

Human Automation Temperature & Smoke Detector Serial Driver

Supported version

TOP Design Studio

V1.4.11.20 or higher



CONTENTS

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

1. System configuration [Page 2](#)

Describes connectable devices and network configurations.

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 10](#)

Describes how to set up communication for external devices.

5. Cable table [Page 11](#)

Describe the cable specifications required for connection.

6. Supported addresses [Page 12](#)

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

1. System configuration

The system configuration of TOP and "Human Automation – TSD Series" is as follows:

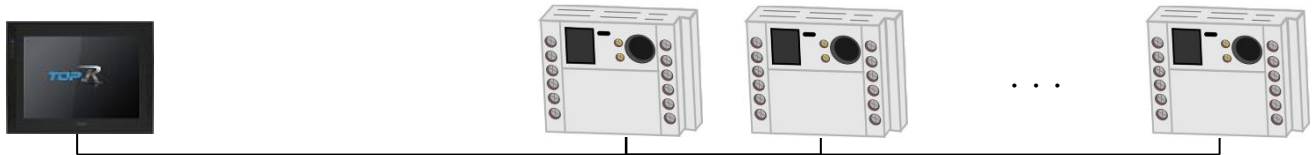
Series	CPU	Communication method	System setting	Cable
TSD	V5-SC1T	RS-485	3. TOP communication setting 4. External device setting	5. Cable table

■ Connection configuration

- 1:1 connection

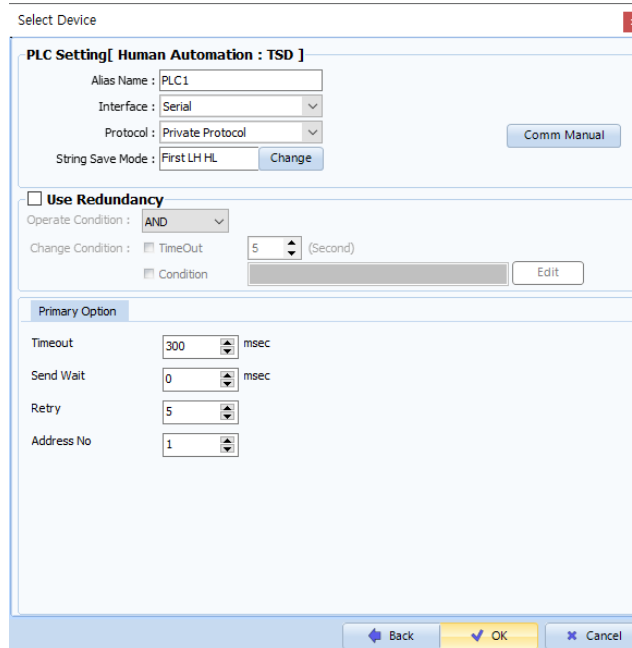
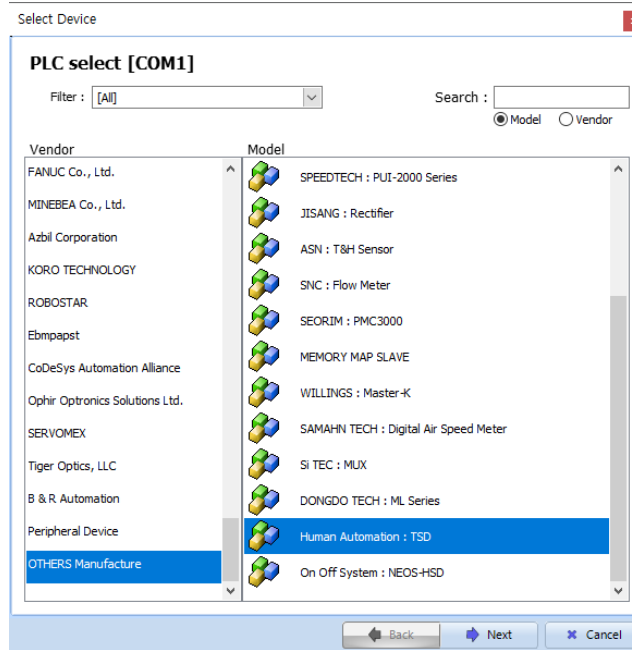


- 1:N connection



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 "OTHERS Manufacture".					
	Model	Select the external device to be connected to the 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>Human Automation : TSD</td> <td>Serial</td> <td>Private Protocol</td> </tr> </tbody> </table> <p>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.</p>	Model	Interface	Protocol	Human Automation : TSD	Serial
Model	Interface	Protocol					
Human Automation : TSD	Serial	Private Protocol					

