



GRAPHIC OPERATION TERMINAL  
**GOT2000** Series

User's Manual (Monitor)





# ● SAFETY PRECAUTIONS ●

(Always read these precautions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product.

In this manual, the safety precautions are ranked as "WARNING" and "CAUTION".



Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.



Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the  caution level may lead to a serious accident according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

## [DESIGN PRECAUTIONS]

### WARNING

- Some failures of the GOT, communication unit or cable may keep the outputs on or off.  
Some failures of a touch panel may cause malfunction of the input objects such as a touch switch. An external monitoring circuit should be provided to check for output signals which may lead to a serious accident. Not doing so can cause an accident due to false output or malfunction.
- Do not use the GOT as the warning device that may cause a serious accident.  
An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.  
Failure to observe this instruction may result in an accident due to incorrect output or malfunction.
- The GOT backlight failure disables the operation on the touch switch(s).  
When the GOT backlight has a failure, the POWER LED blinks (orange/blue) and the display section dims. In such a case, the input by the touch switch(s) is disabled.
- The display section of the GOT is an analog-resistive type touch panel.  
[GT27]  
The GOT is multi-touch compliant; however, do not touch three points or more simultaneously on the display section. Doing so may cause an accident due to incorrect output or malfunction.  
[GT23]  
If you touch the display section simultaneously in two points or more, the switch that is located around the center of the touched point, if any, may operate. Do not touch the display section in two points or more simultaneously. Doing so may cause an accident due to incorrect output or malfunction.
- When programs or parameters of the controller (such as a PLC) that is monitored by the GOT are changed, be sure to reset the GOT, or turn on the unit again after shutting off the power as soon as possible. Not doing so can cause an accident due to false output or malfunction.

## [DESIGN PRECAUTIONS]

### **WARNING**

- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative. For bus connection (GT27 Only) : The CPU becomes faulty and the GOT becomes inoperative. For other than bus connection : The GOT becomes inoperative. A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur. Not doing so can cause an accident due to false output or malfunction.

### **CAUTION**

- Do not bundle the control and communication cables with main-circuit, power or other wiring. Run the above cables separately from such wiring and keep them a minimum of 100mm apart. Not doing so noise can cause a malfunction.
- Do not press the GOT display section with a pointed material as a pen or driver. Doing so can result in a damage or failure of the display section.
- When the GOT is connected to the Ethernet network, the available IP address is restricted according to the system configuration.
  - When multiple GOTs are connected to the Ethernet network :  
Do not set the IP address (192.168.3.18) for the GOTs and the controllers in the network.
  - When a single GOT is connected to the Ethernet network :  
Do not set the IP address (192.168.3.18) for the controllers except the GOT in the network.Doing so can cause the IP address duplication. The duplication can negatively affect the communication of the device with the IP address (192.168.3.18). The operation at the IP address duplication depends on the devices and the system.
- Turn on the controllers and the network devices to be ready for communication before they communicate with the GOT. Failure to do so can cause a communication error on the GOT.
- When the GOT is subject to shock or vibration, or some colors appear on the screen of the GOT, the screen of the GOT might flicker.

## [MOUNTING PRECAUTIONS]

### **WARNING**

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT main unit to/from the panel. Not doing so can cause the unit to fail or malfunction.
- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the option unit onto/from the GOT. (GT27 Only)

## [MOUNTING PRECAUTIONS]

### CAUTION

- Use the GOT in the environment that satisfies the general specifications described in this manual. Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range (0.36 N·m to 0.48 N·m) with a Phillips-head screwdriver No.2. Undertightening can cause the GOT to drop, short circuit or malfunction. Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT.
- When loading the communication unit or option unit other than wireless LAN unit to the GOT, fit it to the connection interface of the GOT and tighten the mounting screws in the specified torque range (0.36 N·m to 0.48 N·m) with a Phillips-head screwdriver No.2. When loading the wireless LAN unit to the GOT, fit it to the side interface of GOT and tighten the mounting screws in the specified torque range (0.10 N·m to 0.14 N·m) with a Phillips-head screwdriver No.1. Under tightening can cause the GOT to drop, short circuit or malfunction. Overtightening can cause a drop, failure or malfunction due to the damage of the screws or unit. (GT27 Only)
- When closing the USB environmental protection cover, fix the cover to the GOT by pushing the [PUSH] mark on the latch firmly to comply with the protective structure.(GT27 Only)
- Remove the protective film of the GOT. When the user continues using the GOT with the protective film, the film may not be removed. In addition, for the models equipped with the human sensor function, using the GOT with the protective film may cause the human sensor not to function properly
- Operate and store the GOT in environments without direct sunlight, high temperature, dust, humidity, and vibrations.
- When using the GOT in the environment of oil or chemicals, use the protective cover for oil. Failure to do so may cause failure or malfunction due to the oil or chemical entering into the GOT.

## [WIRING PRECAUTIONS]

### WARNING

- Be sure to shut off all phases of the external power supply used by the system before wiring. Failure to do so may result in an electric shock, product damage or malfunctions.

### CAUTION

- Make sure to ground the FG terminal and LG terminal of the GOT power supply section to the protective ground conductors dedicated to the GOT with a ground resistance of 100 Ω or less.
- When tightening the terminal screws, use a Phillips-head screwdriver No.2.
- Terminal screws which are not to be used must be tightened always at torque 0.5 N·m to 0.8 N·m. Otherwise there will be a danger of short circuit against the solderless terminals.

## [WIRING PRECAUTIONS]

### CAUTION

- Use applicable solderless terminals and tighten them with the specified torque.  
If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product.  
Not doing so can cause a fire or failure.
- Tighten the terminal screws of the GOT power supply section in the specified torque range (0.5 N·m to 0.8 N·m).  
Undertightening can cause a short circuit or malfunction.  
Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT.  
Not doing so can cause a fire, failure or malfunction.
- The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring.  
Do not peel this label during wiring. Before starting system operation, be sure to peel this label because of heat dissipation. (GT27 Only)
- Plug the communication cable into the GOT interface or the connector of the connected unit, and tighten the mounting screws and the terminal screws in the specified torque range.  
Undertightening can cause a short circuit or malfunction.  
Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.
- Plug the QnA/ACPU/Motion controller(A series) bus connection cable by inserting it into the connector of the connected unit until it "clicks".  
After plugging, check that it has been inserted snugly.  
Not doing so can cause a malfunction due to a contact fault.(GT27 Only)

## [TEST OPERATION PRECAUTIONS]

### WARNING

- Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.  
During test operation, never change the data of the devices which are used to perform significant operation for the system.  
False output or malfunction can cause an accident.

## [STARTUP/MAINTENANCE PRECAUTIONS]

### **WARNING**

- When power is on, do not touch the terminals.  
Doing so can cause an electric shock or malfunction.
- Correctly connect the battery connector.  
Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire.  
Doing so will cause the battery to produce heat, explode, or ignite, resulting in injury and fire.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases.  
Not switching the power off in all phases can cause a unit failure or malfunction.  
Undertightening can cause a short circuit or malfunction.  
Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

### **CAUTION**

- Do not disassemble or modify the unit.  
Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.  
Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.  
Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull from the cable portion.  
Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- Do not drop the module or subject it to strong shock. A module damage may result.
- Do not drop or give an impact to the battery mounted to the unit.  
Doing so may damage the battery, causing the battery fluid to leak inside the battery. If the battery is dropped or given an impact, dispose of it without using.
- Before touching the unit, always touch grounded metals, etc. to discharge static electricity from human body, etc.  
Not doing so can cause the unit to fail or malfunction.
- Use the battery manufactured by Mitsubishi Electric Corporation.  
Use of other batteries may cause a risk of fire or explosion.
- Dispose of used battery promptly.  
Keep away from children. Do not disassemble and do not dispose of in fire.
- Be sure to shut off all phases of the external power supply before replacing the battery or using the dip switch of the terminating resistor.  
Not doing so can cause the unit to fail or malfunction by static electricity.

## [TOUCH PANEL PRECAUTIONS]

### CAUTION

- For the analog-resistive film type touch panels, normally the adjustment is not required. However, the difference between a touched position and the object position may occur as the period of use elapses.  
When any difference between a touched position and the object position occurs, execute the touch panel calibration.
- When any difference between a touched position and the object position occurs, other object may be activated.  
This may cause an unexpected operation due to incorrect output or malfunction.

## [PRECAUTIONS WHEN THE DATA STORAGE IS IN USE]

### WARNING

- If the SD card mounted on drive A of the GOT is removed while the GOT is accessed, processing for the GOT might be interrupted about for 20 seconds.  
The GOT cannot be operated during this period.  
The functions that run in the background including a screen updating, alarm, logging, scripts, and others are also interrupted.  
Since this interruption makes an impact to the system operation, it might cause failure. After checking the light off of SD card access LED, remove the SD card.

### CAUTION

- If the data storage mounted on the GOT is removed while the GOT is accessed, the data storage and files are damaged.  
To remove the data storage from the GOT, check that the access to the data storage in SD card access LED, the system signal, and others is not performed.
- When inserting a SD card into the GOT, make sure to close the SD card cover.  
Failure to do so causes the data not to be read or written.
- When removing the SD card from the GOT, make sure to support the SD card by hand as it may pop out.  
Failure to do so may cause the SD card to drop from the GOT, resulting in a failure or break.
- When inserting a USB device into a USB interface of the GOT, make sure to insert the device into the interface firmly.  
Failure to do so may cause the USB device to drop from the GOT, resulting in a failure or break.
- Before removing the USB device from the GOT, follow the procedure for removal on the utility screen of the GOT.  
After the successful completion dialog is displayed, remove the USB device by hand carefully.  
Failure to do so may cause the USB device to drop from the GOT, resulting in a failure or break.

## [DISPOSAL PRECAUTIONS]

### CAUTION

- When disposing of this product, treat it as industrial waste.  
When disposing of batteries, separate them from other wastes according to the local regulations.  
(Refer to the GOT2000 Series User's Manual (Hardware) for details of the battery directive in the EU member states.)

## [TRANSPORTATION PRECAUTIONS]

### CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.  
(Refer to the GOT2000 Series User's Manual (Hardware) for details of the regulated models.)
- Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of this manual, as they are precision devices.  
Failure to do so may cause the unit to fail.  
Check if the unit operates correctly after transportation.
- When fumigants that contain halogen materials such as fluorine, chlorine, bromine, and iodine are used for disinfecting and protecting wooden packaging from insects, they cause malfunction when entering our products.  
Please take necessary precautions to ensure that remaining materials from fumigant do not enter our products, or treat packaging with methods other than fumigation (heat method).  
Additionally, disinfect and protect wood from insects before packing products.

## INTRODUCTION

Thank you for choosing Mitsubishi Graphic Operation Terminal (Mitsubishi GOT).  
Read this manual and make sure you understand the functions and performance of the GOT thoroughly in advance to ensure correct use.

## CONTENTS

SAFETY PRECAUTIONS .....	A - 1
INTRODUCTION .....	A - 8
CONTENTS .....	A - 8
MANUALS.....	A - 15
QUICK REFERENCE .....	A - 16
ABBREVIATIONS AND GENERIC TERMS .....	A - 18

## 1. FUNDAMENTALS OF MONITER

---

1.1 Each function and related manuals .....	1 - 1
1.2 Required extended system application for the function .....	1 - 1
1.3 Displayable languages for each function .....	1 - 2

## 2. DEVICE MONITOR

---

2.1 Features.....	2 - 1
2.2 Specifications.....	2 - 4
2.2.1 System configuration .....	2 - 4
2.2.2 Devices that can be monitored .....	2 - 7
2.2.3 Access range .....	2 - 11
2.2.4 Precautions.....	2 - 11
2.3 Operations Common for Each Monitor Screen .....	2 - 12
2.3.1 Displaying the monitor screen .....	2 - 12
2.3.2 Names of each section of monitor screen .....	2 - 15
2.3.3 Display format of the monitor screen ([One large screen], [4 screens]) .....	2 - 16
2.3.4 Destination path setting ([Settings]).....	2 - 17
2.3.5 Entering devices ([Register]) .....	2 - 20
2.3.6 Deleting a device ([Delete]) .....	2 - 22
2.3.7 Deleting devices at a time ([Delete all]) .....	2 - 23
2.3.8 Test operation for the monitor device ([Test]).....	2 - 24
2.3.9 Switching the display (number or columns, comment display) ([Layout]).....	2 - 28
2.3.10 Monitoring local devices ([Local monitor]) .....	2 - 29
2.3.11 File switching for comment display ([Change comment]) .....	2 - 31
2.3.12 Screen transition (common operation).....	2 - 32
2.4 Entry Monitor .....	2 - 33
2.5 Batch Monitor.....	2 - 35
2.6 TC Monitor (Monitoring Timers and Counters) .....	2 - 37
2.7 BM Monitor (Monitoring Buffer Memory).....	2 - 40
2.8 Error Messages and Corrective Actions .....	2 - 42

### 3. SEQUENCE PROGRAM MONITOR (LADDER)

---

3.1	Features.....	3 - 1
3.2	Specifications.....	3 - 4
3.2.1	System configuration .....	3 - 4
3.2.2	Devices and range that can be monitored .....	3 - 6
3.2.3	Access range.....	3 - 7
3.2.4	Precautions.....	3 - 7
3.3	Display Operation .....	3 - 8
3.3.1	Setting ladder data storage location .....	3 - 14
3.3.2	Reading comment files from data storage.....	3 - 14
3.3.3	Program update check .....	3 - 17
3.3.4	Setting the security .....	3 - 18
3.4	Setting Display Format .....	3 - 20
3.4.1	Switching languages of sequence programs .....	3 - 20
3.4.2	Switching comment display mode .....	3 - 20
3.5	How to Operate PLC Read Screen.....	3 - 21
3.5.1	Displayed contents .....	3 - 21
3.5.2	Key functions .....	3 - 23
3.6	How to Operate Ladder Monitor Screen.....	3 - 26
3.6.1	Displayed contents .....	3 - 26
3.6.2	Key functions.....	3 - 27
3.6.3	Menus.....	3 - 27
3.7	How to Operate Ladder Editor Screen.....	3 - 30
3.7.1	Displayed contents .....	3 - 30
3.7.2	Key functions .....	3 - 38
3.7.3	Menus.....	3 - 39
3.8	Find/Replace Operation.....	3 - 49
3.8.1	Device/Contact/Coil search .....	3 - 49
3.8.2	Factor search.....	3 - 51
3.8.3	Replace device .....	3 - 53
3.8.4	Change open/close contact .....	3 - 54
3.9	Test Operation .....	3 - 55
3.10	Error Messages and Corrective Action.....	3 - 57

### 4. SEQUENCE PROGRAM MONITOR (SFC)

---

4.1	Features.....	4 - 1
4.2	Specifications.....	4 - 4
4.2.1	System configuration .....	4 - 4
4.2.2	Devices and range that can be monitored .....	4 - 6
4.2.3	Access range.....	4 - 7
4.2.4	Precautions.....	4 - 7
4.3	Operations for Display .....	4 - 8
4.3.1	Setting SFC data storage location.....	4 - 11
4.3.2	Reading comment files from SD card .....	4 - 12
4.3.3	Setting Display Format .....	4 - 14
4.4	How to Operate PLC Read Screen.....	4 - 16
4.4.1	Displayed contents .....	4 - 16

4.4.2	Key functions .....	4 - 19
4.5	How to Operate Block List Screen .....	4 - 22
4.5.1	Displayed contents .....	4 - 22
4.5.2	Key functions .....	4 - 23
4.5.3	Menus .....	4 - 23
4.6	How to Operate SFC Diagram Monitor Screen .....	4 - 24
4.6.1	Displayed contents .....	4 - 24
4.6.2	Key functions .....	4 - 27
4.6.3	Menus .....	4 - 28
4.7	Test Operation .....	4 - 37
4.8	Error Messages and Corrective Action .....	4 - 39

## 5. NETWORK MONITOR

---

5.1	Features .....	5 - 1
5.2	Specifications .....	5 - 3
5.2.1	System configuration .....	5 - 3
5.2.2	Network information that can be monitored .....	5 - 5
5.2.3	Access range .....	5 - 7
5.2.4	Precautions .....	5 - 8
5.3	Operations for display .....	5 - 10
5.4	Operation Procedures .....	5 - 13
5.4.1	Line monitor .....	5 - 13
5.4.2	Detailed monitor .....	5 - 16
5.4.3	Other station monitor .....	5 - 25
5.4.4	Other station communication status monitor .....	5 - 26
5.4.5	Other station data link status monitor .....	5 - 27
5.4.6	Other station parameter status monitor .....	5 - 28
5.4.7	Other station CPU operation status monitor .....	5 - 29
5.4.8	Other station CPU RUN status monitor .....	5 - 30
5.4.9	Other station loop status monitor .....	5 - 31
5.5	Error Message and Corrective Action .....	5 - 32

## 6. Q MOTION MONITOR

---

6.1	Features .....	6 - 1
6.2	Specifications .....	6 - 3
6.2.1	System configuration .....	6 - 3
6.2.2	Access range .....	6 - 5
6.2.3	Precautions .....	6 - 5
6.3	Operations for Display .....	6 - 6
6.4	Operation Procedures .....	6 - 9
6.4.1	System configuration screen layout .....	6 - 9
6.4.2	Setting method for other station monitoring .....	6 - 10
6.4.3	Monitor Menu screen .....	6 - 12
6.4.4	Present Value Monitor screen .....	6 - 13
6.4.5	SFC Error History screen .....	6 - 14
6.4.6	Error List screen .....	6 - 15
6.4.7	Error List Designated-Axis screen .....	6 - 17
6.4.8	Positioning Monitor screen .....	6 - 19

6.4.9	Servo Monitor screen .....	6 - 21
6.4.10	Present Value History Monitor screen .....	6 - 22
6.4.11	Parameter setting screen .....	6 - 24
6.4.12	Hard copy output .....	6 - 27
6.5	Error Messages and Corrective Action .....	6 - 28

## 7. INTELLIGENT MODULE MONITOR

---

7.1	Features.....	7 - 1
7.2	Specifications.....	7 - 3
7.2.1	System configuration .....	7 - 3
7.2.2	Access range.....	7 - 5
7.2.3	Precautions.....	7 - 6
7.3	Operations for Display .....	7 - 7
7.4	Operation of Each Intelligent Module Monitor Screen .....	7 - 10
7.4.1	Composition of the system configuration screen and key functions .....	7 - 10
7.4.2	Setting method for other station monitoring.....	7 - 12
7.4.3	Composition of PC Information monitor screen and key functions .....	7 - 14
7.4.4	Composition of the unit detail info screen and key functions .....	7 - 20
7.4.5	Composition of the intelligent module monitor screen and key functions.....	7 - 25
7.4.6	Specifying a module to monitor and selecting monitor menu .....	7 - 26
7.4.7	Testing of the intelligent function module .....	7 - 27
7.5	Intelligent Module Monitor Screens .....	7 - 29
7.6	Operating I/O Module Monitor Screen .....	7 - 30
7.6.1	Specifying the module to be monitored .....	7 - 30
7.6.2	Monitor screen configuration and key functions .....	7 - 31
7.7	Error Messages and Corrective Action .....	7 - 32

## 8. SERVO AMPLIFIER MONITOR

---

8.1	Features.....	8 - 1
8.2	Specifications.....	8 - 3
8.2.1	System configuration .....	8 - 3
8.2.2	Access range.....	8 - 6
8.2.3	Precautions.....	8 - 6
8.3	Operations of Display .....	8 - 7
8.4	Operations of Servo Amplifier Monitor Screens.....	8 - 10
8.4.1	Servo amplifier monitor.....	8 - 10
8.4.2	Setup .....	8 - 11
8.4.3	Monitor functions .....	8 - 13
8.4.4	Alarm function.....	8 - 15
8.4.5	Diagnostics function .....	8 - 18
8.4.6	Parameter setting .....	8 - 25
8.4.7	Test operations .....	8 - 31
8.4.8	Hard copy output .....	8 - 40
8.5	Error Messages and Corrective Action .....	8 - 41

## 9. BACKUP/RESTORE

---

9.1	Features.....	9 - 1
9.2	Specifications.....	9 - 3

9.2.1	System configuration .....	9 - 3
9.2.2	Access range .....	9 - 11
9.2.3	Precautions .....	9 - 11
9.3	Operations for Display .....	9 - 15
9.3.1	Setting storage location for backup data .....	9 - 18
9.3.2	Security and password .....	9 - 19
9.3.3	Trigger backup.....	9 - 25
9.3.4	Network batch backup/restore .....	9 - 32
9.4	Operation Procedures.....	9 - 36
9.4.1	Main menu .....	9 - 36
9.4.2	Progress screen (backup).....	9 - 37
9.4.3	Data list (restoration) .....	9 - 38
9.4.4	Progress screen (restoration) .....	9 - 39
9.4.5	Controller list screen .....	9 - 40
9.4.6	Controller selection screen (Restoration) .....	9 - 41
9.5	Backup Data Conversion Tool .....	9 - 42
9.5.1	Operating environment .....	9 - 42
9.5.2	How to install and start Backup Data Conversion Tool.....	9 - 43
9.5.3	How to use Backup Data Conversion Tool .....	9 - 43
9.5.4	Precautions.....	9 - 45
9.6	Errors and Corrective Actions .....	9 - 46

## 10. MELSEC-L TROUBLESHOOTING

---

10.1	Features.....	10 - 1
10.2	Specifications.....	10 - 2
10.2.1	System configuration .....	10 - 2
10.2.2	Access range .....	10 - 2
10.3	Operation for Display .....	10 - 3
10.4	Operation Procedures.....	10 - 5
10.5	Error Messages and Corrective Action .....	10 - 7

## 11. LOG VIEWER

---

11.1	Features.....	11 - 1
11.2	Specifications.....	11 - 2
11.2.1	System configuration .....	11 - 2
11.2.2	GOT Side Settings.....	11 - 3
11.2.3	Access range .....	11 - 3
11.2.4	Precautions.....	11 - 4
11.3	Operations for Display .....	11 - 6
11.3.1	Changing screens when view logged device is selected .....	11 - 7
11.3.2	Changing screens when manage log file is selected .....	11 - 8
11.4	How to Operate Various Selection Screens .....	11 - 9
11.4.1	How to operate target setting window.....	11 - 9
11.4.2	How to operate target selection screen .....	11 - 10
11.4.3	How to operate Main Menu screen.....	11 - 14
11.4.4	How to operate file selection screen.....	11 - 15
11.5	How to Operate Data Log Viewer .....	11 - 18
11.5.1	Data log viewer screen .....	11 - 18

11.5.2	Legend display .....	11 - 20
11.5.3	Upper and lower limit values setting .....	11 - 21
11.5.4	Cursor position information .....	11 - 22
11.5.5	Selecting data .....	11 - 23
11.5.6	Searching data .....	11 - 24
11.5.7	Help .....	11 - 25
11.6	Error Messages and Corrective Actions .....	11 - 26

## 12. FX LADDER MONITOR

---

12.1	Features.....	12 - 1
12.2	Specifications.....	12 - 3
12.2.1	System configuration .....	12 - 3
12.2.2	Devices and range that can be monitored .....	12 - 4
12.2.3	Access range .....	12 - 4
12.2.4	Precautions.....	12 - 5
12.3	Operation for Display .....	12 - 7
12.3.1	Display .....	12 - 12
12.3.2	Searching from the monitor screen .....	12 - 14
12.4	Operation Procedure Common.....	12 - 16
12.4.1	Information and key functions displayed on the screen.....	12 - 16
12.4.2	Hard copy output .....	12 - 19
12.5	Switching the Display Format .....	12 - 20
12.5.1	Display switching of 16-bit (one-word)/32-bit (two-word) modules .....	12 - 20
12.5.2	Display switching of decimal numbers/hexadecimal numbers.....	12 - 21
12.5.3	Switching comment/no-comment display .....	12 - 22
12.6	Search Operation.....	12 - 23
12.6.1	Device search.....	12 - 23
12.6.2	Contact point search.....	12 - 25
12.6.3	Coil search.....	12 - 27
12.6.4	Step search .....	12 - 29
12.6.5	Ladder end search.....	12 - 30
12.6.6	Defect search .....	12 - 31
12.7	Test Operation .....	12 - 35
12.7.1	Displaying the test menu screen .....	12 - 35
12.8	Error Messages and Corrective Action .....	12 - 36

## 13. FX LIST EDITOR

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13.1	Features.....	13 - 1
13.2	Specifications.....	13 - 3
13.2.1	System configuration .....	13 - 3
13.2.2	Access range .....	13 - 5
13.2.3	Precautions.....	13 - 5
13.3	Operations for Display .....	13 - 6
13.4	Operation Procedures.....	13 - 9
13.4.1	Key arrangement and a list of key functions.....	13 - 9
13.4.2	Selection and operation of modes .....	13 - 11
13.4.3	Sequence program display .....	13 - 12
13.4.4	Searching commands and devices.....	13 - 14

13.4.5	Writing commands .....	13 - 16
13.4.6	Changing operands, set values .....	13 - 19
13.4.7	Deleting commands .....	13 - 20
13.4.8	Sequence program all clear .....	13 - 21
13.4.9	PLC diagnostics .....	13 - 22
13.4.10	Parameter setting .....	13 - 24
13.4.11	Keywords .....	13 - 27
13.4.12	List monitor .....	13 - 29
13.4.13	Hard copy output .....	13 - 31
13.4.14	Action for an incorrect key input .....	13 - 31
13.5	Error Messages and Corrective Actions .....	13 - 32

## **REVISIONS**

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## **WARRANTY**

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## MANUALS

The following table lists the manual relevant to this product.  
Refer to each manual for any purpose.

### ■ Screen creation software manuals

Manual name	Manual number (Model code)
GT Works3 Version1 Installation Procedure Manual	-
GT Works3 (GOT2000) Help	-

### ■ Connection manuals

Manual name	Manual number (Model code)
GOT2000 Series Connection Manual (Mitsubishi Product) For GT Works3 Version1	SH-081197ENG (1D7MJ8)
GOT2000 Series Connection Manual (Non Mitsubishi Product 1) For GT Works3 Version1	SH-081198ENG (1D7MJ9)
GOT2000 Series Connection Manual (Non Mitsubishi Product 2) For GT Works3 Version1	SH-081199ENG (1D7MK1)
GOT2000 Series Connection Manual (Microcomputer, MODBUS, Products, Peripherals) For GT Works3 Version1	SH-081200ENG (1D7MK2)

### ■ GT SoftGOT2000 manuals

Manual name	Manual number (Model code)
GT SoftGOT2000 Version1 Operating Manual	SH-081201ENG (1D7MK3)

### ■ GOT2000 manuals

Manual name	Manual number (Model code)
GOT2000 Series User's Manual (Hardware)	SH-081194ENG (1D7MJ5)
GOT2000 Series User's Manual (Utility)	SH-081195ENG (1D7MJ6)
GOT2000 Series User's Manual (Monitor)	SH-081196ENG (1D7MJ7)

## **QUICK REFERENCE**

### **■ Creating a project**

Obtaining the specifications and operation methods of GT Designer3	GT Designer3 (GOT2000) Help
Setting available functions on GT Designer3	
Creating a screen displayed on the GOT	
Obtaining useful functions to increase efficiency of drawing	
Setting details for figures and objects	GT Designer3 (GOT2000) Help
Setting functions for the data collection or trigger action	
Setting functions to use peripheral devices	
Simulating a created project on a personal computer	GT Designer3 (GOT2000) Help

### **■ Connecting a controller to the GOT**

Obtaining information of Mitsubishi products applicable to the GOT	GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1 (ELE)
Connecting Mitsubishi products to the GOT	
Connecting multiple controllers to one GOT (Multi-channel function)	
Establishing communication between a personal computer and a controller via the GOT (FA transparent function)	
Obtaining information of Non-Mitsubishi products applicable to the GOT	• GOT2000 Series Connection Manual (Non-Mitsubishi Products 1) for GT Works3 Version1 • GOT2000 Series Connection Manual (Non-Mitsubishi Products 2) for GT Works3 Version1
Connecting Non-Mitsubishi products to the GOT	
Obtaining information of peripheral devices applicable to the GOT	GOT2000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3 Version1
Connecting peripheral devices including a barcode reader to the GOT	
Connecting α2 with GOT	GOT1000 Series Connection Manual (α2 Connection) for GT Works3 (ELE)

### **■ Transferring data to the GOT**

Writing data to the GOT	GT Designer3 (GOT2000) Help
Reading data from the GOT	
Verifying a editing project to a GOT project	

## ■ Others

Obtaining specifications (including part names, external dimensions, and options) of each GOT	GOT2000 Series User's Manual (Hardware)
Installing the GOT	
Operating the utility	GOT2000 Series User's Manual (Utility)
Configuring the gateway function	GT Designer3 (GOT2000) Help
Configuring the extended function and option function	GOT2000 Series User's Manual (Monitor)
Using a personal computer as the GOT	GT SoftGOT2000 Version1 Operating Manual for GT Works3 Version1 (ELE)

## ABBREVIATIONS AND GENERIC TERMS

### ■ GOT

Abbreviations and generic terms		Description	
GOT2000 Series	GT27	GT2712-S	GT2712-STBA, GT2712-STWA, GT2712-STBD, GT2712-STWD
		GT2710-S	GT2710-STBA, GT2710-STBD
		GT2710-V	GT2710-VTBA, GT2710-VTWA, GT2710-VTBD, GT2710-VTWD
		GT2708-S	GT2708-STBA, GT2708-STBD
		GT2708-V	GT2708-VTBA, GT2708-VTBD
	GT23	GT2310-V	GT2310-VTBA, GT2310-VTBD
		GT2308-V	GT2308-VTBA, GT2308-VTBD
GT SoftGOT2000		GT SoftGOT2000 Version1	
GOT1000 Series		GOT1000 Series	
GOT900 Series		GOT-A900 Series, GOT-F900 Series	
GOT800 Series		GOT-800 Series	

### ■ Communication unit

Abbreviations and generic terms		Description	
Bus connection unit		GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L	
Serial communication unit		GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE	
MELSECNET/H communication unit		GT15-J71LP23-25, GT15-J71BR13	
CC-Link IE Controller Network communication unit		GT15-J71GP23-SX	
CC-Link IE Field Network communication unit		GT15-J71GF13-T2	
CC-Link communication unit		GT15-J61BT13	
Wireless LAN Communication Unit		GT25-WLAN	
Serial multi-drop connection unit		GT01-RS4-M	
Connection conversion adapter		GT10-9PT5S	

### ■ Option unit

Abbreviations and generic terms		Description	
Printer unit		GT15-PRN	
Video/RGB unit	Video input unit	GT27-V4-Z (A set of GT16M-V4 and GT27-IF1000)	
	RGB input unit	GT27-R2-Z (A set of GT16M-R2 and GT27-IF1000)	
	Video/RGB input unit	GT27-V4R1-Z (A set of GT16M-V4R1 and GT27-IF1000)	
	RGB output unit	GT27-ROUT-Z (A set of GT16M-ROUT and GT27-IF1000)	
Multimedia unit		GT27-MMR-Z (A set of GT16M-MMR and GT27-IF1000)	
Video signal conversion unit		GT27-IF1000	
External I/O unit		GT15-DIO, GT15-DIOR	
Sound output unit		GT15-SOUT	

## ■ Option

Abbreviations and generic terms		Description
SD card		L1MEM-2GBSD, L1MEM-4GBSD
Battery		GT11-50BAT, GT11-BAT
Protective sheet	For GT27	GT25-12PSGC, GT25-10PSGC, GT25-08PSGC, GT25-12PSCC, GT25-10PSCC, GT25-08PSCC, GT25-12PSCC-UC, GT25-10PSCC-UC, GT25-08PSCC-UC
	For GT23	GT25-10PSCC-UC, GT25-08PSCC-UC
Protective cover for oil		GT20-10PCO, GT20-08PCO
USB environmental protection cover		GT25-UCOV
Stand		GT15-90STAND, GT15-80STAND, GT15-70STAND, GT15-60STAND
Attachment		GT15-70ATT-98, GT15-70ATT-87, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77

## ■ Software

### (1) Software related to GOT

Abbreviations and generic terms		Description
GT Works3		SW1DNC-GTW3-J, SW1DND-GTW3-J, SW1DNC-GTW3-E, SW1DND-GTW3-E, SW1DND-GTW3-C
GT Designer3 Version1		Screen drawing software GT Designer3 for GOT2000/GOT1000 series
GT Designer3		Screen drawing software for GOT2000 series included in GT Works3
GT Designer3 (GOT2000)		
GT Designer3 (GOT1000)		Screen drawing software for GOT1000 series included in GT Works3
GT Simulator3		Screen simulator GT Simulator3 for GOT2000/GOT1000/GOT900 series
GT SoftGOT2000		Monitoring software GT SoftGOT2000 series
GT Converter2		Data conversion software GT Converter2 for GOT1000/GOT900 series
GT Designer2 Classic		Screen drawing software GT Designer2 Classic for GOT900 series
GT Designer2		Screen drawing software GT Designer2 for GOT1000/GOT900 series
DU/WIN		Screen drawing software FX-PCS-DU/WIN for GOT-F900 series

### (2) Software related to GOT

Abbreviations and generic terms		Description
GT Works3		SW1DNC-GTW3-J, SW1DND-GTW3-J, SW1DNC-GTW3-E, SW1DND-GTW3-E, SW1DND-GTW3-C
GT Designer3 Version1		Screen drawing software GT Designer3 for GOT2000/GOT1000 series
GT Designer3		Screen drawing software for GOT2000 series included in GT Works3
GT Designer3 (GOT2000)		
GT Designer3 (GOT1000)		Screen drawing software for GOT1000 series included in GT Works3
GT Simulator3		Screen simulator GT Simulator3 for GOT2000/GOT1000/GOT900 series
GT SoftGOT2000		Monitoring software GT SoftGOT2000 series
GT Converter2		Data conversion software GT Converter2 for GOT1000/GOT900 series
GT Designer2 Classic		Screen drawing software GT Designer2 Classic for GOT900 series
GT Designer2		Screen drawing software GT Designer2 for GOT1000/GOT900 series
DU/WIN		Screen drawing software FX-PCS-DU/WIN for GOT-F900 series

### (3) Other software

Abbreviations and generic terms	Description
GX Works2	SW□DNC-GXW2-J (-JA, -JAZ) type programmable controller engineering software (□ indicates a version.)
GX Simulator2	GX Works2 with the simulation function
GX Simulator	SW□D5C-LLT-J (-JV) type ladder logic test tool function software package (SW5D5C-LLT (-V) or later versions) (□ indicates a version.)
GX Developer	SW□D5C-GPPW-J (-JV)/SW□D5F-GPPW (-V) type software package (□ indicates a version.)
GX LogViewer	SW□DNN-VIEWER-J type software package (□ indicates a version.)
PX Developer	SW□D5C-FBDQ-J type FBD software package for process control (□ indicates a version.)
MT Works2	Motion controller engineering environment MELSOFT MT Works2(SW□DNC-MTW2-J) (□ indicates a version.)
MT Developer	SW□RNC-GSV type integrated start-up support software for motion controller Q series (□ indicates a version.)
MR Configurator2	SW□DNC-MRC2-J type servo configuration software (□ indicates a version.)
MR Configurator	MRZJW□-SETUP type servo configuration software (□ indicates a version.)
FR Configurator	Inverter setup software (FR-SW□-SETUP-WJ) (□ indicates a version.)
NC Configurator	CNC parameter setting support tool NC Configurator
FX Configurator-FP	Parameter setting, monitoring, and testing software packages for FX3U-20SSC-H (SW□D5CFXSSCJ) (□ indicates a version.)
FX3U-ENET-L Configuration tool	FX3U-ENET-L type Ethernet module setting software (SW1D5-FXENETL-J)
RT ToolBox2	Robot program creation software (3D-11C-WINJ)
MX Component	MX Component Version□(SW□D5C-ACT-J, SW□D5C-ACT-JA) (□ indicates a version.)
MX Sheet	MX Sheet Version□(SW□D5C-SHEET-J, SW□D5C-SHEET-JA) (□ indicates a version.)
QnUDVCPULCPU Logging Configuration Tool	QnUDVCPULCPU logging configuration tool (SW1DNN-LLUTL-J)

#### ■ License key (for GT SoftGOT1000)

Abbreviations and generic terms	Description
License key	GT27-SGTKEY-U

## ■ Others

Abbreviations and generic terms	Description
IAI	IAI Corporation
AZBIL	Azbil Corporation
OMRON	OMRON Corporation
KEYENCE	KEYENCE CORPORATION
KOYO EI	KOYO ELECTRONICS INDUSTRIES CO., LTD.
JTEKT	JTEKT Corporation
SHARP	Sharp Manufacturing Systems Corporation
SHINKO	Shinko Technos Co., Ltd.
CHINO	CHINO CORPORATION
TOSHIBA	TOSHIBA CORPORATION
TOSHIBA MACHINE	TOSHIBA MACHINE CO., LTD.
PANASONIC	Panasonic Corporation
PANASONIC IDS	Panasonic Industrial Devices SUNX Co., Ltd.
HITACHI IES	Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI	Hitachi, Ltd.
FUJI ELECTRIC	FUJI ELECTRIC CO., LTD.
YASKAWA	YASKAWA Electric Corporation
YOKOGAWA	Yokogawa Electric Corporation
RKC	RKC INSTRUMENT INC.
ALLEN-BRADLEY	Allen-Bradley products manufactured by Rockwell Automation, Inc.
GE IP	GE Intelligent Platforms KK
LS IS	LS Industrial Systems Co., Ltd.
SCHNEIDER	Schneider Electric SA
SICK	SICK AG
SIEMENS	Siemens AG
PLC	Programmable controller manufactured by each corporation
Control equipment	Control equipment manufactured by each corporation
Temperature controller	Temperature controller manufactured by each corporation
Indicating controller	Indicating controller manufactured by each corporation
Controller	Controller manufactured by each corporation



# 1. FUNDAMENTALS OF MONITER



## 1.1 Each function and related manuals

Functions	Related manuals
Device monitor	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
Sequence program monitor(Ladder, SFC)	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
Network monitor	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
Q Motion monitor	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
Intelligent unit monitor	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
Servo amplifier monitor	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
Backup/Restore	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
LOG Viewer	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
FX Ladder monitor	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help
FX List editor	GOT2000 Series User's Manual (Utility)
	GT Designer3 (GOT2000) Help

## 1.2 Required extended system application for the function

Required extended system application for the function, refer to the following.

Function name	Required advanced system application name
Device monitor	Device monitor
Sequence program monitor (Ladder)	Sequence program monitor • Sequence program monitor (Common)
	GOT Platform Library
	GOT Function Expansion Library
Sequence program monitor (SFC)	Sequence program monitor • Sequence program monitor (SFC)
	GOT Platform Library
	GOT Function Expansion Library
Network monitor	Network monitor
Q Motion monitor	Q Motion monitor
Intelligent module monitor	Intelligent module monitor
Servo amplifier monitor	Servo amplifier monitor
backup/restore	backup/restore

Function name	Required advanced system application name
Log Viewer	Log Viewer
FX Ladder Monitor	FX Ladder Monitor
FX List Editor	FX List Editor

## 1.3 Displayable languages for each function

Languages available for each function are shown in the following table.

○:Displayed ×:Not displayed Eng.:Displayed in English

Function	Japanese	English	Chinese (Simplified)	Chinese (Traditional)	Korean
Utility function	○	○	○	○	○
Device monitor	○	○	○	○	○
Sequence program monitor (Ladder)	File name, Title, Comment, Note, Statement	○	○	○	○
	Over than the above	○	○	×	×
Sequence program monitor (SFC)	○	○	○	○	○
Network monitor	○	○	○	○	○
Q Motion monitor	○	○	Eng.	Eng.	Eng.
Intelligent module monitor	○	○	Eng.	Eng.	Eng.
Servo amplifier monitor	○	○	Eng.	Eng.	Eng.
Backup/Restore	○	○	○	○	○
Log viewer	○	○	○	○	○
FX ladder monitor	○	○	×	×	×
FX list editor	○	○	○	○	○

For further information, see the following:

3.4.1 Switching languages of sequence programs

# 2. DEVICE MONITOR

GT 27 GT 23 Soft GOT 2000

## 2.1 Features

The device monitor function is capable of monitoring and changing the devices of a PLC CPU or an intelligent module. It is intended to troubleshoot the system and to streamline maintenance operations.

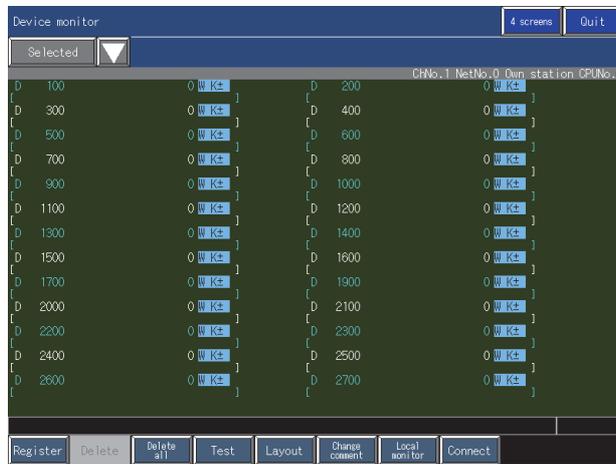
### ■ 1. Any device on four dedicated screens can be monitored.

The device monitor function comprises four monitors: entry monitor, batch monitor, T/C monitor, and BM monitor. You can monitor any device according to the application.

#### (1) Entry Monitor

Monitors the devices registered by the user.

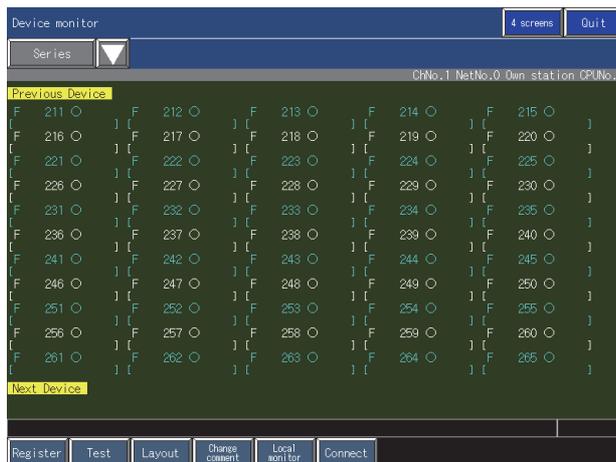
##### 2.4 Entry Monitor



#### (2) Batch Monitor

Monitors the devices starting from the one specified by the user in a batch.

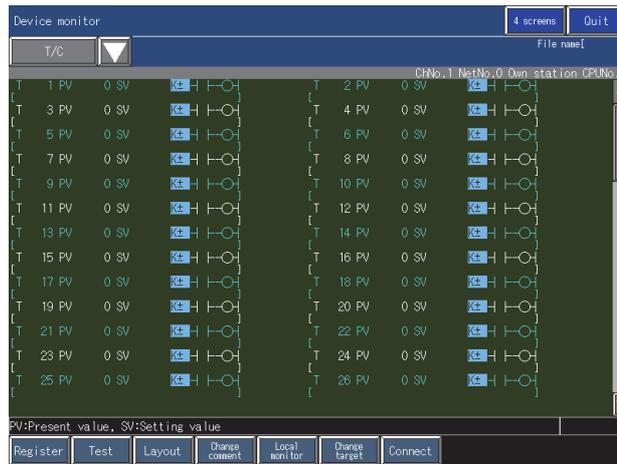
##### 2.5 Batch Monitor



**(3) TC (timer, counter) monitor**

Monitors the current values, set values, contacts, and coils of timers, retentive timers, and counters of the PLC CPU in a batch.

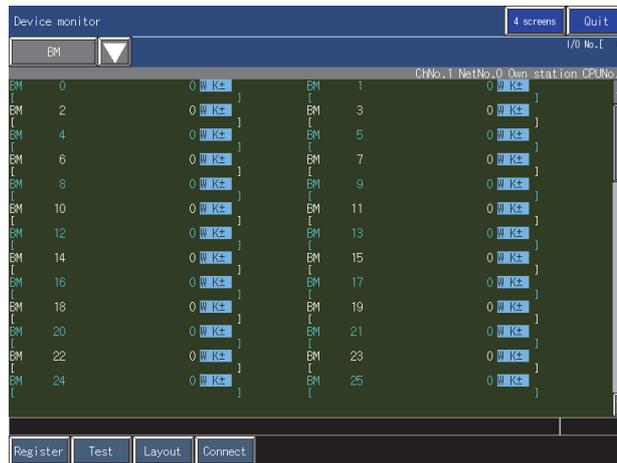
**2.6 TC Monitor (Monitoring Timers and Counters)**



**(4) BM (buffer memory) monitor**

Monitors the buffer memories of the intelligent module in a batch.

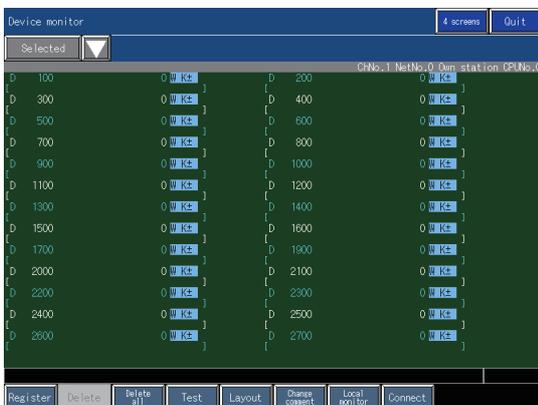
**2.7 BM Monitor (Monitoring Buffer Memory)**



**2. The full mode and the quad mode can be switched**

The full mode and the quad mode can be switched using the screen switching button as needed. The GOT in the full mode displays one monitor screen to display many devices at once. The GOT in the quad mode divides one screen into four windows to display four monitor screens.

