LS Industrial Systems Co., Ltd.
XCode RFID HF Reader Series
XCode RFID

Supported version	TOP Design Studio	V1.4.11.11 or higher

CONTENTS

We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

1. System configuration

The system configuration of TOP and "LS Industrial Systems – XCode RFID" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
XCode Series	XCode – 1307 XCode – 1306	RS 232 Port	RS–232C	3. TOP communication setting 4. External device setting	5.1. Cable table
		Terminal Block 4 Pin	RS–422		
		Terminal Block 4 Pin	RS–485		

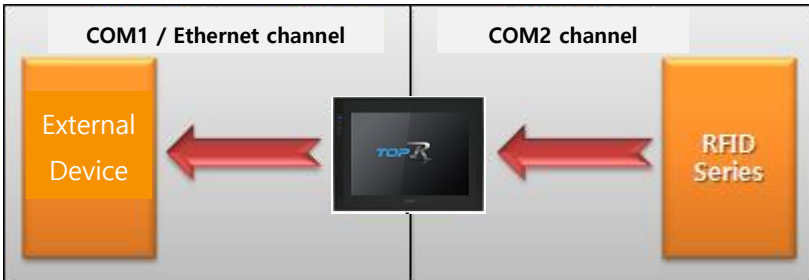### ■ Connection configuration

· 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422/485 communication.
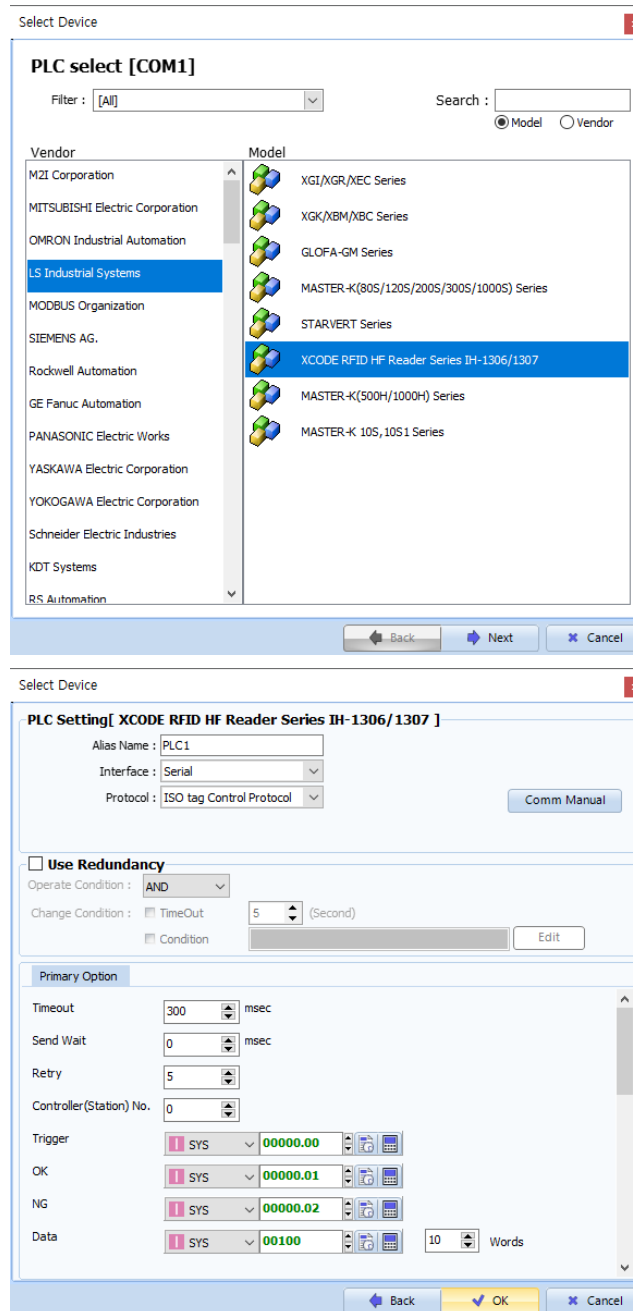

■ Driver Action Properties

If the driver option's trigger address (bit) is "on", it receives data from the XCode RFID HF Reader Series and forwards it to an external device connected to the COM1 / Ethernet channel.

