

# MITSUBISHI Electric Corporation

## MELSERVO MR-J4 Series

### MELSERVO J4 Series 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 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 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** [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 "MITSUBISHI Electric Corporation - MELSERVO MR-J4 Series" is as follows:

Series	CPU	Link I/F	Communication method	Communication setting	Cable
MELSERVO MR-J4	MR-J4-□A MR-J4-□A-RJ	CN3 Port on CPU unit	RS-422	<a href="#">3. TOP communication setting</a> <a href="#">4. External device setting</a>	<a href="#">5. Cable table</a>

## ■ Connection configuration

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

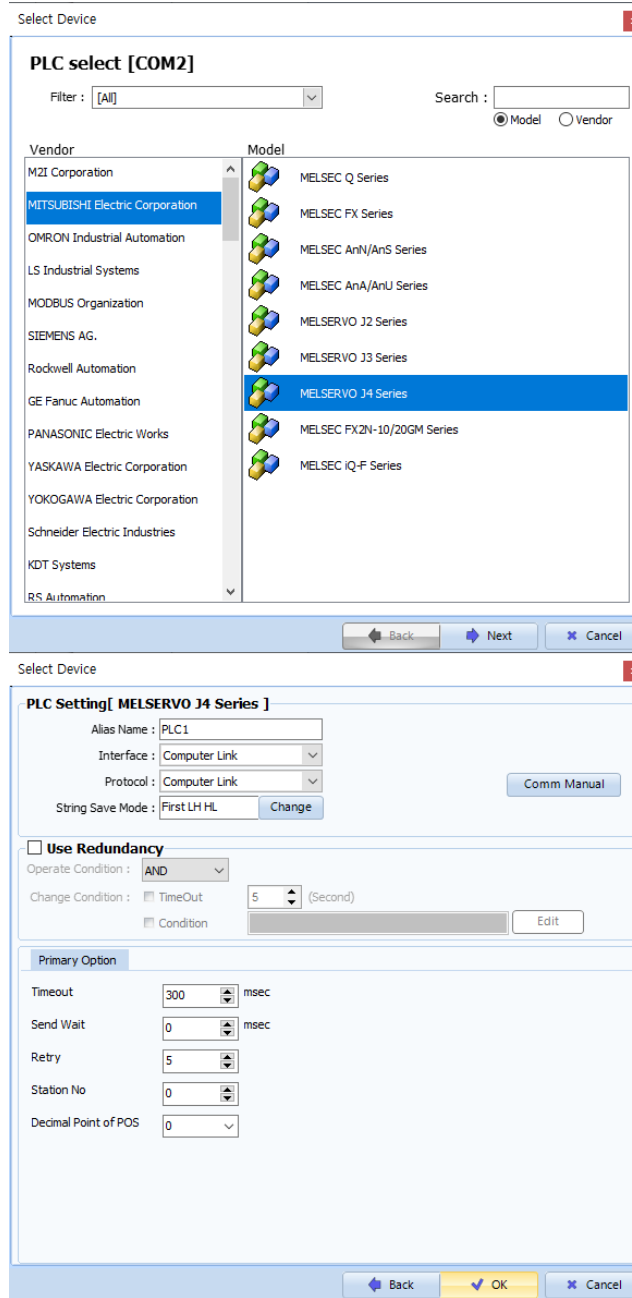


- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422/485 communication.



## 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. Please 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 style="background-color: black; color: white;">Model</th> <th style="background-color: black; color: white;">Interface</th> <th style="background-color: black; color: white;">Protocol</th> </tr> </thead> <tbody> <tr> <td>MELSERVO J4 Series</td> <td>Computer Link</td> <td>Computer Link</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	MELSERVO J4 Series	Computer Link
Model	Interface	Protocol					
MELSERVO J4 Series	Computer Link	Computer Link					

