

# Device/PLC Connection Manuals

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## About the Device/PLC Connection Manuals

Prior to reading these manuals and setting up your device, be sure to read the "Important: Prior to reading the Device/PLC Connection manual" information. Also, be sure to download the "Preface for Trademark Rights, List of Units Supported, How to Read Manuals and Documentation Conventions" PDF file. Furthermore, be sure to keep all manual-related data in a safe, easy-to-find location.

## A 3 Device Monitor

Using the GP's device monitor feature allows the PLC's arbitrary device memory to be monitored or changed. A device can be monitored or changed from the GP window regardless of the GP screen being displayed.

- All applicable devices used with the GP can be monitored or changed by the GP.
- I/O relays, data memory and other items can be displayed on the Device Monitor function's special window in random or block format.
- The bit device's ON/OFF status, and the word device's current numeric values (selectable as binary, octal, decimal or hexadecimal) can be displayed.

### Applicable GPs:

GP2000/GP77R/GP70 (except GP-270 series and GP-H70 series' system version 1.20 or lower) series.

\* ST series units cannot use the Device Monitor feature.

\* LT series units cannot use the Device Monitor feature.

### Applicable PLCs:

MELSEC-A series (CPU: A2A or A3A) direct CPU connection, by Mitsubishi Electric Co.

MELSEC-AnA series using Link I/F (applicable CPUs are listed in Section 1-3 "Connectable PLCs") link, by Mitsubishi Electric Co.

MELSEC-AnN series CPU Direct Connection (applicable CPUs are listed in Section 1-3 "Connectable PLCs") direct CPU connection, by Mitsubishi Electric Co.

MELSEC-AnN series using Link I/F (applicable CPUs are listed in Section 1-3 "Connectable PLCs") link, by Mitsubishi Electric Co.

MELSEC-QnA series CPU Direct Connection (applicable CPUs are listed in Section 1-3 "Connectable PLCs") direct CPU connected, by Mitsubishi Electric Co.

MELSEC-QnA series using Link I/F (applicable CPUs are listed in Section 1-3 "Connectable PLCs") link, by Mitsubishi Electric Co.

MELSEC-FX series (applicable CPUs are listed in Section 1-3 "Connectable PLCs"), by Mitsubishi Electric Co.

MELSEC-Q series CPU Direct Connection (applicable CPUs are listed in Section 1-3 "Connectable PLCs") direct CPU connected, by Mitsubishi Electric Co.

SYSMAC C Series (applicable CPUs are listed in Section 1-3 "Connectable PLCs"), by OMRON.

SYSMAC a Series (applicable CPUs are listed in Section 1-3 "Connectable PLCs"), by OMRON.

SYSMAC CS1/CJ Series (applicable CPUs are listed in Section 1-3 "Connectable PLCs"), by OMRON.

FACTORY ACE 1:1 (applicable CPUs are listed in Section 1-3 "Connectable PLCs"), by Yokogawa Electric Corporation/Yokogawa M&C Corporation\*1

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\*1 When using this PLC, the range of connectable GP models is limited to GP2000 Series units.

**Reference** To use the device monitor function, it must first be registered, using the GP-PRO/PBIII for Windows 95 software's Utility menu. (See Operation Manual's chapter 4.2.5 "Device Monitor".)

This chapter explains the use of this function with a MELSEC-A series PLC, manufactured by Mitsubishi Electric Co.



