

FATEK Automation Corporation

FB Series

Computer Link Driver

Supported version

TOP Design Studio

V1.0 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".

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Describes the devices required for connection, the setting of each device, cables, and configurable systems.

2. External device selection [Page 4](#)

Select a TOP model and an external device.

3. TOP communication setting [Page 5](#)

Describes how to set the TOP communication.

4. External device setting [Page 10](#)

Describes how to set up communication for external devices.

5. Cable table [Page 11](#)

Describes the cable specifications required for connection.

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Refer to this section to check the addresses which can communicate with an external device.

1. System configuration

The system configuration of TOP and "FATEK Automation Corporation – FB Series Computer Link" is as follows.

Series	CPU	Link I/F	Communication method	System setting	Cable
FBs	FBs-□□MA/MC FBs-□□MN	Port 0 on CPU Unit	RS-232C	3. TOP communication setting 4. External device setting	5.1. Cable table 1
		FBs-CB2	RS-232C	3. TOP communication setting 4. External device setting	5.2. Cable table 2
		FBs-CB22 (Port 1)			
		FBs-CB25 (port 1)			
		FBs-CB25 (port 2)	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	5.5 Cable table 5
		FBs-CB5			
		FBs-CB55			
		FBs-CM22	RS-232C	3. TOP communication setting 4. External device setting	5.3. Cable table 3
		FBs-CM25 (Port 3)			
		FBs-CM25 (Port 4)	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	5.5 Cable table 5
		FBs-CM25E (Port 3)	RS-232C	3. TOP communication setting 4. External device setting	5.3. Cable table 3
		FBs-CM25E (Port 4)	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	5.5 Cable table 5
		FBs-CM55			
		FBs-CM55E			
		FBe FBn	FBe-□□MA	Port 0 on CPU Unit	RS-232C
RS-485 (2 Wire)	3. TOP communication setting 4. External device setting				5.5 Cable table 5
FBn-□□MC FBn-□□MCT	Port 0 on CPU Unit		RS-232C	3. TOP communication setting 4. External device setting	5.3. Cable table 3
			RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	5.5 Cable table 5

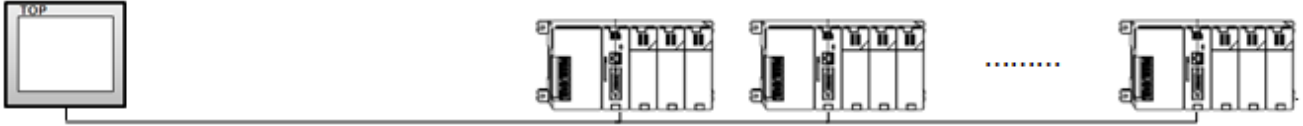
Series	CPU	Link I/F	Communication method	System setting	Cable
		Port 1 on CPU Unit	RS-232C	3. TOP communication setting 4. External device setting	5.4 Cable table 4
		Port 2 on CPU Unit	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	
		FB-DTBR (Port 0)	RS-232C	3. TOP communication setting 4. External device setting	5.3. Cable table 3
		FB-DTBR (Port 1)	RS-232C	3. TOP communication setting 4. External device setting	5.2. Cable table 2
		FB-DTBR (Port 2)	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	5.5 Cable table 5
		FB-DTBR-E (Port 0)	RS-232C	3. TOP communication setting 4. External device setting	5.3. Cable table 3
		FB-DTBR-E (Port 2)	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	5.5 Cable table 5