### 3. TOP communication setting

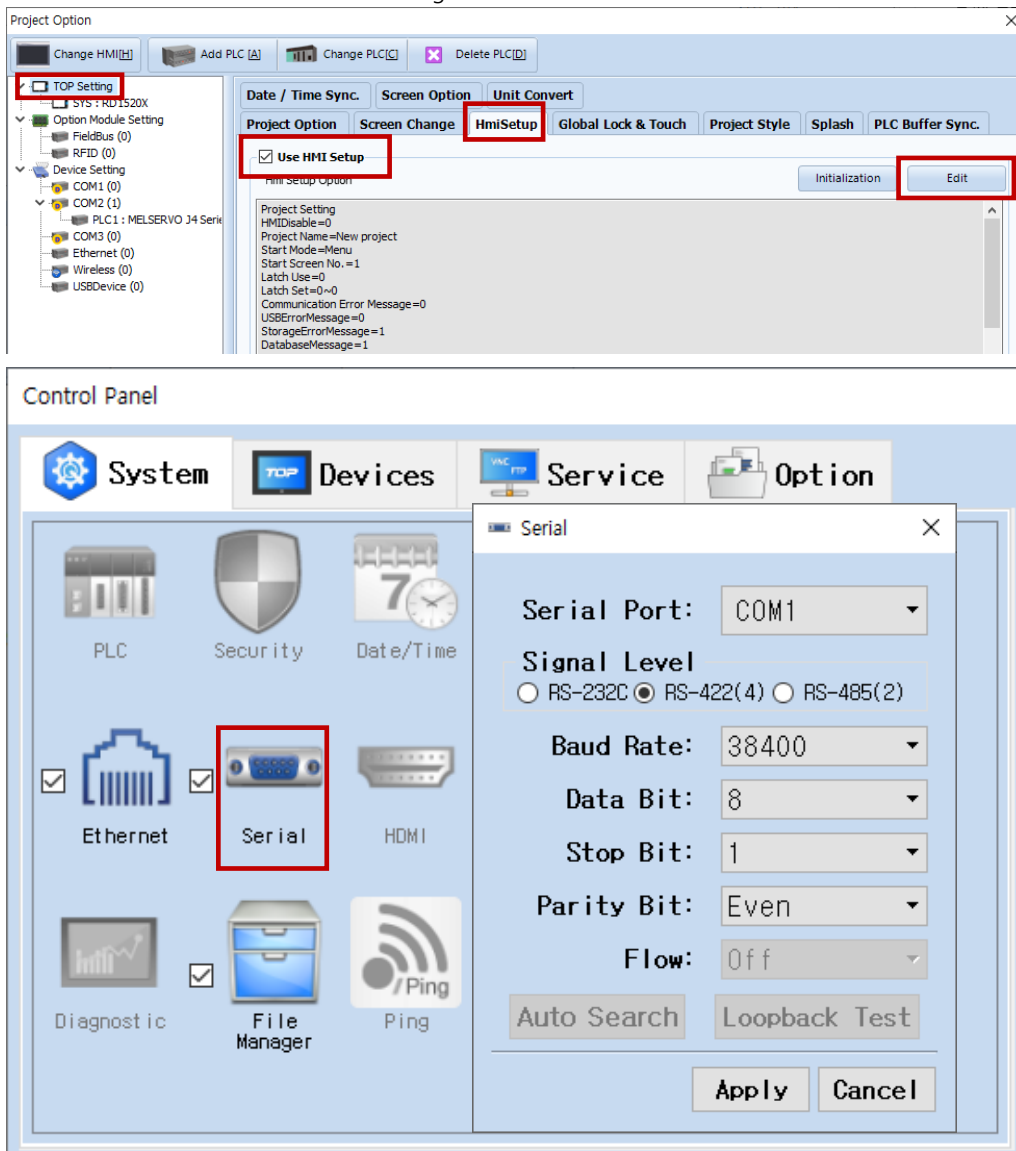
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

#### 3.1 Communication setting in TOP Design Studio

##### (1) Communication interface setting

■ [Project > Project 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-422	RS-422	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	Even		

