

OPTICON

Barcode Scanner

Ethernet Driver

Supported version TOP Design Studio V1.4.10.20 or higher



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

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Describes how to set up communication for external devices.
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Describe the cable specifications required for connection.

1. System configuration

The system configuration of TOP and "OPTICON – Barcode Scanner" is as follows:

Series	Interface	Communication method	System setting	Cable
NLV-□□□□	Serial To Ethernet Converter	RS-232C	3. TOP communication setting 4. External device setting	5. Cable table

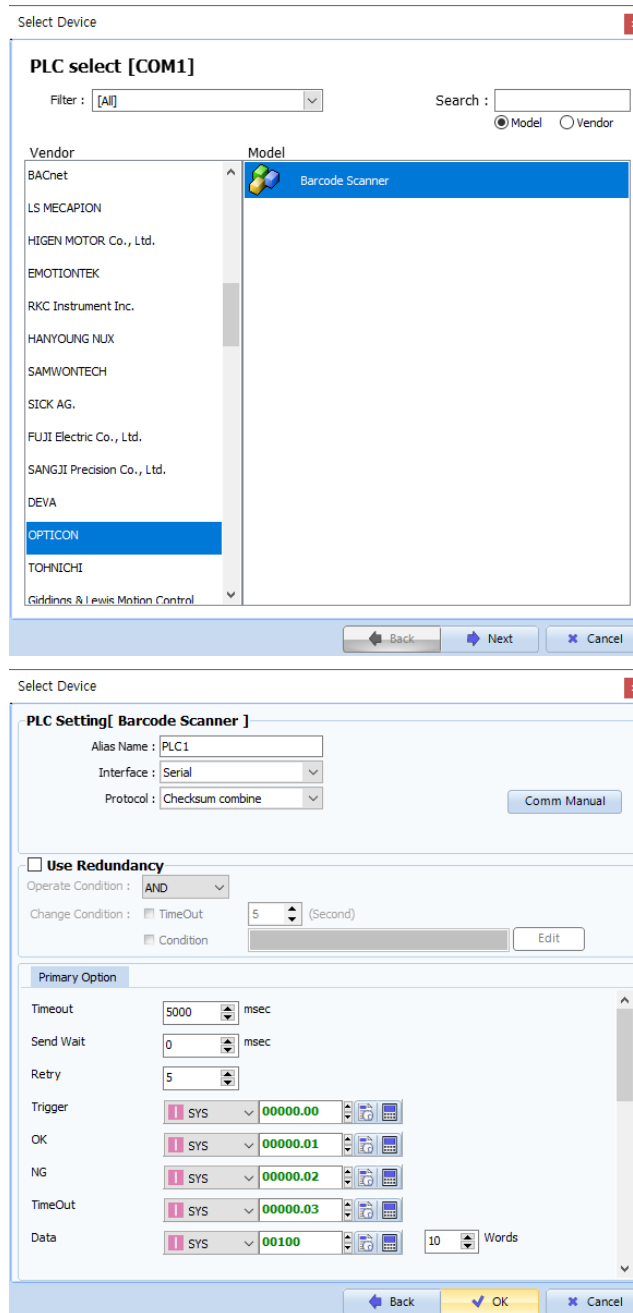
■ Connectable configuration

- 1:1 connection



2. External device selection

- Select a TOP model and a port, and then select an external device.



Settings		Contents					
TOP	Model	Select the TOP model.					
External device	Vendor	Select the vendor of the external device. Select "OPTICON".					
	Model	Select the external device to be connected to the TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: black; color: white;">Model</th> <th style="background-color: black; color: white;">Interface</th> <th style="background-color: black; color: white;">Protocol</th> </tr> </thead> <tbody> <tr> <td>Barcode Scanner</td> <td>Serial</td> <td>Checksum combine</td> </tr> </tbody> </table> <p>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.</p>	Model	Interface	Protocol	Barcode Scanner	Serial
Model	Interface	Protocol					
Barcode Scanner	Serial	Checksum combine					

