# **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".

#### 1. System configuration

#### Page 2

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.

#### Page 10

Describes how to set up communication for external devices.

#### 5. Cable table

#### Page 11

Describes the cable specifications required for connection.

#### 6. Supported addresses

4. External device setting

#### Page 14

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

					한민국대표 터치패널
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	
		Port 2 on CPU Unit	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	<u>5.4 Cable table 4</u>
		FB-DTBR <b>(Port 0)</b>	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 <b>(Port 0)</b>	RS-232C	3. TOP communication setting 4. External device setting	5.3. Cable table 3
		FB-DTBR–E <b>(Port 2)</b>	RS-485 (2 Wire)	3. TOP communication setting 4. External device setting	5.5 Cable table 5



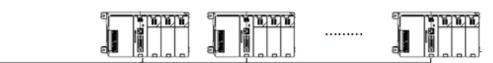
#### ■ Connection configuration

• 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.

PLC select [CO	DM1]				
Filter : [All]		$\sim$		Search :	
				Mode	() Vendor
Vendor		Model			
KDT Systems	-	` 🜮 FB S	eries		
RS Automation					
HITACHI IES	- 1				
FATEK Automation Corp	oration				
DELTA Electronics					
KOYO Electronic Industr	ries				
VIGOR Electric Corporat	tion				
COMFILE TECHNOLOGY	Inc.				
DST ROBOT					
BACnet					
LS MECAPION					
HIGEN MOTOR Co., Ltd					
EMOTIONTEK					
		,			
RKC Instrument Inc.	_	-			
PLC Setting[ FB Se	eries 1				
Alias Name					
Alias Name Interface		k v			
	: PLC1 : Computer Lin	k ~		Co	mm Manual
Interface	: PLC1 : Computer Lin : Serial			Co	mm Manual
Interface Protocol String Save Mode	: PLC1 : Computer Lin : Serial : First HL HL	~		Co	mm Manual
Interface Protocol	: PLC1 : Computer Lin : Serial : First HL HL	Change		Co	mm Manual
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition :	: PLC1 : Computer Lin : Serial : First HL HL : ND V TimeOut	~	econd)		
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition :	: PLC1 : Computer Lin : Serial : First HL HL	Change	econd)		mm Manual
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition :	: PLC1 : Computer Lin : Serial : First HL HL : ND V TimeOut	Change	scond)		
Interface Protocol String Save Mode Use Redundance Operate Condition : Change Condition :	: PLC1 : Computer Lin : Serial : First HL HL Y ND ~ 1 TimeOut 1 Condition	Change	econd)		
Interface Protocol String Save Mode	: PLC1 : Computer Lin : Serial : First HL HL V ND ~ 1 TimeOut 1 Condition 300	Change	econd)		
Interface Protocol String Save Mode Use Redundance Operate Condition : Change Condition : Primary Option Timeout	: PLC1 : Computer Lin : Serial : First HL HL V ND ~ 1 TimeOut 1 Condition 300	Change	ccond)		
Interface Protocol String Save Mode	ELC1           Computer Lin           Esrial           First HL HL           Y           ND           ImeOut           Condition           300           5           5	Change	ccond)		
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition : C Primary Option Timeout Send Wait Retry	ELC1           Computer Lin           Esrial           First HL HL           Y           ND           ImeOut           Condition           300           5           5	Change	ccond)		
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition : C Primary Option Timeout Send Wait Retry	ELC1           Computer Lin           Esrial           First HL HL           Y           ND           ImeOut           Condition           300           5           5	Change	scond)		
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition : C Primary Option Timeout Send Wait Retry	ELC1           Computer Lin           Esrial           First HL HL           Y           ND           ImeOut           Condition           300           5           5	Change	cond)		
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition : C Primary Option Timeout Send Wait Retry	ELC1           Computer Lin           Esrial           First HL HL           Y           ND           ImeOut           Condition           300           5           5	Change	ccond)		
Interface Protocol String Save Mode Use Redundance Operate Condition : A Change Condition : P Primary Option Timeout Send Wait Retry	ELC1           Computer Lin           Esrial           First HL HL           Y           ND           ImeOut           Condition           300           5           5	Change	ccond)		

Sett	tings		Contents			
ТОР	Model	Check the TOP display	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	Select an external device to connect to TOP.			
		Model	Model Interface Protocol			
		FB Series	FB Series Computer Link Serial			
		-	m configuration in Chapter 1 to ose system can be configured.	see if the external device you want to		



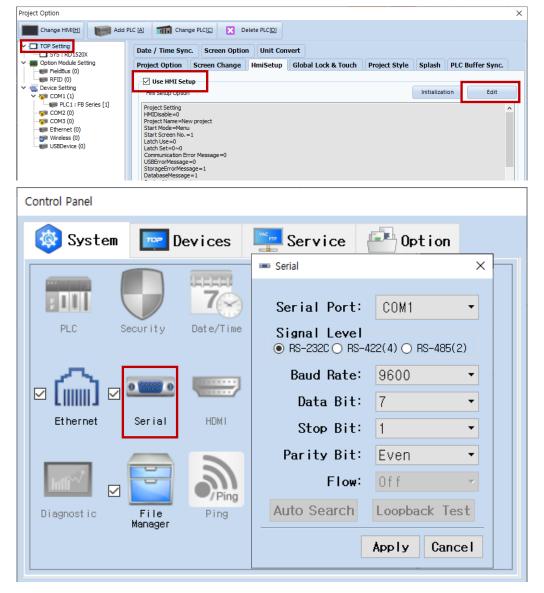
## 3. TOP communication setting

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	т	OP	External device	Remarks
Signal Level (port)	RS-232C	DC 40E	RS-232C	
	K3-232C	RS-485	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.