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 "LS Industrial Systems".
	PLC	Select an external device to connect to TOP.

Model	Interface	Protocol
XCODE RFID HF Reader Series IH-1306/1307	Serial	ISO tag Control Protocol

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

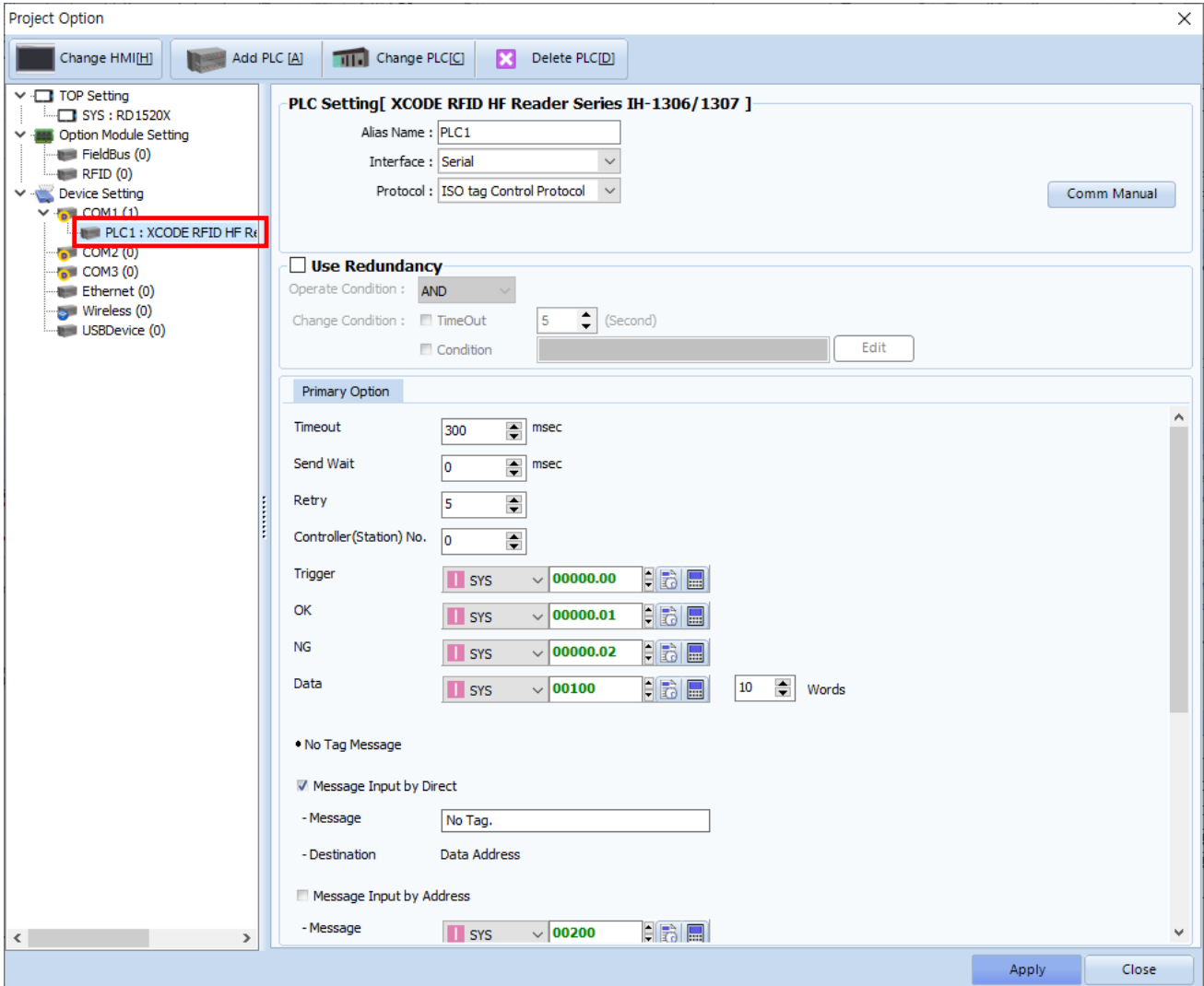– Set the TOP communication interface in TOP Design Studio.
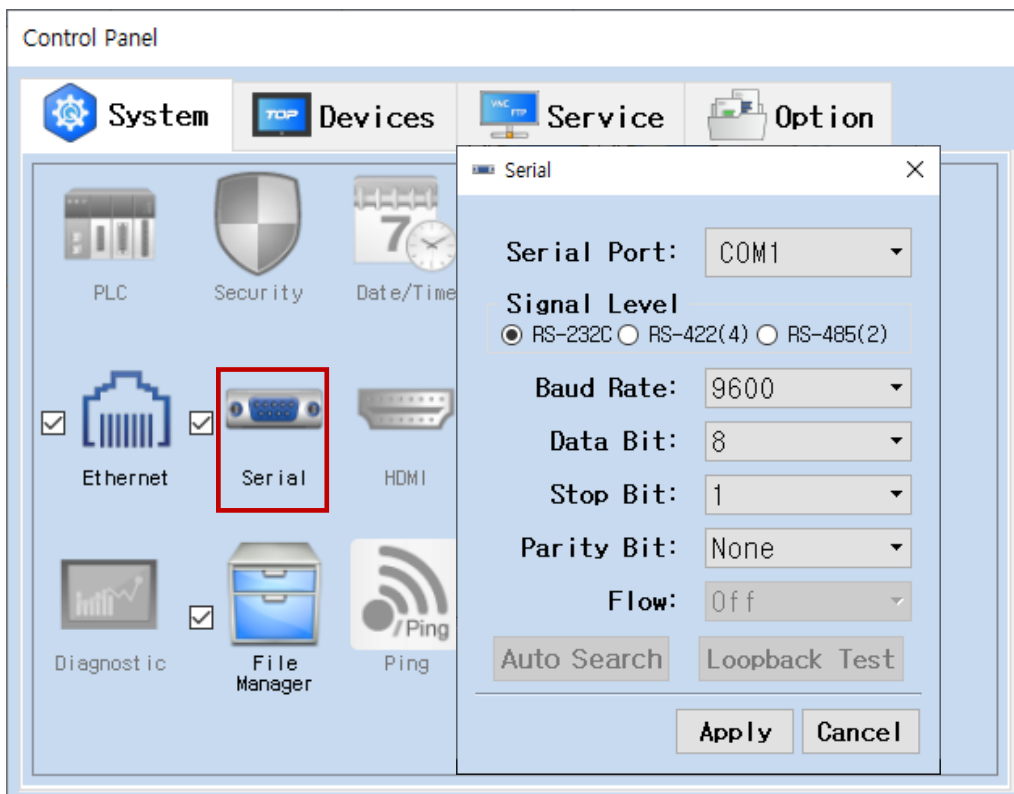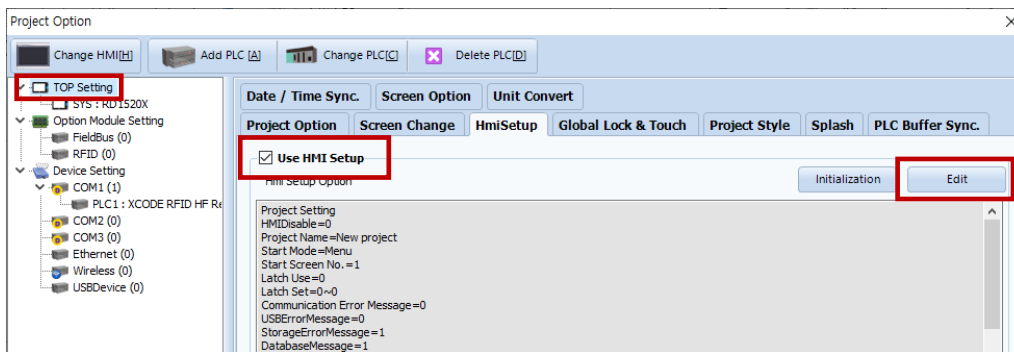
Items	TOP		External device	Remarks
Signal Level (port)	RS-232C/RS422/RS485		RS-232C/RS422/RS485	
Baud Rate	9600			
Data Bit	8			
Stop Bit	1			
Parity Bit	None			

