

MITSUBISHI Electric Corporation

MELSEC A Series

CPU Direct 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 3](#)

Select a TOP model and an external device.

3. TOP communication setting [Page 4](#)

Describes how to set the TOP communication.

4. External device setting [Page 9](#)

Describes how to set up communication for external devices.

5. Cable table [Page 10](#)

Describes the cable specifications required for connection.

6. Supported addresses [Page 11](#)

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

1. System configuration

The system configuration of TOP and "MITSUBISHI Electric Corporation - MELSEC A CPU Direct" is as follows:

Series	CPU	Link I/F	Communication method	Communication setting	Cable
MELSEC-A	AnN CPU AnS CPU AOJ2H CPU	CPU port	RS-232C	3. TOP communication setting 4. External device setting	5. Cable table

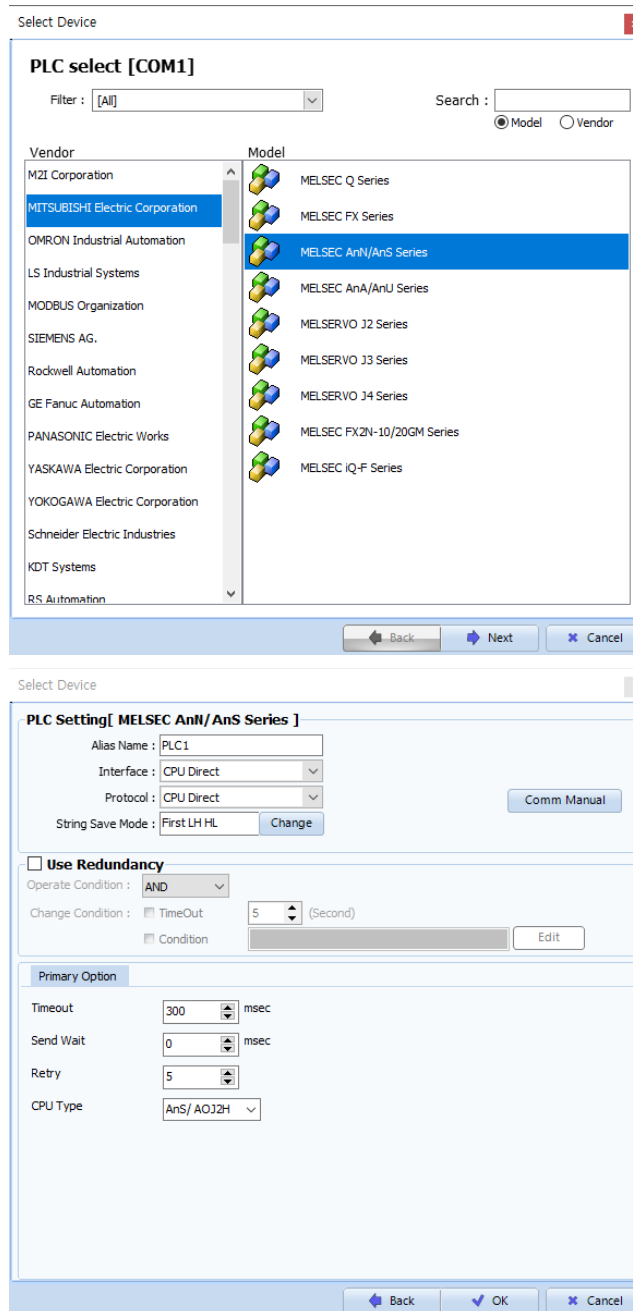
■ Connection configuration

- 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 "MITSUBISHI Electric Corporation".											
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>MELSEC A Series</td> <td>CPU Direct</td> <td>CPU Direct</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Supported Protocol (CPU type)</th> </tr> </thead> <tbody> <tr> <td>AnN CPU</td> <td>AnS CPU</td> <td>AOJ2H CPU</td> </tr> </tbody> </table> 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.	Model	Interface	Protocol	MELSEC A Series	CPU Direct	CPU Direct	Supported Protocol (CPU type)			AnN CPU	AnS CPU
Model	Interface	Protocol											
MELSEC A Series	CPU Direct	CPU Direct											
Supported Protocol (CPU type)													
AnN CPU	AnS CPU	AOJ2H CPU											

