Rockwell Automation, Inc.
MicroLogix, SLC500 Series
DF1 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

The system configuration of the driver "Rockwell Automation – MicroLogix/SLC500 Series" is as follows:

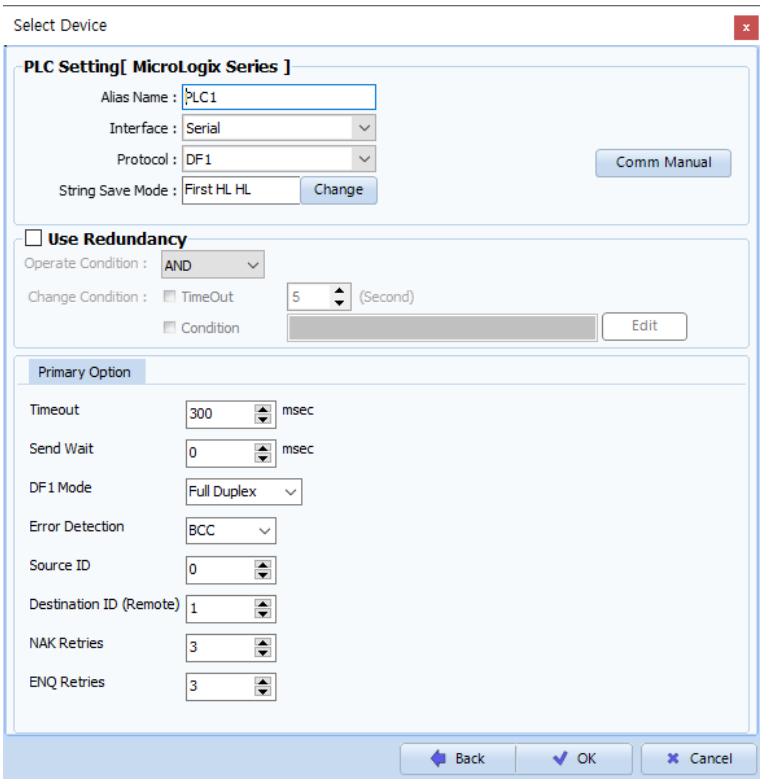
Series	CPU	Link I/F	Communication method	System setting	Cable
MicroLogix	MicroLogix1500 (1764-LRP)	Channel 1	RS-232C	3.1 Settings example 1 (Page 4)	5.1. Cable table 1 (Page 9-(A))
	MicroLogix 1000 MicroLogix 1200 MicroLogix 1500 (1764-LSP, 1764-LRP)	Channel 0	RS-232C	3.1 Settings example 1 (Page 4)	5.2. Cable table 2 (Page 9-(B))
		AIC + 1761-NET-AIC (Advanced Interface Converter)	RS-232C	3.1 Settings example 1 (Page 4)	5.3. Cable table 3 (Page 9-(C))
SLC500	SLC 5/03 SLC 5/04 SLC 5/05	Channel 0	RS-232C	3.1 Settings example 1 (Page 4)	5.1. Cable table 1 (Page 9-(A))
		1770-KF3 2760-RB 1775-KA 5130-RM	RS-232C	3.1 Settings example 1 (Page 4)	5.3. Cable table 3 (Page 9-(D))
		1771-KGM	RS-232C	3.1 Settings example 1 (Page 4)	5.3. Cable table 3 (Page 9-(E))

■ 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 "**Rockwell Automation, Inc**".
	PLC	Select the model series of the external device that connects to the TOP. Select "MicroLogix/SLC500 Series DF1". 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