* 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 Setting > COM > "XCODE RFID"]
  – Set the options of the communication driver in TOP Design Studio.

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.	

■ Communication interface setting

Items	Settings	Remarks
Read Command Set	Set the prefix of XCODE RFID.	
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.	Other PLC address use function

. ※ **No Tag 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		
Message Input by Address	Configure to enable or disable.	
Message	Message reference address	*Note 1)
Destination	Message input address	
Size	Configures the buffer size of the message reference/input address	Word

※ Tag Read Error 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		
Message Input by Address	Configure to enable or disable.	
Message	Message reference address	*Note 1)
Destination	Message input address	
Size	Configures the buffer size of the message reference/input address	Word

*Note 1) Only internal system buffer addresses can be used

※ Caution: The first word in the saved address is the address that stores the error code. It is marked 0x8000 without tag, 0x4000 with BCC error, 0x2000 with communication error, and 0x0001 with normal operation. The actual data storage address is saved from the following word.
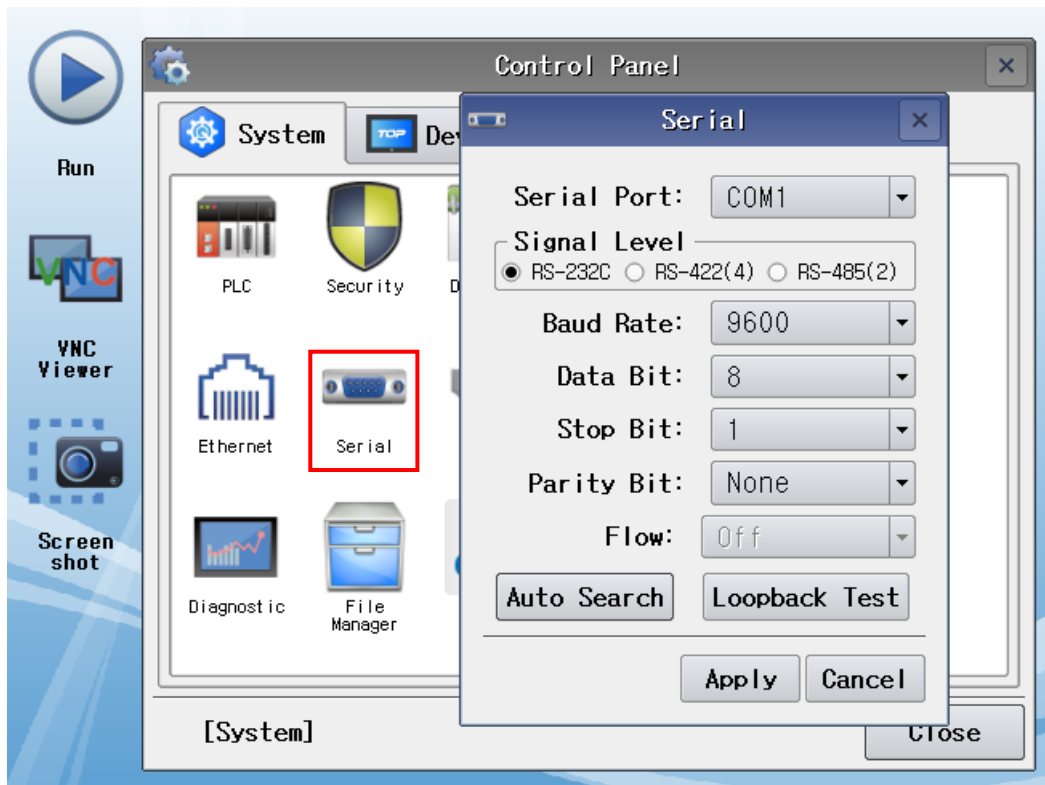
3.2. Communication setting in TOP

* 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 <u>drag</u> it down. Touch "EXIT" in the pop-up window to go to the main screen.
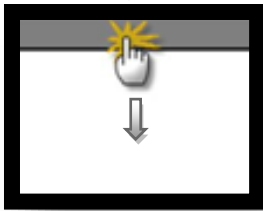
(1) Communication interface setting

