HITACHI
H Series
Serial Driver

Supported version TOP Design Studio V1.4.11.10 or higher

CONTENTS

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

1. System configuration

The system configuration of TOP and "HITACHI H Series" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
HITACHI	H-Series	CPU Port	RS–232C	3. TOP communication setting 4. External device setting	5. Cable table
		COMM-H COMM-2H	RS-232C RS-422		

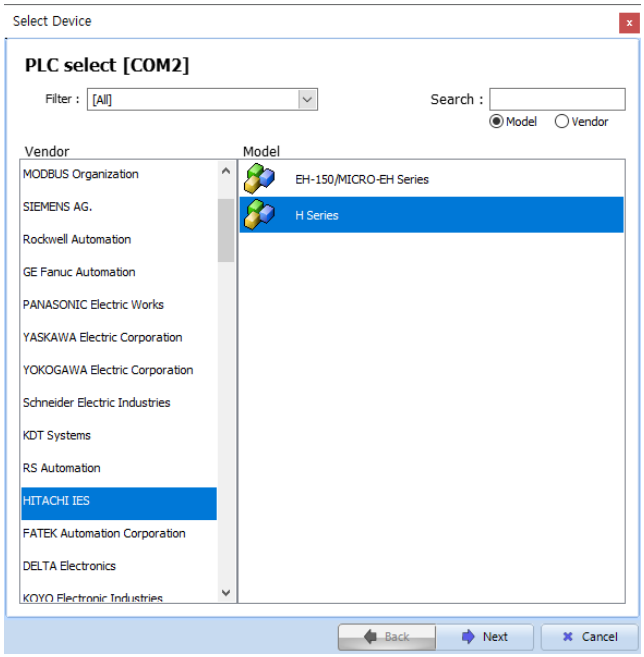
■ Connectable configuration

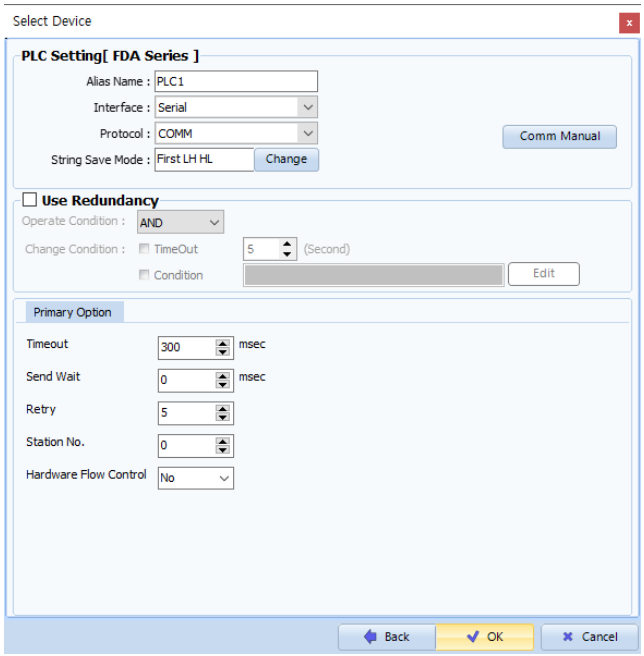
・1:1 connection

・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 “HITACHI IES”.
	PLC	Select an external device to connect to TOP. Select “H Series”. 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.

3. TOP communication setting

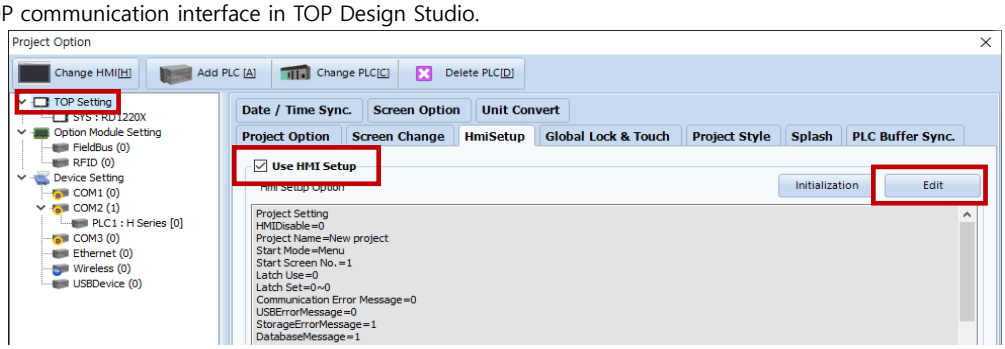
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