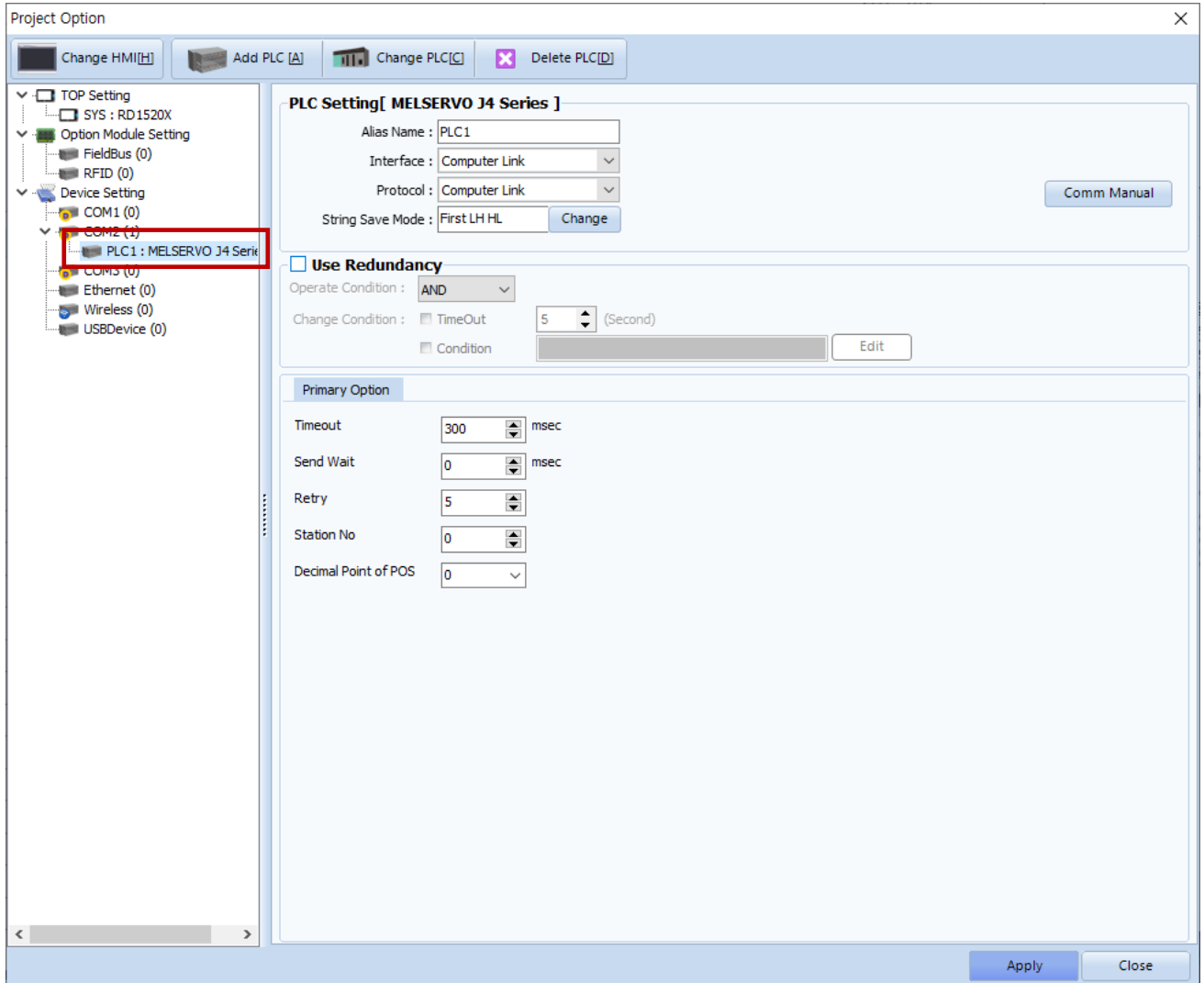
\* The above settings are examples recommended by the company.

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 Property > Device Setting > COM > "PLC1 : MELSERVO J4 Series"]

- Set the options of the MELSERVO J4 Series communication driver in TOP Design Studio.



Items	Settings	Remarks
Interface	Select "Computer Link".	<a href="#">Refer to "2. External device selection"</a> .
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.	
Retry	Set the number of request retries when the data request result is no response/negative response.	
Station Num	Set the prefix of an external device.	
Decimal Point of POS	Configures the transfer length arrangement of the external device. Must be configured identically to the settings of the external device in order for normal writing procedure to occur on the POS address.	<b>*Note)</b>

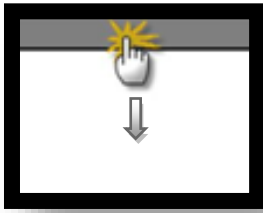
**\*Note) Refer to the user manual of the external device for more details on transfer length arrangement.**

