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

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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

The system configuration of TOP and "Instrument Inc. – Temperature Controller SR Series" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
SR Mini HG (H-PCP-J)	H-PCP-J-□4□-D*□	Connector on the controller	RS-422 (4 wire)	3. TOP communication setting 4. External device setting	<a href="#">5.1. Cable table 1</a>
	H-PCP-J-□5□-D*□	Connector on the controller	RS-485 (2 wire)		
	H-PCP-J-□1-D*□	Connector on the controller	RS-232C		
	H-PCP-J-□4-D*□	Connector on the controller	RS-422 (4 wire)		
	H-PCP-J-□5-D*□	Connector on the controller	RS-485 (2 wire)		
SRZ (Z-TIO)	Z-TIO-A□-□/□-□ Z-TIO-B□-□/□N□-□ Z-TIO-C□-□/□-□ Z-TIO-D□-□/□N□-□	Terminal Block on the controller	RS-485 (2 wire)		<a href="#">5.2. Cable table 2</a>
SRZ (Z-DIO)	Z-DIO-A□-□/□-□ Z-DIO-A□-□N	Terminal Block on the controller	RS-485 (2 wire)		
SRZ (Z-CT)	Z-CT-A□/□-□ Z-CT-A□/N	Terminal Block on the controller	RS-485 (2 wire)		
SRZ (Z-COM)	Z-COM-A-4□/□ Z-COM-A-4□/N	COM.PORT 1/2 on the controller	RS-422 (4 wire)		<a href="#">5.1. Cable table 1</a>
	Z-COM-A-5□/□ Z-COM-A-5□/N	COM.PORT 1/2 on the controller	RS-485 (2 wire)		
	Z-COM-A-□4/□ Z-COM-A-□4/N	COM.PORT 3/4 on the controller	RS-422 (4 wire)		
	Z-COM-A-□5/□ Z-COM-A-□5/N	COM.PORT 3/4 on the controller	RS-485 (2 wire)		

## ■ Connectable configuration

• 1:1 connection – RS-232C/ 422 / 485 communication

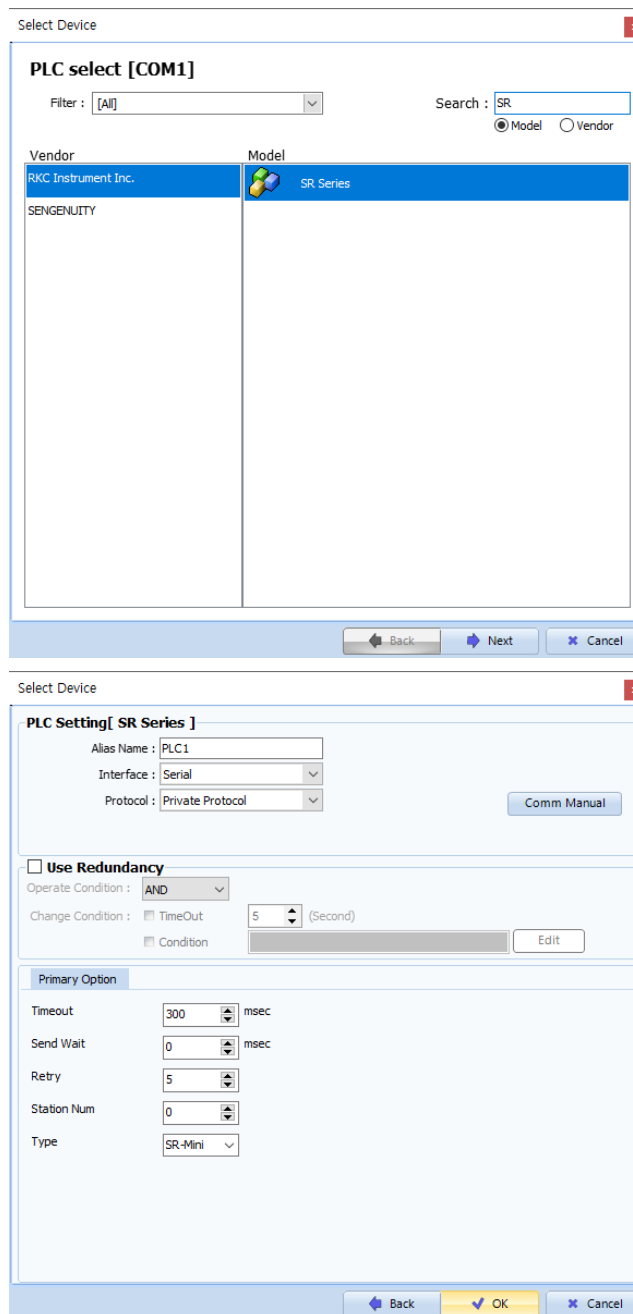


1 : N connection– RS-422 / 485 communication



## 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 "RKC Instrument Inc."					
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; background-color: #f2f2f2;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>SR Series</td> <td>Serial</td> <td>Private Protocol</td> </tr> </tbody> </table>	Model	Interface	Protocol	SR Series	Serial
Model	Interface	Protocol					
SR Series	Serial	Private Protocol					