- **The device monitor function uses approximately 90 reserved tags. Therefore, when the device monitor's special screen is displayed on the GP monitor, the total number of tags displayed may exceed the maximum number allowed. In this case, the device monitor may not operate correctly. (The message "Number of tags exceeded" will be displayed) at the bottom of the screen. If using the device monitor exceeds the maximum number of tags, do not use the device monitor with that screen.**
- **It is possible in the interest of future expansion, to set a device address range which is outside the PLC's present device address range. However, when an attempt is made to display a non-existing range, the message "Host communication error" will be displayed. In this case, either adjust the device address range so it is inside the actual range, or delete it. Also, if a device address was written to outside the actual range, the message "Host communication error" will continue to be displayed. To erase this message, turn the GP's power OFF, and then ON again, or reset the GP while it is offline. Never try to write to device address that are outside of the PLC's actual range.**
- **The device monitor can only monitor devices that are shown in "Supported Devices" section in each PLC.**
- **User's Area from LS2096 to LS4095 will be reserved and cannot be used when using device monitor.**

## ■ Global Window Setup

The device monitor function uses the GP's global window function. This means that when the device monitor function is used, other global windows cannot be displayed.

With the GP in OFFLINE mode, select [1. INITIALIZE], then [1. SYSTEM ENVIRONMENT SETTINGS], and then [3. GLOBAL WINDOW SETUP]. In this window, input the following:

- Global window: Use
- Global window designation: Indirect
- Data format: BIN

## A 3.1 Functions

(1) The Random Monitor can

- Monitor devices at eight arbitrary points.
- Designate bit and word devices monitored in single-bit units.
- Display the ON/OFF status for bit devices; display data in binary, octal, decimal, or hexadecimal notation for word devices.
- Write data to devices being monitored.

(2) The Block Monitor can

- Monitor devices at eight consecutive points.
- Specify the word device.
- Display data in binary, octal, decimal, or hexadecimal notation.
- Monitor devices in 8 point “pages”, (8 devices equal one page). Uses [NEXT] and [Previous] commands to move to next “page”.
- Specify the first device to be monitored.
- Write data to devices being monitored.

(3) To Write Data

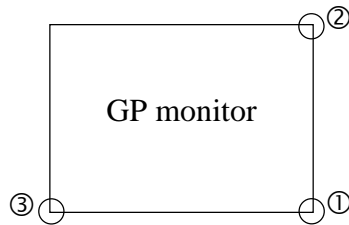
- Write out the data for arbitrary devices regardless of the monitoring screen being used.
- Specify the bit device and word device.
- Change the ON/OFF status for bit devices, or input hexadecimal numeric values for the word device.



**If any device monitor compatible with the MELSEC-FX made by Mitsubishi Electric Corp. is used, only the lower two bytes (16 bits) are displayed for any binary or octal number when a 32-bit device (CN200 to CN255) is monitored. For any hexadecimal or decimal number, all 32 bits are displayed.**

# A 3.2 Screen Operation

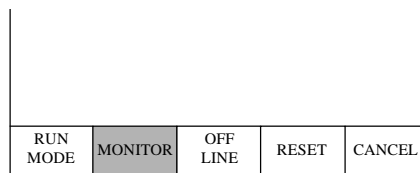
## A 3.2.1 Starting Device Monitor



- 1) Touch the points shown by numbers ① and ②, then touch ③.

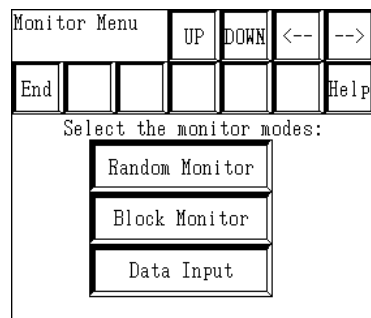
**Reference** For details refer to "I/O setup" in each unit's User's Manual.

Panel's Menu Bar will appear.



- 2) Select MONITOR from the menu bar.

The MONITOR MENU screen is then displayed. \*1



**Important**

**If MONITOR is not displayed in the menu bar, check that the global window setting save correct.**

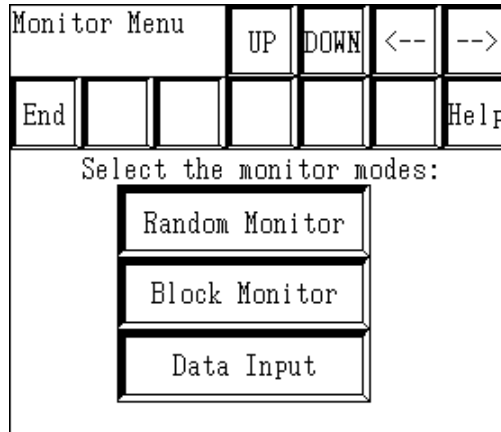
**Reference** See "Global Window Settings".

