MITSUBISHI Electric Corporation
MELSERVO MR-J3 Series
MELSERVO J3 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

The system configuration of TOP and "MITSUBISHI Electric Corporation - MELSERVO MR–J3 Series" is as follows:

Series	CPU	Link I/F	Communication method	Communication setting	Cable
MELSERVO MR–J3	MR–J3–□A	CN3 Port on CPU unit	RS–422	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.
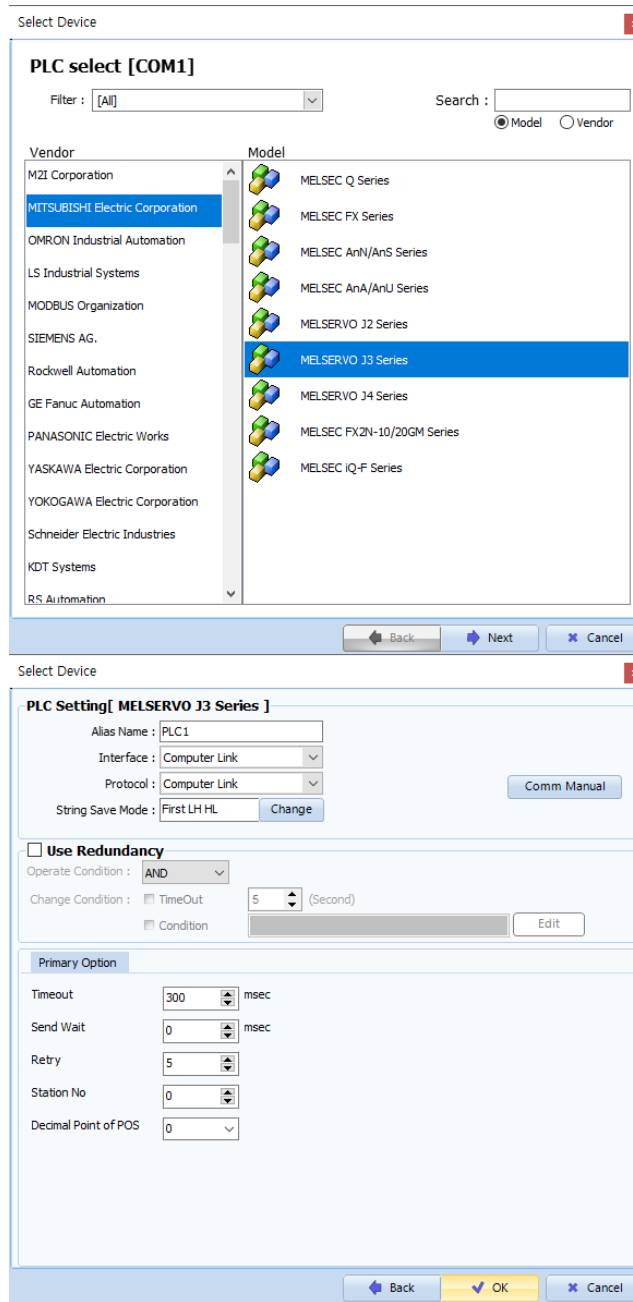
・1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422/485 communication.

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. Please select "MITSUBISHI Electric Corporation".
	PLC	Select an external device to connect to TOP.