**2.3.3 Display format of the monitor screen ([One large screen], [4 screens])**



The full mode and the quad mode can be switched.



### ■3. Device values can be changed by the test operation.

The following values can be changed by the test operation.

- Current values of word devices and bit devices
- Current values and set values of timers, counters, and retentive timers
- Current values of buffer memories

2.3.8 Test operation for the monitor device ([Test])

### ■4. Switching the display format and displaying device comments

The display format of device values can be switched among binary, decimal, and hexadecimal formats. Device comments can be displayed on the entry monitor, batch monitor, and TC monitor.

2.3.9 Switching the display (number or columns, comment display) ([Layout])

### ■5. Other stations can be monitored.

You can monitor other stations in the data link system, network system, and CC-Link system containing the GOT (or GOT-connected station).

For the details of the connection types that can be monitored, refer to the following.

2.2.1 System configuration

### ■6. Switching the display language and multiple-language expansion

Monitor screens are displayed with the language set in the function setting of the utility.

## 2.2 Specifications

---



- 2.2.1 System configuration
- 2.2.2 Devices that can be monitored
- 2.2.3 Access range
- 2.2.4 Precautions

### 2.2.1 System configuration

---



This section describes the names of controllers and connection types that can be monitored using the device monitor function.

For the details of the communication units cables used for each connection type, refer to the following.

GOT2000 Series Connection Manual (Mitsubishi Product) For GT Works3 Version1

#### ■ 1. Target controller

Controller
QCPU (Q mode)
C Controller module
QSCPU*1
LCPU
QnACPU*2
FXCPU*3
Motion controller CPU (Q series)*3
MELDAS C6/C64
Robot controller (CRnQ-700, CRnD-700)
MELDAS C70

The GOT cannot write data to devices in the QSCPU. (The test operation is not available.)

If the number in the DATE column on the rating plate is earlier than 9707B, set values of timers, counters, and retentive timers cannot be monitored.

Buffer memories of the following CPUs cannot be monitored.

- FX1, FX2
- Q172CPU, Q173CPU

## 2. Connection type

The device monitor function can be used for the following connection types.

○ : Available, ×: Not available

Function	Controller		Direct CPU connection	Computer link connection	Ethernet connection	CC-Link IE Controller Network connection	CC-Link IE Field Network connection	CC-Link connection	
								ID*1	G4*2
Device monitor	QCPU (Q mode)	Basic model QCPU	○	○	○	○	×	○	○
		High Performance model QCPU	○	○	○	○	×	○	○
		Process CPU	○	○	○	○	×	○	○
		Redundant CPU (main base)	○	×	○	○	×	○	○
		Redundant CPU (extension base)	×	○	○	×	×	○	○
		Universal model QCPU	○	○	○	○	○	○	○
	C Controller module		○	○	○	○	○	○	○
	QSCPU		×	×	○	○	×	×	×
	LCPU		○	○	○	×	○	○	○
	QnACPU		○	○	○	×	×	○	×
	Motion controller (Q series)		○	○	○	○*3	○*4	○	○
	CNC C70		○	○	○	○	○	○	○
	MELDAS C6/C64		○	×	○	×	×	○	×
	Robot controller	CRnQ-700	○	○	○	○	○	○	○
		CRnD-700	×	×	○	×	×	×	×
	FXCPU		○	×	○*5	×	×	×	×

The GOT is connected as an intelligent device station.  
 Connected to the CC-Link system via the AJ65BT-G4-S3 or AJ65BT-R2N.  
 Not available for the following models.

- Q172CPU, Q173CPU
- Q172CPUN, Q173CPUN
- Q172HCPU, Q173HCPU

Only available for the following models.

- Q170MCP(-S1)
- Q170MSCP(-S1)

Only available for FX3U(C).

## 3. Required system applications

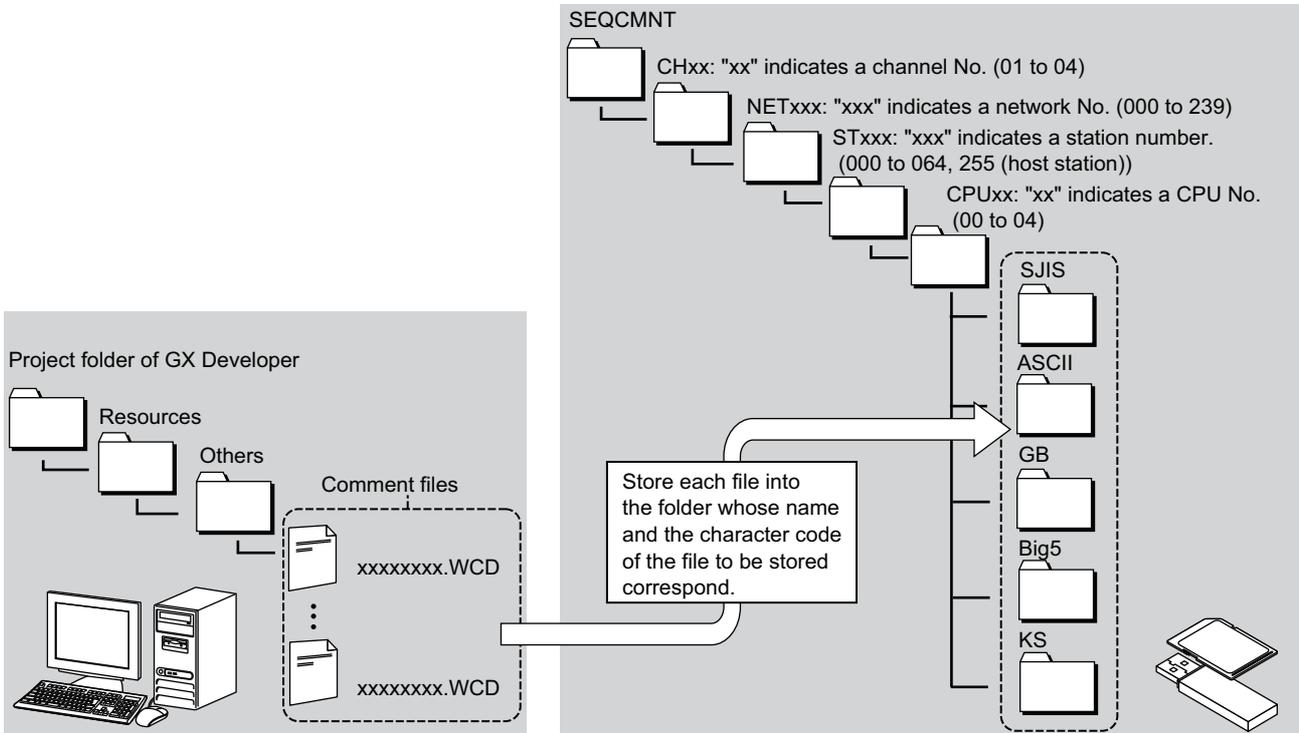
To use the device monitor function, the following system applications must be installed to the GOT.

- Device monitor
- GOT Platform Library

#### 4. Required hardware

To display device comments on the device monitor, the data storage such as a SD card or USB memory is required. Storing comment files used for the sequence program monitor into the data storage enables displaying the device comments on monitor screens.

Comment files in a GX Developer-format project also can be used for displaying device comments. In this case, store the comment files into the data storage as shown below.



## 2.2.2 Devices that can be monitored



Devices that can be monitored differ depending on the monitor type and the controller used.

- 1. Entry Monitor
  - 2. Batch monitor
  - 3. TC monitor
  - 4. BM monitor
  - 5. Test operation

### ■1. Entry Monitor

The following lists the devices that can be monitored on the entry monitor.

#### (1) Bit device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Input (X)	○	○	○	○	○	○	○	○	○	○
Output (Y)	○	○	○	○	○	○	○	○	○	○
Internal relay (M)	○	○	○	○	○	○	○	×	×	○
Latch relay (L)	○	×	○	○	×	○	○	×	×	×
Annunciator (F)	○	×	○	○	○	○	○	×	×	×
Link relay (B)	○	○*1	○	○	○	○	○	×	×	×
Special relay (SM)	○	○	○	○	○	○	○	○	○	×
Special relay for link (SB)	○	×	○	○	○	×	×	×	×	×
GOT bit register (GB)	○	○	○	○	○	○	○	○	○	○

Only Q24DHCCPU-V can be monitored.

#### (2) Word device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Data register (D)	○	○	○	○	○	○	○	○	○	○
Special data register (SD)	○	○	○	○	○	×	○	○	○	×
Link register (W)	○	○*1	○	○	○	○	○	×	×	×
Timer (current value) (TN)	○	×	○	○	○	×	○	×	×	○
Counter (current value) (CN)	○	×	○	○	○	×	○	×	×	○
Retentive timer (current value) (SN)	○	×	○	○	○	×	×	×	×	×
Link special register (SW)	○	×	○	○	○	×	○	×	×	×
File register (R)	○	×	○	○	×	×	○	×	×	×
Extension file register (ZR)	○	×	○	○	×	×	×	×	×	×
Index register (Z)	○	×	○	○	×	×	○	×	×	×
Link register (for writing) (Ww)	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	×	×
Link register (for reading) (Wr)	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	×	×
Motion device (#)	×	×	×	×	×	○	×	×	×	×
GOT data register (GD)	○	○	○	○	○	○	○	○	○	○
GOT special register (GB)	○	○	○	○	○	○	○	○	○	○
Multiple CPU high speed transmission memory (U3E1 to U3E3)	×	○	×	×	×	×	×	○	×	×

Only Q24DHCCPU-V can be monitored.

Can be monitored only when the host station is monitored with the CC-Link connection (intelligent device station).

## 2. Batch monitor

The following lists the devices that can be monitored on the batch monitor.

### (1) Bit device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Input (X)	○	○	○	○	○	○	○	○	○	○
Output (Y)	○	○	○	○	○	○	○	○	○	○
Internal relay (M)	○	○	○	○	○	○	○	×	×	○
Latch relay (L)	○	×	○	○	×	○	○	×	×	×
Annunciator (F)	○	×	○	○	○	○	○	×	×	×
Link relay (B)	○	○*1	○	○	○	○	○	×	×	×
Special relay (SM)	○	○	○	○	○	○	○	○	○	×
Special relay for link (SB)	○	×	○	○	○	×	×	×	×	×
GOT bit register (GB)	○	○	○	○	○	○	○	○	○	○

Only Q24DHCCPU-V can be monitored.

### (2) Word device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Data register (D)	○	○	○	○	○	○	○	○	○	○
Special data register (SD)	○	○	○	○	○	×	○	○	○	×
Link register (W)	○	○*1	○	○	○	○	○	×	×	×
Timer (current value) (TN)	○	×	○	○	○	×	○	×	×	○
Counter (current value) (CN)	○	×	○	○	○	×	○	×	×	○
Retentive timer (current value) (SN)	○	×	○	○	○	×	×	×	×	×
Link special register (SW)	○	×	○	○	○	×	○	×	×	×
File register (R)	○	×	○	○	×	×	○	×	×	×
Extension file register (ZR)	○	×	○	○	×	×	×	×	×	×
Index register (Z)	○	×	○	○	×	×	○	×	×	×
Link register (for writing) (Ww)	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	×	×
Link register (for reading) (Wr)	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	×	×
Motion device (#)	×	×	×	×	×	○	×	×	×	×
GOT data register (GD)	○	○	○	○	○	○	○	○	○	○
GOT special register (GB)	○	○	○	○	○	○	○	○	○	○
Multiple CPU high speed transmission memory (U3E1 to U3E3)	×	○	×	×	×	×	×	○	×	×

Only Q24DHCCPU-V can be monitored.

Can be monitored only when the host station is monitored with the CC-Link connection (intelligent device station).

## 3. TC monitor

The following lists the devices that can be monitored on the TC monitor.

### (1) Bit device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Timer (contact) (TT)	○	×	○	○	○	×	×	×	×	○
Timer (coil) (TC)	○	×	○	○	○	×	×	×	×	○
Counter (contact) (CT)	○	×	○	○	○	×	×	×	×	○
Counter (coil) (CT)	○	×	○	○	○	×	×	×	×	○

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Retentive timer (contact) (SS)	○	×	○	○	○	×	×	×	×	×
Retentive timer (coil) (SC)	○	×	○	○	○	×	×	×	×	×

**(2) Word device**

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Timer (current value) (TN)	○	×	○	○	○	×	○	×	×	○
Timer (set value)	○	×	○	○	○	×	○	×	×	○
Counter (current value) (CN)	○	×	○	○	○	×	○	×	×	○
Counter (set value)	○	×	○	○	○	×	○	×	×	○
Retentive timer (current value) (SN)	○	×	○	○	○	×	×	×	×	×
Timer (set value)	○	×	○	○	○	×	×	×	×	×

#### 4. BM monitor

The following lists the devices that can be monitored on the BM monitor.

##### (1) Word device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Buffer memory (intelligent function module) (BM)	○	○	○	○	×	×	×	×	×	×

#### 5. Test operation

The following lists the devices for which the test operation can be performed.

##### (1) Bit device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Input (X)	○	○	○	○	×	○	○	○	○	○
Output (Y)	○	○	○	○	×	○	○	○	○	○
Internal relay (M)	○	○	○	○	×	○	○	×	×	○
Latch relay (L)	○	×	○	○	×	○	○	×	×	×
Annunciator (F)	○	×	○	○	×	○	○	×	×	×
Link relay (B)	○	○*1	○	○	×	○	○	×	×	×
Special relay (SM)	○	○	○	○	×	○	○	○	○	×
Special relay for link (SB)	○	×	○	○	×	×	○	×	×	×
GOT bit register (GB)	○	○	○	○	○	○	○	○	○	○

Available for only Q24DHCCPU-V.

##### (2) Word device

○ : Available, ×: Not available

Device	QCPU (Q mode)	C Controller module	LCPU	QnACPU	QSCPU	Motion controller (Q series)	CNC C70, MELDAS C6/C64	Robot controller		FXCPU
								CRnQ-700	CRnD-700	
Data register (D)	○	○	○	○	×	○	○	○	○	○
Special data register (SD)	○	○	○	○	×	×	○	○	○	×
Link register (W)	○	○*1	○	○	×	○	○	×	×	×
Timer (current value) (TN)	○	×	○	○	×	×	○	×	×	○
Timer (set value)	○	×	○	○	×	×	×	×	×	×
Counter (current value) (CN)	○	×	○	○	×	×	○	×	×	○
Counter (set value)	○	×	○	○	×	×	×	×	×	×
Retentive timer (current value) (SN)	○	×	○	○	×	×	×	×	×	×
Timer (set value)	○	×	○	○	×	×	×	×	×	×
Link special register (SW)	○	×	○	○	×	×	○	×	×	×
File register (R)	○	×	○	○	×	×	○	×	×	×
Extension file register (ZR)	○	×	○	○	×	×	×	×	×	×
Index register (Z)	○	×	○	○	×	×	○	×	×	×
Buffer memory (intelligent function module) (BM)	○	×	○	○	×	×	×	×	×	×
Link register (for reading) (Wr)	○*1	×	○*2	○*2	×	○*2	○*2	×	×	×
Motion device (#)	×	×	×	×	×	○	×	×	×	×
GOT data register (GD)	○	×	○	○	×	○	○	×	×	○
GOT special register (GB)	○	×	○	○	×	○	○	×	×	○

Available for only Q24DHCCPU-V.

Can be monitored only when the host station is monitored with the CC-Link connection (intelligent device station).

## 2.2.3 Access range

When the GOT is connected to the remote I/O station in the MELSECNET/H network system, only the master station can be monitored.

The access range other than the above is the same as the one for when the GOT is connected with a controller.

For details of the access range, refer to the following.

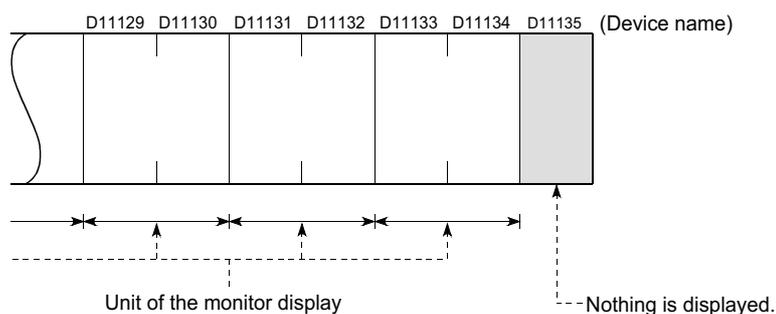
## 2.2.4 Precautions

### 1. Monitoring word devices by 32 bits

When word devices are monitored by 32 bits (two words), those with 32 bits of data remaining are monitored.

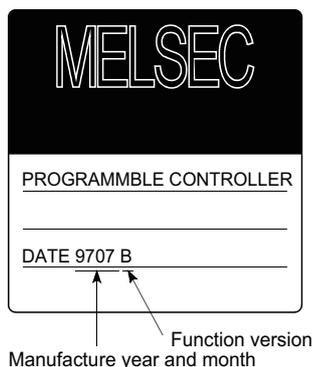
Devices with 16 bits (one-word) of data remaining are not monitored.

If an odd number is specified for the first monitor device number, the last device number of the specified controller will not be displayed.



### 2. Changing the set values of timers and counters of the QnACPU and displaying device comments

For only QnACPU whose number in the DATE column on the rating plate is [9707B] or later, the set values of timers (T) and counters (C) can be changed and device comments can be displayed.



### 3. Monitoring local devices using multiple software

When monitoring local devices, do not monitor the devices of the same PLC CPU simultaneously using multiple software (including GT Designer3 and GX Works2). Otherwise the local devices cannot be monitored properly.

## 2.3 Operations Common for Each Monitor Screen

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This section describes the operations that are common for each monitor screen.

- 2.3.1 Displaying the monitor screen
  - 2.3.2 Names of each section of monitor screen
  - 2.3.3 Display format of the monitor screen ([One large screen], [4 screens])
  - 2.3.5 Entering devices ([Register])
  - 2.3.6 Deleting a device ([Delete])
  - 2.3.7 Deleting devices at a time ([Delete all])
  - 2.3.8 Test operation for the monitor device ([Test])
  - 2.3.9 Switching the display (number or columns, comment display) ([Layout])
  - 2.3.10 Monitoring local devices ([Local monitor])
  - 2.3.11 File switching for comment display ([Change comment])
  - 2.3.12 Screen transition (common operation)

### 2.3.1 Displaying the monitor screen

---

This section describes the flow until the device monitor screen is displayed after the device monitor (advanced system application) is installed in the GOT.

The display method of the device monitor screen differs between for the first time and later.

#### ■ 1. Displaying the device monitor screen for the first time

Follow the procedure described below to display the device monitor screen.

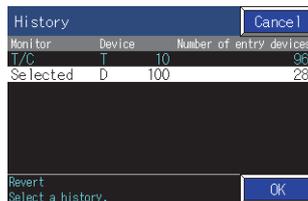
1. Start the device monitor.

The following two methods are provided for starting the device monitor.

  - Using the special function switch (device monitor) set for the project
    - Touch the special function switch (device monitor) placed on the monitor screen.
    - For the setting method of the special function switch, refer to the following.
      - GT Designer3 (GOT2000) Help
    - If the project has not been written into the GOT yet, start the device monitor from the Utility.
  - Starting the device monitor from the utility
    - Display the utility screen and select the [Monitor] tab and [Device monitor].
    - For the display method of the utility, refer to the following.
      - GOT2000 Series User's Manual (Utility)
2. The communication setting window appears.

Select the connection destination and communication driver of the controller to be monitored.

#### 2.3.4 ■ 2. Communication setting dialog





## 2. Displaying the device monitor screen for the second time and later

Follow the procedure described below to display the device monitor screen.

### 1. Start the device monitor.

The following three methods are provided for starting the device monitor.

- Using the special function switch (device monitor) set for the project  
Touch the special function switch (device monitor) placed on the monitor screen.  
For the setting method of the special function switch, refer to the following.

GT Designer3 (GOT2000) Help

If the project has not been written into the GOT yet, start the device monitor from the Utility.

- Starting the device monitor from the utility  
Display the utility screen and select the [Monitor] tab and [Device Monitor].  
For the display method of the utility, refer to the following.

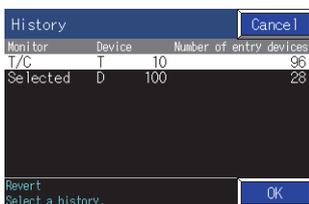
GOT2000 Series User's Manual (Utility)

- Touching [Device monitor] on the [MELSEC-L troubleshooting screen  
When [MELSEC-L troubleshooting] is used, touch the [Device monitor] button.

### 10. MELSEC-L TROUBLESHOOTING

### 2. The [History] dialog appears.

Select the monitor history to be recovered and touch the [OK] key.

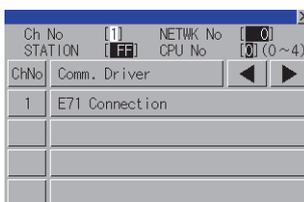


If you want to change the monitor target, touch the [Cancel] button.

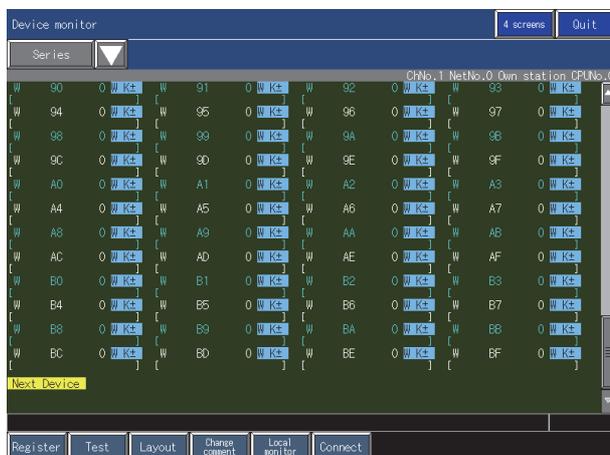
The communication setting dialog appears.

Select the connection destination and communication driver of the controller to be monitored.

### 2.3.4 2. Communication setting dialog



### 3. The [Device monitor] screen appears.



## 2.3.2 Names of each section of monitor screen



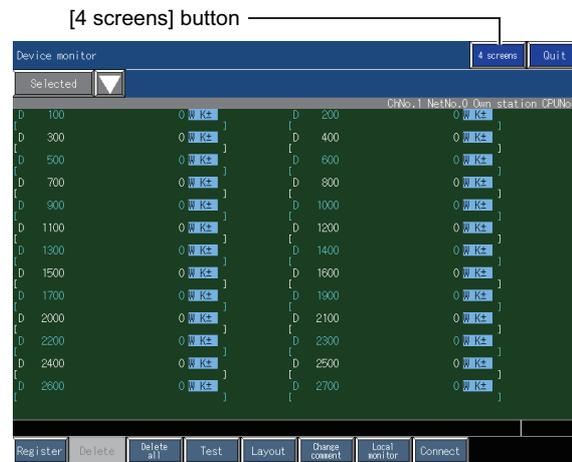
- 1) **Monitor category display**  
Displays a monitor category of the monitor screen that is currently displayed.
- 2) **Monitor category change key**  
Use this button to select a monitor category.  
Select from [Selected], [Series], [TC monitor], and [BM monitor].
- 3) **Screen switch key**  
Switches the screen display between the full screen display and the quad screen display.
- 4) **[Exit] key**  
Exits the device monitor.
- 5) **Monitor target display**  
Displays the channel No., network No., station No., and CPU No. of the monitor target.
- 6) **Monitor device display area**  
Displays the monitor device display area.
- 7) **Scroll key**  
Scrolls the monitor device display up and down.
- 8) **Message display**  
Displays error messages.
- 9) **Sub menu key**  
Use this key to register a device, execute test operation, or switch the display format on each monitor screen.  
Keys to be displayed vary depending on the monitor category.

## 2.3.3 Display format of the monitor screen ([One large screen], [4 screens])

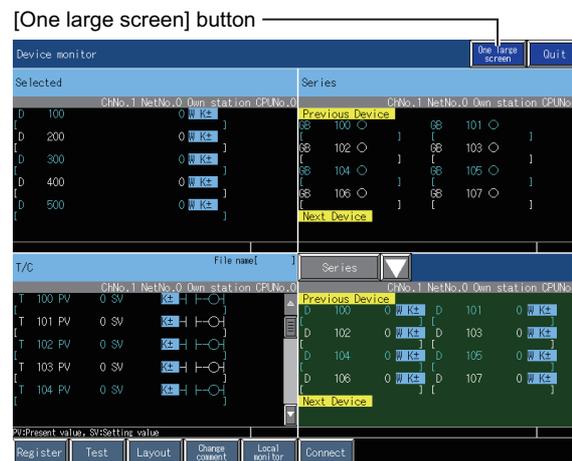
In the device monitor, the screen display format can be switched between the full mode and the quad mode.

### 1. How to switch the display format

To switch the display format from the full mode to the quad mode, touch the [4 screens] key.



To switch the display format from the quad mode to the full mode, touch the [One large screen] key.



## 2.3.4 Destination path setting ([Settings])

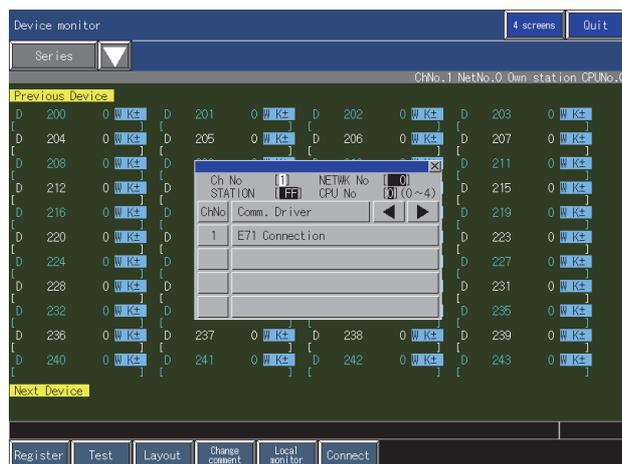
### 1. Setting procedure for the destination path

1. Touch the [Connect] key on a device monitor screen.



2. The communication setting dialog appears.  
Set the destination path with referring to the following.

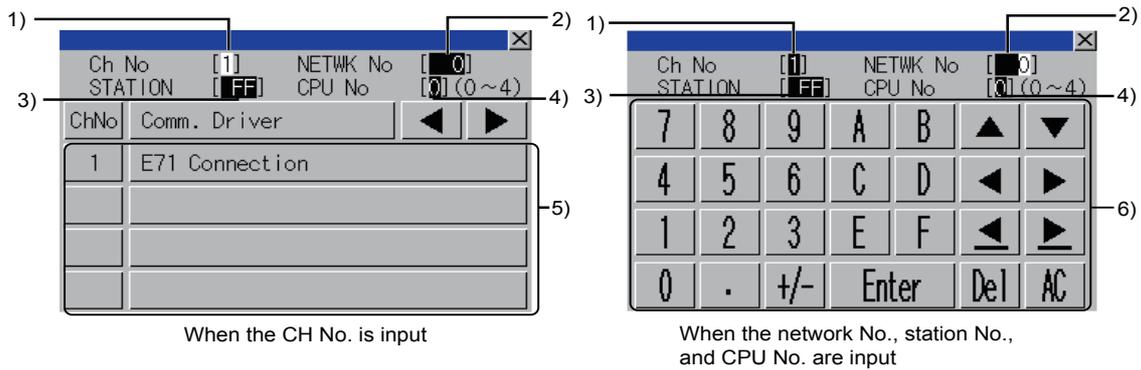
### 2.3.4 ■2. Communication setting dialog



## 2. Communication setting dialog

Configure the communication setting with the monitor target when starting monitor in this dialog.

### (1) Screen display



#### 1) CH No. input area

Set the CH No. for the target controller.  
The setting range is [1] to [4].

#### 2) Network No. input area

Set the network No. for the target controller.

The setting range differs depending on the connection type.

- Bus connection, direct CPU connection, computer link connection: [0]
- Ethernet connection: [1] to [239]
- MELSECNET/H, MELSECNET/10: [0] (host loop), [1] to [255] (specified loop)
- CC-Link IE Controller Network connection: [1] to [239]
- CC-Link IE Field Network: [1] to [239]
- CC-Link (ID/G4) connection: [0]

#### 3) Station No. input area

Set the station No. of the target controller.

When the station No. is set to the host station (FF), set the network No. to 0.

The setting range differs depending on the connection type.

- Bus connection, direct CPU connection, computer link connection: [FF] (host station)
- Ethernet connection: [1] to [64]
- MELSECNET/H, MELSECNET/10: [0] (control station), [1] to [64] (normal station)
- CC-Link IE Controller Network connection: [1] to [120]
- CC-Link IE Field Network connection: [0] (master station), [1] to [120] (local station)
- CC-Link (ID/G4) connection: [0] (master station), [1] to [64] (local station)

#### 4) CPU No. input area

Set the CPU No. of the multiple CPUs.

This setting can be configured only the multiple CPUs are monitored.

The setting range is [1] to [4].

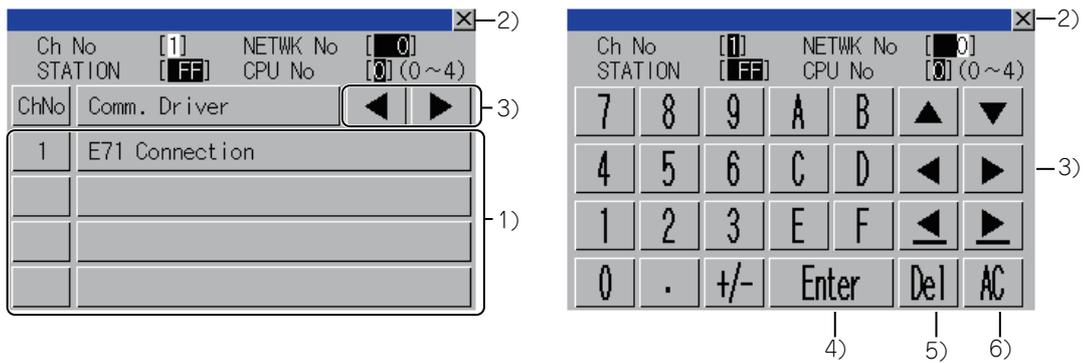
#### 5) CH No. selection key

Select the CH No. for connecting the monitor target.

#### 6) Keys

Keys for operations in the communication setting window are displayed.

## (2) Key functions



- 1) **CH No. selection key**  
Select the CH No. for connecting the monitor target.
- 2) **[×] key**  
Closes the communication setting window.  
When any of the CH No., network No., station No., and CPU No. is not input and the monitor target is not set, the communication setting window does not close.
- 3) **Input area move key**  
Moves the cursor among the input areas.
- 4) **[Enter] key**  
Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area.  
When the cursor is in the CPU No. input area and settings for the CH No., network No., and station No. are completed, the communication setting window closes and the PLC read screen appears.
- 5) **[Del] key**  
Deletes an input value or character.
- 6) **[AC] key**  
Deletes all the input values and characters.

## 2.3.5 Entering devices ([Register])

Enter devices to be monitored for all monitor categories.

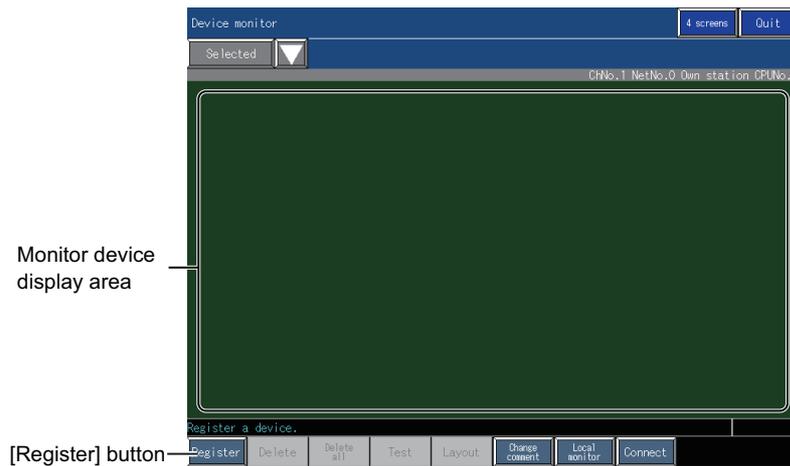
### 1. Entering procedure for the monitor device

The entry monitor is taken here as an example to describe the entry procedure for the monitor device.

1. Display the window for entering the device by either of following operations in each monitor.
  - Touching the [Register] key
  - Touching the monitor device display area

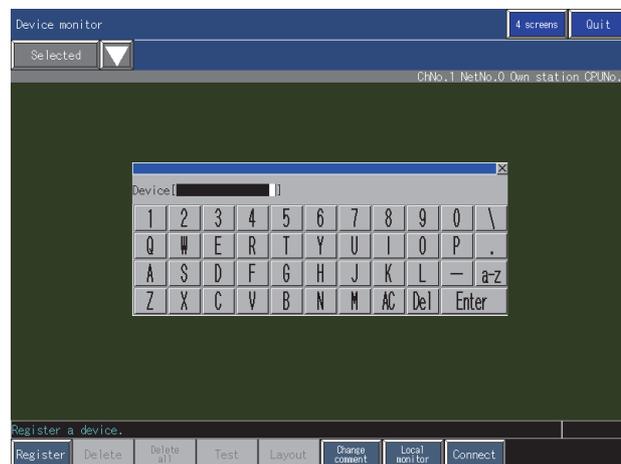
When using other than the entry monitor, the window for entering the device is displayed only when no device is entered.

When using the entry monitor, the window for entering the device is displayed even when a device is entered.



2. The window for entering the device appears.  
Set the destination with referring to the following.

#### 2.3.5 ■2. Window for entering the device



3. When a password is not set for a sequence program, touch the [ENTER] key to enter the specified device.  
When a password is set for the sequence program, the dialog for canceling the password appears when the [ENTER] is touched.  
Inputting the correct password enters the specified device.



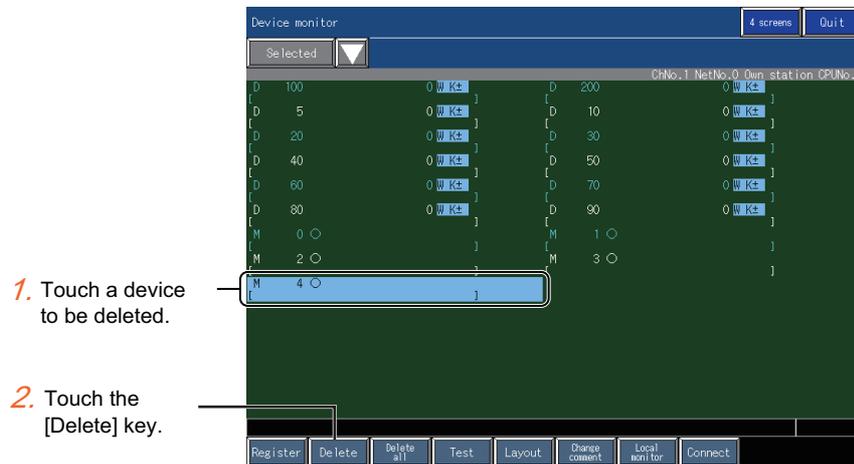
## 2.3.6 Deleting a device ([Delete])



Delete a device entered in the entry monitor.

### 1. How to delete a device

1. Touch a device to be deleted in the entry monitor.
2. Touch the [Delete] key.



3. The confirmation dialog appears.  
Touch the [OK] key to delete the selected device.



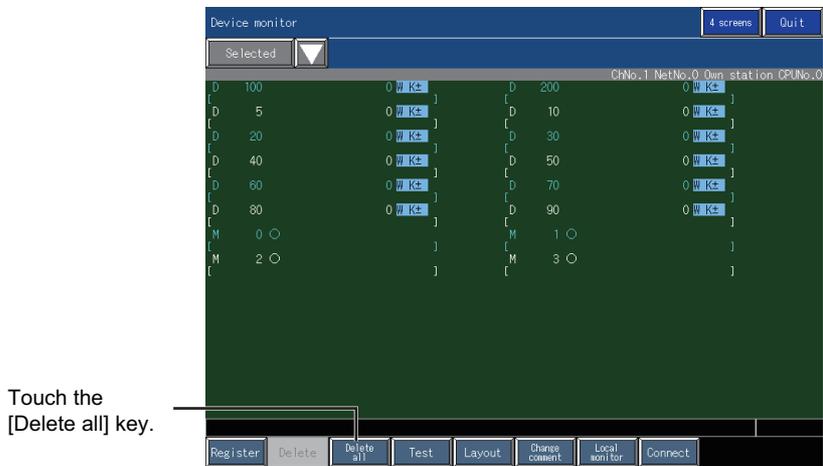
## 2.3.7 Deleting devices at a time ([Delete all])

GT 27 GT 23 Soft GOT 2000

Delete all the registered devices entered in the entry monitor at a time.

### 1. How to delete devices at a time

1. Touch the [Delete all] key in the entry monitor.



2. The confirmation dialog appears.  
Touch the [OK] key to delete all the selected devices.



## 2.3.8 Test operation for the monitor device ([Test])

Test devices.

### WARNING

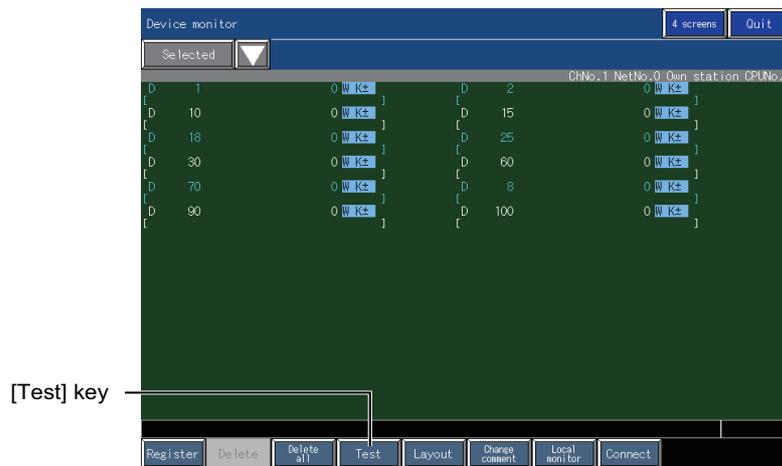
Before performing the quick test operations of the system monitor function (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.

During quick test operation, never change the data of the devices which are used to perform significant operation for the system. False output or malfunction can cause an accident.

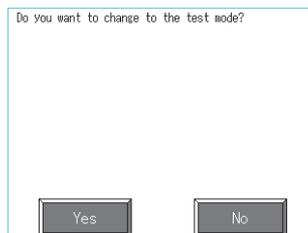
### 1. Operating procedure of the test

This subsection takes a test operation of the D100 device as an example to describe the test operation procedure.

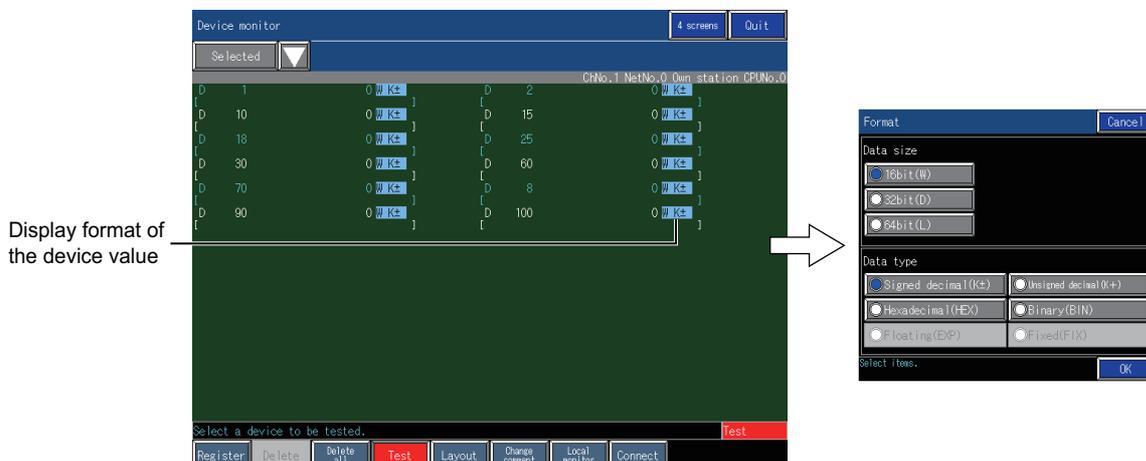
1. Touch the [Test] key in each monitor.



2. The confirmation dialog appears.  
Touch the [Yes] key to switch the mode to the test mode.



3. When switching the device value display format, touch the corresponding device value display format.



4. Touch a device targeted to the test operation.

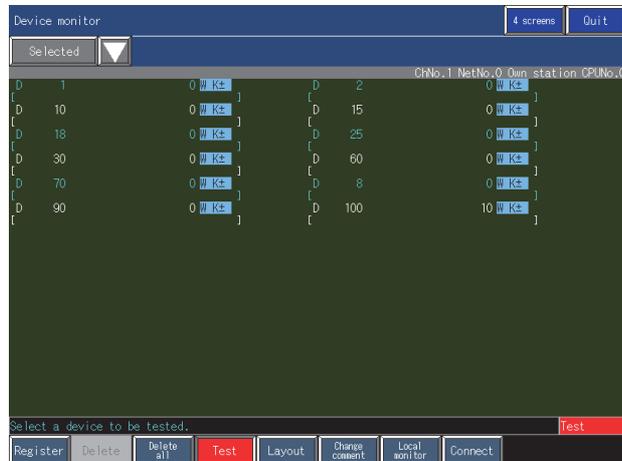


5. A dialog for setting the device value according to the device display format appears. Set the device value with referring to the following. After setting the device value, touch the [ENTER] key.

### 2.3.8 ■3. Dialogs for setting the device value

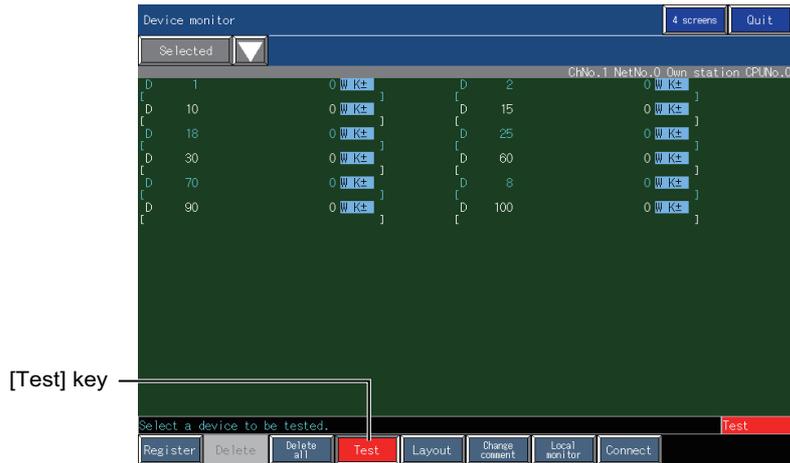


6. The set value is reflected in the device.



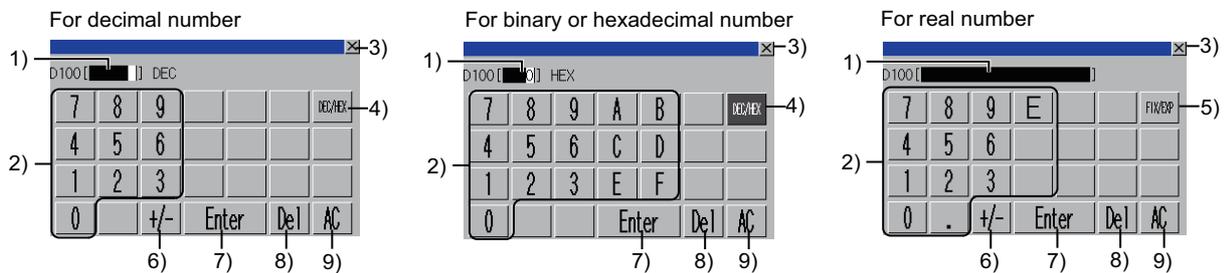
## 2. Ending the test mode

To end the test mode, touch the [Test] key.



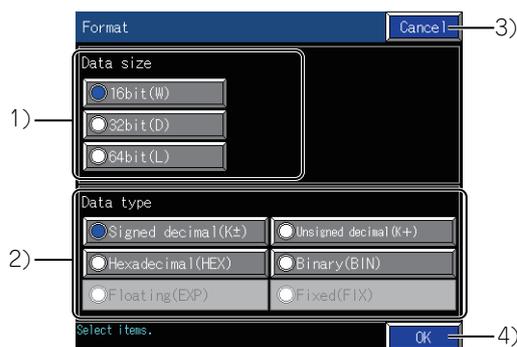
## 3. Dialogs for setting the device value

The display contents of the dialogs for setting the device value differ depending on the device display format.



- 1) **Device value display area**  
Set the device value to be input.
- 2) **Device value input key**  
Use this key to input the device value.
- 3) **[✕] key**  
Closes the window for entering the device.
- 4) **[DEX/HEX] key**  
Switches the key type between the decimal and hexadecimal.
- 5) **[FIX/EXP] key**  
Switches the display format of the device value display area between the exponential representation (EXP) and the floating point representation (FIX).
- 6) **[+/-] key**  
Switches positive and negative of the input value.
- 7) **[Enter] key**  
Determines the device input area input in the device value display area.
- 8) **[Del] key**  
Deletes an input value or character.
- 9) **[AC] key**  
Deletes all the input values and characters.

