RS Automation
ROBOCON SRC-PLUS Series

Supported version TOP Design Studio V1.0 or higher

CONTENTS

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

1. System configuration

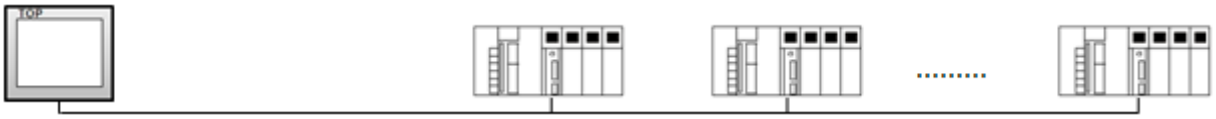
The system configuration of TOP and "RS Automation, Inc. SRC-PLUS Series" is as follows:

Series	Communication method	System setting	Cable
SRC-PLUS Series	RS–232C	3.1 Settings example 1 (Page 4)	5.1. Cable table 1 (Page 5)
	RS–485 (2 wire)	3.2 Settings example 2 (Page 4)	5.1. Cable table 2 (Page 5)

■ Connectable configuration

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

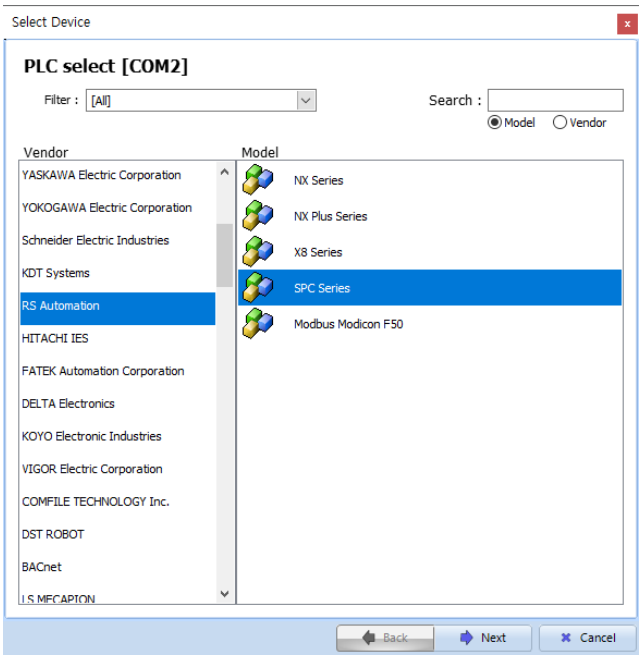
・1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422 communication.

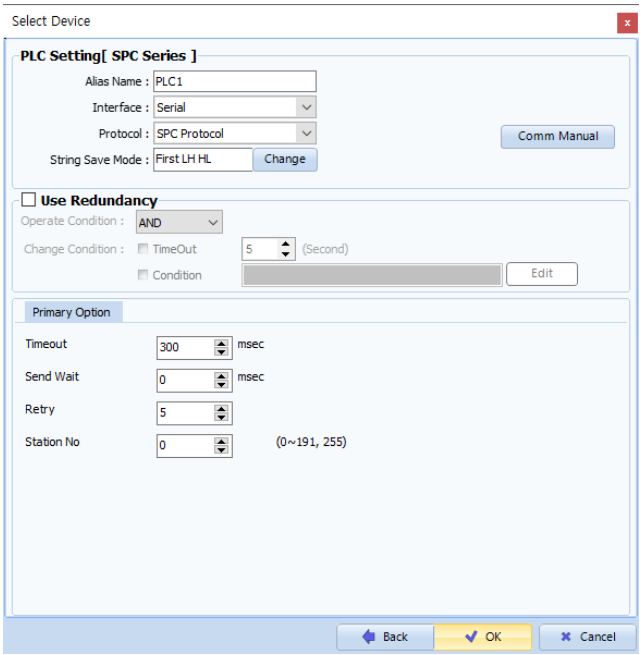


・N:1 connection (multiple TOPs and one external device) connection – configuration which is possible in RS422 MultiLink communication.

2. External device selection

■ Select a TOP 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 “RS AUTO”.
	PLC	Select an external device to connect to TOP.

