SICK AG

RFH6 – RFID Driver

Supported version TOP Design Studio V1.4.11.11 or higher

CONTENTS

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

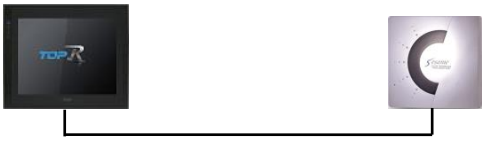
1. System configuration

The system configuration of TOP and "SICK-RFH6 Series" is as follows.

Series	Link I/F	Communication method	System setting	Cable
RFH6 Series	Port on CPU	RS-232C	3.1 Example of setting (Page 4)	4 Cable table (Page 12)

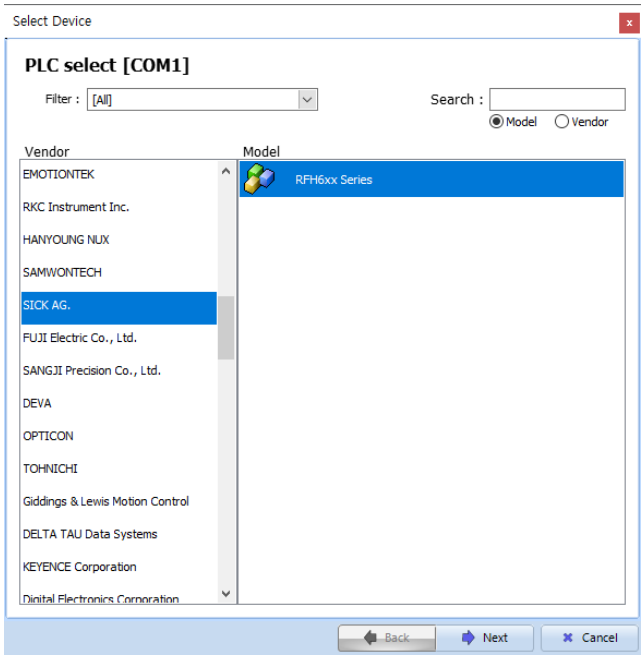
■ Connection configuration

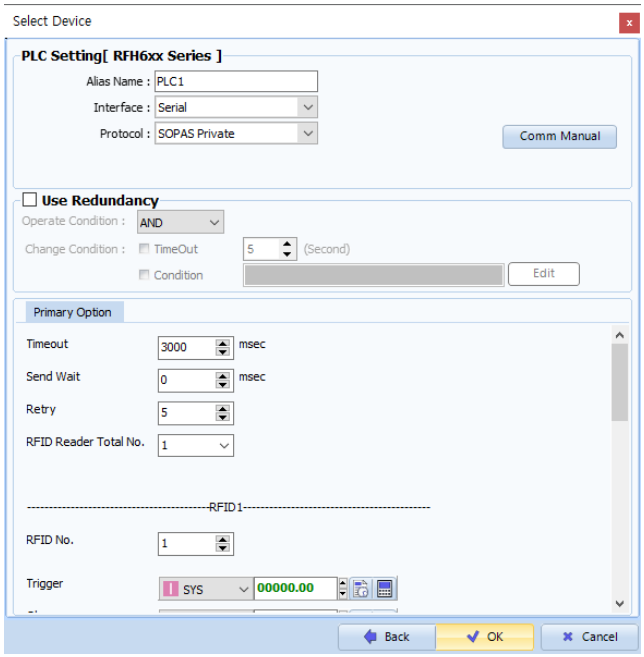
・1:1 (one TOP and one external device) connection



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 "OTHERS Manufacture".
	PLC	Select the external device to be connected to the TOP. **Model** / **Interface** / **Protocol** SICK-RFH6 Series / Serial / SOPAS Private 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

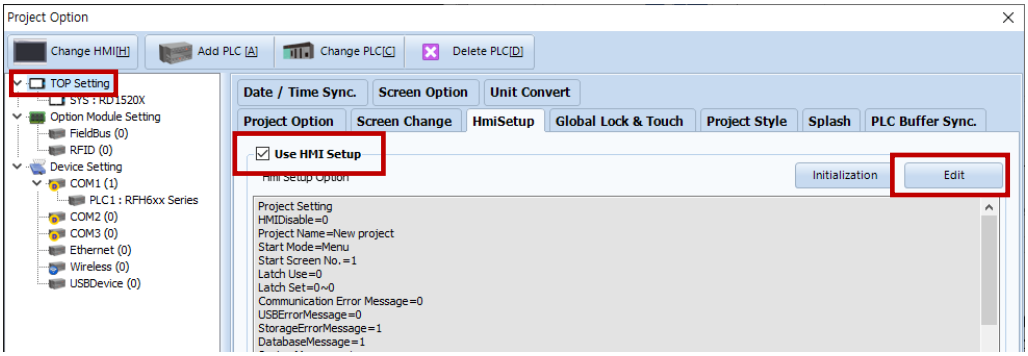
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

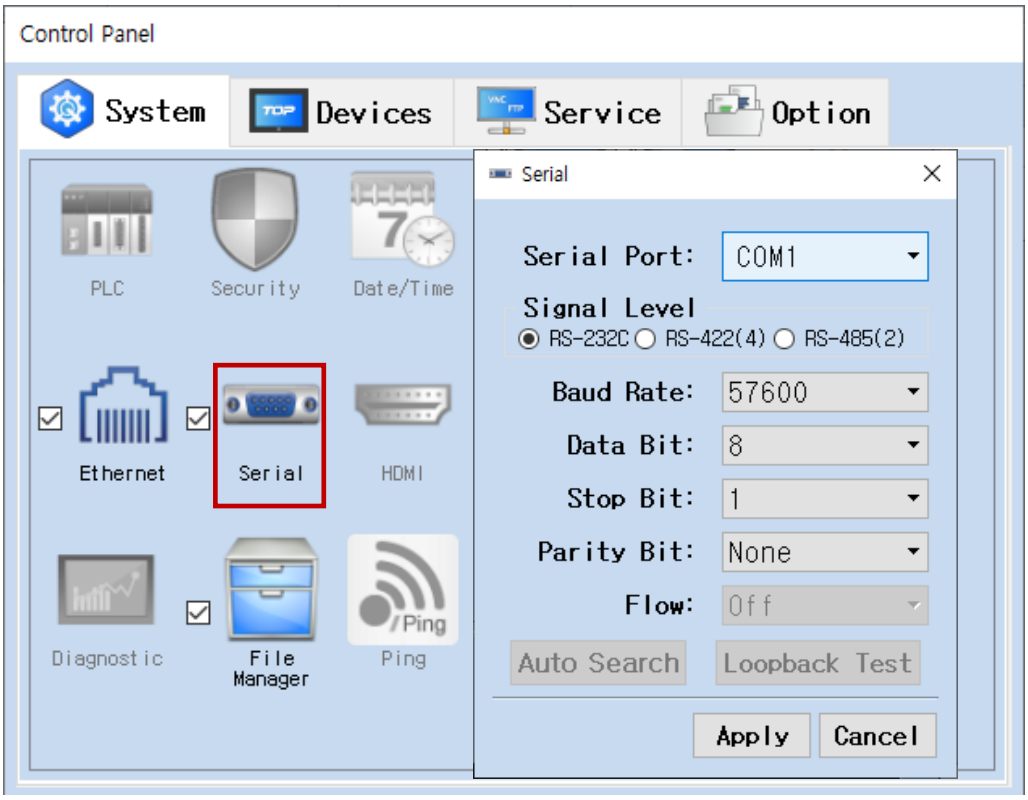
3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project properties > TOP settings] → [Project option > Check "Use HMI settings" > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.