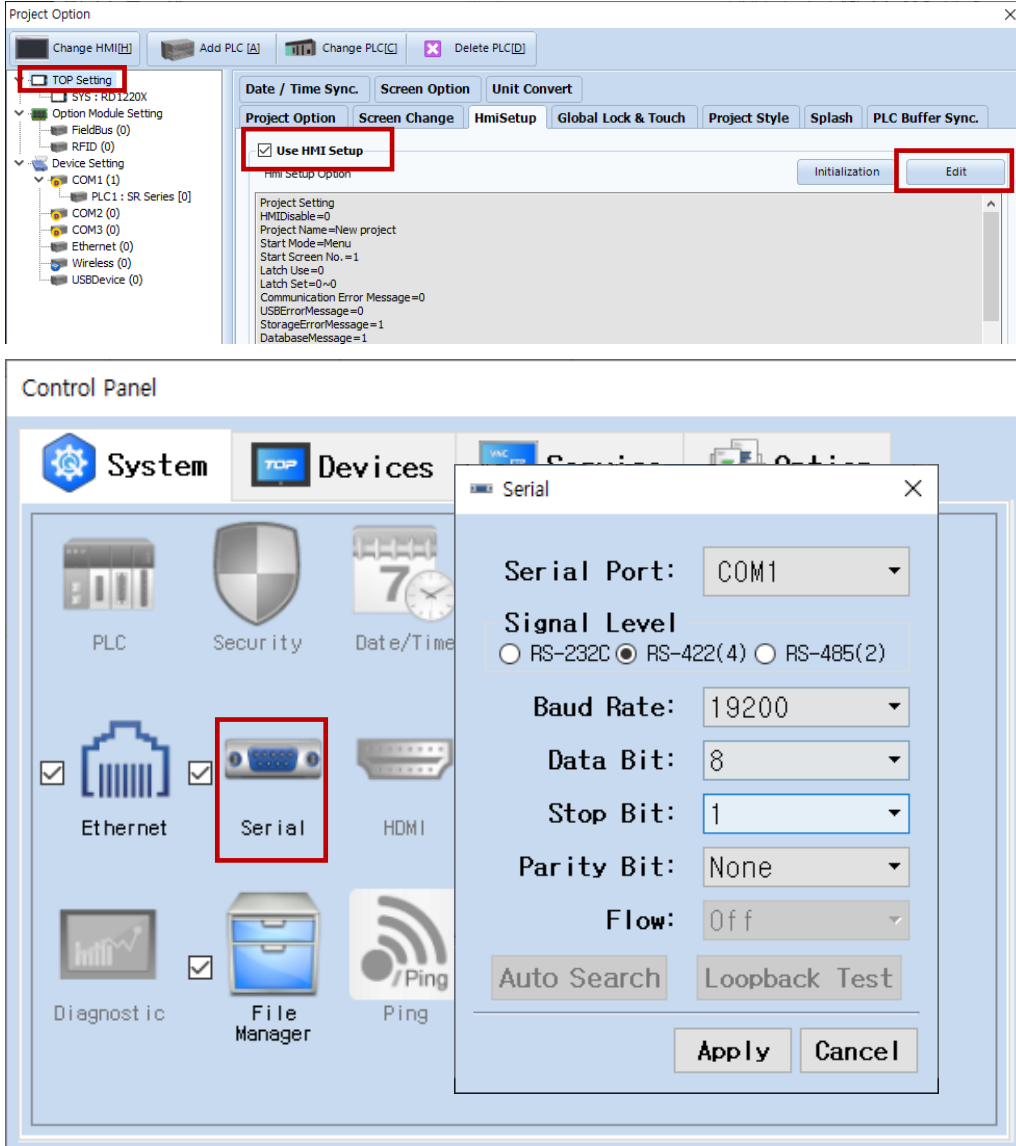
### 3. TOP communication setting

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.



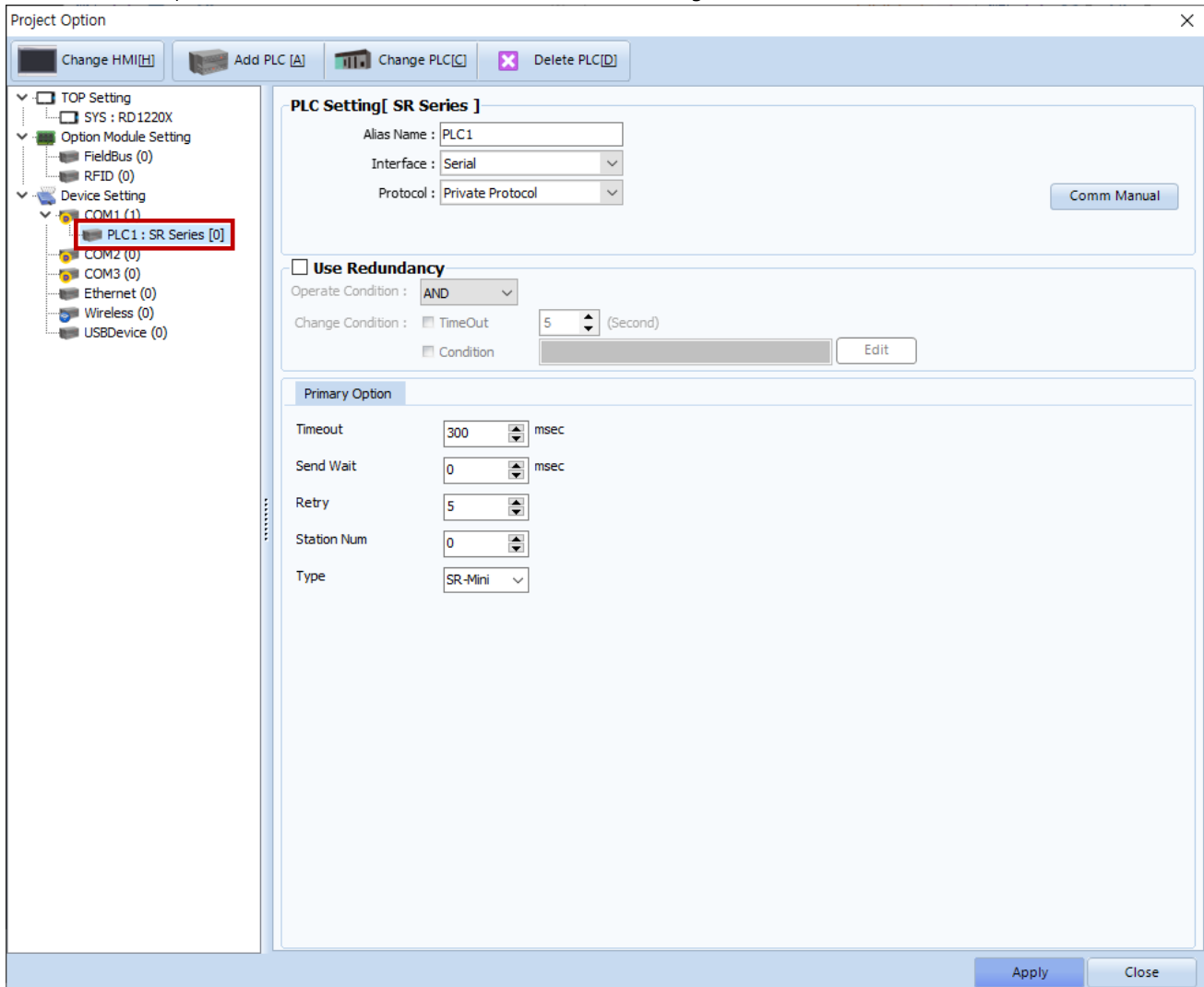
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C / RS-422 / RS-485	RS-232C / RS-422 / RS-485	
Baud Rate		19200	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

\* 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 > Device Settings > COM > "PLC1: SR Series" ]  
 – Set the options of the SR Series communication driver in TOP Design Studio.