\*1 If the device monitor function is not supported by the protocol, touching the MONITOR selection has no effect.

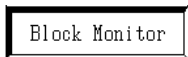
**A3.2.2 Monitor Menu**

This menu can be used to monitor each PLC device.

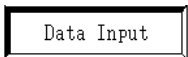
In this window, please select the device monitor mode.



Monitors devices at eight arbitrary points.



Monitors devices at eight consecutive points.



Writes data to an arbitrary device.



Changes the position of the device monitor's display window.



Ends Device Monitoring.

### ■ Random Monitor

Monitors devices at eight arbitrary points.

Random Monitor			UP	DOWN	<--	-->
Menu	CHG	INP	DISP	DEL		
1	D0100					0000h
2	D0120					0000h
3	D0140					0000h
4	D0160					0000h
5	D0180					0000h
6	D0200					0000h
7	D0000					0000h
8	D6550					0000h

└───┬───┘ Device name      └───┬───┘ Data  
└───┬───┘ Line number



Moves the position of the display window.



Returns to the MONITOR MENU.



Displays the title “Change Line Selection” and then changes to device and address change mode.



Displays the title “Write Line Selection” and then changes to data write mode.



Displays the title “Display Line Selection” and then changes to data display mode.



Displays the title “Delete Line Selection” and then deletes the Device data displayed at the selected line number.

Monitor Menu			UP	DOWN	<--	-->
End						Help
Select the monitor modes:						
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Random Monitor</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Block Monitor</div> <div style="border: 1px solid black; padding: 2px;">Data Input</div>						

1) Select RANDOM MONITOR from the MONITOR MENU.

Random Monitor			UP	DOWN	<--	-->
Menu	CHG	INP	DISP	DEL		
1	D0100					0000h
2	D0120					0000h
3	D0140					0000h
4	D0160					0000h
5	D0180					0000h
6	D0200					0000h
7	D0000					0000h
8	D6550					0000h

2) The RANDOM MONITOR screen will appear.

**① Change**

Both the device to be monitored and its address can be changed.

Random Monitor		UP	DOWN	<--	-->
Menu	CHG	INP	DISP	DEL	
1	D0100				0000h
2	D0120				0000h
3	D0140				0000h
4	D0160				0000h
5	D0180				0000h
6	D0200				0000h
7	D0000				0000h
8	D6550				0000h

- 1) Select [CHG] on the RANDOM MONITOR screen, and the RANDOM MONITOR CHANGE LINE SELECTION screen will appear.

Random Monitor CHANGE		UP	DOWN	<--	-->
Menu					RET
Please select a line number					
1	2	3	4		
5	6	7	8		

- 2) Select the line number of the line to be changed, and the RANDOM MONITOR CHANGE screen will appear.



**You can also make the selection directly on the RANDOM MONITOR screen by touching the device or address to be changed with your fingertip.**

Random Monitor CHANGE		UP	DOWN	<--	-->
Menu					RET
Please select a Bit or Word Device					
Bit Device					
Word Device					

- 3) Select the device to be changed.



Select this when monitoring a bit device.



Select this when monitoring a word device.



Returns to the menu screen.



Returns to the previous screen.



**When [BIT DEVICE] is selected:**

Random Monitor CHANGE(Bit)		UP	DOWN	<--	-->
Menu				Next	RET
Please select a type of Bit Device					
X		Y		M	
M9 (Special Relay)		B		L	

- 4) Select the type of device to be monitored on the RANDOM MONITOR CHANGE screen.

Touch [NEXT] to display the remaining device types.