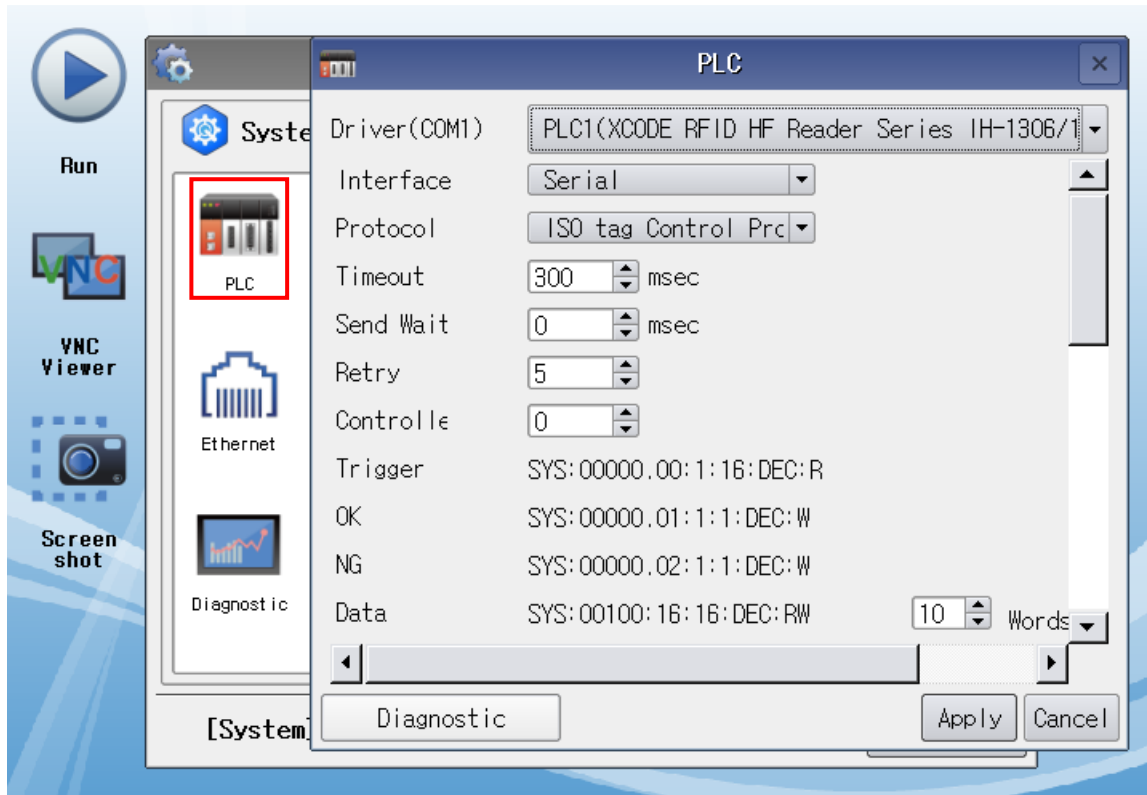■ [Main Screen > Control Panel > Serial]

Items	TOP	External device	Remarks
Signal Level (port)	RS-232C/RS422/RS485	RS-232C/RS422/RS485	
Baud Rate	9600		
Data Bit	8		
Stop Bit	1		
Parity Bit	None		

 * The above settings are setting <u>examples</u> 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.	

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
	Port in use		OK	NG	3. Communication setting
	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.

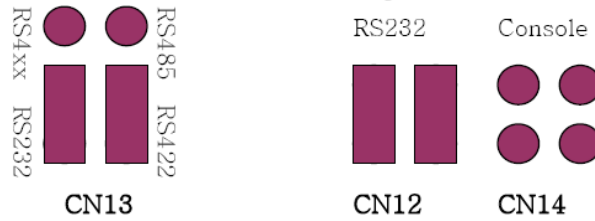LS XCode communication settings can be modified by altering the parameters.

For a more detailed setting method than described in this example, refer to the user manual of the external device.
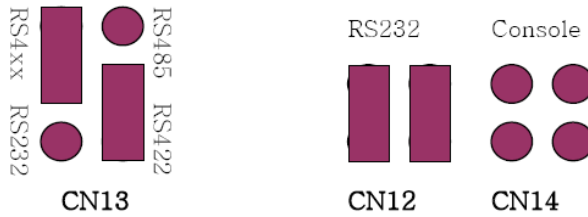
– Default Setting –

Baudrate	9600 [Bps]
Data Bit	8 [Bit]
Stop Bit	1 [Bit]
Parity	None
Data type	ASCII