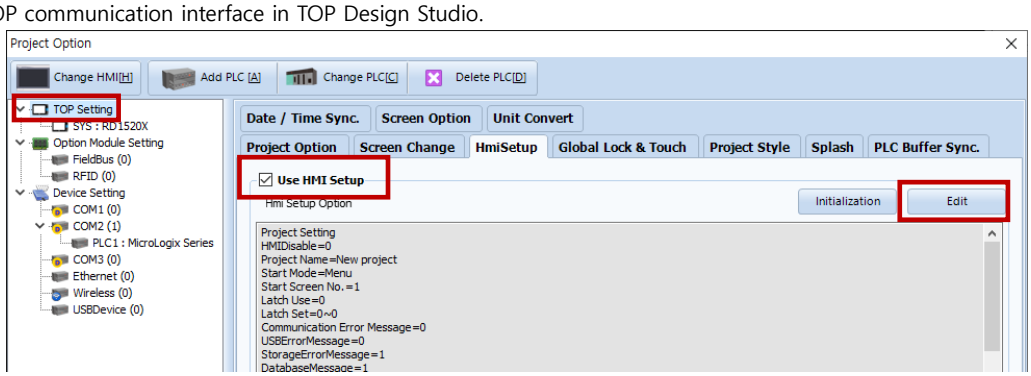
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

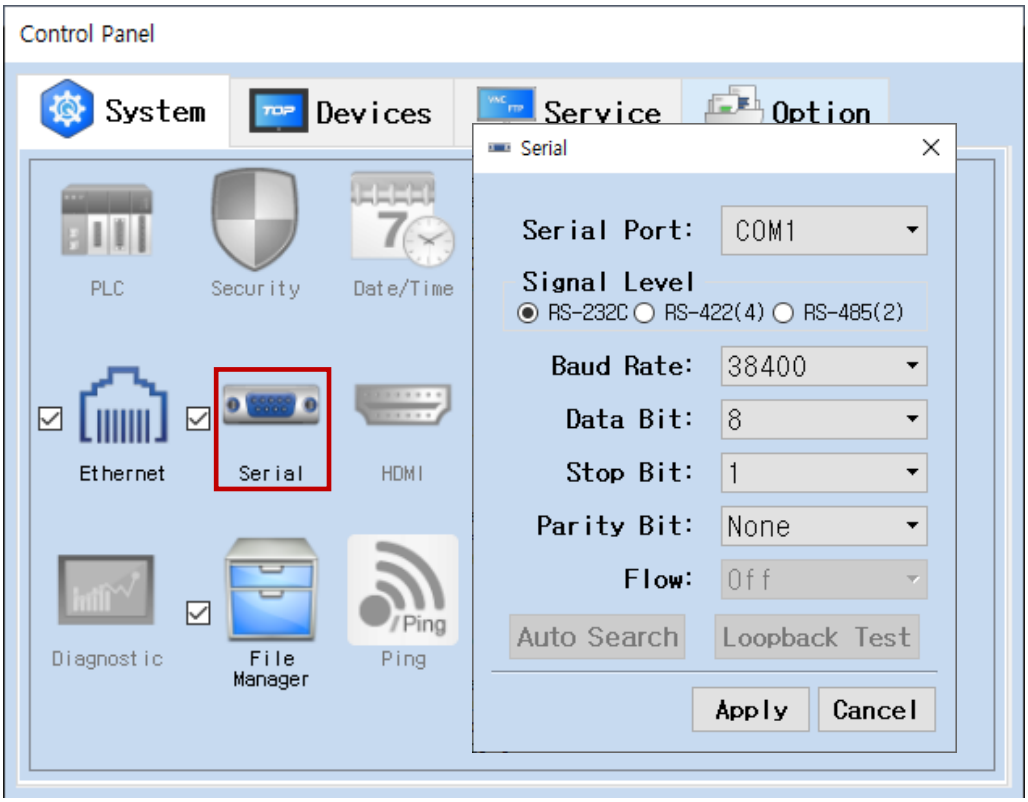
3.1 Communication setting in TOP Design Studio

(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	RS-422	RS-485	RS-232C RS-422/485	
Baud Rate	38400				
Data Bit	8				
Stop Bit	1				
Parity Bit	None.				