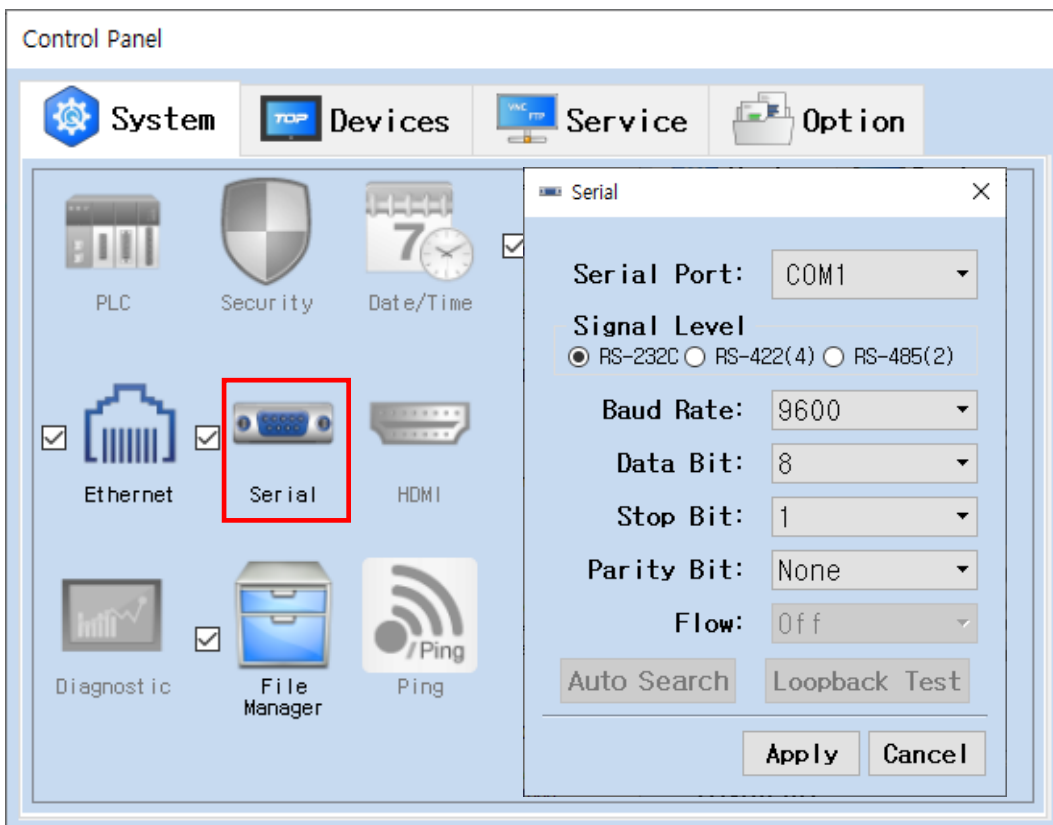
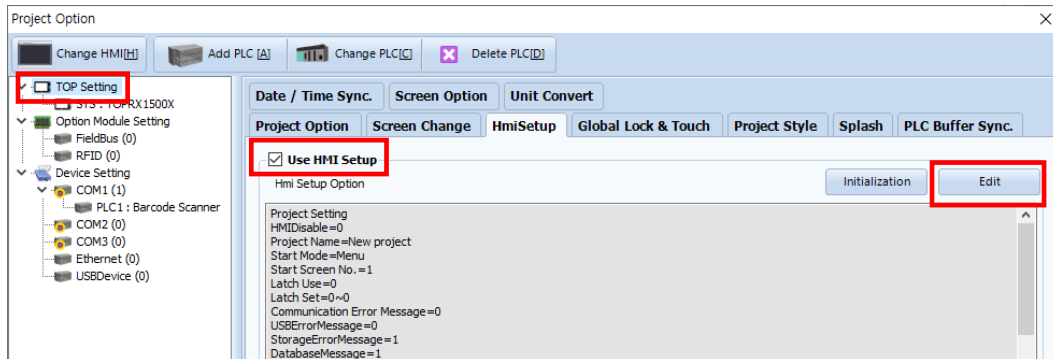
3. TOP communication setting

The communication can be set in TOP Design Studio or TOP system menu.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

- [Project] → [Property] → [TOP Setting] → [HMI Setup] → [Use HMI Setup Check] → [Edit] → [System] → [Serial]
 - Set the TOP communication interface in TOP Design Studio.

