# RS Automation ROBOCON SRC-PLUS Series

Supported version TOP Design Studio





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

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

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# **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

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Describes the cable specifications required for connection.

### **6.** Supported addresses

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



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# 1. System configuration

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

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

#### 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.

elect Device						I
PLC select [CC	DM2]					
Filter : [All]			$\times$	Search ·		
				ocurent.	Model	Vendor
Vendor		Model				
YASKAWA Electric Corpo	oration	^ 🌮	NX Series			
YOKOGAWA Electric Cor	poration		NX Plus Series			
Schneider Electric Indus	tries		X8 Series			
KDT Systems						
RS Automation			SPC Series			
HITACHI IES			Modbus Modicon F	50		
FATEK Automation Corp	oration					
DELTA Electronics						
KOYO Electronic Industri	ies					
VIGOR Electric Corporat	ion					
COMFILE TECHNOLOGY	Inc.					
DST ROBOT						
BACnet						
		~				
TO PERCAPITION						
PLC Setting[ SPC S	Series ]					
Alias Name :	PLC1					
Protocol :	SPC Protoco		~		Com	m Manual
String Save Mode :	First LH HL	Cha	ange			
Uso Rodundano						
Operate Condition : A	ND ~					
Change Condition :	TimeOut	5	(Second)		-	
Change Condition :	TimeOut Condition	5	(Second)		Ed	it
Change Condition :	TimeOut Condition	5	(Second)		Ed	it
Change Condition :	TimeOut Condition	5 msec	(Second)		Ed	it
Change Condition :  Primary Option Timeout Send Wait	TimeOut Condition 300	5 msec msec	(Second)		Ed	it
Change Condition :  Primary Option Timeout Send Wait Retry	TimeOut Condition	5 msec	(Second)		Ed	it
Change Condition : Primary Option Timeout Send Wait Retry Station No	TimeOut           Condition           300           0           5           0	5 msec	♦ (Second) ♦ 0~191, 255)		Ed	it
Change Condition : Primary Option Timeout Send Wait Retry Station No	TimeOut Condition	5 msec msec	(Second)		Ed	it
Change Condition : Primary Option Timeout Send Wait Retry Station No	TimeOut Condition	5 msec msec	(Second)		Ed	it
Change Condition : Primary Option Timeout Send Wait Retry Station No	TimeOut Condition	5 msec msec	(Second)		Ed	it
Change Condition : Primary Option Timeout Send Wait Retry Station No	TimeOut Condition	5 msec	(Second)		Ed	it
Change Condition :	TimeOut Condition	5 msec msec	(Second)		Ed	it

Settings		Contents			
ТОР	Model	Check the TOP display	Check the TOP display and process to select the touch model.		
External device	Vendor	Select the vendor of th Select "RS AUTO".	ect the vendor of the external device to be connected to TOP. ect "RS AUTO".		
	PLC	Select an external device			
		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	ТОР	External device	Remarks	
Signal Level (port)	RS-232C	RS-232C		
	RS-422/485	RS-422/485		
Baud Rate	19200			
Data Bit	8			
Stop Bit	1			
Parity Bit	Nc	ne.		

\* 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.

Project Option		×
Change HMI[H] Kadd PL	C [A] TIT Change PLC[C] N Delete PLC[D]	
<ul> <li>TOP Setting</li> <li>SYS: TOPRXISOX</li> <li>Option Module Setting</li> <li>FieldBus (0)</li> <li>RFID (0)</li> <li>Device Setting</li> <li>COM1 (0)</li> <li>COM2 (1)</li> <li>Ethernet (0)</li> <li>USBDevice (0)</li> </ul>	PLC Setting[ SPC Series ]         Alias Name : PLC1         Interface : Serial         Protocol : SPC Protocol         String Save Mode : First LH HL         Change         Operate Condition : ImeOut         S Condition : TimeOut         Change Condition : TimeOut         Send Wait         O Condition         Retry         Station No         O Condition	Comm Manual
	Apr	ly Close

Items	Settings	Remarks
Interface	Select "SRC PLUS".	Refer to "2. External
Protocol	Select the communication protocol between the TOP and an external device.	device selection".
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	ТОР	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
	RS-422/485	RS-422/485	
Baud Rate	19200		
Data Bit	8		
Stop Bit	1		
Parity Bit	Nc	ne.	

\* 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 ]

	<b>6</b>	PLC	×
Run	Project Setting System System Security	Drvier(COM2) PLC1(SPC Series)  Interface Serial Protocol SPC Protocol TimeOut (ms) 300 SendWait (ms) 0 Retry 5	
VNC Viewo	e Serial	Station No 🛛 📮 (0~191	
Screeshot	File Manage Communica		
	Optional	Diagnostic	АррТу
Items	Settir	igs	Remarks
Interface	Confi	gure the communication interface between the TOP and an external device.	Refer to "2. Exte
Protocol	Config	gure the communication protocol between the TOP and an external device.	device selectio
TimeOut (ms)	Set th	e time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set th sendi	e waiting time between TOP's receiving a response from an external device and ng 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.

ОК	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	Conte	ents	Check		Remarks
System	How to connect the sy	stem	OK	NG	1 Cretem configuration
configuration	Connection cable name	e	ОК	NG	1. System configuration
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		ОК	NG	
	Relative prefix	Project setting	OK	NG	
		Communication	OK	NC	2. External device selection
		diagnostics	ŬK	NG	3. Communication setting
	Serial Parameter	Transmission	OK	NC	
		Speed	ŬK	NG	
		Data Bit	ОК	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name		OK	NG	
	Communication port name (module name)		ОК	NG	
	Protocol (mode)	OK	NG		
	Setup Prefix		OK	NG	
	Other detailed settings		OK	NG	4. External device cetting
	Serial Parameter	Transmission	OK	NC	4. External device setting
		Speed	ÜK	NG	
		Data Bit	ОК	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range				6. Supported addresses
			OK	NG	(For details, please refer to the PLC
					vendor's manual.)



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

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

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

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

■ **RS-485** (1:1 connection)

TOP			External device		
Din arrangement	Signal	Cable connection	Pin	Signal	Pin
Pin arrangement	name		number	name	arrangement*Note 1)
	+		1	CD	1 5
O J@J sg	-		2	RD	
	SG		3	SD	6 9
			4	485P+	Based on
201 -			5	SG	communication
			6	485N-	cable connector
			7	RTS	front,
			8	CTS	D-SUB 9 Pin female
			9	NC	(male, convex)



# 6. Supported addresses

The devices available in TOP are as follows:

				TOP Designer		
Device	TOKEN	Explanation	R/W	Address	Input Value	
				Range		
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	BITO	Unused