MITSUBISHI Electric Corporation MELSERVO MR-J3 Series

MELSERVO J3 Series Driver

Supported version

TOP Design Studio V1.0 or higher



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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 how to set up communication for external devices.

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Describes the cable specifications required for connection.

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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–J3 Series" is as follows:

Series	СРИ	Link I/F	Communication method	Communication setting	Cable
MELSERVO MR–J3	MR-J3-□A	CN3 Port on CPU unit	RS-422	<u>3. TOP</u> communication <u>setting</u> <u>4. External device</u> <u>setting</u>	<u>5. Cable table</u>

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.

Select Device							
PLC select [CO	M1]						
Filter : [All]			\sim		Search :		
					C) Model	Vendor
Vendor		Model					
M2I Corporation	^	\$	MELSEC C) Series			
MITSUBISHI Electric Corp	oration	8	MELSEC F	X Series			
OMRON Industrial Autom	ation	8	MELSEC A	nN/AnS Series			
LS Industrial Systems				nA/AnU Series			
MODBUS Organization				D J2 Series			
SIEMENS AG.							
Rockwell Automation		80	MELSERV	O J3 Series			
GE Fanuc Automation		8	MELSERV	D J4 Series			
PANASONIC Electric Wor	ks	8	MELSEC F	X2N-10/20GM	Series		
YASKAWA Electric Corpo	ration	8	MELSEC (Q-F Series			
YOKOGAWA Electric Corp	poration						
Schneider Electric Indust	ries						
KDT Systems							
RS Automation	~						
elect Device PLC Setting[MELSE	RVO J3 Ser	ies]					
Alias Name :	PLC1						
	Computer Link		\sim				
	Computer Link		\sim			Con	nm Manual
String Save Mode :	First LH HL	Ch	ange				
Use Redundancy							
Operate Condition :		c	(Second)				
Change Condition :	Condition	5		,		E	dit
Primary Option							
Timeout		msec					
Send Wait		msec					
Retry	5						
Station No	0						
Decimal Point of POS	0 ~						

Settings			Contents	
ТОР	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.		
		Model	Interface	Protocol
MELSERVO J3 Series Computer Link Comp			Computer Link	
	Please check the system configuration in Chapter 1 to see if the external d			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. Project Option × Change HMI[H] Kald PLC [A] The Change PLC[C] Change PLC[D] TOP Setting Date / Time Sync. Screen Option Unit Convert Dotion Module Setting Project Option Screen Change HmiSetup Global Lock & Touch Project Style Splash PLC Buffer Sync. Poton Module Setting
 FieldBus (0)
 RFID (0)
 Device Setting
 COM1 (1)
 PLC1: MELSERVO J3 Serie 🖂 Use HMI Setup Initialization Edit misetup opt Project Setting HMIDisable=0 Project Name=New proj Start Knode=Menu Start Screen No.=1 Latch Use=0 Latch Set=0~0 Communication Error M USBErrorMessage=0 COM2 (0) COM3 (0) Ethernet (0) ^ New projec 👦 Wireless (0) USBDevice (0) essage rorMessage=1 Message=1 Control Panel Service 🔎 Option System Devices TOP 🚥 Serial \times Serial Port: COM1 • 1 Signal Level PLC Security Date/Time ○ RS-232C ● RS-422(4) ○ RS-485(2) Baud Rate: 38400 • 0 Data Bit: 8 \checkmark • \sim Stop Bit: 1 Ŧ Ethernet Serial HDM I Parity Bit: Even Ŧ Flow: Off \checkmark / Ping Auto Search Loopback Test File Ping Diagnost ic Manager Apply Cancel

Items	ТОР	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 > PLC Settings > COM > "PLC1 : MELSERVO J3 Series"]
 - Set the options of the MELSERVO J3 Series communication driver in TOP Design Studio.

Project Option	×
Change HMI[H] Kald PLC [A] The Change PLC C C Delete PLC D	
TOP Setting SYS: RD1530X Control Nolde Setting FieldBus (0) Protocol: Computer Link Protocol: First LH HL Charge Condition:: Interface: Primary Option Timeout 300 Timeout 300 maec Retry S Station No Decimal Point of POS P	Comm Manual
	Apply Close

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select "Computer Link".	device selection".
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	Configures the transfer length arrangement of the external device. Must be	
POS	configured identically to the settings of the external device in order for normal	*Note)
	writing procedure to occur on the POS address.	