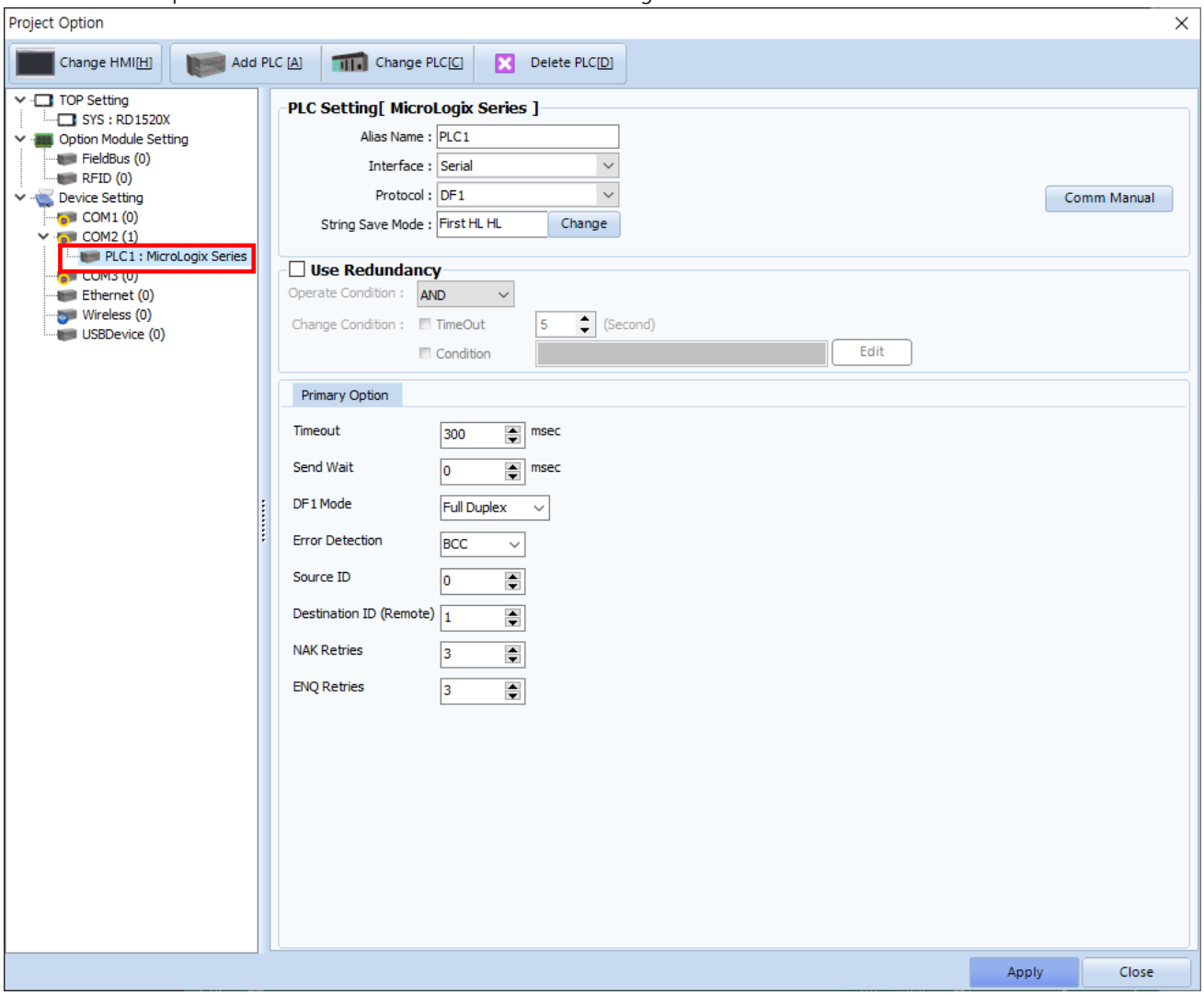
* The above settings are examples recommended by the company.

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> "PLC1 : **Control/Compact Logix Series**"]

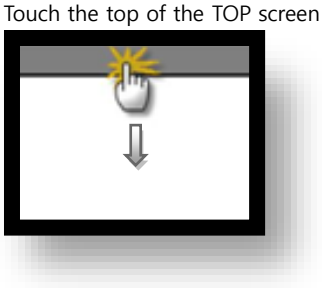
– Set the options of the DF1 communication driver in TOP Design Studio.