Items	Settings	Remarks
Interface	Configure the communication interface between the TOP and an external device.	<a href="#">Refer to "2. External device selection".</a>
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.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	
Station Num	Enter the prefix of an external device.	
Type	Select model type.	SR-Mini, SRZ

### 3.2. Communication setting in TOP

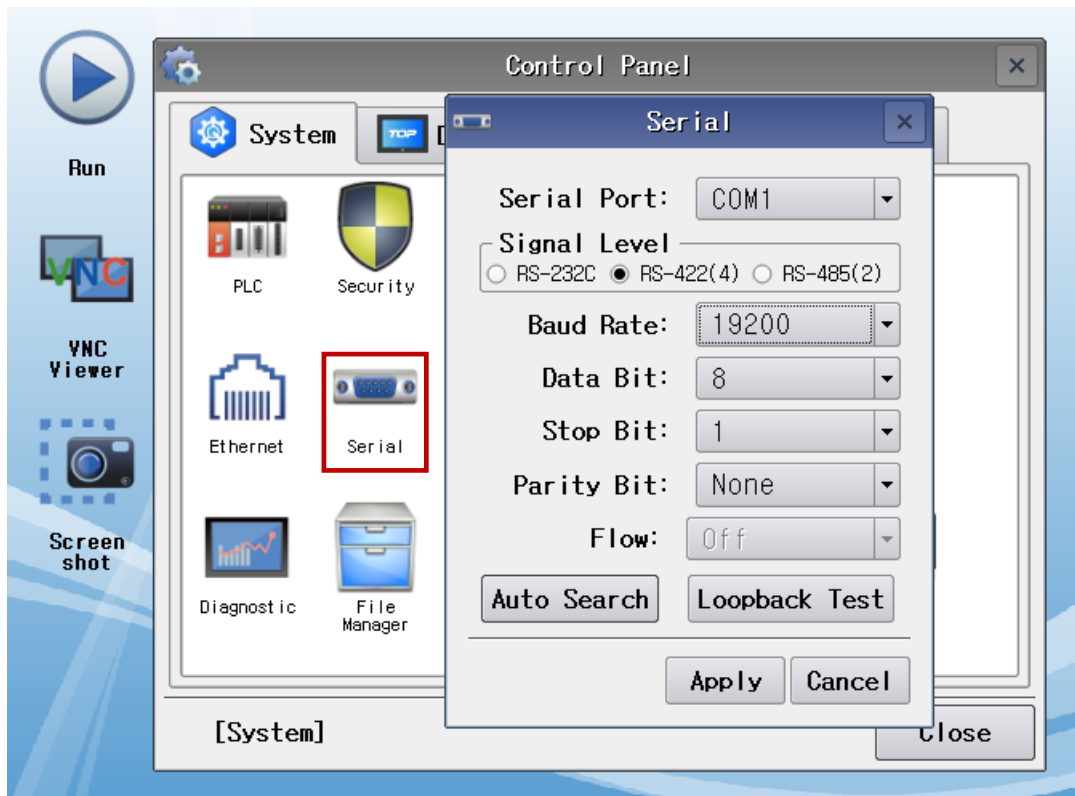
\* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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 ]



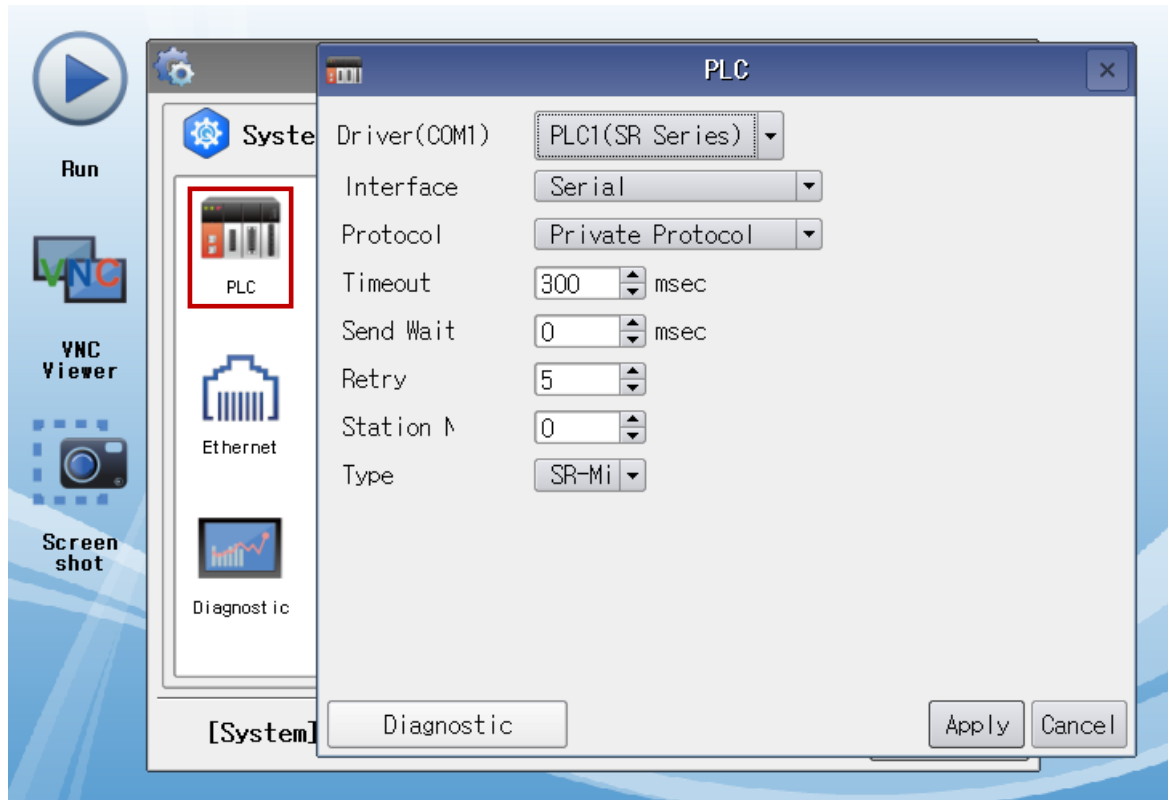
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C / RS-422 / RS-485	RS-232C / RS-422 / RS-485	
Baud Rate	19200		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