Items	TOP	External device	Remarks
Signal Level (port)	RS-232	RS-232	
Baud Rate	57600		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	none		Fixed

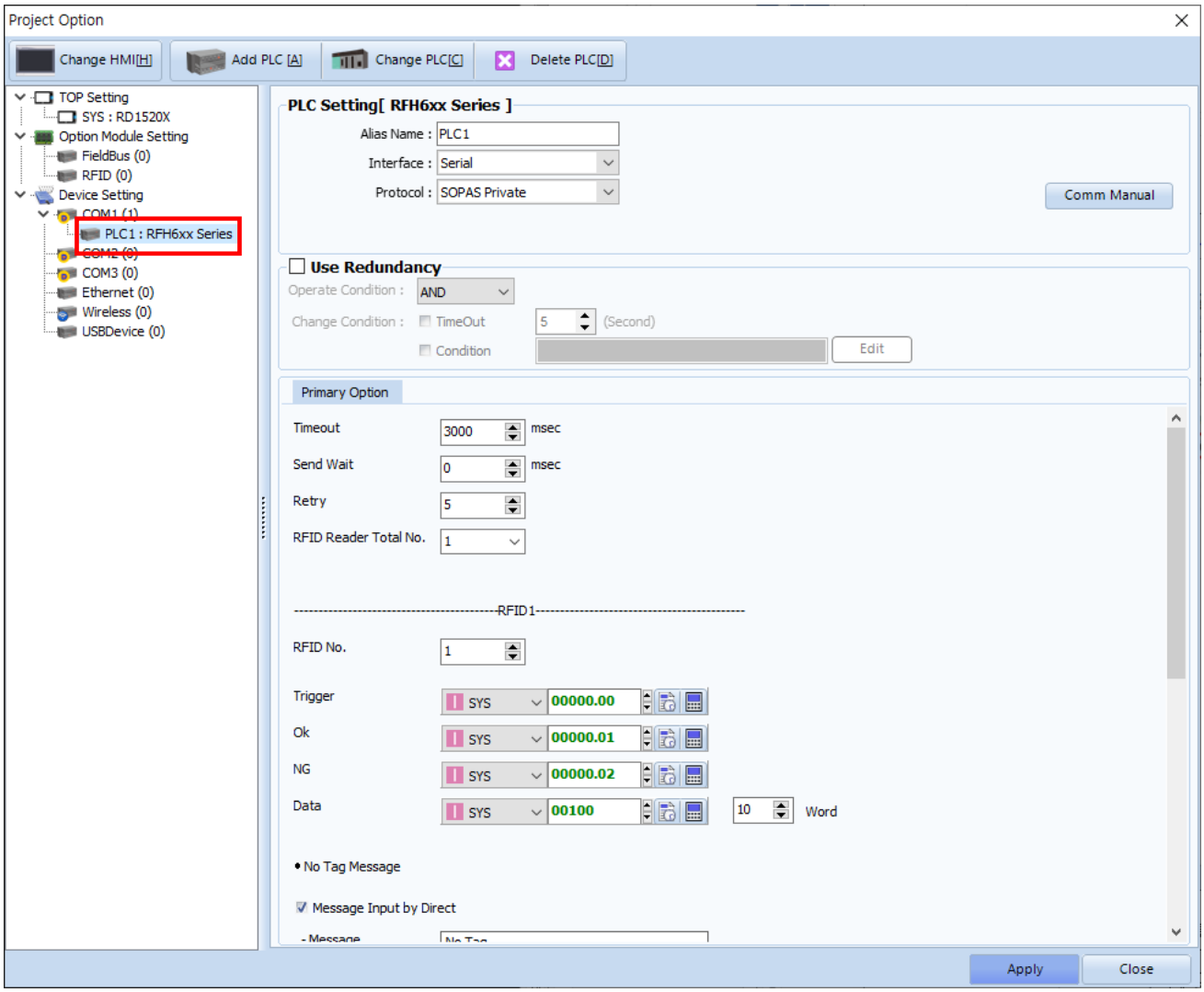
* The above settings are setting examples recommended by the company.

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

■ [Project > Project properties > PLC setting > COM > "PLC1 : RFH6xx Series"]