Decimal Point of POS	Input Scale for Position data	
	[mm]	[inch]
0	- 999.999 ~ + 999.999	- 99.9999 ~ + 99.9999
1	- 9999.99 ~ + 9999.99	- 999.999 ~ + 999.999
2	- 99999.9 ~ + 99999.9	- 9999.99 ~ + 9999.99
3	- 999999 ~ + 999999	- 99999.9 ~ + 99999.9

### 3.2. Communication setting in TOP

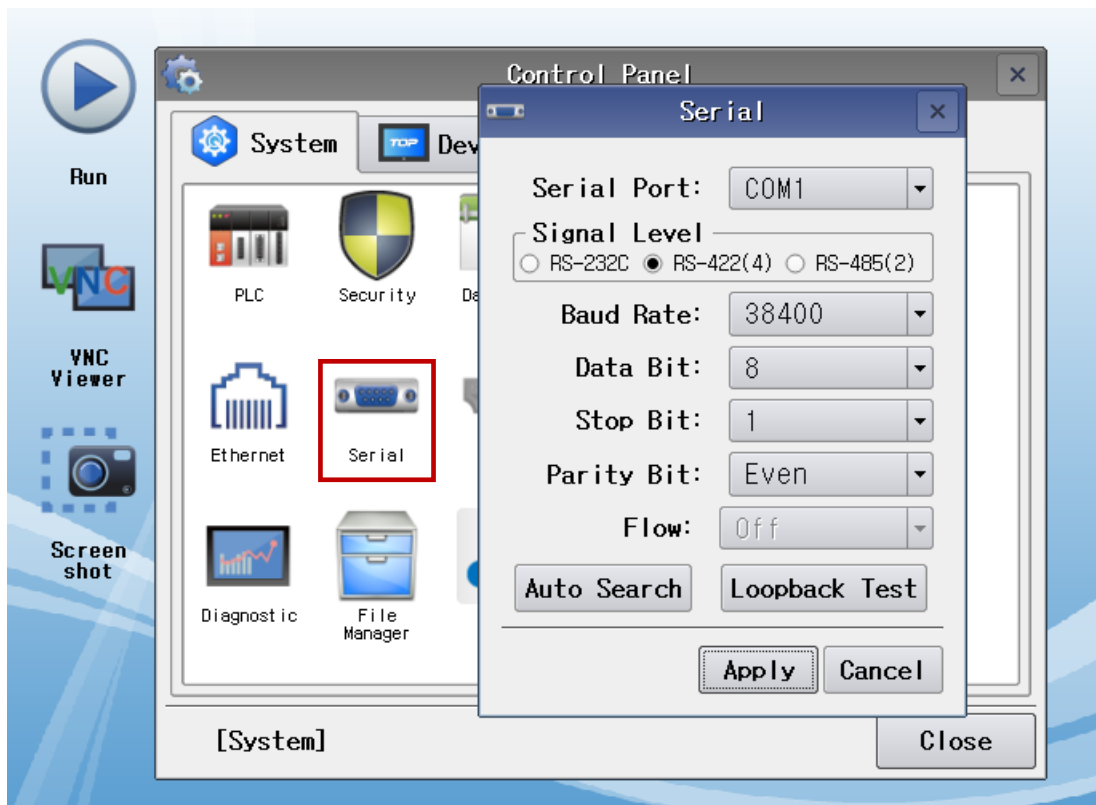
\* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ 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]