– RS 232C / 422 / 485 Select DIP Switch –

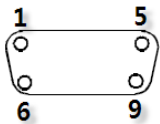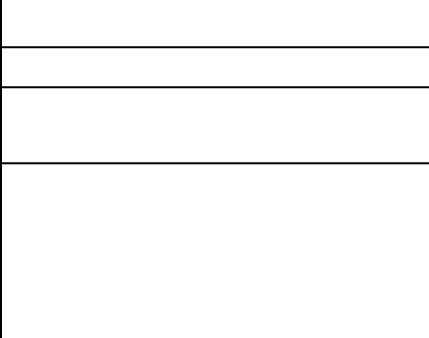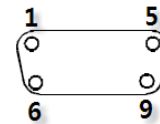| 1. For RS 232C communication |
|---|
| |
| 2. For RS 422 communication |
| |
| 3. For RS 485 communication |
| |
| 4. For Hyper terminal hardware setting |
| |
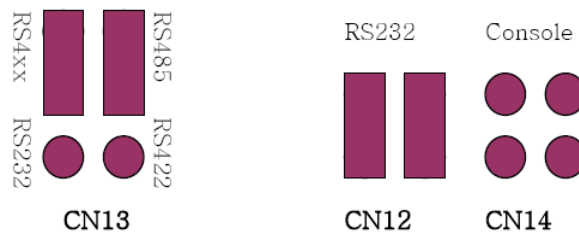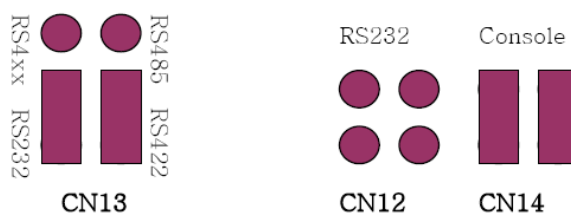
5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.
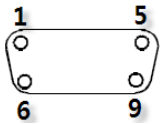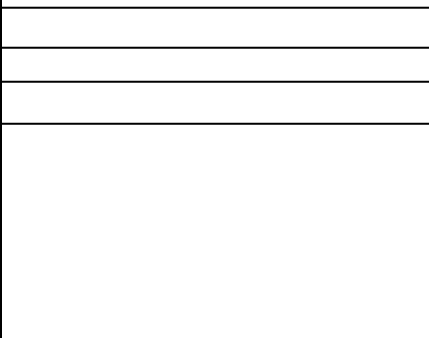
(The cable diagram described in this section may differ from the recommendations of "XCODE RFID")

■ RS232C

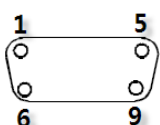| TOP COM			Cable connection	"XCode RFID		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
 1　5 6　9 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)						 1　5 6　9 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)
	RD	2		2	SD	
	SD	3		3	RD	
	SG	5		5	SG	

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

■ RS-422

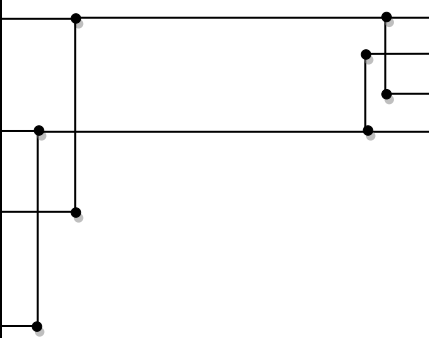| TOP COM			Cable connection	"XCode RFID"	
Pin arrangement*Note 1)	Signal name	Pin number		Signal name	Pin arrangement*Note 1)
 1　5 6　9 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	RDA	1		TXD+	 RDA RDB SDA SDB Based on communication cable connector front Terminal Block 4 Pin
	RDB	4		TXD-	
	SDA	6		RXD+	
	SDB	9		RXD-	

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

■ RS-485

TOP COM			Cable connection	"XCode RFID"	
Pin arrangement*Note 1)	Signal name	Pin number		Signal name	Pin arrangement*Note 1)
 1　5 6　9 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	RDA	1		TXD+	 RDA RDB SDA SDB Based on communication cable connector front Terminal Block 4 Pin
		2		TXD-	
		3		RXD+	
	RDB	4		RXD-	
		5			
	SDA	6			
		7			
		8			
	SDB	9			

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