



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 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 12](#)

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

1. System configuration

The system configuration of TOP and "HIGEN MOTOR Co., Ltd. – FDA Series Servo Drive" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
FDA	FDA70□□	CN3 Port (COM Port)	RS-232C	3.1 Settings example 1 (Page 4)	5.1. Cable table 1 (Page 9)
		CN3 Port (COM Port)	RS-485 (2 wire)	3.2 Settings example 2 (Page 5)	5.3. Cable table 3 (Page 11)
	FDA60□□	CN3 Port (COM Port)	RS-232C	3.1 Settings example 1 (Page 4)	5.2. Cable table 2 Page 10
		CN4 Port (COM Port)	RS-485 (2 wire)	3.2 Settings example 2 (Page 5)	5.4. Cable table 4 (Page 12)

■ Connectable configuration

- 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422/485 communication.

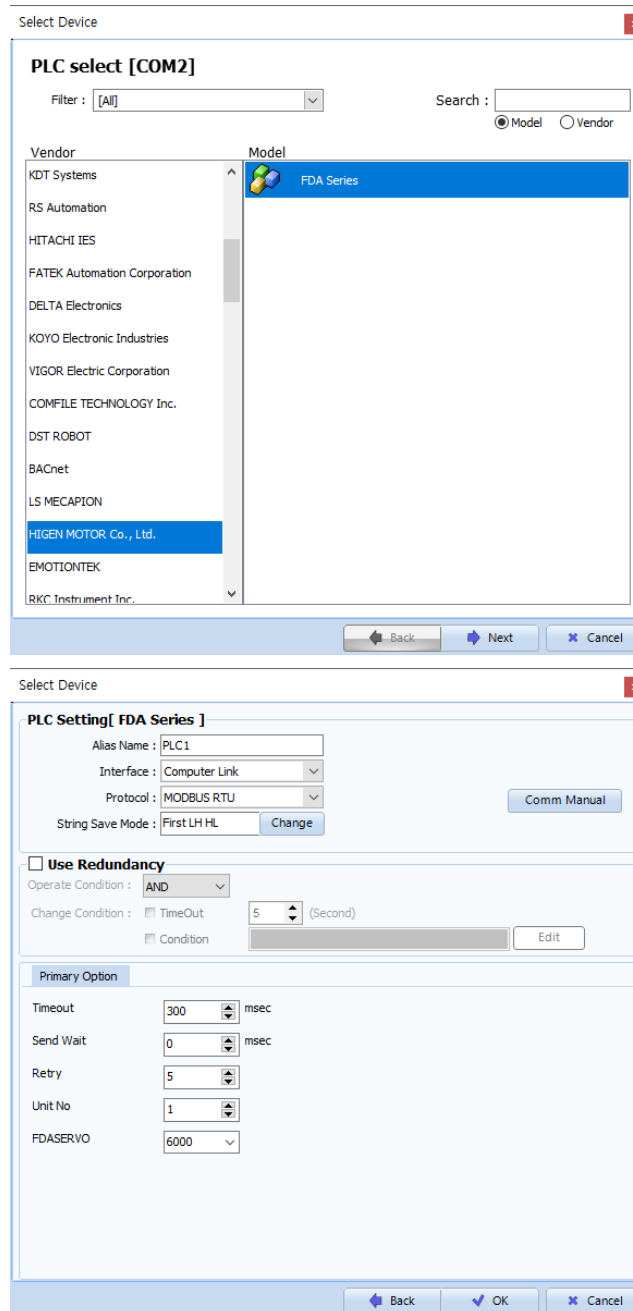


- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422/485 communication.



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 "HIGEN MOTOR Co., Ltd".
	PLC	Select an external device to connect to TOP. Select "FDA Series Servo". 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