## 4. Display format dialog



- 1) **[Data size]**  
Represents the data formats of the device.  
The following shows the selectable items.
  - [16bit(W)]
  - [32bit(D)]
  - [64bit(L)]
- 2) **[Data type]**  
Represents the displayable display formats for the device value.  
The following shows the selectable items.
  - [Signed decimal ( $K\pm$ ) ]
  - [Unsigned decimal ( $K+$ ) ]
  - [Hexadecimal (HEX) ]
  - [Binary (BIN) ]
  - [Floating(EXP)]
  - [Fixed(FIX)]
- 3) **[Cancel] key**  
Closes the display format dialog without reflecting the settings.
- 4) **[OK] key**  
Closes the display format dialog after reflecting the settings.

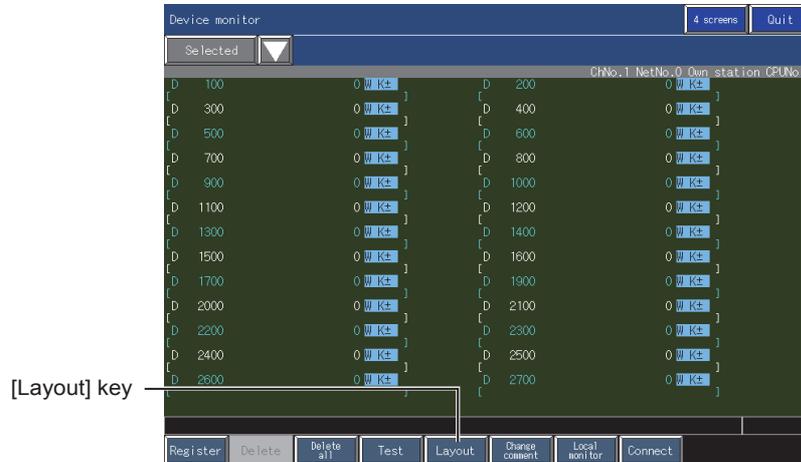
## 2.3.9 Switching the display (number or columns, comment display) ([Layout])

Switch the displayed number of device columns and display or non-display of the comments.

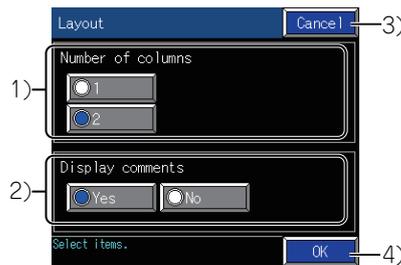
### 1. Procedure for switching the display

The entry monitor is taken here as an example to describe the switch procedure for the display.

1. Touch the [Layout] key in the entry monitor.



2. The display item dialog appears.  
Set the display format and touch the [OK] key.



- 1) **[Number of columns]**  
Represents the number of the columns of the devices.
  - 2) **[Display comments]**  
Switches whether to display or hide the device comments.
  - 3) **[Cancel] key**  
Closes the display item dialog without reflecting the settings.
  - 4) **[OK] key**  
Closes the display item dialog after reflecting the settings.
3. The display items are switched.

## 2.3.10 Monitoring local devices ([Local monitor])

Monitor local devices.

### POINT

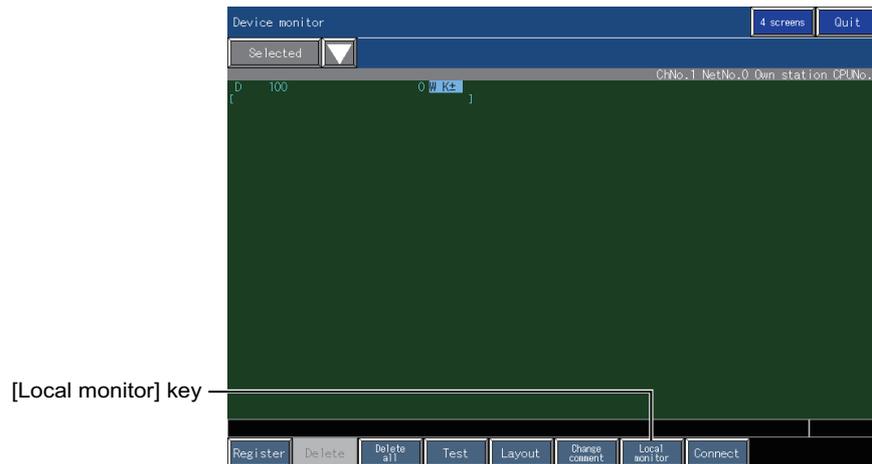
#### Scan time while the GOT is using the local device monitor

When the GOT is using the local device monitor, the scan time for the PLC increases.

### 1. Monitoring procedure of local devices

The entry monitor is taken here as an example to describe the switch procedure for the display.

1. Touch the [Local monitor] key in each monitor.

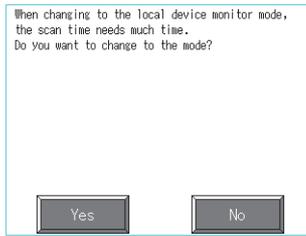


2. The program list dialog appears.  
Select the target file for the local device monitor and touch the [Cancel] key.



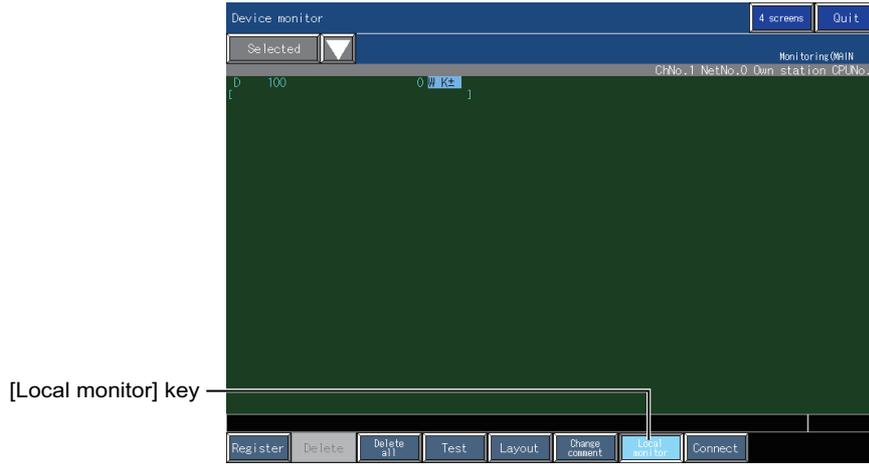
- 1) **Program file list**  
Represents the program file list of the local device monitor target.  
A file can be selected by touching the file name.
- 2) **[Cancel] key**  
Closes the program list dialog without starting the local device monitor.
- 3) **[OK] key**  
Starts the local device monitor of the selected program.

- The confirmation dialog appears.  
Touching the [OK] key starts the local device monitor.  
Touching the [Cancel] key cancels the local device monitor.



## 2. Ending the local device monitor

To end the local device monitor, touch the [Local monitor] key.



## 2.3.11 File switching for comment display ([Change comment])

The comment file to be displayed can be switched.  
This function cannot be used with the BM monitor.

### 1. Comment files that can be displayed with the device monitor

With the device monitor, comment files used for the sequence program monitor (ladder) can be displayed.  
The following lists the types of comment file that can be displayed.

- Common comment files
- Comment files for the target programs for monitoring  
The comment files can be displayed only when the local device monitor or TC monitor is used.
- All the comment files stored in a data storage installed on the GOT  
The comment files can be displayed only when the local device monitor or TC monitor is unused.
- Comment files specified with the parameters of PLCs  
The comment files specified for [Comment File Used in a Command] of the PC parameter with GX Works2 or GX Developer are displayed.

### 2. Procedure for switching

The entry monitor is taken here as an example to describe the procedure for switching comment files.

1. Touch the [Comment] key.



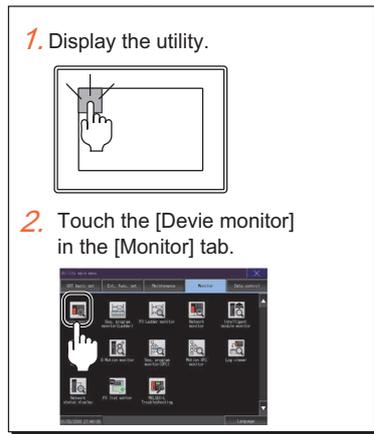
2. The comment file list dialog appears.  
Select the comment file to display and touch the [Change] key.



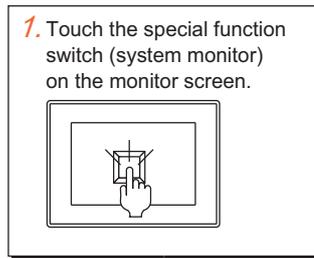
- 1) **[Comment list]**  
Lists the comment files displayed with the device monitor.  
A file can be selected by touching the file name.
  - 2) **[Cancel] key**  
Closes the comment file list dialog.
  - 3) **[OK] key**  
Closes the comment file list dialog and displays the selected comment file.  
When four screens are displayed and a comment file is set for one of the four screens, the comment file is also set for other screens connected to the same monitor target and no comment file is set for.
3. The comment file on display is switched.

## 2.3.12 Screen transition (common operation)

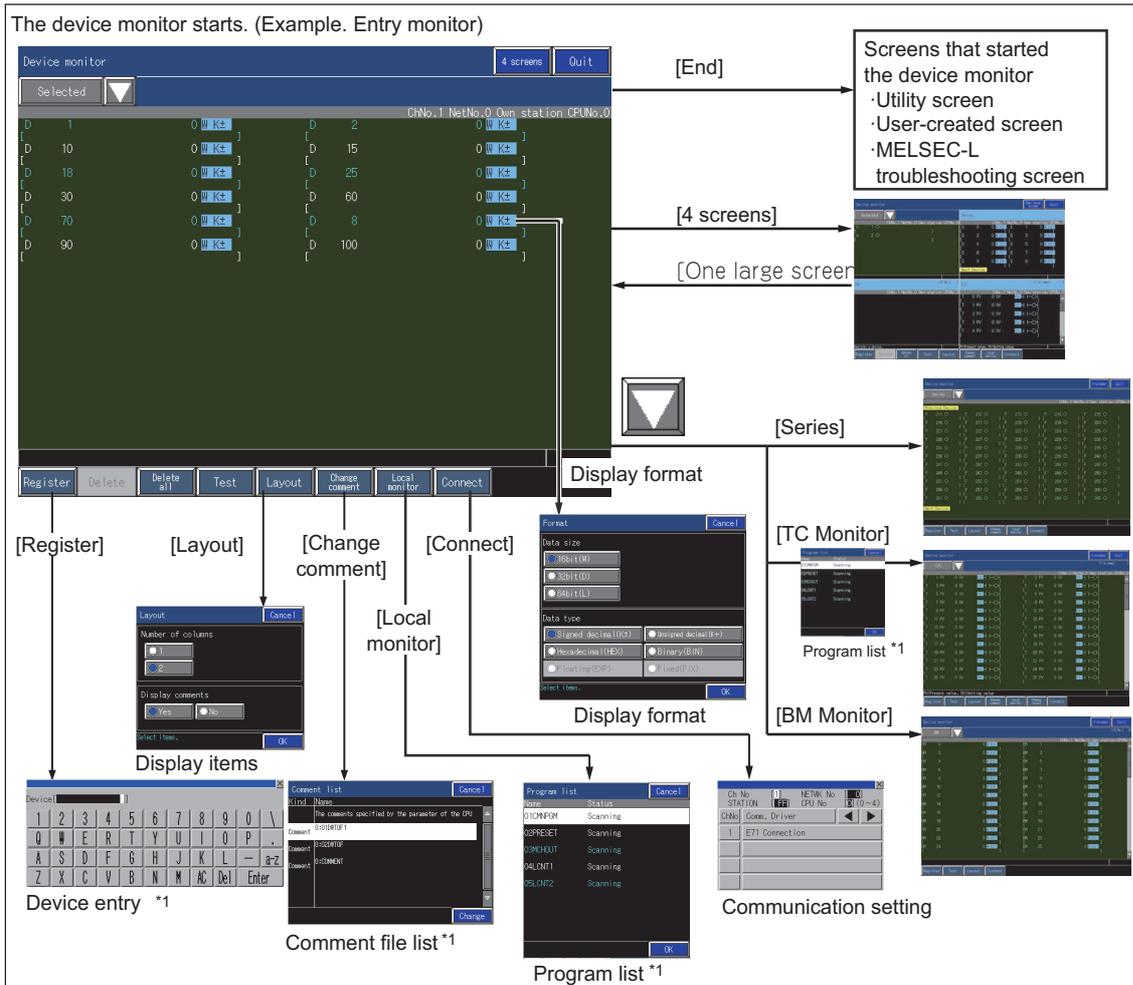
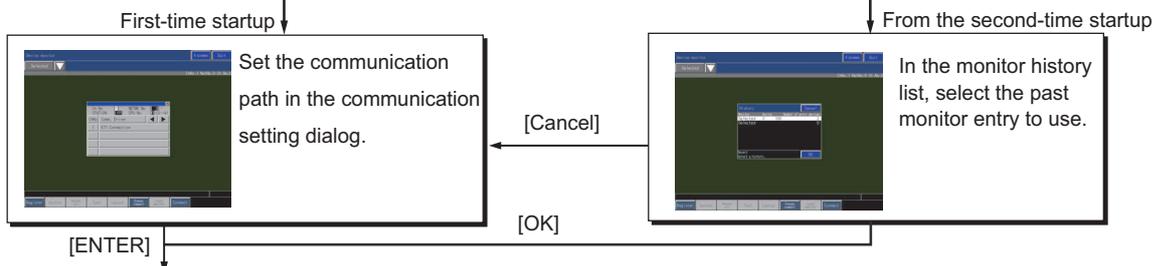
Starting the device monitor from the utility



Starting the device monitor from the special function switch (system monitor)



Starting the device monitor from the MELSEC-L troubleshooting

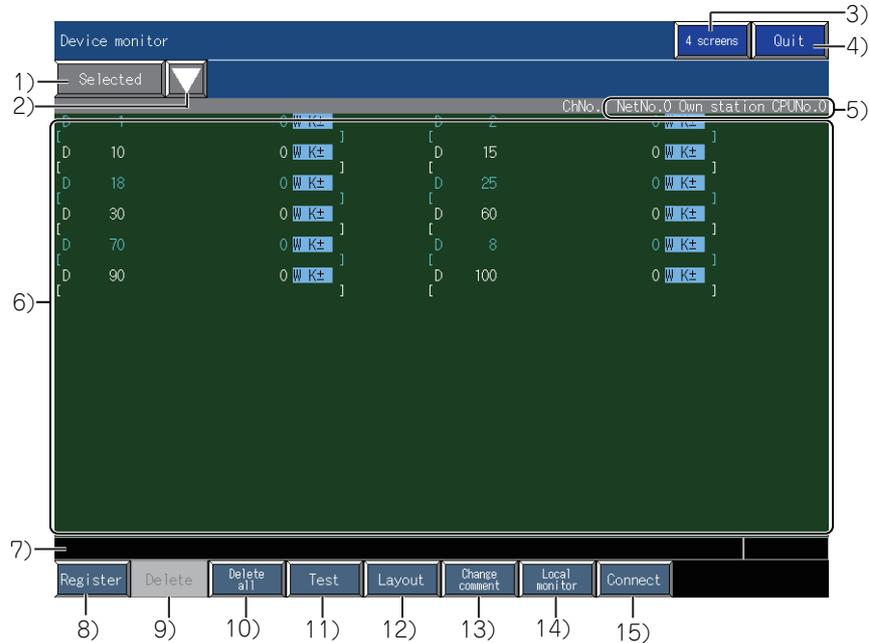


When a password or keyword is set for the controller, the password entry dialog appears.

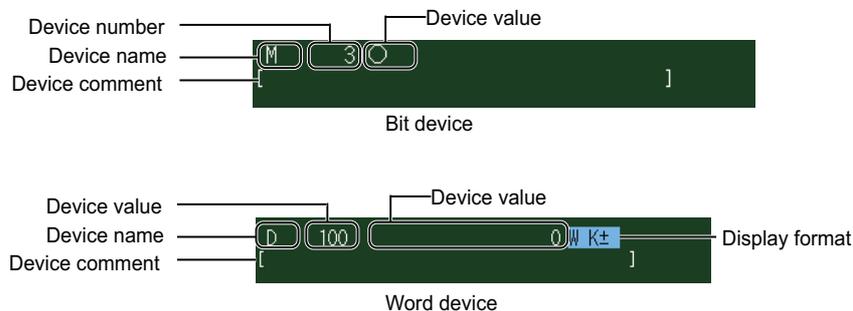
## 2.4 Entry Monitor

The entry monitor is a function that registers the devices to monitor beforehand and monitors only the registered devices.

### 1. Screen display and the key function



- 1) **Monitor category display**  
Displays a monitor category of the monitor screen that is currently displayed.
- 2) **Monitor category change key**  
Use this button to select a monitor category.  
Select from [Series], [TC monitor], and [BM monitor].
- 3) **Screen switching key ([4 screens], [One large screen])**  
Switches the screen display between the full screen display and the quad screen display.
- 4) **[Exit] key**  
Exits the device monitor.
- 5) **Monitor target display**  
Displays the channel No., network No., station No., and CPU No. of the monitor target.
- 6) **Monitor device display area**  
Displays the monitor device display area.



- **Device name**  
Displays the device name of the monitor device.
- **Device number**  
Displays the device number of the monitor device.
- **Device comment**  
Displays the device comment set for the monitor device.

#### ■ **Device value**

Displays the device value of the monitor device.

If a bit device is the target, the status is indicated as shown below.

- ●: Bit ON
- ○: Bit OFF

#### ■ **Display format**

Represents the display format of the device value.

The character on the left represents the data range of the device.

- [W]: Word (16 bits)
- [D]: Double-word (32 bits)
- [L]: Longword (64 bits)

The character string on the right represents the display format of the device value.

- [K±]: Signed decimal
- [K+]: Signed decimal
- [HEX]: Signed decimal
- [BIN]: Signed decimal
- [EXP]: Exponential notation (floating point type real)
- [FIT]: Decimal representation (fixed-point arithmetic)

The display format can be changed when touched.

### 7) **Message display**

Displays error messages.

### 8) **[Register] key**

Registers devices.

Displays the device entry window when touched.

2.3.5 ■2. Window for entering the device

### 9) **[Delete] key**

Deletes a selected registered device.

2.3.6 Deleting a device ([Delete])

### 10) **[Delete all] key**

Deletes all the registered devices.

2.3.7 Deleting devices at a time ([Delete all])

### 11) **[Test] key**

Carries out a test operation.

2.3.8 Test operation for the monitor device ([Test])

### 12) **[Layout] key**

Changes the display of items.

The display of the following items can be changed.

- Number of the columns of the devices to be displayed
- Comments (can be switched between displaying and hiding)

2.3.9 Switching the display (number or columns, comment display) ([Layout])

### 13) **[Change comment] key**

The comment file to be displayed can be switched.

Touch the key to display the comment file list dialog.

2.3.11 File switching for comment display ([Change comment])

### 14) **[Local monitor] key**

Starts or ends the local device monitor.

2.3.10 Monitoring local devices ([Local monitor])

### 15) **[Connect] key**

Switches the monitor target for the device monitor.

Touch the key to display the communication setting dialog.

2.3.4 ■2. Communication setting dialog

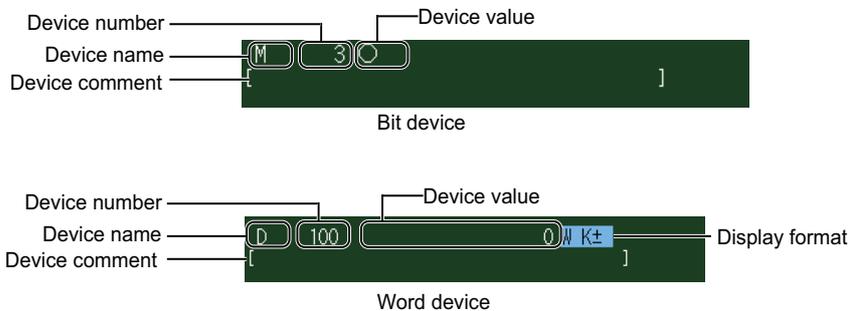
## 2.5 Batch Monitor

The device monitor is a function that specifies the start device in a range of devices and monitors the start and the following successive devices in a batch.

### 1. Screen display and the key function



- 1) **Monitor category display**  
Displays a monitor category of the monitor screen that is currently displayed.
- 2) **Monitor category change key**  
Use this button to select a monitor category.  
Select from [Selected], [TC monitor], and [BM monitor].
- 3) **Screen switching key ([4 screens], [One large screen])**  
Switches the screen display between the full screen display and the quad screen display.
- 4) **[Exit] key**  
Exits the device monitor.
- 5) **Monitor target display**  
Displays the channel No., network No., station No., and CPU No. of the monitor target.
- 6) **Monitor device display area**  
Displays the monitor device display area.



- **[Previous Device]**  
Displays the devices preceding those on display. (Displays another part of the range.)
- **[Next Device]**  
Displays the devices following those on display. (Displays another part of the range.)

- **Device name**  
Displays the device name of the monitor device.  
If a bit device is the target, the status is indicated as shown below.
    - ●: Bit ON
    - ○: Bit OFF
  - **Device number**  
Displays the device number of the monitor device.
  - **Device comment**  
Displays the device comment set for the monitor device.
  - **Device value**  
Displays the device value of the monitor device.
  - **Display format**  
Represents the display format of the device value.  
The display format can be changed when touched.  
The character on the left represents the data range of the device.
    - [W]: Word (16 bits)
    - [D]: Double-word (32 bits)
    - [L]: Longword (64 bits)
 The character string on the right represents the display format of the device value.
    - [K±]: Signed decimal
    - [K+]: Signed decimal
    - [HEX]: Signed decimal
    - [BIN]: Signed decimal
    - [EXP]: Exponential notation (floating point type real)
    - [FIT]: Decimal representation (fixed-point arithmetic)
- 7) **Message display**  
Displays error messages.
- 8) **[Register] key**  
Registers the start device of monitor targets.  
Displays the device entry window when touched.  
2.3.5 ■2. Window for entering the device
- 9) **[test] key**  
Carries out a test operation.  
2.3.8 Test operation for the monitor device ([Test])
- 10) **[Layout] key**  
Changes the display of items.  
The display of the following items can be changed.
  - Number of the columns of the devices to be displayed
  - Comments (can be switched between displaying and hiding)
 2.3.9 Switching the display (number or columns, comment display) ([Layout])
- 11) **[Change comment] key**  
The comment file to be displayed can be switched.  
Touch the key to display the comment file list dialog.  
2.3.11 File switching for comment display ([Change comment])
- 12) **[Local monitor] key**  
Starts or ends the local device monitor.  
2.3.10 Monitoring local devices ([Local monitor])
- 13) **[Connect] key**  
Switches the monitor target for the device monitor.  
Touch the key to display the communication setting dialog.  
2.3.4 ■2. Communication setting dialog

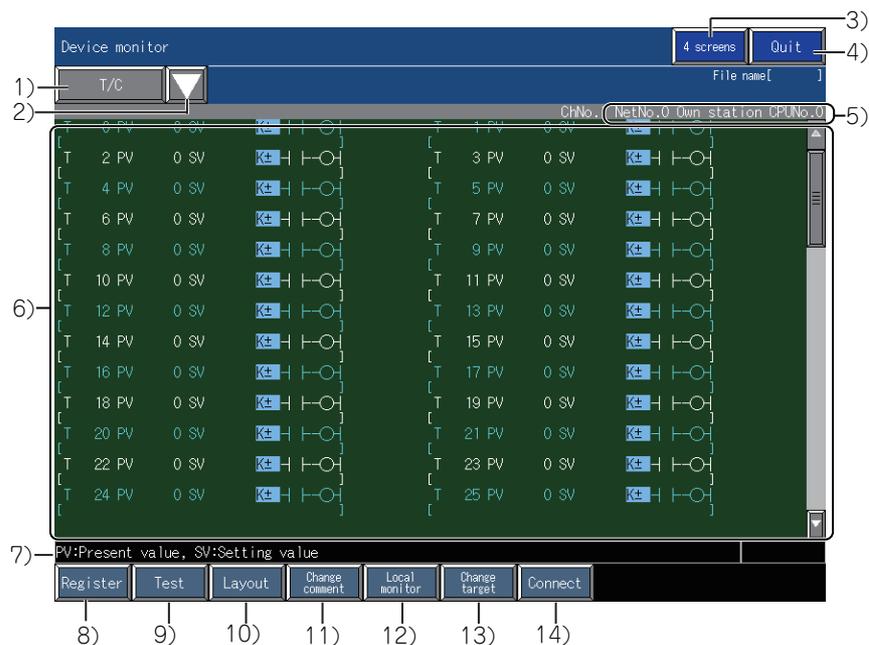
## 2.6 TC Monitor (Monitoring Timers and Counters)

The TC monitor is a function that monitors only timers (T) and counters (C).  
At the start of the TC monitor, the program list dialog appears.  
Select the target program for monitoring and start monitoring.



- 1) **Program file list**  
Lists program files that can be the targets for the TC monitor.  
A file can be selected by touching the file name.
- 2) **[Cancel] key**  
Closes the program list dialog without starting the local device monitor.
- 3) **[OK] key**  
Starts the local device monitor of the selected program.

### ■ 1. Screen display and the key function



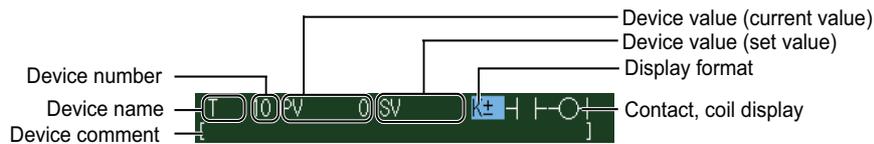
- 1) **Monitor category display**  
Displays a monitor category of the monitor screen that is currently displayed.
- 2) **Monitor category change key**  
Use this button to select a monitor category.  
Select from [Selected], [Series], and [BM monitor].
- 3) **Screen switching key ([4 screen], [One large screen])**  
Switches the screen display between the full screen display and the quad screen display.
- 4) **[Exit] key**  
Exits the device monitor.

## 5) Monitor target display

Displays the channel No., network No., station No., and CPU No. of the monitor target.

## 6) Monitor device display area

Displays the monitor device display area.



### ■ Device name

Displays the device name of the monitor device.

### ■ Device number

Displays the device number of the monitor device.

### ■ Device comment

Displays the device comment set for the monitor device.

### ■ Device value (current value)

Displays the current value of the monitor device.

### ■ Device value (set value)

Displays the set value of the monitor device.

### ■ Display format

Represents the display format of the device value.

The character on the left represents the data range of the device.

- [W]: Word (16 bits)

The character string on the right represents the display format of the device value.

- [K±]: Signed decimal
- [HEX]: Signed decimal

The display format can be changed when touched.

### ■ Contact, coil display

Indicates the status of the contact or coil.



## 7) Message display

Displays error messages.

## 8) [Register] key

Registers devices.

Displays the device entry window when touched.

2.3.5 ■2. Window for entering the device

## 9) [Test] key

Carries out a test operation.

2.3.8 Test operation for the monitor device ([Test])

## 10) [Layout] key

Changes the display of items.

The display of the following items can be changed.

- Number of the columns of the devices to be displayed
- Comments (can be switched between displaying and hiding)

2.3.9 Switching the display (number or columns, comment display) ([Layout])

## 11) [Change comment] key

The comment file to be displayed can be switched.

Touch the key to display the comment file list dialog.

2.3.11 File switching for comment display ([Change comment])

**12) [Local monitor] key**

Starts or ends the local device monitor.

2.3.10 Monitoring local devices ([Local monitor])

**13) [Connect] key**

Switches the monitor target for the device monitor.

Touch the key to display the communication setting dialog.

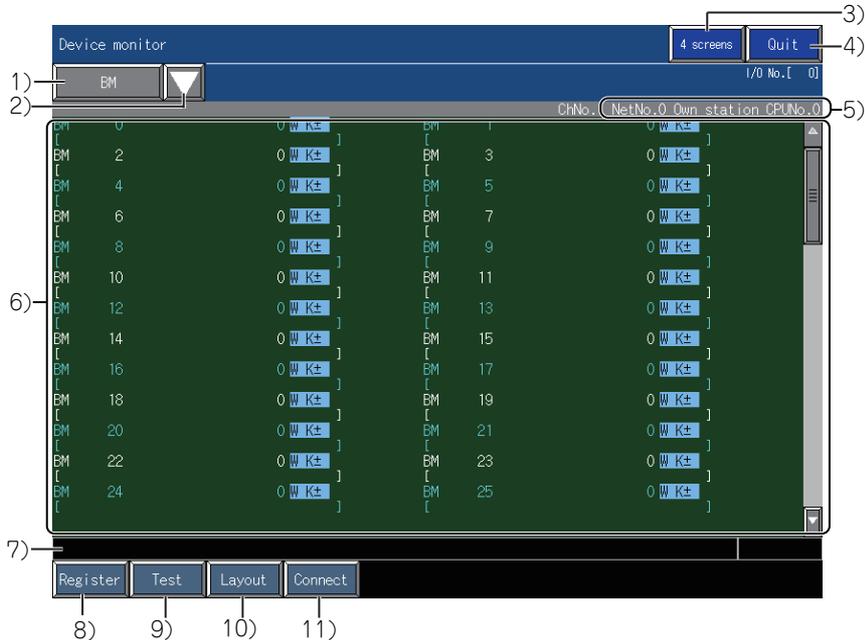
2.3.4 ■2. Communication setting dialog

## 2.7 BM Monitor (Monitoring Buffer Memory)



The BM monitor is a function that monitors the buffer memory of special function modules.

### 1. Screen display and the key function



#### 1) Monitor category display

Displays a monitor category of the monitor screen that is currently displayed.

#### 2) Monitor category change key

Use this button to select a monitor category.

Select from [Selected], [Series], and [TC monitor].

#### 3) Screen switching key ([4 screens], [One large screen])

Switches the screen display between the full screen display and the quad screen display.

#### 4) [Exit] key

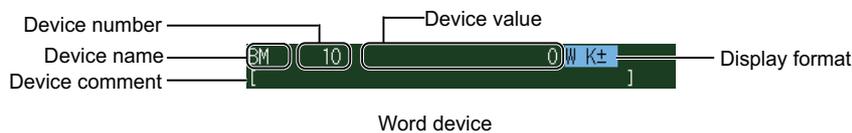
Exits the device monitor.

#### 5) Monitor target display

Displays the channel No., network No., station No., and CPU No. of the monitor target.

#### 6) Monitor device display area

Displays the monitor device display area.



#### ■ Device name

Displays the device name of the monitor device.

#### ■ Device number

Displays the device number of the monitor device.

#### ■ Device comment

Displays the device comment set for the monitor device.

#### ■ Device value

Displays the device value of the monitor device.

**■ Display format**

Represents the display format of the device value.

The character on the left represents the data range of the device.

- [W]: Word (16 bits)
- [D]: Double-word (32 bits)
- [L]: 64 bits

The character string on the right represents the display format of the device value.

- [K±]: Signed decimal
- [K+]: Signed decimal
- [HEX]: Signed decimal
- [BIN]: Signed decimal
- [EXP]: Exponential notation (floating point type real)
- [FIT]: Decimal representation (fixed-point arithmetic)

The display format can be changed when touched.

**7) Message display**

Displays error messages.

**8) [Register] key**

Registers devices.

Displays the device entry window when touched.

2.3.5 ■2. Window for entering the device

**9) [Test] key**

Carries out a test operation.

2.3.8 Test operation for the monitor device ([Test])

**10) [Layout] key**

Changes the display of items.

The display of the following items can be changed.

- Number of the columns of the devices to be displayed
- Comments (can be switched between displaying and hiding)

2.3.9 Switching the display (number or columns, comment display) ([Layout])

**11) [Connect] key**

Switches the monitor target for the device monitor.

Touch the key to display the communication setting dialog.

2.3.4 ■2. Communication setting dialog

## 2.8 Error Messages and Corrective Actions



The following table lists error messages displayed when the device monitor is carried out and describes the corresponding corrective actions.

Error message	Explanation	Action
Failed to communicate with CPU.	Communication with the target PLC for monitoring cannot be established.	<ul style="list-style-type: none"> <li>• Check the connection (a connector disconnection, a break in a cable) between the PLC and GOT.</li> <li>• Check if the PLC has caused an error.</li> <li>• Refer to the following to check if a network error has occurred.</li> </ul> <b>➡ GOT2000 Series User's Manual (Monitor)</b>
A device has exceeded a specified device range.	Because the data range was changed to one with a larger number of bits, a device that has exceeded the range is included in the targets for display.	Change the data range back in the previous number of bits.
The number of the target devices for monitoring has exceeded its maximum.	The number of the target devices for the registration for monitoring is larger than its maximum.	The number of the target devices for monitoring beyond its maximum cannot be registered. Delete unnecessary registered devices before registering.
Displaying device comments has failed.	No device comment file exists.	Create a device comment file.
Local device monitoring has failed.	The target program for local device monitoring does not exist or has been deleted.	Start the local device monitor again and select a program from the alternatives in the list.
Failed to write the value to the device.	The target device for writing a value does not exist or the target device is outside the range.	Check the range of devices with the parameter of the PLC.
A device that cannot be monitored exists.	A device outside the range is included in those on display.	Change the display position of devices.
The device range has been changed.	During GOT startup, the parameter of the PLC was changed then a device on display has fallen outside the range.	Restart the GOT.
Writing a TC set value has failed.	The target program for writing a timer or counter setting value does not exist or has been deleted.	Start the TC monitor again and select a program from the alternatives in the list.
The device that has been specified as a security condition is invalid.	The device that has been specified as a device test authorization device for the system security setting does not exist or is outside the device range.	<ul style="list-style-type: none"> <li>• Check the range of devices with the parameter of the PLC.</li> <li>• Check the device test authorization device for the system security setting.</li> </ul>
Reading a comment file has failed.	<ul style="list-style-type: none"> <li>• If drive A has been specified in the GOT setup as the destination for saving data: The SD card slot cover on the GOT is open.</li> <li>• No stored comment file exists on the SD card or USB memory that has been connected to the GOT.</li> </ul>	<ul style="list-style-type: none"> <li>• Close the SD card slot cover and select the comment file again.</li> <li>• In the comment file list dialog, select an existing comment file.</li> </ul>
Obtaining the program name has failed.	No program has been written to the PLC CPU.	To the PLC, write a PC parameter and sequence program that are consistent with each other.
No program is in execution.	In using the TC monitor, there is no program being scanned.	Start to scan a program.

# 3. SEQUENCE PROGRAM MONITOR (LADDER)

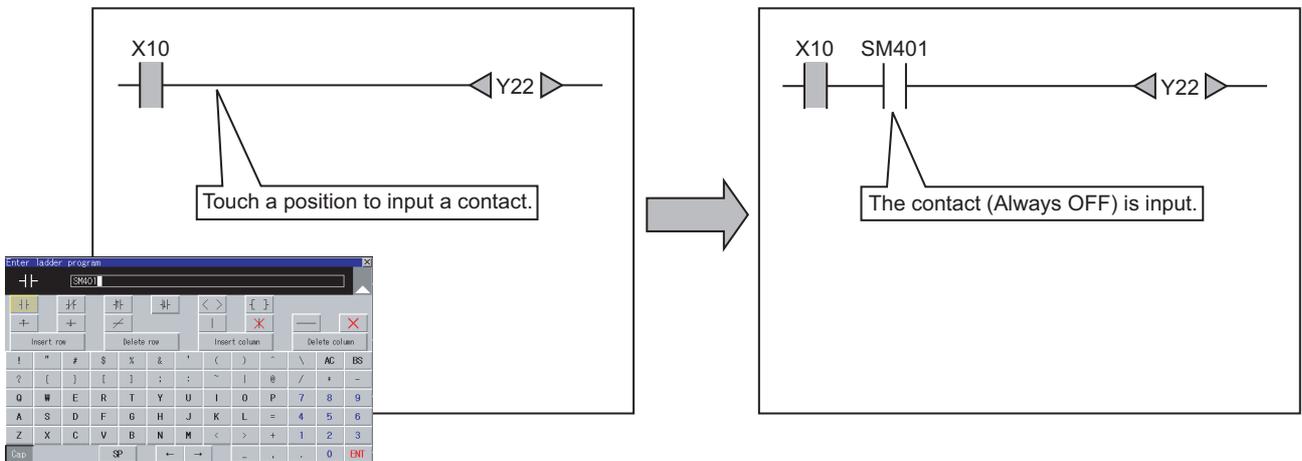
GT 27 GT 23 Soft GOT 2000

## 3.1 Features

With the sequence program monitor (ladder), the GOT can monitor and edit a sequence program in the ladder diagram format of a controller, and changing current device values of the program is available. The features of the sequence program monitor (ladder) are shown below.

### ■ Editing sequence programs by using the GOT

Editing sequence programs in the ladder diagram format is available.



The following screens are displayed with the sequence program monitor (ladder).

- PLC read screen ( ➡ 3.5 How to Operate PLC Read Screen)
- Ladder monitor screen ( ➡ 3.6 How to Operate Ladder Monitor Screen)
- Ladder editor screen ( ➡ 3.7 How to Operate Ladder Editor Screen)

## ■ Switching display formats, device comment display, and languages

The following are available.

- Switching whether to display or hide device comments
- Switching languages for file names of sequence programs, comments, and others

### (1) Switching device comment display

Whether to display or hide device comments used in sequence programs can be switched.

### (2) Switching languages

Preparing a comment file created in either of the following character codes enables character code switching of the header and comment of a file following the language switching in the utility.

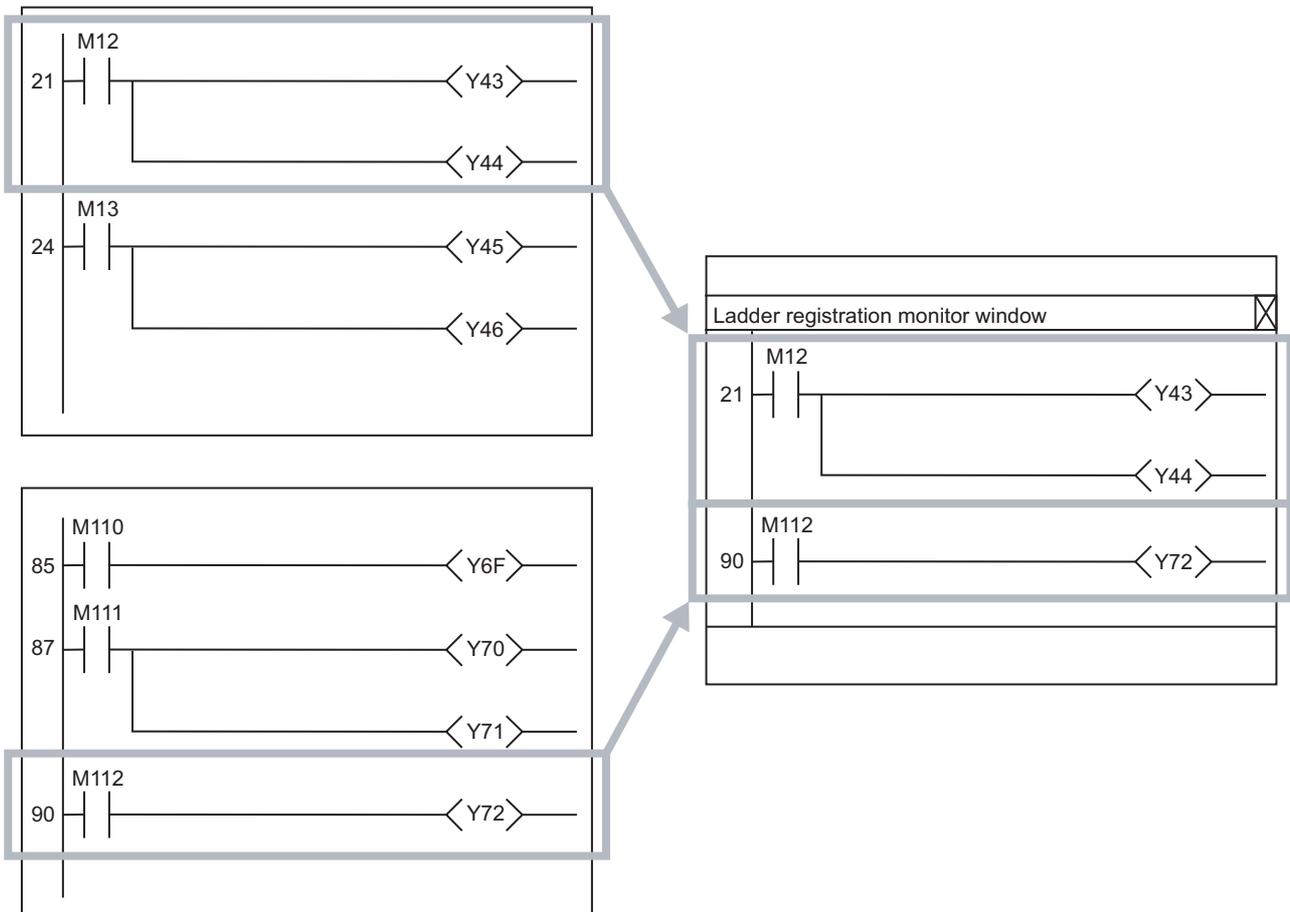
- SJIS
- GB
- Big5
- KS
- ASCII

When a comment file created in either of the character codes above in a data storage, the comment of the comment file can be displayed regardless of the language selected in the utility.

## ■ Displaying registered ladder blocks is available

On the Ladder registration monitor window, displaying registered ladder blocks is available.

⇒ 3.6.3 ■ Display menu (1) Ladder registration monitor window



## ■ Enhanced interaction with objects (one-touch ladder jump function)

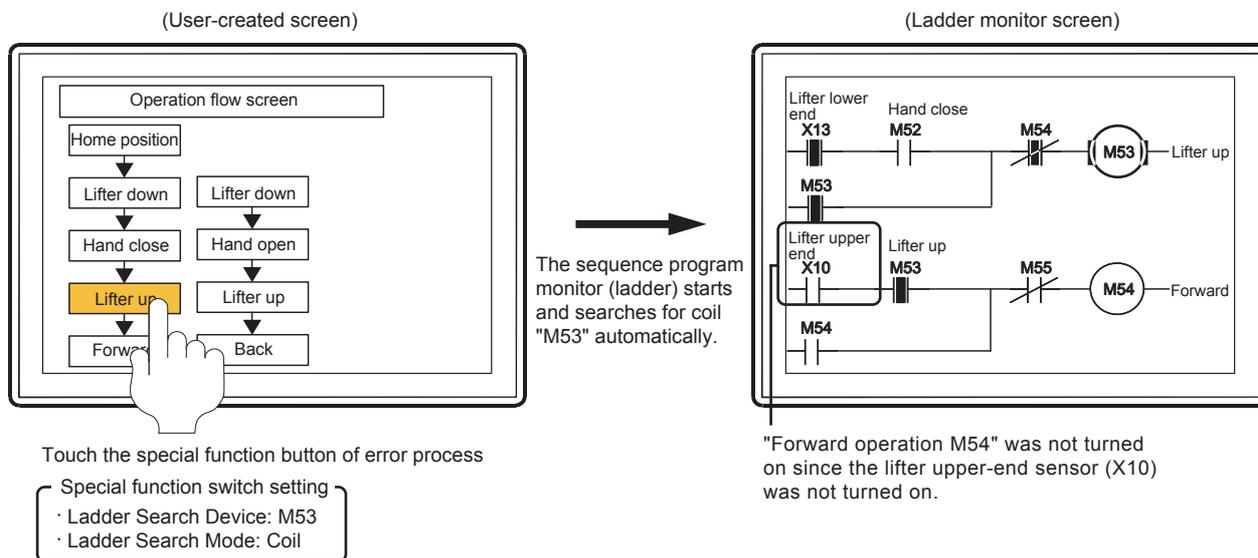
### (1) Interaction with the special function switch

Set a program file or device to be searched to the special function switch.

This enables that the automatic PLC read can be executed and a device can be searched automatically by touching the special function switch placed on the user-created screen.

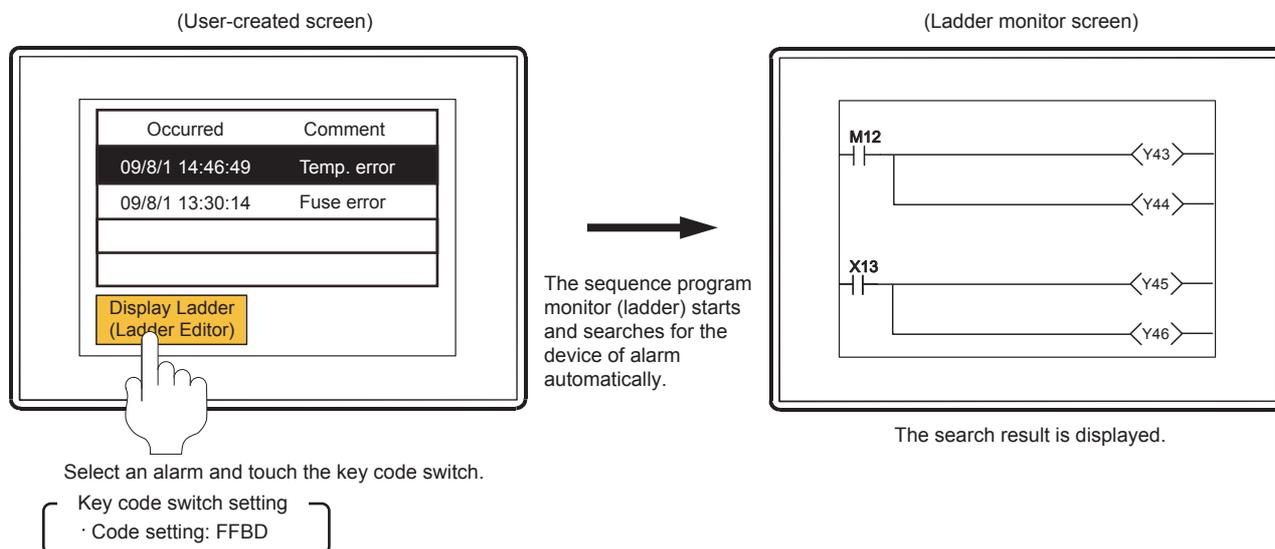
Even a person who is not the operator familiar with the equipment inside can trace the source of the equipment error without fail by simple operations, reducing time to stop the error.