Random Monitor CHANGE(Bit)		UP	DOWN	<--	-->
Menu					RET
Please select a type of Bit Device					
TS		TC		CS	
CC		F			

**When [WORD DEVICE] is selected:**

Random Monitor CHANGE(Word)		UP	DOWN	<--	-->
Menu				Next	RET
Please select a type of Word Device					
X		Y		D	
W		R		F	

Touch [NEXT] to display the remaining device types.

Random Monitor CHANGE(Word)		UP	DOWN	<--	-->
Menu					RET
Please select a type of Word Device					
TN			CN		
M			M9 (Special Relay)		

Random Monitor CHANGE(Bit)		UP	DOWN	<--	-->	
Menu					RET	
Type of Bit Device						
Please enter an address						
1	2	3	4	5	6	7
8	9	0	A	B	C	D
E	F	CL	ENT			

- 5) Input the address of the device to be monitored, and touch [ENT].

The address of the device being monitored is then changed.



- The types of devices displayed will vary depending on the PLC being used.
- In anticipation of future expansion, the device address input can exceed the actual device address range of the PLC being used.

However, if an attempt is made to monitor an address outside the device address range, the message “PLC COM. ERROR” will be displayed at the bottom of the screen.

In such a case, adjust the device address range being monitored so that it is within the actual device address range of the PLC being used.

**② Writing**

Data can be written either to the device to be monitored or to its address.

Random Monitor				UP	DOWN	<--	-->
Menu	CHG	INP	DISP	DEL			
1	D0100						0000h
2	D0120						0000h
3	D0140						0000h
4	D0160						0000h
5	D0180						0000h
6	D0200						0000h
7	D0000						0000h
8	D6550						0000h

- 1) Select [WRITE] on the RANDOM MONITOR screen, and the RANDOM MONITOR WRITE LINE SELECTION screen will appear.

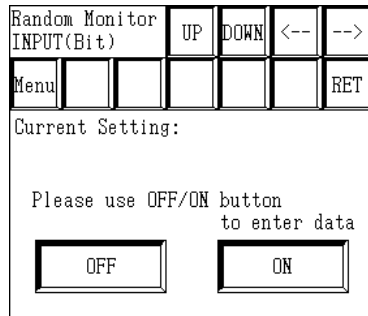
Block Monitor INPUT				UP	DOWN	<--	-->
Menu							RET
Please select a line number							
<input type="button" value="1"/>	<input type="button" value="2"/>	<input type="button" value="3"/>	<input type="button" value="4"/>				
<input type="button" value="5"/>	<input type="button" value="6"/>	<input type="button" value="7"/>	<input type="button" value="8"/>				

- 2) Select the line number of the device to be written to, and the RANDOM MONITOR WRITE screen will appear.



**You can also make the selection directly on the RANDOM MONITOR screen by touching the device to be written to with your fingertip.**

**When the selected line's device is a bit device:**



1) Select the data.

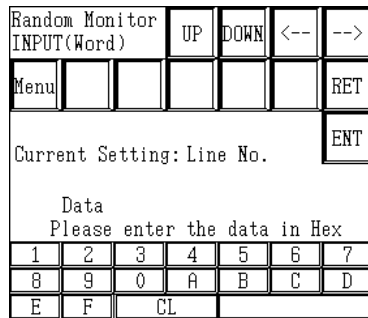


Turns the bit device OFF.



Turns the bit device ON.

**When the selected line's device is a word device:**



1) Input the data in hexadecimal, and touch [ENT].

The data will be written to the selected line's device.



**Note:** The position of the [ENT] key is different from that on the **RANDOM MONITOR CHANGE** screen. (This is to prevent the accidental writing of data.)

If input wrong, the message "Input error" will blink in the upper-left corner of the screen.

**Reference** For information about input ranges, refer to devices listed in "Supported Devices" section in each PLC.



Do not attempt to write address data to a device that is outside the actual device address range of the PLC being used.

**③ Display format**

Here, the data's display format can be selected. While a bit device is actually being monitored, however, the display format cannot be changed.