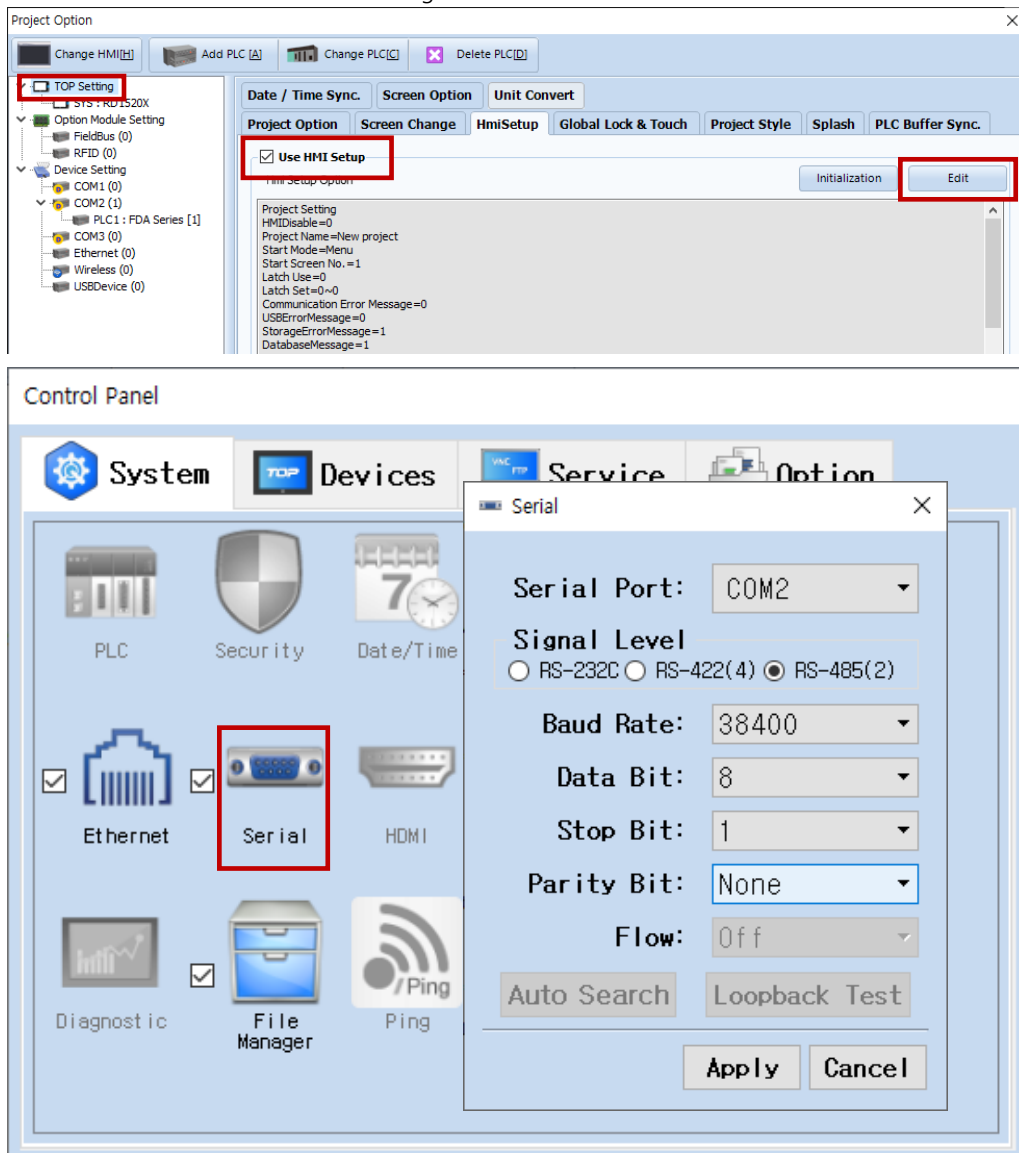
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Options > "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-485	RS-232C/RS-485	
Baud Rate		38400	
Data Bit		8	
Stop Bit		1	
Parity Bit		NONE	