\* 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.	<a href="#">Refer to "2. External device selection".</a>
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.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	
Station Num	Enter the prefix of an external device.	
Type	Select model type.	SR-Mini, SRZ

### 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.

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

- 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	<a href="#">1. System configuration</a>	
	Connection cable name	OK	NG		
TOP	Version information	OK	NG	<a href="#">2. External device selection</a> <a href="#">3. TOP communication setting</a>	
	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	<a href="#">4. External device setting</a>	
	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	<a href="#">6. Supported addresses</a> (For details, please refer to the PLC vendor's manual.)		



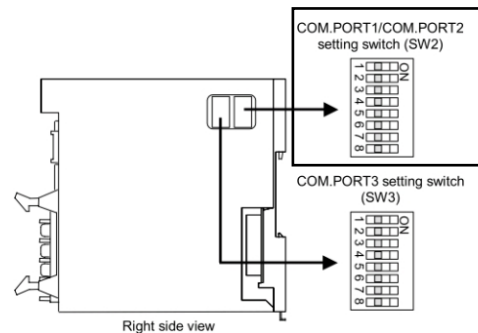
## 4. External device setting

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

### ■ For H-PCP-J-□□4□-D\*□, H-PCP-J-□□4-D\*□

- Front Rotary Switch Setting: **Prefix**
- Dip Switch Setting

SW2	Value	Description
1	OFF	Data bit configuration
2	OFF	Data Bit: 8 / Stop Bit: 1 / Parity None
3	ON	Communication speed: 19200 bps
4	OFF	
5	OFF	Communication protocol: RKC PROTOCOL
6	OFF	
7	OFF	
8	OFF	

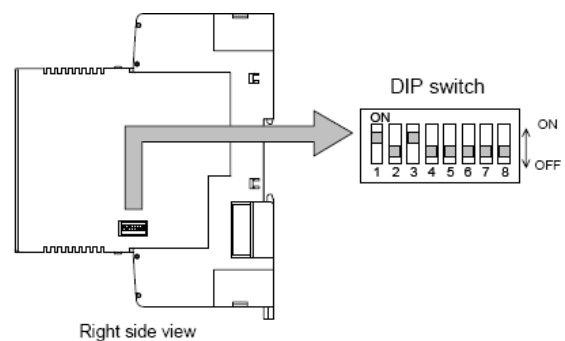


### ■ Z-TIO-A□-□/□-□, Z-TIO-B□-□/□N□-□, Z-TIO-C□-□/□-□, Z-TIO-D□-□/□N□-□

#### For Z-DIO-A□-□/□-□, Z-DIO-A□-□N, Z-CT-A□/□-□, Z-CT-A□/□N

- Front Rotary Switch Setting: **Prefix**
- Dip Switch Setting

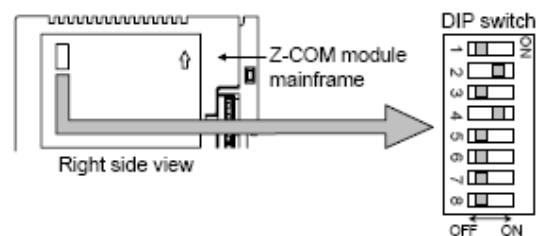
SW	Value	Explanation
1	OFF	Communication speed: 19200 bps
2	ON	
3	OFF	Data bit configuration
4	OFF	Data Bit: 8 / Stop Bit: 1 / Parity None
5	ON	Communication protocol: RKC PROTOCOL
6	OFF	
7	OFF	—
8	OFF	—



### ■ For Z-COM-A-4□/□, Z-COM-A-4□/□N, Z-COM-A-□4/□, Z-COM-A-□4/□N

- Front Rotary Switch Setting: **Prefix**
- Dip Switch Setting

PORT	SW	Value	Description
COM. PORT1 & COM. PORT2	1	OFF	Communication speed: 19200 bps
	2	ON	
	3	ON	MODBUS Data Bit: 8 / Stop Bit: 1 / Parity None
COM. PORT3 & COM. PORT4	4	ON	Communication speed: 19200 bps
	5	OFF	RKC PROTOCOL Data Bit: 8 / Stop Bit: 1 / Parity None
	6	OFF	
	7	OFF	
	8	OFF	—

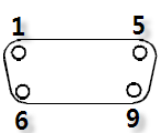
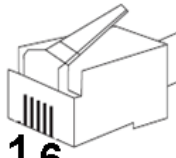


## 5. Cable table

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 Instrument Inc.")

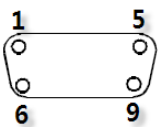
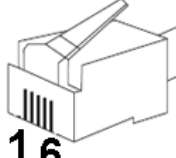
### 5.1 Cable Table 1

#### ■ RS-232C (1:1 connection)

TOP			External device		
Pin arrangement* <b>Note 1</b>	Signal name	Pin number	Pin number	Signal name	Pin arrangement* <b>Note 1</b>
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	RD	2	2	SD	 <p>Based on communication cable connector front, 6 pin male RJ12</p>
	SD	3	3	SG	
	SG	5	4	RD	
			6	SG	