Model	Interface	Protocol
MELSERVO J3 Series	Computer Link	Computer Link

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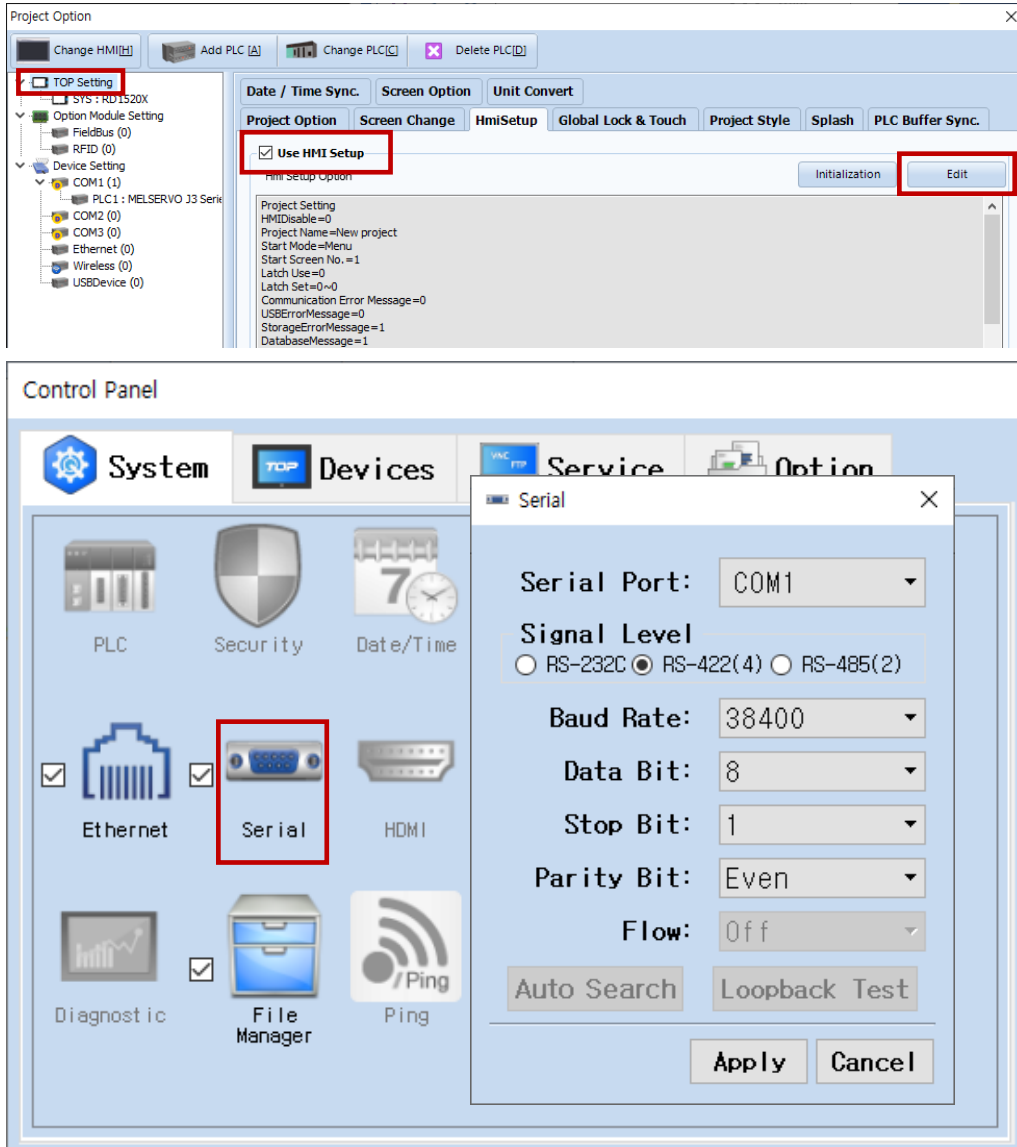
Items	TOP	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	Even		

* 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.

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.	
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.	*Note)

*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.
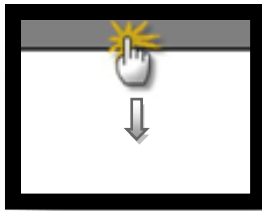
(1) Communication interface setting
■ [Main Screen > Control Panel > Serial]
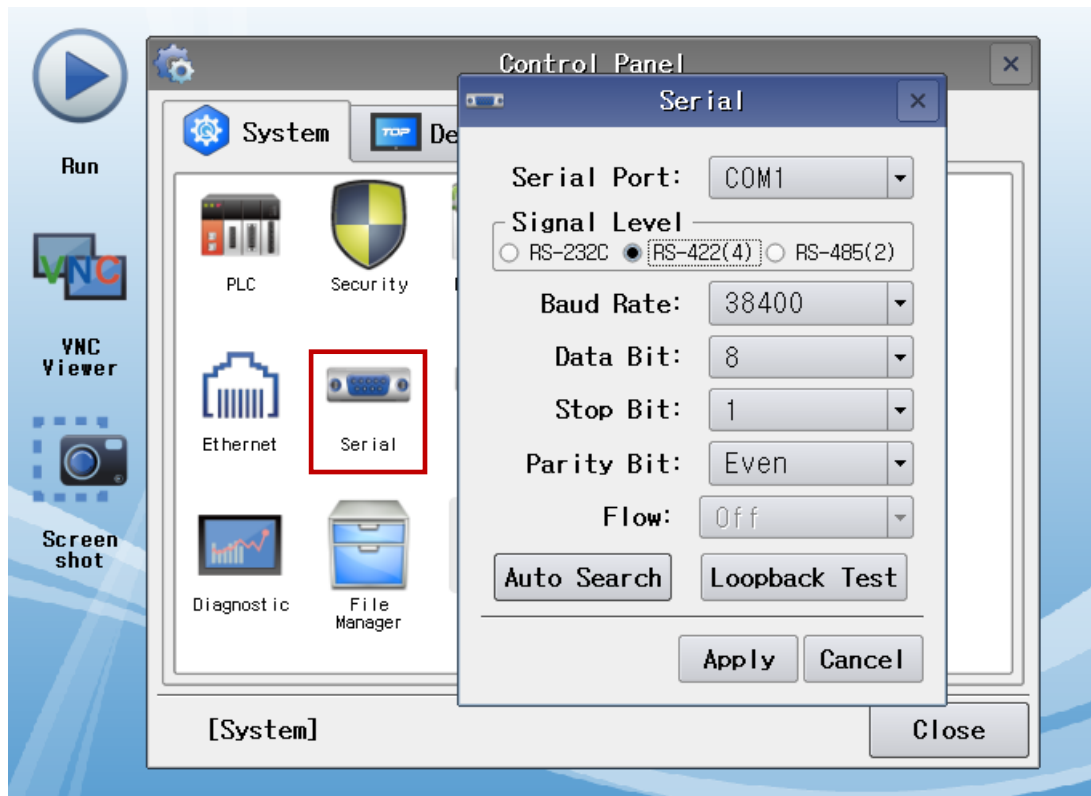
Items	TOP	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	Even		