Example) Coil searching by touching a special function switch



### (2) Interaction with the alarm display (user) or simple alarm display

Select an alarm in various alarm displays and touching the key code switch (setting the key code of Display Ladder (Ladder Editor)). This enables to start the sequence program monitor (ladder) and a device of alarm can be searched.



## 3.2 Specifications

### 3.2.1 System configuration

This section describes the system configuration for the sequence program monitor (ladder). For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

#### ■ Target controller

Controller
QCPU <sup>*1</sup> , motion controller (Q series) <sup>*2</sup>
LCPU
CNC (C70)

- \*1 Excluding the Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PHCPU.  
For creating a multiple CPU system with the Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and/or Q25HCPU, use CPUs with the function version B or later.
- \*2 For the motion controller CPU (Q series), only the PLC CPU area (CPU No.1) in the Q170MCP can be monitored.

#### ■ Connection type

This function can be used in the following connection types.

(○: Available, ×: Unavailable)

Function		Connection form between GOT and controller							
Name	Description	Bus connection <sup>*1</sup>	Direct CPU connection <sup>*2</sup>	Computer link connection	Ethernet connection <sup>*9</sup>	MELSECNET/H connection <sup>*1</sup> , MELSECNET/10 connection <sup>*1*3</sup>	CC-Link IE controller connection <sup>*1*4</sup> , CC-Link IE field connection <sup>*5*6</sup>	CC-Link connection	
								ID <sup>*7</sup>	G4 <sup>*8</sup>
sequence program monitor (ladder)	Monitors and edits a sequence program in the ladder diagram format in a controller, or changes current device values of the program.	○	○	○	○	○	○	○	○

- \*1 The LCPU does not support the connection type.
- \*2 When the GOT is connected to LCPU, use L6ADP-R2.
- \*3 For the MELSECNET/10 connection, use a QCPU and network module (QJ71LP21, QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, and QJ71BR11) with the function version B or later.
- \*4 Indicates the CC-Link IE controller network connection.
- \*5 Indicates CC-Link IE field network connection.
- \*6 Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU are not available.
- \*7 Indicates CC-Link connection (Intelligent device station).
- \*8 Indicates CC-Link connection (via G4).
- \*9 Ladder editor cannot be used when using CC-Link IE field network Ethernet adapter.

## ■ Required extended system application

The advanced system applications shown below are required.

⇒ 1.2 Required extended system application for the function

### (1) Extended system application

Write the package data that has the extended system application for the sequence program monitor (ladder) to the GOT.

For the communication method with the GOT, refer to the following.

⇒ GT Designer3 (GOT2000) Help

### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

⇒ GT Designer3 (GOT2000) Help

## ■ Required hardware

The following hardware is required.

Hardware
Data Storage (SD card, USB memory, and etc)

## 3.2.2 Devices and range that can be monitored

The device range varies depending on the CPU to be used.

(○: Possible, ×: Impossible)

Device <sup>*1</sup>	Device range	Program display	Device monitor display	Search operation
Input	X0 to 1FFF, DX0 to FFF	○	○	○
Output	Y0 to 1FFF, DY0 to FFF	○	○	○
Internal relay <sup>*1</sup>	M0 to 8191 to 61439	○	○	○
Latch relay	L0 to 32767	○	○	○
Link relay <sup>*2</sup>	B0 to 1FFF to EFFF	○	○	○
Timer	T0 to 32767	○	○	○
Retentive timer	ST0 to 32767	○	○	○
Counter	C0 to 32767	○	○	○
Data register	D0 to 12287	○	○	○
Link register	W0 to 1FFF	○	○	○
Annunciator	F0 to 32767	○	○	○
Edge relay	V0 to 2047	○	×	○
File register	R0 to 32767	○	○	○
	ZR0 to 4849663	○	○	○
Extended data register <sup>*2</sup>	D0 to 4910079	○	○	○
Extended link register <sup>*2</sup>	W0 to 4AEBFF	○	○	○
Link special relay	SB0 to 7FFF	○	○	○
Link special register	SW0 to 7FFF	○	○	○
Index register	Z0 to 19	○	○	○
Special relay	SM0 to 2047	○	○	○
Special register	SD0 to 2047	○	○	○
Function input	FX0 to F	○	×	○
Function output	FY0 to F	○	×	○
Function register	FD0 to 4	○	×	○
Link direct device	J□□□□	○	×	×
Module access device	J□□□□ U3En□□□□	○	×	×
Nesting	N0 to 14	○	×	×
Pointer	P0 to 8191	○	×	○ <sup>*3</sup>
Interrupt pointer	I0 to 255	○	×	○ <sup>*3</sup>
SFC block device	BL0 to 319	○	×	○
SFC transition device	TR0 to 511, BL□TR□	○	×	○
Network No. specification device	J0 to 255	○	×	×
I/O No. specification device	U0 to 1FF 3E0 to 3	○	×	×
Macro instruction argument device	VD0 to	○	×	×

\*1 The GOT can monitor local devices. For applicable devices and device ranges, refer to manual of the PLC CPU.

\*2 The extended data register and extended link register are applicable to Universal model QCPU only.

\*3 Device cannot be replaced.

### 3.2.3 Access range



The access range is the same as the access range when the GOT is connected to a controller.  
For details of the access range, refer to the following.

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

### 3.2.4 Precautions

#### (1) Precautions for operations during sequence program monitor (ladder) startup

Do not operate the following with the GOT during the sequence program monitor (ladder) startup.  
Doing so may delete stored data and cause the sequence program monitor (ladder) to operate incorrectly.

- Opening the SD card cover (when an SD card is used)
- Installing/removing the data storage (SD card or USB memory)

#### (2) Backup

Before editing the program with the sequence program monitor (ladder), backup the program with the backup/restore function to restore an original sequence program.

⇒ 9. BACKUP/RESTORE

#### (3) Precautions for the online program change

Precautions for the online program change with the sequence program monitor (ladder) are the same as the online program change with GX Works2/GX Developer, except the followings.

For details of precautions on the online program change, refer to the followings.

⇒ GX Works2 Version1 Operating Manual (Common)  
GX Developer Version8 Operating Manual  
QnUCPU User's Manual (Function Explanation, Program Fundamentals)

The following items are the difference between GX Works2/GX Developer online program change when using the sequence program monitor (ladder).

- Online program change is not available for programs other than program memories.
- Online program change cannot be executed with the pointer at the top. Do not execute the online program change simultaneously from multiple points.
- Online program change is not available by file unit.
- No option setting is available for preventing from executing the fall instruction.
- Online program change is not available when the reserved area is exceeded by the change. Execute Write to PLC when the reserved area is exceeded.
- The setting whether to transfer or not to the program memory cannot be changed after the writing is completed. When the online program change to the universal model QCPU is executed, all the program cache memory information is transferred at once, after the online program change.
- If the setting of GOT days and time is February 29th when using the Q00JCPU, Q01CPU or Q00CPU, the online program change cannot be executed. Change days and time of the GOT to something other than February 29th and execute the online program change again.

#### (4) Precautions for creating the program

The sequence program monitor (ladder) is not available for the program which uses labels.

When using the sequence program monitor (ladder), create the program in the simple project which does not use labels.

## 3.3 Display Operation

---

This section describes the operation procedure from turning on the power to the GOT to sequence program monitor (ladder) display.

1. Power on the GOT.
2. Display the screen of the sequence program monitor (ladder).  
The display methods include the following two types.
  - Starting from the special function switch (sequence program monitor (ladder)) set in the project data  
For how to set the special function switch, refer to the following.
    - ▣ GT Designer3 (GOT2000) HelpIf no project has not been written to the GOT, start the sequence program monitor (ladder) from the utility.
  - Starting from the utility  
Touch [Monitor] → [Seq. program monitor] from the Main Menu.  
For how to display the utility, refer to the following.
    - ▣ GOT2000 Series User's Manual (Utility)
3. Set the channel No., network No., station number, and CPU number in the communication setting dialog.
  - ▣ 3.5.2 (1) Communication setting window
4. Read data from the PLC and display the program list window.
  - ▣ 3.5.2 (2) Program list windowReading data from the PLC is not required when reclosing the GOT power, because sequence programs and comment files are stored in a data storage for the sequence program monitor (ladder).
5. Select a program to be displayed from the program list and display the ladder monitor screen.
  - ▣ 3.6 How to Operate Ladder Monitor Screen
6. Display the ladder editor screen from the edit menu of the ladder monitor screen.
  - ▣ 3.7 How to Operate Ladder Editor Screen

For the start operation of the Ladder Editor using the One-touch Ladder Jump function, refer to the following.

- ▣ ■Start operation when using the One-touch Ladder Jump function

For the changing screens for the security setting, refer to the following.

- ▣ 3.3.4 Setting the security

## ■ Start operation when using the One-touch Ladder Jump function

By using the special function switch, alarm display (user), or others, start the sequence program monitor (ladder), and sequence program files can be read automatically and devices can be searched automatically. The following shows objects which can use the One-touch Ladder Jump function.

Object
Special function switch, alarm display (user), simple alarm display

### POINT

#### Before executing the automatic PLC read

##### (1) Setting the automatic PLC read

When reading a sequence program file or a comment file from controllers, the automatic PLC read have to be set on GT Designer3 or in the utility.

For the setting of automatic PLC read, refer to the following.

- ▶▶▶ GT Designer3 (GOT2000) Help  
GOT2000 Series User's Manual (Utility)

##### (2) Specifying an automatic PLC read file

With the special function switch or alarm display (user), the target sequence program of automatic PLC read can be specified.

However, the operation differs depending on the automatic PLC read setting on GT Designer3 or in the utility.

Automatic PLC read setting of GT Designer3/utility	File name specification in objects	Operation
Done	Done	The specified sequence program file is read automatically.
	None	All sequence program files are read automatically.
None	Done	No sequence program file is read. To search automatically, if a sequence program file of the specified file name among the sequence program files read in the GOT exists, it is executed.
	None	No sequence program file is read. To search automatically, if a sequence program file read in the GOT exists, it is executed to all files.

**(1) Starting from the special function switch**

Select [Ladder Editor] in [Switch Action] and the [Use One-touch Ladder Jump] check box of the special function switch. By touching this switch, sequence program monitor (ladder) can be started.

Operation at start differs depending on the setting contents of the special function switch.

For the setting items for the special function switch, refer to the following.

➡ GT Designer3 (GOT2000) Help

(○: Set, ×: Not set)

Setting		Operation for touching the special function switch
Search Method	Specify Search File	
Specify Search Device*1	○	➡ (a)
	×	➡ (b)
Specify Connected Station*2	○	➡ (c)
	×	➡ (d)

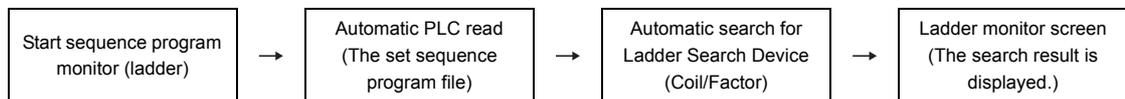
\*1 When [Specify Search Device] is selected, set [Ladder Search Device] and [Ladder Search Mode].

The setting of PLC station number is included in the [Ladder Search Device] setting.

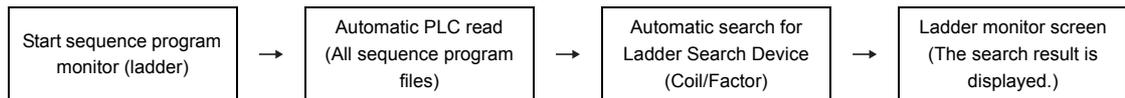
\*2 When [Specify Connected Station] is selected, set [CH No.] and [Network].

If [Other] in [Network] is selected, also set [Net No.], [Station No.] and [CPU Machine].

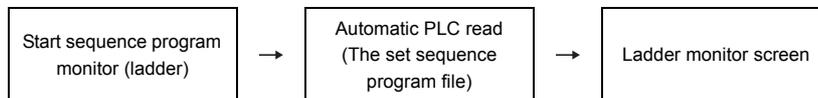
(a) Operations for searching a device with specifying the file name



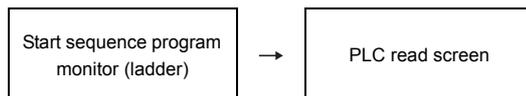
(b) Operations for searching a device without specifying the file name



(c) Operations for searching a connected station with specifying the file name



(d) Operations for setting a connected station without specifying the file name



**Operations for the special function switch when not using the One-touch Ladder Jump function**

When the [Use One-touch Ladder Jump] is not selected, the operation for touching the special function switch is the same as when starting from the utility.

➡ 3.3 ■ Starting from the special function switch

**(2) Starting from the alarm display (user)**

By selecting an alarm in the alarm display (user) and touching the key code switch (setting the key code of the [Display Ladder (Ladder Editor)]), the sequence program monitor (ladder) can be started and the device of alarm can be searched.

Operation at start differs depending on the setting contents of the user alarm observation.

For the setting items for user alarm observation, refer to the following.

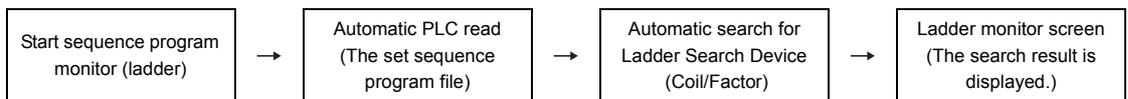
➡ GT Designer3 (GOT2000) Help

(O: Set, x: Not set)

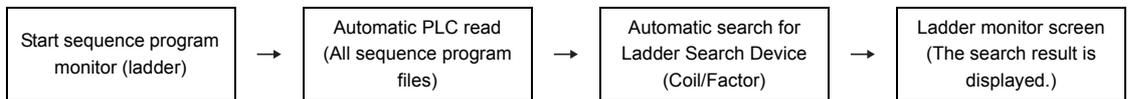
Ladder search setting*1		Operation for touching the key code switch
Ladder Search Mode	Specify Search File	
○	○	➡ (a)
○	×	➡ (b)

\*1 The setting of PLC station number is included in the target device.

**(a) Operations for setting the Ladder Search Mode and file name**

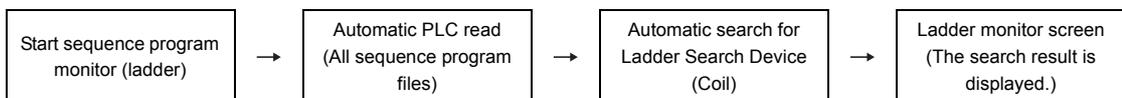


**(b) Operations for setting the Ladder Search Mode**



**(3) Starting from the simple alarm display**

By selecting an alarm in the simple alarm display and touching the key code switch (setting the key code of the [Display ladder (Ladder Editor)]), the sequence program monitor (ladder) can be started and the device of alarm can be coil-searched.

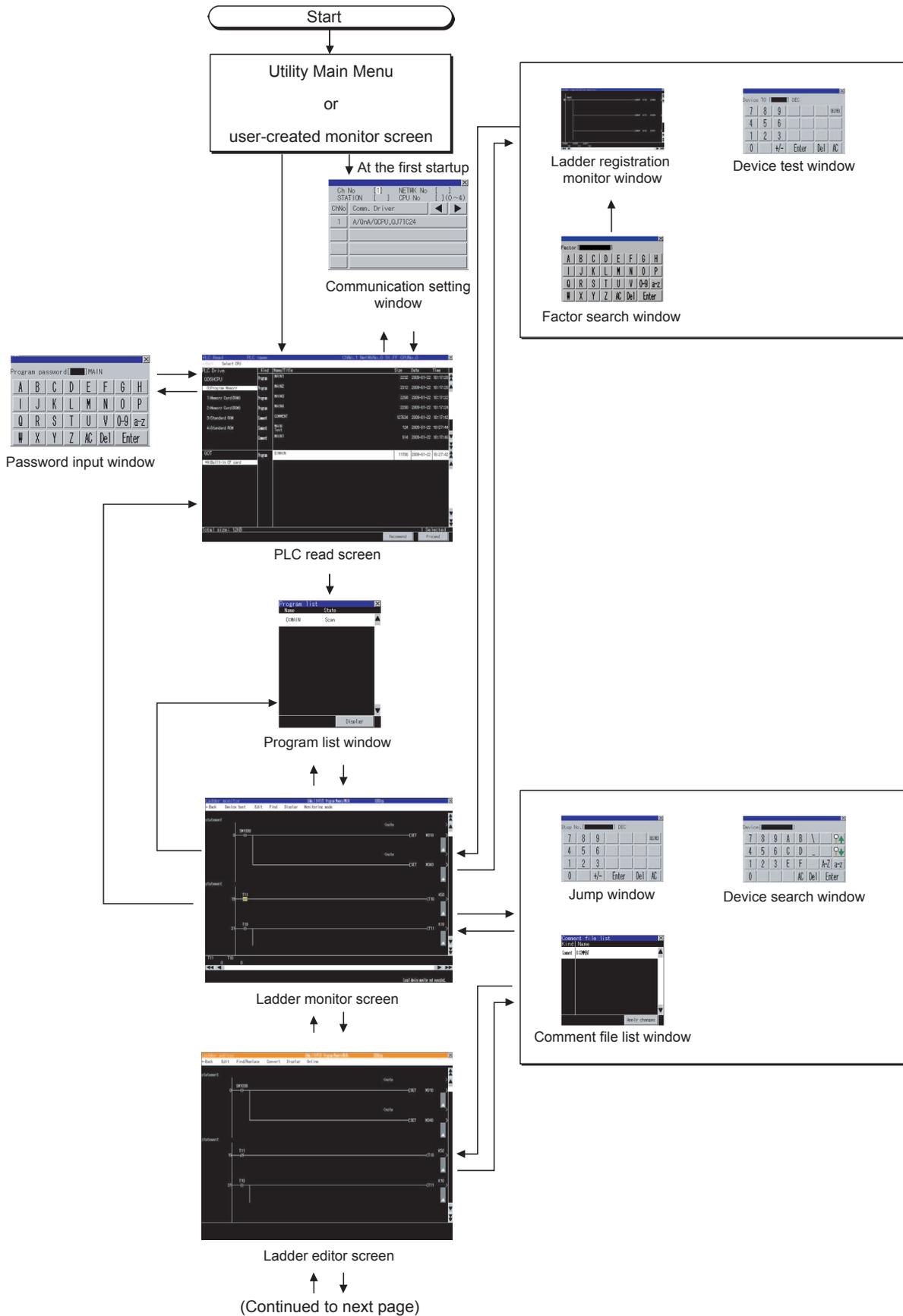


For the simple alarm display, refer to the following.

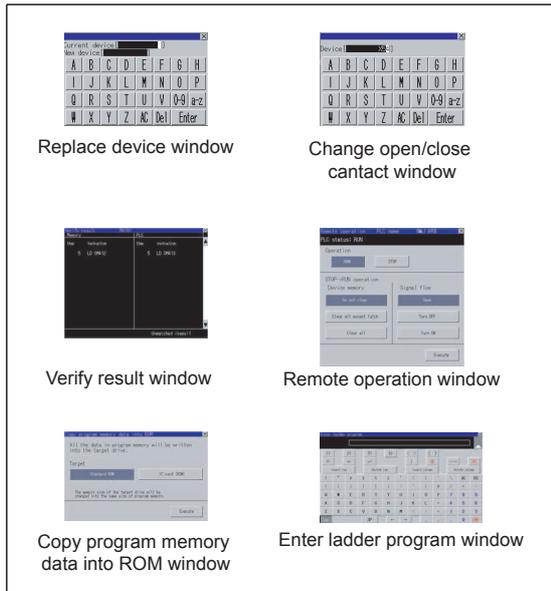
➡ GT Designer3 (GOT2000) Help

## ■ Changing screens

The following describes how to change the screen.



From previous page



## POINT

### (1) Changing screens when using the One-touch Ladder Jump function

For changing screens when using the One-touch Ladder Jump function, refer to the following.

⇒ 3.3 ■ Start operation when using the One-touch Ladder Jump function

### (2) Changing screens when setting the security

For changing screens when setting the security, refer to the following.

⇒ 3.3.4 Setting the security

### 3.3.1 Setting ladder data storage location

---

#### ■ Setting ladder data storage location

Up to 512 files of data used for the sequence program monitor (ladder) (sequence programs, device comments) can be stored in a selected drive.

Only the A drive (standard SD card) or B drive (USB drive) is available for storing ladder data.

For the ladder data storage destination setting, refer to the following.

When setting with GOT utility

➡ GOT2000 Series User's Manual (Utility)

When setting with GT Designer3

➡ GT Designer3 (GOT2000) Help

### 3.3.2 Reading comment files from data storage

---

The sequence program monitor (ladder) uses comment files stored in a data storage (SD card, USB memory, and etc) installed in the GOT.

#### ■ Procedure for using comment files stored in data storage

The following shows the procedure for using a comment file stored in a data storage.

##### (1) When displaying comments in language set for language switching of GOT utility

Store comment files in a data storage on the PLC read screen.

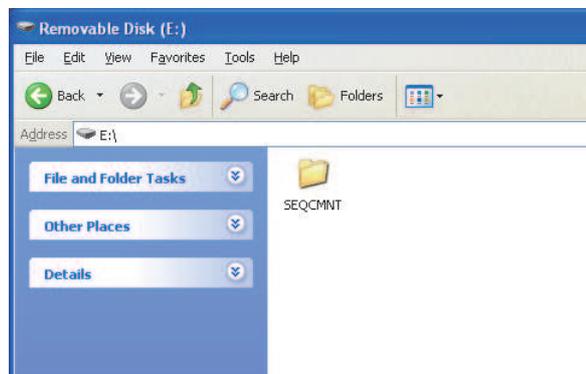
For how to store comment files in a data storage on the PLC read screen, refer to the following.

➡ 3.5 How to Operate PLC Read Screen

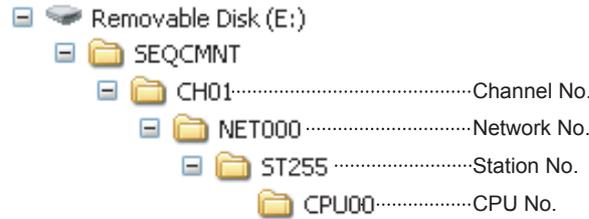
##### (2) When displaying comments in any language regardless of language set for language switching of GOT utility

###### 1. Create a SEQCMNT folder in a data storage.

When the SEQCMNT folder already exists, creating a new SEQCMNT folder is not required.



- In the SEQCMNT folder, create folders for CH No., network No., station No., and CPU number of the monitored controller with a hierarchy as shown below.

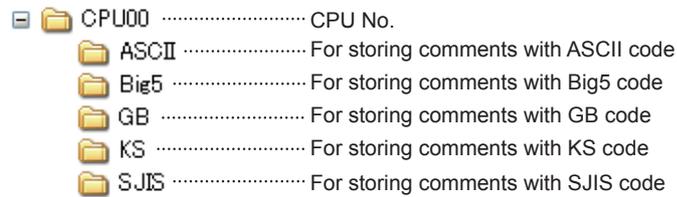


Item	Folder name
CH No.	CH**
Network No.	NET***
Station No.	ST***
CPU No.	CPU**

Assign numbers to "\*" marks.

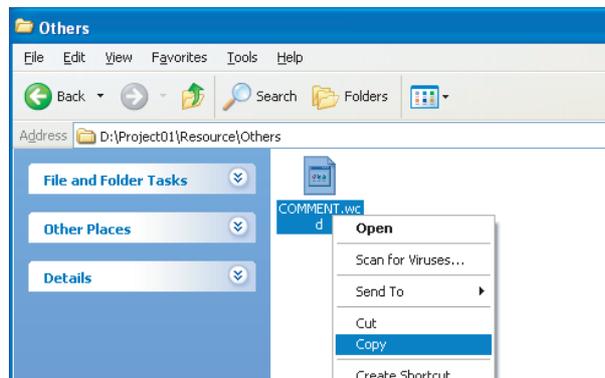
(When the CH No. is 1, the folder name is CH01. When the monitor target is the host station, the folder name is ST255.)

- In the CPU No. folder, create folders for storing comment files by character code.

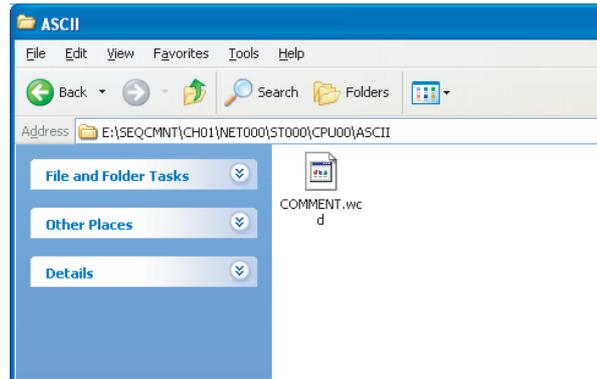


Item	Folder name
Folder for SJIS code	SJIS
Folder for GB code	GB
Folder for Big5 code	Big5
Folder for KS code	KS
Folder for ASCII code	ASCII

- Copy a comment file (.wcd) that has saved in the GX Developer format in GX Works2 or GX Developer.



5. Store the copied comment files in the folders for each character code in the data storage.  
Example: Storing comment files with ASCII code in the ASCII folder.



6. Install the data storage with the comment file on the GOT.  
Switch comment files on the Ladder monitor screen for displaying the comments in appropriate language.

## POINT

### Restrictions on using comment files

If the comments of a comment file stored in the data storage are displayed, the comments that are assigned to the bits of word devices cannot be displayed.

### 3.3.3 Program update check

The GOT checks if there is any difference between sequence program files read in the GOT and sequence programs stored in controllers, while the Ladder monitor screen or Ladder Editor screen is displayed.

#### ■ Specification of the program update check

(1) **Check criterion**

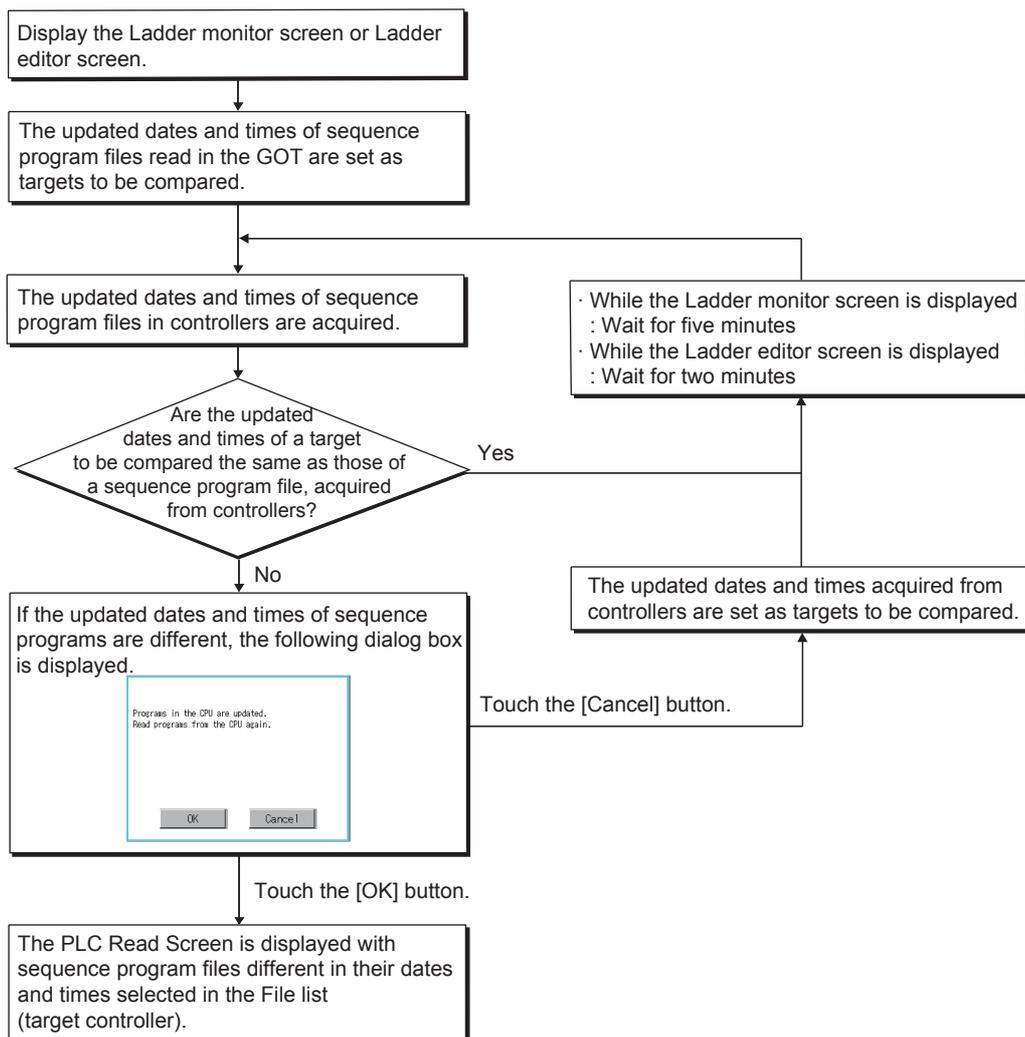
The updated dates and times of sequence program files are compared.

(2) **Check timing**

The program update is checked when the Ladder monitor screen or Ladder editor screen are displayed.

After that, it is checked in a five minutes cycle while the Ladder monitor screen is displayed and in a two minutes cycle while the Ladder Editor screen is displayed.

#### ■ Operations for the program update check



### 3.3.4 Setting the security

The device test window and Ladder editor screen displays can be limited by passwords.

#### ■ Specification of the security setting

##### (1) Security types

Type	Description
Restriction by bit devices	The changing screens is restricted by the Authorization Device. The changing screens is authorized when the Authorization Device is ON.
Restriction by a password	The changing screens is restricted by a Password. When changing screens, the security password input dialog box is displayed.

The restriction types above can be used together.

##### (2) Setting method for security

Set the security setting in the [Functional Operation Security] tab in the [Environmental Setting] dialog (Security) on GT Designer3.

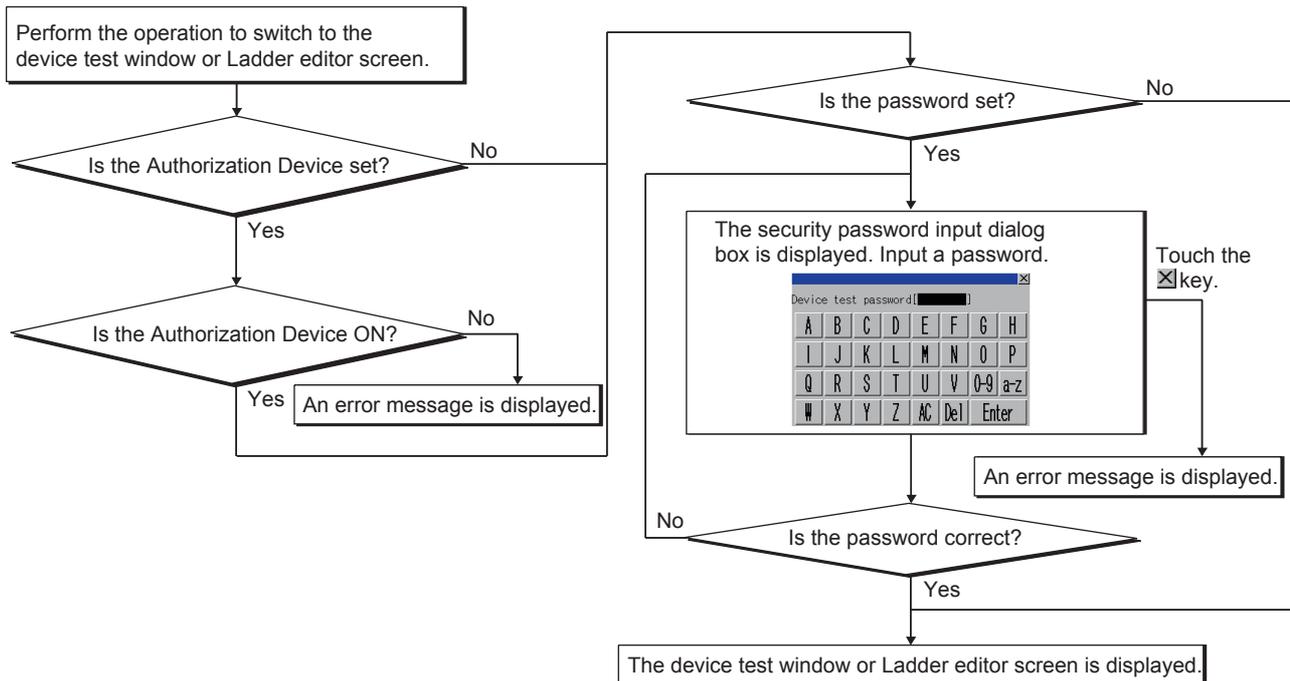
The following shows the setting method for each security type.

Type	Setting method
Restriction by bit devices	Select the [Authorization Device] check box of [Device Test Operation] or [Ladder Editor Screen Display] and set bit devices.
Restriction by a password	Set [Password] of [Device Test Operation] or [Ladder Editor Screen Display].

For the setting of the [Environmental Setting] dialog, refer to the following.

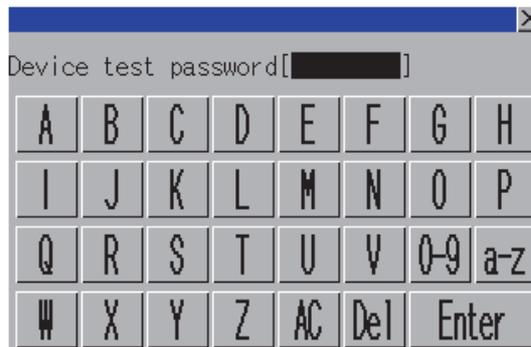
➡ GT Designer3 (GOT2000) Help

#### ■ Changing screens when setting the security



## ■ Operations for the security password input dialog box

### (1) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Password type	Displays the type of the password to be input. (Device test password/Ladder editor password)
2)	Password input area	Set the password.
3)	Keys	Keys for operations in the security password input window.

### (2) Key functions

Key	Function
[X]	Closes the security password input window and cancels the password input operation.
[0-9]	Switches the key type to the value.
[A-Z]	Switches the key type to the alphabet (uppercase).
[a-z]	Switches the key type to the alphabet (lowercase).
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[Enter]	Verifies the password set in the password input area.

## 3.4 Setting Display Format

---

The display format of word device values displayed on screens for the sequence program monitor (ladder), language, the display mode of sequence programs, and others can be set.

### 3.4.1 Switching languages of sequence programs

---

Languages (Japanese, Simplified Chinese, Traditional Chinese, or Korean) of comments to be displayed on screens for the sequence program monitor (ladder) can be switched when monitoring.

For switching languages, comment files in the language to be displayed must be created in advance.

⇒ 3.3.2 Reading comment files from data storage

The following shows the relations between the language selected in the GOT utility and comment files with each character code.

Language	Comment file
Japanese	Comment files with SJIS code
Simplified Chinese	Comment files with GB code
Traditional Chinese	Comment files with Big5 code
Korean	Comment files with KS code
Other than the above	Comment files with ASCII code

### 3.4.2 Switching comment display mode

---

Set whether to display or hide comments, statements and notes on the Ladder monitor screen or Ladder editor screen.

⇒ 3.6.3 ■Display menu

3.7.3 ■Display menu

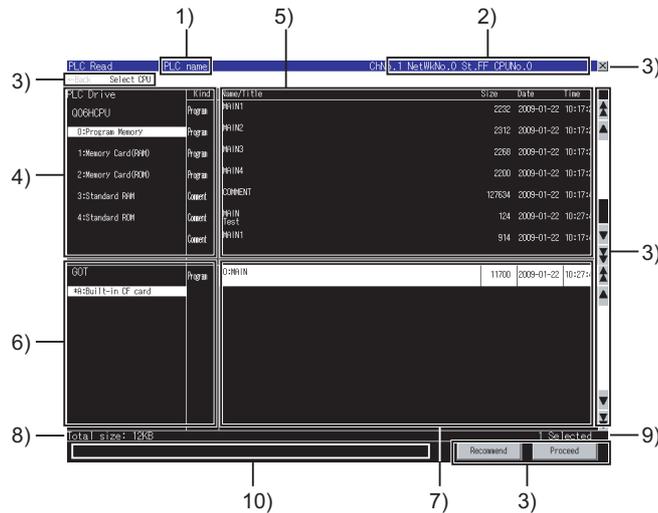
## 3.5 How to Operate PLC Read Screen

On the PLC read screen, the GOT reads sequence programs and comment files used for the sequence program monitor (ladder) from the PLC.

The following describes how to operate the PLC read screen.

### 3.5.1 Displayed contents

The following describes the configuration of the PLC read screen displayed after the sequence program monitor (ladder) starts and key functions on the screen.



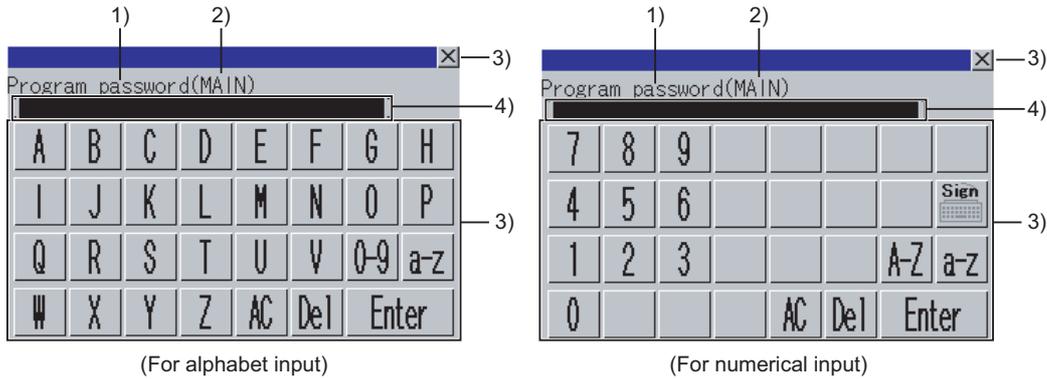
No.	Item	Description
1)	PLC name	Displays the label set in the PLC name setting for the target PLC CPU.
2)	Target controller	Displays CH No., network No., station No., and CPU No. of the target PLC CPU.
3)	Keys	Keys for operations on the PLC read screen shown in section 3.5.2. (Touch input)
4)	Target drive list (target controller)	Displays the target PLC CPU model and the drives in a list. Selecting a drive displays files within the drive in the file list (target controller). For the drive that stores files selected in the file list (target controller), [*] is displayed to the left of the drive name.
5)	File list (target controller)	Displays the program types, file names, titles, sizes, dates, and times of all the files within the drive selected in the target drive list (target controller). (The date and time show those of updated files.) A file to be read can be selected from the file list. (The selected file is highlighted.) For program files, only sequence program files in the program memory can be selected. For selecting the file name selected in the file list (GOT), the file selection in the file list (GOT) is canceled. When a password is set for the selected file, the password input window appears. (  (1) Password input window)
6)	Target drive list (GOT)	Displays the drive set for [Data save location] in the sequence program monitor settings. (Only the A drive (standard SD card) or B drive (USB drive) is available.) For the drive that stores files displayed in the file list (GOT), [*] is displayed to the left of the drive name.

(Continued to next page)

No.	Item	Description
7)	File list (GOT)	Displays the program types, file names, titles, sizes, dates, and times of all the files within the drive selected in the target drive list (GOT). (The date and time show those of updated files.) A file to be read can be selected from the file list. (The selected file is highlighted.) For selecting the file name selected in the file list (target controller), the file selection in the file list (target controller) is canceled.
8)	Total file size	Displays the total data size of files selected in the file list (target controller) and file list (GOT).
9)	Number of selected files	Displays the total number of files selected in the file list (target controller) and file list (GOT).
10)	Message display area	Displays error messages and others.

### (1) Password input window

#### (a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Password type	Displays the type of the password to be input. (Program password/Comment password/Parameter password)
2)	Password input area	Set the password.
3)	File name	Displays the file name.
4)	Keys	Keys for operations in the password input window shown in (b)

#### (b) Key functions

No.	Description
[X]	Closes the password input window and cancels the password input operation.
[0-9]	Switches the key type to the value.
[Sign]	Switches the key type to the symbol.
[A-Z]	Switches the key type to the alphabet (uppercase).
[a-z]	Switches the key type to the alphabet (lowercase).
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[Enter]	Verifies the password set in the password input area. When the password verification for the first file is successful, the password verification for the other files is automatically executed with the same password.

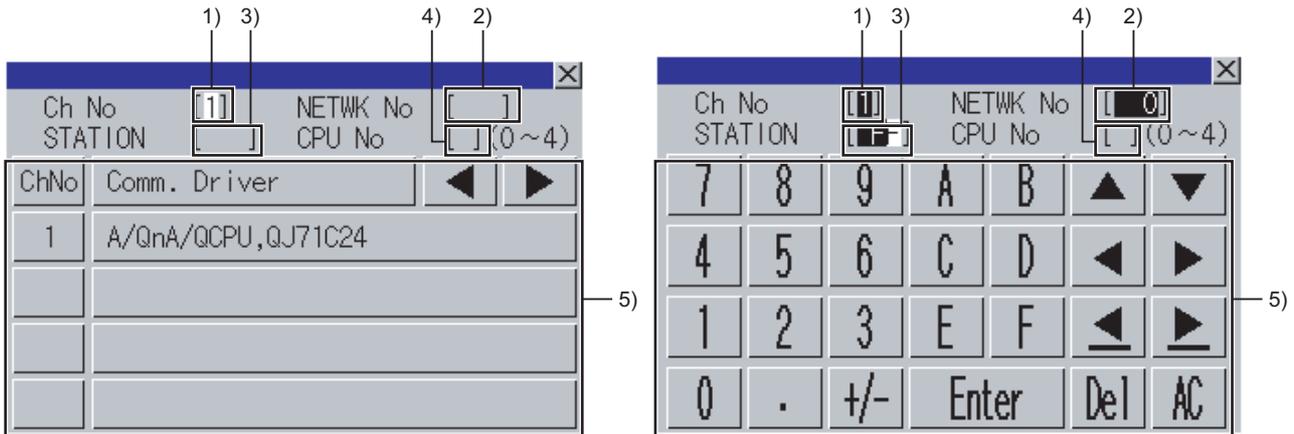
## 3.5.2 Key functions

The following shows the functions of the keys used for operating the PLC read screen.

Key	Function
[←Back]	Returns the screen to the last screen that is displayed right before the PLC read screen appears. The key is disabled when the last screen is the GOT utility screen or user-created monitor screen.
[Select CPU]	Displays the communication setting window. (  (1) Communication setting window)
[X]	Exits the sequence program monitor (ladder) and returns the screen to the sequence program monitor (ladder) startup screen.
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
[Recommend]	Available when program files are displayed in the target drive list (target controller). Touching the key selects all the sequence program files, common comment files, and comment files for the selected sequence program files in the file list (target controller). When files with the same name are displayed in the file list (target controller) and file list (GOT), touching the key selects a file as shown below. <ul style="list-style-type: none"> <li>• For sequence program files <ul style="list-style-type: none"> <li>When the updated dates and times differ between the files, touching the key selects the file in the file list (target controller).</li> <li>When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT).</li> </ul> </li> <li>• For comment files <ul style="list-style-type: none"> <li>When the updated dates and times differ between the files, touching the key selects the latest file.</li> <li>When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT).</li> </ul> </li> </ul>
[Proceed]	Writes the file selected in the file list (target controller) into the data storage displayed in the target drive list (GOT). The file written into the data storage on the PLC read screen is stored in the SEQDAT folder. After writing, among files other than comment files in the data storage, files that are not selected in the file list (GOT) are deleted. Then, the program list window appears. (  (2) Program list window)

## (1) Communication setting window

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	CH No. input area	Set the CH No. for the target controller.
2)	Network No. input area	Set the network No. for the target controller.
3)	Station No. input area	Set the station No. of the target controller. When the station No. is set to the host station (FF), set the network No. to 0.
4)	CPU No. input area	Set the CPU No.
5)	CH No. selection key	Select a CH No.
6)	Keys	Keys for operations in the communication setting window shown in (b). (Touch input)

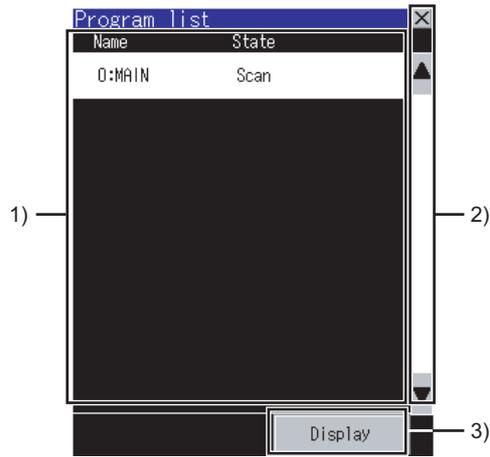
(b) Key functions

Key	Function
[X]	Closes the communication setting window. When any of the CH No., network No., station No., and CPU No. is not input and the monitor target is not set, the communication setting window does not close.
◀ ▶	Moves the cursor among the input areas.
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[Enter]	Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area. When the cursor is in the CPU No. input area and settings for the CH No., network No., and station No. are completed, the communication setting window closes and the PLC read screen appears.