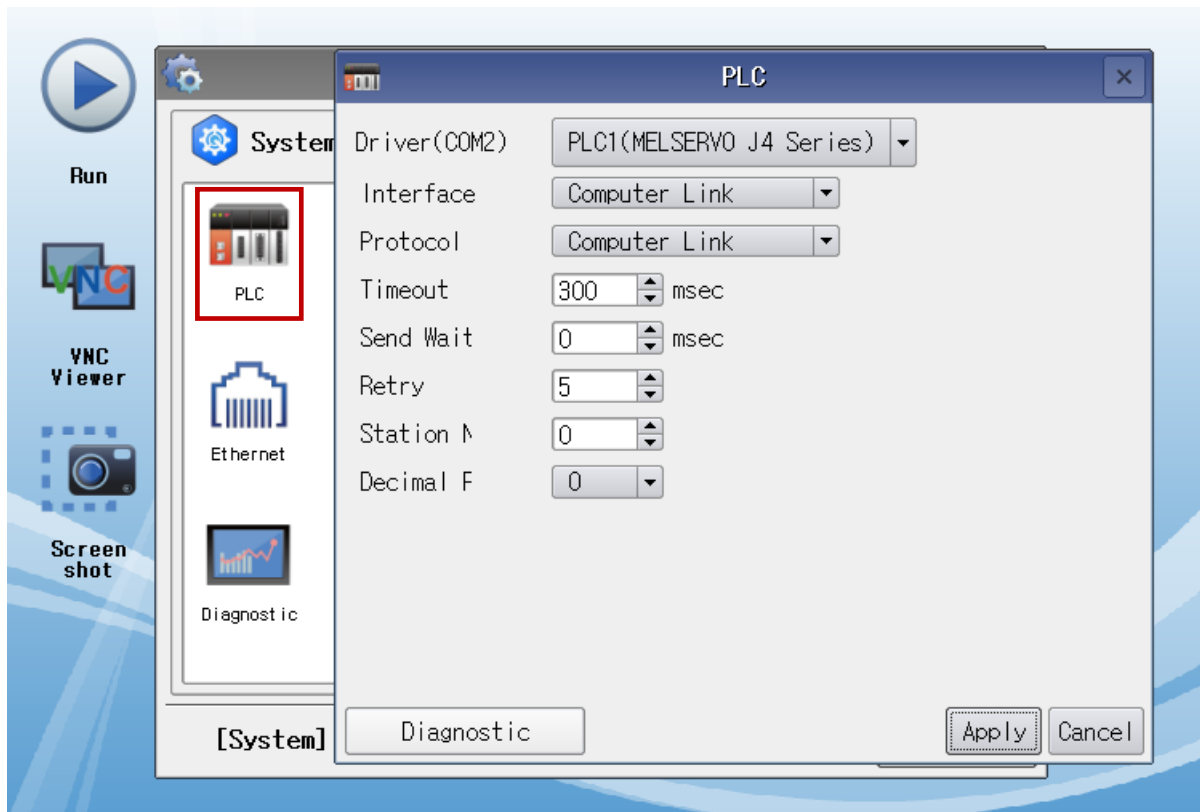
Items	TOP	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	Even		

\* 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]



Items	Settings	Remarks
Interface	Select "Computer Link".	<a href="#">Refer to "2. External device selection".</a>
Protocol	Select "Computer Link".	<a href="#">Refer to "2. External device selection".</a>
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.	
Retry	Set the number of request retries when the data request result is no response/negative response.	
Station Num	Set the prefix of an external device.	
Decimal Point of POS	Configures the transfer length arrangement of the external device. Must be configured identically to the settings of the external device in order for normal writing procedure to occur on the POS address.	<b>*Note)</b>

**\*Note) Refer to the user manual of the external device for more details on transfer length arrangement.**

Decimal Point of POS	Input Scale for Position data	
	[mm]	[inch]
0	- 999.999 ~ + 999.999	- 99.9999 ~ + 99.9999
1	- 9999.99 ~ + 9999.99	- 999.999 ~ + 999.999
2	- 99999.9 ~ + 99999.9	- 9999.99 ~ + 9999.99
3	- 999999 ~ + 999999	- 99999.9 ~ + 99999.9

### 3.3 Communication diagnostics

- Check the interface setting status between the TOP and 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.

<b>OK</b>	<b>Communication setting normal</b>
<b>Time Out Error</b>	<b>Communication setting abnormal</b> - Check the cable, TOP, and external device setting status. <b>(Reference: Communication diagnostics sheet)</b>

■ Communication diagnostics sheet

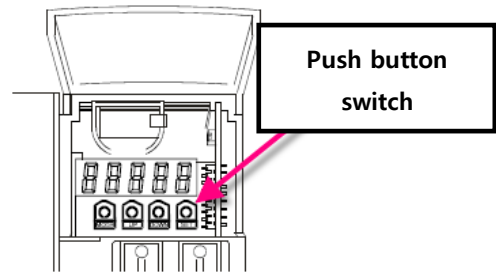
- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Contents	Check		Remarks	
System configuration	How to connect the system	OK	NG	<a href="#">1. System configuration</a>	
	Connection cable name	OK	NG		
TOP	Version information	OK	NG	<a href="#">2. External device selection</a> <a href="#">3. Communication setting</a>	
	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	<a href="#">4. External device setting</a>	
	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	<a href="#">6. Supported addresses</a> (For details, please refer to the PLC vendor's manual.)	