■ Connection configuration

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

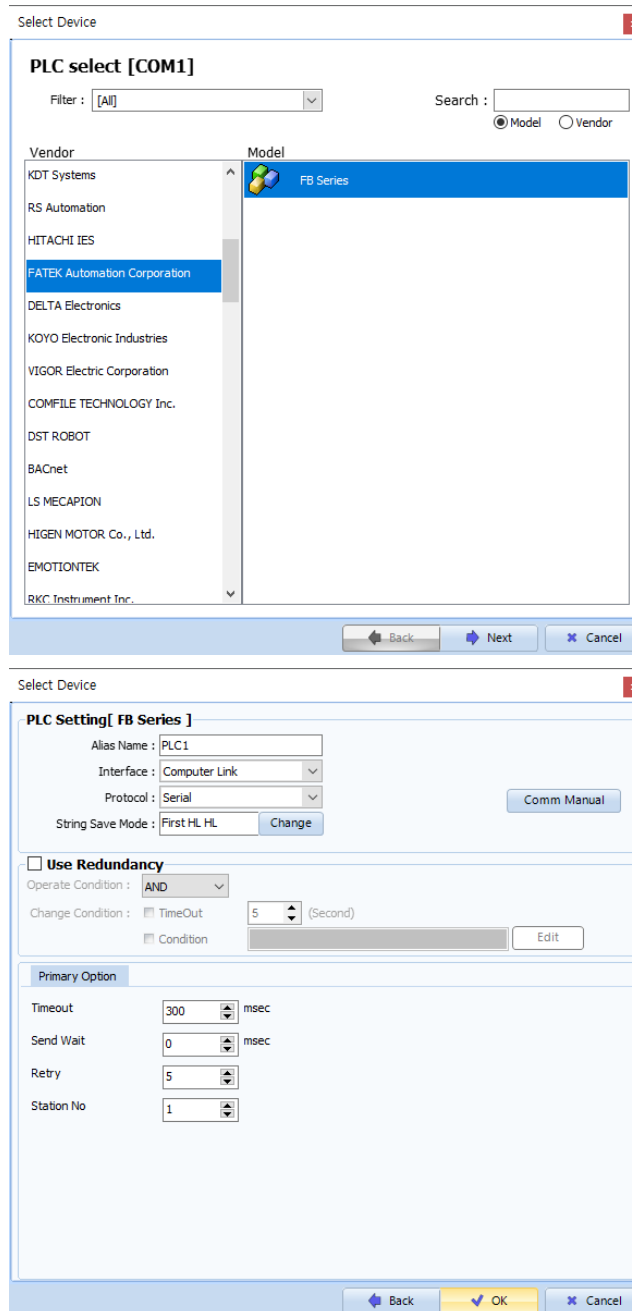


- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422 communication.



2. External device selection

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



Settings		Contents					
TOP	Model	Check the 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 "FATEK Automation Corporation".					
	PLC	Select an external device to connect to TOP. <table border="1" data-bbox="497 1825 1449 1904"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>FB Series</td> <td>Computer Link</td> <td>Serial</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	FB Series	Computer Link
Model	Interface	Protocol					
FB Series	Computer Link	Serial					