**(2) Program list window**

Displaying the read sequence programs in a list is available.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Sequence program file list	Displays the file names and execution statuses of the read sequence programs. The execution statuses show execution types set for the programs. A touched sequence program file is highlighted.
2)	Keys	Keys for operations in the program list window shown in (b). (Touch input)

(b) Key functions

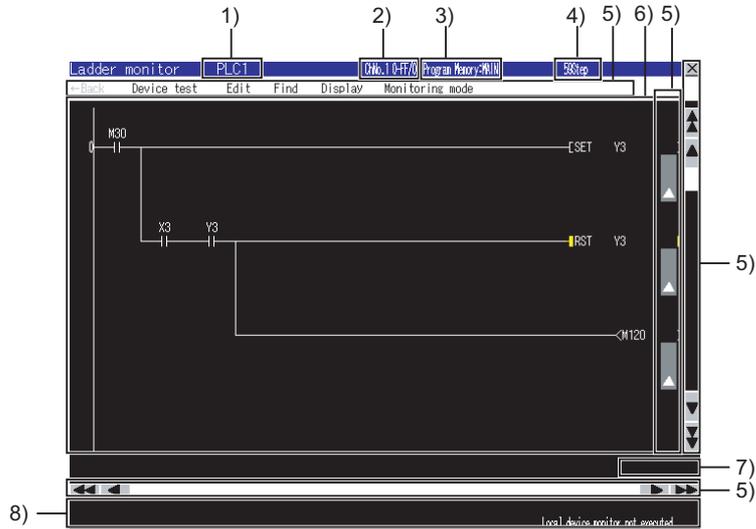
Key	Function
[X]	Closes the Program List window.
▲ ▼	Scrolls the display area up and down by one line.
[Display]	Displays the sequence program file selected in the sequence program file list on the Ladder monitor screen. ( → 3.6 How to Operate Ladder Monitor Screen)

# 3.6 How to Operate Ladder Monitor Screen

On the Ladder monitor screen, the GOT displays the read sequence program. The following describes how to operate the Ladder monitor screen.

## 3.6.1 Displayed contents

The following describes the configuration of the Ladder monitor screen, menus and key functions on the screen.



No.	Item	Description						
1)	PLC name	Displays the label set in the PLC name setting for the target PLC CPU.						
2)	Target controller	Displays the CH No., network No., station No., and CPU No of the target PLC CPU as shown below. • CH No. network No.-station No./CPU No.						
3)	Program name	Displays the file name of the displayed sequence program.						
4)	Number of steps	Displays the number of steps for the displayed sequence program.						
5)	Keys	Keys operations for the Ladder monitor screen shown in 3.6.2. (Touch input)						
6)	Ladder display area	<p>Displays the read sequence program. By touching a device, it is selected and surrounded with a green frame.</p> <ul style="list-style-type: none"> <li>The following shows the conductive status</li> </ul> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Non-conductive status</td> <td style="text-align: center;">Conductive status</td> </tr> <tr> <td style="text-align: center;">Contact </td> <td style="text-align: center;">Contact </td> </tr> <tr> <td style="text-align: center;">Coil </td> <td style="text-align: center;">Coil </td> </tr> </table> <p>Instruction*1  </p> <ul style="list-style-type: none"> <li>When contacts, coils, and outputs are the selection status, touching the area displays the device search window. ( ➡ 3.8.1 Device/Contact/Coil search)</li> <li>Displaying the first step number When the Ladder registration monitor window is opened, the first step number of registerable ladder blocks is highlighted. Touching the area registers the specified ladder block in the window. (For the Factor mode, it is not registered even if it is touched.) ( ➡ 3.6.3 ■Display menu (1) Ladder registration monitor window)</li> </ul>	Non-conductive status	Conductive status	Contact	Contact	Coil	Coil
Non-conductive status	Conductive status							
Contact	Contact							
Coil	Coil							

(Continued to next page)

No.	Item	Description
7)	Current device value display area	Displays the current value of the displayed word device.
8)	Message display area	Displays error messages and others.

\*1 The conductive status of the following instructions is displayed only on the screen.  
SET, RST, PLS, PLF, SFT, SFTP, FF, DELTA, DELTAP, MC

### 3.6.2 Key functions

The following shows the functions of the keys used for operating the Ladder monitor screen.

Key	Function
[←Back]	Returns the screen to the last screen that is displayed right before the Ladder monitor screen appears. The key is disabled when the last screen is the GOT utility screen or user-created monitor screen.
[Device test]	Sets the device test mode. Touching the key in the device test mode cancels the device test mode. (  3.9 Test Operation)
[Edit]	Displays the Edit menu. Touching [Start editing] displays the Ladder editor screen. (  3.7 How to Operate Ladder Editor Screen)
[Find]	Displays the Find menu. (  3.6.3 ■Find menu)
[Display]	Displays the Display menu. (  3.6.3 ■Display menu)
[Monitoring mode]	Displays the Monitoring Mode menu. (  3.6.3 ■Monitoring Mode menu)
	The comment and note of the touched line can be displayed/hidden. If the touched line is the first line in the ladder block, the statement of the touched ladder block can be displayed/hidden.
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.

### 3.6.3 Menus

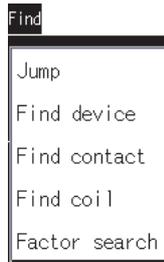
The following shows operations for the menus displayed on the Ladder monitor screen.

#### ■ Edit menu



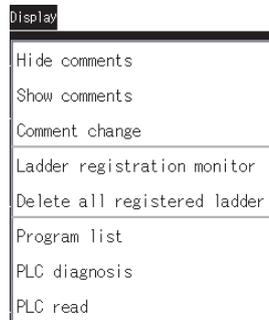
Key	Function	Reference section
[Start editing]	Switches to the Ladder editor screen.	3.7

## Find menu



Key	Function	Reference section
[Jump]	Displays the jump window.	3.7.3 ■Find/Replace menu (1)
[Find device]	Displays the device search window.	3.8.1
[Find contact]	Displays the device search window	3.8.1
[Find coil]	Displays the device search window	3.8.1
[Factor search]	Displays the Factor window.	3.8.2

## Display menu

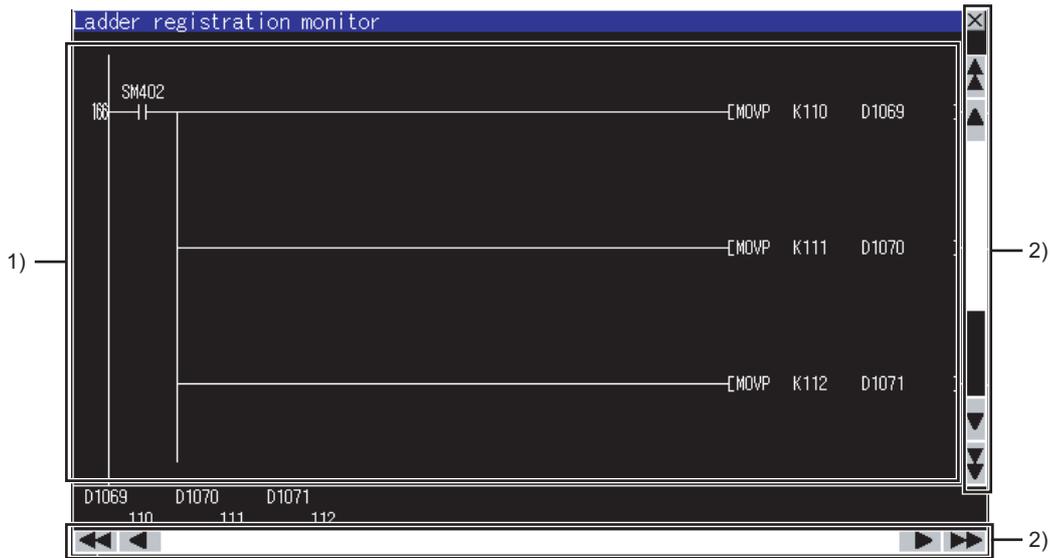


Key	Function	Reference section
[Hide comments]	Hides the comments, statements or notes in the ladder display area.	3.4.2
[Show comments]	Displays the comments, statements or notes in the ladder display area.	
[Comment change]	Displays the comment file list window.	3.7.3 ■Display menu (1)
[Device Monitor]	Displays the window for the device monitor.	2.
[Ladder registration monitor]	Displays the Ladder registration monitor window.	(1)
[Delete all registered ladder]	Deletes all registered ladder blocks in the Ladder registration monitor window.	(1)
[Program list]	Displays the program list window	3.5.2 (2)
[PLC diagnosis]	Displays the PLC diagnosis screen.	3.7.3 ■Online menu (2)
[PLC read]	Displays the PLC read screen.	3.5

**(1) Ladder registration monitor window**

Displaying or deleting the registered ladder blocks is available.

(a) Displayed screen



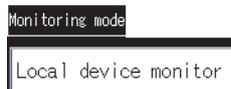
The following table shows the displayed contents.

No.	Item	Description
1)	Ladder display area	A ladder block selected on the Ladder monitor screen is added as the last registered ladder block on the Ladder registration monitor window. Touching the first step number displays the dialog box to delete the ladder block. (For the Factor mode, it is not deleted even if it is touched.)
2)	Keys	Keys for operations in the Ladder registration monitor window shown in (b).

(b) Key functions

Item	Description
[X]	Closes the Ladder registration monitor window.
▲ ▼	Scrolls the display area up and down by one line.
▲▲ ▼▼	Scrolls the display area up and down by one page.
◀ ▶	Scrolls the display area right and left by one column.
◀◀ ▶▶	Scrolls the display area right and left by one page.

**■ Monitoring Mode menu**



Key	Function	Reference section
Local device monitor	Displays local devices monitored by the GOT.	(1)

**(1) Monitoring local devices**

- (a) When the GOT monitors local devices, the scan time increases.
- (b) When local devices are displayed on the screen, touching the [local device monitor] key cancels the display of local devices.
- (c) When the Ladder monitor screen is switched to other screen, or the displayed program is switched to other program, the GOT cancels the display of local devices.

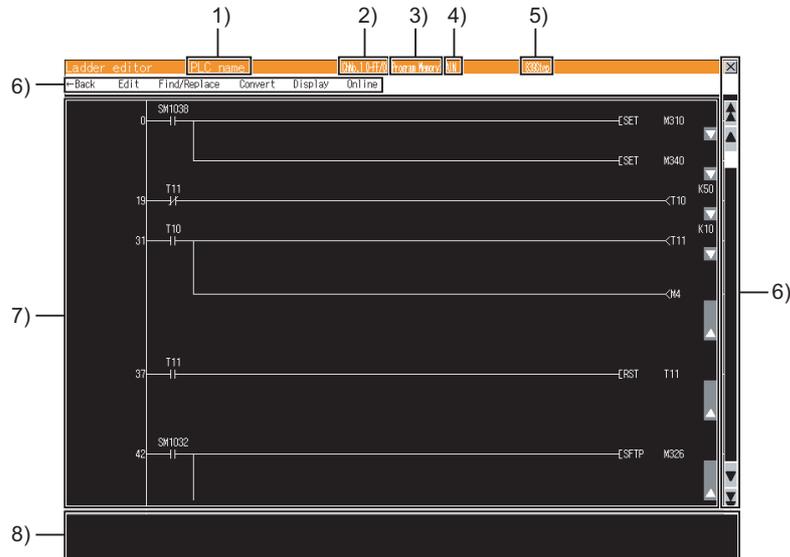
## 3.7 How to Operate Ladder Editor Screen

On the Ladder editor screen, editing sequence programs, finding devices, and displaying comments are available. The following describes how to operate the Ladder editor screen.

### 3.7.1 Displayed contents

#### ■ Ladder editor screen

The following describes the configuration of the Ladder editor screen, menus and key functions on the screen.



No.	Item	Description
1)	PLC name	Displays the label set in the PLC name setting for the target PLC CPU.
2)	Target controller	Displays the CH No., network No., station No., and CPU No. of the target PLC CPU as shown below. • CH No. network No.-station No./CPU No.
3)	Drive name	Displays the drive of the controller for the displayed sequence program.
4)	Program name	Displays the file name of the displayed program.
5)	Number of steps	Displays the number of steps for the displayed sequence program.
6)	Keys	Keys for operations for the Ladder editor screen shown in 3.7.2. (Touch input)
7)	Ladder display area	Displays the read sequence program. By touching a contact, coil, statement, or note, the item is highlighted and the Ladder input window is displayed. (  (1) Enter ladder program window) Touch [Show comments] from the [Display] menu to display the comments, statements or notes. Touch [Hide comments] from the [Display] menu to hide the comments, statements or notes. Displays the first step number of ladder blocks. Touching the first step number of ladder blocks highlights the touched position, and displays the Enter ladder program window. (  (1) Enter ladder program window)
8)	Message display area	Displays error messages and others.

## POINT

### (1) Restrictions on ladder blocks that can be edited with the sequence program monitor (ladder)

In the sequence program monitor (ladder), ladder blocks exceeding 25 lines cannot be edited. Even ladder blocks displayed within 24 lines with GX Works2/GX Developer may be displayed exceeding 25 lines on the GOT.

### (2) Displaying the Ladder editor screen when setting the security

By setting the security on GT Designer3, the display of the Ladder editor screen can be limited.

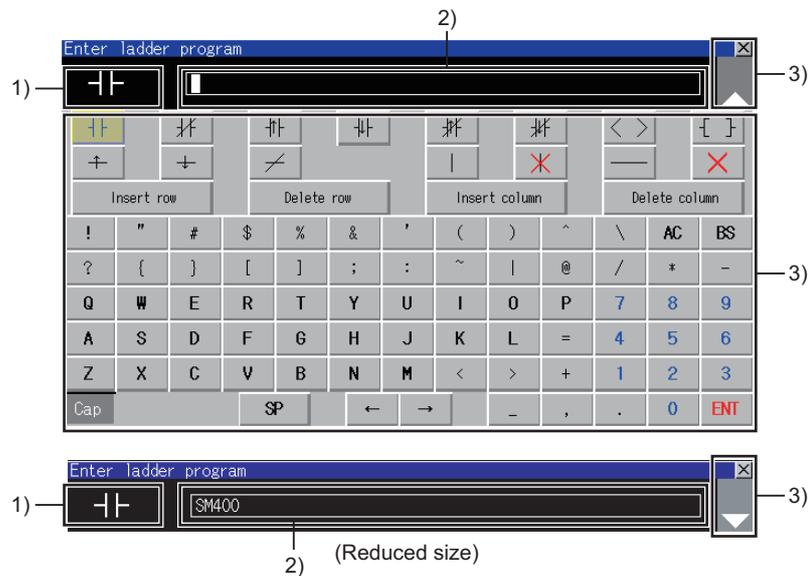
For the security setting, refer to the following.

▶▶▶ 3.3.4 Setting the security

### (1) Enter ladder program window

Editing sequence programs is available.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Ladder symbol display area	Displays the ladder symbol selected in the ladder display area.
2)	Text display area	Displays devices, sequence programs, statements, and notes selected in the Ladder symbol display area. The cursor is displayed at the position to be input. If devices, sequence programs, statements, and notes are not fully displayed in the display area, move the cursor to the border of the side where the display was cut, and touch the cursor to scroll the displayed contents. Only one-byte alphanumeric characters can be input for statements and notes. If characters other than one-byte alphanumeric characters input on GX Works2/GX Developer are deleted on the GOT, they cannot be input again.
3)	Keys	Keys for operations in the Enter ladder program window shown in (b).

## POINT

### Types of statements and notes that can be entered

Statements and notes that can be entered are integrated statements and notes.

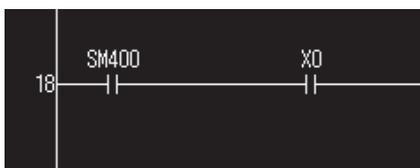
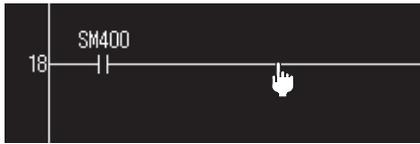
Peripheral statements and notes cannot be entered.

(If the \* is entered at the start of statements and notes, an error occurs.)

(b) Key functions

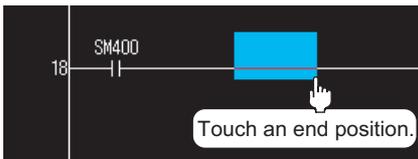
Key	Function
[X]	Closes the Enter ladder program window. The displayed contents are not reflected.
	Touch the key to input a normally open contact.
	Touch the key to input a normally closed contact.
	Touch the key to input a leading edge pulse.
	Touch the key to input a trailing edge pulse.
	Touch the key to input a leading edge pulse rejection.
	Touch the key to input a trailing edge rejection.
	Touch the key to input a conversion of operation result to leading edge pulse.
	Touch the key to input a conversion of operation result to trailing edge pulse.
	Touch the key to input a coil.
	Touch the key to input an application instruction.
	Touch the key to input a vertical line.
	Touch the key to delete a vertical line.
	Touch the key to input a horizontal line.
	Touch the key to delete a ladder.
[Insert row]	Inserts one row in the specified position.
[Delete row]	Deletes the specified row.
[Insert column]	Inserts one column in the specified position.
[Delete column]	Deletes the specified column.
[ENT]	Reflects the displayed contents, and closes the Enter ladder program window.
	Reduces the size of the Enter ladder program window.
	Changes the Enter ladder program window from the reduced size to the default size.
[Cap]	Switches the alphabetic characters between the uppercase and the lowercase.

- (c) Inputting or deleting ladders
- Inputting contacts or instructions
- (Operation example: Inputting a contact (X0))



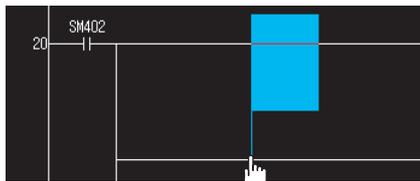
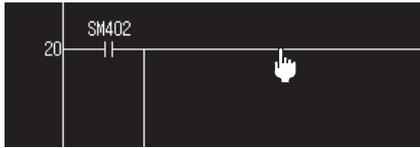
1. Touch a position to input a contact (X0).
2. The Enter ladder program window appears.
3. Touch the  key.  
The ladder symbol corresponding to the touched key is displayed on the ladder symbol display area.  
Input X0 in the text display area, and touch the [ENT] key.
4. The contact (X0) is input.

- Deleting contacts or instructions  
(Operation example: Deleting a contact (X0))

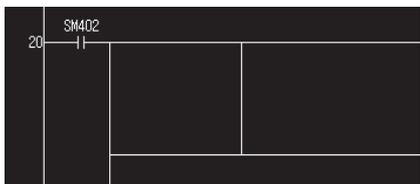


1. Touch a contact (X0) to be deleted.
2. The Enter ladder program window appears.
3. Touch the [X] key.  
Touch the end position of the contact (X0).
4. The contact (X0) is deleted.

- Inputting vertical lines or horizontal lines  
(Operation example: Inputting a vertical line)

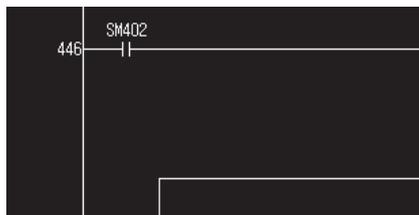
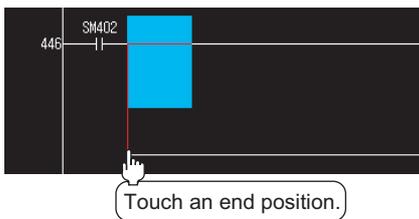
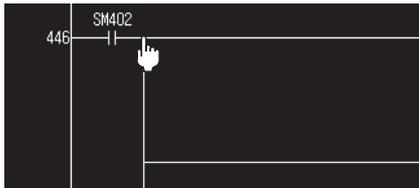


Touch an end position.



1. Touch a position to input a vertical line.
2. The Enter ladder program window appears.
3. Touch the  key.  
Touch the end position to input the vertical line.
4. The vertical line is input.

- Deleting vertical lines or horizontal lines  
(Operation example: Deleting a vertical line)



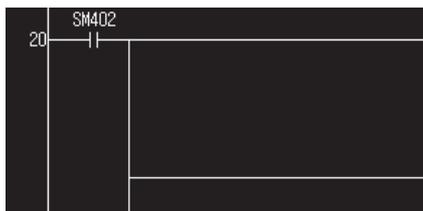
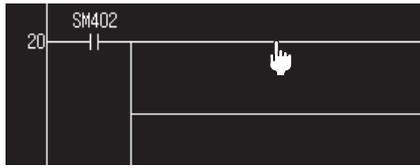
1. Touch a position to delete a vertical line.

2. The Enter ladder program window appears.

3. Touch  key.  
Touch the end position to delete the vertical line.

4. The vertical line is deleted.

- Inputting rows and columns  
(Operation example: Inputting a row)



- Deleting rows and columns  
(Operation example: Deleting a row)



1. Touch a position to insert a row.
2. The Enter ladder program window appears.
3. Touch the [Insert row] key.  
The Enter ladder program window is closed, and the row is inserted.

1. Touch a position to delete a row.
2. The Enter ladder program window appears.
3. Touch the [Delete row] key.  
The Enter ladder program window is closed, and the row is deleted.

## 3.7.2 Key functions

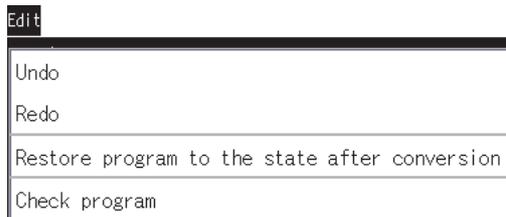
The following shows the functions of keys used for operating the Ladder editor screen.

Key	Function
[←Back]	Returns the screen to the last screen that is displayed right before the Ladder editor screen appears. The key is disabled when the last screen is the GOT utility screen or user-created monitor screen.
[Edit]	Displays the Edit menu. (  3.7.3 ■Edit menu)
[Find/Replace]	Displays the Find/Replace menu. When the Find/Replace menu is displayed, touching the key closes the menu. (  3.7.3 ■Find/Replace menu)
[Convert]	Displays the Convert menu. (  3.7.3 ■Convert menu)
[Display]	Displays the Display menu. (  3.7.3 ■Display menu)
[Online]	Displays the Online menu. (  3.7.3 ■Online menu)
[X]	Exits the Ladder editor screen and returns the screen to the sequence program monitor (ladder) startup screen.
	The comment and note of the touched line can be displayed/hidden. If the touched line is the first line in the ladder block, the statement of the touched ladder block can be displayed/hidden.
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.

### 3.7.3 Menus

The following shows operations for the menus displayed on the Ladder editor screen.

#### ■ Edit menu



Key	Function	Reference section
[Undo]	Undoes the last edit operation. The GOT can be returned to the state right after the last but one conversion, write during RUN, Replace Device or Change open/close contact.	-
[Redo]	Redoes the operation which was undone using the [Undo] key.	-
[Restore program to the state after conversion]	Restores the edited ladder to the state just after conversion.	-
[Check program]	Executes the program check to check if programs have consistency or double coils do not exist.	-

#### POINT

##### Deleting ladders which are not converted

When deleting ladders which are not converted, a dialog box is displayed.

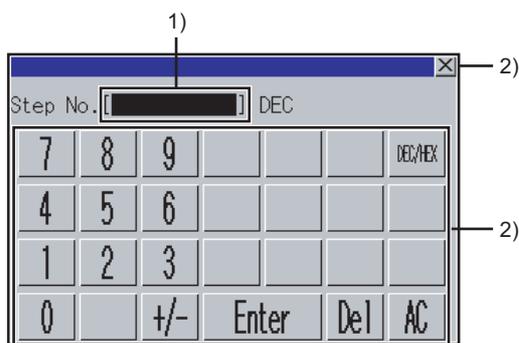
When touching the [OK] button in the dialog box, the ladders which are not converted are deleted, as well as the operation history. Therefore, the [Undo] and [Redo] keys do not operate.

Also, touch the [Cancel] button to return to the previous screen.

## ■ Find/Replace menu



Key	Function	Reference section
[Jump]	Displays the jump window.	(1)
[Find device]	Displays the device search window.	3.8.1
[Find contact]	Displays the device search window.	3.8.1
[Find coil]	Displays the device search window.	3.8.1
[Replace device]	Displays the replace device window.	3.8.3
[Change open/close contact]	Displays the change open/close contact window.	3.8.4

**(1) Jump window****(a) Displayed contents**

No.	Item	Description
1)	Jump destination step number input area	Displays the input step number.
2)	Keys	Keys for operations in the jump window shown in (b). (Touch input)

**(b) Key functions**

Key	Function
[X]	Closes the jump window.
[Enter]	Displays a row that includes the input step number on the center of the ladder display area.
[Del]	Deletes an input value or character.
[AC]	Deletes all the input values and characters.

**■ Convert menu**

Key	Function	Reference section
[Convert]	Convert the editing program to the execution program.	-
[Convert (Online change)]	Convert the editing program to the execution program and execute the online change to controllers.	-

**POINT****Precautions for the online change**

For the precautions for the online change, refer to the following.

⇒ 3.2.4 Precautions

Instruction Manual of the controller to use

## ■ Display menu

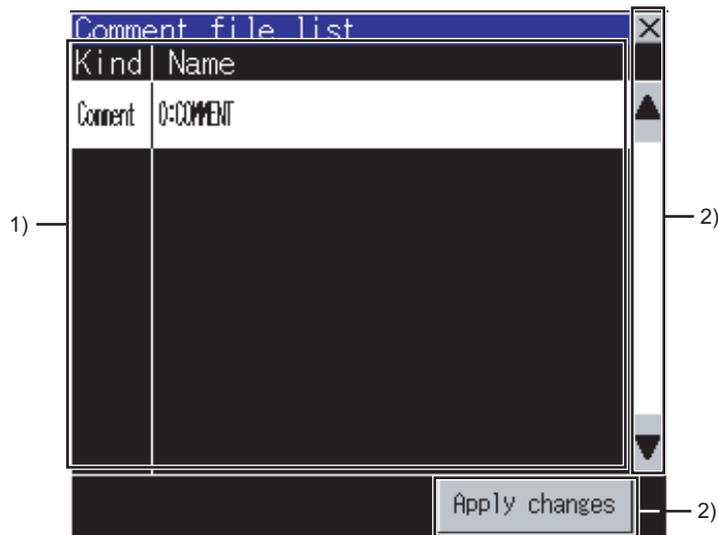


Key	Function	Reference section
[Hide comments]	Hides the comments, statements or notes in the ladder display area.	3.2.4
[Show comments]	Displays the comments, statements or notes in the ladder display area.	
[Comment change]	Displays the comment file list window.	(1)
[Program list]	Displays the program list window	3.5.2 (2)
[PLC diagnosis]	Displays the PLC diagnosis screen.	3.7.3 ■Online menu (2)
[PLC read]	Displays the PLC read screen.	3.5

**(1) Comment file list window**

The GOT displays the comment file list.

(a) Displayed screen



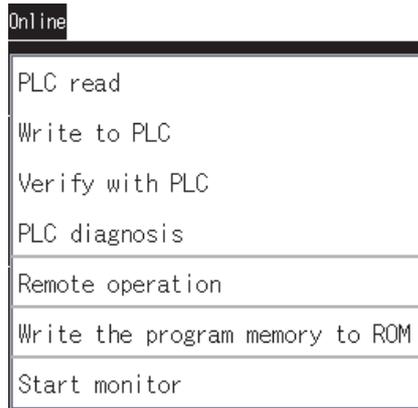
The following table shows the displayed contents.

No.	Item	Description
1)	Comment file list	Among comment files stored in the data storage, the file names and titles of the comment files, and common comment files used for the displayed sequence program are displayed. For switching comments, select a comment file to be used. A selected comment file is highlighted.
2)	Keys	Keys for operations in the comment file list window shown in (b) (Touch input)

(b) Key functions

Key	Function
[X]	Closes the Comment file list window.
▲ ▼	Scrolls the display area up and down by one line.
[Apply changes]	Closes the Comment file list window and displays the ladder display area with the comments of the file selected from the comment file list.

## ■ Online menu

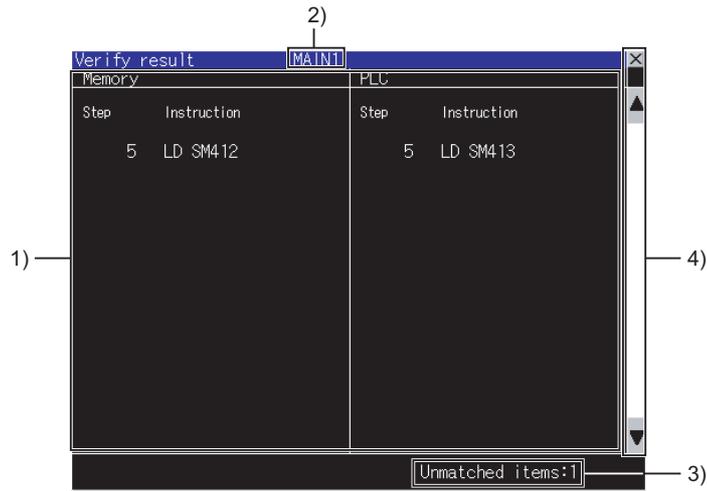


Key	Function	Reference section
[PLC read]	Displays the PLC read screen.	3.5
[Write to PLC]	Checks the edited sequence program, and writes the program into the PLC CPU. Set the PLC CPU to the STOP status, and write the program into the PLC CPU. To execute the online change, execute it using the [Convert (Online change)] in the [Convert] menu. (  ■Convert menu)	-
[Verify with PLC]	Verifies the sequence program displayed on the ladder display area and the program in the PLC CPU. If the programs do not match, the Verify result window is displayed.	(1)
[PLC diagnosis]	Displays the PLC diagnosis screen.	(2)
[Remote operation]	Displays the Remote operation window.	(3)
[Write the program memory to ROM]	Displays the Copy program memory data into ROM window.	(4)
[Start monitor]	Displays the Ladder monitor screen.	3.6

**(1) Verify result window**

Displaying the result of the program verification with the PLC is available.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Verification result display area	Displays the unmatched items. Up to 100 items are displayed. The program verification is stopped when unmatched items are more than 100.
2)	Program name display area	Displays the file name of the verified program.
3)	Unmatched item count display area	Displays the number of unmatched items displayed on the Verify result window.
4)	Keys	Keys for operations in the Verify result window shown in (b). (Touch input)

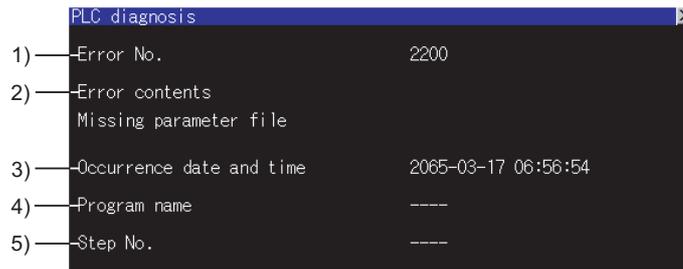
(b) Key functions

Key	Function
[X]	Closes the Verify result window.
 	Scrolls the display area up and down by one line.

## (2) PLC diagnosis window

Displays the PLC diagnosis screen.

### (a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Error No.	Displays the error number of the destination PLC found by PLC diagnosis. Displays [No errors exist.] when no error occurs.
2)	Error contents	Displays the message corresponding to the error number of the destination PLC.
3)	Occurrence date and time	Displays the error occurrence date and time when an error occurs in the destination PLC.
4)	Program name	Displays the program name when the error in the destination PLC is a program error. If the error is not a program error, [----] is displayed.
5)	Step No.	Displays the sequence step number highlighted in yellow when the error in the destination PLC is a program error. By touching the sequence step number where an error occurs, the PLC diagnosis dialog box will be closed and the screen will be switched to the ladder display. The screen jumps to sequence step number where the error occurs and the area of error is highlighted in a red rectangle. If the error is not a program error, [----] is displayed.

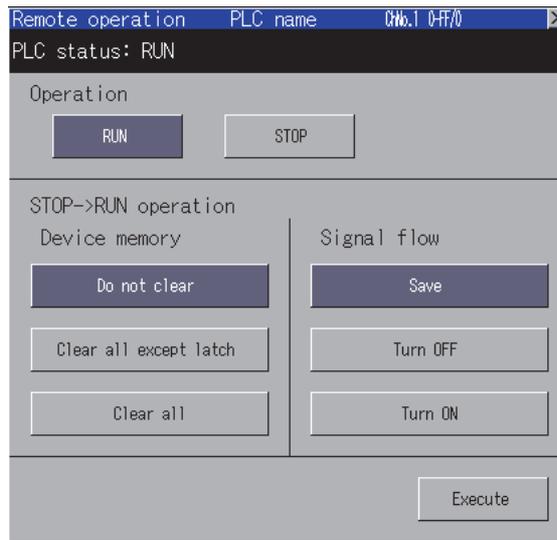
### (b) Key functions

Key	Function
[X]	Closes the PLC diagnosis window.

### (3) Remote operation window

Changing the operation status of the PLC CPU by using the remote operation is available.

(a) Displayed screen



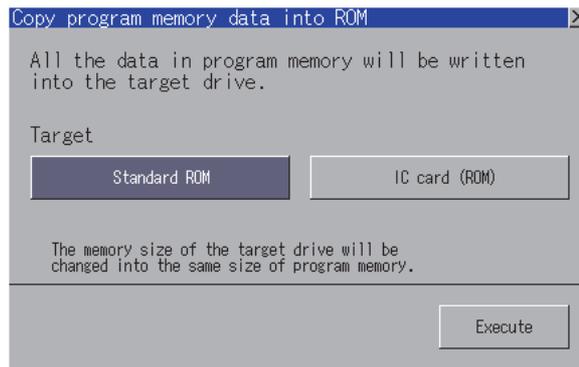
The following table shows the displayed contents.

No.	Item	Description
1)	Operation	Select an operation (RUN or STOP key), and touch the [Execute] key. RUN : The PLC CPU becomes the remote RUN status. STOP : The PLC CPU becomes the remote STOP status.
2)	STOP → RUN operation	Set the status of devices and signals when executing the remote RUN. Device memory Do not clear : The PLC CPU operates device values prior to the remote STOP. Clear all except latch : Clears all device values to zero except the latched devices. Clear all : Clears all device values to zero. Signal flow Save : Keeps signals prior to the remote STOP, and outputs the signals. Turn OFF : Turns off the signal. Turn ON : Turns on the signal.
3)	[Execute]	Executes the remote RUN or STOP.

#### (4) Copy program memory data into ROM window

Writing data in the program memory into a ROM is available.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Target	Touch the target ROM. Standard ROM : Set the standard ROM in the PLC CPU as the target. IC card (ROM) : Set the IC memory card (Flash card) inserted in the PLC CPU as the target.
2)	[Execute]	Touching the key writes data in the program memory into the target ROM.

## 3.8 Find/Replace Operation

### 3.8.1 Device/Contact/Coil search

Ladder blocks including the set devices are searched.  
They can be searched continuously in multiple sequence program files.

- Execute any of the following operations to display the device search window.
  - Touch the [Find] → [Find device]/[Find contact]/[Find coil] menu on the Ladder monitor screen.
  - Touch the [Find/Replace] → [Find device]/[Find contact]/[Find coil] menu on the Ladder editor screen.
- Set a device to be searched and touch the  /[Enter] key
  - Displayed screen



(For alphabet input)



(For numerical input)

No.	Item	Description
1)	Device input area	Set a device to be searched. Bit device words cannot be specified. The device can be input also by selecting a device on the ladder monitor screen, ladder editor screen, Ladder registration monitor window.
2)	Keys	Keys for operations in the device search window shown in (b).

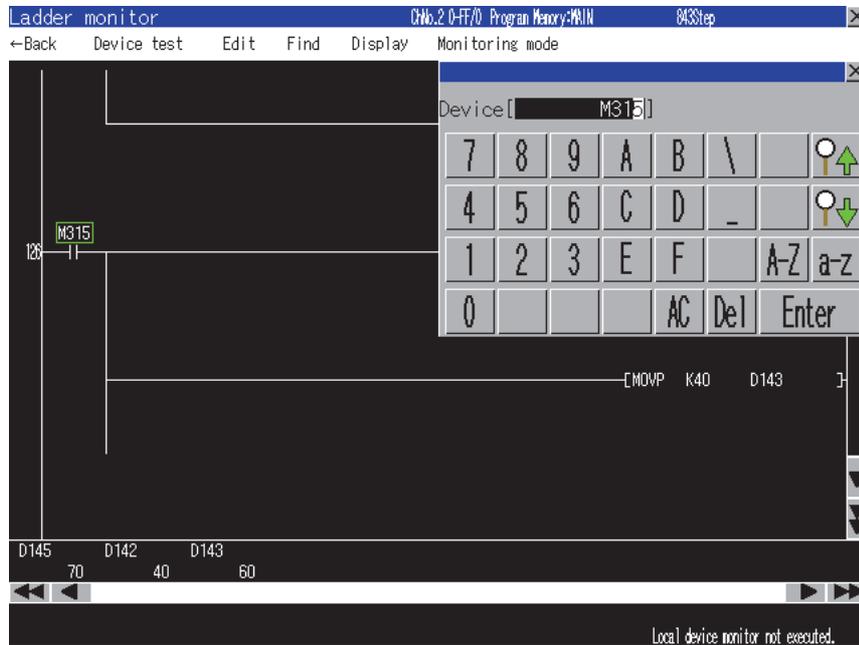
#### • Key functions

Key	Function
[X]	Closes the device search window.
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[0-9]	Switches the key type to the value.
[A-Z]	Switches the key type to the alphabet.
	Searches the input device in descending order of the step number.
	Searches the input device in ascending order of the step number. If the device is selected on the Ladder monitor screen or Ladder editor screen, the search starts from the selected device.

(Continued to next page)

Key	Function
[Enter]	<p>Searches the input device in ascending order of the step number.</p> <p>If the device is selected on the Ladder monitor screen or Ladder editor screen, the search starts from the selected device.</p> <p>However, the search starts always from the start of the program in the following conditions.</p> <ul style="list-style-type: none"> <li>• When searching for the first time after the device search window is displayed.</li> <li>• When starting to search consecutively after searching</li> </ul>

3. The ladder block which has the searched device is displayed and the device is surrounded with a green frame.



### 3.8.2 Factor search

The contact point that affected the set device status (ON/OFF) is searched backwards in ladder blocks.

1. Touch the [Find] → [Factor] menu from the Ladder monitor screen to display the factor search window.
2. Set a device to be searched, and touch the [Enter] key
  - Displayed screen



(For alphabet input)



(For numerical input)

No.	Item	Description
1)	Device input area	Set a device to be searched. Bit device words cannot be specified. Also, by selecting a device on the Ladder monitor screen, the device can be input.
2)	Keys	Keys for operations in Factor search window.

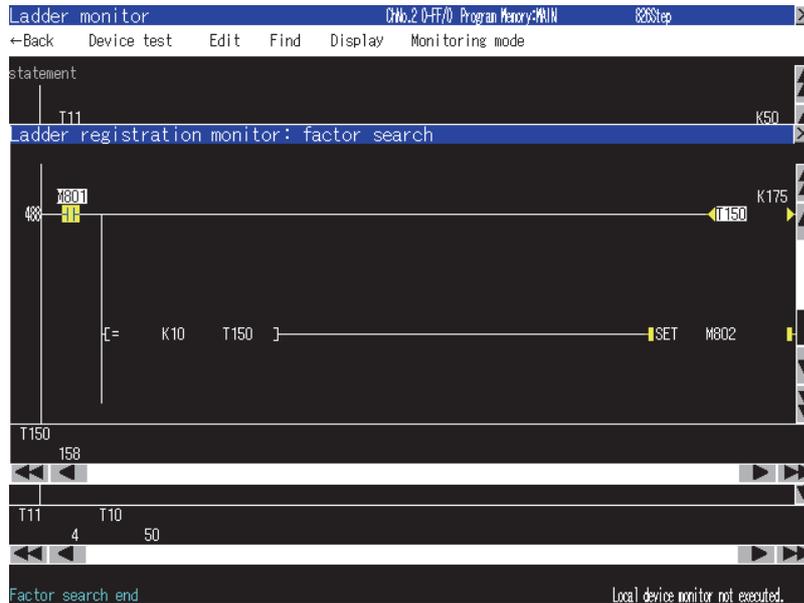
- Key functions

Key	Function
[X]	Closes the Factor search window.
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[0-9]	Switches the key type to the value.
[A-Z]	Switches the key type to the alphabet.
[Enter]	By touching the key, the Factor search window is closed and the Ladder registration monitor window is displayed. The search starts from the last step. If the device is selected on the Ladder monitor screen, the search starts from the selected device. When the search is executed, ladder blocks registered in the Ladder registration monitor window are deleted.

The following shows the target instructions and coils for Factor search.

Instruction, coil	Target of the search operation
Instruction	LD, LDI, AND, ANI, OR, ORI
Coil	OUT, OUTH

3. The Factor search window is closed and the Ladder registration monitor window is displayed. The sequence programs displayed on the ladder monitor screen are searched. Then, the factor ladder blocks for the set device are registered in order. The ladder blocks newly registered are always displayed in the Ladder monitor window during the factor search. The factor devices are highlighted.



For the Ladder registration monitor window, refer to the following.

➡ 3.6.3 ■Display menu (1) Ladder registration monitor window

4. The message [Factor search is completed.] is displayed in the message area when the search is completed. When closing the Ladder registration monitor window, the factor search mode is released.

## POINT

### Cancellation of the factor search

#### (1) When there are multiple factor contacts

The message [Factor search was aborted because there were multiple factor contact points.] is displayed in the message area on the ladder monitor screen.

When continuing the factor search based on the interrupted result, execute the factor search based on one of the found contacts.

#### (2) When the ladder blocks registered in the Ladder registration monitor window exceed 100

The message [Factor search was aborted because the number of ladder blocks exceeded 100.] is displayed in the message area on the ladder monitor screen.

When restarting the factor search, proceed the factor search based on the contact of the 100th ladder block.

### 3.8.3 Replace device

1. Touch the [Find/Replace] → [Replace device] menu on the Ladder editor screen to display the Replace device window.
2. Set the current device and new device, and touch the [Enter] key.
  - Displayed screen



(For alphabet input)



(For numerical input)

No.	Item	Description
1)	Current device display area	Set a current device. The device can be input also by selecting a device on the Ladder editor screen.
2)	New device display area	Set a new device. The device can be input also by selecting a device on the Ladder editor screen.
3)	Keys	Displays the keys used in the operation in the Replace device window.

- Key functions

Key	Function
[X]	Closes the Replace device window.
	Touching the key after inputting a current device moves the cursor to the new device display area.
	
[0-9]	Switches the key type to the value.
[A-Z]	Switches the key type to the alphabet (uppercase).
[a-z]	Switches the key type to the alphabet (lowercase).
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[Enter]	Replaces the current device to the new device.

3. All the old devices in the sequence programs displayed on the Ladder editor screen are replaced with new devices.

### 3.8.4 Change open/close contact

1. Touch the [Find/Replace] → [Change open/close contact] menu on the Ladder editor screen to display the Change open/close contact window.
  - Displayed screen



(For alphabet input)



(For numerical input)

No.	Item	Description
1)	Device input area	Set a device for changing a normally open contact or a normally closed contact. The item can be set also by selecting in the ladder editor screen.
2)	Keys	Displays the keys used in the operation in the Change open/close contact window.

- Key functions

Key	Function
[X]	Closes the Change open/close contact window.
[0-9]	Switches the key type to the value.
[A-Z]	Switches the key type to the alphabet (uppercase).
[a-z]	Switches the key type to the alphabet (lowercase).
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[Enter]	Changes a normally open contact or a normally closed contact.

3. The contacts of devices in the sequence program displayed in the Ladder editor screen are changed from A to B or B to A.

## 3.9 Test Operation

In the device test mode, device values can be changed on the screen.  
For setting the device test mode, refer to the following.

⇒ 3.6.2 Key functions

The test operation of devices is available by touching devices on the following screens in the device test mode.

Screen applicable to device test mode	Reference section
Ladder monitor screen	3.6.2

### POINT

#### Displaying the device test window when setting the security

By setting the security on GT Designer3, the display of the device test window can be limited.  
For the security setting, refer to the following.

⇒ 3.3.4 Setting the security

Touching a device displays the device test window.

#### (1) When touching bit devices

A bit device is switched between ON and OFF states in the device test window.

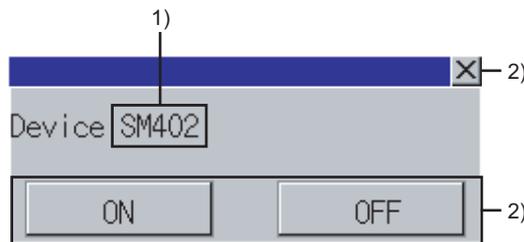
#### (2) When touching word devices

The GOT writes the value input in the device test window into the selected word device.

### How to operate device test window

#### (1) Bit devices

(a) Displayed screen



The following table shows the displayed contents.