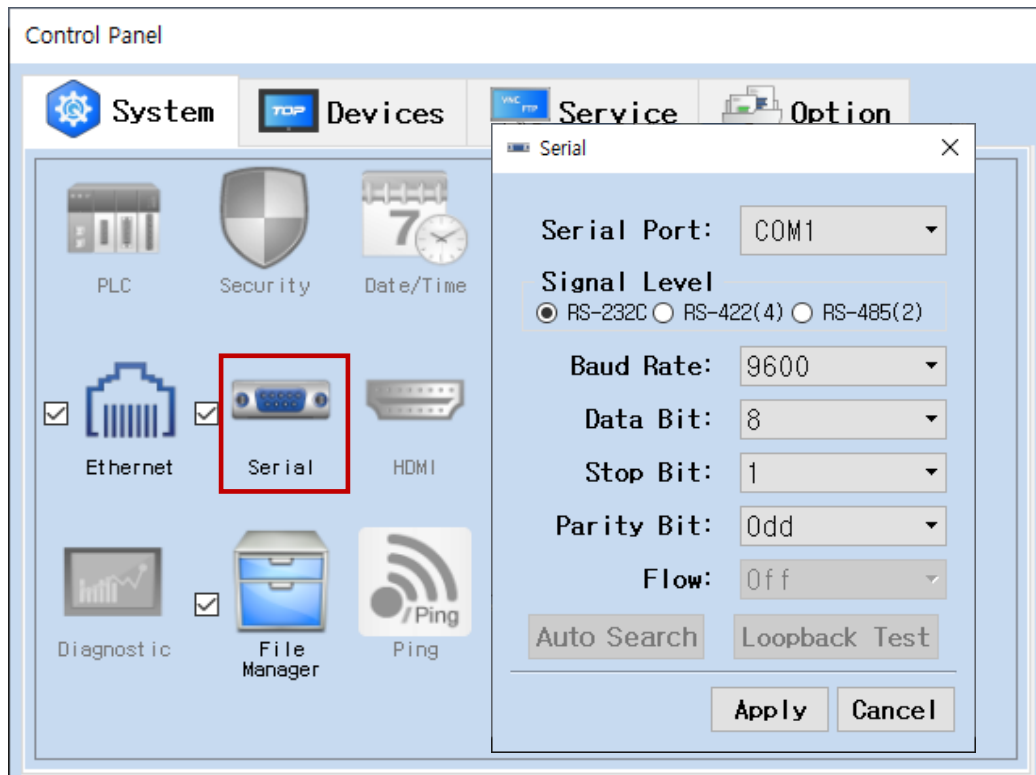
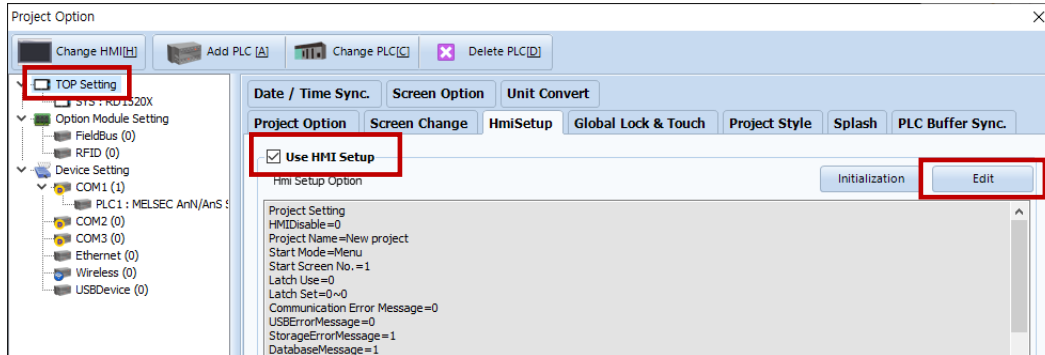
3. TOP communication setting

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-232C (CPU port)	Fixed
Baud Rate	9600		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	Odd		Fixed

