

DONGBU ROBOT CO., LTD

iMS-J 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 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 “DongBu Robot Co.,Ltd – iMS-J Series Computer Link” is as follows.

Series	CPU	Link I/F	Communication method	System setting	Cable
	iMS-J Series		RS-422 (4 wire)	3. TOP communication setting 4. External device setting	5. Cable table

■ Connection configuration

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

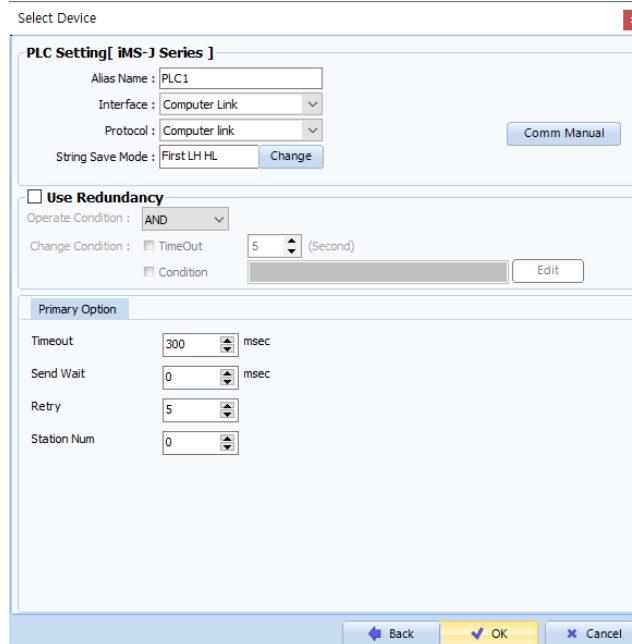
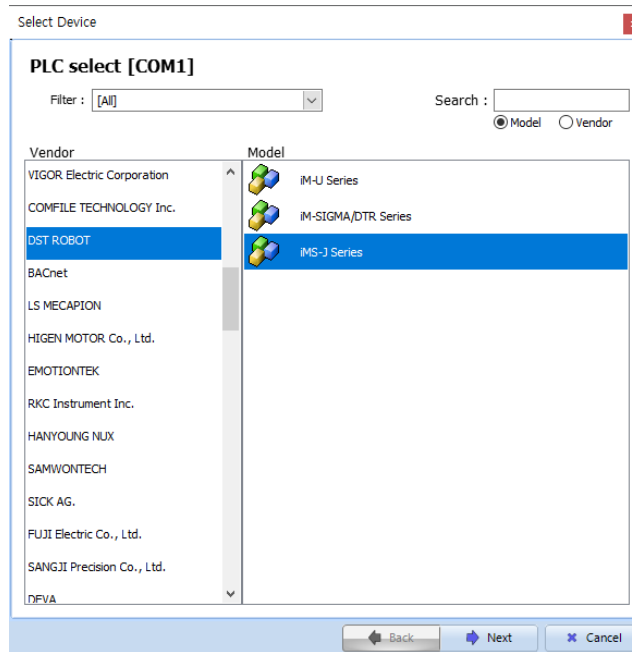


- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422/485 communication.



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 "Dongbu(DASAROBOT)".					
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>iMS-J Series</td> <td>Computer Link</td> <td>Computer Link</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	iMS-J Series	Computer Link
Model	Interface	Protocol					
iMS-J Series	Computer Link	Computer Link					