Model	Interface	Protocol
SRC	Serial	SRC PLUS PROTOCOL

3. TOP communication setting

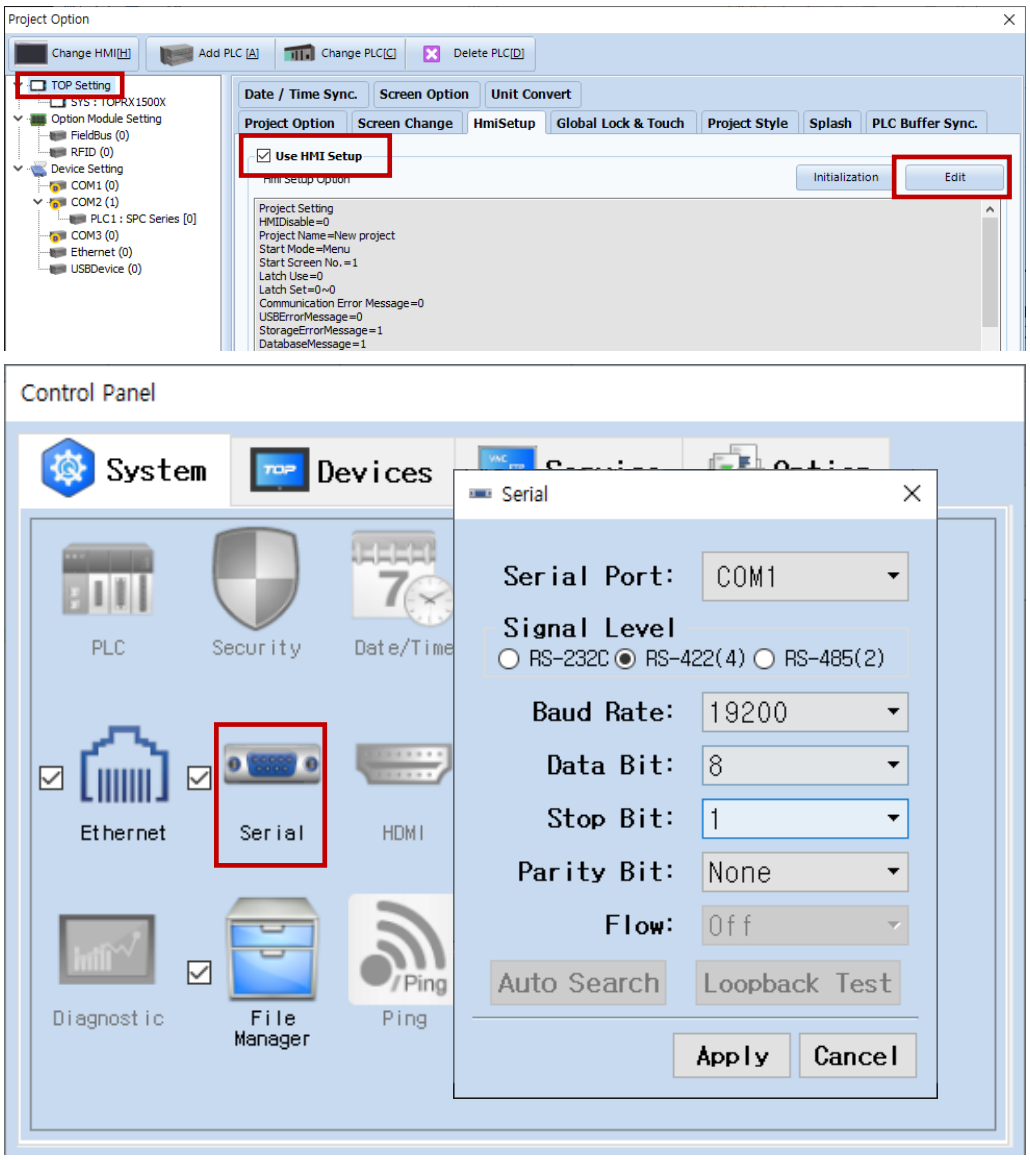
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Options > "Use HMI Setup" Check > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.