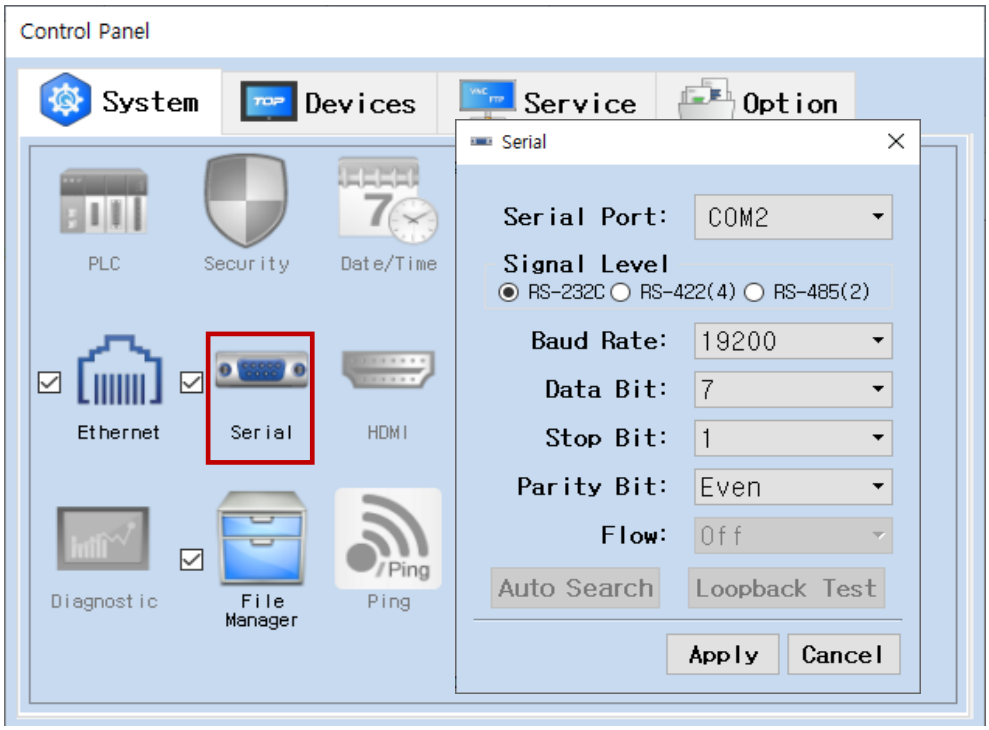
3.1 Communication setting in TOP Design Studio

(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-232C	RS-422	RS-485	RS-232C RS-422	
Baud Rate	19200				
Data Bit	7				
Stop Bit	1				
Parity Bit	EVEN				