3. TOP communication setting

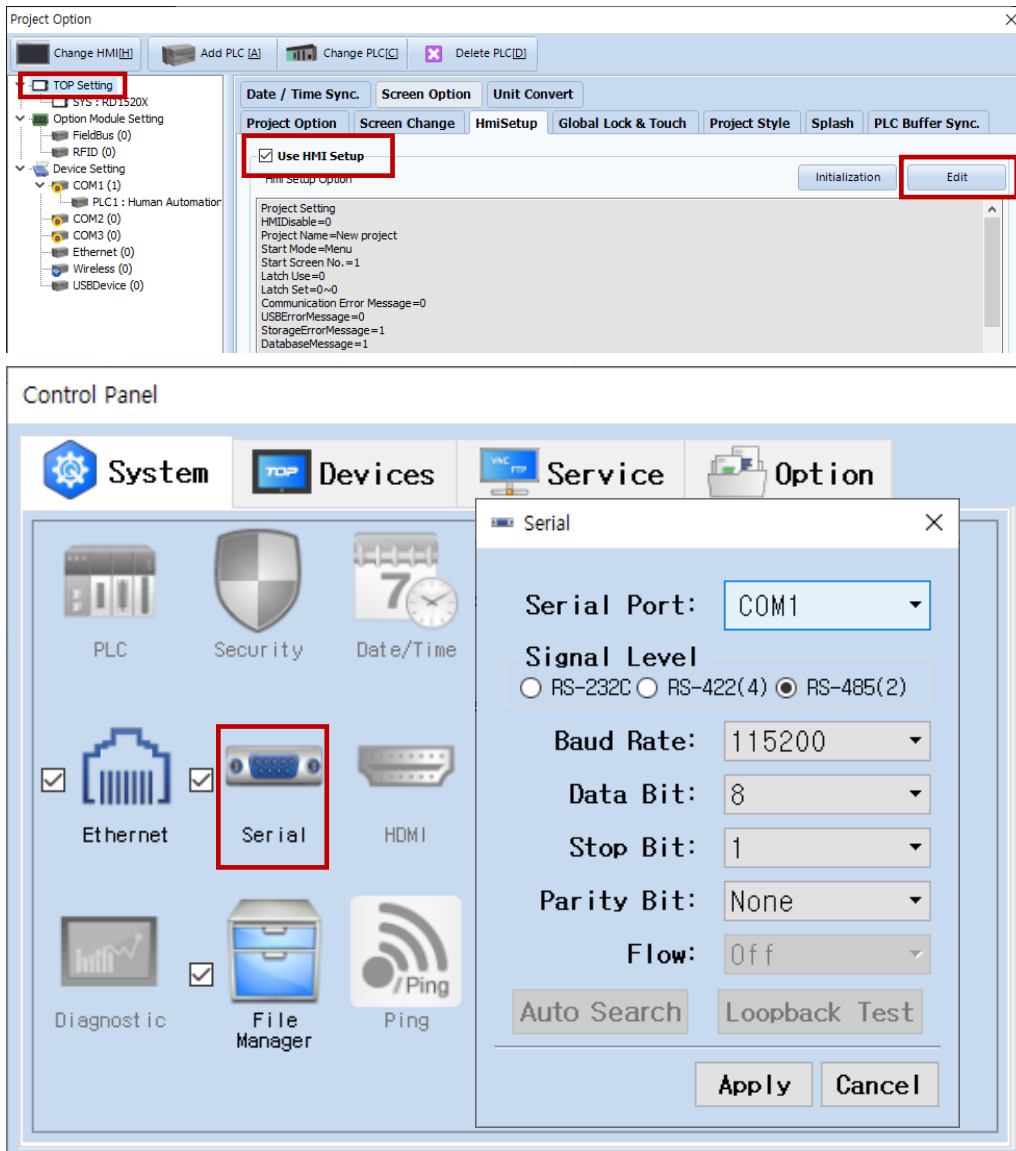
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [HMI Setup > “Use HMI Setup” Check > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.