Items	TOP	External device	Remarks
Signal Level (port)	RS-232C RS-422/485	RS-232C RS-422/485	
Baud Rate	19200		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

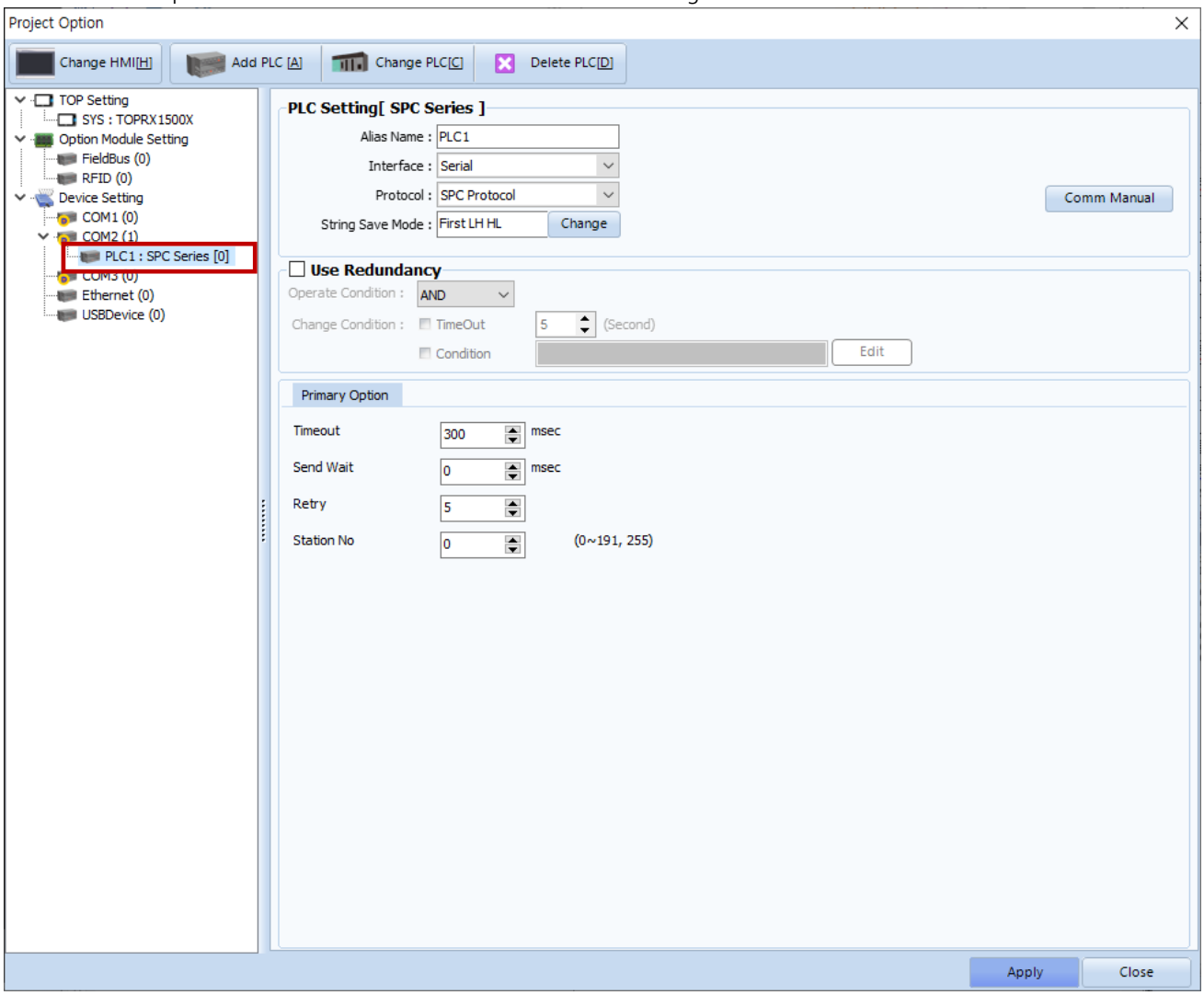
* The above settings are examples recommended by the company.

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 Settings > COM > "PLC1 :SRC Series"]

– Set the options of the SR Series communication driver in TOP Design Studio.