Random Monitor			UP	DOWN	<--	-->
Menu	CHG	INP	DISP	DEL		
1	D0100				0000h	
2	D0120				0000h	
3	D0140				0000h	
4	D0160				0000h	
5	D0180				0000h	
6	D0200				0000h	
7	D0000				0000h	
8	D6550				0000h	

1) Select [DISP] on the RANDOM MONITOR screen, and the RANDOM MONITOR DISPLAY LINE SELECTION screen will appear.

Random Monitor DISPLAY			UP	DOWN	<--	-->
Menu						RET
Please select a line number						
1	2	3	4			
5	6	7	8			

2) Select the line number of the line whose display format you wish to change, and the RANDOM MONITOR DISPLAY screen will appear.

Random Monitor DISPLAY			UP	DOWN	<--	-->
Menu						RET
Please select a data display format						
Bin		Oct				
Dec		Hex				

3) Select the data's display format.

**④ Deleting**

Here, a line of device data used for monitoring can be deleted.

Random Monitor				UP	DOWN	<--	-->
Menu	CHG	INP	DISP	DEL			
1	D0100					0000h	
2	D0120					0000h	
3	D0140					0000h	
4	D0160					0000h	
5	D0180					0000h	
6	D0200					0000h	
7	D0000					0000h	
8	D6550					0000h	

- 1) Select [DEL] on the RANDOM MONITOR screen, and the RANDOM MONITOR DELETE LINE SELECTION screen will appear.

Random Monitor DISPLAY				UP	DOWN	<--	-->
Menu							RET
Please select a line number							
1	2	3	4				
5	6	7	8				

- 2) Select the line number of the line you wish to delete, and the monitor of the selected line number will be deleted.

**■ BLOCK MONITOR**

Here, you can monitor up to eight consecutive word devices.

Block Monitor				UP	DOWN	<--	-->
Menu	CHG	INP	DSP		△	▽	
	D0100					0000h	
	D0120					0000h	
	D0140					0000h	
	D0160					0000h	
	D0180					0000h	
	D0200					0000h	
	D0000					0001h	



Moves the window's display position.



Returns to the MONITOR MENU screen.



Displays the CHANGE LINE SELECTION and then switches to the Device and Address Change mode.



Displays the WRITE LINE SELECTION screen, and then switches to the Data Write mode.



Displays the DISPLAY LINE SELECTION screen, and then switches to the Data Display mode.



Displays ("Pages" backwards to show) the previous 8 addresses.



Displays ("Pages" forwards to show) the next 8 addresses.

Monitor Menu				UP	DOWN	<--	-->
End							Help
Select the monitor modes:							
Random Monitor							
Block Monitor							
Data Input							

1) Select [BLOCK MONITOR] from the MONITOR MENU screen and then [BLOCK MONITOR] screen will be displayed.

Block Monitor				UP	DOWN	<--	-->
Menu	CHG	INP	DSP		△	▽	
	D0100					0000h	
	D0120					0000h	
	D0140					0000h	
	D0160					0000h	
	D0180					0000h	
	D0200					0000h	
	D0000					0000h	
	D6550					0000h	

2) Use the [CHG] key to select the device to be monitored.

**① Change**

Both the device to be monitored and its address can be changed. First, change the device and address where you will start monitoring.

Block Monitor				UP	DOWN	<--	-->
Menu	CHG	INP	DSP		△	▽	
	D0100						0000h
	D0120						0000h
	D0140						0000h
	D0160						0000h
	D0180						0000h
	D0200						0000h
	D0000						0000h
	D6550						0000h

- 1) Select [CHG] from the BLOCK MONITOR screen's menu, and the BLOCK MONITOR CHANGE screen will appear.

Block Monitor CHANGE				UP	DOWN	<--	-->
Menu					Next	RET	
Please select a type of device							
	X		Y			D	
	W		R			F	

- 2) Select the type of device to be changed.