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

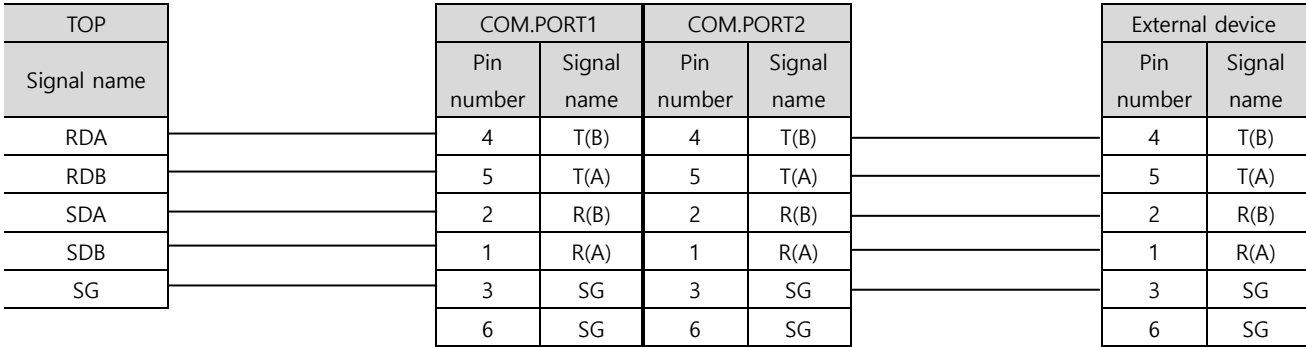
#### ■ RS-422 (1:1 connection)

TOP			External device		
Pin arrangement* <b>Note 1</b>	Signal name	Pin number	Pin number	Signal name	Pin arrangement* <b>Note 1</b>
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	RDA	1	1	R(A)	 <p>Based on communication cable connector front, 6 pin male RJ12</p>
	RDB	4	2	R(B)	
	SG	5	3	SG	
	SDA	6	4	T(B)	
			5	T(A)	
	SDB	9	6	SG	

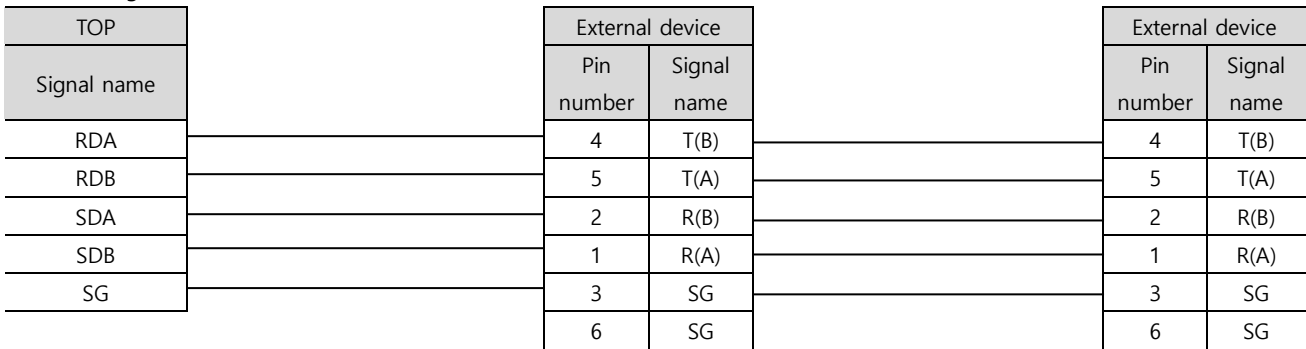
\***Note 1**) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-422 (1:N connection)

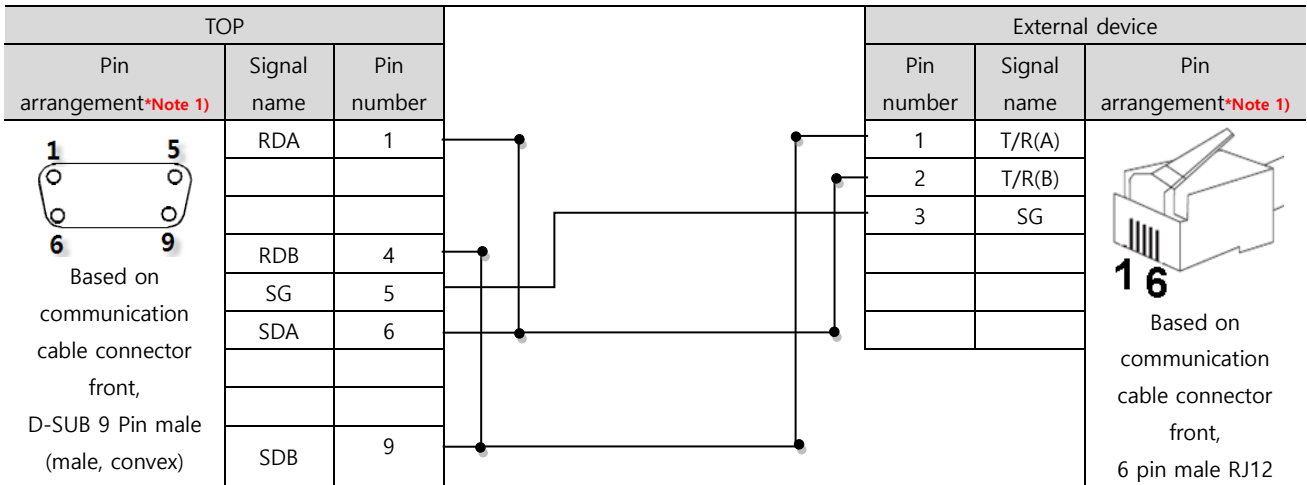
• For SR Mini HG (H-PCP-A-□4N-□\*□Z-1021) / SR Mini HG(H-PCP-J-□4□-D\*□)