3.2. Communication setting in TOP

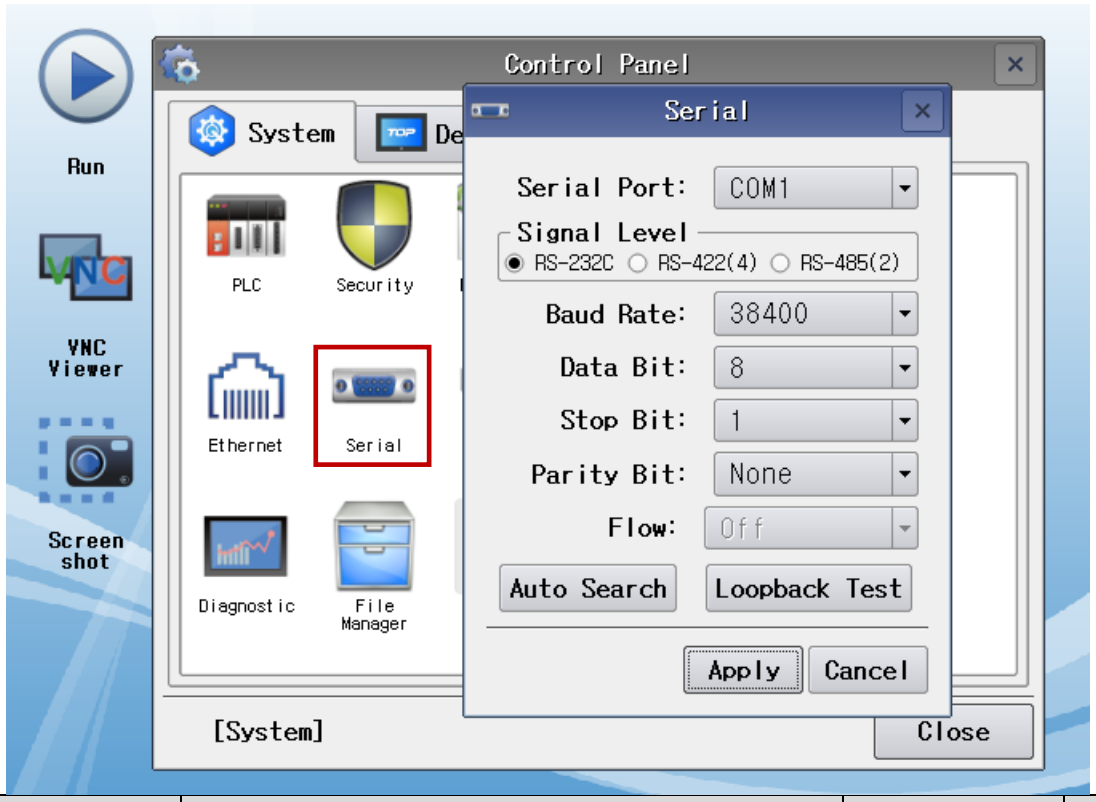
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