## 4. External device setting

- The serial communication parameter of the "MELSERVO MR-J4 Series" is configured using the "Push button switch".
- Reboot the external device after configuration.



For a more detailed setting method than described in this example, refer to the user manual of the external device.

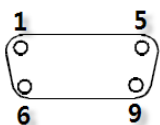
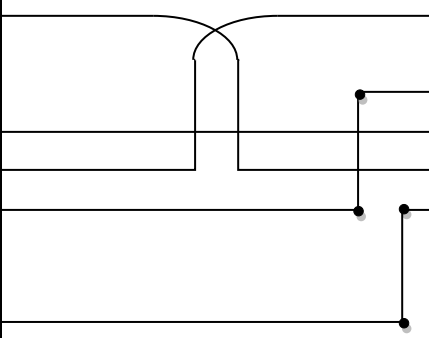
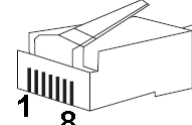
### ■ Communication Parameter Settings for MELSERVO-J4 Series

Items	Parameter	Descriptions																																														
Prefix number setting	Basic parameter [Pr.PC20]	0 (Default value: 0)																																														
Select the serial communication speed.	Basic parameter [Pr.PC21] : 0020	<p>Configure the 4-digit value of the default parameter for Pr.PC21 as shown below.</p> <table border="1" style="margin-left: 20px;"> <tr> <td style="width: 30px; height: 30px;"></td> <td style="width: 30px; height: 30px; text-align: center;">②</td> <td style="width: 30px; height: 30px; text-align: center;">①</td> <td style="width: 30px; height: 30px;"></td> </tr> </table> <table border="1" style="margin-left: 20px; width: 100%;"> <thead> <tr> <th style="width: 30px;">①</th> <th style="width: 30px;">Select</th> <th style="width: 30px;">Serial</th> <th style="width: 30px;">②</th> <th style="width: 30px;">Select</th> <th style="width: 30px;">Response</th> </tr> <tr> <th colspan="3">Transmission Speed</th> <th colspan="3">Latency</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>9600 BPS</td> <td>0</td> <td></td> <td>Null</td> </tr> <tr> <td>1</td> <td></td> <td>19200 BPS</td> <td>1</td> <td></td> <td>Valid</td> </tr> <tr> <td>2</td> <td></td> <td>38400 BPS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td>57600 BPS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td>115200 BPS</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		②	①		①	Select	Serial	②	Select	Response	Transmission Speed			Latency			0		9600 BPS	0		Null	1		19200 BPS	1		Valid	2		38400 BPS				3		57600 BPS				4		115200 BPS			
	②	①																																														
①	Select	Serial	②	Select	Response																																											
Transmission Speed			Latency																																													
0		9600 BPS	0		Null																																											
1		19200 BPS	1		Valid																																											
2		38400 BPS																																														
3		57600 BPS																																														
4		115200 BPS																																														

## 5. Cable table

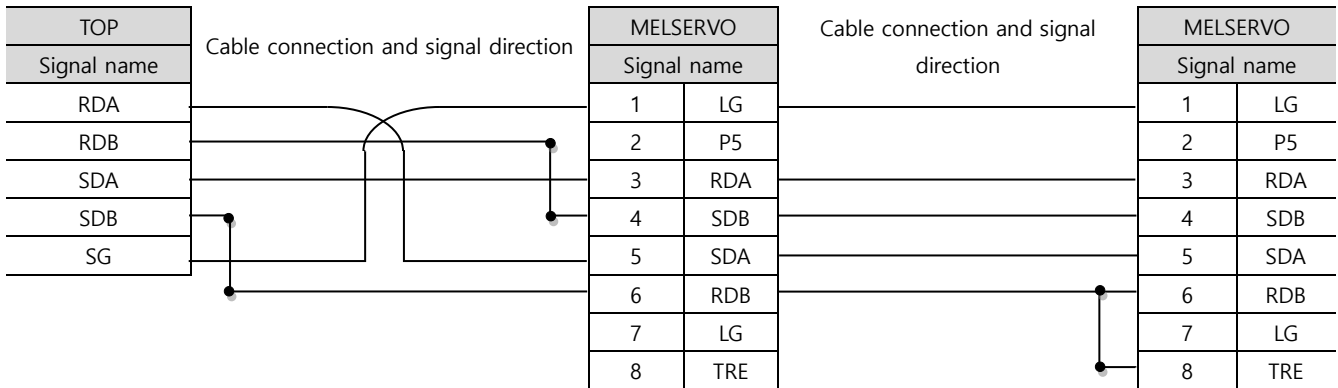
This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.  
 (The cable diagram described in this section may differ from the recommendations of "MITSUBISHI Electric Corporation")