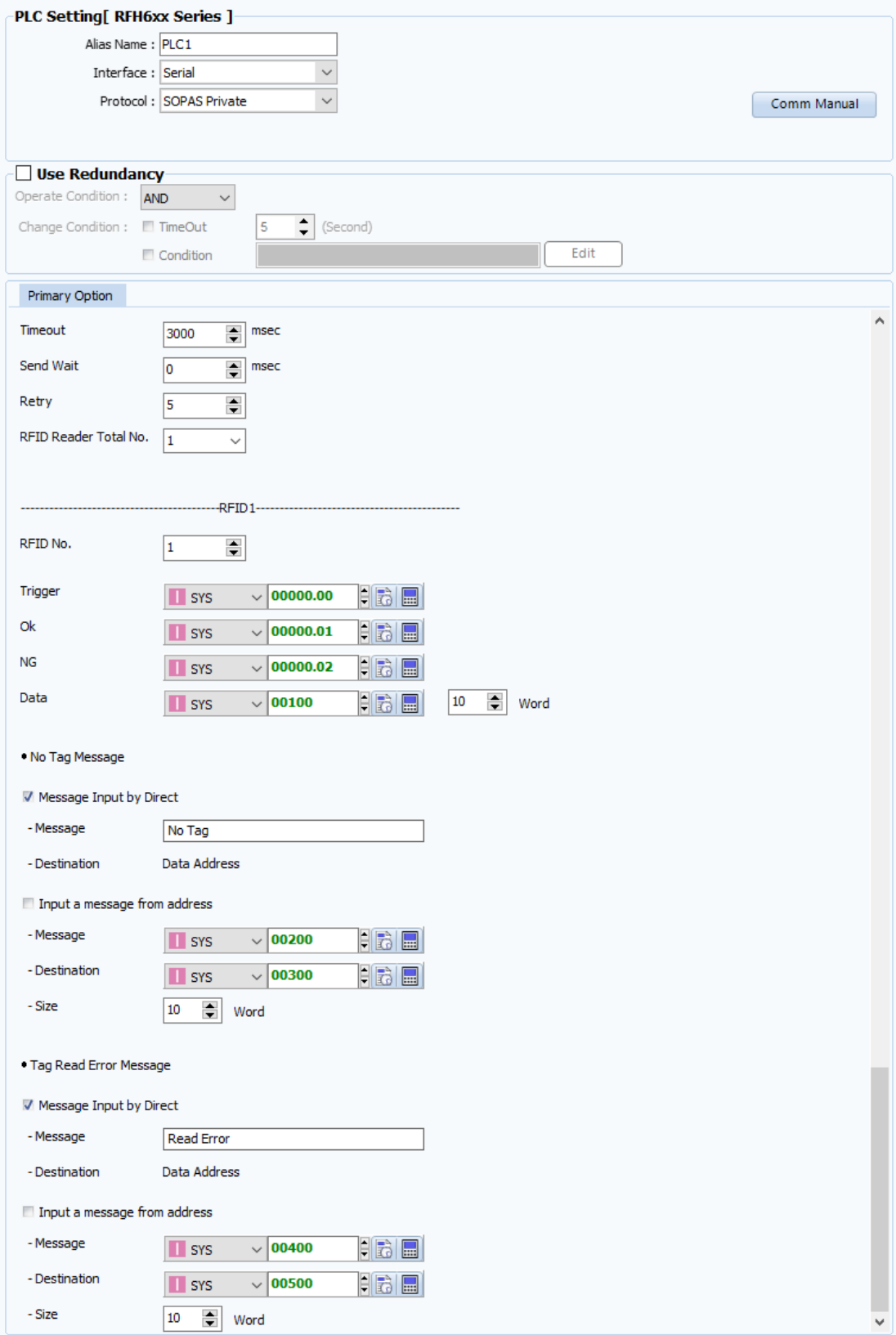
– Set the options of the communication driver of SICK-RFH6 in TOP Design Studio.



• **Basic communication option**

Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select "SOPAS Private".	
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	Set the number of retries in case of no tag, tag read failure.	
Channel Total No.	Enter the number of RFID channels to be used.	

■Communication interface setting.



Items	Settings	Remarks
RFID No	Set the RFID number to be used.	
Trigger	Configures the Bit address for executing Tag recognition.	
OK	Configures the enabled Bit address upon successful Tag recognition.	
NG	Configures the enabled Bit address upon failed Tag recognition.	
Data	Configures the address and word length for entering Tag data.	

※ Scan Error Message

Enter designated message for "No tag" error		
Message Input by Direct	Configure to enable or disable.	
Message	Message	
Destination	Enter to data storage address.	
Enter reference message for "No tag" error		
Input a message from address	Configure to enable or disable.	
Message	Message reference address	
Destination	Message input address	
Size	Configures the buffer size of the message reference/input address	Unit: word

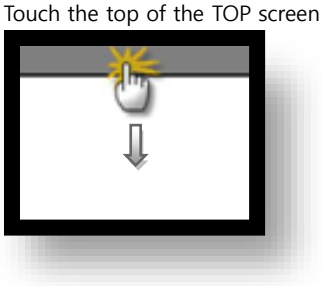
※ Tag Time Out Message

Enter designated message for "Tag read" error		
Message Input by Direct	Configure to enable or disable.	
Message	Message	
Destination	Enter to data storage address.	
Enter reference message for "Tag read" error		
Input a message from address	Configure to enable or disable.	
Message	Message reference address	
Destination	Message input address	
Size	Configures the buffer size of the message reference/input address	Word

3.2. Communication setting in TOP

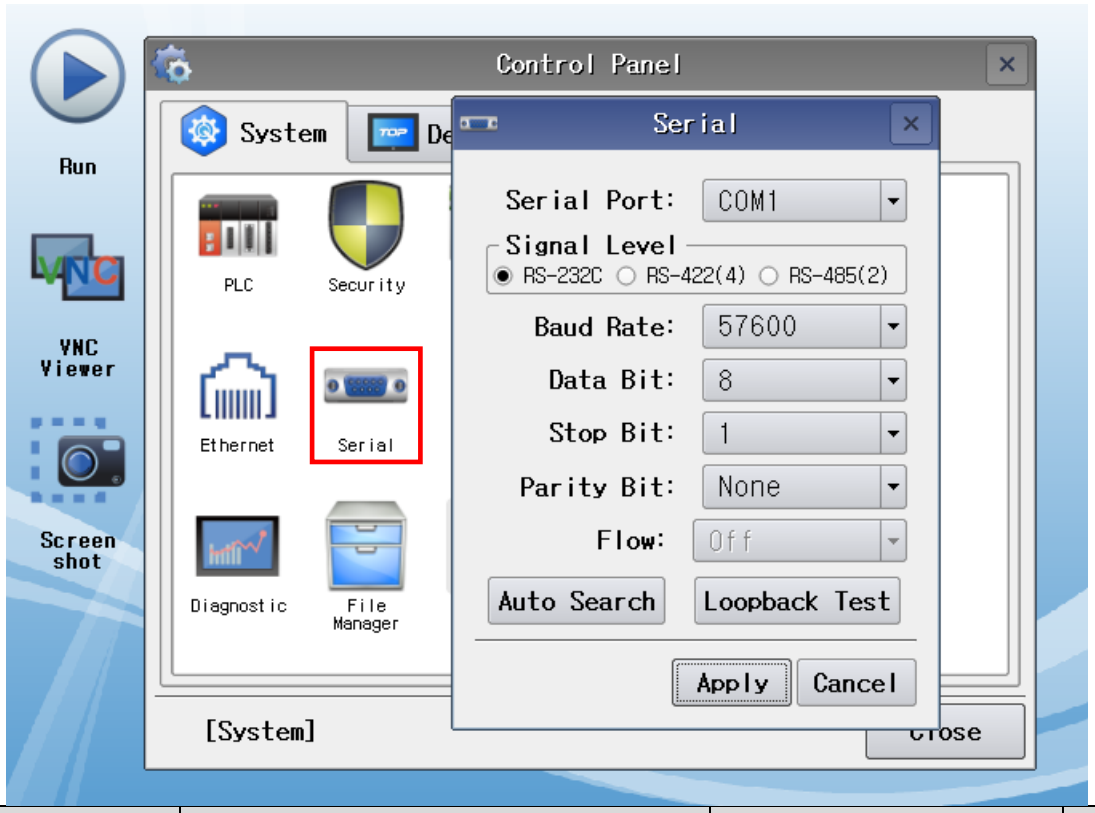
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