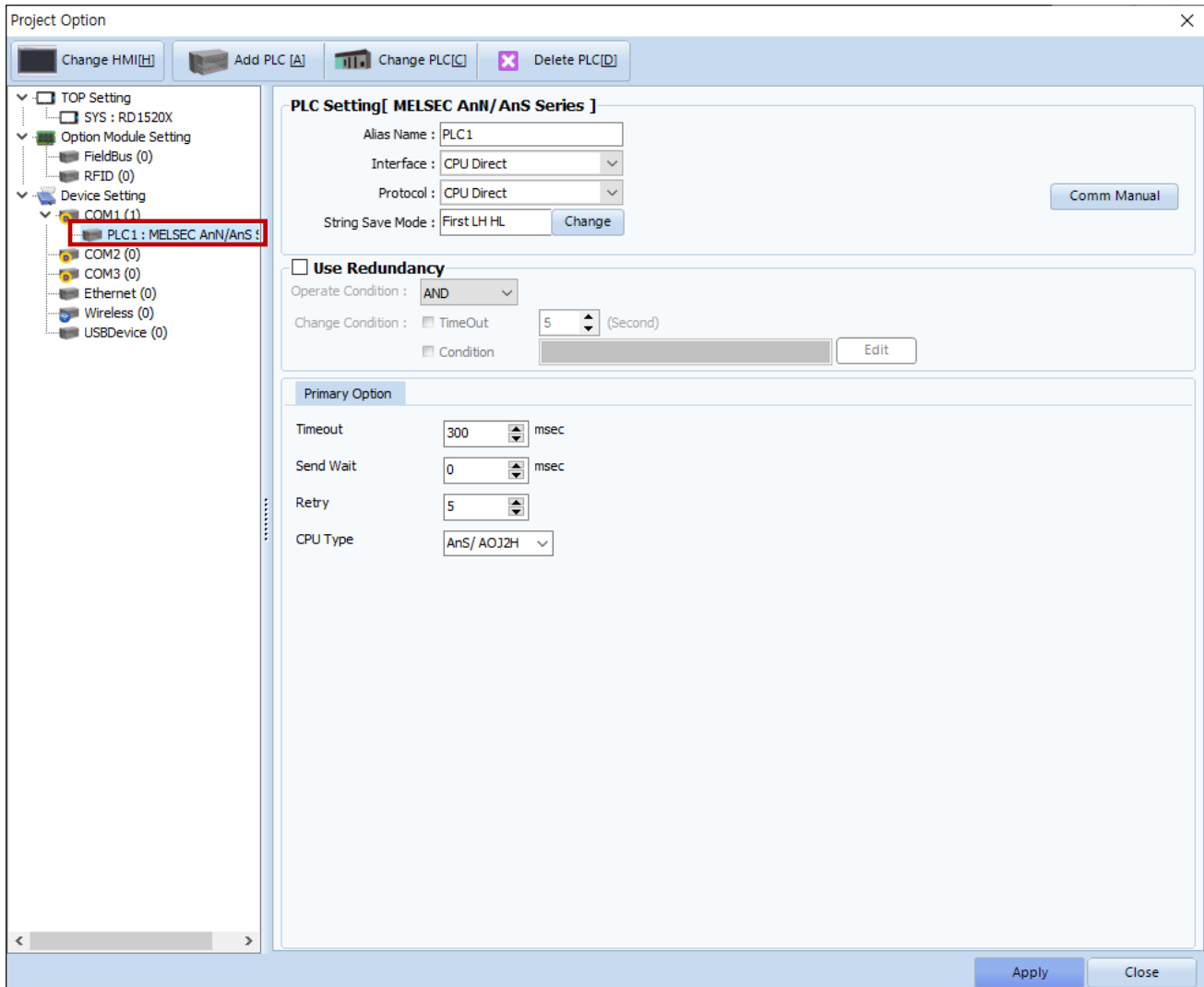
※ The communication interface for Melsec A Series CPU Direct is fixed to the above configuration values.

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 : MELSEC-A Series"]

– Set the options of the MELSEC A Series CPU Direct communication driver in TOP Design Studio.

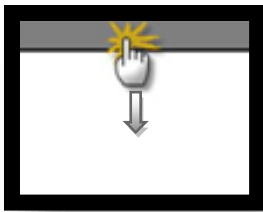


Items	Settings	Remarks
Interface	Select "CPU Direct".	Refer to "2. External device selection" .
Protocol	Select "CPU Direct".	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
CPU Type	Select the CPU type for the external device.	