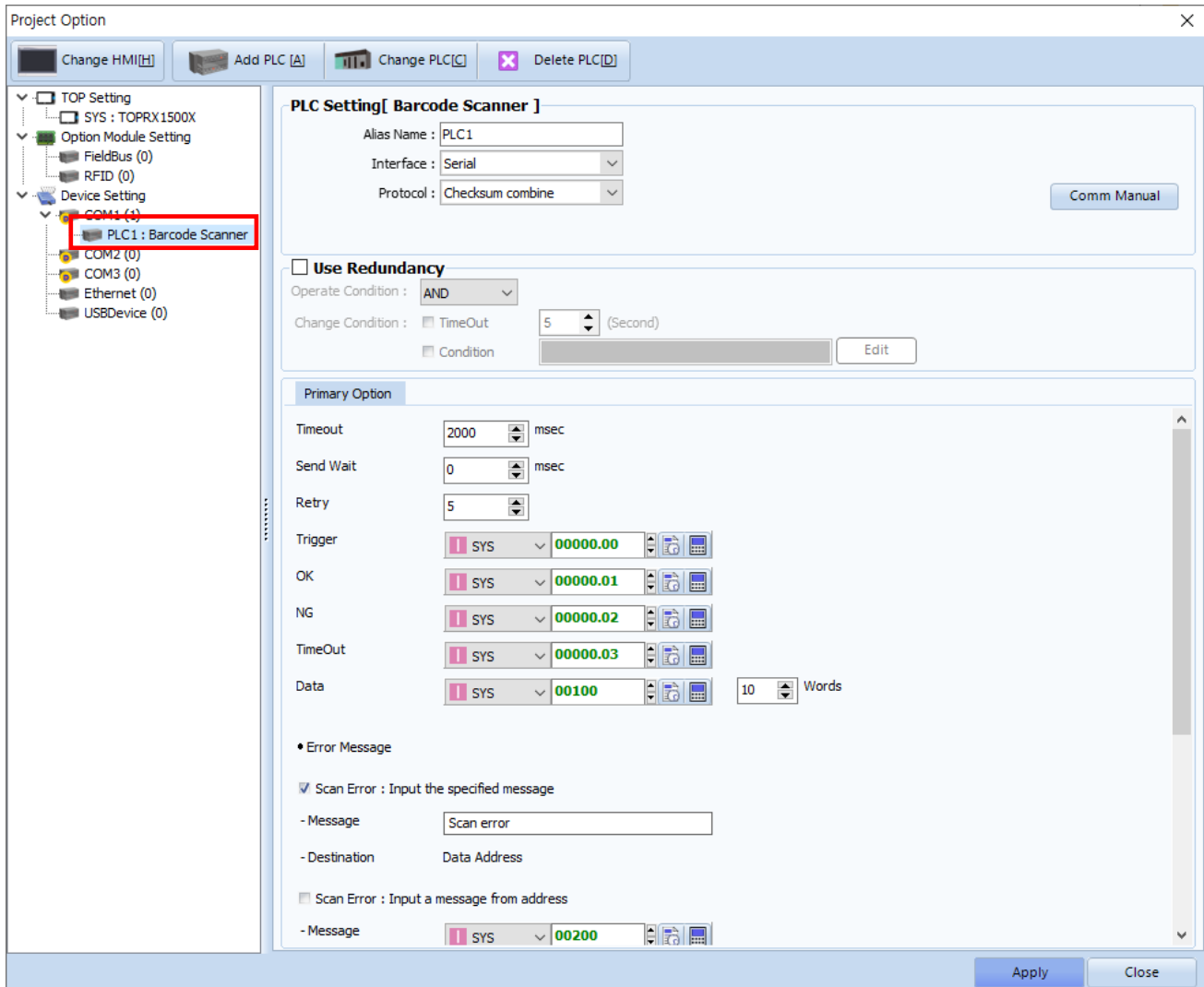


Items	TOP	External device	Remarks
Signal Level	RS-232C	RS-232C	
Baud Rate		9600	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device. (COM3 supports only RS-485.)
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 > COM1 > Barcode Scanner]
 - Set the options of the BACnet MS/TP communication driver in TOP Design Studio.



* The above settings are examples recommended by the company.

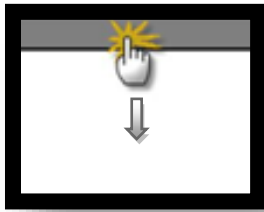
Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection" .
Protocol	Select the communication protocol between the TOP and an external device.	Refer to "2. External device selection" .
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	*Note 1)
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Retry	Configures the number of attempts for data reception upon failure.	
Trigger	Configures the Bit address for executing barcode scan.	
Success	Configures the enabled Bit address upon successful barcode scan.	
Error	Configures the enabled Bit address upon failed barcode scan.	
Data	Configures the address and word length for entering barcode data.	

*Note 1) Configure it to be longer than the receive latency of the barcode scanner.