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

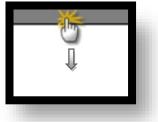
Decimal Point of POS	Input Scale for Position data		
Decimal Point of POS	[mm]	[inch]	
0	- 999.999 ~ + 999.999	- 99.9999 ~ + 99.9999	
1	- 9999.99 ~ + 9999.99	- 999.999 ~ + 999.999	
2	- 99999.9 ~ + 99999.9	- 9999.99 ~ + 9999.99	
3	- 999999 ~ + 999999	- 99999.9 ~ + 99999.9	



3.2. Communication setting in TOP

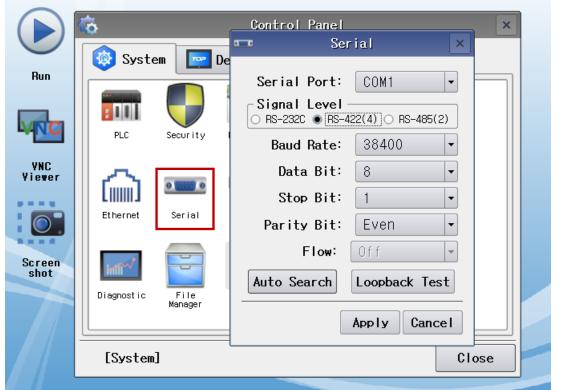
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ 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	ТОР	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	Eve	n	

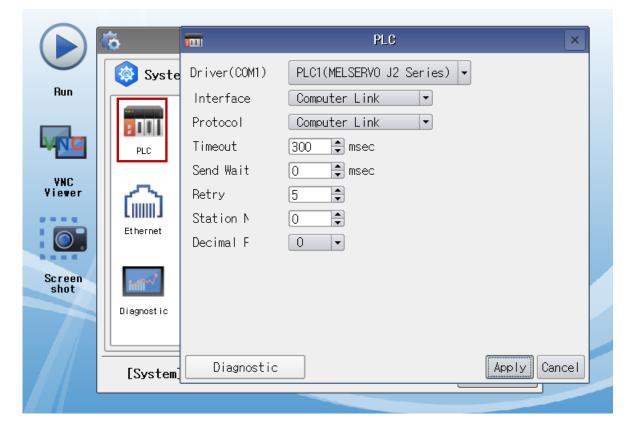
* The above settings are setting examples recommended by the company.

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
Protocol	Select "Computer Link".	device selection".
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	Configures the transfer length arrangement of the external device. Must be	
POS	configured identically to the settings of the external device in order for normal	*Note)
	writing procedure to occur on the POS address.	

*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		
Decimal Point of POS	[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 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.

ОК	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.

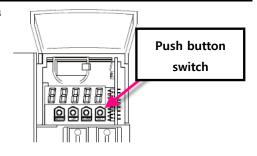
Items	Contents		Ch	eck	Remarks
System	How to connect the sy	rstem	OK	NG	
configuration	figuration Connection cable name		OK	NG	1. System configuration
ТОР	Version information	OK	NG		
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings	5	OK	NG	
	Relative prefix	Project setting	OK	NG	
		Communication diagnostics	ОК	NG	2. External device selection 3. Communication setting
	Serial Parameter	Transmission Speed	ОК	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name	OK	NG		
	Communication port n	OK	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings		OK	NG	1. External device cotting
	Serial Parameter	Transmission Speed	ОК	NG	<u>4. External device setting</u>
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range				6. Supported addresses
			ОК	NG	(For details, please refer to the PLC vendor's manual.)



4. External device setting

- The serial communication parameter of the "MELSERVO MR–J3 Series" is configu "Push button switch".
- $\boldsymbol{\cdot}$ 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–J3 Serie	es
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Items	Parameter	Des	Descriptions				
Prefix number setting	Base Parameter No. 20	0 (D	0 (Default value: 0)				
Select the serial	Base Parameter No. 21	Con	Configure the 4-digit value of the default parameter for No. 16 as shown below:				
communication speed.	: 0020	21					
		① Select Serial ②		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)

СОМ					PI	LC
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	RDA	1		1	LG	
$(\circ \circ)$		2	$\left(\right)$	2	P5	
		3	•	3	RDP	
6 9	RDB	4		4	SDN	8
Based on	SG	5		5	SDP	Based on
communication	SDA	6		6	RDN	communication
cable connector		7		7	LG	cable connector
front,		8		8	TRE	front,
D-SUB 9 Pin male	SDB	9				8-pin male RJ45
(male, convex)	SDR					(Male, convex)

*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.

TOP	Cable connection and signal	MELSE	RVO	Cable connection and signal	MELS	SERVO
Signal name	direction	Signal	name	direction	Signal	l name
RDA ·		- 1	LG		1	LG
RDB		2	P5		2	P5
SDA		- 3	RDA		3	RDA
SDB	┝┓ ┶──	4	SDB		4	SDB
SG .		5	SDA		5	SDA
	•	6	RDB	•	6	RDB
		7	LG		7	LG
		8	TRE	•	8	TRE



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	SPO - SP6	-	Servo amplifier request
			SP0: Clear status display data
			SP1 : Reset current alarm
			SP2: Clear alarm history
			- 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)
			SP3: (a) Restriction
			SP5: (b) Disable restriction
			- Restrict or disable output device (DO)
			SP4: (a) Restriction
			SP6: (b) Disable restriction
			Note 1)
OM	OM0 to OM2	-	Operation mode selection
	OM4 - OM5		READ: Test operation mode
			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
			WRITE: Select operation mode
			Switch operation mode
			0000: Disable test operation mode
			0001: JOG operation
			0002: Positioning operation
ТМВ	TMB1 - TMB6	_	0004: Output signal (DO) forced export Instruction demand
			- Used when paused during a test operation
			(positioning operation)
			TMB1: Pause
			TMB5: Resume remaining length
			TMB6: Clear remaining length
			TMB2: Start command for test operation
			(positioning operation)
			- Select positioning direction for test operation
			(positioning operation)
			TMB3: Forward rotation direction
			TMB4: Reverse rotation direction
			Note 1)