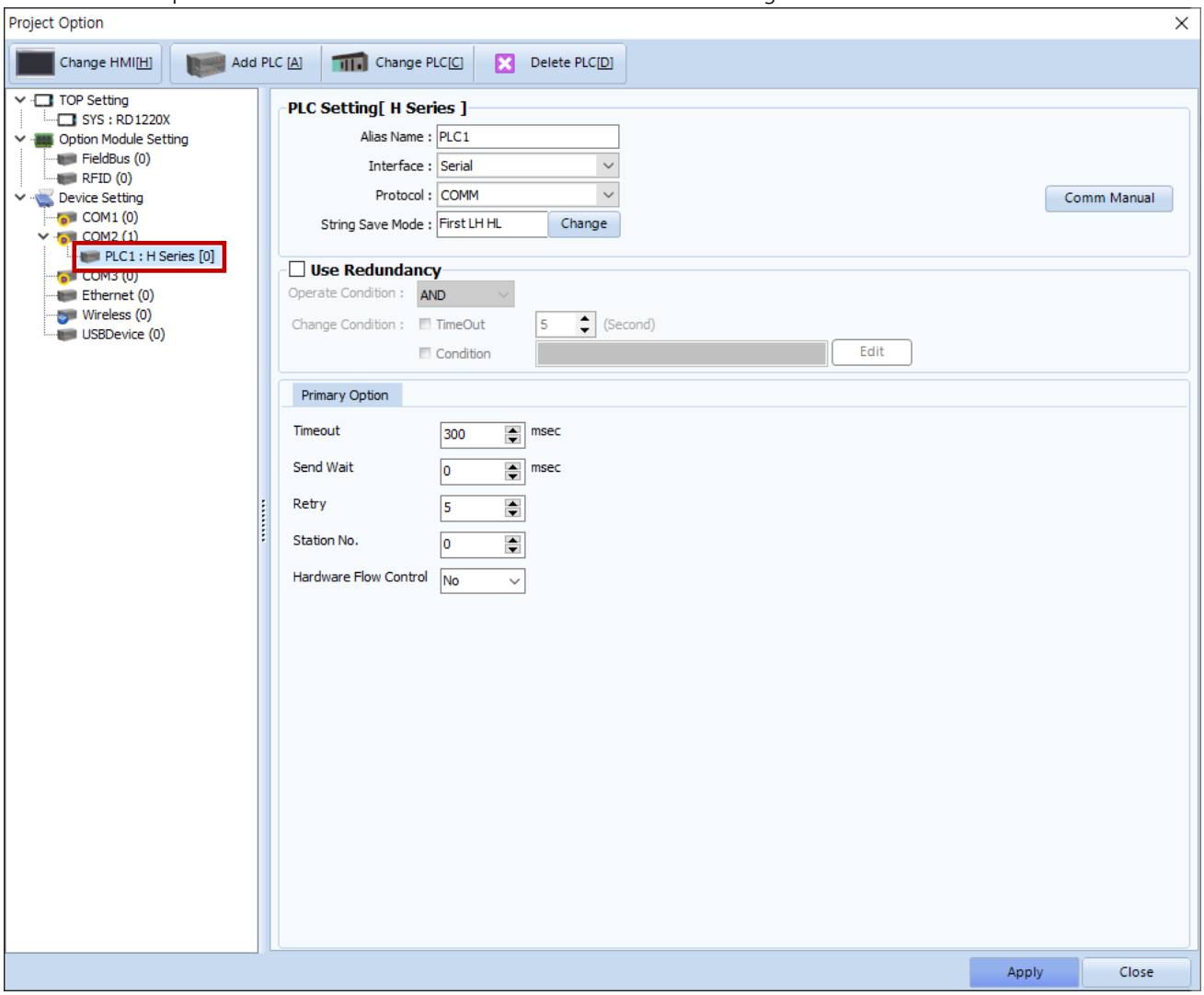
* The above settings are examples recommended by the company.

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: H Series"]

– Set the options of the HITACHI Series communication interface in TOP Design Studio.



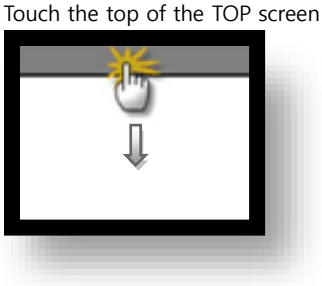
Items	Settings	Remarks
Interface	Select "Serial".	
Protocol	Select "COMM".	
TimeOut	Set the time for the TOP to wait for a response from an external device.	
SendWait	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	
Station No.	Prefix	
Hardware Flow Control	Set whether flow control exists in hardware.	Check CTS ***Note 1)**