3.2. Communication setting in TOP

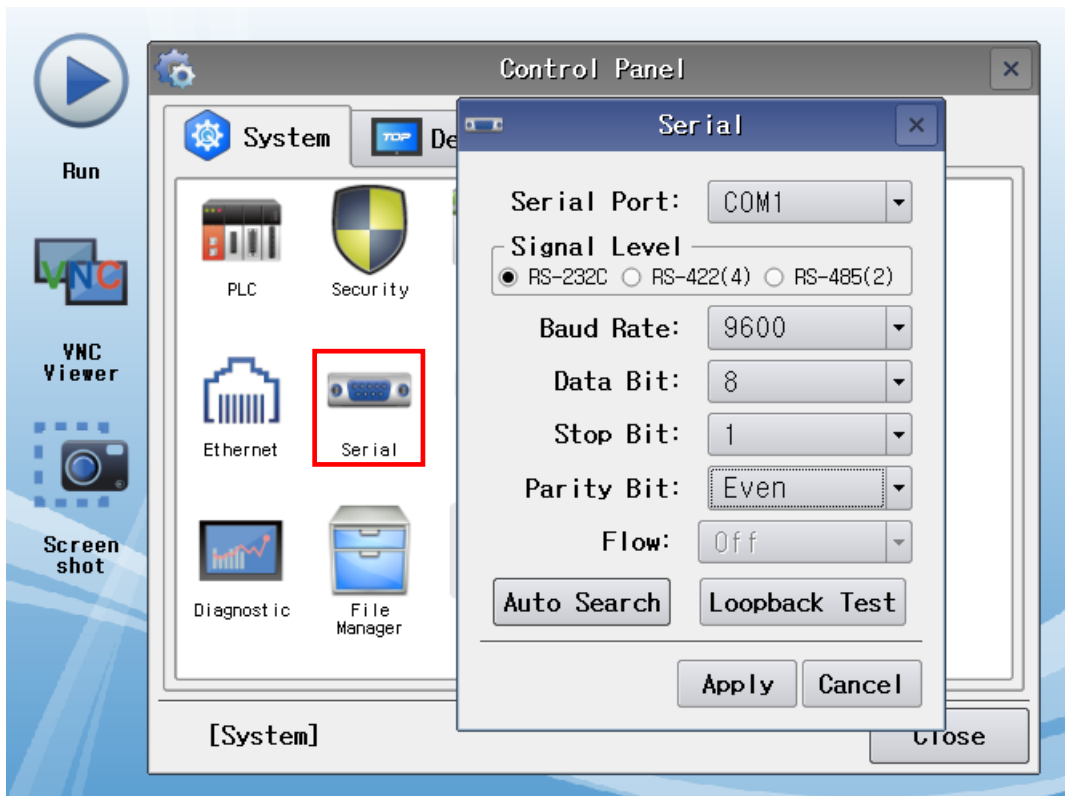
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ 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

■ [Control Panel] → [System] → [Serial]