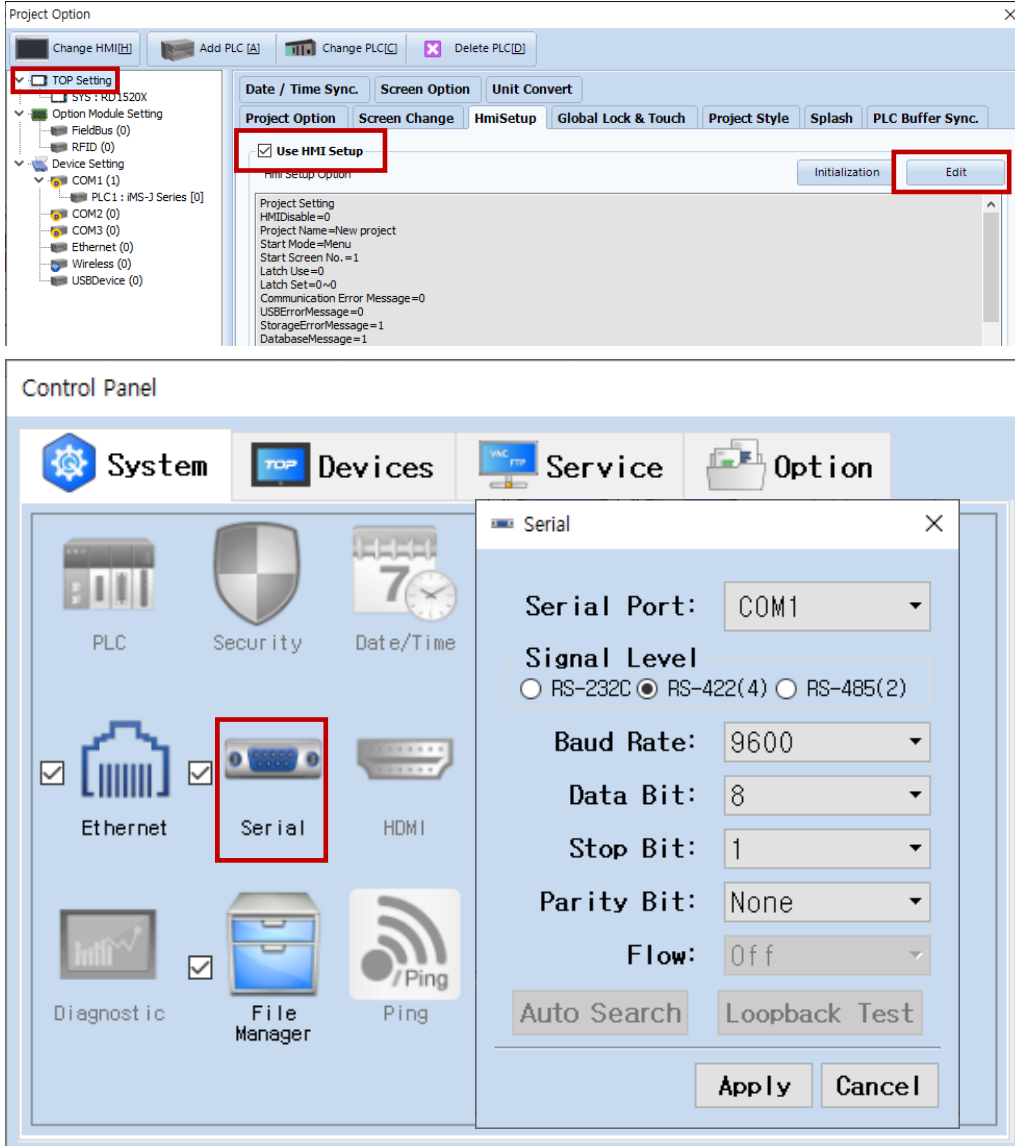
3. TOP communication setting

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-422	RS-422	
Baud Rate		9600	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

