OMRON Industrial Automation

V680 RFID Controller Series

Supported version TOP Design Studio V1.4.11.11 or higher

CONTENTS

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

1. System configuration

The system configuration of TOP and "OMRON V680 RFID" is as follows.

Series	CPU	Link I/F	Communication method	System setting	Cable
RFID	V680-CA5D01-V2/-CA5D02-V2	RS-232C Port on CPU unit	RS-232C	3.1 Settings example 1 (Page 4) 4. External device setting (Page 7)	5.1. Cable table 1
		RS-422,485 Port on CPU unit	RS-422/485		

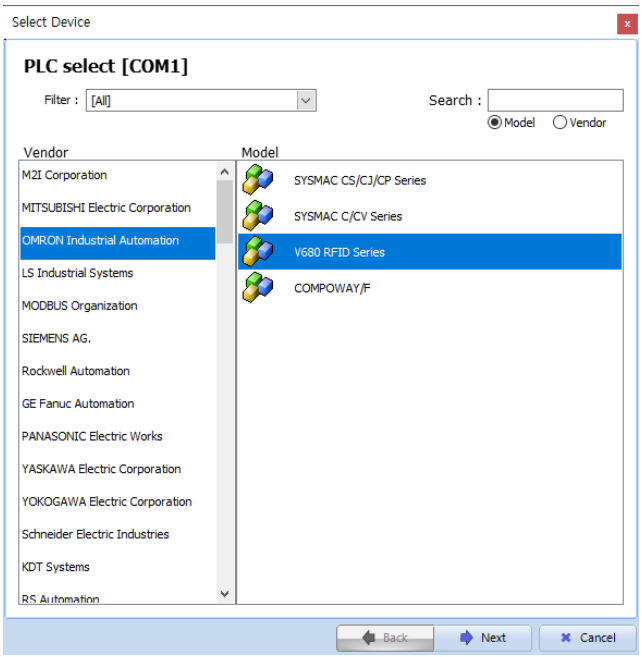
■ Connection configuration

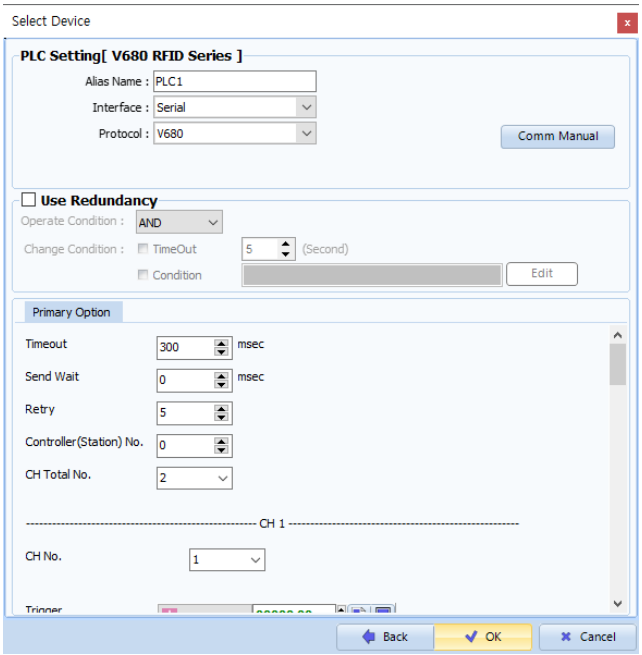
・1:1 connection

・1 : N connection - Available in RS422 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. Please select “OMRON Industrial Automation”.
	PLC	Select an external device to connect to TOP. **Model** / **Interface** / **Protocol** V680 RFID Series / Serial / V680 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