* 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".	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.	
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.	*Note)

*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 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.

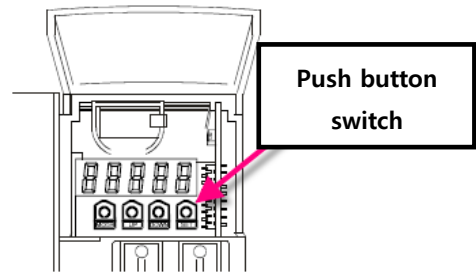| OK	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the cable, TOP, and external device setting status. **(Reference: Communication diagnostics sheet)**

■ 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

・The serial communication parameter of the "MELSERVO MR–J3 Series" is configu
"Push button switch".

・Reboot the external device after configuration.

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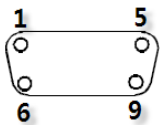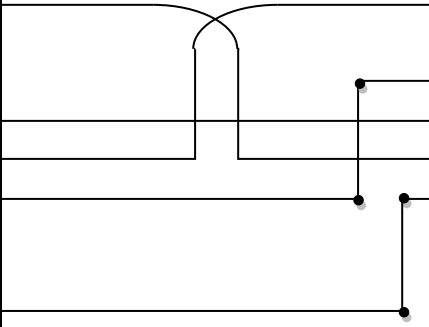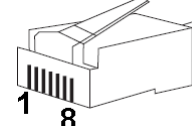refer to the user manual of the external device.

Push button switch

■ Communication Parameter Settings for MELSERVO–J3 Series

Items	Parameter	Descriptions
Prefix number setting	Base Parameter No. 20	0 (Default value: 0)
Select the serial communication speed.	Base Parameter No. 21 : 0020	Configure the 4-digit value of the default parameter for No. 16 as shown below:

Configure the 4-digit value of the default parameter for No. 16 as shown below:

	②	①	

① Select Serial Transmission Speed		② Select Response 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*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	RDA	1		1	LG	Based on communication cable connector front, 8-pin male RJ45 (Male, convex)
		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.

TOP	Cable connection and signal direction	MELSERVO		Cable connection and signal direction	MELSERVO	
Signal name		Signal name			Signal 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
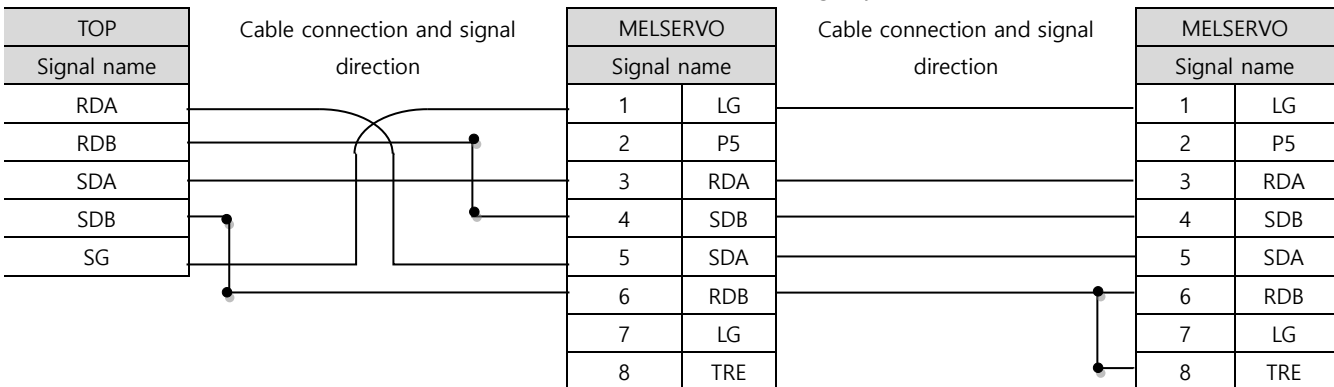
6. Supported addresses

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	SP0 - 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 OM4 - OM5	-	**Operation mode selection** **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 0004: Output signal (DO) forced export
TMB	TMB1 - TMB6	-	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)

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) SPD1001 - SPD1255(EEPROM)	Point table (speed)
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

Device	Bit	Word	Remarks
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