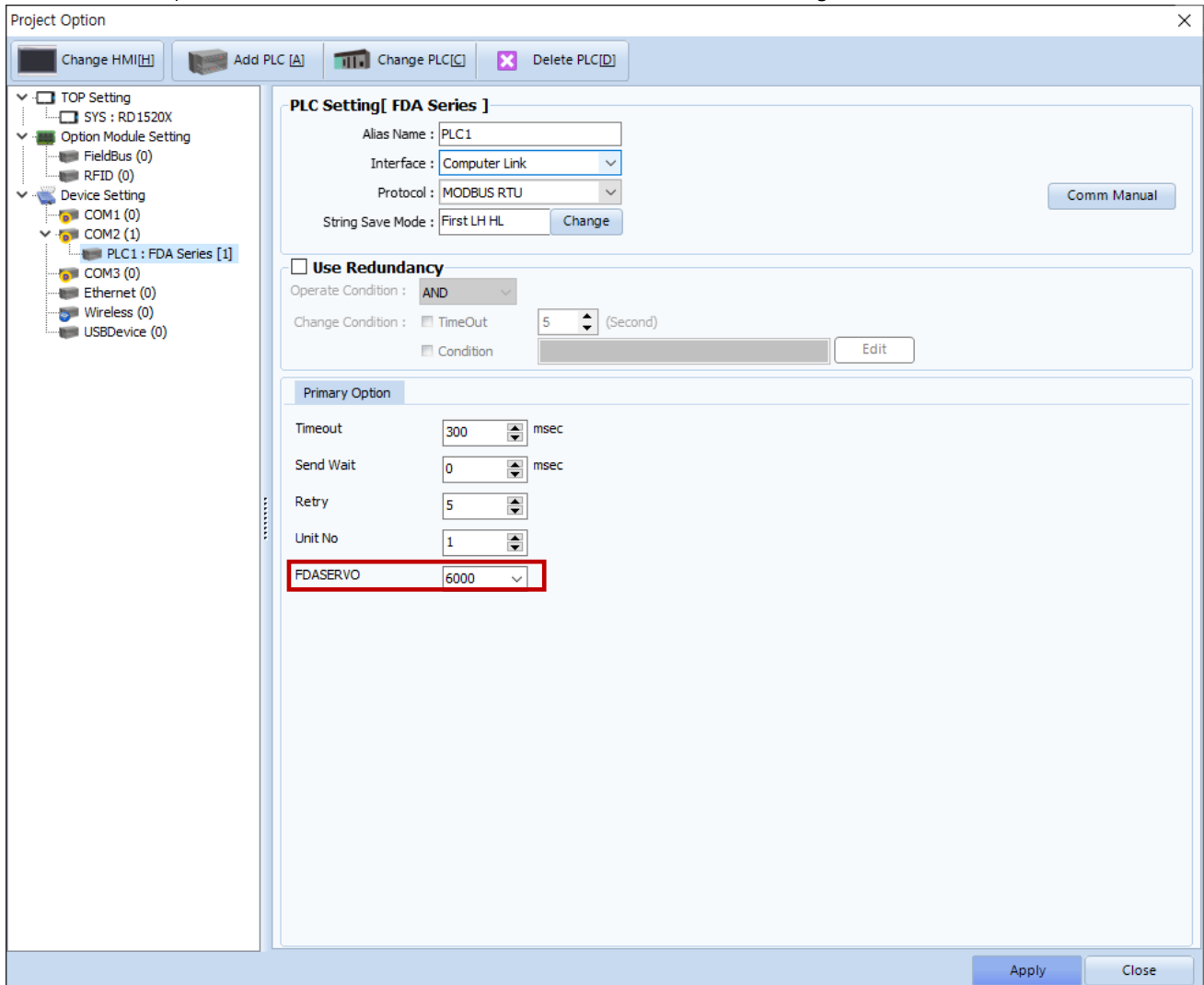
* The above settings are examples recommended by the company.

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 > PLC Setting > COM > "PLC1 : FDA Series Servo"]

– Set the options of the HIGEN MOTOR Co., Ltd communication driver in TOP Design Studio.



Items	Settings	Remarks
Interface	"Computer Link	Fixed
Protocol	Modbus Rtu	
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.	
FDASERVO6000	0 : FDA7000 1 : FDA6000	