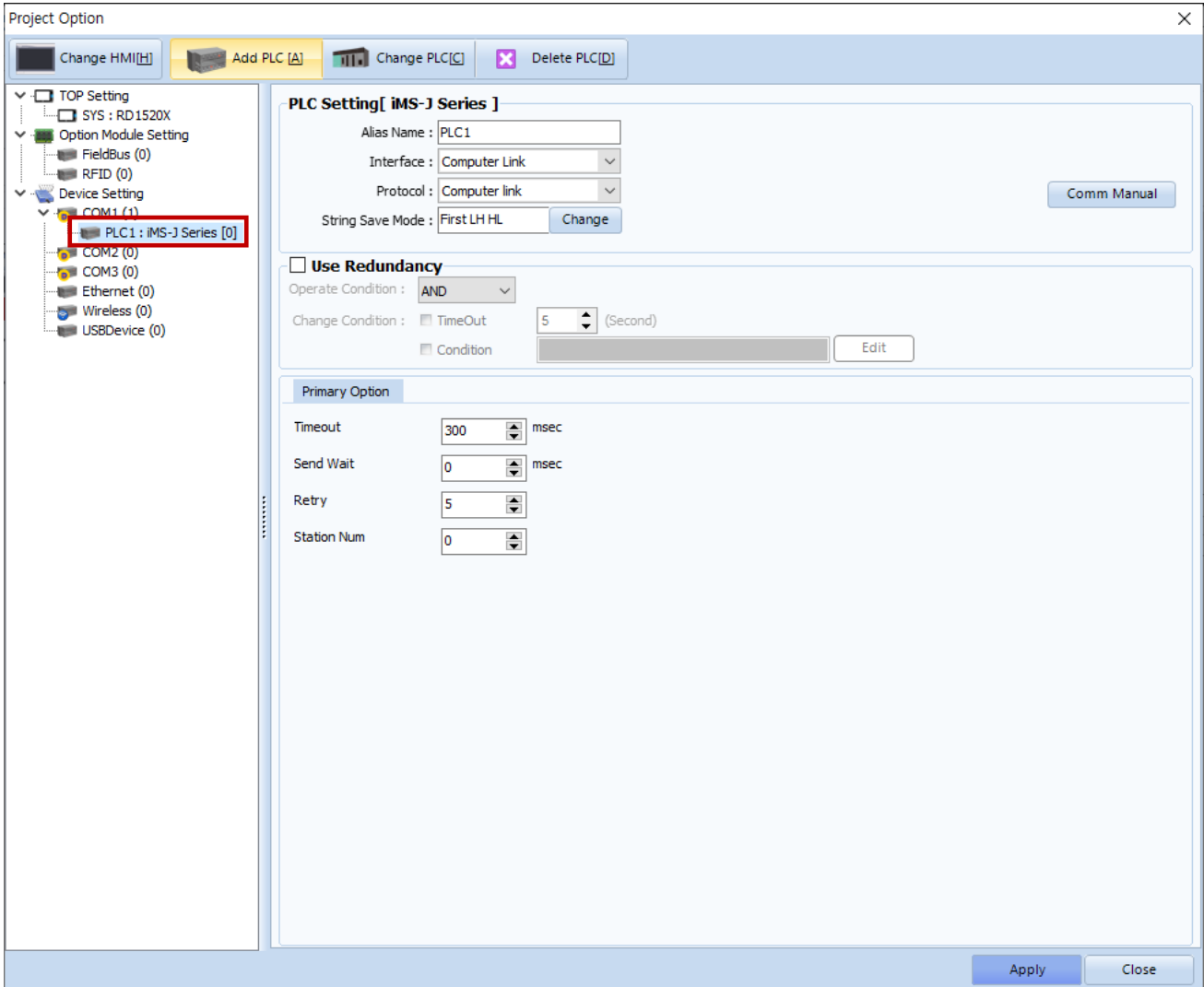
* The above settings are examples recommended by the company.

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 properties > PLC settings > COM > "PLC1 : iMS-J Series"]

– Set the options of the communication driver of DongBu Robot Co.,Ltd – iMS-J Series Computer Link in TOP Design Studio.



Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External device selection".
Protocol	Select the communication protocol between the TOP and an external device.	
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 Num	Enter the prefix of an external device.	