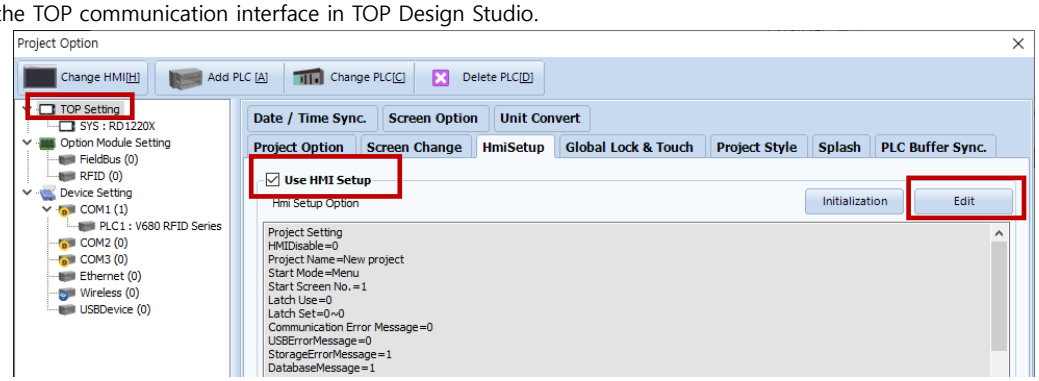
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

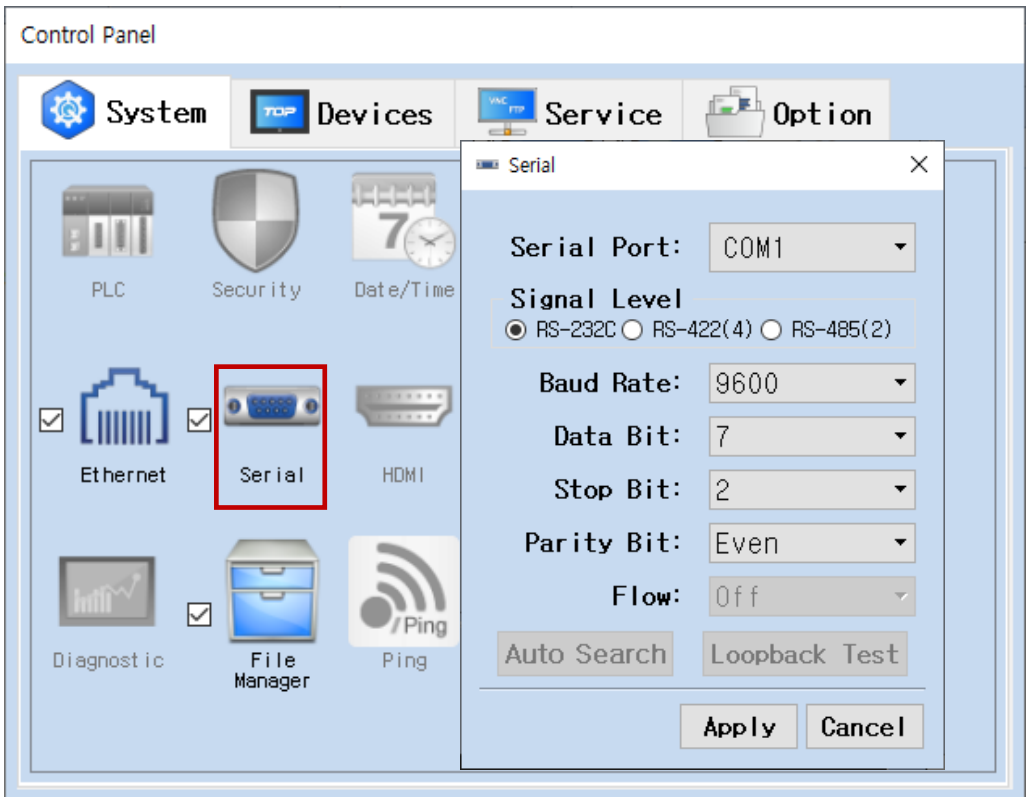
3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project properties > TOP settings] → [HMI settings > Check "Use HMI settings" > 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	9600		
Data Bit	7		
Stop Bit	2		
Parity Bit	Even		