TOP 대한민국대표 터치패널 Touch Operation Panel

			Touch Operation Panel
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)
	1	Word device	
PA	PA1.00 - PA32.31	PA1 - PA32(RAM)	Basic setting parameter
	PA1001.00 - PA1032.31	PA1001 - PA1032(EEPROM)	
PB	PB1.00 - PB64.31	PB1 - PB64(RAM)	Gain filter parameter
	PB1001.00- PB1064.31	PB1001- PB1064(EEPROM)	
PC	PC1.00 - PC80.31	PC1 - PC80(RAM)	Extension setting parameter
	PC1001.00- PC1080.31	PC1001- PC1080(EEPROM)	
PD	PD1.00 - PD48.31	PD1 - PD48(RAM)	I/O setting parameter
	PD1001.00 - PD1048.31	PD1001 - PD1048(EEPROM)	
PE	PE1.00 - PE64.31	PE1 - PE64(RAM)	Extension setting No.2 parameter
	PE1001.00 - PE1064.31	PE1001 - PE1064(EEPROM)	
PF	PF1.00 - PF48.31	PF1 - PF48(RAM)	Extension setting No.3 parameter
	PF1001.00 - PF1048.31	PF1001 - PF1048(EEPROM)	
PO	PO1.00 - PO32.31	PO1 - PO32(RAM)	Option unit parameter
	PO1001.00 - PO1032.31	PO1001 - PO1032	
PL	PL1.00 - PL48.31	PL1 - PL48(RAM)	Linear servo motor/DD motor setting parameter
	PL1001.00 - PL1048.31	PL1001 - PL1048(EEPROM)	
PT	PT1.00 - PT48.31	PT1 - PT48(RAM)	Positioning control parameter
	PT1001.00 - PT1048.31	PT1001 - PT1048(EEPROM)	
ST	ST0.00 - ST48.31	STO - ST48	Status display
			Note 2)
AL	AL0.00 - AL1.15	ALO - AL1	Alarm (current alarm compatible with J3)
	AL11.00 - AL25.15	AL11 - AL25	Note 2)
AL	AL200.00 - AL205.15	AL200 - AL205	Alarm (alarm history compatible with J3)
	AL210.00 - AL215.15	AL210 - AL215	Note 2)
	AL230.00 - AL235.15	AL230 - AL235	
ALM	ALM0.00 - ALM1.15	ALM0 - ALM1	Alarm (current alarm, extended for J4)
	ALM11.00 - ALM59.15	ALM11 - ALM59	Note 2)
ALM	ALM200.00 - ALM215.15	ALM200 - ALM215	Alarm (alarm history, extended for J4)
	ALM220.00 - ALM235.15	ALM220 - ALM235	Note 2)
	ALM240.00 - ALM255.15	ALM240 - ALM255	
POS	POS1.00 - POS255.31	POS1 - POS255(RAM)	Point table (position)
	POS1001.00 - POS1255.31	POS1001 -	
		POS1255(EEPROM)	
SPD	SPD1.00 - SPD255.31	SPD1 - SPD255(RAM)	Point table (speed)
	SPD1001.00 - SPD1255.31	SPD1001 - SPD1255(EEPROM)	
ACT	ACT1.00 - ACT255.31	ACT1 - ACT255(RAM)	Point table (acceleration time constant)
	ACT1001.00 - ACT1255.31	ACT1001 - ACT1255(EEPROM)	
DCT	DCT1.00 - DCT255.31	DCT1 - DCT255(RAM)	Point table (deceleration time constant)
-	DCT1001.00 - DCT1255.31	DCT1001 -	
		DCT1255(EEPROM)	
DWL	DWL1.00 - DWL255.31	DWL1 - DWL255(RAM)	Point table
	DWL1001.00 - DWL1255.31	DWL1001 -	
		DWL1255(EEPROM)	



Device	Bit	Word	Remarks
AUX	AUX1.00 - AUX255.31	AUX1 - AUX255(RAM)	Point table (auxiliary function)
	AUX1001.00 - AUX1255.31	AUX1001 -	
		AUX1255(EEPROM)	
MCD	MCD1.00 - MCD255.31	MCD1 - MCD255(RAM)	Point table (M code)
	MCD1001.00 - MCD1255.31	MCD1001 -	
		MCD1255(EEPROM)	
MD	MD0.00 - MD11.15	MD0 - MD11	Machine diagnosis data
OTS	OTS0.00 - OTS3.15	OTSO - 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 DEV	/ICE
LD	LD0.00 - LD1.31	LD0 - LD1	Current position latch data
			Note 2)
RR	RR1.00 - RR4.31	RR1 - RR4	The value of the general purpose register
	RR1001.00 - RR100.314	RR1001 - RR1004	
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	TMD0 - TMD1	Set data (for test operation)
	TMD3.00 - TMD3.31	TMD3	Note 1)

Note 1) Write-only

Note 2) Read-only