Returns to the menu screen.



Returns to the previous screen.



Displays the remaining device types.

Block Monitor CHANGE				UP	DOWN	<--	-->
Menu							RET
Please select a type of device							
	TN					CN	
	M					M9	
(Special Relay)							

- 3) Input the address to be monitored and touch the [ENT] key.

Block Monitor CHANGE				UP	DOWN	<--	-->
Menu							RET
Type of Device							
Please enter an address							
1	2	3	4	5	6	7	
8	9	0	A	B	C	D	
E	F		CL			ENT	



**In anticipation of future expansion, the device address input can exceed the actual device address range of the PLC being used.**

**However, if an attempt is made to monitor an address outside the device address range, the message "Host Communication Error" will be displayed at the bottom of the screen.**

**In such a case, adjust the device address range being monitored so that it is within the actual device address range of the PLC being used.**

**② Writing**

Data can be written to either the device being monitored or to its address.

Block Monitor				UP	DOWN	<--	-->
Menu	CHG	INP	DSP		△	▽	
	D0100					0000h	
	D0120					0000h	
	D0140					0000h	
	D0160					0000h	
	D0180					0000h	
	D0200					0000h	
	D0000					0000h	
	D6550					0000h	

- 1) Select [INP] on the BLOCK MONITOR screen, and the BLOCK MONITOR INPUT LINE SELECTION screen will appear.

Block Monitor INPUT				UP	DOWN	<--	-->
Menu							RET
Please select a line number							
	1	2	3	4			
	5	6	7	8			

- 2) Select the line number of the device to be written to, and the BLOCK MONITOR INPUT screen will appear.



**You can also make the selection directly on the BLOCK MONITOR screen by touching the device to be written to with your fingertip.**

Block Monitor INPUT				UP	DOWN	<--	-->
Menu							RET
Current Setting:							ENT
Data Please enter the data in Hex							
1	2	3	4	5	6	7	
8	9	0	A	B	C	D	
E	F	CL					

- 3) Input the data in hexadecimal, and touch [ENT].

The data will be written to the selected line's device.



**The position of the [ENT] key is different from that on the BLOCK MONITOR CHANGE screen. (This is to prevent the accidental writing of data.)**

If input wrong, the message "Input error" will blink in the upper-left part of the screen.

**Reference** For information about input ranges, refer to devices listed in "Supported Devices" section in each PLC.



**Do not attempt to write address data to a device that is outside the actual device address range of the PLC being used.**



**③ Display format**

Here, the data's display format can be selected.

Block Monitor				UP	DOWN	<--	-->
Menu	CHG	INP	DSP		△	▽	
D0100				0000h			
D0120				0000h			
D0140				0000h			
D0160				0000h			
D0180				0000h			
D0200				0000h			
D0000				0000h			
D6550				0000h			

1) Select [DISP] on the BLOCK MONITOR screen and the BLOCK MONITOR DISPLAY screen will appear.

Block Monitor DISPLAY				UP	DOWN	<--	-->
Menu							RET
Please select a data display format							
Bin		Oct					
Dec		Hex					

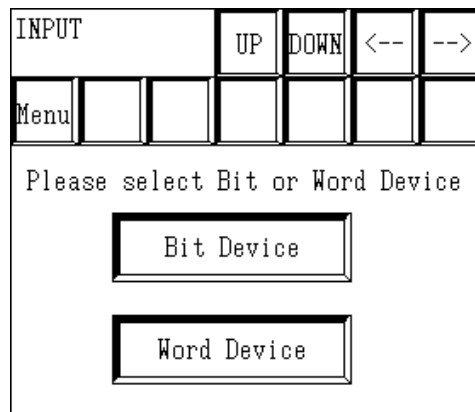
2) Select the data's display format.

**A 3.2.3 Writing Data**

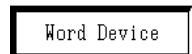
Here, data can be written to the PLC's arbitrary (designated) device.



**Do not attempt to write address data to a device that is outside the actual device address range of the PLC being used.**



Select this when writing to a bit device.