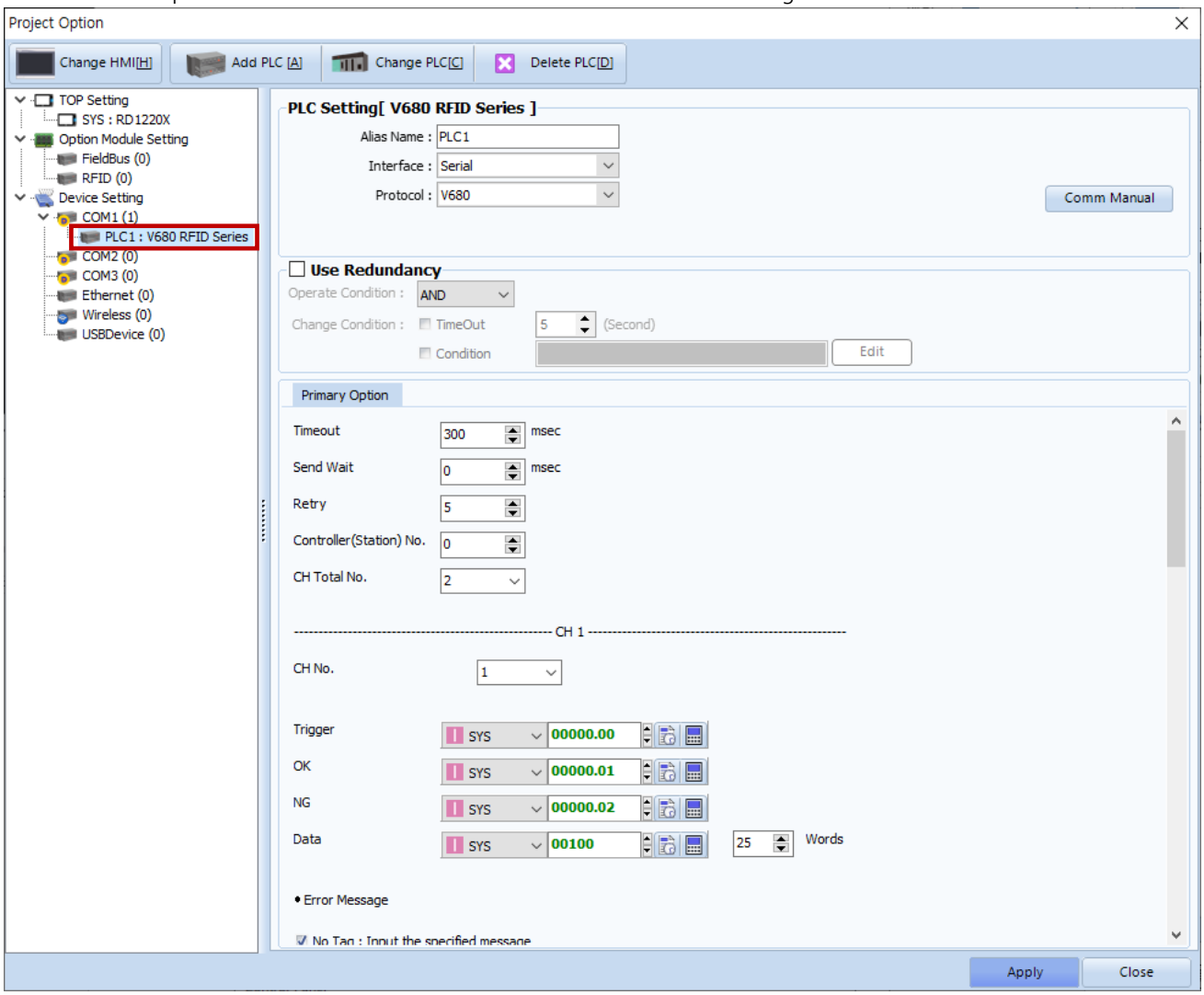
* The above settings are examples recommended by the company.

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.