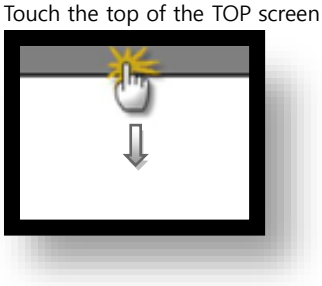


Items	Settings	Remarks
Interface	Select "SRC PLUS".	Refer to "2. External device selection".
Protocol	Select the communication protocol between the TOP and an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between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

3.2. Communication setting in TOP

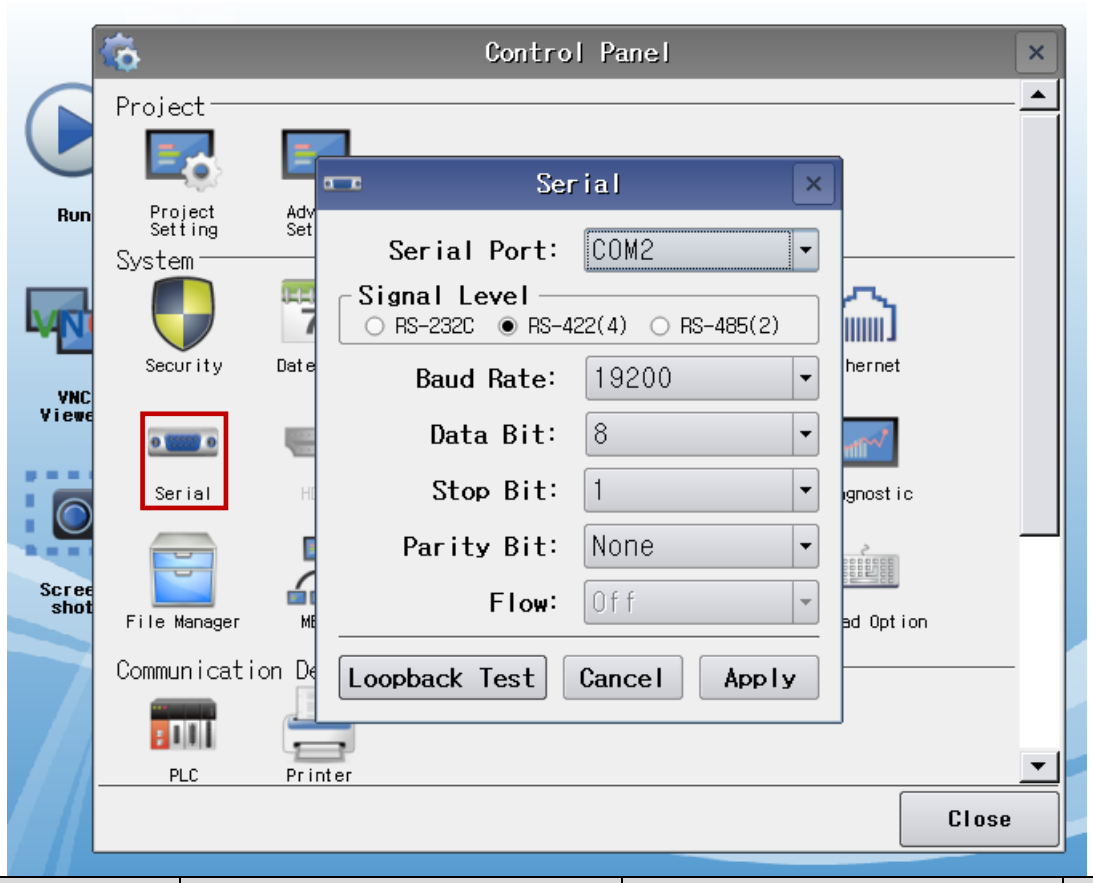
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