Project Option		×
Change HMI[H] Keel Add	I PLC [A] TIT Change PLC[C] Noteste PLC[D]	
<ul> <li>TOP Setting</li> <li>SYS : RD1520X</li> <li>Option Module Setting</li> <li>FieldBus (0)</li> <li>FieldBus (0)</li> <li>Device Setting</li> <li>COM1 (1)</li> <li>COM2 (0)</li> <li>Ethernet (0)</li> <li>Wireless (0)</li> <li>USBDevice (0)</li> </ul>	PLC Setting[FB Series]         Alias Name:         Interface:         Computer Link         Protocol:         String Save Mode:         Frist HL HL         Change         Use Redundancy         Operate Condition:         Allos Name:         Condition:         TimeOut         Send Wait         0         Retry         5         Station No	Comm Manual
		Apply Close

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select "Serial".	device selection".
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.	

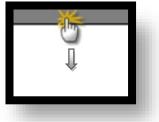
X If you use external device prefix 0, all devices on the connected track will respond. Use the designated prefix from 1 to 254 to operate only the relevant number.



#### 3.2. Communication setting in TOP

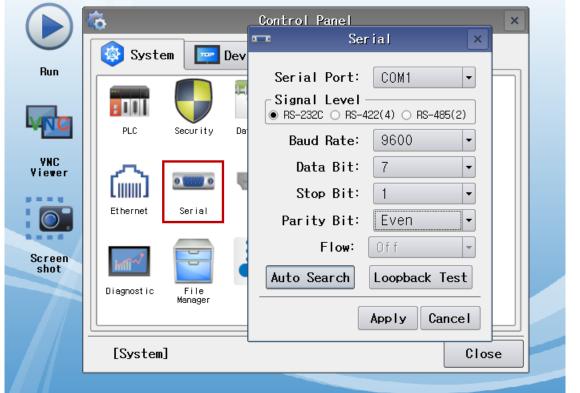
\* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ 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	Т	OP	External device	Remarks
Signal Level (port)	RS-232C	RS-485	RS-232C	
	K3-252C	K3-403	RS-485	
Baud Rate		9600		
Data Bit		7		
Stop Bit				
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 ]

	õ	100	PLC	×
	🔯 System	Driver(COM1)	PLC1(FB Series) 🔻	
Run		Interface	Computer Link 🔻	
		Protocol	Serial 🔻	
<b>VNC</b>	PLC S	Timeout	300 🖨 msec	
VNC Viewer		Send Wait	0 🗣 msec	
Viewer	് പ്രി 🛛	Retry	5	
	Ethernet	Station N	1	
Screen shot	Heff w			
	Diagnostic N			
	[System]	Diagnostic		Apply Cancel
ns	Settings			Remarks

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select "Serial".	device selection".
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.	

X 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 <u>drag</u> 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.

ОК	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	Conte	ents	Check		Remarks	
System	How to connect the sy	stem	OK	NG	1. System configuration	
configuration	Connection cable name	e	OK	NG	1. System computation	
TOP	Version information		OK	NG		
	Port in use		OK	NG		
	Driver name		OK	NG		
	Other detailed settings		OK	NG		
	Relative prefix	Project setting	OK	NG		
		Communication diagnostics	ОК	NG	2. External device selection 3. Communication setting	
Se	Serial Parameter	Transmission Speed	ОК	NG	<u>5. communication setting</u>	
		Data Bit	ОК	NG		
		Stop Bit	ОК	NG		
		Parity Bit	ОК	NG		
External device	CPU name	CPU name				
	Communication port n	ame (module name)	OK	NG		
	Protocol (mode)		OK	NG		
	Setup Prefix		OK	NG		
	Other detailed settings	OK	NG	4. External device actions		
	Serial Parameter	Transmission Speed	ОК	NG	4. External device setting	
		Data Bit	OK	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
Check address rang			ОК	NG	<u>6. Supported addresses</u> (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.

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

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

#### ■ 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	



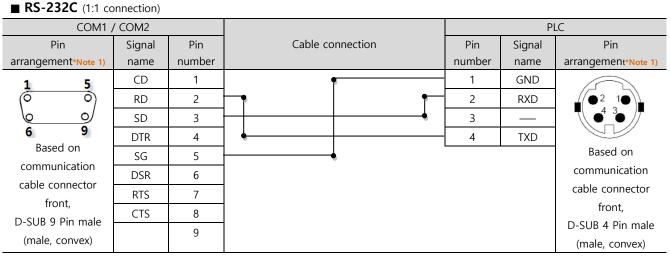
## 5. Cable table

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.