### ■ RS-422 (1:1 connection)

COM			Cable connection	PLC		
Pin arrangement* <i>Note 1)</i>	Signal name	Pin number		Pin number	Signal name	Pin arrangement* <i>Note 1)</i>
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	RDA	1		1	LG	 <p>Based on communication cable connector front, 8-pin male RJ45 (Male, convex)</p>
		2		2	P5	
		3		3	RDP	
	RDB	4		4	SDN	
	SG	5		5	SDP	
	SDA	6		6	RDN	
		7		7	LG	
		8		8	TRE	
	SDB	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 way.



## 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	Word	Remarks
Bit Device			
SP	SP0 - SP6	-	<p><b>Servo amplifier request</b></p> <p>SP0: Clear status display data            SP1 : Reset current alarm            SP2: Clear alarm history</p> <p><b>- Restrict or disable input devices (DI), external analog input signal, and pulse train input excluding the EM2 (force stop 2), LSP (forward rotation stroke end), and LSN (reverse rotation stroke end)</b></p> <p>SP3: (a) Restriction            SP5: (b) Disable restriction</p> <p><b>- Restrict or disable output device (DO)</b></p> <p>SP4: (a) Restriction            SP6: (b) Disable restriction</p> <p>Note 1)</p>
OM	OM0 to OM2 OM4 - OM5	-	<p><b>Operation mode selection</b></p> <p><b>READ: Test operation mode</b></p> <p>Read test operation mode            0000: Normal mode (Not a test operation mode)            0001: JOG operation            0002: Positioning operation            0003: No motor operation            0004: Output signal (DO) forced export</p> <p><b>WRITE: Select operation mode</b></p> <p>Switch operation mode            0000: Disable test operation mode            0001: JOG operation            0002: Positioning operation            0004: Output signal (DO) forced export</p>
TMB	TMB1 - TMB6	-	<p><b>Instruction demand</b></p> <p><b>- Used when paused during a test operation (positioning operation)</b></p> <p>TMB1: Pause            TMB5: Resume remaining length            TMB6: Clear remaining length</p> <p>TMB2: Start command for test operation (positioning operation)</p> <p><b>- Select positioning direction for test operation (positioning operation)</b></p> <p>TMB3: Forward rotation direction            TMB4: Reverse rotation direction</p> <p>Note 1)</p>