3.2. Communication setting in TOP

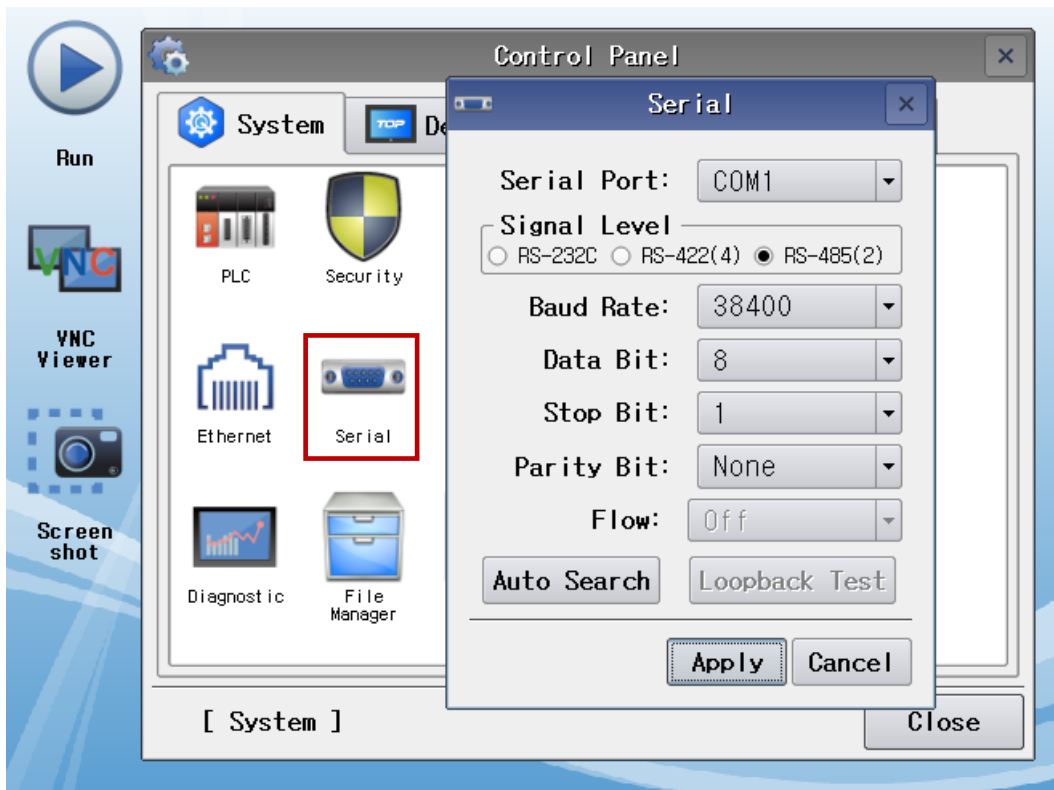
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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]



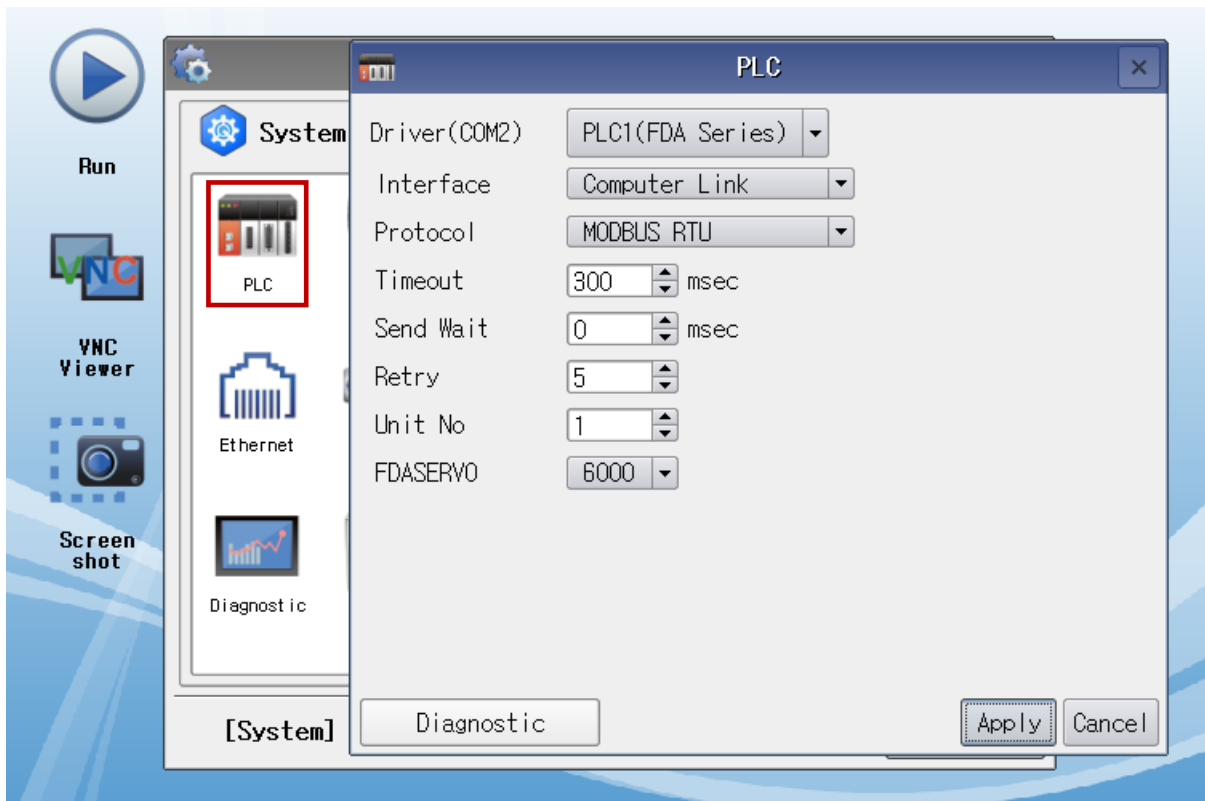
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C/RS-485	RS-232C/RS-485	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	NONE		