3.2. Communication setting in TOP

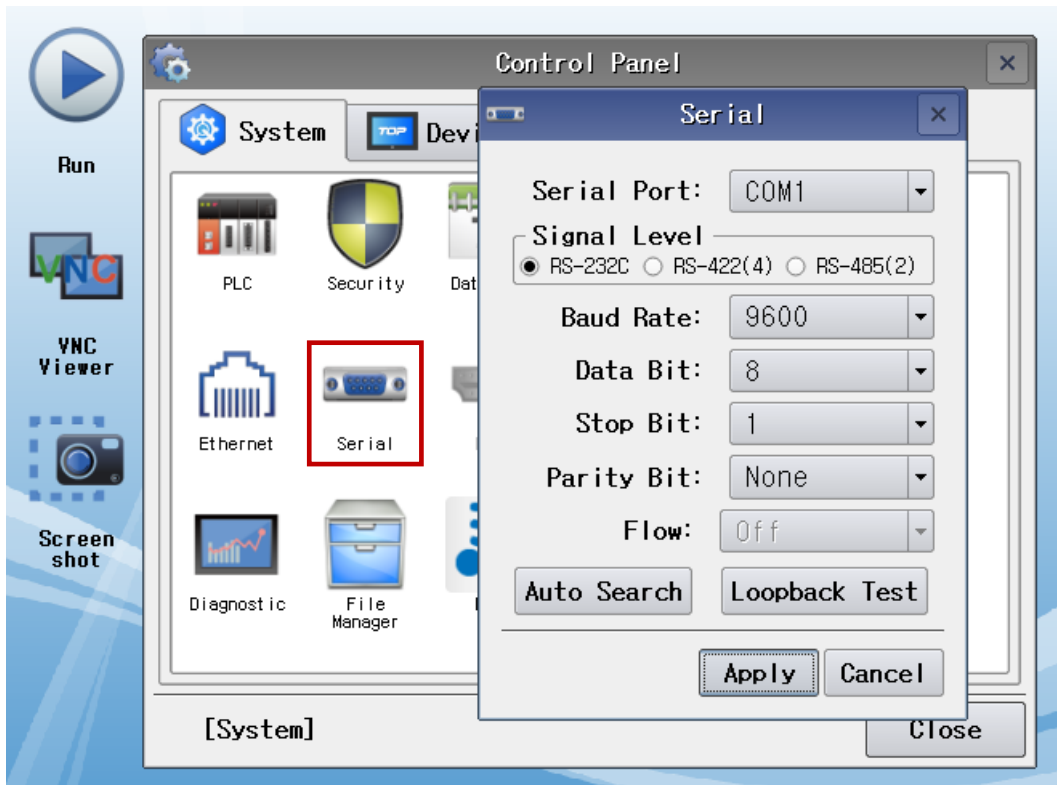
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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]



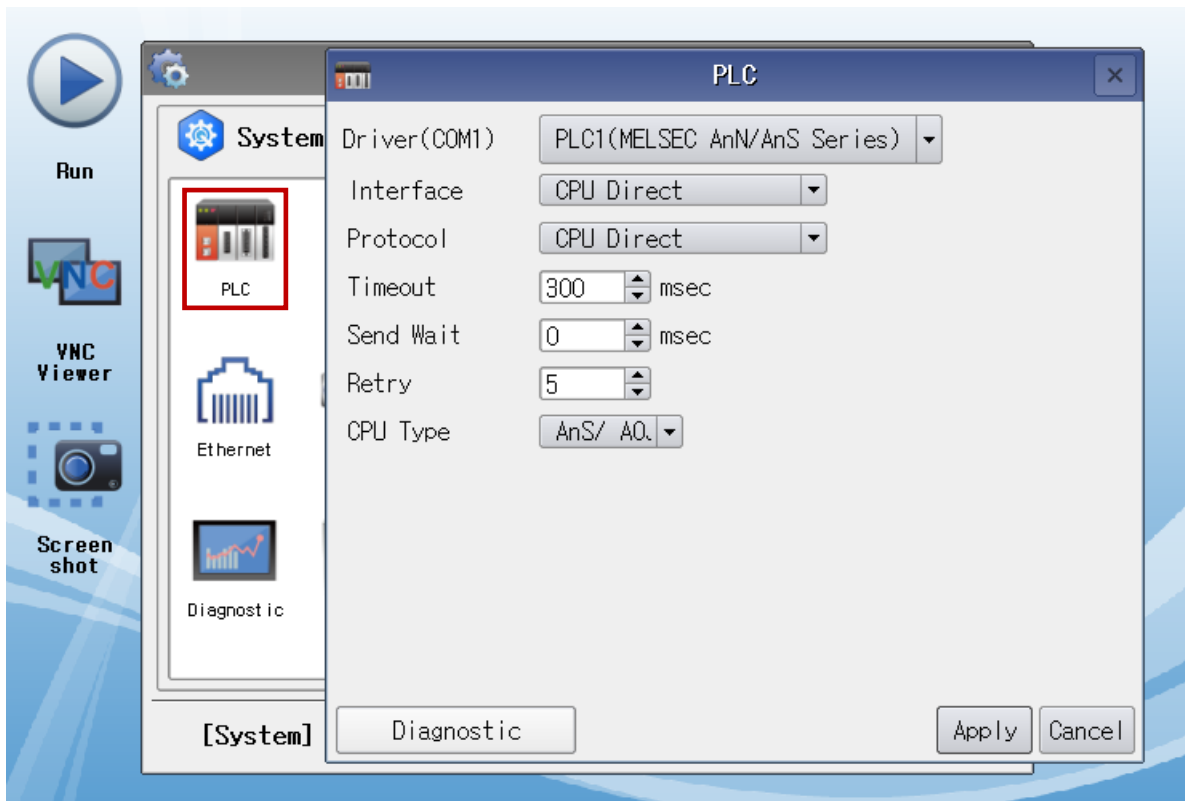
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C (CPU port)	Fixed
Baud Rate		9600	Fixed
Data Bit		8	Fixed
Stop Bit		1	Fixed
Parity Bit		Odd	Fixed