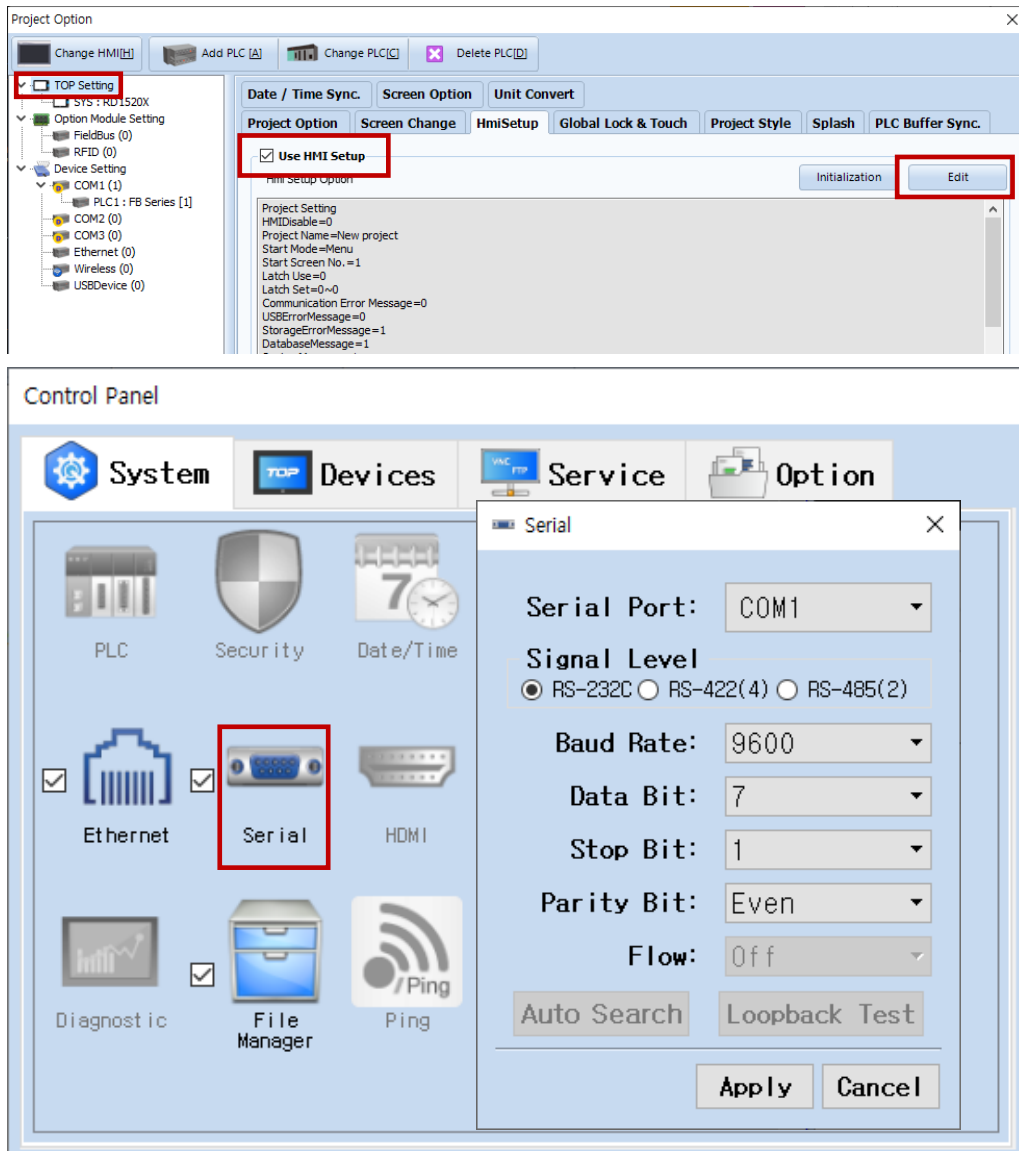
3. TOP communication setting

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-232C	RS-485	RS-232C RS-485	
Baud Rate	9600			
Data Bit	7			
Stop Bit	1			
Parity Bit	Even			

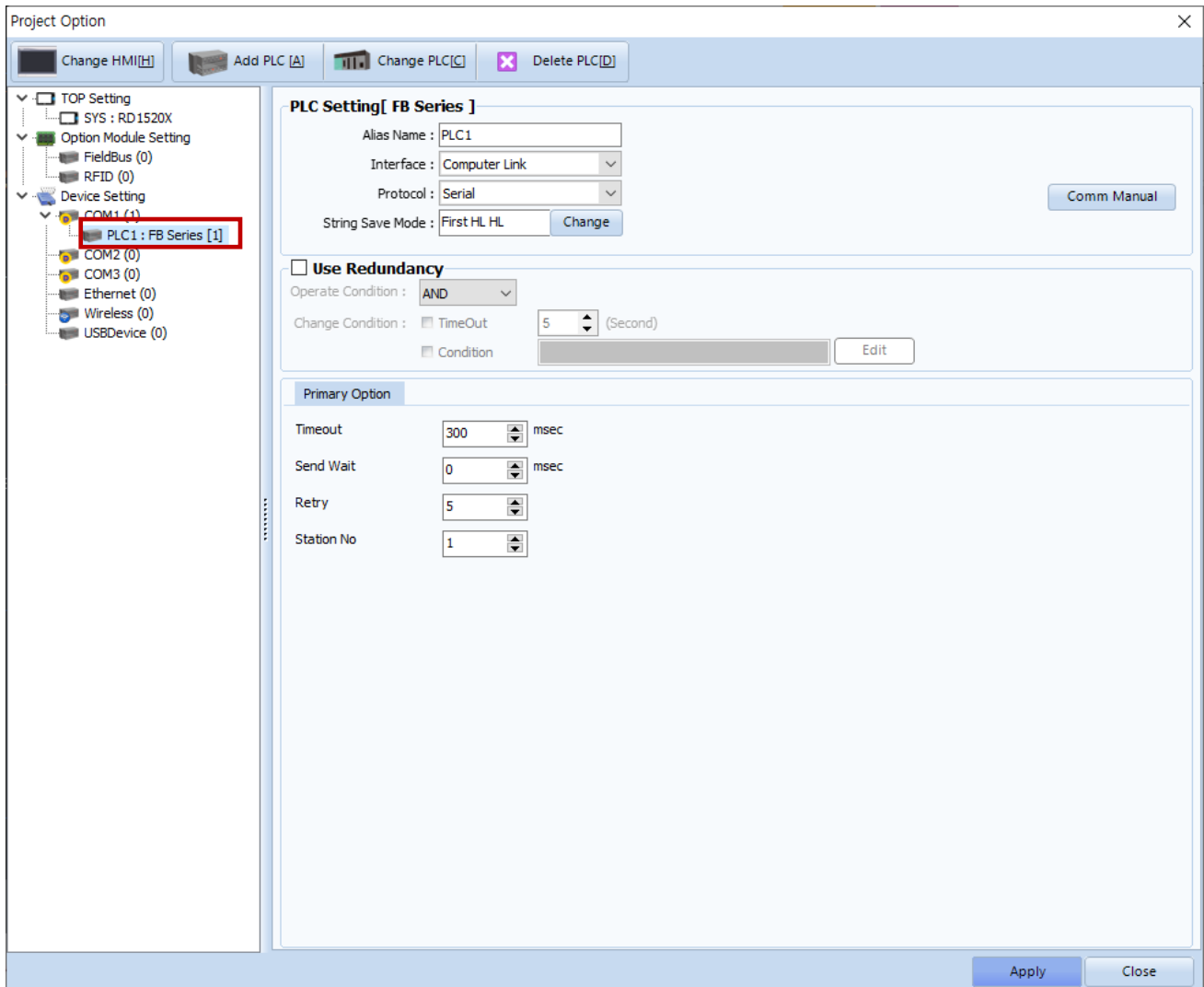
* The above settings are examples recommended by the company.