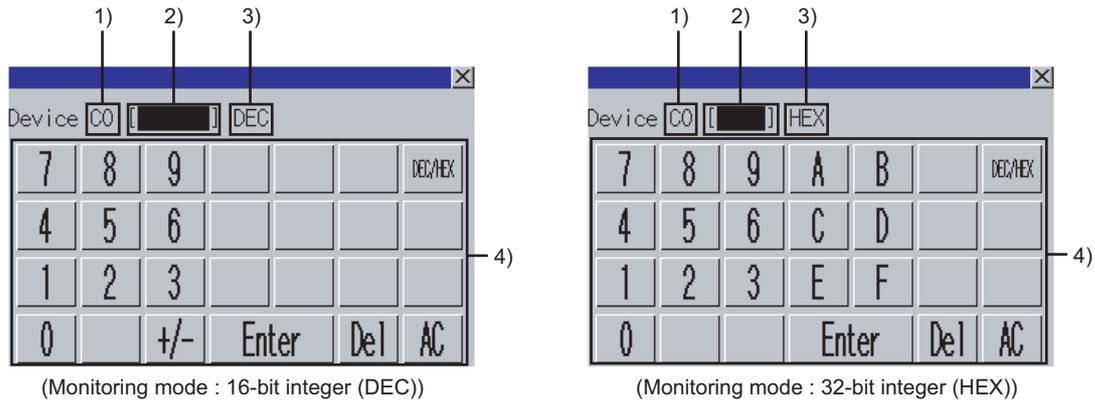
No.	Item	Description
1)	Device	Displays the selected device.
2)	Keys	Keys for operations in the device test window shown in (b).

(b) Key functions

Key	Function
[X]	Closes the device test window.
[ON]	Turns on the bit device and writes the device state to the PLC CPU.
[OFF]	Turns off the bit device and writes the device state to the PLC CPU.

## (2) Word devices

### (a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Device	Displays the selected device.
2)	Device value input area	Set the value to be written into the selected device.
3)	Input mode	Displays the current input mode. (DEC: decimal number. HEX: hexadecimal number)
4)	Keys	Keys for operations in the device test window shown in (b).

### (b) Key functions

Key	Function
[X]	Closes the device test window.
[DEC/HEX]	Switches the input modes. (DEC, HEX)
[Enter]	Writes the value input in the device value input area into the PLC CPU.
[Del]	Deletes an input value or character.
[AC]	Deletes all the input values and characters.

## 3.10 Error Messages and Corrective Action

The following shows the error messages for the sequence program monitor (ladder) and the corrective actions.

### ■ Error messages for data-storing destination access

Error message	Description	Corrective action
File access error. Please check the [drive name] drive.	<ul style="list-style-type: none"> <li>No data storage is inserted in the GOT.</li> <li>The SD card cover is opened.</li> <li>A data storage with a format error is inserted in the GOT.</li> <li>The data storage has insufficient free space for writing a file.</li> <li>The folder for the sequence program monitor (ladder) in the data storage is write-protected.</li> </ul>	<ul style="list-style-type: none"> <li>Insert a data storage without a format error in the GOT.</li> <li>Close the SD card cover.</li> <li>Delete files in the data storage.</li> <li>Insert a data storage with a large capacity.</li> <li>Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.</li> </ul>
Failed to write the (file name) to the [drive name] drive. Please check the [drive name] drive.	<ul style="list-style-type: none"> <li>No data storage is inserted in the GOT.</li> <li>The SD card cover is opened.</li> <li>A data storage with a format error is inserted in the GOT.</li> <li>The data storage has insufficient free space for writing a file.</li> <li>The folder for the sequence program monitor (ladder) in the data storage is write-protected.</li> </ul>	<ul style="list-style-type: none"> <li>Insert a data storage without a format error in the GOT.</li> <li>Close the SD card cover.</li> <li>Delete files in the data storage.</li> <li>Insert a data storage with a large capacity.</li> <li>Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.</li> </ul>
The [drive name] drive has insufficient free space. The file cannot be saved.	The data storage has insufficient free space for writing a file.	<ul style="list-style-type: none"> <li>Delete files in the data storage.</li> <li>Insert a data storage with a large capacity.</li> </ul>
The file (file name) is broken. The file is unselected.	The read file in the data storage is corrupted.	Read the file from the PLC CPU again.
The file (file name) is broken. Perform PLC Read and read the file again.	<ul style="list-style-type: none"> <li>The temporary file used on the Ladder editor screen or the Ladder monitor screen in the data storage is corrupted.</li> <li>The writing of files into data storage is failed due to an insufficient capacity of data storage.</li> </ul>	<ul style="list-style-type: none"> <li>Read the file from the PLC CPU again.</li> <li>Delete unnecessary files in the data storage. Or insert a data storage with a larger free space.</li> </ul>
The file (file name) is broken. Please read the file in the program list again.	The temporary file used on the Ladder editor screen or the Ladder monitor screen in the data storage is corrupted.	Select the program displayed in the Program list window again.
The file (file name) is broken.	When searching for devices in an undisplayed program, a file in the data storage is corrupted.	Read the file from the PLC CPU again.
Failed to check program. Please check the [drive name] drive.	The GOT cannot access the temporary file in the data storage during a program check.	<ul style="list-style-type: none"> <li>Insert a data storage without a format error in the GOT.</li> <li>Close the SD card cover.</li> <li>Delete files in the data storage.</li> <li>Insert a data storage with a large capacity.</li> <li>Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.</li> </ul>
Failed to verify with PLC. Please check the [drive name] drive.	The GOT cannot access the temporary file in the data storage during the PLC program verification.	<ul style="list-style-type: none"> <li>Insert a data storage without a format error in the GOT.</li> <li>Close the SD card cover.</li> <li>Delete files in the data storage.</li> <li>Insert a data storage with a large capacity.</li> <li>Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.</li> </ul>
Parameter file is corrupted. Please restart the ladder editor.	The parameter file in the data storage is corrupted.	Exit the sequence program monitor (ladder), and then start the function again.

## ■ Error messages for communication

Error message	Description	Corrective action
Failed to communicate with CPU.	The GOT cannot communicate with the PLC CPU.	<ul style="list-style-type: none"> <li>• Check the line status between the GOT and the PLC CPU, and make the GOT communicate with the PLC CPU.</li> <li>• Check if the PLC CPU supports the sequence program monitor (ladder).</li> </ul>
Failed to communicate with CPU.	The GOT cannot communicate with the PLC CPU.	<ul style="list-style-type: none"> <li>• Check the line status between the GOT and the PLC CPU, and make the GOT communicate with the PLC CPU.</li> <li>• Check if the PLC CPU supports the sequence program monitor (ladder).</li> </ul>
Failed to get the information of CPU because of bad connection.	The GOT cannot communicate with the PLC CPU.	Check the line status between the GOT and the PLC CPU, and make the GOT communicate with the PLC CPU.
Failed to get the information.	<ul style="list-style-type: none"> <li>• The GOT cannot communicate with the PLC CPU.</li> <li>• A file with faulty file name is selected.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the communications between the GOT and PLC CPU, and make sure that the GOT communicates with the PLC CPU.</li> <li>• Select the file after changing the message display language to one which can display the file name in the utility.</li> <li>• Change the file name with GX Works2/GX Developer.</li> </ul>
The CPU protect switch is ON. Turn OFF the protect switch.	<ul style="list-style-type: none"> <li>• The system protect switch of the PLC CPU is on.</li> <li>• The PLC CPU is in the boot process.</li> </ul>	<ul style="list-style-type: none"> <li>• Turn off the system protect switch of the PLC CPU.</li> <li>• Wait until the boot process of the PLC CPU is completed.</li> </ul>
The CPU is not in STOP mode. Please change the CPU to STOP mode.	Any operation that the PLC CPU cannot execute during running is performed.	Set the PLC CPU to the STOP status.
CPU drive error. Please confirm the drive status.	The target drive does not function.	Format the target drive by using GX Works2/GX Developer.
The specified file does not exist in the CPU. Please confirm the file in the drive.	The specified file does not exist in the PLC CPU.	Check files in the specified drive of the PLC CPU.
The specified file in the CPU is invalid. Please confirm the file in the drive.	The specified file in the PLC CPU is corrupted.	Delete the specified file by using GX Works2/GX Developer, and then create the file again.
The file cannot be accessed while it is being accessed by other connected equipment or it is being transferred.	<ul style="list-style-type: none"> <li>• Other GOTs or GX Works2/GX Developer access the connected PLC CPU.</li> <li>• The QCPU transfers program files from the program cache memory to the program memory.</li> </ul>	<ul style="list-style-type: none"> <li>• Access the file when other devices do not access the connected PLC CPU.</li> <li>• Access the file after QCPU completes the transference from the program cache memory to the program memory.</li> </ul>
The data cannot be written to the specified CPU because the total data size may exceed the drive capacity.	The specified drive of the PLC CPU runs out of space.	Reduce the capacity of the file to be written.
The specified file is invalid.	The specified file in the PLC CPU is corrupted.	Format the target drive by using GX Works2/GX Developer, and then write the specified file.
There is no consecutive free space in the drive of the specified CPU. Please clean up the drive.	The specified drive of the PLC CPU does not have consecutive free space.	Execute [Arrange PLC memory] with GX Works2/GX Developer.
Failed to write data to the specified CPU. Please check if the target flash ROM has an error or not.	An error occurs when writing/deleting data to/from the specified drive of the PLC CPU.	Check the specified drive by using GX Works2/GX Developer.
The specified file does not exist.	The specified drive or file does not exist in the PLC CPU.	Read data from the PLC, and check if the specified drive exists.
The file (file name) does not exist. Please check if the file exists using PLC Read.	When reading data from the PLC, the program file corresponding to the specified program on the ladder display area does not exist in the PLC CPU.	Read data from the PLC, and check if the specified file exists.
The specified CPU drive has an error. Please check the drive.	The specified drive of the PLC CPU is faulty.	<ul style="list-style-type: none"> <li>• Execute [Format PLC memory] with GX Works2/GX Developer.</li> <li>• If the specified drive is the flash ROM, write data to the PLC (flash ROM) again.</li> </ul>
The specified file is under processing.	The specified drive of the PLC CPU is in use.	Execute the same operation later.

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Error message	Description	Corrective action
Invalid password.	The password to access the specified file is incorrect.	Input the correct password.
The specified CPU drive is write-protected.	Data is written to the write-protect drive of the PLC CPU.	Cancel the write-protect setting for the specified drive of the PLC CPU.
Too many files are being accessed at the same time.	Other devices are accessing too many files in the PLC CPU at the same time.	Reduce the number of files being accessed by other devices.
The specified CPU drive cannot be accessed.	The specified drive does not exist in the PLC CPU.	Read data from the PLC, and specify a drive that exists in the PLC CPU.
Failed to access the specified CPU drive. Please check the drive status.	<ul style="list-style-type: none"> <li>No memory card is inserted in the specified drive of the PLC CPU.</li> <li>The memory card is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>Insert a memory card in the specified drive of the PLC CPU.</li> <li>Format the memory card in the specified drive by using GX Works2/GX Developer.</li> </ul>
The specified CPU drive has an error. Please check the drive status.	The specified drive in the PLC CPU does not function.	Format the specified drive by using GX Works2/GX Developer.
The specified CPU drive is not formatted.	The specified drive of the PLC CPU is not formatted.	Format the specified drive by using GX Works2/GX Developer.
CPU memory card is not inserted.	No memory card is inserted in the specified drive of the PLC CPU.	Insert a memory card in the specified drive.
The type of the CPU memory card is wrong. Please check the memory card.	<ul style="list-style-type: none"> <li>An unsupported memory card is inserted in the specified drive of the PLC CPU.</li> <li>No memory card is inserted in the specified drive of the PLC CPU.</li> <li>The program memory of QnUDVCPU is written to the ROM.</li> </ul>	<ul style="list-style-type: none"> <li>Insert a supported memory card in the specified drive.</li> <li>The program memory of QnUDVCPU cannot be written to the ROM.</li> </ul>
The CPU is write protected. Please remove the protection.	The PLC CPU is write-protected.	Cancel the write-protect setting for the PLC CPU.
The specified CPU drive cannot be used. Please check the drive.	The specified drive of the PLC CPU does not exist.	Read data from the PLC, and check if the specified drive exists.
PLC types of the program (file name) and the connected PLC are not the same. Perform PLC Read and read the data again.	The PLC CPU type of the program file stored in the data storage differs from the connected PLC CPU type.	Read a program file that exists in the PLC CPU.
The program before modification on the GOT and the program being registered on the CPU do not match. Please perform PLC Read and read the program again.	When a program is written into the PLC, the target file does not exist in the PLC CPU, or the type of the program differs from that of the target file.	Read a program file that exists in the PLC CPU
Failed to write the value to the device.	The GOT cannot write device values to the PLC CPU with the device test.	Read the program being displayed from the PLC again.
Parameter file is corrupted. The ladder editor cannot be used.	The GOT cannot read parameters from the PLC CPU.	Write the parameters to the PLC CPU by using GX Works2/GX Developer.
The file has invalid date or timestamp. Please check the GOT clock data.	<ul style="list-style-type: none"> <li>The date of the GOT is wrong.</li> <li>PC writing or online change is executed to Q00JCPU, Q00CPU, or Q01CPU when the date of the GOT is Feb. 29th.</li> </ul>	<ul style="list-style-type: none"> <li>Set the date of the GOT properly.</li> <li>When executing PC writing or online change to the Q00JCPU, Q00CPU, or Q01CPU, set the date of the GOT other than Feb. 29th.</li> </ul>
Communication of the online debug function failed.	Communication of the online debug function failed.	<ul style="list-style-type: none"> <li>Execute after registering the online debug function (online change, trace, monitor with conditions, etc.) in GX Works2/GX Developer.</li> <li>Execute after confirming the communication path such as communication cables.</li> </ul>
Specified contents of the online debug function are invalid.	Specified contents of the online debug function are invalid.	<ul style="list-style-type: none"> <li>Execute after registering the online debug function (online change, trace, monitor with conditions, etc.) in GX Works2/GX Developer.</li> <li>Execute after confirming the communication path such as communication cables.</li> </ul>

(Continued to next page)

Error message	Description	Corrective action
An error occurred when verifying the specified program and the program in the CPU. Please read the file again.	The sequence program after modification of the online change operation differs from the program before modification.	Execute the online change after executing PLC read to equalize the sequence program of the GOT and PLC CPU by PLC read.
END instruction cannot be written to a CPU module while the module is running.	The END instruction is inserted or deleted by the online change.	<ul style="list-style-type: none"> <li>• Check the contents of the specified sequence program file.</li> <li>• Write the program after setting the PLC CPU to the stop status.</li> </ul>
Reserved area for online change is insufficient. Online change cannot be performed.	The file capacity is exceeded by the online change.	<ul style="list-style-type: none"> <li>• Check the capacity of the specified sequence program file.</li> <li>• Write the program after setting the PLC CPU to the stop status.</li> </ul>
There are instructions that cannot be handled in the CPU.	An instruction, which is not compatible with the CPU type set in the project, exists in the sequence program executing the online change.	<ul style="list-style-type: none"> <li>• Check if the PLC CPU type is correct.</li> <li>• Check the sequence program and delete the invalid instruction.</li> </ul>
The step to be written is invalid.	<ul style="list-style-type: none"> <li>• The step to be written is invalid.</li> <li>• The start position of the online change was not specified with a correct program step No.</li> </ul>	<ul style="list-style-type: none"> <li>• Write the program after setting the PLC CPU to the stop status.</li> <li>• Check if the GX Works2/GX Developer is compatible with the CPU type and CPU version set in the project.</li> </ul>
The instruction that was written during online change is invalid.	The instruction of the online change is wrong.	<ul style="list-style-type: none"> <li>• Execute the online change again.</li> <li>• Write the program after setting the PLC CPU to the stop status.</li> </ul>
The number of blocks to be written by online change is invalid.	Block size error (The number of the online change is invalid.)	Check the number of the block for the online change.
The specified file is too large to read.	A program file exceeding 260k steps was read.	Split the program to sections within 260k steps.
The parameter file cannot be read. The ladder editor function cannot be used.	No parameter file exists.	Write the parameter file using the peripheral software of the PLC CPU.
The function is not supported by the specified CPU version.	<ul style="list-style-type: none"> <li>• The function that is not supported by the specified PLC CPU is used.</li> <li>• The program memory of QnUDVCPU is written to the ROM.</li> </ul>	The executed function cannot be used.

## ■ Error messages for editing

Error message	Description	Corrective action
The instruction is incorrect.	The input instruction is incorrect.	Input the correct instruction.
The specified device is not available.	The input device name is incorrect.	Input the correct device name.
The device number is out of range.	The device number outside the range is input.	Input the correct device number.
Too many rows are being edited. Data cannot be entered.	On the edited ladder, 49 or more rows are input.	Delete rows to be 48 or less per edited ladder.
The ladder block is too large. Data cannot be entered.	On a ladder block, 25 or more rows are input.	Delete rows to be 24 or less per ladder block.

(Continued to next page)

Error message	Description	Corrective action
The edit position is incorrect.	<ul style="list-style-type: none"> <li>• A specified position is incorrect to input a ladder.</li> <li>• A space of a specified position is too narrow to input a ladder.</li> <li>• A start position and end position are not specified in the same column to input a vertical line.</li> <li>• An end position is specified in an upper row of the start position to input a vertical line.</li> <li>• A start position and end position are not specified in the same row to input a horizontal line.</li> <li>• A start position and end position are not specified in the same row to delete a ladder.</li> </ul>	<ul style="list-style-type: none"> <li>• Input a ladder in a correct position.</li> <li>• Insert columns, and then input a ladder.</li> <li>• Specify a correct end position for a vertical line or horizontal line, and then input the line.</li> <li>• Specify a correct end position, and then delete a ladder.</li> </ul>
The data being edited is too large.	Too many ladders are not converted. The data cannot be converted.	Reduce the ladders which are not converted before conversion.
Line statements exist in the ladder program and the data cannot be edited. Please delete the line statements from the ladder program.	A vertical line that overlaps an interlinear statement is input.	Delete the interlinear statement, and then input a vertical line.
PI devices exist in the ladder program and the data cannot be edited. Please delete the PI devices from the ladder program.	A vertical line that overlaps a pointer or interrupt pointer is input.	Delete the pointer or interrupt pointer, and then input a vertical line.
There is a ladder block which cannot be displayed in the ladder program. Data cannot be edited.	<ul style="list-style-type: none"> <li>• On a ladder block, 25 or more rows are edited.</li> <li>• An incomplete ladder block is edited.</li> </ul>	<ul style="list-style-type: none"> <li>• Edit the ladder block in 24 rows or less by using GX Works2/GX Developer, and then write the program into the PLC CPU.</li> <li>• Write the program into the PLC CPU by using GX Works2/ GX Developer again because the program may be corrupted.</li> </ul>
Statements should be 64 characters or less.	A statement with 65 characters or more was entered.	Enter statements with 64 characters or less.
Notes should be 32 characters or less.	A note with 33 characters or more was entered.	Enter notes with 32 characters or less.
Conversion (online change) failed due to communication error.	The GOT fails to communicate with the PLC during conversion (online change).	<ul style="list-style-type: none"> <li>• Check the communication setting.</li> <li>• Check cables.</li> <li>• Verify with PLC.</li> <li>• Operate the GOT for reading the program from the PLC.</li> </ul>
Peripheral statements cannot be entered.	A peripheral statement was entered.	Delete the peripheral statement.
Peripheral notes cannot be entered.	A peripheral note was entered.	Delete the peripheral note.

### ■ Error messages for conversion

Error message	Description	Corrective action
The data being edited is too large. Please reduce the data being edited.	Too many ladders are not converted. The data cannot be converted.	Reduce the ladders which are not converted before conversion.
There is a ladder which cannot be converted. Correct the ladder at the cursor position.	When a ladder block is converted, the ladder block is not completed.	Complete the ladder block, and then convert the ladder block.
The ladder block is too large to convert. Please reduce the size of the ladder block.	Too large ladder blocks are not converted. The data cannot be converted.	Delete or split the ladder block before conversion.

## ■ Error messages for file selection

Error message	Description	Corrective action
You cannot select programs other than ladder programs.	A program that is not a ladder program is selected.	<ul style="list-style-type: none"><li>• Use the sequence program monitor (SFC) to monitor SFC programs.</li><li>• Use GX Works2 or GX Developer to monitor SFC programs.</li></ul>
The specified file is too large to read.	A program file having 260k steps or more is selected.	Split the program.

# 4. SEQUENCE PROGRAM MONITOR (SFC)

GT 27 GT 23 Soft GOT 2000

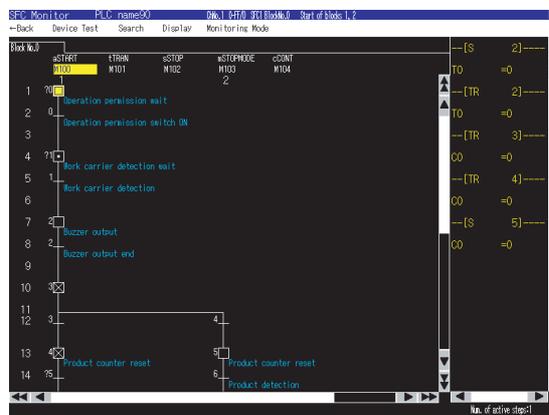
## 4.1 Features

With the SFC monitor function, the GOT can monitor SFC programs of controllers, and changing device values of the programs is available.

The function improves the efficiency in troubleshooting and maintenance of PLC systems with SFC programs. The following shows features of the SFC monitor function.

### ■ Displaying SFC programs in SFC diagram format

The GOT can monitor SFC programs of the PLC CPU and display the programs in the SFC diagram format (MELSAP3 or MELSAP-L format).

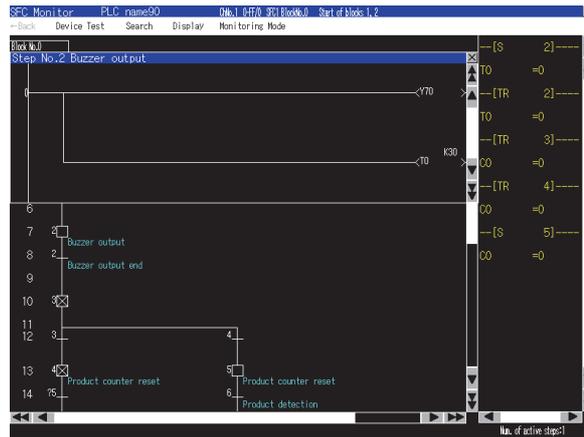


SFC diagram monitor screen

The following screens are displayed with the SFC monitor function.

- PLC read screen  
( ➡ 4.4 How to Operate PLC Read Screen)
- Block list screen  
( ➡ 4.5 How to Operate Block List Screen)
- SFC diagram monitor screen  
( ➡ 4.6 How to Operate SFC Diagram Monitor Screen)

Touching a step or transition condition on the SFC diagram monitor screen displays an enlarged operation output/ transition condition sequence program.



## ■ Switching display formats, device comment display, and languages

The following are available.

- Switching the display formats of device values
- Switching whether to display or hide device comments
- Switching languages for file names of SFC programs, comments, and others

### (1) Switching display formats

On the SFC diagram monitor screen, the display formats for the current values of word devices can be switched between decimal and hexadecimal numbers.

### (2) Switching device comment display

Whether to display or hide device comments used in SFC programs can be switched.

### (3) Switching languages

Block titles, file titles and comments can be displayed in the language set for the language switching in the GOT utility with comment files created with the SJIS code, KS code, GB code, and/or ASCII code.

With a SD card storing comment files created with the SJIS code, KS code, GB code, and/or ASCII code, comments can be displayed in the language corresponding to any character code in the SD card, regardless of the language set in the GOT utility.

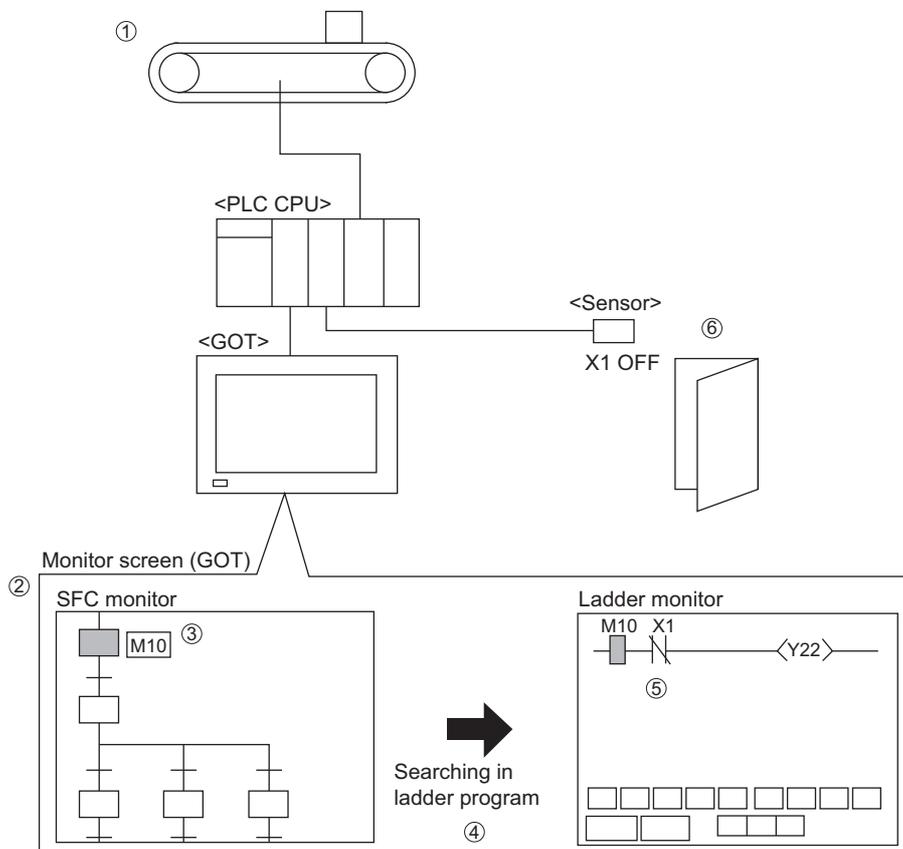
## ■ Interaction with ladder monitor function

By only selecting a device on the SFC diagram monitor screen and starting the ladder monitor, the GOT can search and display the device in a ladder program.

( ➡ 4.6.3 ■ Display menu)

The function is useful for searching for a device used within both a SFC program and a ladder program in the ladder program.

Example) When turning on Y22 device with ladder program including interlock circuit



1. Finding that the machine stops
2. Checking an active step with the SFC monitor
3. Checking that the machine operation command (M10) is on
4. Touching M10 and starting the ladder monitor
5. Finding out that Y22 (machine operation) is off because X1 is off
6. Finding out that the machine stops because the door is open (X1 is off)

## 4.2 Specifications

### 4.2.1 System configuration

This section describes the system configuration for the SFC monitor function.

For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

#### ■ Target controller

Controller
QCPU (Q mode) <sup>*1</sup>
LCPU

<sup>\*1</sup> For creating a multiple CPU system with the Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and/or Q25HCPU, use CPUs with the function version B or later.

#### ■ Connection type

This function can be used in the following connection types.

(○: Available, ×: Unavailable)

Function		Connection form between GOT and controller							
Name	Description	Bus connection <sup>*8</sup>	Direct CPU connection <sup>*9</sup>	Computer link connection	Ethernet connection <sup>*7</sup>	MELSECNET/H connection <sup>*8</sup> , MELSECNET/10 connection <sup>*1*8</sup>	CC-Link IE controller connection <sup>*2*8</sup> , CC-Link IE field connection <sup>*3</sup>	CC-Link connection	
								ID <sup>*4</sup>	G4 <sup>*4*5</sup>
SFC monitor	Monitors SFC programs.	○ <sup>*6*7</sup>	○	○	○	○	○	○	○

<sup>\*1</sup> For the MELSECNET/10 connection, use a QCPU and network module (QJ71LP21, QJ71LP21-25, QJ71LP21S-25, and QJ71BR11) with the function version B or later.

<sup>\*2</sup> Indicates the CC-Link IE controller network connection.

<sup>\*3</sup> Indicates CC-Link IE field network connection.

<sup>\*4</sup> Indicates CC-Link connection (Intelligent device station).

<sup>\*5</sup> Indicates CC-Link connection (via G4).

<sup>\*6</sup> The Q12PRHCPU and Q25PRHCPU are not available.

<sup>\*7</sup> SFC monitor cannot be used when using CC-Link IE field network Ethernet adapter.

<sup>\*8</sup> The LCPU does not support the connection type.

<sup>\*9</sup> When the GOT is connected to LCPU, use L6ADP-R2.

## ■ Required extended system application

The advanced system applications shown below are required.

⇒ 1.2 Required extended system application for the function

### (1) Extended system application

Write the package data that has the extended system application for the sequence program monitor (SFC) to the GOT.

For the communication method with the GOT, refer to the following.

⇒ GT Designer3 (GOT2000) Help

### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

⇒ GT Designer3 (GOT2000) Help

## ■ Required hardware

The following hardware is required.

Hardware
SD card

## 4.2.2 Devices and range that can be monitored

The device range varies depending on the CPU to be used.

(○: Possible, ×: Impossible)

Device	Device range	Program display	Device monitor display	Search operation
Input	X0 to 1FFF, DX0 to FFF	○	○	○
Output	Y0 to 1FFF, DY0 to FFF	○	○	○
Internal relay	M0 to 61439	○	○	○
Latch relay	L0 to 32767	○	○	○
Link relay	B0 to FFFF	○	○	○
Timer	T0 to 32767	○	○	○
Retentive timer	ST0 to 32767	○	○	○
Counter	C0 to 32767	○	○	○
Data register	D0 to 12287	○	○	○
Link register	W0 to 1FFF	○	○	○
Annunciator	F0 to 32767	○	○	○
Edge relay	V0 to 2047	○	×	○
File register	R0 to 32767	○	○	○
	ZR0 to 4184063	○	○	○
Extended data register	D0 to 4212223	○	○	○
Extended link register	W0 to 4045FFF	○	○	○
Link special relay	SB0 to 7FF	○	○	○
Link special register	SW0 to 7FF	○	○	○
Step relay	S0 to 8191, BL □ ¥S □	○	×	○
Index register	Z0 to 19	○ *1	○	○
Special relay	SM0 to 2047	○	○	○
Special register	SD0 to 2047	○	○	○
Function input	FX0 to F	○	×	○
Function output	FY0 to F	○	×	○
Function register	FD0 to 4	○	×	○
Link direct device	J □ □ ¥ □ □	○	×	×
Module access device	U □ □ ¥ □ □	○	×	×
	U3En □ □ ¥ □ □	○	×	×
Nesting	N0 to 14	×	×	×
Pointer	P0 to 4095	×	×	×
Interrupt pointer	I0 to 255	×	×	×
SFC block device	BL0 to 319	○	×	○
SFC transition device	TR0 to 511, BL □ ¥TR □	○	×	○
Network No. specification device	J0 to 255	○	×	×
I/O No. specification device	U0 to 1FF 3E0 to 3E3	○	×	×
Macro instruction argument device	VD0 to	×	×	×

\*1 When a ZZ device is used, "ZZ" can be displayed.

### 4.2.3 Access range

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The access range is the same as the access range when the GOT is connected to a controller.  
For details of the access range, refer to the following.

▣▣▣▣ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

### 4.2.4 Precautions

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**(1) Precautions for operations during SFC monitor startup**

Do not operate the following with the GOT during the SFC monitor startup.  
Doing so may delete stored data and cause the SFC monitor to operate incorrectly.

- Opening and closing of the SD card cover
- Inserting or removing a SD card

**(2) Precautions for devices**

- (a) The GOT cannot search for indexing devices.
- (b) The GOT cannot monitor local devices.

**(3) Precautions for setting [Locus] for line graphs**

The SFC monitor function is not available when [Locus] is set for line graphs.  
For using the SFC monitor function, do not set [Locus] for line graphs.

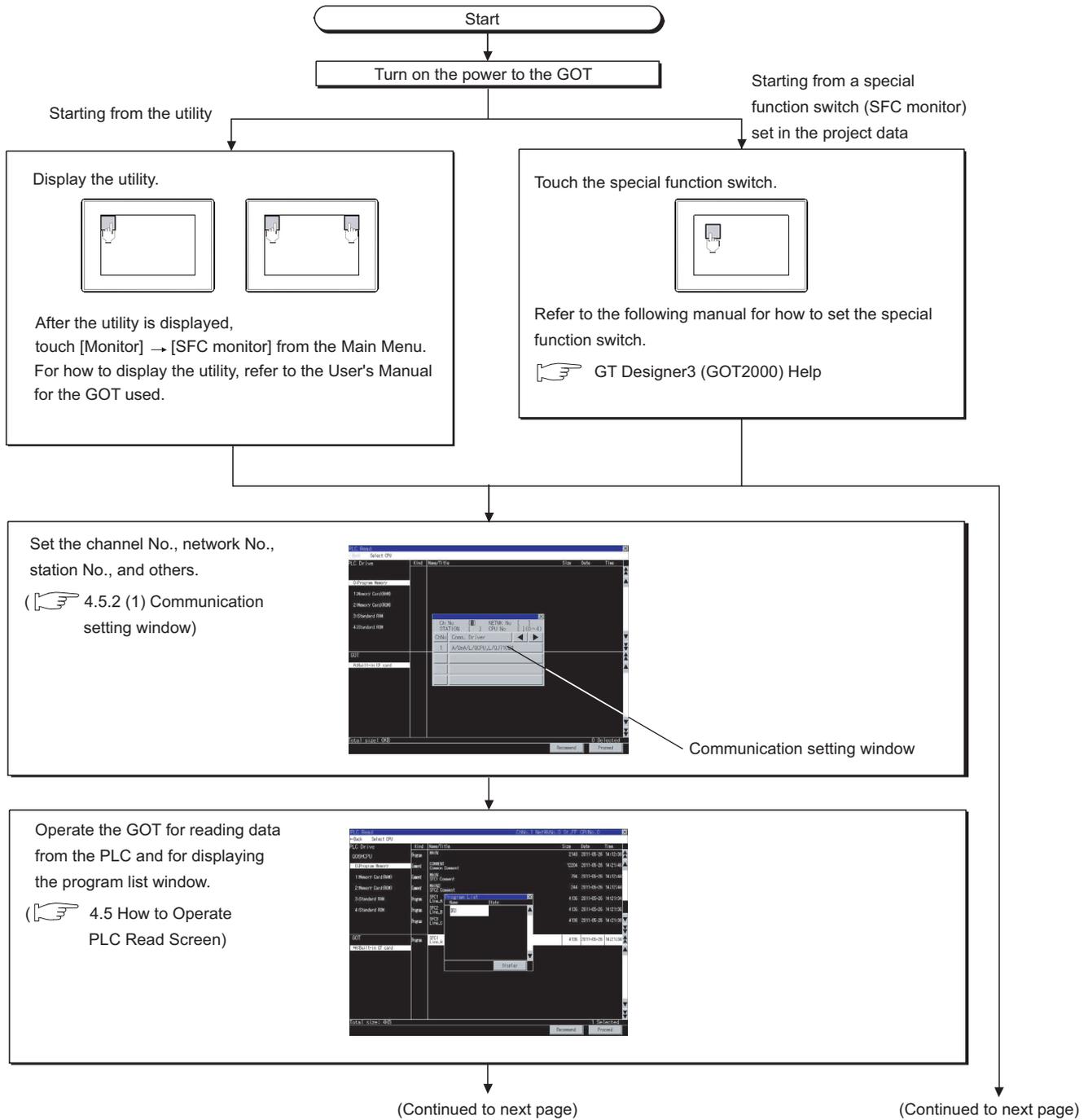
**(4) Precautions for file names (program names) of comment files to be read**

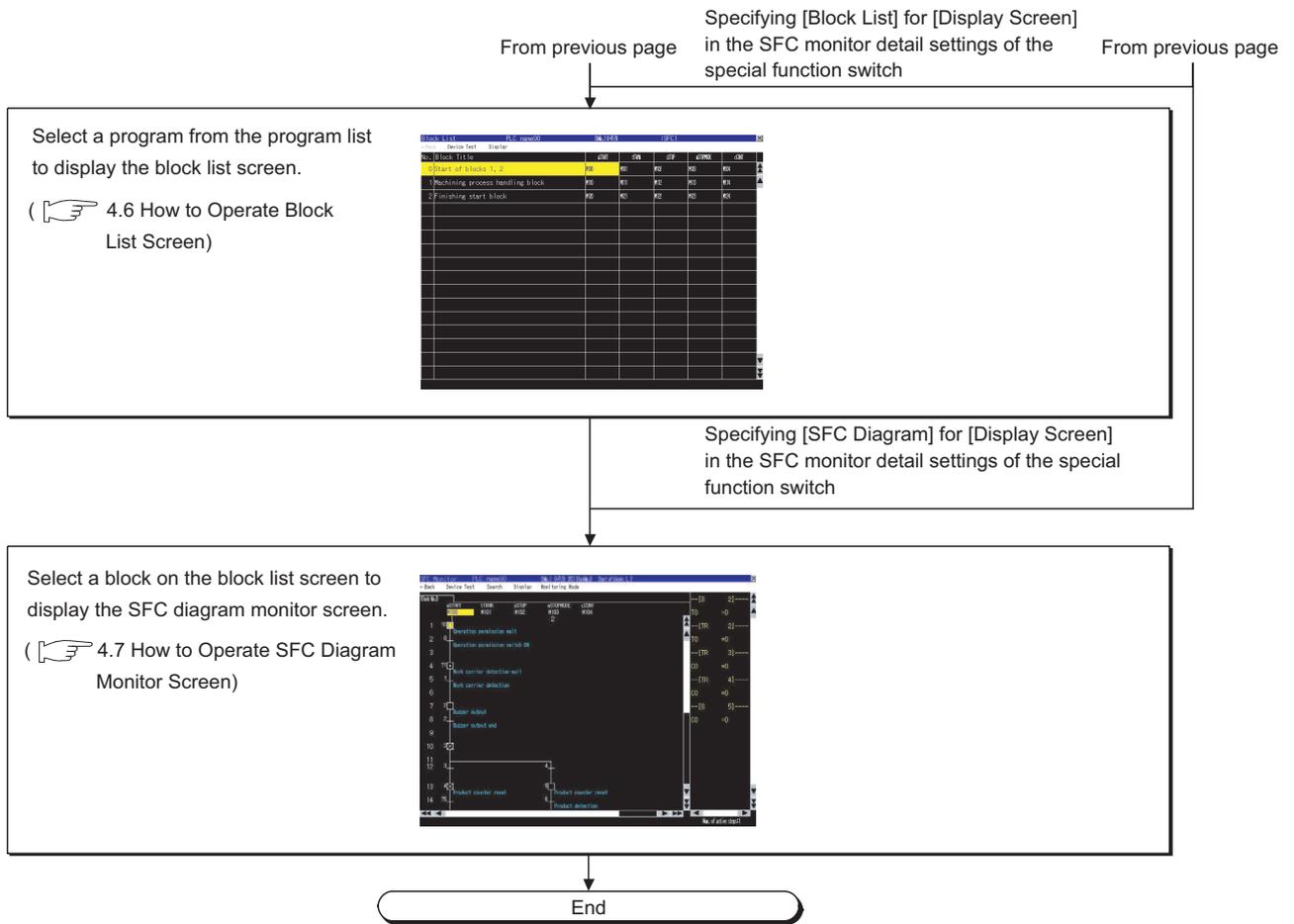
Only files with the file names (program names) with one-byte alphanumeric characters are applicable to the GOT.

When project data are created on GX Developer, use only one-byte alphanumeric characters for file names (program names).

# 4.3 Operations for Display

The following describes the outline for displaying the SFC monitor operation screens after installing GOT Platform Library, SFC Monitor, and GOT Function Expansion Library on the GOT.



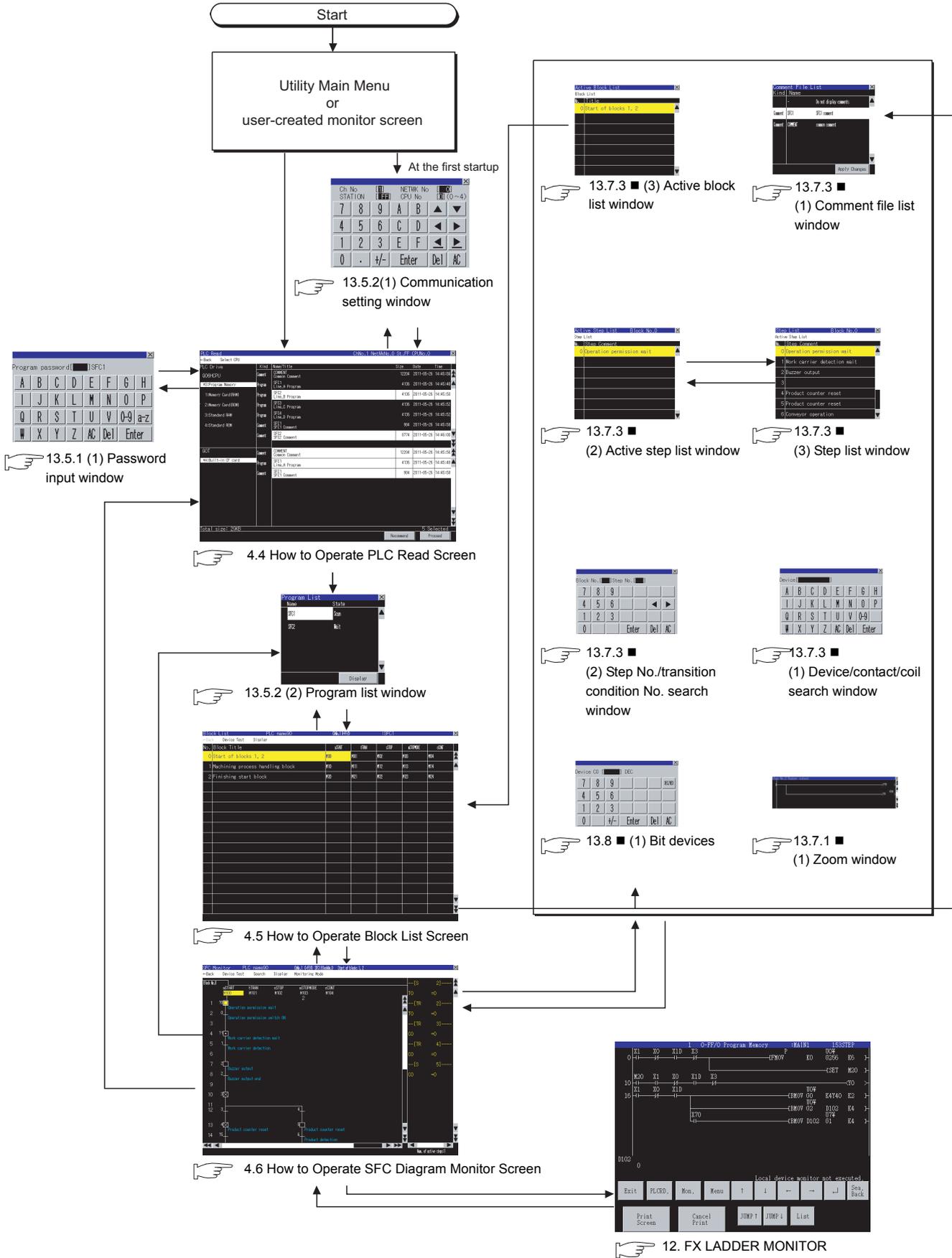


**POINT**

- (1) **How to display the utility**  
 For how to display the utility, refer to the following.
  - ☞ User's Manual for the GOT used
- (2) **Reading data from PLC when reclosing GOT**  
 Reading data from the PLC is not required when reclosing the GOT power, because SFC programs and comment files are stored in a SD card for the SFC monitor function.
  - ☞ 4.3.1 Setting SFC data storage location
- (3) **When GOT has no project data**  
 The SFC monitor can be started with the utility even though the GOT has no project data.

## Changing screens

The following describes how to change the screen.



### ■ Setting SFC data storage location

The selected drive of the GOT (SD card) can store up to 512 files of SFC data (SFC programs, device comments) used for the SFC monitor function.

SFC data are stored in the storage location that stores ladder data for the ladder monitor function. Only the A drive (standard SD card) or B drive (extended memory card) is available for storing SFC data. For the ladder data storage destination setting, refer to the following.

When setting with GOT utility

- ⇒ GOT2000 Series User's Manual (Utility)

When setting with GT Designer3

- ⇒ GT Designer3 (GOT2000) Help

## 4.3.2 Reading comment files from SD card

The SFC monitor function uses comment files stored in a SD card installed in the GOT.

### ■ Procedure for using comment files stored in SD cards

The following shows the procedure for using a comment file stored in a SD card.

**(1) When displaying comments in language set for language switching of GOT utility**

Store comment files in a SD card on the PLC read screen.

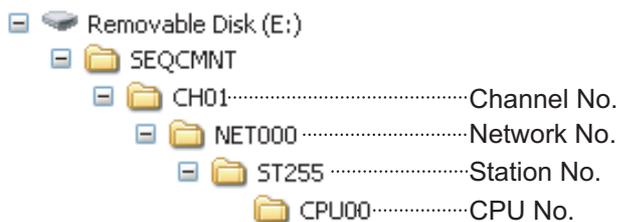
For how to store comment files in a SD card on the PLC read screen, refer to the following.

⇒ 4.4 How to Operate PLC Read Screen

**(2) When displaying comments in any language regardless of language set for language switching of GOT utility**



1. Create a SEQCMNT folder in a SD card. When the SEQCMNT folder already exists, creating a new SEQCMNT folder is not required.



2. In the SEQCMNT folder, create folders for CH No., network No., station No., and CPU No. of the monitored controller with a hierarchy as shown left.