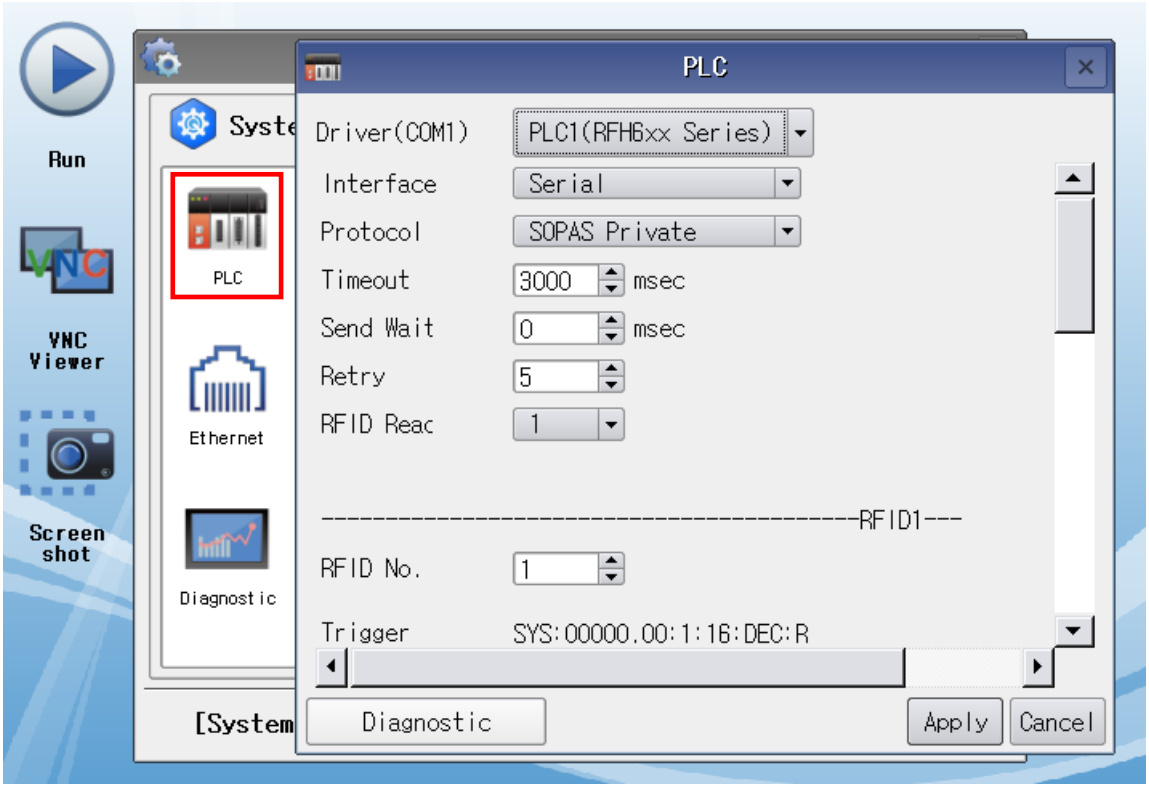
Items	TOP	External device	Remarks
Signal Level (port)	RS-232	RS-232	
Baud Rate	57600		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	none		Fixed

* 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]



* The above settings are examples recommended by the company.

• **Basic communication option**

Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select "SOPAS Private".	
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	Set the number of retries in case of no tag, tag read failure.	
Channel Total No.	Enter the number of RFID channels to be used.	

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

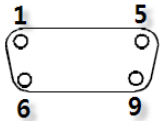
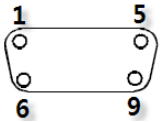
- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

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. Cable table

■ 1:1 connection

■ RS-232C wiring

COM PORT			Cable connection	PLC		
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		 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)
	RD	2		2	232 Rx	
	SD	3		3	232 Tx	
	DTR	4		4		
	SG	5		5	GND	
	DSR	6		6		
	RTS	7		7		
	CTS	8		8		
		9		9		