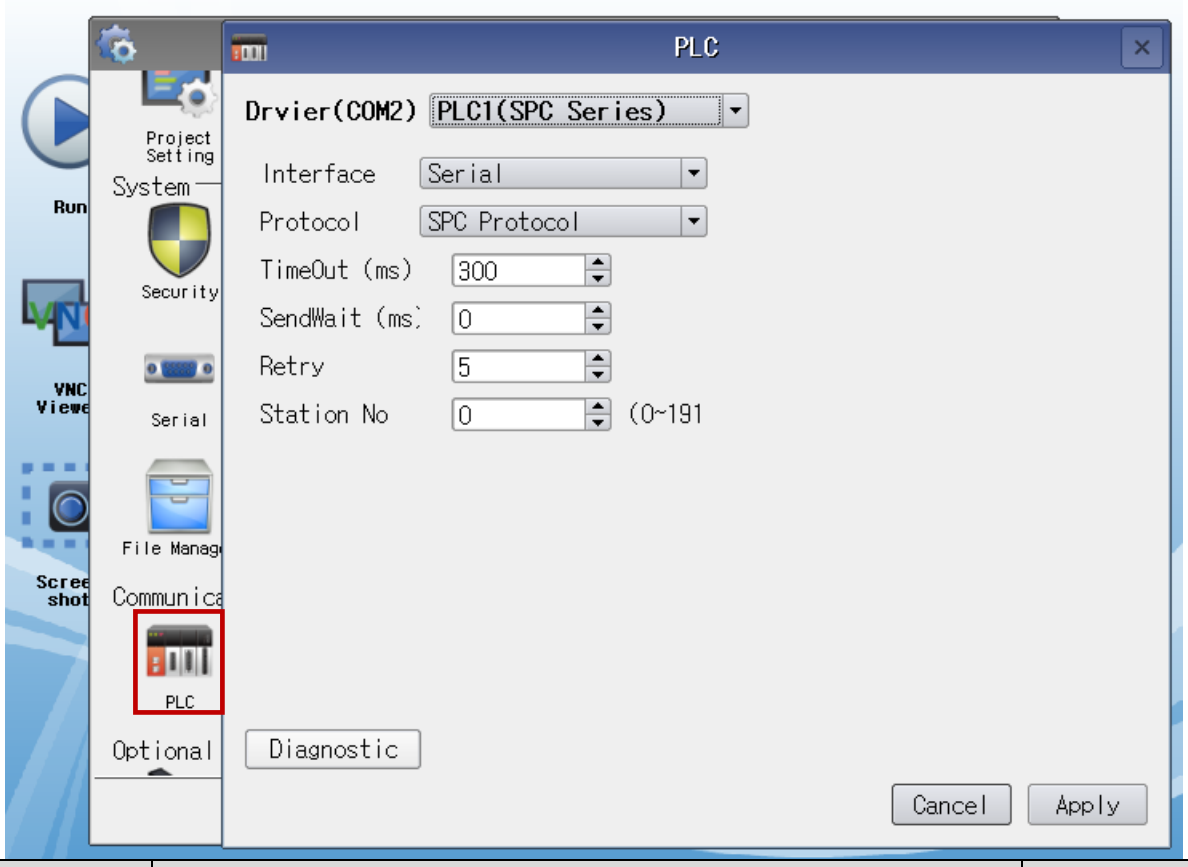
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C RS-422/485	RS-232C RS-422/485	
Baud Rate	19200		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

* 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.	

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

Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.

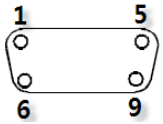
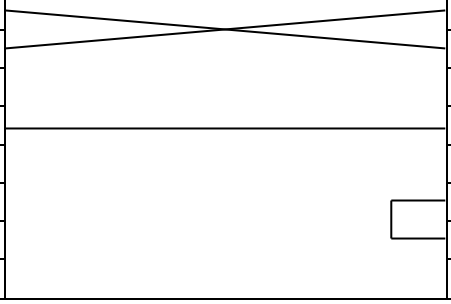
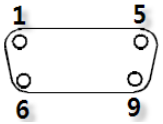
5. Cable table

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 "RKC SR Series")

5.1. Cable table 1

■ **RS-232C** (1:1 connection)

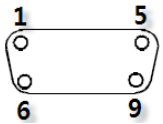
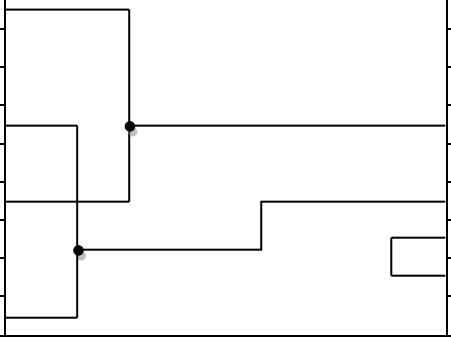
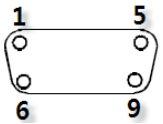
(A) TOP COM Port (9 pin)

TOP COM			Cable connection	External device		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	CD	1		1	CD	 Based on communication cable connector front, D-SUB 9 Pin female (male, convex)
	RD	2		2	RD	
	SD	3		3	SD	
	DTR	4		4	485P+	
	SG	5		5	SG	
	DSR	6		6	485N-	
	RTS	7		7	RTS	
	CTS	8		8	CTS	
	NC	9		9	NC	