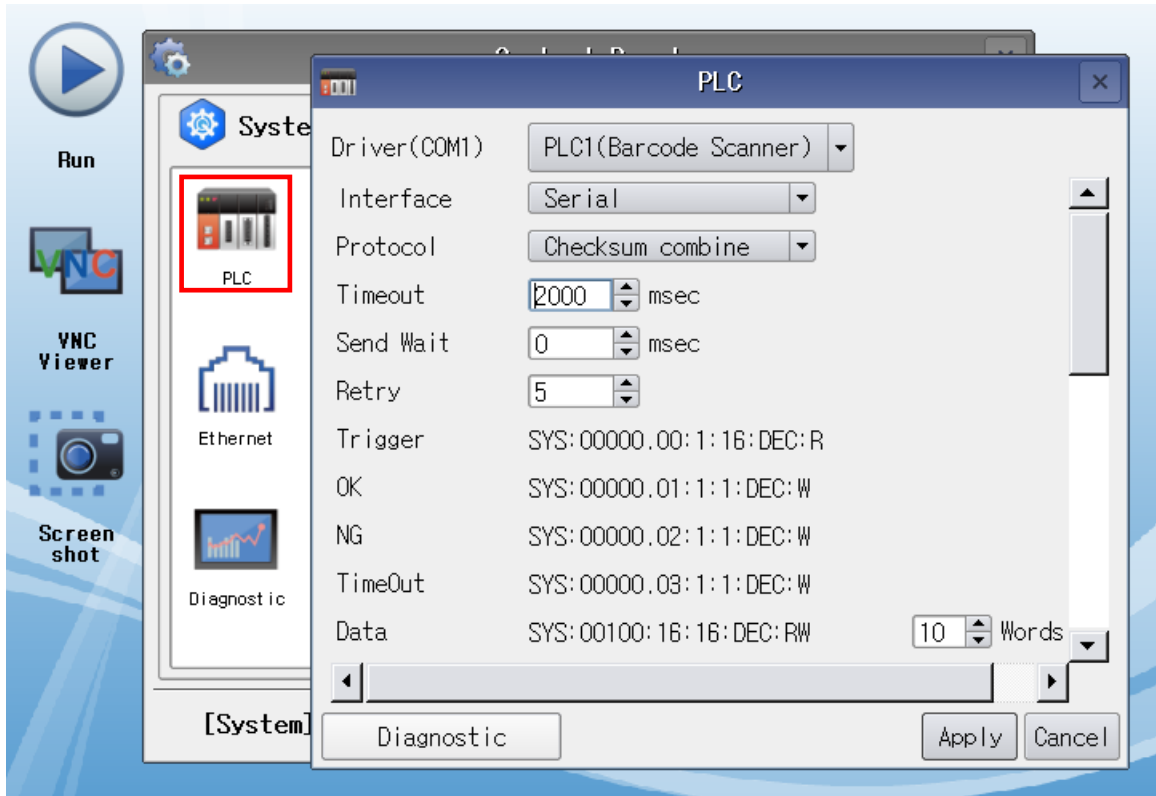


Items	TOP	External device	Remarks
Signal Level	RS-232C	RS-232C	
Baud Rate		9600	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device. (COM3 supports only RS-485.)
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

■ [Control Panel] → [System] → [PLC]



Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select 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.	*Note 1)
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Retry	Configures the number of attempts for data reception upon failure.	
Trigger	Configures the Bit address for executing barcode scan.	
Success	Configures the enabled Bit address upon successful barcode scan.	
Error	Configures the enabled Bit address upon failed barcode scan.	
Data	Configures the address and word length for entering barcode data.	

*Note 1) Configure it to be longer than the receive latency of the barcode scanner.

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 that the settings of the connected ports in [Control Panel] → [System] → [Serial] are the same as the settings of the external device.

- Diagnosis of whether the port communication is normal or not
 - Touch "Communication Diagnostics" in [Control Panel] → [System] → [PLC].
 - Check whether communication is connected or not.

Communication diagnostics succeeded	Communication setting normal
Error message	Communication setting abnormal - Check the cable, TOP, and external device settings. (Refer to 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.

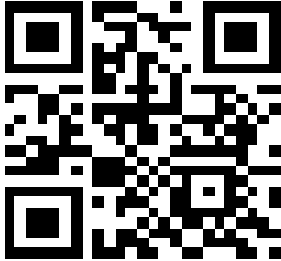
Items	Contents	Check		Remarks	
System configuration	How to connect the system	OK	NG	1. System configuration	
	Cable	OK	NG		
TOP	Version	OK	NG	2. External device selection 3. Communication setting	
	Communication port	OK	NG		
	Communication driver and protocol	OK	NG		
	Other detailed settings	OK	NG		
	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	OK	NG	4. External device setting	
	Communication port	OK	NG		
	Protocol	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		

4. External device setting

Configure the IP and port number of the external device by referring to the vendor's user manual.

Scan the following barcodes in order.

- Reset barcode scanner



- Data format settings



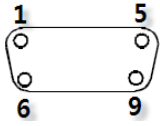
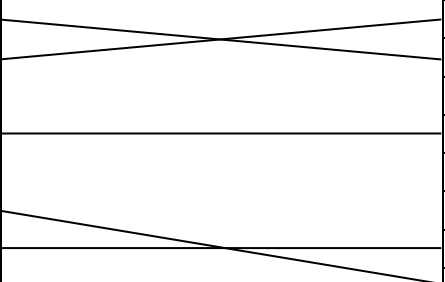
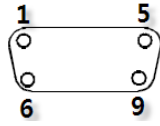
* Data format

	A	B	C
Part	Data size (Length)	Code data	Checksum
Length	2 bytes	N bytes	2 bytes
Description	Length of (A+B+C) Hex number	Code data (Read result)	Exclusive OR of (A+B) Hex number

5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.
 (The cable diagrams in this section may differ from the external device vendor's recommendations.)

■ RS-232C (1:1 connection)

TOP-R(X) (COM1)			Cable connection	External device			
Pin arrangement* Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement* Note 1)	
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>		1		1		 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	
		RD		2	2		RD
		SD		3	3		SD
				4	4		
		SG		5	5		SG
				6	6		
		+5V		7	7		
		GND		8	8		GND
				9	9		+5V

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