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 > PLC setting > COM1 > "PLC1: FB Series"]

– Set the options of the communication driver of FATEK Automation Corporation – FB Series Computer Link in TOP Design Studio.



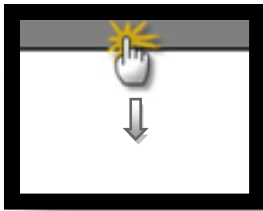
Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External device selection".
Protocol	Select "Serial".	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
Station No	Enter the prefix of an external device.	

※ If you use external device prefix 0, all devices on the connected track will respond. Use the designated prefix from 1 to 254 to operate only the relevant number.

3.2. Communication setting in TOP

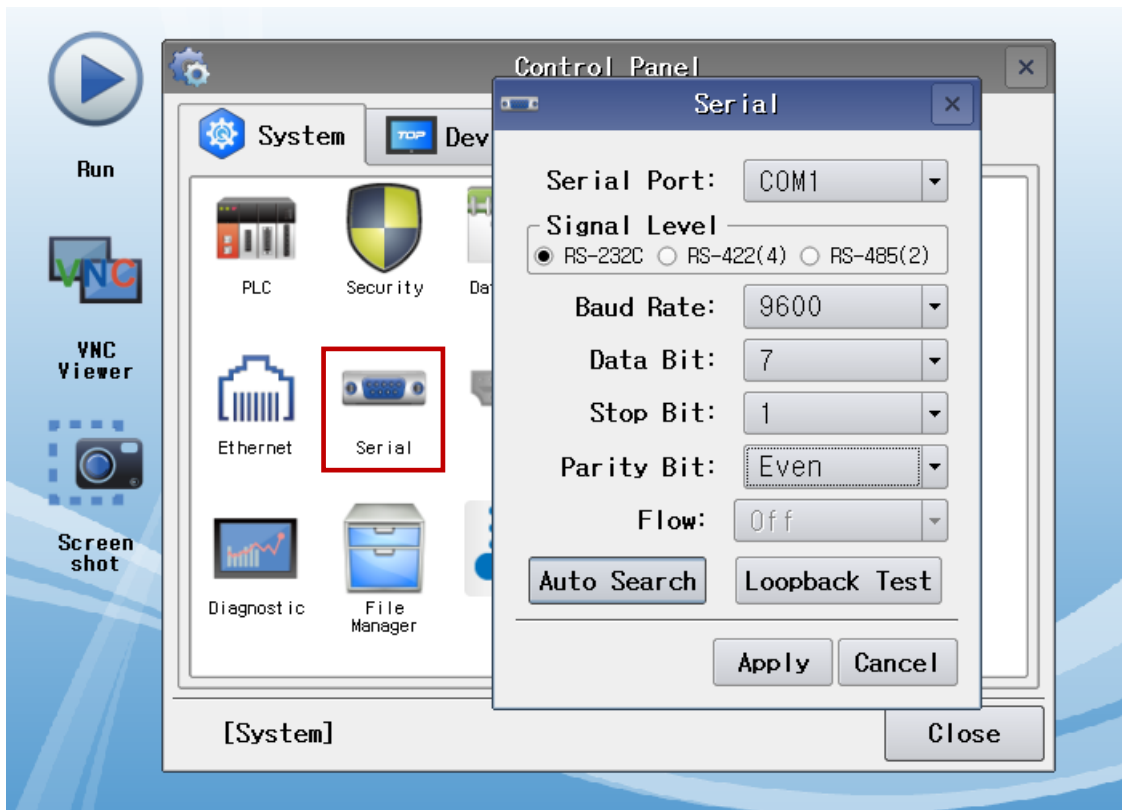
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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]