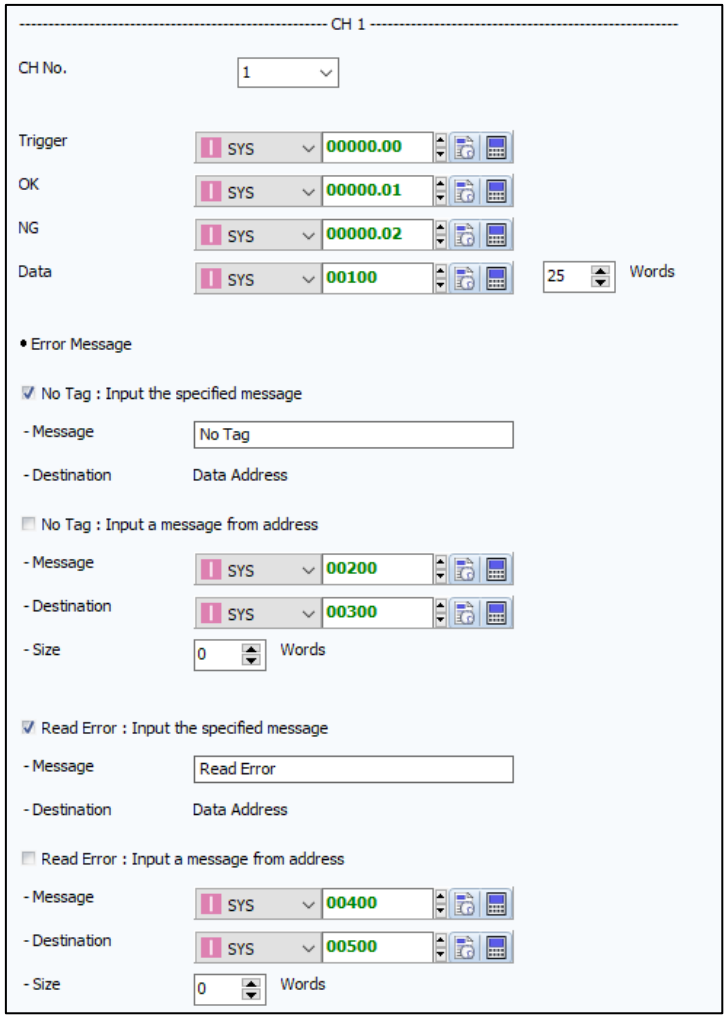
(2) Communication option setting

■ [Project > Project properties > Device setting > COM > "PLC1 : V680 RFID Series"]

– Set the options of the communication driver of V680 RFID Series in TOP Design Studio.



Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select "V680".	
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.	
Controller No.	Set the station number of the controller that communicates with TOP.	Station No.
CH Total No.	Set total number of channels.	



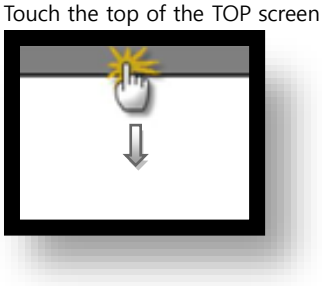
■ Communication interface setting

Items		Details	Contents
CH No.			RFID antenna number
Trigger			Conditional bit configuration required to execute RFID reading.
OK			Corresponding address turns on when RFID reading is normal User must manually turn off, since off operation does not occur
NG			Corresponding address turns on when an error occurs User must manually turn off, since off operation does not occur
Data			Address for storing loaded RFID data (Other PLC address can be used) Designate maximum words for loaded RFID data
Error message processing method		Direct Input (Input the specified message)	Method used to make an entered message appear by default on the drawing screen when an error occurs.
		Address variable (Input a message from address)	Method that allows users to designate a set amount of words as a variable for the designated address when an error occurs.
No Tag	Direct Input	Message	Enter the tag error message to be used as default.
		Destination	Stores the data address.
	Address variable	Message	Message content to be stored when tag error occurs
		Destination	Address for storing message when tag error occurs.
		Size	Maximum words of a message to be stored when tag error occurs
Read Error	Direct Input	Message	Enter the communication error message to be used as default.
		Destination	Stores the data address.
	Address variable	Message	Message content to be stored when communication error occurs
		Destination	Address for storing message when communication error occurs.
		Size	Maximum words of a message to be stored when communication error occurs