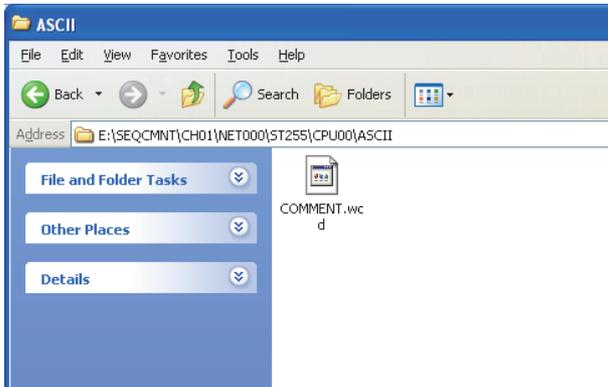
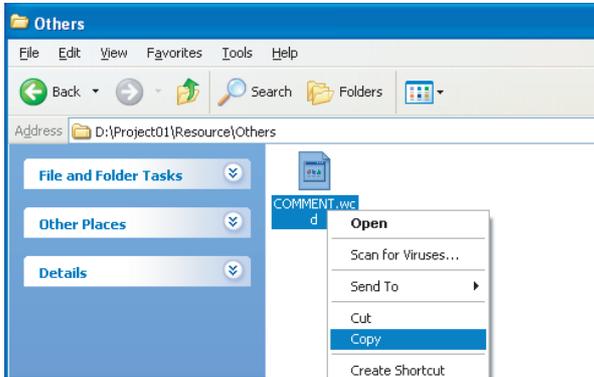
Item	Folder name
CH No.	CH**
Network No.	NET***
Station No.	ST***
CPU No.	CPU**

Assign numbers to "\*\*\*" marks.

(When the CH No. is 1, the folder name is CH01. When the monitor target is the host station, the folder name is ST255.)

(Continued to next page)

- CPU00.....CPU No.
  - ASCII .....For storing comments with ASCII code
  - GB .....For storing comments with GB code
  - KS .....For storing comments with KS code
  - SJIS .....For storing comments with SJIS code



(Example: Storing comment files with ASCII code in the ASCII folder.)

3. In the CPU No. folder, create folders for storing comment files by character code.

Item	Folder name
Folder for SJIS code	SJIS
Folder for KS code	KS
Folder for GB code	GB
Folder for ASCII code	ASCII

4. Copy a comment file (.wcd) from the project data of GX Developer.

5. Store the copied comment files in the folders for each character code in the SD card.

Comment character code	Storage folder name
SJIS code	SJIS
KS code	KS
GB code	GB
ASCII code	ASCII

6. Install the SD card with the comment file on the GOT.  
Switch comment files on the SFC diagram monitor screen for displaying the comments in an appropriate language.

### 4.3.3 Setting Display Format

The display format of word device values displayed on the SFC diagram monitor screen, language, the display mode of SFC programs, and others can be set.

#### ■ Switching languages of SFC programs

Languages (Japanese/Korean/Simplified Chinese) of comments to be displayed on the SFC monitor screens can be switched during monitoring.

For switching languages, comment files in the language to be displayed must be created in advance.

⇒ 4.3.2 Reading comment files from SD card

The following shows the relations between the language selected in the GOT utility and comment files with each character code.

Language	Comment file
Japanese	Comment files with SJIS code
Korean	Comment files with KS code
Simplified Chinese	Comment files with GB code
Other than the above	Comment files with ASCII code

#### ■ Setting display mode of SFC programs

The display mode of SFC programs on the SFC diagram monitor screen can be set.

⇒ 4.6.3 ■Display menu

The MELSAP-L program display mode is available regardless of the read SFC program format (MELSAP3, MELSAP-L).

In the MELSAP-L program display mode, operation output/transition condition sequence programs are displayed as [?????] when the GOT displays a SFC program with the MELSAP3 format.

The following shows how the GOT displays sequence programs with and without the MELSAP-L program display mode.

Item	With MELSAP-L program display mode	Without MELSAP-L program display mode
Displayed operation output/transition condition sequence program	The GOT displays a sequence program on the SFC diagram monitor screen.	The GOT displays a sequence program in the zoom window by touching a step or transition condition on the SFC diagram monitor screen.

#### ■ Setting zoom comment display mode

Whether to display or hide comments and notes in the zoom window can be set.

⇒ 4.6.3 ■Monitoring Mode menu

#### ■ Switching display formats between decimal and hexadecimal numbers

The display formats of word device values on the SFC diagram monitor screen can be switched between decimal and hexadecimal numbers.

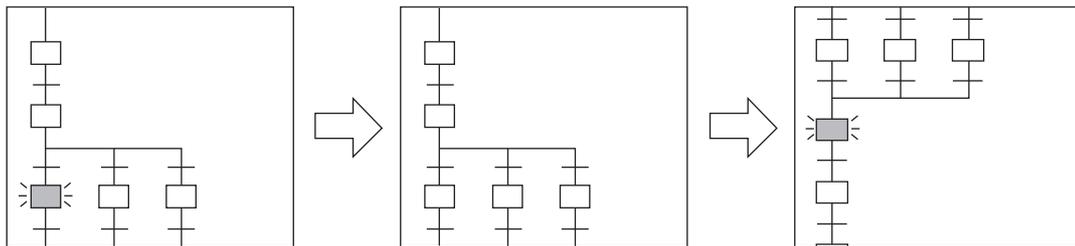
⇒ 4.6.3 ■Display menu

## ■ Setting automatic scroll mode

The automatic scroll can be switched between enabled or disabled states.

In the automatic scroll mode, the GOT displays active steps on the SFC diagram monitor screen by automatically scrolling the screen when all the following conditions are satisfied.

- No active step is displayed on the SFC diagram monitor screen.
- The displayed block has an active step.



The step status becomes inactive.

An active step in the block is displayed by automatically scrolling the screen.

For setting the automatic scroll mode, refer to the following.

⇒ 4.6.3 ■ Display menu

For the SFC diagram monitor screen, refer to the following.

⇒ 4.6 How to Operate SFC Diagram Monitor Screen

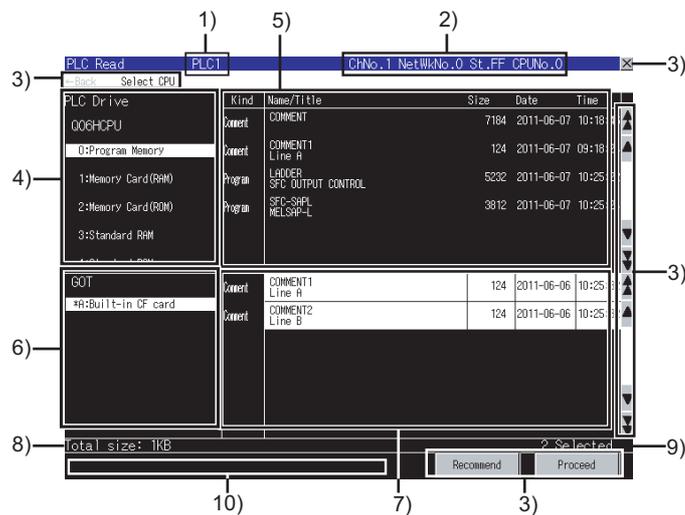
## 4.4 How to Operate PLC Read Screen

On the PLC read screen, the GOT reads SFC programs and comment files used for the SFC monitor function from the PLC.

The following describes how to operate the PLC read screen.

### 4.4.1 Displayed contents

The following describes the configuration of the PLC read screen displayed after the SFC monitor starts and key functions on the screen.



No.	Item	Description
1)	PLC name	Displays the label set in the PLC name setting for the target PLC CPU.
2)	Target controller	Displays CH No., network No., station No., and CPU No. of the target PLC CPU.
3)	Keys	Keys for operations on the PLC read screen shown in section 13.5.2. (Touch input)
4)	Target drive list (target controller)	Displays the target PLC CPU model and the drives in a list. Selecting a drive displays files within the drive in the file list (target controller). For the drive that stores files selected in the file list (target controller), [*] is displayed to the left of the drive name.
5)	File list (target controller)	Displays the program types, file names/titles, sizes, dates, and times of all the files within the drive selected in the target drive list (target controller). (The date and time show those of updated files.) A file to be read can be selected from the file list. (The selected file is highlighted.) For program files, only SFC program files in the program memory can be selected. For selecting the file name selected in the file list (GOT), the file selection in the file list (GOT) is canceled. When a password is set for the selected file, the password input window appears. (  (1) Password input window)

(Continued to next page)

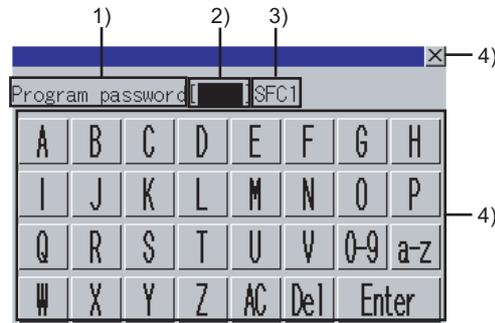
No.	Item	Description
6)	Target drive list (GOT)	Displays the drive set for [Data save location] in the MELSEC-Q/QnA ladder monitor settings. (For the SFC monitor function, only the A drive (standard SD card) or B drive (extended memory card) is available.) For the drive that stores files displayed in the file list (GOT), [*] is displayed to the left of the drive name.
7)	File list (GOT)	Displays the program types, file names/titles, sizes, dates, and times of all the files within the drive selected in the target drive list (GOT). (The date and time show those of updated files.) A file to be read can be selected from the file list. (The selected file is highlighted.) For selecting the file name selected in the file list (target controller), the file selection in the file list (target controller) is canceled.
8)	Total file size	Displays the total data size of files selected in the file list (target controller) and file list (GOT).
9)	Number of selected files	Displays the total number of files selected in the file list (target controller) and file list (GOT).
10)	Message display area	Displays error messages and others.

**(1) Password input window**

After the password authentication has succeeded, the password is authenticated automatically for the following files with the same password.

(The password input window is not displayed.)

(a) Displayed screen



The following table shows the displayed contents.

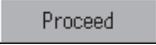
No.	Item	Description
1)	Password type	Displays the type of the password to be input. (Program password/Comment password)
2)	Password input area	Set the password.
3)	File name	Displays the file name.
4)	Keys	Keys for operations in the password input window shown in (b) (Touch input)

(b) Key functions

Key	Function
	Closes the password input window and cancels the password input operation.
	Switches the key type to the value.
	Switches the key type to the alphabet (uppercase).
	Switches the key type to the alphabet (lowercase).
	Deletes all the input values and characters.
	Deletes an input value or character.
	Authenticates the password set in the password input area.

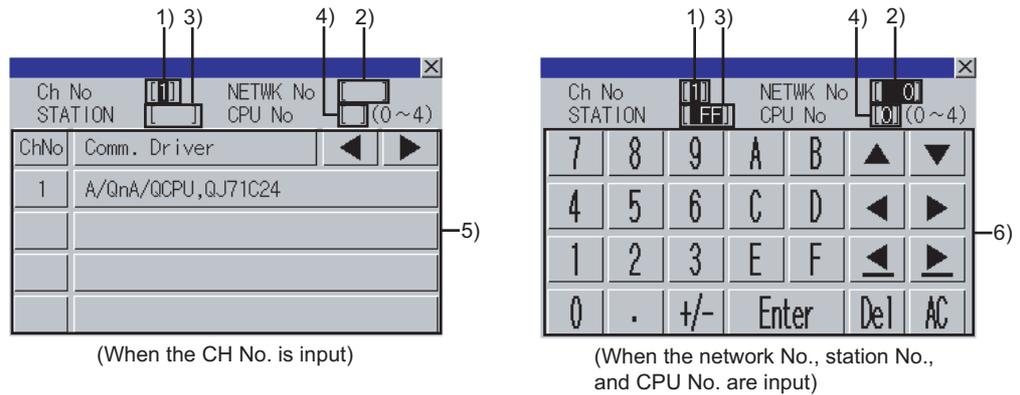
## 4.4.2 Key functions

The following shows the functions of the keys used for operating the PLC read screen.

Key	Function
	Returns the screen to the last screen that is displayed right before the PLC read screen appears. The key is disabled when the last screen is the GOT utility screen or user-created monitor screen.
Select CPU	Displays the communication setting window. (  13.5.2 (1) Communication setting window)
	Exits the SFC monitor and returns the screen to the SFC monitor startup screen.
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
	Available only when [0:Program Memory] is selected from the target drive list (target controller). Touching the key selects all the SFC program files, common comment files, and comment files for the selected SFC program files in the file list (target controller). When files with the same name are displayed in the file list (target controller) and file list (GOT), touching the key selects a file as shown below. <ul style="list-style-type: none"> <li>• For SFC program files <ul style="list-style-type: none"> <li>When the updated dates and times differ between the files, touching the key selects the file in the file list (target controller).</li> <li>When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT).</li> </ul> </li> <li>• For comment files <ul style="list-style-type: none"> <li>When the updated dates and times differ between the files, touching the key selects the latest file.</li> <li>When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT).</li> </ul> </li> </ul>
	Writes the file selected in the file list (target controller) into the SD card displayed in the target drive list (GOT). The file written into the SD card on the PLC read screen is stored in the SEQDAT folder. After writing, among files other than comment files in the SD card, files that are not selected in the file list (GOT) are deleted. Then, the program list window appears.  (2) Program list window

## (1) Communication setting window

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	CH No. input area	Set the CH No. for the target controller.
2)	Network No. input area	Set the network No. for the target controller.
3)	Station No. input area	Set the station No. of the target controller. When the station No. is set to the host station (FF), set the network No. to 0.
4)	CPU No. input area	Set the CPU No.
5)	CH No. selection key	Select a CH No.
6)	Keys	Keys for operations in the communication setting window shown in (b). (Touch input)

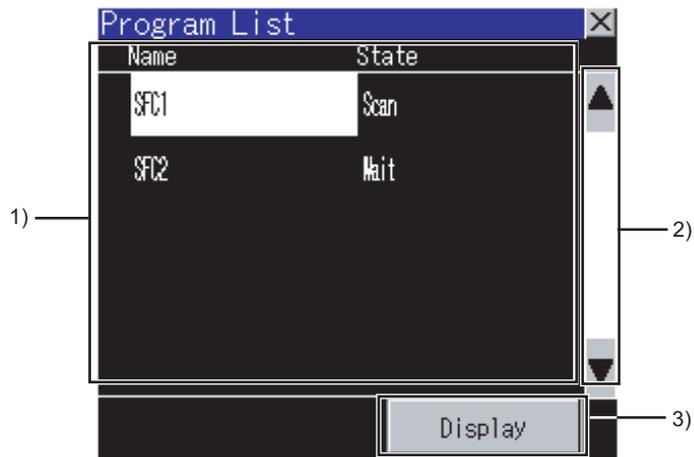
(b) Key functions

Key	Function
	Closes the communication setting window. When any of the CH No., network No., station No., and CPU No. is not input and the monitor target is not set, the communication setting window does not close.
	Moves the cursor among the input areas.
	Deletes all the input values and characters.
	Deletes an input value or character.
	Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area. When the cursor is in the CPU No. input area and settings for the CH No., network No., and station No. are completed, the communication setting window closes and the PLC read screen appears.

**(2) Program list window**

The GOT displays the read SFC programs in a list.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	SFC program file list	Displays the file names and execution statuses of the read SFC programs. The execution statuses show execution types set for the programs. A touched SFC program file is highlighted.
2)	Keys	Keys for operations in the program list window shown in (b). (Touch input)

(b) Key functions

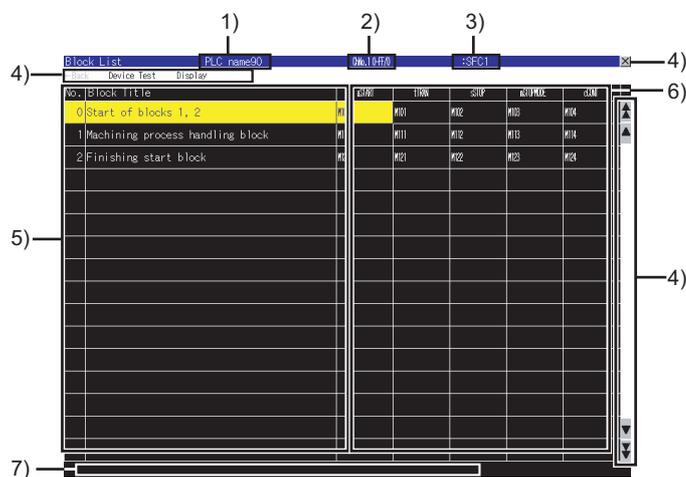
Key	Function
	Scrolls the display area up and down by one line.
	Displays the blocks of the SFC program file selected in the SFC program file list on the block list screen. (  4.5 How to Operate Block List Screen)

## 4.5 How to Operate Block List Screen

On the block list screen, the GOT displays blocks within the read SFC program in a list. The following describes how to operate the block list screen.

### 4.5.1 Displayed contents

The following describes the configuration of the block list screen, menus and key functions on the screen.



No.	Item	Description
1)	PLC name	Displays the label set in the PLC name setting for the target PLC CPU.
2)	Target controller	Displays the CH No., network No., station No., and CPU No of the target PLC CPU as shown below. • CH No. network No.-station No./CPU No.
3)	Program name	Displays the file name (without the extension) of the displayed program.
4)	Keys	Keys for operations on the block list screen shown in section 13.6.2. (Touch input)
5)	Block list	Displays the block numbers and block titles in the displayed program. The block numbers are not displayed with no block. Active blocks are highlighted. Selecting a block title displays the block data on the SFC diagram monitor screen. (  4.6 How to Operate SFC Diagram Monitor Screen)
6)	Block information list	Displays block information for each block. When devices are set for the block information, the set devices are displayed in the corresponding cells.
7)	Message display area	Displays error messages and others.

## 4.5.2 Key functions

The following shows the functions of the keys used for operating the block list screen.

Key	Function
←Back	Returns the screen to the last screen that is displayed right before the block list screen appears. The key is disabled when the last screen is the GOT utility screen or user-created monitor screen.
Device Test	Sets the device test mode. Touching the key in the device test mode cancels the device test mode. ( → 4.7 Test Operation)
Display	Displays menus used for operations on the block list screen. ( → 4.5.3 ■Display menu)
⊗	Exits the SFC monitor and returns the screen to the SFC monitor startup screen.
▲ ▼	Scrolls the display area up and down by one line.
▲ ▼	Scrolls the display area up and down by one page.

## 4.5.3 Menus

The following shows operations for the menus displayed on the block list screen.

### ■ Display menu



Key	Function	Reference section
Comment change	Displays the comment file list window.	13.7.3 ■ Display menu (1)
Program List	Displays the program list window.	13.5.2 (2)
PLC Read	Displays the PLC read screen.	4.4

## 4.6 How to Operate SFC Diagram Monitor Screen

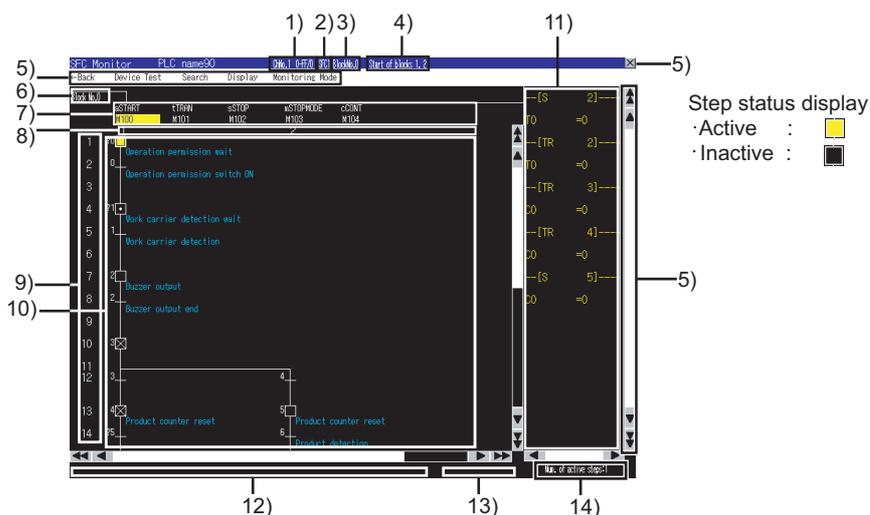
On the SFC diagram monitor screen, the GOT monitors and displays data of the block selected on the block list screen in the SFC diagram.

The following describes how to operate the SFC diagram monitor screen.

### 4.6.1 Displayed contents

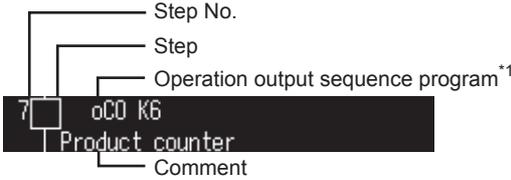
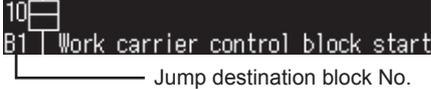
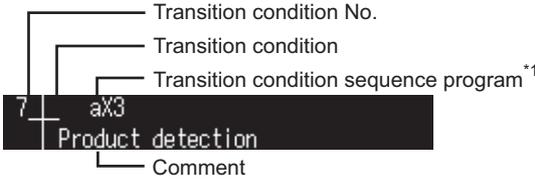
#### ■ SFC diagram monitor screen

The following describes the configuration of the SFC diagram monitor screen, menus and key functions on the screen.



No.	Item	Description
1)	Target controller	Displays the CH No., network No., station No., and CPU No. of the target PLC CPU as shown below. • CH No. network No.-station No./CPU No.
2)	Program name	Displays the file name of the displayed program.
3)	Block No.	Displays the block No. of the displayed block.
4)	Block title	Displays the block title of the displayed block.
5)	Keys	Keys for operations on the SFC diagram monitor screen shown in section 13.7.2. (Touch input)
6)	Block switching tab	Displays the block No. of the block displayed in the SFC diagram display area. Touching a tab displays the corresponding block data in the SFC diagram display area. (Tabs displayed to the right of the touched tab are removed.)
7)	Block information display area	Displays the block information of the displayed block. When the displayed block is in any status of the block information, the corresponding device is highlighted. When the block information is set, the set devices are displayed.
8)	Column No.	Displays the column numbers.
9)	Row No.	Displays the row numbers.

(Continued to next page)

No.	Item	Description
10)	SFC diagram display area	<p>Displays a SFC program in the SFC diagram format.</p> <ul style="list-style-type: none"> <li>• Step display</li> </ul>   <p>Touching a step displays the zoom window.</p> <p>(  (1) Zoom window)</p> <p>Touching a step with a jump destination block No. displays a block switching tab, and then the jump destination block data is displayed in the SFC diagram display area.</p> <ul style="list-style-type: none"> <li>• Transition condition display</li> </ul>  <p>Touching a transition condition displays the zoom window.</p> <p>(  (1) Zoom window)</p>
11)	Device current value display area	Displays the current values of word devices displayed in the SFC diagram display area.
12)	Message display area	Displays error messages and others.
13)	Automatic scroll status display area	<p>Displays [Scrolling automatically] with the automatic scroll mode. Nothing is displayed without the automatic scroll mode.</p> <p>(  n Setting automatic scroll mode)</p>
14)	Number of active steps	<p>Displays the number of active steps in the displayed block. Touching the item displays the active step list window.</p> <p>(  13.7.3 ■ (2) Active step list window)</p>

\*1 Operation output/transition condition sequence programs are displayed in the MELSAP-L program display mode only.

(  4.6.3 ■ Display menu)

## POINT

### Displayed contents of SFC diagram monitor screen

#### (1) Display mode at first display of SFC diagram monitor screen

The display mode state at the first display of the SFC diagram monitor screen differs depending on the SFC program format.

SFC program format	State at the first display
MELSAP3 format	Without MELSAP-L program display mode
MELSAP-L format	With MELSAP-L program display mode

For the display mode of SFC programs, refer to the following.

 n Setting display mode of SFC programs

**(2) Comment display at first display of SFC diagram monitor screen**

The following shows the order of comment files to be used at the first display of the SFC diagram monitor screen after reading data from the PLC. (When the SD card has no comment file, no comment is displayed.)

Priority order	Comment files used for SFC diagram monitor screen
1	Comment files by program within the SEQCMNT folder in the SD card
2	Common comment files within the SEQCMNT folder in the SD card
3	Comment files by program within the SEQDAT folder in the SD card
4	Common comment files within the SEQDAT folder in the SD card

**(1) Zoom window**

The GOT can display operation output/transition condition sequence programs in the ladder format.

(a) Displayed screen



ON/OFF status display of contacts and coils

· ON :

· OFF :

The following table shows the displayed contents.

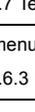
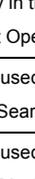
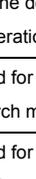
No.	Item	Description
1)	Type	<ul style="list-style-type: none"> <li>For displaying operation output sequence program The step number and step comment are displayed.</li> <li>For displaying transition condition sequence program The transition condition number and transition condition comment are displayed.</li> </ul>
2)	Ladder program display area	Displays an operation output/transition condition sequence program. Comments and notes are displayed in the zoom comment display mode. (  4.6.3 ■Display menu)
3)	Keys	Keys for operations in the zoom window shown in (b). (Touch input)

(b) Key functions

Key	Function
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.

## 4.6.2 Key functions

The following shows the functions of keys used for operating the SFC diagram monitor screen.

Key	Function
←Back	Returns the screen to the last screen that is displayed right before the SFC diagram monitor screen appears. The key is disabled when the last screen is the GOT utility screen or user-created monitor screen.
Device Test	Sets the device test mode. Touching the key in the device test mode cancels the device test mode. (  4.7 Test Operation)
Search	Displays menus used for operations on the SFC diagram monitor screen. (  4.6.3 ■Search menu)
Display	Displays menus used for operations on the SFC diagram monitor screen. (  4.6.3 ■Display menu)
Monitoring Mode	Displays menus used for operations on the SFC diagram monitor screen. (  4.6.3 ■Monitoring Mode menu)
	Exits the SFC monitor and returns the screen to the SFC monitor startup screen.
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
	Scrolls the display area right and left by one column.
	Scrolls the display area right and left by one page.

## 4.6.3 Menus

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The following shows operations for the menus displayed on the SFC diagram monitor screen.

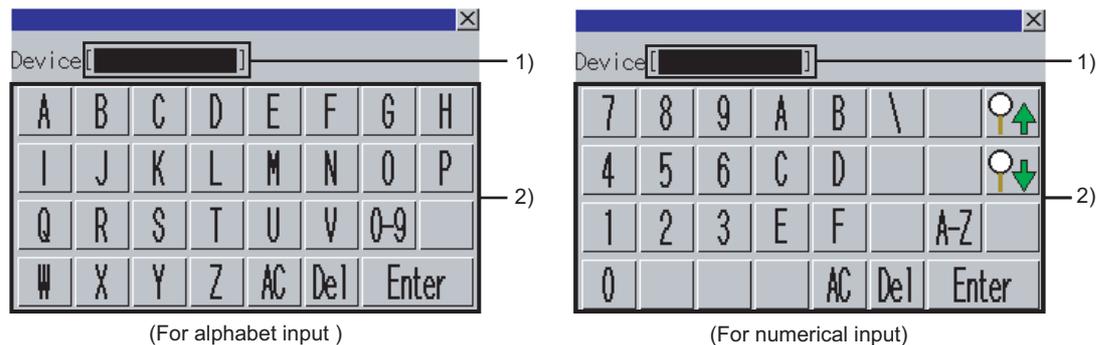
### ■ Search menu



Key	Function	Reference section
Device Search	Displays the device/contact/coil search window.	(1)
Step No. Search	Displays the step No./transition condition No. search window.	(2)
Transition No. Search	Displays the step No./transition condition No. search window.	(2)
Condition Search	Displays the device/contact/coil search window.	(1)
Coil Search	Displays the device/contact/coil search window.	(1)
Step List	Displays the step list window.	(3)
Block List	Displays the block list screen.	4.5

**(1) Device/contact/coil search window**

The GOT can search for devices in a SFC program.

**(a) Displayed screen**

The following table shows the displayed contents.

No.	Item	Description
1)	Device input area	Set a device to be searched.
2)	Keys	Keys for operations in the device/contact/coil search window shown in (b) (Touch input)

**(b) Key functions**

Key	Function
	Deletes all the input values and characters.
	Deletes an input value or character.
	Switches the key type to the value.
	Switches the key type to the alphabet.
	Searches for the input device in the upward direction. When multiple blocks are set, the GOT searches for the device in descending order of the block No. When the device is found without the MELSAP-L program display mode, the GOT displays an operation output/transition condition sequence program corresponding to the step or transition condition with the device in the zoom window.
	Search for the input device in the downward direction. When multiple blocks are set, the GOT searches for the device in ascending order of the block No. When the device is found without the MELSAP-L program display mode, the GOT displays an operation output/transition condition sequence program corresponding to the step or transition condition with the device in the zoom window.

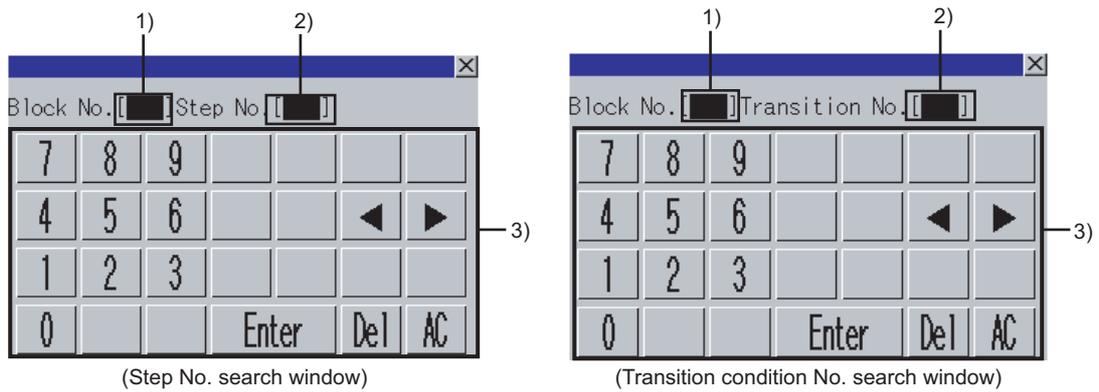
**HINT****Precautions for device/contact/coil search window**

Searching for any bits in word devices is not available.  
Specify word devices for searching for any bits.

**(2) Step No./transition condition No. search window**

The GOT can search for steps and transition conditions in a block.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Block No. input area	Set the block No. of the block to be searched. The GOT searches for a step or transition condition in the set block.
2)	Step No./transition condition No. input area	Set the step No. or transition condition No. of the step or transition condition to be searched.
3)	Keys	Keys for operations in the step No./transition condition No. search window shown in (b) (Touch input)

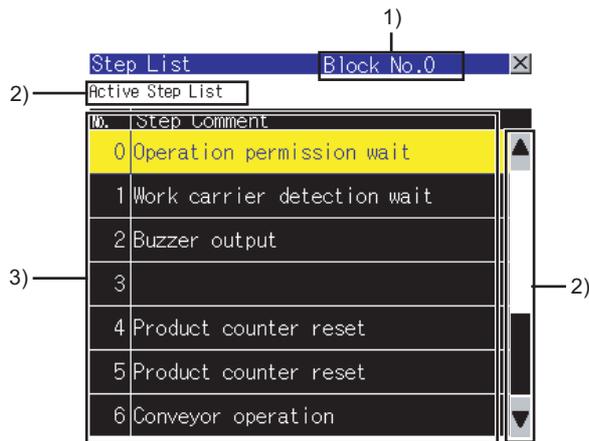
(b) Key functions

Key	Function
◀ ▶	Moves the cursor among the input areas.
Enter	<ul style="list-style-type: none"> <li>When the cursor is in the block No. input area Moves the cursor to the step No./transition condition No. input area.</li> <li>When the cursor is in the step No./transition condition No. input area Searches for a step or transition condition in the set block. When the searched step or transition condition is found, the step No./transition condition No. search window closes and the GOT displays data of the step or transition condition on the SFC diagram monitor screen. (The step or transition condition is highlighted.)</li> </ul>
Del	Deletes an input value or character.
AC	Deletes all the input values and characters.

**(3) Step list window**

The GOT displays steps in a block.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Block No.	Displays the block No. of the displayed block.
2)	Keys	Keys for operations in the step list window shown in (b) (Touch input)
3)	Step list	Displays the step numbers and step comments of the steps in the displayed block. Selecting a step searches for the step, and the GOT displays the step data on the SFC diagram monitor screen. (Active steps are highlighted.)

(b) Key functions

Key	Function
Active Step List	Displays the active step list window. ( (Active step list window)
▲ ▼	Scrolls the display area up and down by one line.

## ■ Display menu

Display
MELSAP-L Program Display
Comment Display in Zoom Window
Comment Change
Automatic Scroll
Active Step List
Active Block List
Program List
PLC Read
Ladder Monitor

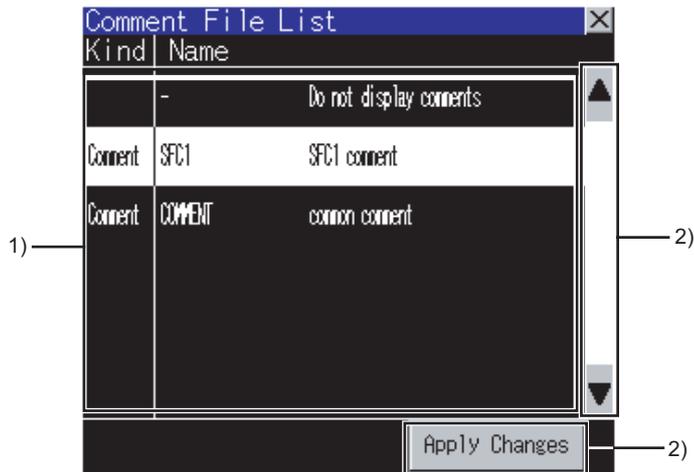
Key	Function	Reference section
MELSAP-L Program Display	Sets the MELSAP-L program display mode. Touching the key in the MELSAP-L program display mode cancels the MELSAP-L program display mode.	4.3.3 ■Setting display mode of SFC programs
Comment Display in Zoom Window	Sets the zoom comment display mode. Touching the key in the zoom comment display mode cancels the zoom comment display mode.	4.3.3 ■Setting zoom comment display mode
Comment change	Displays the comment file list window.	(1)
Automatic Scroll	Sets the automatic scroll mode. Touching the key in the automatic scroll mode cancels the automatic scroll mode.	4.3.3 ■Setting automatic scroll mode
Active Step List	Displays the active step list window.	(2)
Active Block List	Displays the active block list window.	(3)
Program List	Displays the program list window.	13.5.2 (2)
PLC Read	Displays the PLC read screen.	4.4
Ladder Monitor	Starts the ladder monitor. Touching the key with a device selected can automatically search for the device with the ladder monitor.*1	12.

- \*1 For the automatic search with the ladder monitor, settings for automatically reading sequence programs are required.  
For settings for automatically reading sequence programs, refer to the following.
- When setting with GOT utility
    - ➡ User's Manual for the GOT used
  - When setting with GT Designer3
    - ➡ GT Designer3 (GOT2000) Help

**(1) Comment file list window**

The GOT displays the comment file list.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Comment file list	Among comment files stored in the SD card, the file names and titles of the comment files and common comment files used for the displayed SFC program are displayed. For switching comments, select a comment file to be used. For hiding comments, select [Do not display comments]. A selected comment file is highlighted.
2)	Keys	Keys for operations in the comment file list window shown in (b) (Touch input)

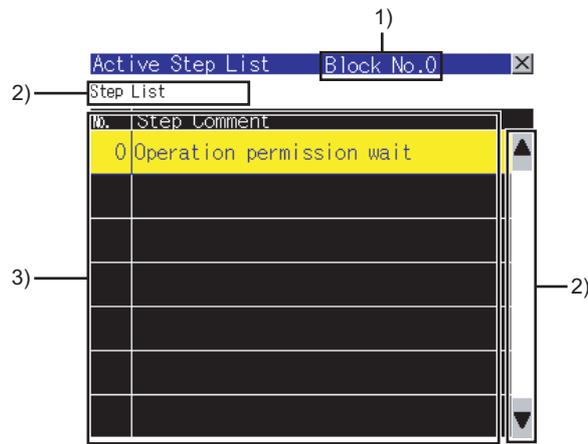
(b) Key functions

Key	Function
	Scrolls the display area up and down by one line.
	Closes the comment file list window and displays the SFC diagram monitor screen with the comments of the file selected from the comment file list.

**(2) Active step list window**

The GOT displays active steps in the displayed block.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Block No.	Displays the block No. of the displayed block.
2)	Keys	Keys for operations in the active step list window shown in (b) (Touch input)
3)	Active step list	Displays the step numbers and step comments of the active steps in the displayed block. Selecting a step searches for the step, and the GOT displays the step data on the SFC diagram monitor screen.

(b) Key functions

Key	Function
Step List	Displays the step list window. ■ 4.6.3 Search menu (3) Step list window
▲ ▼	Scrolls the display area up and down by one line.

**POINT**

**Precautions for active step list window**

When the statuses of steps change, the displayed contents of the active step list in the active step list window change. Therefore, selecting a step may be difficult depending on the frequency of the step status change.

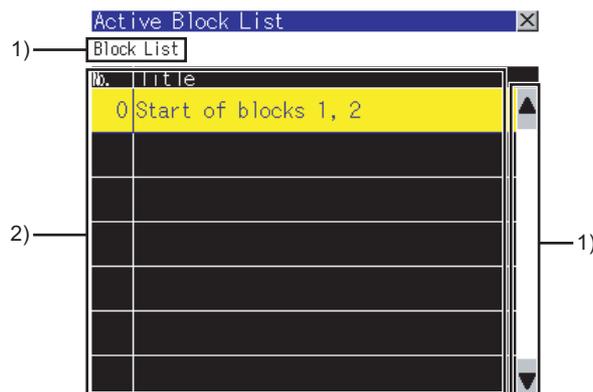
When selecting a step is difficult, select a step from the step list in the step list window.

■ 4.6.3 Search menu (3) Step list window

**(3) Active block list window**

The GOT displays active blocks in the read SFC program.

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Keys	Keys for operations in the active block list window shown in (b) (Touch input)
2)	Active block list	Displays the block numbers and block titles of active blocks in the read SFC program. Selecting a block displays the block data on the SFC diagram monitor screen.

(b) Key functions

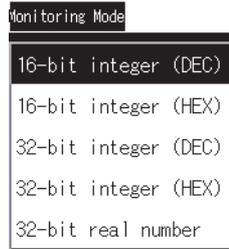
Key	Function
Block List	Displays the block list screen. ( ■■■▶ 4.5 How to Operate Block List Screen)
▲ ▼	Scrolls the display area up and down by one line.

**POINT****Precautions for active block list window**

When the statuses of blocks change, the displayed contents of the active block list in the active block list window change. Therefore, selecting a block may be difficult depending on the frequency of the block status change. When selecting a block is difficult, select a block from the block list on the block list screen.

■■■▶ 4.5 How to Operate Block List Screen

## ■ Monitoring Mode menu



Key	Function	Reference section
16-bit integer (DEC)	Displays the device values in the device current value display area as 16-bit decimal numbers.	4.3.3 ■Switching display formats between decimal and hexadecimal numbers
16-bit integer (HEX)	Displays the device values in the device current value display area as 16-bit hexadecimal numbers.	4.3.3 ■Switching display formats between decimal and hexadecimal numbers
32-bit integer (DEC)	Displays the device values in the device current value display area as 32-bit decimal numbers.	4.3.3 ■Switching display formats between decimal and hexadecimal numbers
32-bit integer (HEX)	Displays the device values in the device current value display area as 32-bit hexadecimal numbers.	4.3.3 ■Switching display formats between decimal and hexadecimal numbers
32-bit real number	Displays the device values in the device current value display area as 32-bit floating-point numbers with the exponential representation.	4.3.3 ■Switching display formats between decimal and hexadecimal numbers

# 4.7 Test Operation

In the device test mode of the SFC monitor, device values can be changed on the screen. For setting the device test mode, refer to the following.

➡ 4.5.2 Key functions

### 4.6.2 Key functions

The test operation of devices is available by touching devices on the following screens in the device test mode.

Screen applicable to device test mode	Reference section
Block information list on the block list screen	4.5.1 ■Displayed contents
SFC diagram display area on the SFC diagram monitor screen	4.6.1 ■SFC diagram monitor screen
Device current value display area on the SFC diagram monitor screen	
Ladder program display area in the zoom window	4.6.1 ■SFC diagram monitor screen (1)

Touching a device displays the device test window.

**(1) When touching bit devices**

A bit device is switched between ON and OFF states in the device test window.

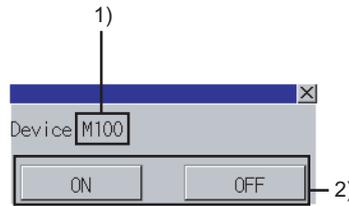
**(2) When touching word devices**

The GOT writes the value input in the device test window into the selected word device.

### ■ How to operate device test window

**(1) Bit devices**

(a) Displayed screen



The following table shows the displayed contents.

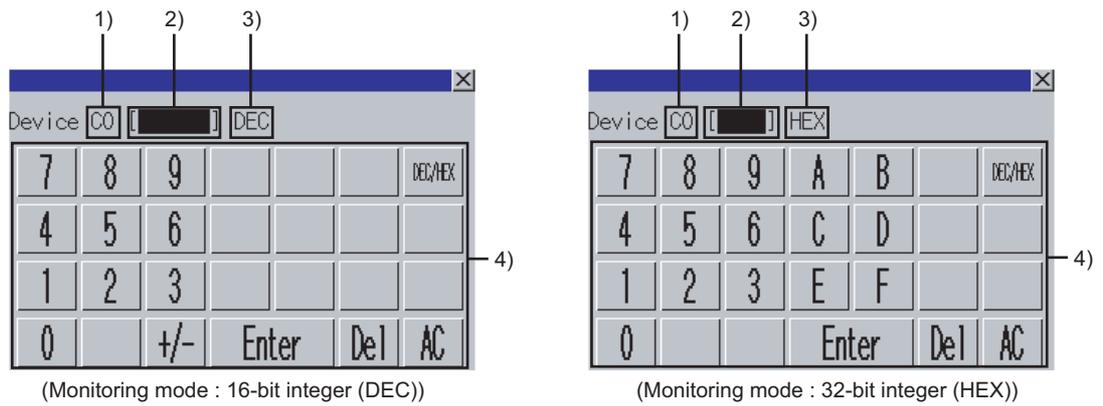
No.	Item	Description
1)	Device	Displays the selected device.
2)	Keys	Keys for operations in the device test window shown in (b).

(b) Key functions

Key	Function
	Turns on the bit device and writes the device state to the PLC CPU.
	Turns off the bit device and writes the device state to the PLC CPU.

**(2) Word devices**

(a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Device	Displays the selected device.
2)	Device value input area	Set the value to be written into the selected device.
3)	Input mode	Displays the current input mode. (DEC: decimal number. HEX: hexadecimal number)
4)	Keys	Keys for operations in the device test window shown in (b).

(b) Key functions

Key	Function
	Closes the device test window.
	Switches the input modes. (DEC, HEX)
	Writes the value input in the device value input area into the PLC CPU.
	Deletes an input value or character.
	Deletes all the input values and characters.

## 4.8 Error Messages and Corrective Action

The following shows the error messages for the SFC monitor and the corrective actions.

Error message	Description	Corrective action
Failed to write the value to the device.	In the device test mode, the GOT fails to write the value into the device of the PLC CPU.	(1) Check the communications between the GOT and PLC CPU, and make sure that the GOT communicates with the PLC CPU. (2) Check if the target device is writable with parameters of the target PLC CPU.
Failed to communicate with CPU.	The GOT cannot communicate with the target PLC CPU.	Check the communications between the GOT and PLC CPU, and make sure that the GOT communicates with the PLC CPU.
File access error. Confirm the SD card.	A file access error occurs.	(1) When no SD card is installed, install a SD card. (2) When the SD card access switch is off, turn on the switch. (3) Check if the SD card is formatted with FAT16. When the SD card is not formatted with FAT16, format the SD card with FAT16 and install the card in the GOT.
Failed to get the information.	<ul style="list-style-type: none"> <li>The GOT cannot communicate with the PLC CPU.</li> <li>A file with faulty file name is selected.</li> </ul>	<ul style="list-style-type: none"> <li>Check the communications between the GOT and PLC CPU, and make sure that the GOT communicates with the PLC CPU.</li> <li>Select the file after changing the message display language to one which can display the file name in the utility.</li> <li>Change the file name with GX Developer.</li> </ul>
Failed to save files because of an insufficient capacity of SD card.	The SD card has insufficient space for storing files.	(1) Delete files in the SD card. (2) Install a large capacity SD card.
The file(file name) is broken. The file is unselected.	The file read from the SD card is broken.	(1) Do not select broken files. (2) Overwrite the broken file with the unbroken file.
Failed to write (file name) to SD card.	The GOT fails to write the file into the SD card.	(1) When no SD card is installed, install a SD card. (2) When the SD card access switch is off, turn on the switch. (3) Check if folders and files within the SEQDAT folder in the SD card are writable. When the folders and files are not writable, make sure that the folders and files are writable. (4) Check if the SD card is formatted with FAT16. When the SD card is not formatted with FAT16, format the SD card with FAT16 and install the card in the GOT.
Change the Data save location of Q/QnA ladder monitor to A: or B:	The SFC monitor is started with [Data save location] is set to a drive other than [A: Built-in SD card] and [B:Memory card] in the MELSEC-Q/L/QnA ladder monitor setting.	Set [Data save location] to [A: Built-in SD card] or [B:Memory card] in the MELSEC-Q/L/QnA ladder monitor setting of the GOT utility.
The ladder block is too big to display.	The GOT cannot display a sequence program in the zoom window because the program has a ladder block with 25 or more lines.	Split the ladder block.
The specified block does not exist. Confirm the program.	The GOT cannot display the specified block data in the SFC diagram because the specified block does not exist.	Correct the program with GX Developer and operate the GOT for reading the file from the PLC.
The file(file name) is broken. Perform PLC Read and read the file again.	The GOT cannot display the program file data on the block list screen or SFC diagram monitor screen because the program file is broken.	Operate the GOT for reading the file from the PLC.
The device range has been changed. Please read the file again.	The GOT cannot read the target device values of the SFC monitor because the device range is changed in the PLC parameter setting during the SFC monitor.	Operate the GOT for reading the file from the PLC.
Cannot read programs other than SFC program.	The program file specified by a key on the block list screen or the SFC diagram monitor screen is not a SFC program.	Specify a SFC program by a key on the block list screen or the SFC diagram monitor screen.