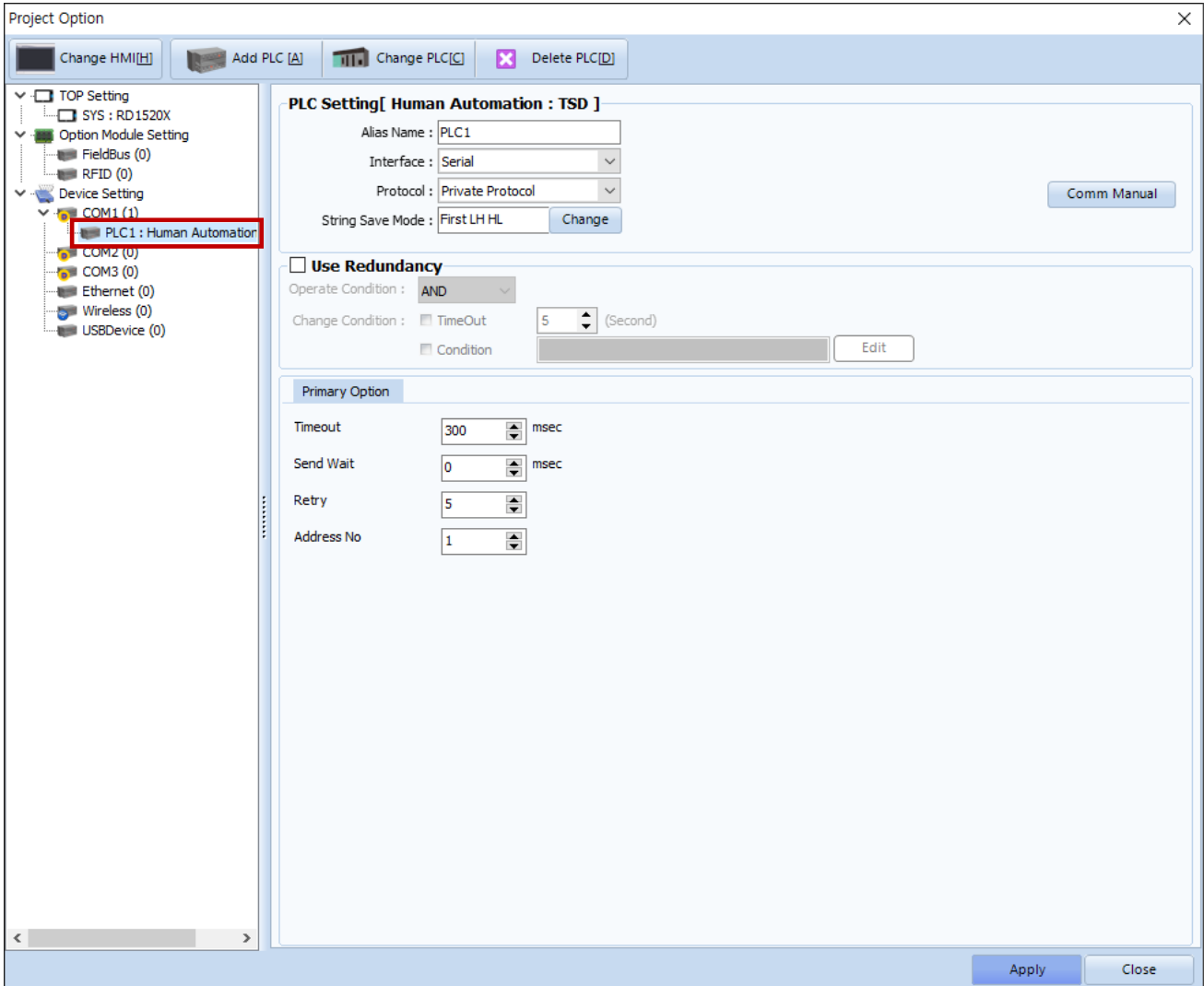
Items	TOP	External device	Remarks
Signal Level		RS-485	
Baud Rate		115200	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

* 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 > Device Setting > COM > "PLC1 : Human Automation : TSD"]
 - Set the options of the Human Automation : TSD communication driver in TOP Design Studio.

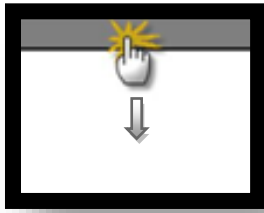


Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection" .
Protocol	Select "Private Protocol".	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	
Address No	Set the prefix of an external device.	