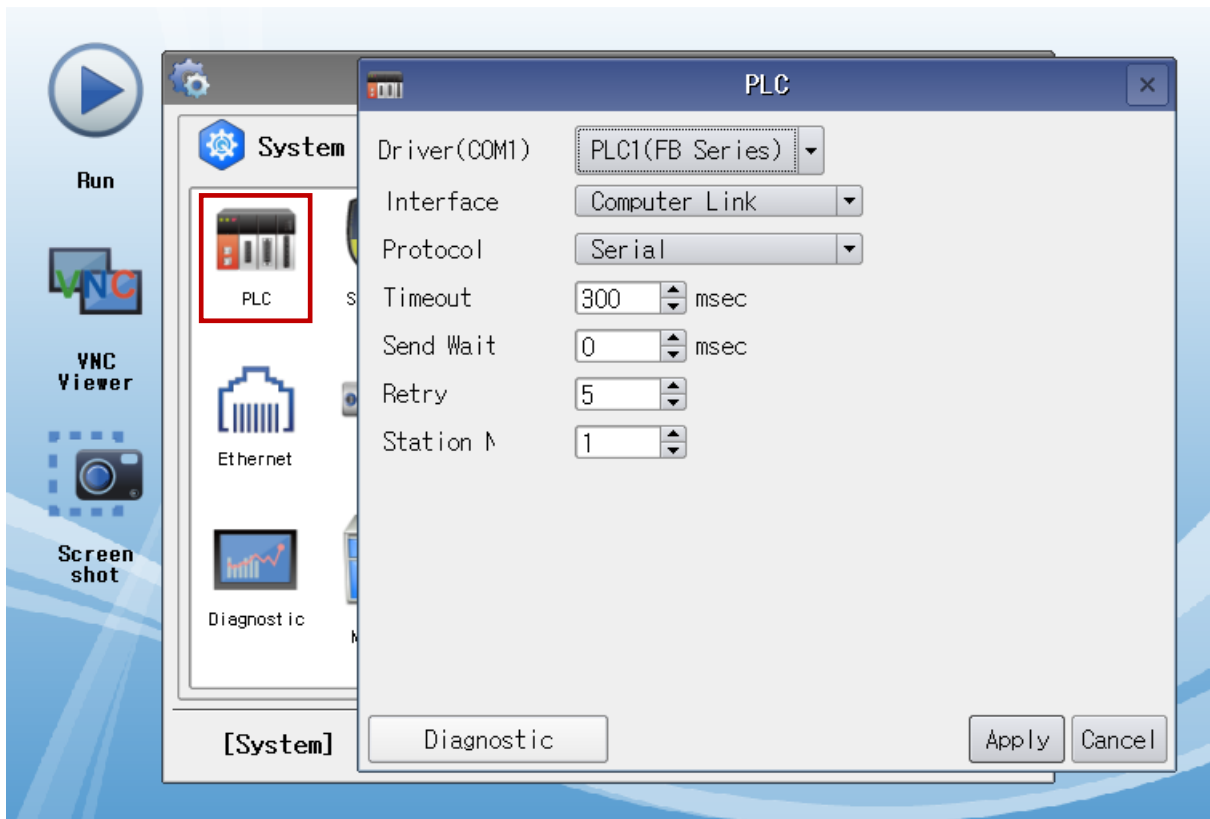
Items	TOP		External device	Remarks
Signal Level (port)	RS-232C	RS-485	RS-232C RS-485	
Baud Rate	9600			
Data Bit	7			
Stop Bit	1			
Parity Bit	Even			

* 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 "Computer Link".	Refer to "2. External device selection".
Protocol	Select "Serial".	
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.	
Station No	Enter the prefix of an external device.	