\*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				PLC		
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	CD	1		1	CD	1 5
(° °)	RD	2		2	TXD	$\left( \circ \circ \right)$
	SD	3		3	RXD	
6 9 Based on	DTR	4		4	DTR	6 9 Based on
communication	SG	5		5	SG	communication
cable connector	DSR	6		6	DSR	cable connector
front,	RTS	7	•	7	RTS	front,
D-SUB 9 Pin male	CTS	8		8	CTS	D-SUB 9 Pin male
(male, convex)		9		9		(male, convex)

\*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				Р	LC
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	CD	1		1	CD	1 5
(° °)	RD	2		2	TXD	(° °)
69	SD	3		3	RXD	6 9
6 9 Based on	DTR	4		4	DTR	6 9 Based on
communication	SG	5		5	SG	communication
cable connector	DSR	6		6	DSR	cable connector
front,	RTS	7		7	RTS	front,
D-SUB 9 Pin male	CTS	8		8	CTS	D-SUB 9 Pin male
(male, convex)		9		9		(male, convex)

\*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				PLC		
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	CD	1	•	1	RXD	1 8
(° °)	RD	2		2	TXD	(° °)
69	SD	3	<u>⊢</u> •	3	RTS	9 15
6 9 Based on	DTR	4	•         •         •         •       •     •     •     •     •   •   •   • •   • •   • •   •	4	CTS	Based on
communication	SG	5	•	5		communication
cable connector	DSR	6	•	6	SG	cable connector
front,	RTS	7		7		front,
D-SUB 9 Pin male	CTS	8		8		D-SUB 15 Pin male
(male, convex)		9		9		(male, convex)

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

#### **RS-485** (1:1 connection)

COM1 / COM2				PLC		
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	RDA	1	•	5	D+	1 8
$\left( \circ \circ \right)$		2		7	D-	
		3				9 15
6 9 Based on	RDB	4				Based on
communication		5				communication
cable connector	SDA	6				cable connector
front,		7				front,
D-SUB 9 Pin male		8				D-SUB 9 Pin female
(male, convex)	SDB	9				(male, convex)

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

#### ■ **RS-485** (1:1 connection)

COM3				Р	LC
Pin arrangement	Signal	Cable connection	Pin	Signal	Pin
	name		number	name	arrangement*Note 1)
	+		5	D+	1 8
	-		7	D-	
0	SG				9 15
SG 3					Based on
001 -					communication
567 +					cable connector
					front,
					D-SUB 9 Pin female
•••••••					(male, convex)

\*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.

TOP	Cable connection and signal	PLC		Cable connection and simpl	PLC	
Signal name	direction	Pin	Signal	Cable connection and signal direction	Pin	Signal
Signal name	direction	number	name	direction	number	name
RDA	•	- 5	D+		5	D+
RDB	•	- 7	D-		7	D-
SDA						
SDB	4					
SG						



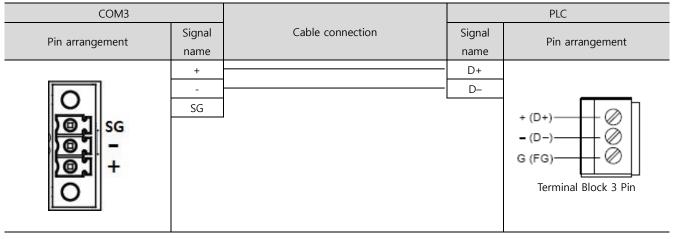
#### ■ **RS-485** (1:1 connection)

COM1 / COM2				PLC		
Pin	Signal	Pin	Cable connection	Signal	Pin arrangement	
arrangement*Note 1)	name	number		name	Pin allangement	
1 5	RDA	1 ·		D+		
(° °)		2		D-		
69		3				
6 9 Based on	RDB	4	<b>⊢</b> •		+ (D+)	
communication		5			- (D-)	
cable connector	SDA	6	⊢┼-┪ │		G (FG)	
front,		7			Terminal Block 3 Pin	
D-SUB 9 Pin male		8				
(male, convex)	SDB	9	•			

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

#### ■ **RS-485** (1:1 connection)

SDB SG



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

	_				
TOP	Cable connection and signal direction	PLC	Cable connection and signal	PLC	
Signal name		Signal name	direction	Signal name	
RDA	•	D+		D+	
RDB	<mark>┤                                    </mark>	D-		D-	
SDA	}_•		-		



## 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 unlus)	CTR000.00 ~ CTR199.15	CTR000 ~ CTR199		
Counter(Current value)		CTR200 ~ CTR255		
Data register	R00000.00 ~ R65535.15	R00000 ~ R65535		
Data register	D00000.00 ~ D65535.15	D00000 ~ D65535		