3.2. Communication setting in TOP

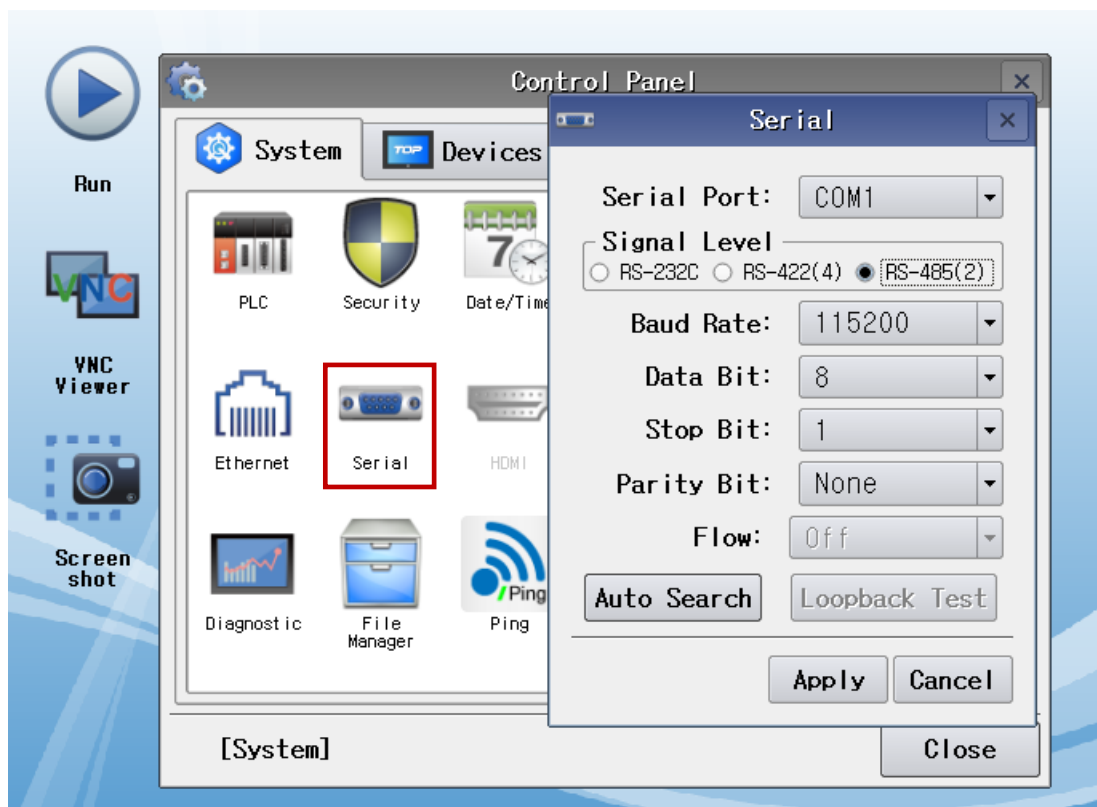
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ 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]