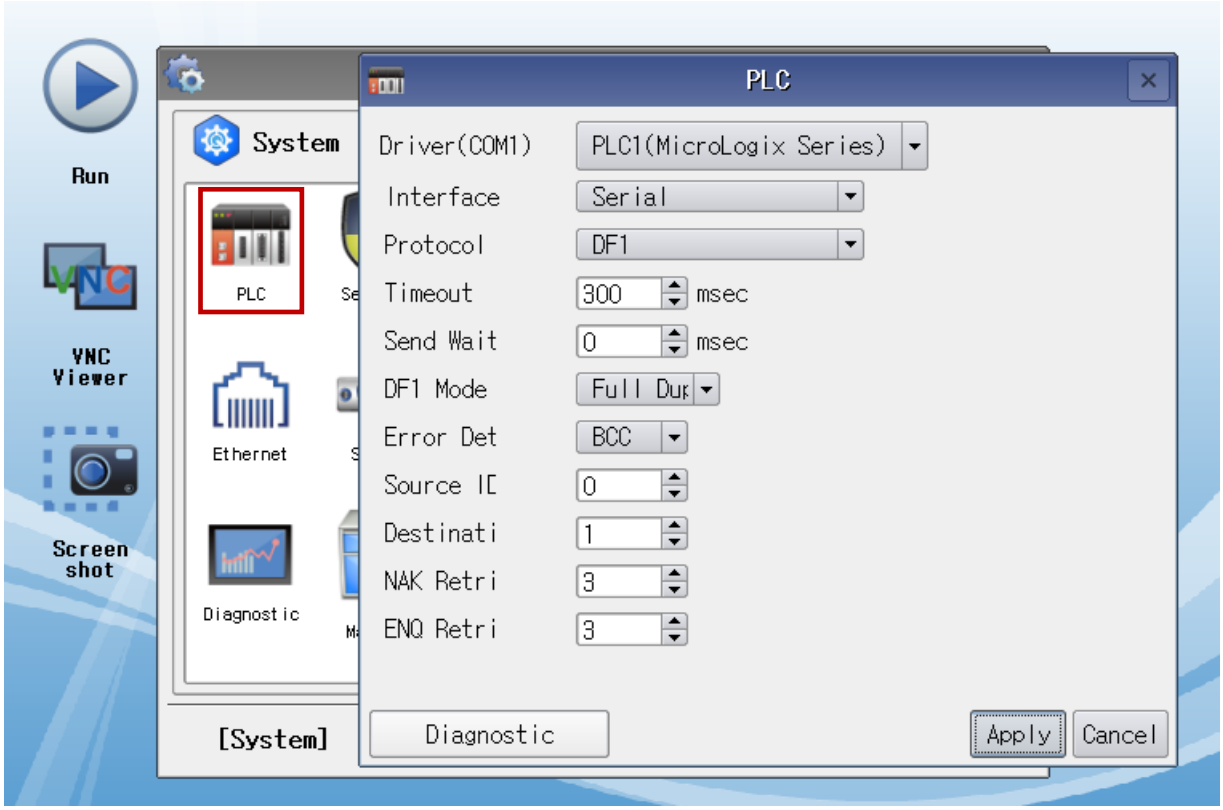
Items	TOP			External device	Remarks
Signal Level (port)	RS-232C	RS-422	RS-485	RS-232C RS-422/485	
Baud Rate	38400				
Data Bit	8				
Stop Bit	1				
Parity Bit	None.				

* 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]



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 port (COM1/COM2/COM3) 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. External device setting

Set as below using "MicroLogix/SLC500 Series" Ladder Software "RSLogix 500". For more detailed setting method than that described in this example, refer to the PLC user manual.

Do not configure a duplicate Source ID (prefix) for the external device connected to the same unit network

1. From the "RSLogix 500" window, double-click [Channel Configuration] to open the "Channel Configuration" window.

2. From the "Channel Configuration" window, select the [Chan. 0 –System] tab, and configure as shown below.

Setup Items		Setup Description	Remarks
Driver		DF1 Full Duplex Slave	Fixed
Baud Rate		19200	
Parity		NONE	
Stop Bits		1	
Source ID (Station Address)		0	
Protocol Control	Control	No Handshaking	Fixed
	Error Detection	BCC	Fixed
	Embedded	Enabled	Fixed
	Duplicate Packet Detect	No Check	Fixed
	ACK Timeout	50	
	NAK Retries	3	
	ENQ Retries	3	

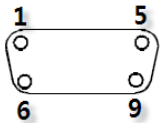
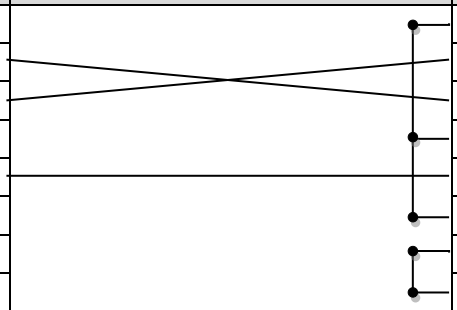
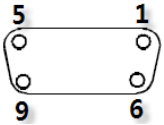
3. Download configurations to PLC.