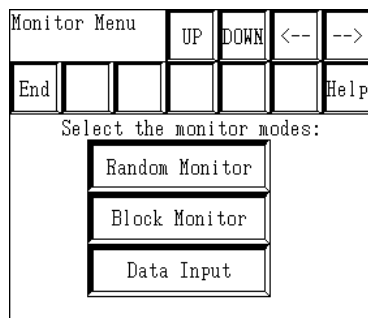
Select this when writing to a word device.



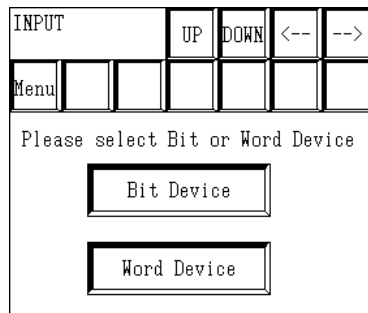
Moves the window's display position.



Returns to the menu screen.



1) Select [Data Input] on the MONITOR MENU screen, and the WRITE screen will appear.



2) Select the (bit or word) device to be changed.

The following section explains the procedures used when either a bit or word device is selected.

**When [BIT DEVICE] is selected:**

INPUT	Bit Select	UP	DOWN	<--	-->
Menu				Next	RET

Please select a type of device

X	Y	M
MR	B	L

(Special Relay)

3) Select the type of the device to be written to.

Touching [NEXT] displays the remaining device types.

INPUT	Bit Select	UP	DOWN	<--	-->
Menu					RET

Please select a type of Bit Device

TS	TC	CS
CC	F	

4) Input the address of the device to be written to, and touch [ENT].

INPUT	Bit Select	UP	DOWN	<--	-->
Menu					RET

Type of Device

Please enter an address

1	2	3	4	5	6	7
8	9	0	A	B	C	D
E	F	CL			ENT	



In anticipation of future expansion, the device address input can exceed the actual device address range of the PLC being used.

However, if an attempt is made to monitor an address outside the device address range, the message "Host Communication Error" will be displayed at the bottom of the screen.

In such a case, adjust the device address range being monitored so that it is within the actual device address range of the PLC being used.

INPUT	Bit Select	UP	DOWN	<--	-->
Menu					RET

Type of Device

Please use OFF/ON button to enter data

OFF	ON
-----	----

5) Input the data to be written to the PLC bit address.

OFF
-----

Turns the bit OFF.

ON
----

Turns the bit ON.

If input wrong, the message "Input error" will blink in the upper-left corner of the screen.

**Reference** For information about input ranges, refer to devices listed in "Supported Devices" section in each PLC.

When [WORD DEVICE] is selected:

INPUT	Word Select	UP	DOWN	<--	-->
Menu				Next	RET

Please select a type of device

X	Y	D
W	R	F

3) Select the type of the device to be written to.

Touching [NEXT] displays the remaining device types.

INPUT	Word Select	UP	DOWN	<--	-->
Menu					RET

Please select a type of Word Device

TN	CN
M	M9 (Special Relay)

4) Input the address of the device to be written to, and touch [ENT].

INPUT	Word Select	UP	DOWN	<--	-->
Menu					RET

Type of Device D 000000

Please enter an address

1	2	3	4	5	6	7
8	9	0	A	B	C	D
E	F	CL	ENT			

If input wrong, the message “Input error” will blink in the upper-left corner of the screen.

**Reference** For information about input ranges, refer to devices listed in "Supported Devices" section in each PLC.

INPUT	Word Select	UP	DOWN	<--	-->
Menu					RET

Type of Device

Please enter an address

1	2	3	4	5	6	7
8	9	0	A	B	C	D
E	F	CL	ENT			

5) Input the data to be written to the PLC word address and touch [ENT].



**Note:** The position of the [ENT] key is different from that on the RANDOM MONITOR CHANGE screen. (This is to prevent the accidental writing of data.)