3.2. Communication setting in TOP

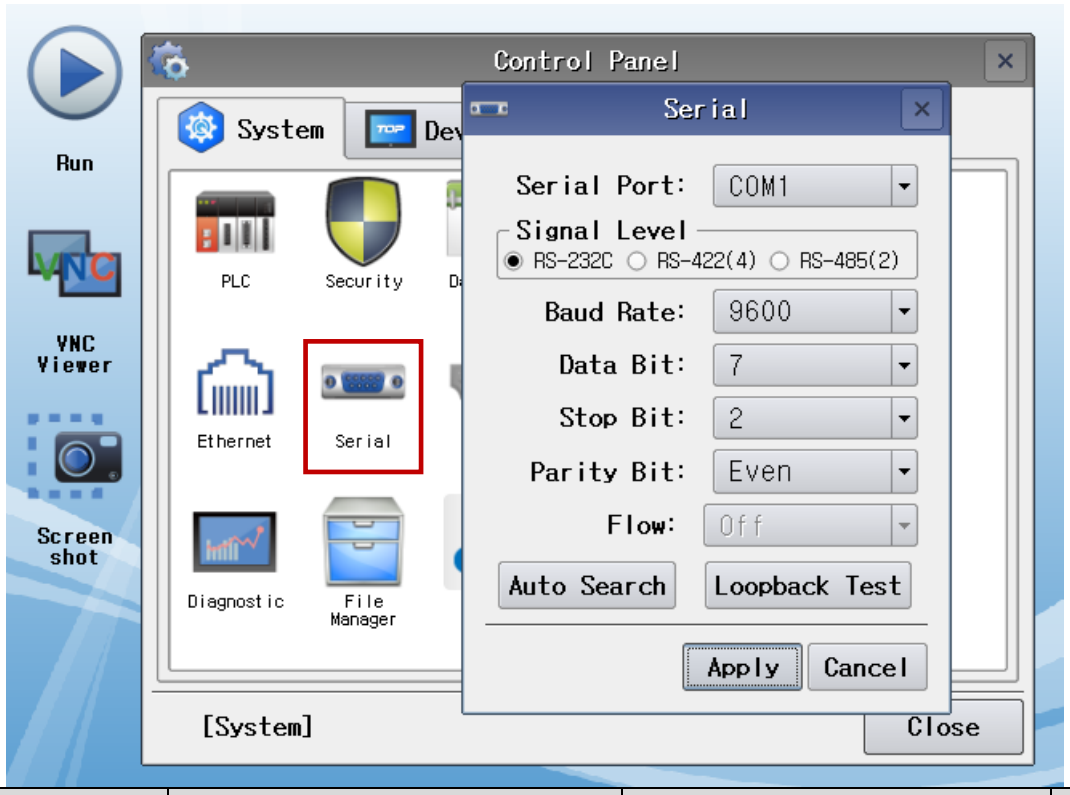
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