3.2. Communication setting in TOP

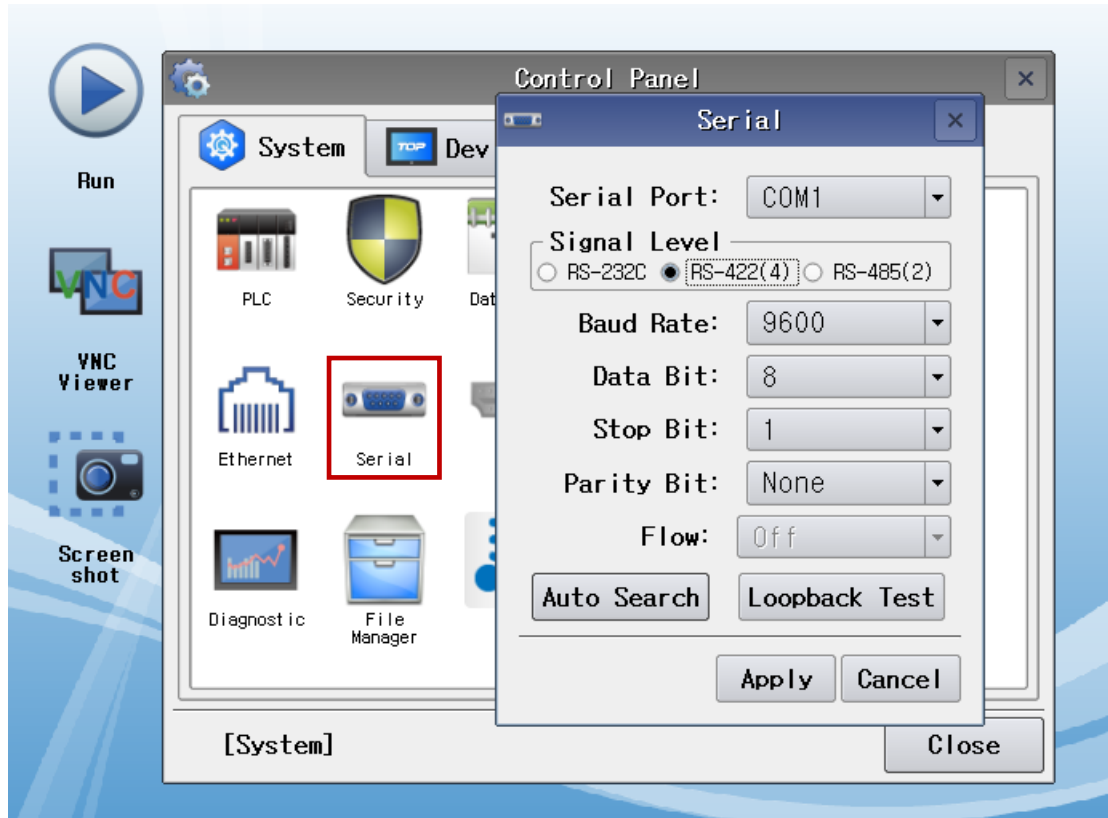
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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]