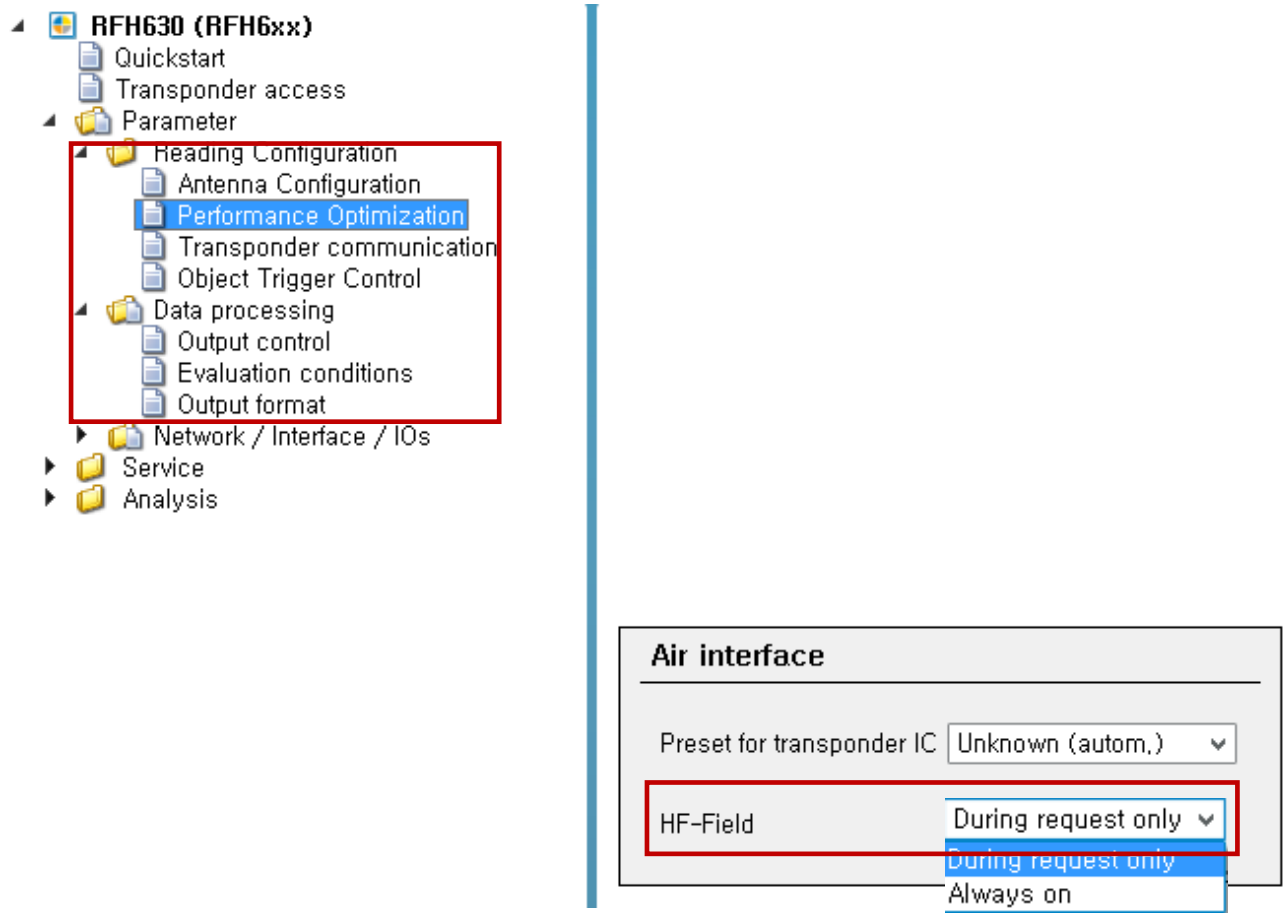
5. External device setting

This is an example of setting using SICK's software "SOPAS Engineering Tool".

For more detailed setting methods than described in this example, refer to the user manual of Seyeon Technology.

Step 1. Connect RFH630 to SOPAS Engineering Tool.

Step 2. Performance Optimization setting

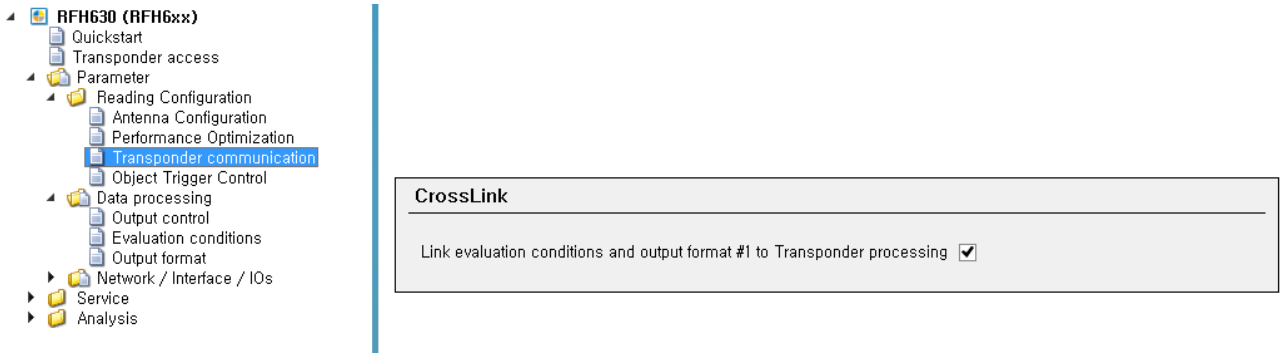


Select Parameter >> Performance Optimization >> Air interface.

■ Preset for transponder IC: The IC type of the tag to be used can be set automatically/manually.

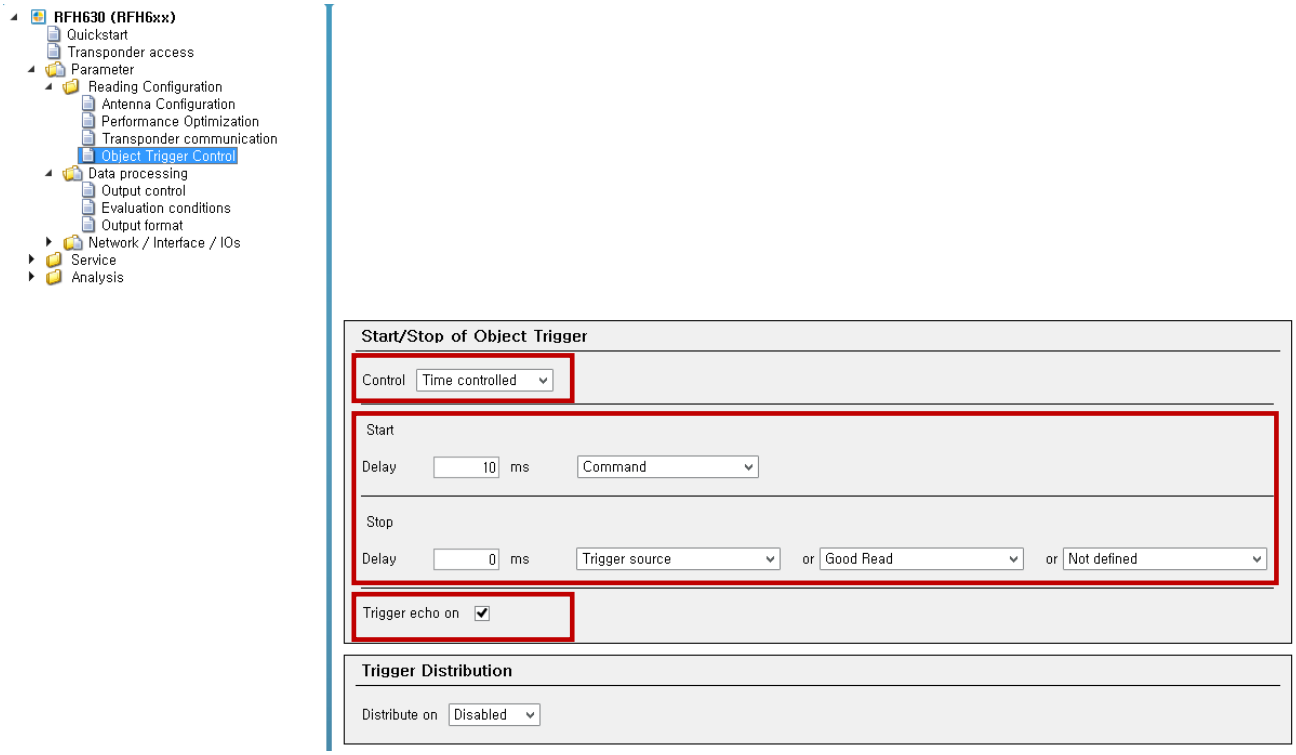
■ HF-Field: In case of During request only, HF-field is activated when the trigger signal is applied. In case of Always on, it is always on standby status without trigger. TOP only supports During request only.