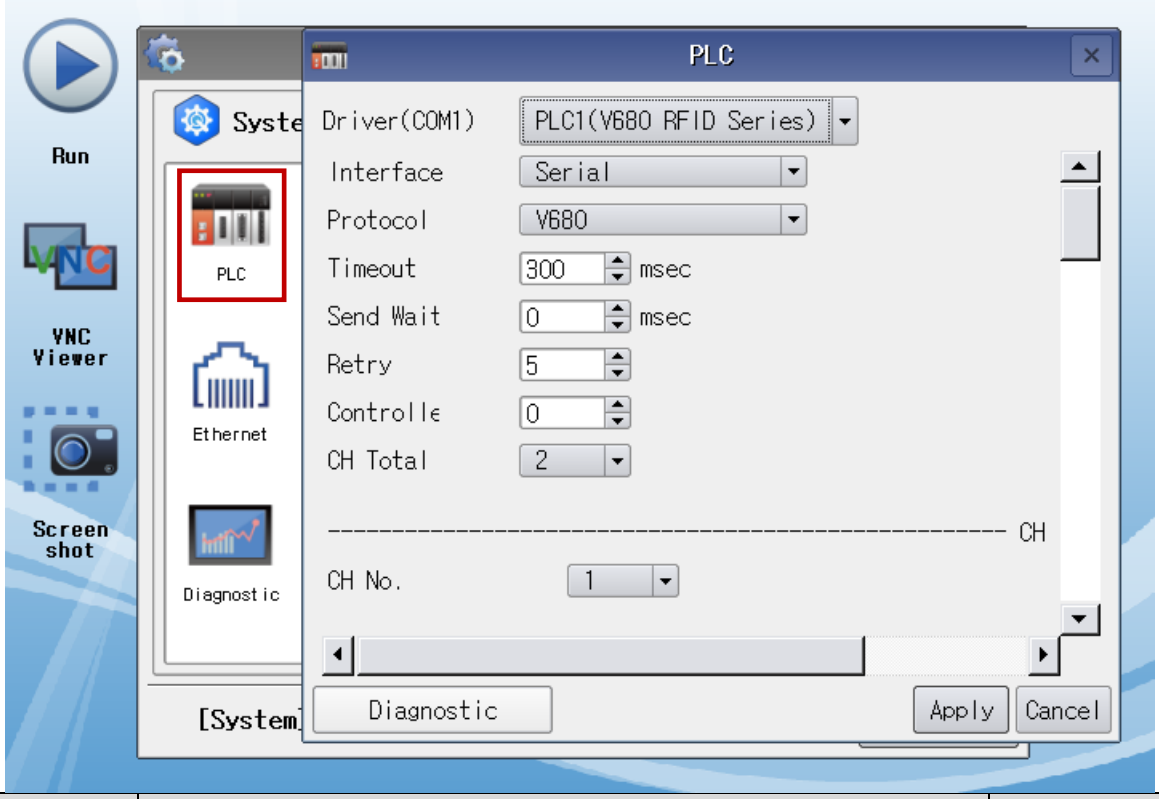
Items	TOP	External device	Remarks
Signal Level	RS-232C / RS-422 / RS-485	RS-232C / RS-422 / RS-485	
Baud Rate	9600		
Data Bit	7		
Stop Bit	2		
Parity Bit	Even		

* 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
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select "V680".	
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.	
Controller No.	Set the station number of the controller that communicates with TOP.	Station No.
CH Total No.	Set total number of channels.	

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

Configure the RFID switch communication settings as follows. For more detailed setting methods than described in this example, please refer to the PLC user manual.

1. SW 1, SW 2 (Controller Number): Set to 0 as follows.

SW1	SW2	Controller No.
Upper digit	Lower digit	
0	0	0
0	1	1
0	2	2
0	3	3
0	4	4
0	5	5
0	6	6
0	7	7
0	8	8
0	9	9
1	0	10
1	1	11
:	:	:
2	9	29
3	0	30
3	1	31
3	2	Setting prohibited
3	3	Setting prohibited
:	:	:
9	9	Setting prohibited

2. SW3, PIN 1 (SW Enable Switch): Set to OFF.

SW3, pin 1	Description
OFF	DIP switch enabled
ON	Internal settings enabled

3. SW3, Pin 2 (Reserved by System): Set to OFF.

4. SW3, Pins 3 and 4 (Baud Rate): Set both pin 3 and 4 to OFF.

SW3, pin 3	SW3, pin 4	Description
OFF	OFF	9,600 bps
	ON	19,200 bps
ON	OFF	38,400 bps
	ON	115,200 bps