***Note 1)** Confirm used communication port pin CTS.

3.2. Communication setting in TOP

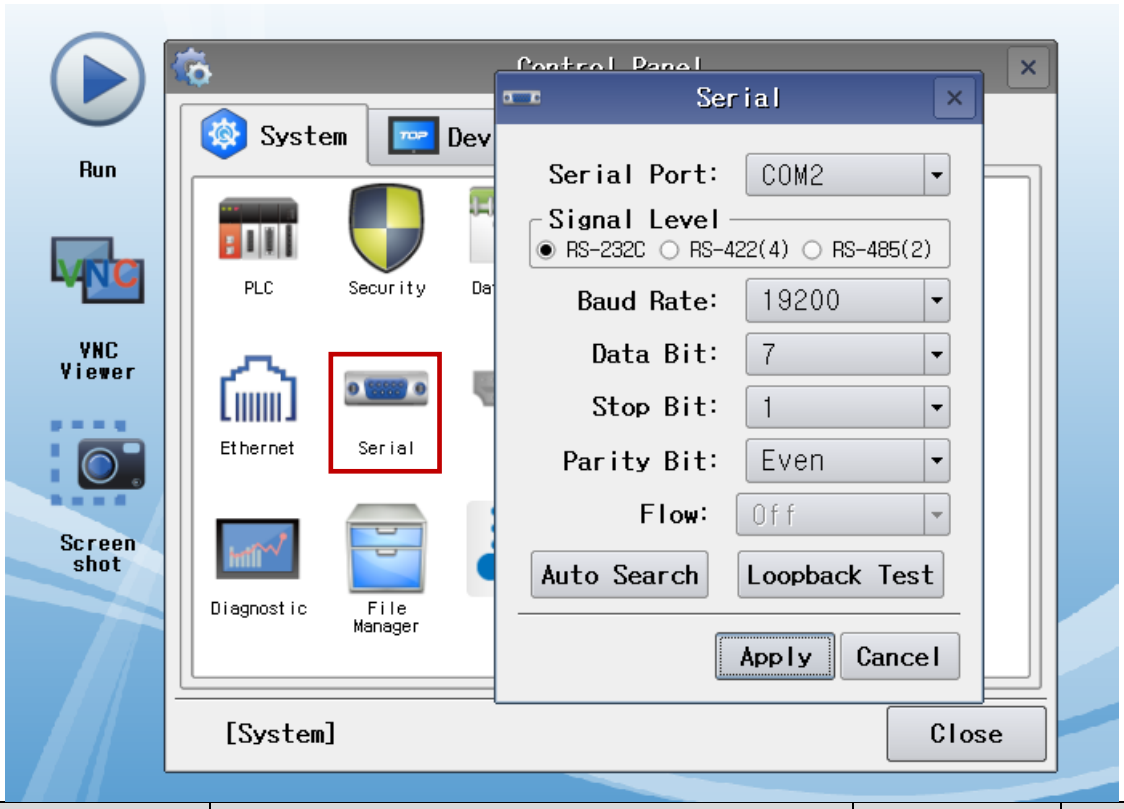
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