Step 3. Transponder communication - CrossLink setting



■ RFID TAG data processed according to evaluation condition and output format #1. (manual setting when deactivated)

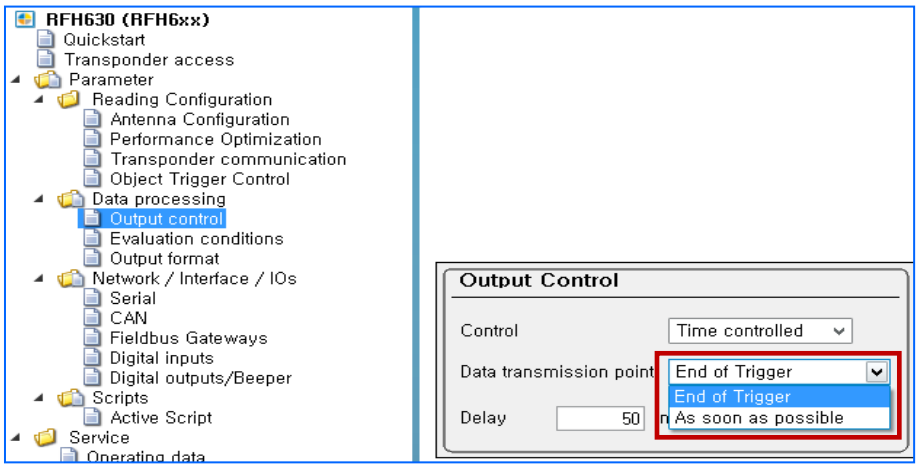
Step 4. Object trigger control setting



■ Start/Stop of Object Trigger

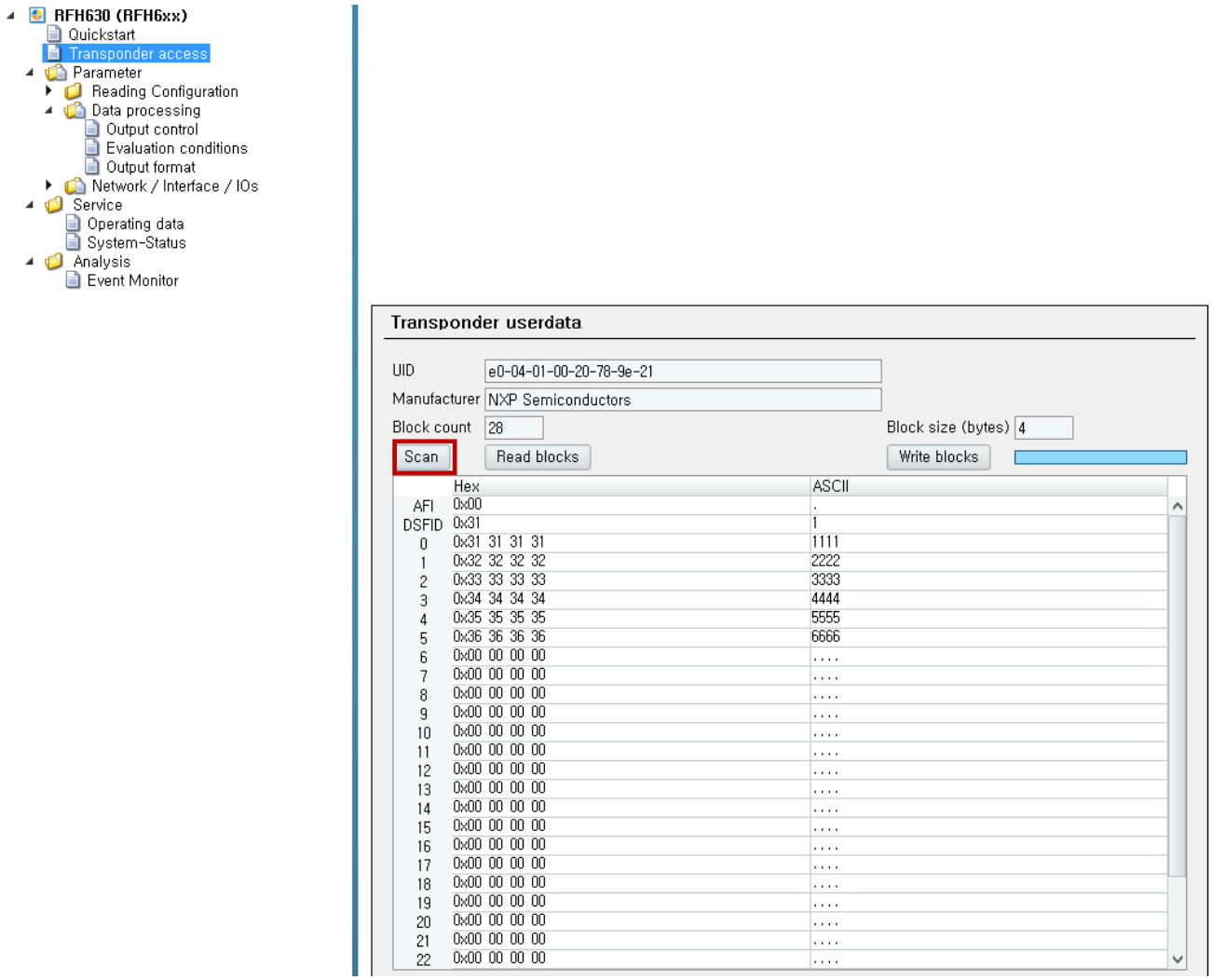
- Control – Time controlled
- Set the delay time after applying tag recognition start/end time and synchronization start/end signal.
- Set as Start condition = Command.
- Set as Stop condition = Trigger source, Good Read
- Check Trigger echo ON.