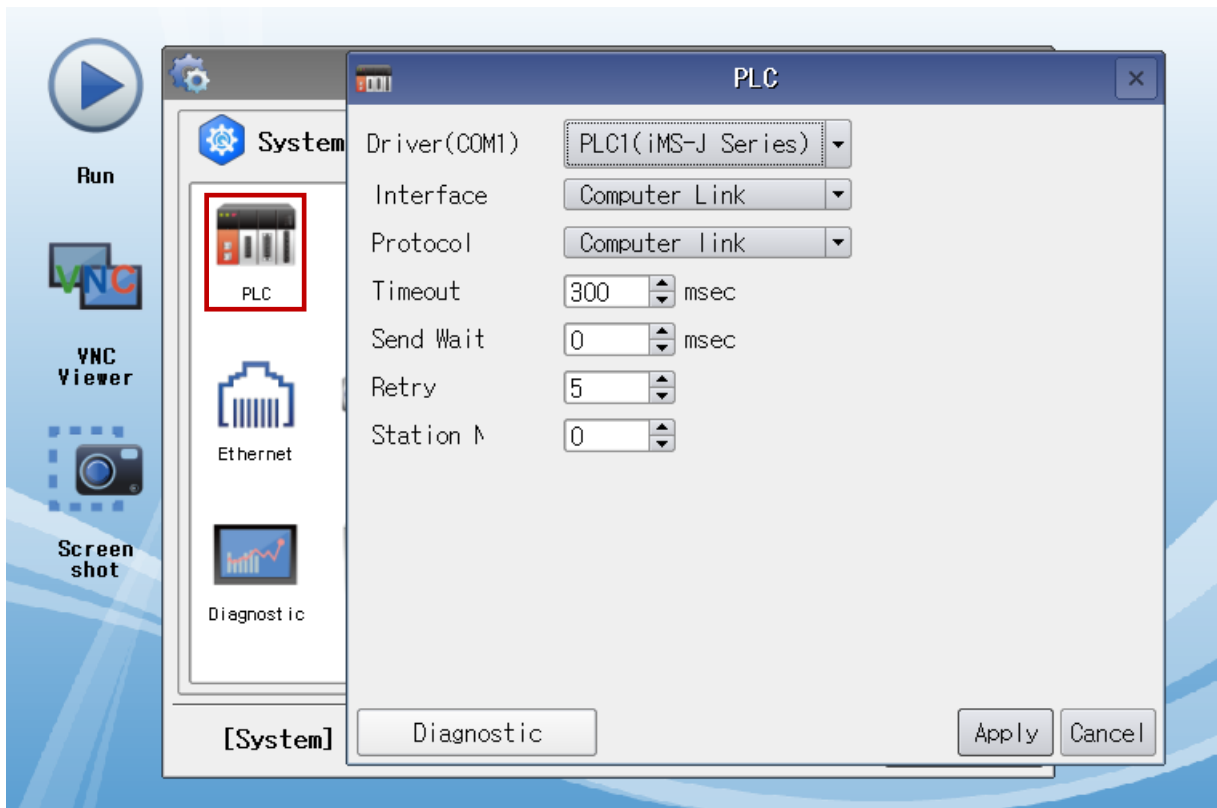
Items	TOP	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	9600		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

* 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	Select "Computer Link".	Refer to "2. External device selection".
Protocol	Select "Computer Link".	
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 Num	Enter the prefix of an 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 COM port 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

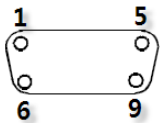
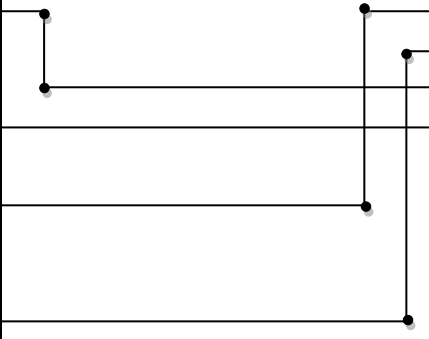
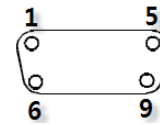
Refer to the manual of the external device to set the serial communication settings as follows (same as TOP serial communication settings).

Items	Settings
Signal Level	RS-422
Baud Rate	9600 BPS
Data Bit	8 BIT
Stop Bit	1 BIT
Parity Bit	NONE

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 chapter may differ from the recommendations of "DongBu Robot Co.,Ltd".)

■ RS-422 (1:1 connection)

COM			Cable connection	External device			
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	RDA	 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	
				2	2		RDB
				3	3		SDA
		RDB		4	4		SDB
				5	5		
		SDA		6	6		
				7	7		
				8	8		
		SDB		9	9		

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

■ RS-422 1 : N connection - Refer to 1:1 connection to connect in the following method.