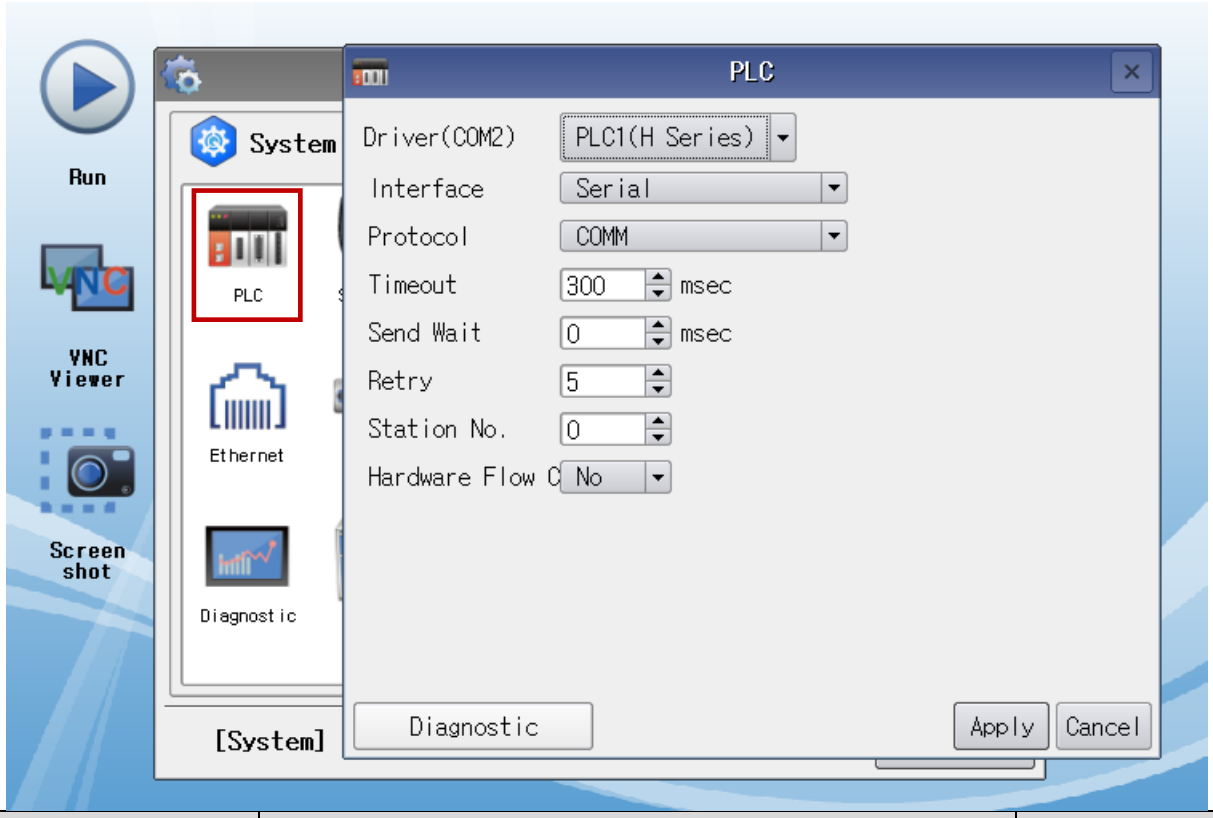
Items	TOP			External device	Remarks
Signal Level (port)	RS-232C	RS-422	RS-485	RS-232C RS-422	
Baud Rate	19200				
Data Bit	7				
Stop Bit	1				
Parity Bit	EVEN				

* 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
TimeOut	Set the time for the TOP to wait for a response from an external device.	
SendWait	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.	
Station No.	Prefix	
Hardware Flow Control	Set whether flow control exists in hardware.	Check CTS ***Note 1)**

***Note 1)** Confirm used communication port pin CTS.

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

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

1. For communication with CPU (H20 – H64)

DIP Switch		
1	2	Transmission Speed (bps)
OFF	OFF	2400
OFF	ON	4800
ON	OFF	9600
ON	ON	19200
3 (HL)		Description
OFF		CPU Link
ON		Host Link or Remote Master

DIP Switch 3	Rotary Switch	
	x10	x1
Remote Master	F	F
CPU Link	Prefix	
Host Link	Channel	

2. For communication with CPU misc.

- no other CPU module settings.