Step 5. Data processing /Output control setting



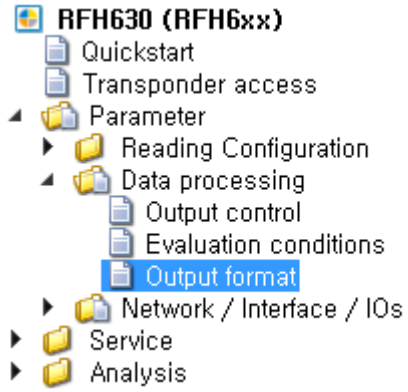
■ End of trigger: Data transmission after satisfying the termination condition set in the object trigger control menu

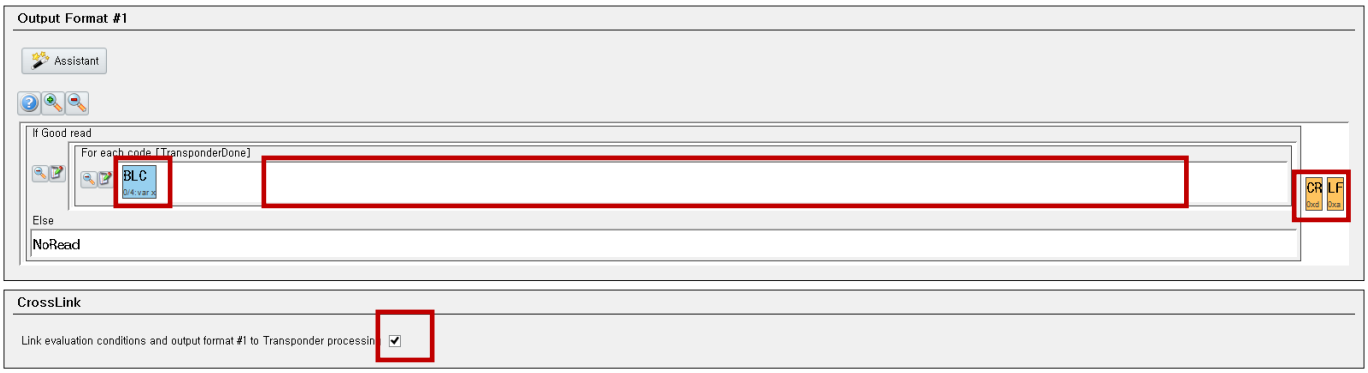
Step 6. Transponder access setting



■Scan the TAG scan in the area.

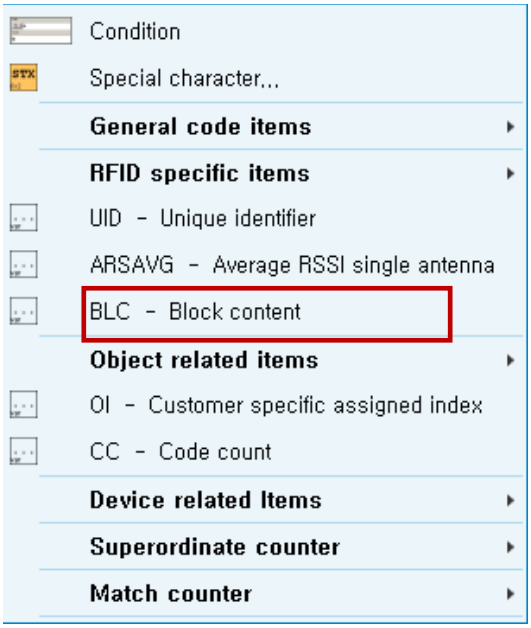
Step 7. OUTPUT FORMAT setting(1)





■ Create a condition by left-clicking the window, and press to pop-up the window below.

■add variable or constant

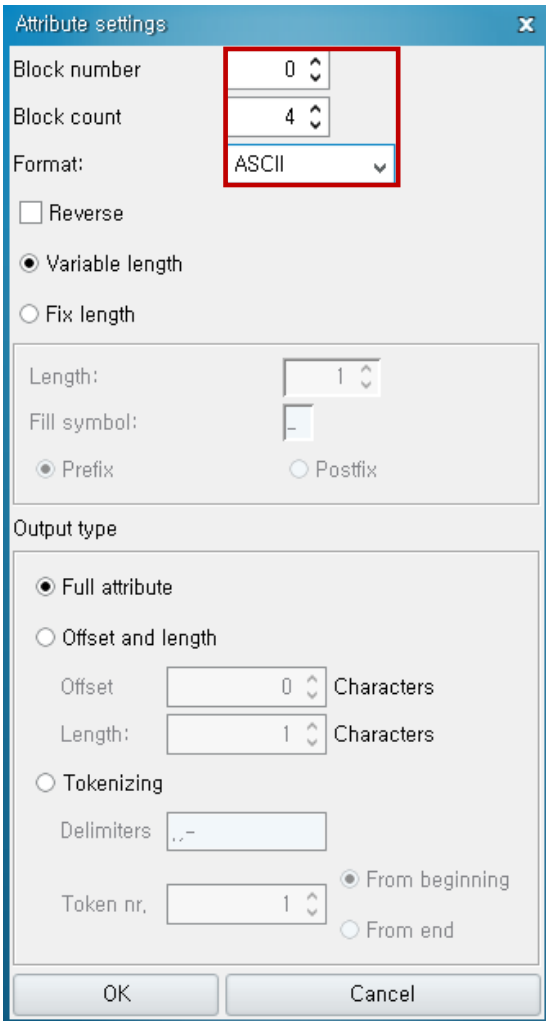


Select BLC – Block content.

■ Double-click 

to open the attribute settings window.

■attribute settings



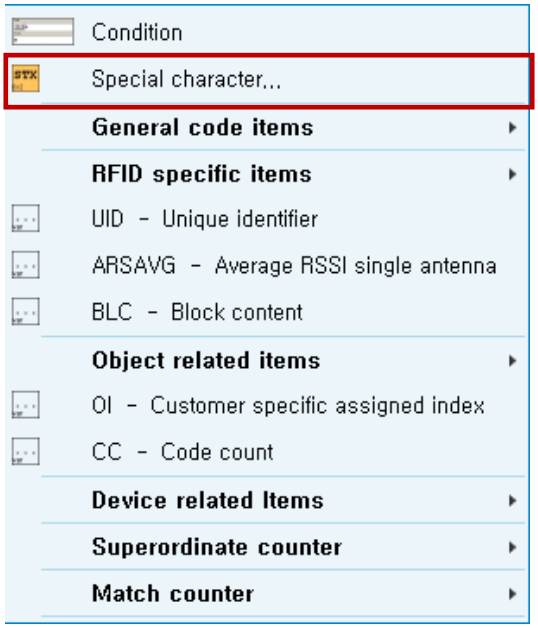
Block number - **Step 6** **start address**

