm Parameters settings
0500 – 0599	Identification of parameters related to transmission and remote and parameters related to communication (0510 - 0516 : Read Only)
0600 – 0699	Input/output parameters settings