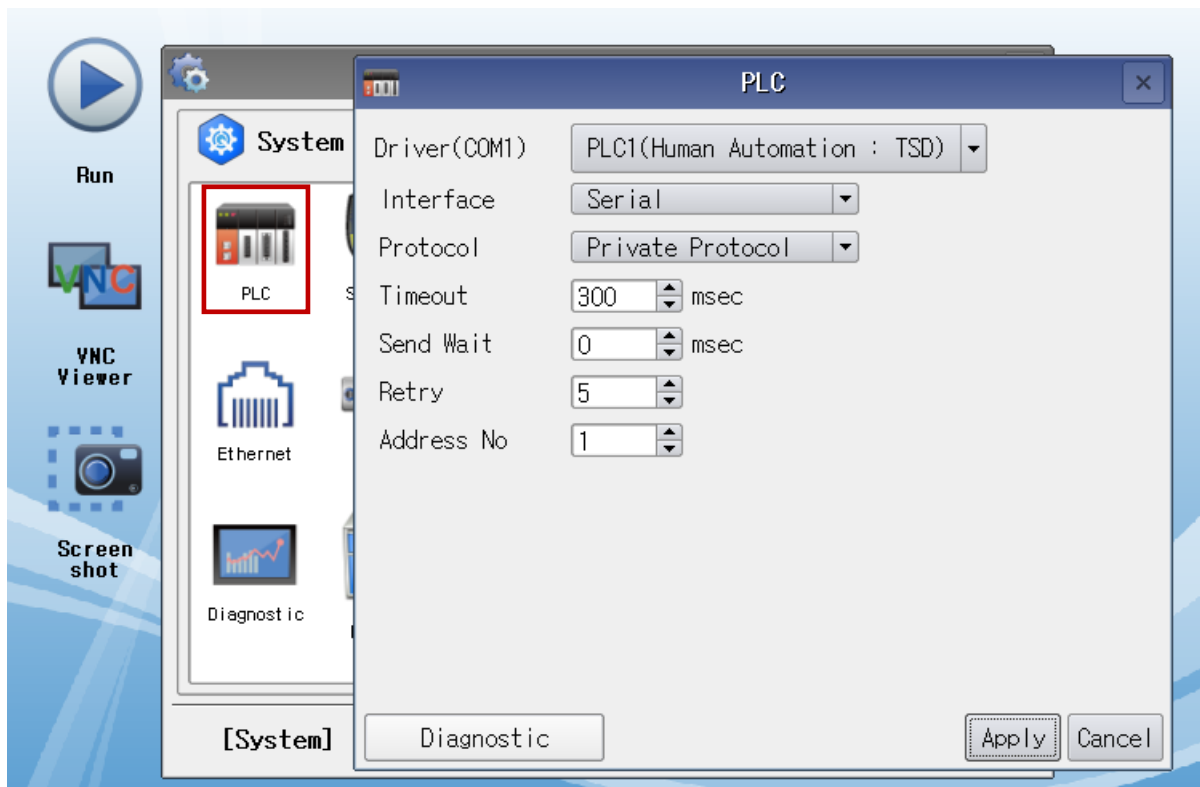
Items	TOP	External device	Remarks
Signal Level		RS-485	
Baud Rate		115200	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

* 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

■ [Main Screen > Control Panel > PLC]



Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select "Private Protocol".	
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.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	
Address No	Set the prefix of an external device.	

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 port setting	Baud Rate	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 port setting	Baud Rate	OK		NG
		Data Bit	OK		NG
		Stop Bit	OK		NG
Parity Bit		OK	NG		
Check address range		OK	NG	6. Supported addresses	

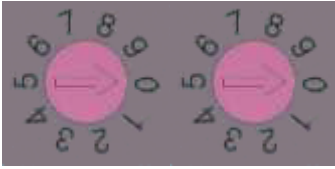
4. External device setting

For more detailed setting method than that described in this example, refer to the Human Automation user manual.

※ **Must be the same as the TOP's external communication option setting.** ([Note](#))

Step 1. Set the prefix (detected address) using the rotary switch.

- In the case that the main connector is facing left

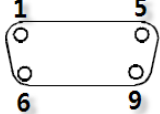
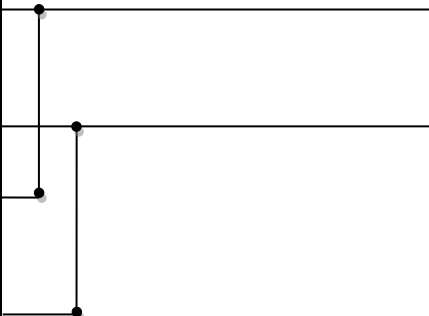


Switch	Left	Right
Unit	X10	X1

5. Cable table

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 "Temperature & Smoke Detector")

■ RS-485

TOP			Cable connection	External device		
Pin arrangement* Note 1)	Signal name	Pin number		Pin number	Signal name	
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	RDA	1		2	DA	
	RDB	4		5	DB	
	SDA	6				
	SDB	9				

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

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	Double word address	R/W	Remarks
RUN_STATE	RUN_STATE	RUN_STATE	-	R	Motion Condition
SMOKE_ALARM	SMOKE_ALARM	SMOKE_ALARM	-	R	Smoke alarm
TEMP_ALARM	TEMP_ALARM.0 ~ TEMP_ALARM.1	TEMP_ALARM	-	R	Temperature alarm* Note 1)
CURRENT_TEMP	-	-	CURRENT_TEMP (FLOAT)	R	Current temperature
WARNING_TEMP	-	-	WARNING_TEMP (FLOAT)	R/W	Warning Temperature
DANGER_TEMP	-	-	DANGER_TEMP (FLOAT)	R/W	Danger Temperature
ALARM_RESET	ALARM_RESET	ALARM_RESET	-	W	Alarm reset

***Note 1)** TEMP_ALARM VALUE 0 : OFF / 1 : Warning Event / 2 : Danger Event