※ The communication interface for Melsec A Series CPU Direct is fixed to the above configuration values.

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 "CPU Direct".	Refer to "2. External device selection".
Protocol	Select "CPU Direct".	
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.	
CPU Type	Select the CPU type for the external device.	

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) 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.

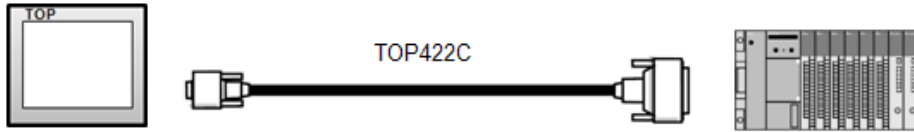
Items	Contents	Check		Remarks	
System configuration	How to connect the system	OK	NG	1. System configuration	
	Connection cable name	OK	NG		
TOP	Version information	OK	NG	2. External device selection 3. Communication setting	
	Port in use	OK	NG		
	Driver name	OK	NG		
	Other detailed settings	OK	NG		
	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

The communication interface for Melsec-A Series CPU Direct is fixed to the target configuration values indicated by the ["communication interface setting"](#) in this user manual.

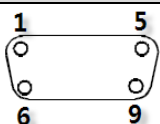
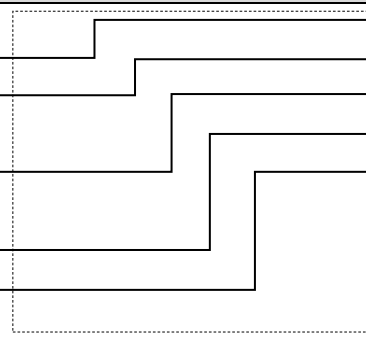
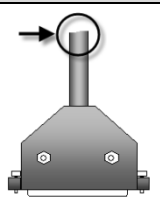
5. Cable table

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 "Mitsubishi Electric Corporation")



Use the **dedicated cable "TOP422C" (sold by M2I Corp.)** to connect the TOP and the MELSEC-A Series CPU
 Direc

■ RS-232C (1:1 connection)

COM			Cable connection	Cable cross section	
Pin arrangement* Note 1	Signal name	Pin number		Cable color	
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	CD	1		Red	 <p>TOP422C Dedicated cable (25 pin) Cable cross section</p>
	RD	2		Yellow	
	SD	3		Green	
	DTR	4		Blue	
	SG	5		White	
	DSR	6		Black	
	RTS	7			
	CTS	8			
		9			

***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.

Type	Remarks	Bit-designated address	Word-designated address
Input	Bit	X0000 - X07FF	X0000 - X07F0
Output	Bit	Y0000 - Y07FF	Y0000 - Y07F0
LINK relay	Bit	B0000 - B03FF	
LINK register	Word		W0000 - W03F0
Special relay	Bit	F0000 - F0255	F0000 - F0240
LATCH relay	Bit	L0000 - L2047	L0000 - L2032
Internal relay	Bit	M0000 - M2047	M0000 - M2032
Special relay	Bit	M9000 - M9255	M9000 - M9240
Timer - Coil	Bit	TC000 - TC255	
Timer - Contact	Bit	TS000 - TS255	
Timer-Current value	Word		TN000 - TN255
Counter - Coil	Bit	CC000 - CC255	
Counter - Contact	Bit	CS000 - CS255	
Counter-Current value	Word		CN000 - CN255
Data register	Word	D0000.0 - D1023.15	D0000 - D1023
File register	Word	R0000.0 - R8191.15	R0000 - R8191