* 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]



Items	Settings	Remarks
Interface	"Computer Link	Fixed
Protocol	Modbus Rtu	
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.	
FDASERVO6000	0 : FDA7000 1 : FDA6000	

3.3 Communication diagnostics

- 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.)		

■ FDA 7000 Series

- **P01-15** :Communication speed "10" Settings

P01-15 setting value	RS-232C	RS-485	P01-15 setting value	RS-232C	RS-485
00	9600	9600	08	38400	9600
01	9600	19200	09	38400	19200
02	9600	38400	10	38400	38400
03	9600	57600	11	38400	57600
04	19200	9600	12	57600	9600
05	19200	19200	13	57600	19200
06	19200	38400	14	57600	38400
07	19200	57600	15	57600	57600

- **P01-18** : Terminal Prefix (Station ID) "1" configuration

Item	Description	Remark
P01-18	1	Prefix Station ID

4. External device setting

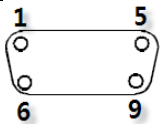
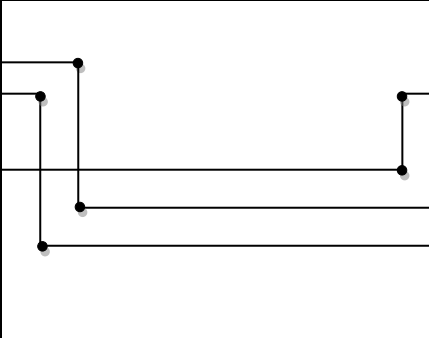
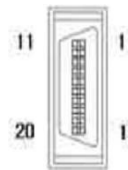
Configure the communication setting of the external device by referring to its user manual.

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 "HIGEN MOTOR Co., Ltd.")

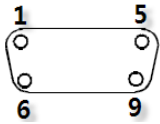
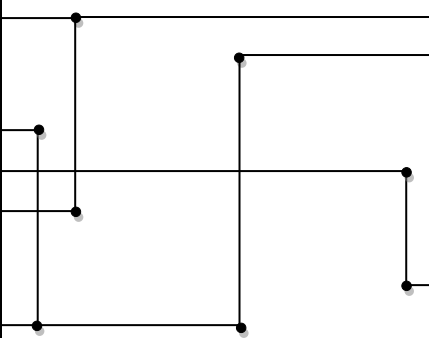
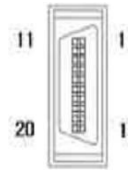
■ 1:1 connection

(A) TOP COM Port (9 pin) RS 232

TOP COM			Cable connection	Servo Drive (CN3 port, 20PIN)			
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				 <p>10120-3000VE(3M)</p>	
	RD	2		6	SG		
	SD	3					
	DTR	4					
	SG	5					
	DSR	6			9		SD
	RTS	7			10		RD
	CTS	8					
		9					

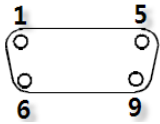
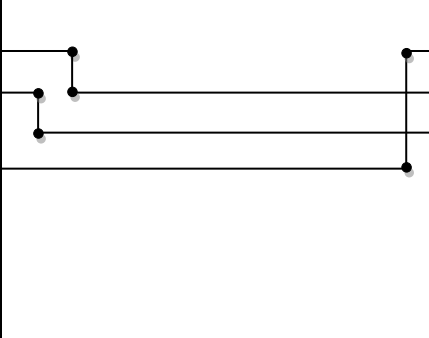