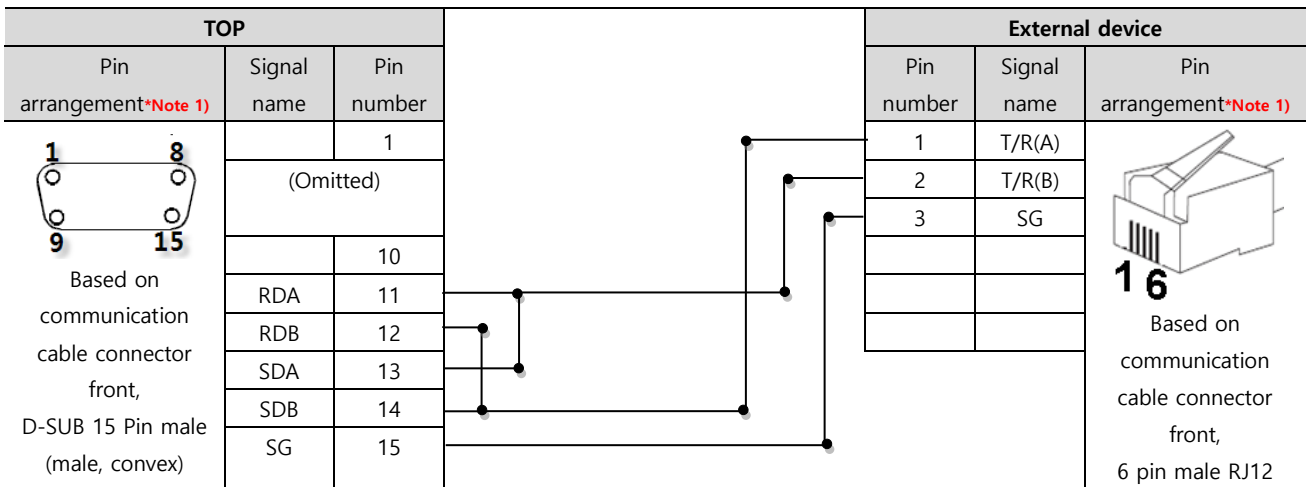
• Remaining devices



■ RS-485 1:1 connection



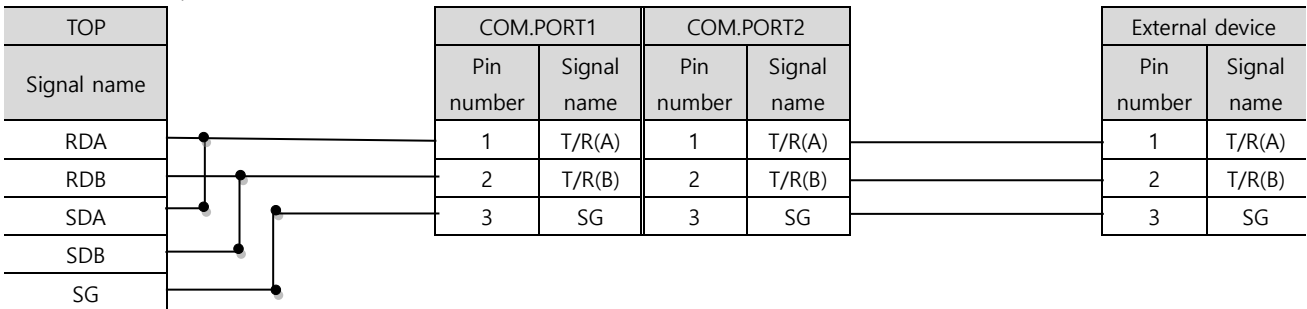
\*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.



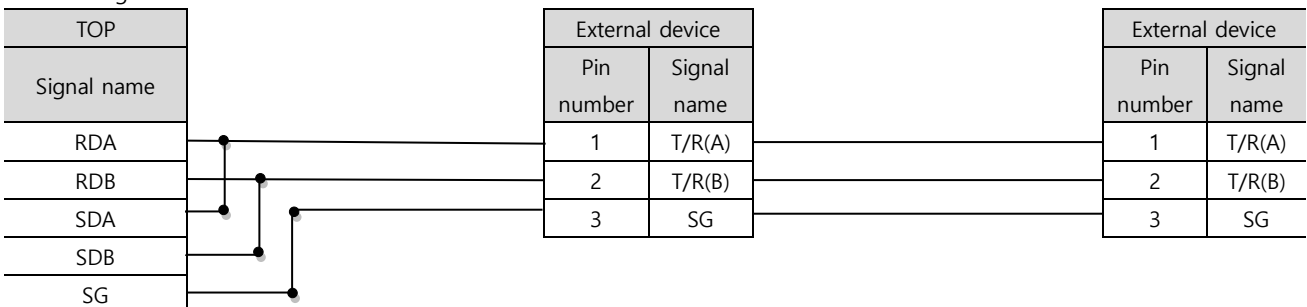
\*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 1:N connection

• For SR Mini HG(H-PCP-J-□5□-D\*□)