※ If you use external device prefix 0, all devices on the connected track will respond. Use the designated prefix from 1 to 254 to operate only the relevant number.

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 whether the port (COM1/COM2/COM3) settings you want to use are the same as those of the external device in [Control panel > Serial].

- 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

Use "FB Series" Ladder Software "WinProladder" to set as follows. After downloading the settings, reboot the power of the external device.

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

■ When using Port 0

The serial parameters of the corresponding port is fixed as the target setting value of TOP communication setting example. (9600bps / 7bit / 1bit / Even parity)

■ When using Port 1

1. Select the "[Setting] – [Port 1 Parameter]" route in the PLC menu of "Ladder Software "WinProladder" to display the [Comm. Parameter Setting] Dialog box.

2. Set as follows in the [Comm. Parameter Setting] Dialog box.

Items	Settings	Remarks
Communication speed	9600 bps	
Data Bit	7 bit	
Stop Bit	1 bit	
Parity Bit	Even	

■ When using Port 2

1. Select the "[Setting] – [Port 2 Parameter]" route in the PLC menu of "Ladder Software "WinProladder" to display the [Comm. Parameter Setting] Dialog box.

2. Set as follows in the [Comm. Parameter Setting] Dialog box.

Items	Settings	Remarks
Communication speed	9600 bps	
Data Bit	7 bit	
Stop Bit	1 bit	
Parity Bit	Even	

■ When using Port 3

1. Select the "[Setting] – [Port 3 Parameter]" route in the PLC menu of "Ladder Software "WinProladder" to display the [Comm. Parameter Setting] Dialog box.

2. Set as follows in the [Comm. Parameter Setting] Dialog box.

Items	Settings	Remarks
Communication speed	9600 bps	
Data Bit	7 bit	
Stop Bit	1 bit	
Parity Bit	Even	

■ When using Port 4

1. Select the "[Setting] – [Port 4 Parameter]" route in the PLC menu of "Ladder Software "WinProladder" to display the [Comm. Parameter Setting] Dialog box.

2. Set as follows in the [Comm. Parameter Setting] Dialog box.

Items	Settings	Remarks
Communication speed	9600 bps	
Data Bit	7 bit	
Stop Bit	1 bit	
Parity Bit	Even	

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 "FATEK Automation Corporation")

5.1 Cable table 1 (FBs Series - Port 0 on CPU Unit)



It is recommended to use a cable dedicated to **FBs-232P0-9F-150** (FATEK Automation Corporation Port0).

■ RS-232C (1:1 connection)

COM1 / COM2			Cable connection	PLC		
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>	CD	1		1	GND	<p>Based on communication cable connector front, D-SUB 4 Pin male (male, convex)</p>
	RD	2		2	RXD	
	SD	3		3	—	
	DTR	4		4	TXD	
	SG	5				
	DSR	6				
	RTS	7				
	CTS	8				
		9				

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

5.2 Cable table 2 (FBs-CB2, FBs-CB22(Port1), FBs-CB25(Port1), FB-DTBR(Port1))

■ RS-232C (1:1 connection)

COM1 / COM2			Cable connection	PLC		
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>	CD	1		1	CD	<p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>
	RD	2		2	TXD	
	SD	3		3	RXD	
	DTR	4		4	DTR	
	SG	5		5	SG	
	DSR	6		6	DSR	
	RTS	7		7	RTS	
	CTS	8		8	CTS	
		9		9		

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

5.3 Cable table 3 (FBs-CM22, FBs-CM25(Port3), FBe/FBn – Port 0 on CPU Unit, FB-DTBR(Port0))

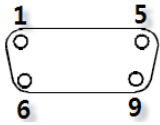
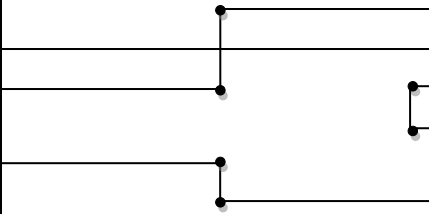
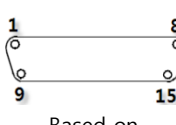
■ RS-232C (1:1 connection)