5. Cable table

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

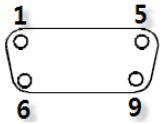
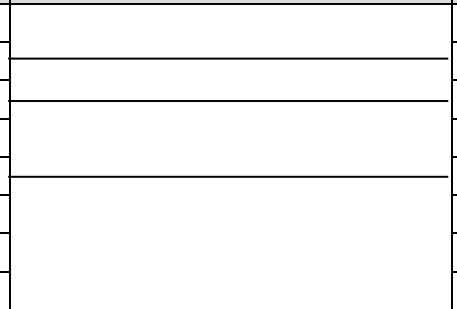
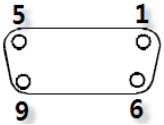
■ **RS-232C** (1:1 connection)

(A) TOP COM Port (9 pin)

TOP COM			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	CD	 Based on communication cable connector front, D-SUB 9 Pin female (female, concave)
	RD	2		2	RD	
	SD	3		3	SD	
	DTR	4		4	DTR	
	SG	5		5	SG	
	DSR	6		6	DSR	
	RTS	7		7	RTS	
	CTS	8		8	CTS	
		9		9		

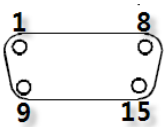
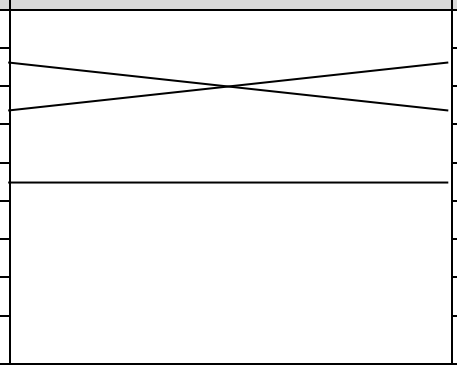
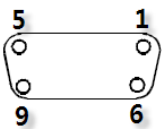
*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

(B) TOP COM Port (9 pin)

TOP COM			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 female (female, concave)
	RD	2		2	TXD	
	SD	3		3	RXD	
	DTR	4		4		
	SG	5		5	SG	
	DSR	6		6		
	RTS	7		7		
	CTS	8		8		
		9		9		

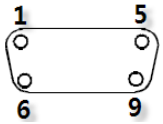
*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

(C) TOP COM Port (15 pin)

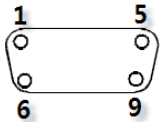
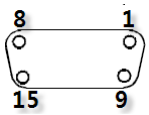
TOP COM			**Cable connection**	**PLC**		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
 Based on communication cable connector front, D-SUB 15 Pin male (male, convex)	CD	1		1		 Based on communication cable connector front, D-SUB 9 Pin female (female, concave)
	RD	2		2	RXD	
	SD	3		3	TXD	
	DTR	4		4		
	SG	5		5	SG	
	DSR	6		6		
	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.

(D) TOP COM Port (9 pin)

TOP COM			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	GND	 Based on communication cable connector front, D-SUB 25 Pin female (female, concave)
	RD	2		2	TXD	
	SD	3		3	RXD	
	DTR	4		4	RTS	
	SG	5		5	CTS	
	DSR	6		6	DSR	
	RTS	7		7	COM	
	CTS	8		8	DCD	
		9		20	DTR	

(E) TOP COM Port (9 pin)

TOP COM			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	GND	 Based on communication cable connector front, D-SUB 15 Pin female (female, concave)
	RD	2		2	TXD	
	SD	3		3	RXD	
	DTR	4		4	RTS	
	SG	5		5	CTS	
	DSR	6		6	DSR	
	RTS	7		7	COM	
	CTS	8		8	DCD	
		9		20	DTR	

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

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 notation ➔ Device Name File Number : Element