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

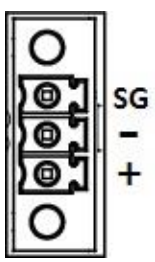
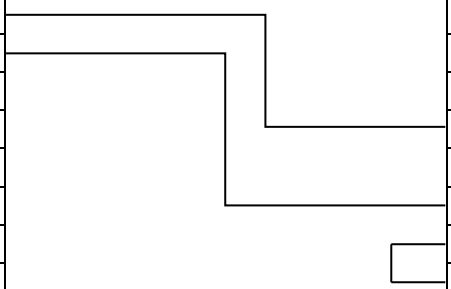
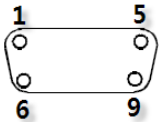
■ **RS-485** (connection)

(B) TOP COM Port (9 pin)

TOP COM			Cable connection	External device		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	RDA	1		1	CD	 Based on communication cable connector front, D-SUB 9 Pin female (male, convex)
		2		2	RD	
		3		3	SD	
	RDB	4		4	485P+	
		5		5	SG	
	SDA	6		6	485N-	
		7		7	RTS	
		8		8	CTS	
	SDB	9		9	NC	

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

■ **RS-485** (1:1 connection)

TOP		Cable connection	External device		
Pin arrangement	Signal name		Pin number	Signal name	Pin arrangement*Note 1)
	+		1	CD	 Based on communication cable connector front, D-SUB 9 Pin female (male, convex)
	-		2	RD	
	SG		3	SD	
			4	485P+	
			5	SG	
			6	485N-	
			7	RTS	
			8	CTS	
			9	NC	

6. Supported addresses

The devices available in TOP are as follows:

Device	TOKEN	Explanation	R/W	TOP Designer	
				Address Range	Input Value
RUN_	0x2C	Run program	W	**000~999**	Don't care
STOP	0x2D	Stop program	W	000	Don't care
PAUS	0x73	Pause	W	000	Don't care
FREE	0x73	Unpause	W	000	Don't care
OVER	0x61	Override Speed Read and Write	R/W	**001~100**	Don't care
PWON	0x4A	Servo power	W	000	Don't care
PWOF	0x4B	Servo power OFF	W	000	Don't care
STS_	0x79	Robot status	R	000	Don't care
INIT	0x40	Error initialization	W	000	Don't care
JNTX	0x42	X-axis Joint current location (no save)	R	000	Don't care
JNTY	0x42	Y-axis Joint current location (no save)	R	000	Don't care
JNTZ	0x42	Z-axis Joint current location (no save)	R	000	Don't care
JNTA	0x42	A-axis Joint current location (no save)	R	000	Don't care
JNTB	0x42	B-axis Joint current location (no save)	R	000	Don't care
JNTC	0x42	C-axis Joint current location (no save)	R	000	Don't care
WRDX	0x42	X-axis World current location (no save)	R	000	Don't care
WRDY	0x42	Y-axis World current location (no save)	R	000	Don't care
WRDZ	0x42	Z-axis World current location (no save)	R	000	Don't care
WRDA	0x42	A-axis World current location (no save)	R	000	Don't care
WRDB	0x42	B-axis World current location (no save)	R	000	Don't care
WRDC	0x42	C-axis World current location (no save)	R	000	Don't care

* RUN_ : Run program

Name the program with the same format as "PROG000-PROG999".

The name must begin with "PROG". When entering an address in the designer, only enter three digits, excluding "PROG". If the program name is "PROG123", just enter the numbers (and not the letters) as shown in the following image.

* OVER : Override Speed Settings

Set the decimal places to 1. Enter a value between 001 and 100 (%).

* STS_ : Robot status Bit Value

Set the address to 000 and view the following table only for bit digits to configure.

Bit number	Meaning	Bit number	Meaning
BIT15	E-stop button	Bit7	Joint Jog
BIT14	Servo power	BIT6	World Jog
BIT13	H/W Limit	BIT5	Tool Jog
BIT12	S/W Limit	BIT4	Jog mode
BIT11	Error status	BIT3	External Control Mode
BIT10	Run status	BIT2	Origin run completed
BIT9	Step Run	BIT1	Completing origin run
BIT8	Pause status	BIT0	Unused