COM1 / COM2			Cable connection	PLC		
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>	CD	1		1	CD	<p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>
	RD	2		2	TXD	
	SD	3		3	RXD	
	DTR	4		4	DTR	
	SG	5		5	SG	
	DSR	6		6	DSR	
	RTS	7		7	RTS	
	CTS	8		8	CTS	
		9		9		

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

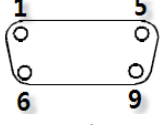
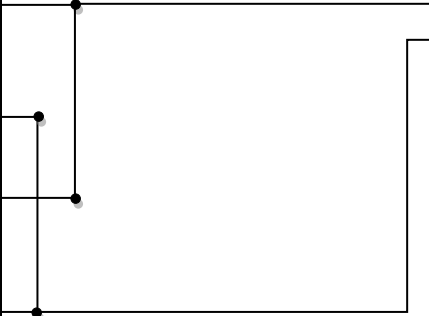
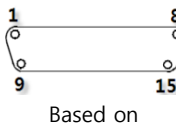
5.4 Cable table 4 (FBe/FBn Series – Port1/2 on CPU Unit)

■ RS-232C (1:1 connection)

COM1 / COM2			Cable connection	PLC		
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>	CD	1		1	RXD	 <p>Based on communication cable connector front, D-SUB 15 Pin male (male, convex)</p>
	RD	2		2	TXD	
	SD	3		3	RTS	
	DTR	4		4	CTS	
	SG	5		5		
	DSR	6		6	SG	
	RTS	7		7		
	CTS	8		8		
				9	9	



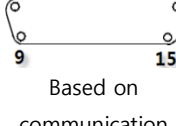
***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 (1:1 connection)

COM1 / COM2			Cable connection	PLC			
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>	RDA	1		5	D+	 <p>Based on communication cable connector front, D-SUB 9 Pin female (male, convex)</p>	
				2			
				3			
	RDB	4					
				5			
	SDA	6					
				7			
				8			
	SDB	9					

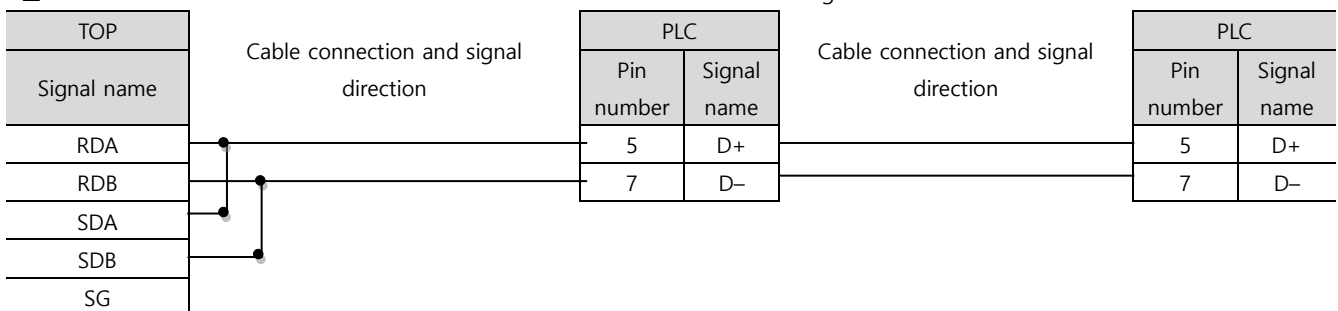
***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 (1:1 connection)

COM3		Cable connection	PLC		
Pin arrangement	Signal name		Pin number	Signal name	Pin arrangement* Note 1)
	+		5	D+	 <p>Based on communication cable connector front, D-SUB 9 Pin female (male, convex)</p>
	-		7	D-	
	SG				

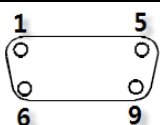
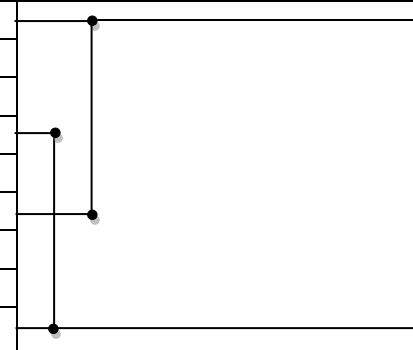
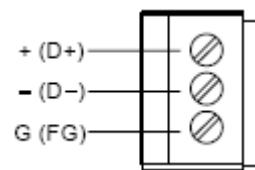
***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 1 : N connection - Refer to 1:1 connection to connect in the following method.