TOP	Cable connection and signal direction	External device	Cable connection and signal direction	External device
Signal name		Signal name		Signal name
RDA	→	SDA	←	SDA
RDB	→	SDB	←	SDB
SDA	→	RDA	←	RDA
SDB	→	RDB	←	RDB
SG	→	SG	←	SG

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	Read/Write	Remarks
Contact point	IO00.0 ~ IO41.7	IO00 ~ IO41	Read/Write	*Note 1)
Integer variable	INT00.00 ~ INT99.15	INT00 ~ INT99	Read/Write	
Position variable	–	POS000 ~ POS999	Read/Write	*Note 2)
Controller status	STS0 ~ STS7	STS	Read	*Note 3)
Function failure error	–	MSG	Read	*Note 4)
Speed	–	SPD	Read/Write	*Note 5)
Current motion program file	–	JOB	Read	*Note 6)
Current position	–	CRP0 ~ CRP1	Read	*Note 7)
Relative direct move	–	JOG	Write	*Note 8)
Emergency stop	EMG	EMG	Write	*Note 9)
Execute the motion program	JOB_START	JOB_START	Write	*Note 10)
Stop the motion program	JOB_STOP	JOB_STOP	Write	*Note 11)
Reset the motion program	SYS_REBOOT	SYS_REBOOT	Write	*Note 12)
Return-to-origin execution	MOVE_ORIGIN	MOVE_ORIGIN	Write	*Note 13)
Start jog movement (+)	JOG_MOVE+	JOG_MOVE+	Write	*Note 14)
Start jog movement (-)	JOG_MOVE-	JOG_MOVE-	Write	*Note 15)
Move the jog continuously	JOG_CONTINUE	JOG_CONTINUE	Write	*Note 16)
End the jog movement	JOG_STOP	JOG_STOP	Write	*Note 17)

*Note 1) Contact point device (IO) has two bytes constituting one word, and has L/H structure. The bit range is "0 - 7".

*Note 2) The position variable device (POS) is Float-type data.

*Note 3) The bit information for the controller status (STS) is as follows.

Bit	Contents	Bit	Contents
STS 0	Robot Run	STS 4	Origin OK
STS 1	In Position	STS 5	Servo On
STS 2	Motor Power	STS 6	Exec Fail
STS 3	Alarm	STS 7	Seq Run

*Note 4) When an error occurs in the controller, the code for the cause of the error is displayed.

*Note 5) It displays the rotation speed when the motor is rotating.

The data range that can be entered is a percentage value of RPM set to "1 - 100".

*Note 6) It displays the file name of the currently running motion program. It can be used only as a character string (12 characters).

*Note 7) It reads the current position of the controller.

CRP	Type	Data Type
CRP 0	Motor encoder pulse	Decimal
CRP 1	Distance (Joint)	Float

*Note 8) Relative direct move device (JOG) is Float-type data.

It moves relative to the current position according to the type of motion, position type and position information.

The input data range is -99999.999~99999.999. If it is out of range, the value is entered as the maximum or minimum value.

*Note 9) Stop the controller in emergency situations.

*Note 10) Execute the set motion program number.

*Note 11) Stop the running motion program.

*Note 12) Reset to the first step in step-by-step motion program execution.

*Note 13) Execute returning to the start point.

*Note 14) Start moving at the speed set in the jog speed parameter. (positive direction)

*Note 15) Start moving at the speed set in the jog speed parameter. (negative direction)

*Note 16) If executing continuous jog movement (JOG_CONTINUE) after starting jog movement (JOG_MOVE+,-), it moves continuously.

*Note 17) Stop jog movement.

※ Write-only Device Use Method

① Pop-up the object's property window → ② Effects and actions → ③Condition setting → ④Action setting

Set to enter data to the corresponding device when setting the action. (regardless of data value)