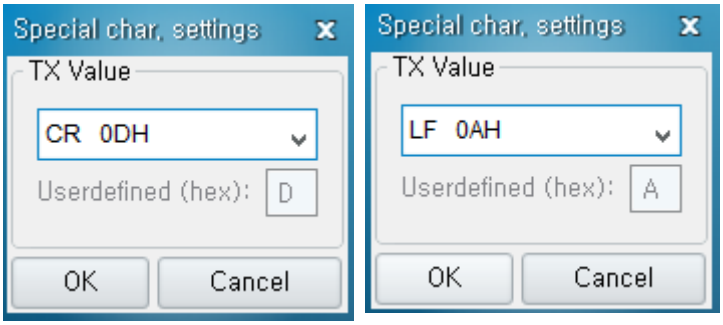
Block count - Number from the block number

Format – Communication format (Select ASCII)

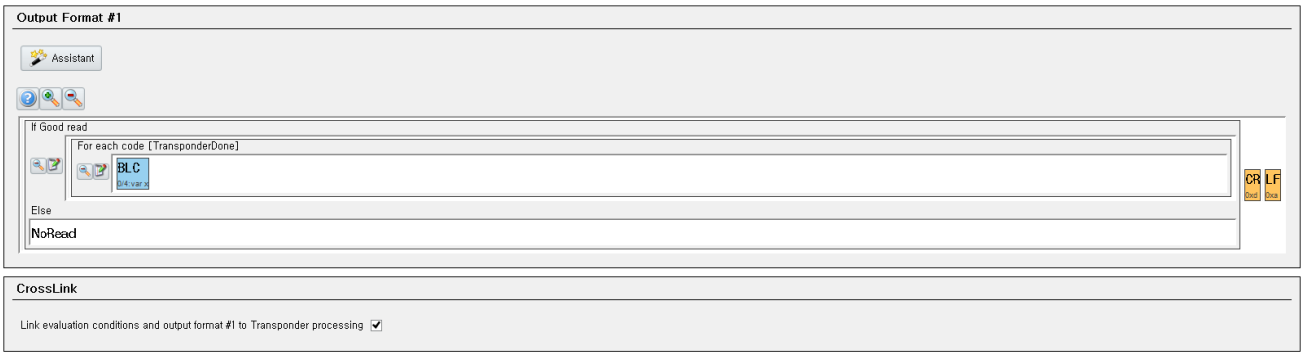
Step 8. OUTPUT FORMAT setting(2)

■add variable or constant





Select



In SOPAS program, it is possible to set up many types of data formats, but in TOP, it is developed with the above settings.

It does not support other kinds of data formats.

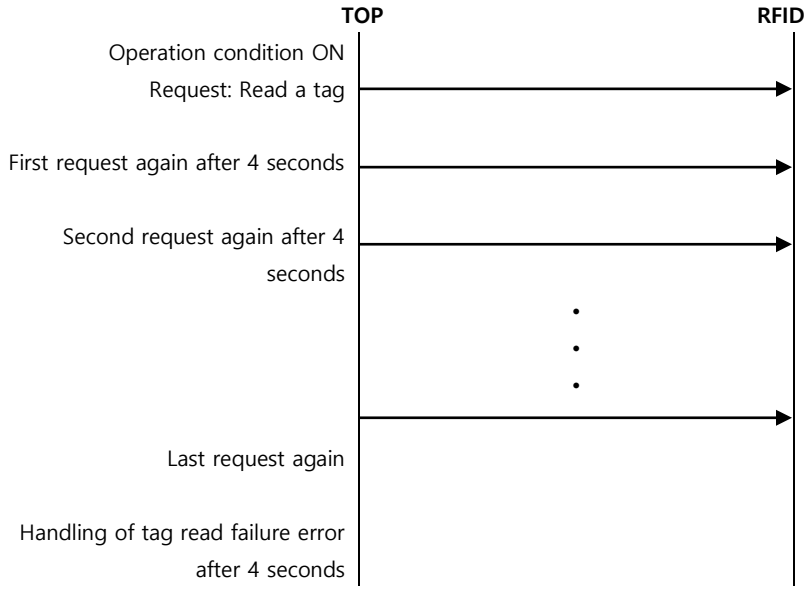
Appendix, Description on No tag, and tag read failure

1. Description on TOP operation of No tag, and tag read failure error situation

When the operation condition bit set by the user turns ON, TOP sends a tag read request to the RFID reader.
After that, if there is no response to the read request within the timeout set time from the RFID, a request is made again. This situation is the Tag Read Error message. After that, if there is no DATA (tag value) response within the timeout set time, it is the No Tag message.

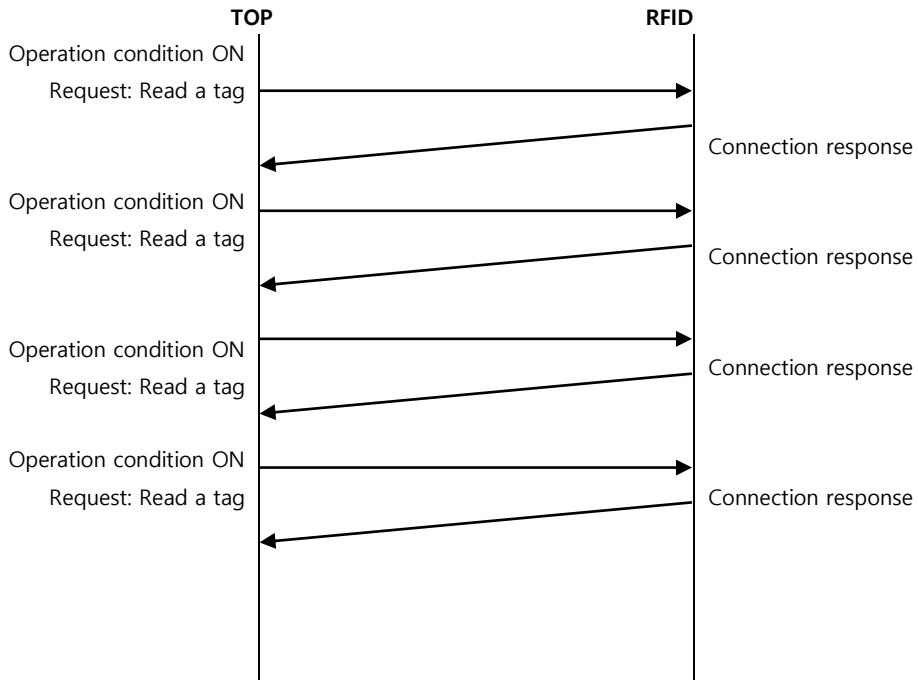
2. Tag Read Error message

(When TOP timeout is set to 4 seconds)



2. No Tag message(No tag), Example of data flow of the tag read failure error situation

(When TOP timeout is set to 4 seconds)



Request is attempted again in all cases other than normal response after tag read request, and OK Set Bit is ON when normal response processing is completed.