6.1 MicroLogix Series

Device		Bit Address		Word Address	32 bits	Remarks
Output File		O000:000.00 – O008:255.15		O000:000 – O008:255		
Input File		I000:000.00 – I008:255.15		I000:000 – I008:255		
Bit File		B003:000.00 – B003:255.15 B009:000.00 – B255:255.15		B003:000 – B003:255 B009:000 – B255:255		
Timer File	Coil	Done	TC004:000.13 – TC004:255.13 TC009:000.13 – TC255:255.13	–		
		Timing	TC004:000.14 – TC004:255.14 TC009:000.14 – TC255:255.14			
		Enable	TC004:000.15 – TC004:999.15 TC009:000.15 – TC099:999.15			
	Preset	–		TP004:000 – TP004:255 TP009:000 – TP255:255		
	Accumulated	–		TA004:000 – TA004:255 TA009:000 – TA255:255		
Counter File	Coil	Update Acc	CC005:000.10 – CC005:255.10 CC009:000.10 – CC255:255.10	–	L/H	
		Underflow	CC005:000.11 – CC005:255.11 CC009:000.11 – CC255:255.11			
		Overflow	CC005:000.12 – CC005:255.12 CC009:000.12 – CC255:255.12			
		Done	CC005:000.13 – CC005:255.13 CC009:000.13 – CC255:255.13			
		Down Enable	CC005:000.14 – CC005:255.14 CC009:000.14 – CC255:255.14			
		Up Enable	CC005:000.15 – CC005:255.15 CC009:000.15 – CC255:255.15			
	Preset	–		CP005:000 – CP005:255 CP009:000 – CP255:255		
	Accumulated	–		CA005:000 – CA005:255 CA009:000 – CA255:255		
Integer File		N007:000.00 – N007:255.15 N009:000.00 – N255:255.15		N007:000 – N007:255 N009:000 – N255:255		
Floating Point File		–		F008:000 – F255:255	H/L	
String File		–		ST9:0 – ST255:255	L/H	
Long Word File		L9:0/0 – L255:255/31		L9:0 – L255:255		

6.2 SLC 500 Series

Device		Bit Address		Word Address	32 bits	Remarks
Output File		O000:000.00 – O063:255.15		O000:000 – O063:255		
Input File		I000:000.00 – I063:255.15		I000:000 – I063:255		
Bit File		B003:000.00 – B003:255.15 B009:000.00 – B255:255.15		B003:000 – B003:255 B009:000 – B255:255		
Timer File	Coil	Done	TC004:000.13 – TC004:255.13 TC009:000.13 – TC255:255.13	–		
		Timing	TC004:000.14 – TC004:255.14 TC009:000.14 – TC255:255.14			
		Enable	TC004:000.15 – TC004:999.15 TC009:000.15 – TC099:999.15			
	Preset	–		TP004:000 – TP004:255 TP009:000 – TP255:255		
	Accumulated	–		TA004:000 – TA004:255 TA009:000 – TA255:255		
Counter File	Coil	Update Acc	CC005:000.10 – CC005:255.10 CC009:000.10 – CC255:255.10	–	L/H	
		Underflow	CC005:000.11 – CC005:255.11 CC009:000.11 – CC255:255.11			
		Overflow	CC005:000.12 – CC005:255.12 CC009:000.12 – CC255:255.12			
		Done	CC005:000.13 – CC005:255.13 CC009:000.13 – CC255:255.13			
		Down Enable	CC005:000.14 – CC005:255.14 CC009:000.14 – CC255:255.14			
		Up Enable	CC005:000.15 – CC005:255.15 CC009:000.15 – CC255:255.15			
	Preset	–		CP005:000 – CP005:255 CP009:000 – CP255:255		
	Accumulated	–		CA005:000 – CA005:255 CA009:000 – CA255:255		
Integer File		N007:000.00 – N007:255.15 N009:000.00 – N255:255.15		N007:000 – N007:255 N009:000 – N255:255		
Floating Point File		–		F008:000 – F255:255	H/L	