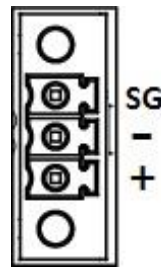
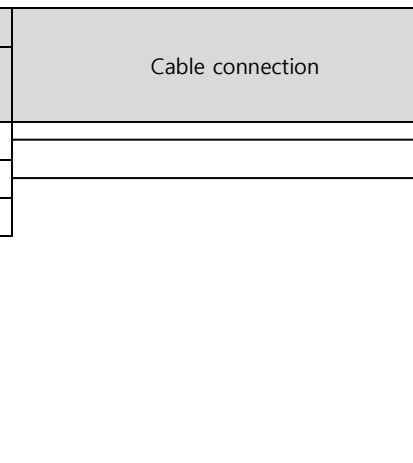
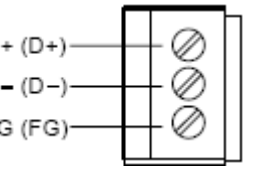
5.5 Cable table 5 (FB Series – RS-485)

■ RS-485 (1:1 connection)

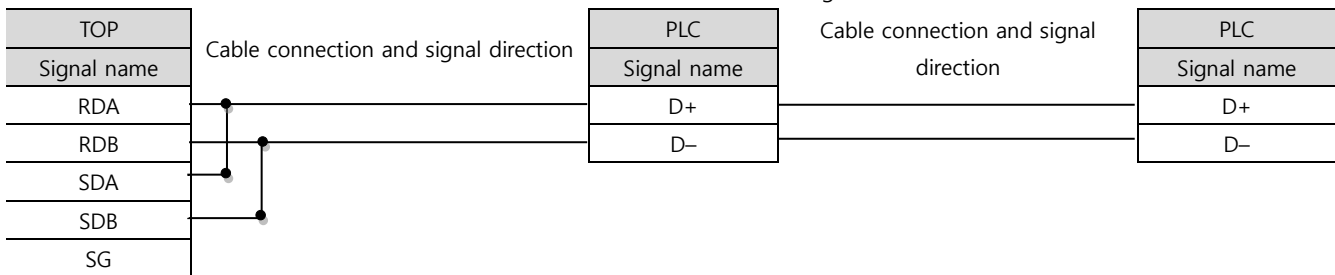
COM1 / COM2			Cable connection	PLC		
Pin arrangement* <i>Note 1)</i>	Signal name	Pin number		Signal name	Pin arrangement	
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	RDA	1		D+	 <p>Terminal Block 3 Pin</p>	
		2				D-
			3			
	RDB	4				
		5				
	SDA	6				
		7				
		8				
	SDB	9				

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

■ RS-485 (1:1 connection)

COM3		Cable connection	PLC	
Pin arrangement	Signal name		Signal name	Pin arrangement
	+		D+	 <p>Terminal Block 3 Pin</p>
	-		D-	
	SG			

■ RS-485 1 : N connection - Refer to 1:1 connection to connect in the following method.



6. Supported addresses

The devices available in TOP are as follows:

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.

Device	Bit Address	Word Address	32 Bits	Remarks
Input relay	X000 ~ X255	WX000 ~ WX240	L/H	
Output relay	Y000 ~ Y255	WY000 ~ WY240		
Step relay	S000 ~ S999	WS000 ~ WS976		
Internal relay	M0000 ~ M1911	WM0000 ~ WM1888		
Special relay	M1912 ~ M2001	WM1912 ~ WM1976		
Timer(Contact)	T000 ~ T255	WT000 ~ WT240		
Counter(Contact)	C000 ~ C255	WC000 ~ WC240		
Timer(Current value)	TMR000.00 ~ TMR255.15	TMR000 ~ TMR255		
Counter(Current value)	CTR000.00 ~ CTR199.15	CTR000 ~ CTR199		
	——	CTR200 ~ CTR255		
Data register	R00000.00 ~ R65535.15	R00000 ~ R65535		
Data register	D00000.00 ~ D65535.15	D00000 ~ D65535		