Device	Bit	Word	Remarks
OTI	OTI0 - OTI5	-	OTI0 - One-touch tuning command OTI1 - One-touch tuning start command(Basic mode) OTI2 - One-touch tuning start command(High mode) OTI3 - One-touch tuning start command(Low mode) OTI4 - One-touch tuning start command OTI5 - Return to initial value OTI6 - Return to value before adjustment Note 1)
Word device			
PA	PA1.00 - PA32.31 PA1001.00 - PA1032.31	PA1 - PA32(RAM) PA1001 - PA1032(EEPROM)	Basic setting parameter
PB	PB1.00 - PB64.31 PB1001.00- PB1064.31	PB1 - PB64(RAM) PB1001- PB1064(EEPROM)	Gain filter parameter
PC	PC1.00 - PC80.31 PC1001.00- PC1080.31	PC1 - PC80(RAM) PC1001- PC1080(EEPROM)	Extension setting parameter
PD	PD1.00 - PD48.31 PD1001.00 - PD1048.31	PD1 - PD48(RAM) PD1001 - PD1048(EEPROM)	I/O setting parameter
PE	PE1.00 - PE64.31 PE1001.00 - PE1064.31	PE1 - PE64(RAM) PE1001 - PE1064(EEPROM)	Extension setting No.2 parameter
PF	PF1.00 - PF48.31 PF1001.00 - PF1048.31	PF1 - PF48(RAM) PF1001 - PF1048(EEPROM)	Extension setting No.3 parameter
PO	PO1.00 - PO32.31 PO1001.00 - PO1032.31	PO1 - PO32(RAM) PO1001 - PO1032	Option unit parameter
PL	PL1.00 - PL48.31 PL1001.00 - PL1048.31	PL1 - PL48(RAM) PL1001 - PL1048(EEPROM)	Linear servo motor/DD motor setting parameter
PT	PT1.00 - PT48.31 PT1001.00 - PT1048.31	PT1 - PT48(RAM) PT1001 - PT1048(EEPROM)	Positioning control parameter
ST	ST0.00 - ST48.31	ST0 - ST48	Status display Note 2)
AL	AL0.00 - AL1.15 AL11.00 - AL25.15	AL0 - AL1 AL11 - AL25	Alarm (current alarm compatible with J3) Note 2)
AL	AL200.00 - AL205.15 AL210.00 - AL215.15 AL230.00 - AL235.15	AL200 - AL205 AL210 - AL215 AL230 - AL235	Alarm (alarm history compatible with J3) Note 2)
ALM	ALM0.00 - ALM1.15 ALM11.00 - ALM59.15	ALM0 - ALM1 ALM11 - ALM59	Alarm (current alarm, extended for J4) Note 2)
ALM	ALM200.00 - ALM215.15 ALM220.00 - ALM235.15 ALM240.00 - ALM255.15	ALM200 - ALM215 ALM220 - ALM235 ALM240 - ALM255	Alarm (alarm history, extended for J4) Note 2)
POS	POS1.00 - POS255.31 POS1001.00 - POS1255.31	POS1 - POS255(RAM) POS1001 - POS1255(EEPROM)	Point table (position)
SPD	SPD1.00 - SPD255.31 SPD1001.00 - SPD1255.31	SPD1 - SPD255(RAM)	Point table (speed)

Device	Bit	Word	Remarks
		SPD1001 - SPD1255(EEPROM)	
ACT	ACT1.00 - ACT255.31 ACT1001.00 - ACT1255.31	ACT1 - ACT255(RAM) ACT1001 - ACT1255(EEPROM)	Point table (acceleration time constant)
DCT	DCT1.00 - DCT255.31 DCT1001.00 - DCT1255.31	DCT1 - DCT255(RAM) DCT1001 - DCT1255(EEPROM)	Point table (deceleration time constant)
DWL	DWL1.00 - DWL255.31 DWL1001.00 - DWL1255.31	DWL1 - DWL255(RAM) DWL1001 - DWL1255(EEPROM)	Point table
AUX	AUX1.00 - AUX255.31 AUX1001.00 - AUX1255.31	AUX1 - AUX255(RAM) AUX1001 - AUX1255(EEPROM)	Point table (auxiliary function)
MCD	MCD1.00 - MCD255.31 MCD1001.00 - MCD1255.31	MCD1 - MCD255(RAM) MCD1001 - MCD1255(EEPROM)	Point table (M code)
MD	MD0.00 - MD11.15	MD0 - MD11	Machine diagnosis data
OTS	OTS0.00 - OTS3.15	OTS0 - OTS3	One-touch tuning data
DI	DI0.00 - DI6.15	DI0 - DI6	External input
DO	DO0.00 - DO4.15	DO0 - DO4	External output Note 2)
DOUBLE WORD DEVICE			
LD	LD0.00 - LD1.31	LD0 - LD1	Current position latch data Note 2)
RR	RR1.00 - RR4.31 RR1001.00 - RR100.314	RR1 - RR4 RR1001 - RR1004	The value of the general purpose register
RD	RD1.00 - RD4.31	RD1 - RD4	The value of the general purpose register
ALD	ALD0.00 - ALD1.31	ALD0 - ALD1	Lifetime diagnosis
TMI	TMI0.00 - TMI2.31	TMI0 - TMI2	Input signal for test operation (for test operation) Note 1)
TMO	TMO0.00 - TMO0.31	TMO0	Forced output of signal pin (for test operation) Note 1)
TMD	TMD0.00 - TMD1.31 TMD3.00 - TMD3.31	TMD0 - TMD1 TMD3	Set data (for test operation) Note 1)

Note 1) Write-only

Note 2) Read-only