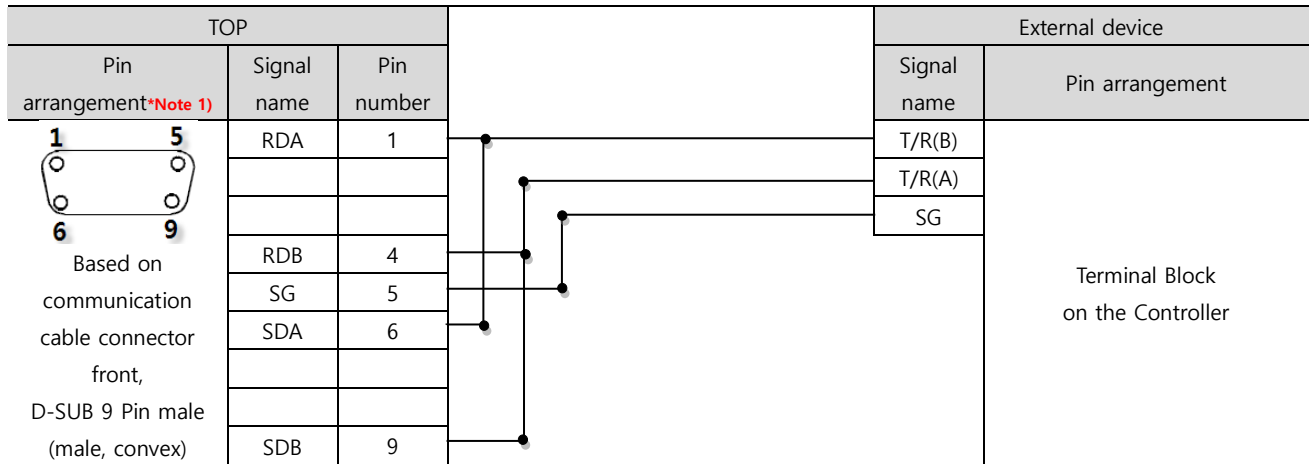


• Remaining devices



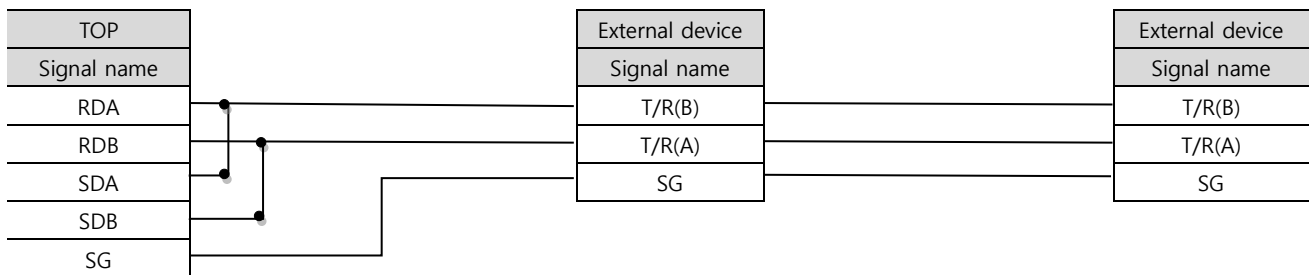
## 5.2. Cable table 2

### ■ RS-485 1:1 connection



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

### ■ RS-485 1:N connection



## 6. Supported addresses

The devices available in TOP are as follows:

SR Series, for [devices][Command Index][channel] forms, has an existing address version, and has a new address version for forms [Commands] / [Channel].

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.

※ Depending on the model, the number of decimal places in the FLOAT type may vary. Please refer to the table and set up the external device. (Write Only)

Device	Existing version	New version	Bit address	Word address	Double word address	R/W	Data type (Decimal places)
	Command Index	Device (Commands)					
WDEV	00	M1	M1/01.00 ~ M1/99.31	—	M1/01 ~ M1/99	R	FLOAT
	01	O1	O1/01.00 ~ O1/99.31	—	O1/01 ~ O1/99	R	FLOAT
	02	O2	O2/01.00 ~ O2/99.31	—	O2/01 ~ O2/99	R	FLOAT
	03	M3	M3/01.00 ~ M3/99.31	—	M3/01 ~ M3/99	R	FLOAT
	04	M4	M4/01.00 ~ M4/99.31	—	M4/01 ~ M4/99	R	FLOAT
	05	MS	MS/01.00 ~ MS/99.31	—	MS/01 ~ MS/99	R	FLOAT
	06	S1	S1/01.00 ~ S1/99.31	—	S1/01 ~ S1/99	R/W	FLOAT (1)
	07	P1	P1/01.00 ~ P1/99.31	—	P1/01 ~ P1/99	R/W	FLOAT (1)
	08	P2	P2/01.00 ~ P2/99.31	—	P2/01 ~ P2/99	R/W	FLOAT (1)
	09	I1	I1/01.00 ~ I1/99.31	—	I1/01 ~ I1/99	R/W	
	10	D1	D1/01.00 ~ D1/99.31	—	D1/01 ~ D1/99	R/W	
	11	V1	V1/01.00 ~ V1/99.31	—	V1/01 ~ V1/99	R/W	FLOAT (1)
	12	A1	A1/01.00 ~ A1/99.31	—	A1/01 ~ A1/99	R/W	FLOAT (1)
	13	A2	A2/01.00 ~ A2/99.31	—	A2/01 ~ A2/99	R/W	FLOAT (1)
	14	A3	A3/01.00 ~ A3/99.31	—	A3/01 ~ A3/99	R/W	FLOAT (1)
	15	A4	A4/01.00 ~ A4/99.31	—	A4/01 ~ A4/99	R/W	FLOAT (1)
	16	T0	T0/01.00 ~ T0/99.31	—	T0/01 ~ T0/99	R/W	*Note 1)
	17	T1	T1/01.00 ~ T1/99.31	—	T1/01 ~ T1/99	R/W	
	18	PB	PB/01.00 ~ PB/99.31	—	PB/01 ~ PB/99	R/W	FLOAT (2)
	19	ON	ON/01.00 ~ ON/99.31	—	ON/01 ~ ON/99	R/W	FLOAT (1)
	20	HD	HD/01.00 ~ HD/99.31	—	HD/01 ~ HD/99	R/W	FLOAT (1)
	21	T3	T3/01.00 ~ T3/99.31	—	T3/01 ~ T3/99	R/W	
	22	M5	M5/01.00 ~ M5/99.31	—	M5/01 ~ M5/99	R	FLOAT
	23	A5	A5/01.00 ~ A5/99.31	—	A5/01 ~ A5/99	R/W	FLOAT (1)
	24	A6	A6/01.00 ~ A6/99.31	—	A6/01 ~ A6/99	R/W	FLOAT (1)
	25	C6	C6/01.00 ~ C6/99.31	—	C6/01 ~ C6/99	R/W	
	26	V2	V2/01.00 ~ V2/99.31	—	V2/01 ~ V2/99	R/W	FLOAT (1)
	27	M6	M6/01.00 ~ M6/99.31	—	M6/01 ~ M6/99	R	FLOAT
	28	S6	S6/01.00 ~ S6/99.31	—	S6/01 ~ S6/99	R/W	FLOAT (1)
	29	XO	XO/01.00 ~ XO/99.31	—	XO/01 ~ XO/99	R/W	
	30	OY	OY/01.00 ~ OY/99.31	—	OY/01 ~ OY/99	R/W	
	31	CV	CV/01.00 ~ CV/99.31	—	CV/01 ~ CV/99	R/W	FLOAT (1)
	32	CW	CW/01.00 ~ CW/99.31	—	CW/01 ~ CW/99	R/W	FLOAT (1)
	33	JK	JK/01.00 ~ JK/99.31	—	JK/01 ~ JK/99	R/W	FLOAT (2)
	34	JL	JL/01.00 ~ JL/99.31	—	JL/01 ~ JL/99	R/W	FLOAT (2)
	35	L1	L1/01.00 ~ L1/99.31	—	L1/01 ~ L1/99	R	
	36	Q3	Q3/01.00 ~ Q3/99.31	—	Q3/01 ~ Q3/99	R	
	37	Q4	Q4/01.00 ~ Q4/99.31	—	Q4/01 ~ Q4/99	R/W	
	38	A7	A7/01.00 ~ A7/99.31	—	A7/01 ~ A7/99	R/W	FLOAT (1)
	39	KH	KH/01.00 ~ KH/99.31	—	KH/01 ~ KH/99	R/W	*Note 2)
40	KG	KG/01.00 ~ KG/99.31	—	KG/01 ~ KG/99	R/W	*Note 2)	