***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

(A) TOP COM Port (9 pin) RS 485

TOP COM			Cable connection	Servo Drive (CN3 port, 20PIN)				
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		7	P	 <p>10120-3000VE(3M)</p>		
		2			8		N	
		3						
	RDB	4						
		5						
	SDA	6						
		7						
		8					19	SG
	SDB	9						

■ 1:1 connection

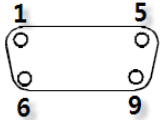
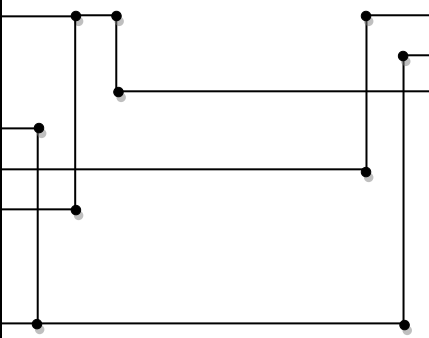

(A) TOP COM Port (9 pin)

TOP COM			Cable connection	Servo Drive (CN3 port, 15PIN)		
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				
	RD	2		2	GND	
	SD	3		13	TXD	
	DTR	4		14	RXD	
	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.

■ 1:1 connection

(A) TOP COM Port (9 pin)

TOP COM			Cable connection	Servo Drive (CN3 port)			
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		1	GND		
				2	2		TRXD-
				3	3		TRXD+
	RDB	4		4			
	SG	5		5			
	SDA	6		6			
				7			
				8			
	SDB	9		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.



· TOP DESIGN STUDIO Device marking method : Refer to FDA Series User Manual "Address Map" table

Address		Menu	Data Type	Menu name (variable name)	Property	Initial value	Min	Max	Unit
40011	0x000A	StE-01	INT	Display Select	R	1203	100	1330	-

(1) How to select a device: Select "INT/FLT" according to "Data Type" in table.

For FLT, select "Float" data class in TOP DESIGN STUDIO.

For INT, select "DEC" data class and data size "32bit" in TOP DESIGN STUDIO.

However, for Alarm Address/ Jog Key Address select ALM/RST device.

(2) How to select address: Select 4 digits as indicated after "4" in address.

(3) Caution relevant to "Properties": Please be careful with the use of devices dedicated to R (Read)/W (Write).

5.1 FDA 7000 Series

■ Standard type

Device	Bit Address	Word Address	Remarks
Integer Data Type	INT0011.00 – INT2205.15	INT 0011 – INT 2205	
Float Data Type	—	FLT 0011 – FLT 2205	
JOG	Key Jog Mode	INT 1001	
	Auto Jog Mode	INT 1003	
	Key Jog Speed	FLT 1002	
	Jog Speed, Time/REV	FLT 1003 – FLT 1019	
Jog Key	JOG ON	INT 2201	*Note 1)
	JOG OFF	INT 2202	*Note 1)
	Clockwise (CW)	INT 2203	*Note 1)
	Counter Clockwise (CCW)	INT 2204	*Note 1)
	Stop	INT 2205	*Note 1)
ALM	Current alarm request	ALM0	*Note 2)
RST	Current alarm clear	RST0	*Note 1)

*Note 1) Write-only device

*Note 2) Read-only Device

5.2 FDA 6000 Series

■ Standard type

Device	Bit Address	Word Address	Remarks
Integer Data Type	INT0011.00 – INT2205.15	INT 0011 – INT 2205	
Float Data Type	—	FLT 0011 – FLT 2205	
JOG	Auto Jog Speed	FLT 0701 – FLT 0703	
	Auto Jog Time	INT 0704 – INT 0706	
ALM	Current alarm request	ALM0	*Note 2)
RST	Current alarm clear	RST0	*Note 1)

*Note 1) Write-only device

*Note 2) Read-only Device

■ Location Determination Type

Device		Bit Address	Word Address	Remarks
Integer Data Type		INT0011.00 – INT2205.15	INT 0011 – INT 2205	
Float Data Type		——	FLT 0011 – FLT 2205	
JOG	Jog Speed	——	FLT 0605 – FLT 0606	
	INC Jog Value	——	FLT 0607 – FLT 0608	
ALM	Current alarm request	——	ALM0	*Note 2)
RST	Current alarm clear	RST0	——	*Note 1)

*Note 1) Write-only device

*Note 2) Read-only Device