3. For communication with COMM-H/COMM-2H card.

DIP Switch	Value					Description
1	**ON** : 8bit **OFF** : 7bit					Data Bit
	2400	4800	9600	19200	19200	
2	ON	OFF	ON	OFF	ON	Baud Rate (bps)
3	ON	OFF	OFF	ON	ON	
4	OFF	ON	ON	ON	ON	
5	**ON:** Use **OFF:** Not used					Enable or disable parity
6	**ON** : Even **OFF** : Odd					Parity Bit
7	**ON** : 2bit **OFF** : 1bit					Stop Bit
8	**ON:** Use **OFF:** Not used					Enable or disable Check CTS (Hardware flow control)

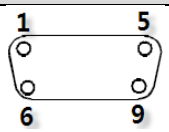
Rotary Switch	Value	Description
x10		Prefix
x1		
MODE	1~4	Transmission control procedure: 1
	7,9	Transmission control procedure: 2

※ Transmission Control Procedure (Procedure) 2 fixed

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 "**H-Series**")

■ RS-232C [COMM-H/ COMM-2H, CPU Port]

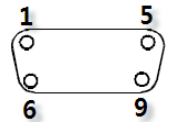
TOP			Cable connection	External device		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
						
	RD	2		2	SD	
	SD	3		3	RD	
				4	RS	
	SG	5		5	CS	
				7	DR	
	CTS*Note 2)	8		8	PHL	
				9	SG	
				14	PV12	

Based on communication cable connector front, D-SUB 9 Pin male (male, convex)

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

*Note 2) GND in COM1 port

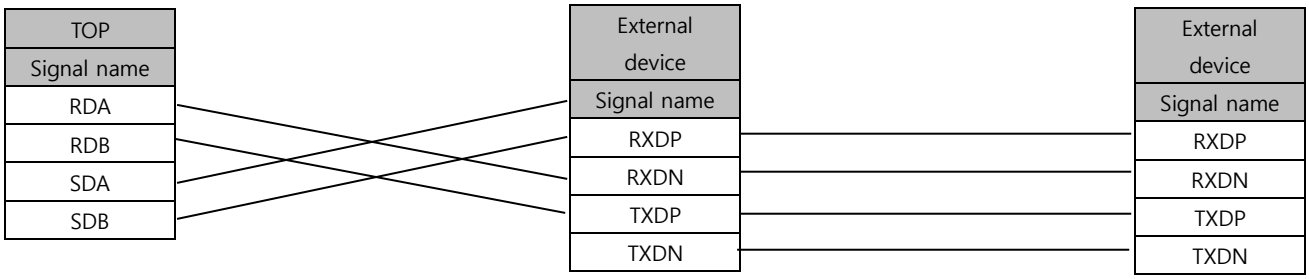
■ RS-422 [COMM-H/ COMM-2H]

TOP			Cable connection	External device		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
	RDA	1		1	TXDP	
				2	TXDN	
	RDB	4		4	RXDP	
				5	RXDN	
	SDA	6				
	SDB	9				

Based on communication cable connector front, D-SUB 9 Pin male (male, convex)

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

■ RS-422 [COMM-H/COMM-2H] 1:N connection



6. Supported addresses

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
X	X0000 ~ X4007	WX000 ~ WX400	External input
Y	Y0100 ~ Y4021	WY010 ~ WY401	External output
R	R0000 ~ R07BF	WR000 ~ WRFFF	Internal output
M	M0000 ~ M3FFF	WM000 ~ WM3FF	Data area
L	L0000 ~ L3FFF	WL000 ~ WL3FF	Link area
TC	TC0000.00 ~ TC2047.15	TC0000 ~ TC2047	Timer/Counter current value
CL	CL0000.00 ~ CL2047.15	CL0000 ~ CL2047	Counter clear
CU	CU0000 ~ CU2047	-	Up counter
RCU	RCU0000 ~ RCU2047	-	Ring counter
CTU	CTU0000 ~ CTU2047	-	Updown counter - Up input
CTD	CTD0000 ~ CTD2047	-	Updown counter - Down input
TD	TD0000 ~ TD1023	-	Delay timer
SS	SS0000 ~ SS1023	-	Single short timer
WDT	WDT0000 ~ WDT1023	-	Watchdog timer
MS	MS0000 ~ MS1023	-	Monostable timer
TMR	TMR0000 ~ TMR1023	-	Watchdog timer