Existing version		New version	Bit address	Word address	Double word address	R/W	Data type (Decimal places)
Device	Command Index	Device (Commands)					
WDEV	41	KI	KI/01.00 ~ KI/99.31	—	KI/01 ~ KI/99	R/W	FLOAT (2)
	42	M7	M7/01.00 ~ M7/99.31	—	M7/01 ~ M7/99	R	FLOAT
	43	A8	A8/01.00 ~ A8/99.31	—	A8/01 ~ A8/99	R/W	FLOAT (1)
	44	A9	A9/01.00 ~ A9/99.31	—	A9/01 ~ A9/99	R/W	FLOAT (1)
	45	PC	PC/01.00 ~ PC/99.31	—	PC/01 ~ PC/99	R/W	FLOAT (2)
	46	L3	L3/01.00 ~ L3/99.31	—	L3/01 ~ L3/99	R/W	FLOAT (1)
	47	L4	L4/01.00 ~ L4/99.31	—	L4/01 ~ L4/99	R	
	48	L5	L5/01.00 ~ L5/99.31	—	L5/01 ~ L5/99	R	
	49	Q5	Q5/01.00 ~ Q5/99.31	—	Q5/01 ~ Q5/99	R/W	
	50	AJ	AJ/01.00 ~ AJ/99.31	—	AJ/01 ~ AJ/99	R	
	51	M8	M8/01.00 ~ M8/99.31	—	M8/01 ~ M8/99	R	FLOAT
	52	V3	V3/01.00 ~ V3/99.31	—	V3/01 ~ V3/99	R/W	FLOAT (1)
	53	TJ	TJ/01.00 ~ TJ/99.31	—	TJ/01 ~ TJ/99	R/W	
	54	OS	OS/01.00 ~ OS/99.31	—	OS/01 ~ OS/99	R/W	FLOAT (1)
	55	OO	OO/01.00 ~ OO/99.31	—	OO/01 ~ OO/99	R/W	FLOAT (1)
BDEV	00	AA	AA/01.00 ~ AA/99.15	AA/01 ~ AA/99	—	R	
	01	AB	AB/01.00 ~ AB/99.15	AB/01 ~ AB/99	—	R	
	02	B1	B1/01.00 ~ B1/99.15	B1/01 ~ B1/99	—	R	
	03	AC	AC/01.00 ~ AC/99.15	AC/01 ~ AC/99	—	R	
	04	HE	HE.00 ~ HE.15	HE	—	R	
	05	ER	ER.00 ~ ER.15	ER	—	R	
	06	G1	G1/01.00 ~ G1/99.15	G1/01 ~ G1/99	—	R/W	
	07	CA	CA/01.00 ~ CA/99.15	CA/01 ~ CA/99	—	R/W	
	08	EI	EI/01.00 ~ EI/99.15	EI/01 ~ EI/99	—	R/W	
	09	SR	SR.00 ~ SR.15	SR	—	R/W	
	10	IN	IN.00 ~ IN.15	IN	—	R/W	
	11	ZA	ZA/01.00 ~ ZA/99.15	ZA/01 ~ ZA/99	—	R/W	
	12	J1	J1/01.00 ~ J1/99.15	J1/01 ~ J1/99	—	R/W	
	13	HS	HS/01.00 ~ HS/99.15	HS/01 ~ HS/99	—	R/W	
	14	AD	AD/01.00 ~ AD/99.15	AD/01 ~ AD/99	—	R	
	15	AE	AE/01.00 ~ AE/99.15	AE/01 ~ AE/99	—	R	
	16	JI	JI/01.00 ~ JI/99.15	JI/01 ~ JI/99	—	R/W	
	17	JJ	JJ/01.00 ~ JJ/99.15	JJ/01 ~ JJ/99	—	R/W	
	18	NJ	NJ/01.00 ~ NJ/99.15	—	NJ/01 ~ NJ/99	R/W	*Note 1)
	19	AP	AP/01.00 ~ AP/99.15	AP/01 ~ AP/99	—	R	
	20	HP	HP/01.00 ~ HP/99.15	HP/01 ~ HP/99	—	R/W	
	21	C2	C2/01.00 ~ C2/99.15	C2/01 ~ C2/99	—	R/W	FLOAT (1)
	22	KF	KF/01.00 ~ KF/99.15	—	KF/01 ~ KF/99	R/W	*Note 1)
	23	AF	AF/01.00 ~ AF/99.15	AF/01 ~ AF/99	—	R	
	24	AG	AG/01.00 ~ AG/99.15	AG/01 ~ AG/99	—	R	
	25	B2	B2/01.00 ~ B2/99.15	B2/01 ~ B2/99	—	R	
	26	EJ	EJ/01.00 ~ EJ/99.15	EJ/01 ~ EJ/99	—	R/W	
	27	AH	AH/01.00 ~ AH/99.15	AH/01 ~ AH/99	—	R	
28	C1	C1/01.00 ~ C1/99.15	C1/01 ~ C1/99	—	R/W		
WFUN	00	AR	AR/01.00 ~ AR/99.15	AR/01 ~ AR/99	—	R/W	

Device example) BDEV0001.00 = AA/01.00

\*Note 1) Data type differs depending on model.

Address	SR-Mini	SRZ
T0	DEC	FLOAT (1)
NJ	DEC	FLOAT (1)
KF	DEC	FLOAT (2)

\*Note 2) Decimal place differs depending on model.

Address	SR-Mini	SRZ
KH	FLOAT (1)	FLOAT (2)
KG	FLOAT (3)	FLOAT (2)