5. SW3, Pin 5 (Data Length): Set to OFF.

SW3, pin 5	Description
OFF	7 bits
ON	8 bits

6. SW3, Pins 6 and 7 (Parity): Set both pin 6 and 7 to OFF.

SW3, pin 6	SW3, pin 7	Description
OFF	OFF	Even
	ON	None
ON	OFF	Odd
	ON	Even

7. SW3, Pin 8 (Stop Bit Length): Set to OFF.

SW3, pin 8	Description
OFF	2 bits
ON	1 bit

8. SW3, Pin 9 (Communications Protocol): Set to ON.

SW3, pin 9	Description
OFF	1:1
ON	1:N

9. SW3, Pin 10 (Command System): Set to OFF>

SW3, pin 10	Description
OFF	V680 commands
ON	V600 commands

10. SW4, Pins 1, 2, and 3 (Maintenance Mode Switch Settings): Set all of pin 1, 2, and 3 to OFF.

SW4, pin 1	SW4, pin 2	SW4, pin 3	Description
OFF	OFF	OFF	Distance Level Measurement Mode
		ON	Tag Communications Test Mode
	ON	OFF	Speed Level Measurement Mode, Read
		ON	Speed Level Measurement Mode, Write
ON	OFF	OFF	Noise Level Measurement Mode
	ON	OFF	Communications Success Rate Measurement Mode
		ON	Host Communications Monitor Mode

11. SW4, Pin 4 (Antenna Specification): Set the antenna number you want to use as follows.

SW4, pin 4	Description
OFF	Antenna 1
ON	Antenna 2

12. SW4, Pin 5 (Write Verification): Set to ON.

SW4, pin 5	Description
OFF	With write verification
ON	Without write verification

13. SW4, Pin 6 (Lower Trigger Execution): Set to OFF.

SW4, pin 6	Description
OFF	None
ON	Enabled (on rising edge)

14. SW4, Pin 7 (Write Protection Function): Set to ON.

SW4, pin 7	Description
OFF	Enabled
ON	Disabled

15. SW4, pin 8 (V680-H01 Antenna connection setting): Set the antenna type you want to use as follows.

SW4, pin 8	Description
OFF	Connection to antennas other than the V680-H01
ON	Allows connection of the V680-H01 Antenna.

16. SW4, Pin 9 (Run Mode): Set to OFF.

SW4, pin 9	Description
OFF	Command Execution Mode
ON	Self-execution Mode

17. SW4-10 (High-speed Data Transmission setting): Set to OFF.

SW4, pin 8	Description
OFF	Normal mode
ON	High-speed mode

18. SW 5 (Mode Switch Setting): Set to OFF.

SW5	Description
OFF	Run Mode
ON	Maintenance Mode

19. SW 6 (Terminating Resistance): Set to OFF.

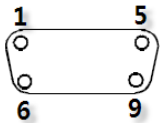
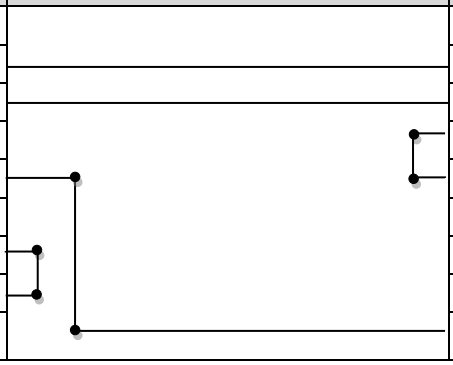
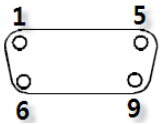
SW6	Description
OFF	Terminating resistance OFF
ON	Terminating resistance ON

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 chapter may differ from the recommendations of "Omron V680 RFID".)

■ 1:1 connection

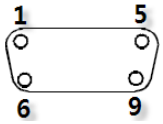
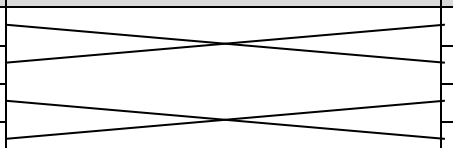
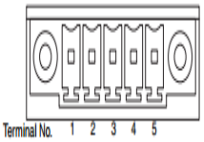
TOP COM Port (9 pin)

TOP			Cable connection	RFID		
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	NC	 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)
	RD	2		2	SD	
	SD	3		3	RD	
	DTR	4		4	RS	
	SG	5		5	CS	
	DSR	6		6	NC	
	RTS	7		7	NC	
	CTS	8		8	NC	
		9		9	SG	

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

■ 1 : N connection

TOP COM Port (9 pin)

TOP			Cable connection	RFID		
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		4	SDB	 Based on communication cable connector front,
	RDB	4		3	SDA	
	SDA	6		2	RDB	
	SDB	9		1	RDA	

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