# 5. NETWORK MONITOR

GT 27 GT 23 Soft GOT 2000

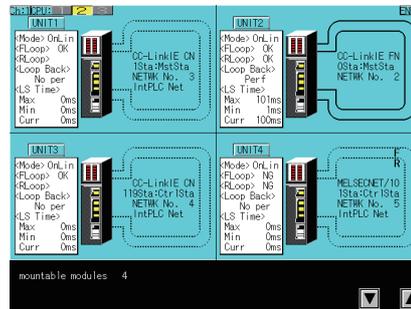
## 5.1 Features

The network monitor function enables the GOT to monitor and display the statuses of the MELSECNET/H, MELSECNET/10, MELSECNET(II), CC-Link IE controller networks, and CC-Link IE field networks. The features of the network monitor are described below.

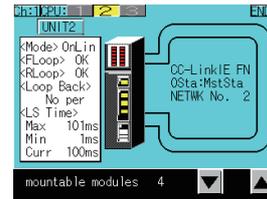
### ■ Selectable from detailed monitoring or other station monitoring for a desired network by the line monitor

The line monitor enables you to monitor the statuses of all network lines connected to the host.

In addition, you can also perform detailed monitoring of a desired network and monitoring of other stations by touch input on the line monitor.



(GOT with VGA or higher resolution)



(GOT with QVGA resolution)

### ■ Monitoring available for the detailed network information with the detailed monitor

Dedicated monitor screens are displayed according to the network type of the connected host.

Network type: MELSECNET(II), master station

MELSECNET(II), local station

MELSECNET/10 and MELSECNET/H, control station and normal station

MELSECNET/10 and MELSECNET/H, remote master station

CC-Link IE controller network, control station and normal station

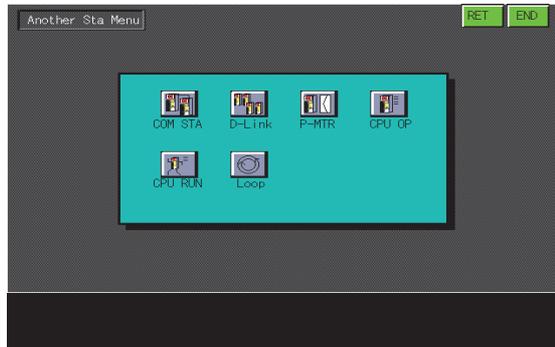
CC-Link IE field network, master station and local station

## ■ Monitoring available for other stations statuses with the other station monitor

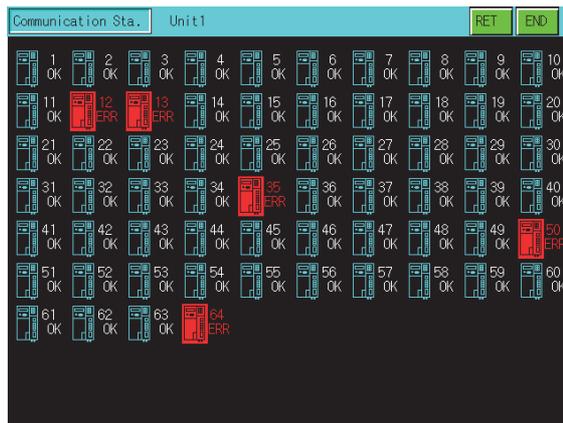
You can monitor the following statuses of other stations connected to the network.

- Communication status of each station
- Data link status of each station
- Parameter status of each station
- CPU action status of each station
- CPU RUN status of each station
- Loop status of each station

Other station monitor menu



Other station communication status monitor



## 5.2 Specifications

### 5.2.1 System configuration

This section describes the system configuration of the network monitor.

For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

#### ■ Target controller

Controller
QCPU (Q mode), motion controller (Q series)*1
LCPU
QnACPU
ACPU/QCPU (A mode)
Motion controller (A series)

\*1 For the motion controller CPU (Q series), only the PLC CPU area (CPU No.1) in the Q170MCP and Q170MSCPU can be monitored.

#### ■ Connection type

This function can be used in the following connection types.

##### (1) When the GOT is connected to a QCPU (Q mode), motion controller (Q series), QnACPU, or motion controller (A series)

(○: Available, △: Partly restricted, ×: Unavailable)

Function		Connection type between GOT and controller							
Name	Description	Bus connection	Direct CPU connection	Computer link connection	Ethernet connection *6	MELSEC NET/H connection, MELSEC NET/10 connection *5	CC-Link IE controller connection*1, CC-Link IE field connection*2	CC-Link connection	
								ID*3	G4*4
Network monitor	Monitors the statuses of the following networks. <ul style="list-style-type: none"> <li>MELSECNET/H network</li> <li>MELSECNET/10 network</li> <li>MELSECNET(II) network</li> <li>CC-Link IE controller network</li> <li>CC-Link IE field network</li> </ul>	○	○	○	○	△*5	○	○	○

\*1 Indicates the CC-Link IE controller network connection.

\*2 Indicates CC-Link IE field network connection.

\*3 Indicates CC-Link connection (Intelligent device station).

\*4 Indicates CC-Link connection (via G4).

\*5 When the GOT is connected to the MELSECNET/H or MELSECNET/10, use a QCPU and a network module (QJ71LP21, QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, or QJ71BR11) of function version B or a later version.

\*6 Network monitor cannot be used when using CC-Link IE field network Ethernet adapter.

**(2) When the GOT is connected to an ACPU/QCPU (A mode)**

(○: Available, △: Partly restricted, ✕: Unavailable)

Function		Connection type between GOT and controller						
Name	Description	Bus connection	Direct CPU connection	Computer link connection	Ethernet connection	MELSECNET/10 connection	CC-Link connection	
							ID <sup>*1</sup>	G4 <sup>*2</sup>
Network monitor	Monitors the statuses of the following networks. <ul style="list-style-type: none"> <li>• MELSECNET/H network</li> <li>• MELSECNET/10 network</li> <li>• MELSECNET(II) network</li> <li>• CC-Link IE controller network</li> <li>• CC-Link IE field network</li> </ul>	○	○	△ <sup>*3</sup>	○	○	○	○

\*1 Indicates CC-Link connection (Intelligent device station).

\*2 Indicates CC-Link connection (via G4).

\*3 Monitoring is not possible when the target CPU is AnUCPU and a MELSECNET/10 network module is used.

**■ Required extended system application**

The extended system applications shown below are required.

➡ 1.2 Required extended system application for the function

**(1) Extended system application**

Write the package data that has the extended system application for the sequence program monitor (SFC) to the GOT.

For the communication method with the GOT, refer to the following.

➡ GT Designer3 (GOT2000) Help

**(2) Extended system application space**

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

➡ GT Designer3 (GOT2000) Help

## 5.2.2 Network information that can be monitored

The network information that can be monitored with the network monitor and the link types are as follows.

(○: Can be monitored, ✕: Cannot be monitored)

Function	Network Information	MELSEC NET(II) master station	MELSEC NET(II) local station	MELSEC NET/10, MELSEC NET/H control station	MELSEC NET/10, MELSEC NET/H normal station	MELSEC NET/10, MELSEC NET/H remote master station	CC-Link IE controller network control station	CC-Link IE controller network normal station	CC-Link IE field network master station	CC-Link IE field network local station
Line monitor	Network category display	○	○	○	○	○	○	○	○	○
	Network number display	✕	✕	○	○	○	○	○	○	○
	Station number display	○	○	○	○	○	○	○	○	○
	Host operation mode	○	○	○	○	○	○	○	○	○
	Host loop line status	○	○	○	○	○	○	○	○	✕
	Loopback execution status	○	○	○	○	○	○	○	○	✕
	Link scan time display	○	✕	○	○	○	○	○	○	○
	Data link system loop status	○	✕	○	○	○	○	○	○	✕
	Host communication status	✕	○ <sup>*1</sup>	✕	✕	✕	✕	✕	✕	✕
Detailed monitor	Host information	Host number	○	○	○	○	○	○	○	○
		Host	○	○	✕	✕	✕	✕	✕	✕
		Network number	✕	✕	○	○	○	○	○	○
		Group number	✕	✕	○	○	✕	○	○	✕
	Control station information	Specified control station	✕	✕	○	○	✕	○	○	✕
		Current control station	✕	✕	○	○	✕	○	○	✕
		Communication information	✕	✕	○	○	✕	○	○	✕
		Sub-control-station link	✕	✕	○	○	✕	○	○	✕
		Remote-I/O-master-station station number	✕	✕	○	○	✕	○	○	✕
	Data link information	Total of linked stations	○	○	○	○	○	○	○	○
		Largest connected stations	✕	✕	○	○	○	○	○	○
		Largest data-linked station	✕	✕	○	○	○	○	○	○
		Communication status	✕	○	○	○	○	○	○	○
		Causes of interrupted communication	✕	✕	○	○	○	○	○	○
		Causes of data link stoppage	✕	✕	○	○	○	○	○	○
	Constant link scan	Constant link scan	✕	✕	○	○	○	○	○	○
BWY receive	BWY from the master station	✕	○	✕	✕	✕	✕	✕	✕	
BW receive	BW from the master station in the higher loop	✕	○	✕	✕	✕	✕	✕	✕	

(Continued to next page)

Function	Network Information	MELSEC NET (II) master station	MELSEC NET (II) local station	MELSEC NET/10, MELSEC NET/H control station	MELSEC NET/10, MELSEC NET/H normal Station	MELSEC NET/10, MELSEC NET/H remote master station	CC-Link IE controller network control station	CC-Link IE controller network normal station	CC-Link IE field network master station	CC-Link IE field network local station	
Detailed monitor	Loopback	Forward loop status	○	○	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*3</sup>	○ <sup>*3</sup>	×	×
		Reverse loop status	○	○	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*3</sup>	○ <sup>*3</sup>	×	×
		Loopback station (forward loop)	○	×	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*3</sup>	○ <sup>*3</sup>	×	×
		Loopback station (reverse loop)	○	×	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*3</sup>	○ <sup>*3</sup>	×	×
		Loop switching frequency	○	×	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	○	○	×	×
		PORT1 Loop	×	×	×	×	×	×	×	○ <sup>*4</sup>	×
		PORT2 Loop	×	×	×	×	×	×	×	○ <sup>*4</sup>	×
		Loop Back Sta.1	×	×	×	×	×	×	×	○ <sup>*4</sup>	×
		Loop Back Sta.2	×	×	×	×	×	×	×	○ <sup>*4</sup>	×
		#of Loop Switching	×	×	×	×	×	×	×	×	×
Detailed monitor	Host status	Parameter settings	×	×	○	○	×	○	○	×	×
		Designation of reserved station	×	×	○	○	○	○	○	○	○
		Communications mode	×	×	○	○	○	○	○	○	○
		Designation of transmission	×	×	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	○	○	×	×
		Transmission status	×	×	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	○	○	×	×
Other station monitor	Communication status of each station	○	×	○	○	○	○	○	○	○	
	Communications status of each station	×	×	○	○	○	○	○	○	○	
	Parameter status of each station	○	×	○	○	○	○	○	○	○	
	CPU action status of each station	○	○	○	○	×	○	○	○	○	
	CPU RUN status of each station	○	○	○	○	×	○	○	○	○	
	Loop status of each station	○	×	○ <sup>*2</sup>	○ <sup>*2</sup>	○ <sup>*2</sup>	×	×	×	×	

\*1 Monitoring is only possible when connected to a MELSECNET(II) local station.

\*2 Monitoring is possible only when using a MELSECNET/H or MELSECNET/10 loop system.

\*3 The loop names vary depending on the network system to be monitored as shown below.

MELSECNET/H, MELSECNET/10, MELSECNET(II) network systems	CC-Link IE controller network
Forward loop	OUT-side loop
Reverse loop	IN-side loop

\*4 Monitoring is possible only when using a loopback function.

### 5.2.3 Access range

---

In bus connection, direct CPU connection, computer link connection, or Ethernet connection, only the host station can be monitored.

In MELSECNET/H connection or MELSECNET/10 connection, only the control station can be monitored.

In CC-Link connection (Intelligent device station), only the master station can be monitored.

In CC-Link connection (via G4), only the host and master stations can be monitored.

When the GOT is connected to the remote I/O station in MELSECNET/H network system, no stations can be monitored.

The GOT cannot monitor stations on the MELSECNET/G network system.

The access range other than above is the same as the access range when the GOT is connected to a controller.

For details of the access range, refer to the following.

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

## 5.2.4 Precautions

### (1) Station monitored as the host

The station monitored as the host differs depending on the connection type.

Connection type	Station monitored as the host
Bus connection, direct CPU connection, computer link connection	Connected station (target)
Ethernet connection	Station set as the host with the Ethernet setting of GT Designer3
MELSECNET/H connection, MELSECNET/10 connection CC-Link IE controller network connection	Control station
CC-Link connection (Intelligent device station), CC-Link connection (Via G4), CC-Link IE field network connection	Master station

### (2) When the network monitor cannot be displayed correctly

The network monitor cannot be displayed correctly in the following cases.

- (a) When the network module is performing offline testing  
The network monitor cannot be displayed correctly during offline testing.  
Set the network module mode to online.
- (b) When the network parameter has been changed  
The network monitor cannot be displayed correctly when the network parameter is changed.  
Restart the network monitor.
- (c) When there is a network parameter error  
The network monitor cannot be displayed correctly when there is a network parameter error.  
Review the network parameter.
- (d) When the network parameter has not been set to the QCPU  
The network monitor cannot be displayed correctly when the network parameter is not set to the QCPU.  
Be sure to set the network parameter when monitoring the network with the GOT.
- (e) When changing the head addresses on CPU side to which refresh parameter is set  
The network monitor cannot be displayed correctly if the SB and SW head addresses on CPU side are changed while refresh parameter is set in the network parameter for the QCPU.  
To monitor the network with the GOT, set the SB and SW head addresses on CPU side to default.  
However, for CC-Link IE field network connection, set the SB and SW head addresses on CPU side according to the position where the network module is installed.

Installation position of the network module			
1st	2nd	3rd	4th
0000	0200	0400	0600

### (3) When monitoring MELSECNET/H, CC-Link IE controller network, or CC-Link IE field network

Even if a network module on the MELSECNET/H, CC-Link IE controller network, or CC-Link IE field network is being monitored, a MELSECNET/10 display is provided in either of the following cases:

- The normal station has been started due to a communication error (cable disconnection, etc.)
- The monitor target is the remote master station.

### (4) When monitoring MELSECNET(II)

When connected to a QnACPU and the master station of the MELSECNET(II), monitoring cannot be done with the keyword being defined.

### (5) When the CPU type of the connection target of the GOT is AnNCPU or AnACPU

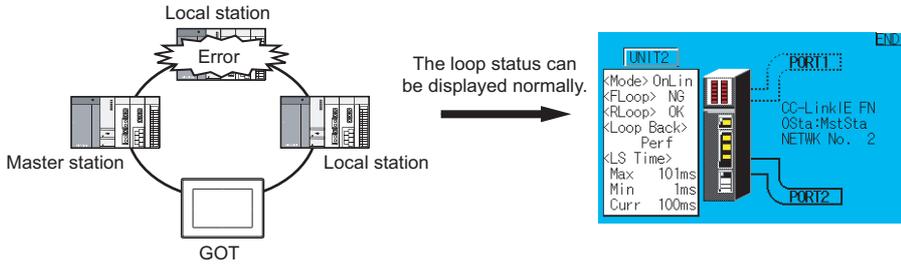
Even when using the network module of the MELSECNET/10, the network information that can be monitored is the content of the MELSECNET(II).

**(6) Display of loop status for CC-Link IE field network**

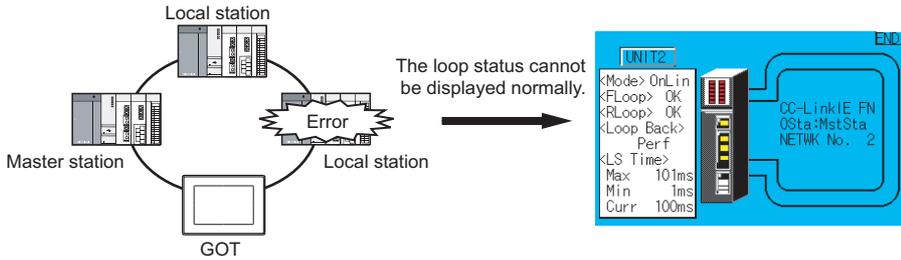
In ring topology with CC-Link IE field network, if an error occurs in a local module which is not directly connected to a master module and the network comes into loopback status, information cannot be acquired from the master station.

Therefore, in the above case, the loop status cannot be displayed on the line monitor normally.

- When an error occurs in a local station which is directly connected to a master station

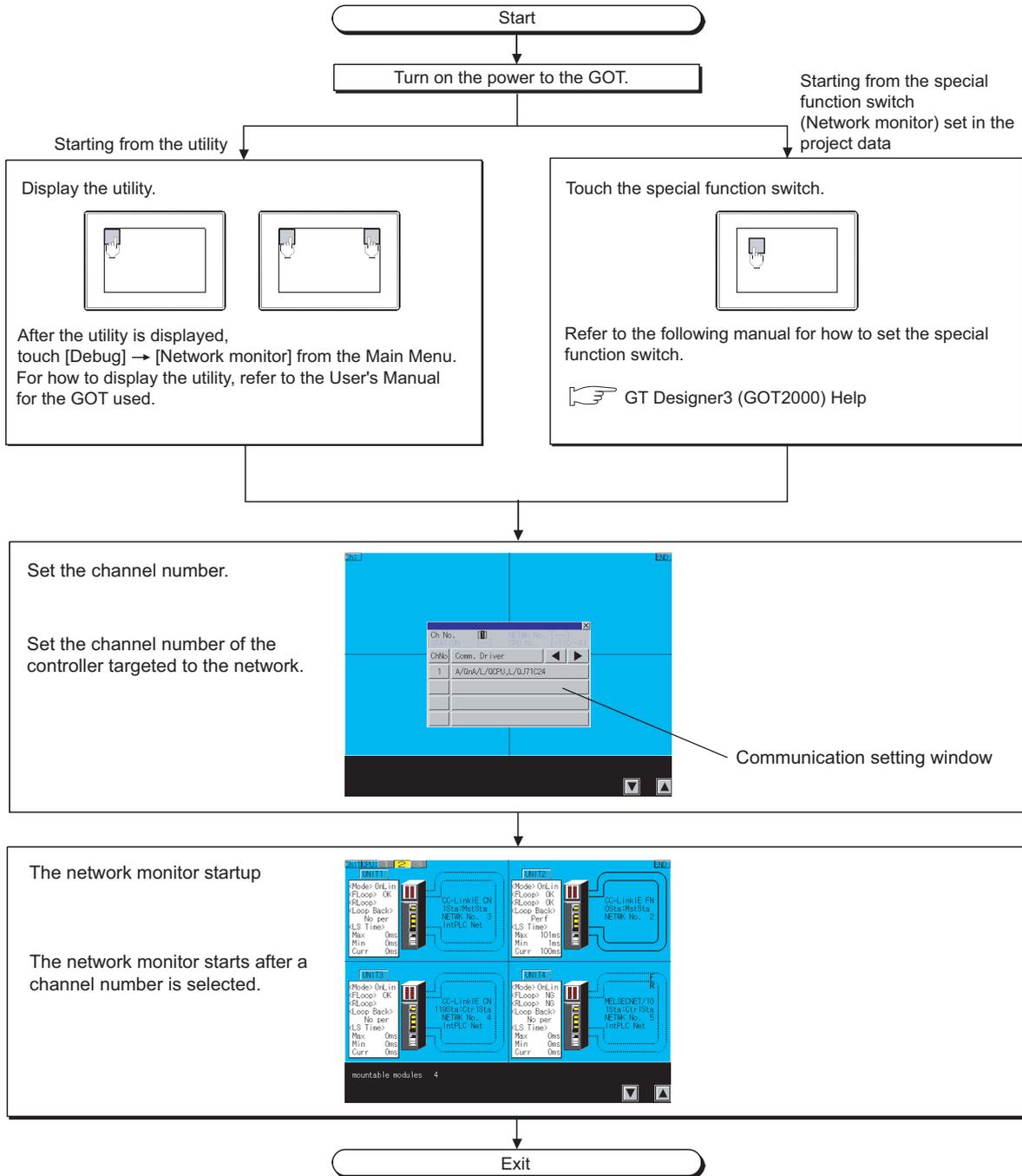


- When an error occurs in a local station which is not directly connected to a master station



# 5.3 Operations for display

This section describes the flow until the operation screen for the network monitor is displayed after the network monitor is installed in the GOT.



## POINT

**(1) How to display the utility**

For how to display the utility, refer to the following.

▣▣▣▣ GOT2000 Series User's Manual (Utility)

**(2) Displaying communication setting window**

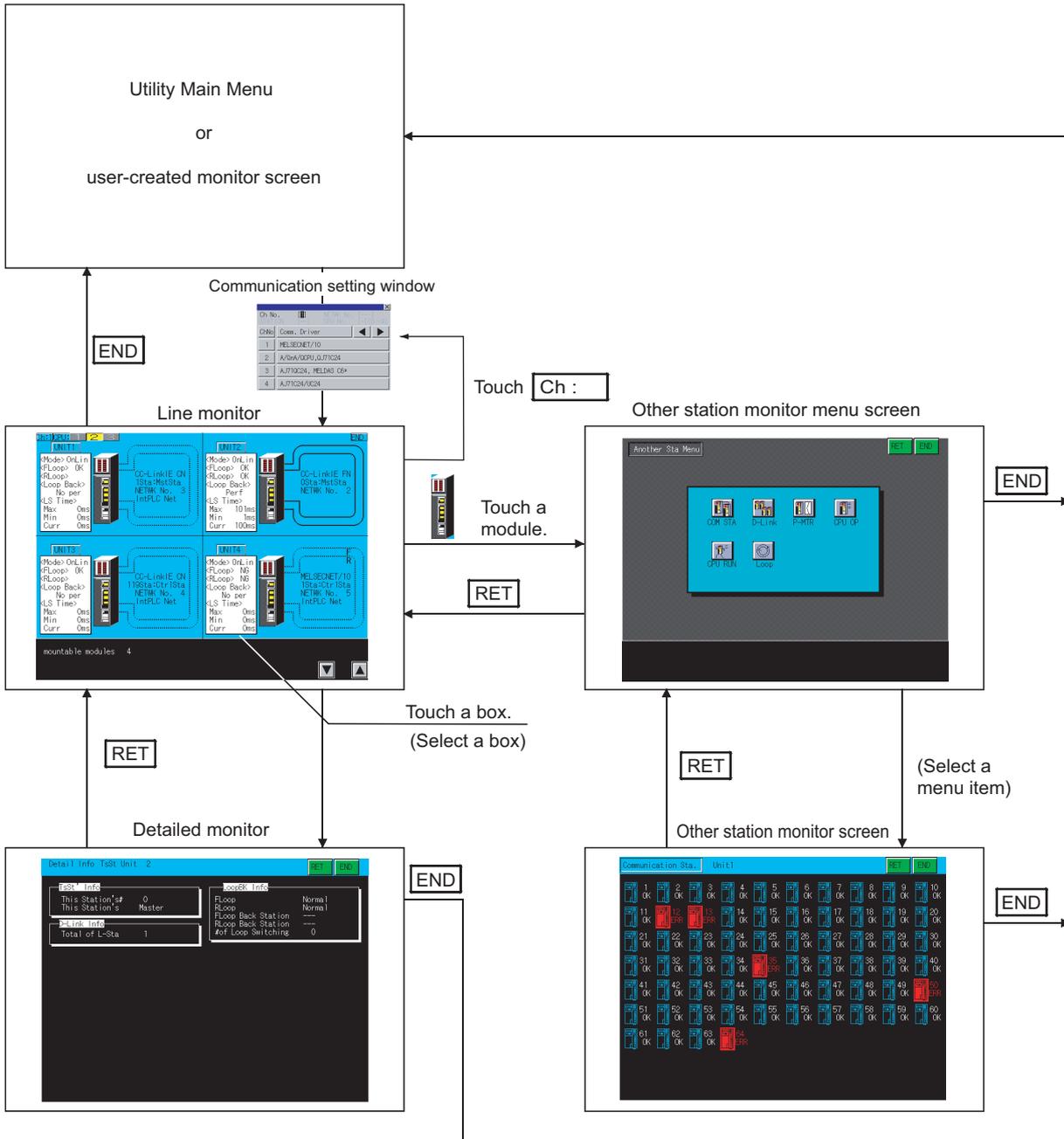
After turning on the GOT, the communication setting window is displayed at the first startup of the network monitor only.

For displaying the communication setting window at the second or later startup, touch the Ch : button on the network monitor screen. (▣▣▣▣ 5.4 Operation Procedures)

**(3) If the project data has not been downloaded**

The network monitor can be started from the utility even if the project data has not been downloaded to the GOT.

## Changing screens



# 5.4 Operation Procedures

This section describes the information and key functions displayed on the network monitor screen. The display on the network monitor screen varies slightly depending on the GOT used, and a screen for the GT1575-V is used for the descriptions in this section.

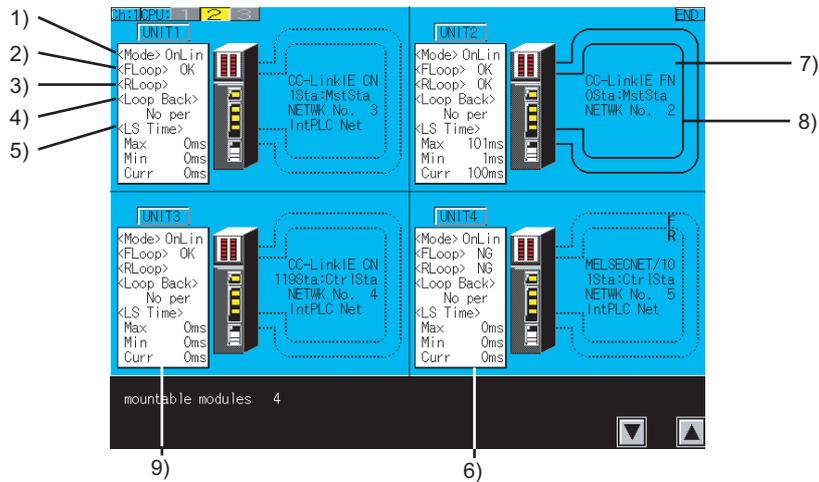
## 5.4.1 Line monitor

This section describes the structure of the monitor screen and the common operations used when executing the line monitor.

### ■ Display contents and keys functions

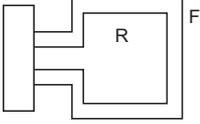
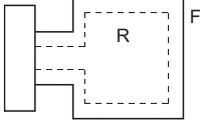
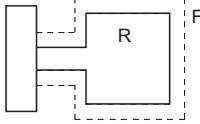
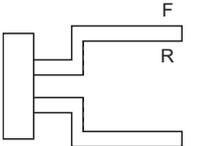
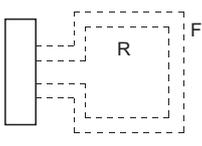
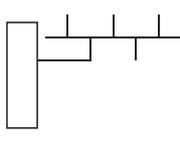
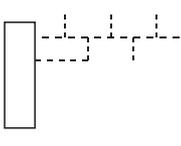
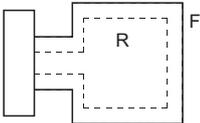
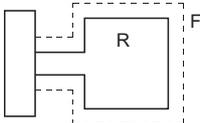
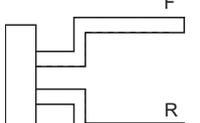
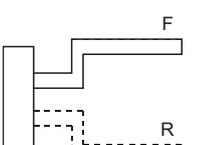
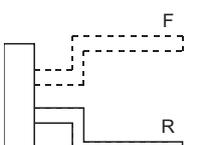
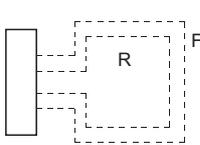
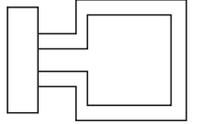
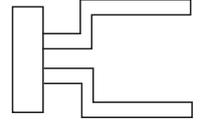
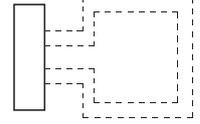
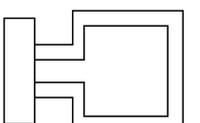
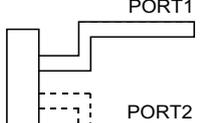
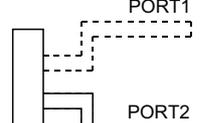
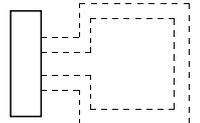
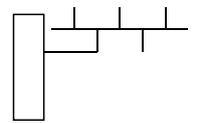
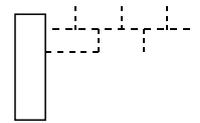
This section describes the line monitor screen configuration and the function of keys displayed on the screen after starting the network monitor.

#### (1) Displayed contents



No.	Display contents
1)	This shows the operation mode of the host. (On-line, Off-line, Test*1)
2)	This shows the status of the F-loop (Forward loop). (OK, NG)*2
3)	This shows the status of the R-loop (Reverse loop). (OK, NG)*2
4)	This shows whether the loopback was executed or not. (Executed, Not executed)
5)	This shows the link scan time required for the control station and the normal station, for the remote master station and the remote I/O station, and for the master station and all the sub-stations. Maximum (the maximum value of link scan time) Minimum (the minimum value of link scan time) Current (the current value of link scan time)
6)	This shows the communication status of the host. (Only for MELSECNET(II) local station) P-MTR WAIT :Ready to receive parameters from the master station. Cyclic com :Normal communication Com. suspension :Communication is suspended because the host is disconnected.
7)	This shows the network category, network number, and station number.

(Continued to next page)

No.	Display contents
	<p>For the MELSECNET/H and MELSECNET/10 network systems, the loop status is displayed as shown below. (Forward loop: F, Reverse loop: R)</p> <p>(a) Forward loop: OK Reverse loop: OK</p>  <p>(b) Forward loop: OK Reverse loop: NG</p>  <p>(c) Forward loop: NG Reverse loop: OK</p>  <p>(d) Loopback in execution</p>  <p>(e) Forward loop: NG Reverse loop: NG</p>  <p>(f) MELSECNET/10 coaxial bus (OK)</p>  <p>(g) MELSECNET/10 coaxial bus (NG)</p> 
8)	<p>For the MELSECNET(II) network system, the loop status is displayed as shown below. (Forward loop: F, Reverse loop: R)</p> <p>(a) Data link in execution in forward loop</p>  <p>(b) Data link in execution in reverse loop.</p>  <p>(c) Loopback is performed in the forward/reverse loop direction.</p>  <p>(d) Loopback is performed in the forward loop direction only.</p>  <p>(e) Loopback is performed in the reverse loop direction only.</p>  <p>(f) Data link is not available.</p> 
	<p>For the CC-Link IE controller network, the loop status is displayed as shown below.</p> <p>(a) Normal status</p>  <p>(b) Loopback in execution</p>  <p>(c) All stations with errors</p> 
	<p>For the CC-Link IE field network, the loop status is displayed as shown below.</p> <p>(a) Normal status (ring topology)</p>  <p>(b) Loopback in execution on PORT1 side (ring topology)</p>  <p>(c) Loopback in execution on PORT2 side (ring topology)</p>  <p>(d) Error status (ring topology)</p>  <p>(e) Normal status (star topology/line topology)</p>  <p>(f) Error status (star topology/line topology)</p> 
9)	<p>This shows the number of installed network modules.</p>

- \*1 [Test] is only displayed when using MELSECNET(II).  
When using a system other than MELSECNET(II), [Off-line] is displayed even during testing of the forward or reverse loop.
- \*2 The loop names vary depending on the network system to be monitored as shown below.

MELSECNET/H, MELSECNET/10, MELSECNET(II) network systems	CC-Link IE controller network	CC-Link IE field network
Forward loop	OUT-side loop	PORT1-side loop
Reverse loop	IN-side loop	PORT2-side loop

## POINT

### When the GOT target is AnACPU or AnNCPU

"MELSECNET(II)" is displayed even if a MELSECNET/10 network module is installed.

In addition, if there is a master station and local station, module 1 of the line monitor is displayed as "Master station".

Network module		Display on the GOT	
1st module	2nd module	Module 1	Module 2
Local station	Master station	Master station	Local station

## (2) Key functions

This section describes the function of keys to be used for the line monitor operations.

Key	Function
	Exits the line monitor and returns to the screen where the network monitor function was started.
	Switches to the detailed monitor screen that corresponds to the module displayed on the current monitor screen. This key is effective for each screen.
	Switches to the other station monitor menu that corresponds to the network displayed on the current monitor screen. This key is effective for each screen.
	Displays the communication setting window.
	Changes the monitoring destination CPU using the controller number. (For multi-CPU system connection only) The controller number is displayed according to the number of CPUs loaded.
	Touch  to switch the displayed module to the next one. Touch  to switch the displayed module to the previous one.

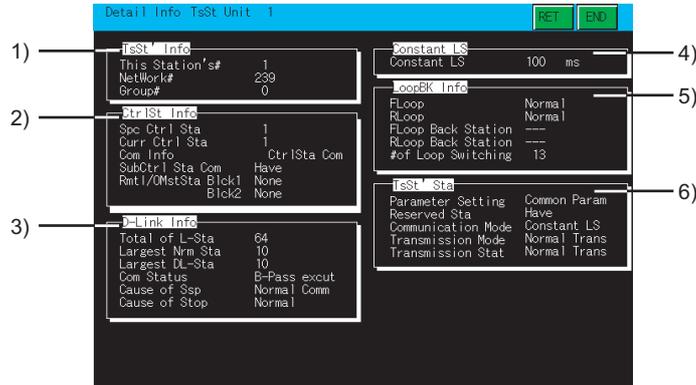
## 5.4.2 Detailed monitor

This section describes the detailed monitor and the common operations used when executing the line monitor.

### ■ Display contents and keys functions: acting as a MELSECNET/H or MELSECNET/10 Control station/normal station

This section describes the contents of the detailed monitor and the function of on-screen keys. All these are displayed and used when the host acts as the control station/normal station on the MELSECNET/H, MELSECNET/10.

#### (1) Displayed contents



No.	Item	Display contents
1)	TsSt' Info	<ul style="list-style-type: none"> <li>• This Station's # : Indicates the station number of the host.</li> <li>• Network # : Indicates the network number.</li> <li>• Group # : Indicates the group number.</li> </ul>
2)	Ctrl St Info	<ul style="list-style-type: none"> <li>• Spc Ctrlr Sta : Indicates the station number of the station that is specified as a control station.</li> <li>• Curr Ctrl Sta : Indicates the station number of a station that is currently acting as the control station.</li> <li>• Com Info : Indicates whether the host is communicating with the control station or the sub-control station.</li> <li>• SubCtrl Sta Com : Indicates whether there is a sub-control station link.</li> <li>• Rmt I/OMstSt*1 : Displays the station number of the remote I/O master station for X/Y communication block1 and block 2. Displays "None" when there is no setting.</li> </ul>
3)	D-Link Info	<ul style="list-style-type: none"> <li>• Total of L-Sta : Indicates the maximum number of the stations to be linked. The maximum number is defined by common parameters.</li> <li>• Largest Nrm Sta : Indicates the maximum station number of the station performing a communication in a normal condition.</li> <li>• Largest DL-Sta : Indicates the maximum station number of the station that is data-linked.</li> <li>• Com Status : Shows the current communications status of the host. (D-Link in prog/D-Link Stop (A)/D-Link Stop (H)/B-Pass excut/Disconnection/Loop test/Set Conf. test/Sta Odr. Conf./Com. test/Offline test/Reset. in prgr.)</li> <li>• Causes of Ssp : Indicates the causes why the communications were interrupted. This indicates "Normal" if communications are normal. (Normal/Offline/Offline Test/Line error/Disconnection/Initialize/Others (error codes))</li> <li>• Causes of Stop : Indicates the causes why the data link was stopped. This indicates "Normal" if communications are normal. (Stop disignat/No common para/ Host Para error/Host CPU error/Com. suspension/Others)</li> </ul>

(Continued to next page)

No.	Item	Display contents
4)	Constant LS	Indicates the predetermined time of constant link scans.
5)	LoopBK Info <sup>*2</sup>	<ul style="list-style-type: none"> <li>• FLoop : Shows the status of the forward loop lines of the host. (Normal/LoopBK Trans/D-Link Impo)</li> <li>• RLoop : Shows the status of the reverse loop lines of the host. (Normal/LoopBK Trans/D-Link Impo)</li> <li>• FLoop Back Station : Indicates the station number of a station that executes the loopback along the forward loop. Displays "---" when the loopback is operating normally.</li> <li>• RLoop Back Station : Indicates the station number of a station that executes the loopback along the reverse loop. Displays "---" when the loopback is operating normally.</li> <li>• # of Loop Switching : Indicates the cumulative number of times for which loops have been switched.</li> </ul>
6)	TsSt' Sta	<ul style="list-style-type: none"> <li>• Parameter Setting : Common Param, Common + Spec if, Default Param, Default + Specif</li> <li>• Reserved Sta : Indicates the availability of a reserved station. (Have/None)</li> <li>• Communication Mode : Indicates either "Normal mode" or "Constant LS."</li> <li>• Transmission Mode : Indicates either "Normal Trans" or "Multiple Trans."<sup>*2</sup></li> <li>• Transmission Stat : Indicates either "Normal Trans" or "Multiple Trans."<sup>*2</sup></li> </ul>

\*1 This is not displayed when the CPU type of the GOT connection target is AnNCPU or AnACPU

\*2 "---" is displayed when coaxial bus connections are established.

## (2) Key functions

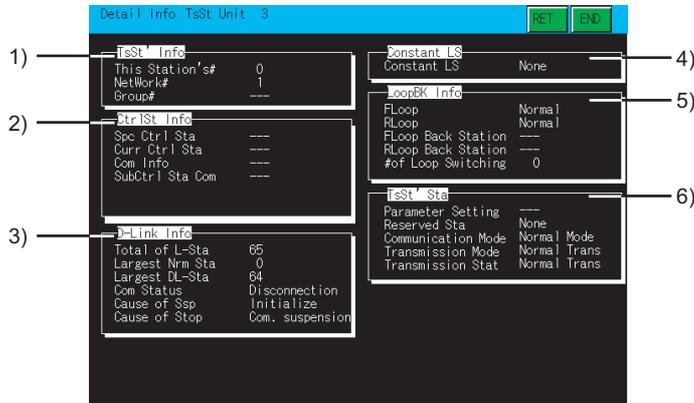
The table below shows the function of keys that are used on the detailed monitor.

Key	Function
RET	Returns to the line monitor.
END	Exits the detailed monitor and returns to the screen where the network monitor function was executed.

## ■ Display contents and keys functions: acting as a MELSECNET/H, MELSECNET/10 remote master station

This section describes the screen configuration of the detailed monitor and the function of on-screen keys when the host acts as the remote master station on the MELSECNET/H, MELSECNET/10.

### (1) Displayed contents



No.	Item	Display contents
1)	TsSt Info	<ul style="list-style-type: none"> <li>• This Stations # : Indicates the station number of the host.</li> <li>• Network # : Indicates the network number.</li> <li>• Group # : Not displayed. ("---" is displayed.)</li> </ul>
2)	Ctrl St Info	<ul style="list-style-type: none"> <li>• SpC Ctrl Sta : Not displayed. ("---" is displayed.)</li> <li>• Curr Ctrl Sta : Not displayed. ("---" is displayed.)</li> <li>• Com Info : Not displayed. ("---" is displayed.)</li> <li>• SubCtrl-Sta Com : Not displayed. ("---" is displayed.)</li> </ul>
3)	D-Link Info	<ul style="list-style-type: none"> <li>• Total of L-Sta : Indicates the maximum number of the stations to be linked, which is set by common parameters.</li> <li>• Largest Nrm Sta : Indicates the maximum station number of the station that is connected in a normal condition.</li> <li>• Largest DL-Sta : Indicates the maximum station number of the station that is performing data link.</li> <li>• Com Status : Shows the current communications status of the host. (D-Link in prog/D-Link Stop (A)/D-Link Stop (H)/B-Pass excut/Disconnection/Loop test/Set Conf. test/Sta Odr. Conf./Com. test/Offline test/Reset. in prgr.)</li> <li>• Causes of Ssp : Indicates the causes why the communications were interrupted. This indicates "Normal" if communications are normal. (Normal/Offline/Offline Test/Line error/Disconnection/Initialize/Others (error codes))</li> <li>• Causes of Stop : Indicates the causes why the data link was stopped. This indicates "Normal" if communications are normal. (Stop disignat/No common para/ Host Para error/Host CPU error/Com. suspension/Others (error codes))</li> </ul>
4)	Constant LS	Indicates the predetermined time of constant link scans.

(Continued to next page)

No.	Item	Display contents
5)	LoopBK Info *1	<ul style="list-style-type: none"> <li>• FLoop : Shows the status of the forward loop lines of the host. (Normal/LoopBK Trans/D-Link Impo)</li> <li>• RLoop : Shows the status of the reverse loop lines of the host. (Normal/LoopBK Trans/D-Link Impo)</li> <li>• FLoop Back Station : Indicates the station number of a station that executes the loopback along the forward loop. Displays "---" when the loopback is operating normally.</li> <li>• RLoop Back Station : Indicates the station number of a station that executes the loopback along the reverse loop. Displays "---" when the loopback is operating normally.</li> <li>• # of Loop Switching : Indicates the cumulative number of times for which loops have been switched.</li> </ul>
6)	TsSt' Sta	<ul style="list-style-type: none"> <li>• Parameter Setting : Not displayed. ("---" is displayed.)</li> <li>• Reserved Sta : Indicates the availability of a reserved station. (Have/None)</li> <li>• Communication Mode : Indicates either "Normal mode" or "Constant LS."</li> <li>• Transmission Mode : Indicates either "Normal Trans" or "Multiple Trans."*1</li> <li>• Transmission Stat : Indicates either "Normal Trans" or "Multiple Trans."*1</li> </ul>

\*1 "---" is displayed when coaxial bus connections are established.

## (2) Key functions

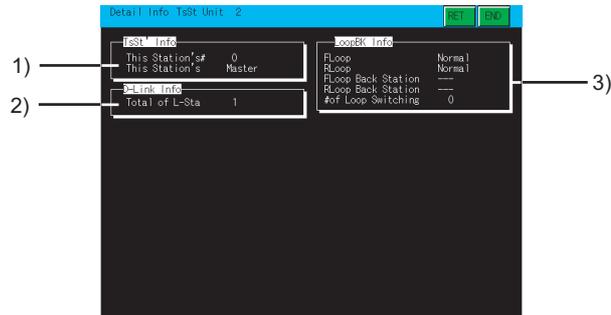
The table below shows the function of keys that are used on the detailed monitor.

Key	Function
	Returns to the line monitor.
	Exits the detailed monitor and returns to the screen where the network monitor function was started.

## ■ Display contents and keys functions: acting as a MELSECNET(II) master station

This section describes the screen configuration of the detailed monitor and the function of on-screen keys when the host acts as the master station on the MELSECNET(II).

### (1) Displayed contents



No.	Item	Display contents
1)	TsSt Info	<p>This Station's # : This shows the station number of the host.</p> <p>This Station's : Indicates the category of the host.</p>
2)	D-Link Info	Indicates the maximum number of the stations to be linked, which is defined by common parameters.
3)	LoopBK Info	<ul style="list-style-type: none"> <li>• FLoop : Shows the status of the forward loop lines of the host. (Normal/NG)</li> <li>• RLoop : Shows the status of the reverse loop lines of the host. (Normal/NG)</li> <li>• FLoop Back Station : Indicates the station number of a station that executes the loopback along the forward loop. When loopback is normal, "---" is displayed. When there is no loopback station, "F" is displayed.</li> <li>• RLoop Back Station : Indicates the station number of a station that executes the loopback along the reverse loop. When loopback is normal, "---" is displayed. When there is no loopback station, "R" is displayed.</li> <li>• # of Loop Switching : Indicates the cumulative number of times for which loops have been switched.</li> </ul>

### (2) Key functions

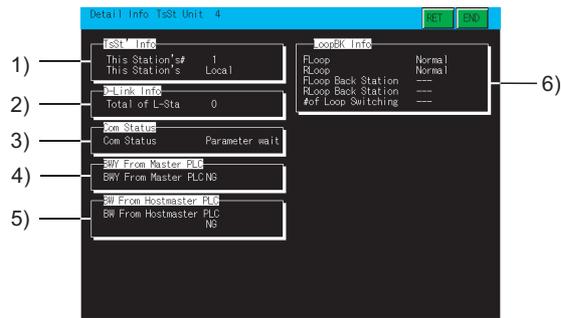
The table below shows the function of keys that are used on the detailed monitor.

Key	Function
	Returns to the line monitor.
	Exits the detailed monitor and returns to the screen where the network monitor function was started.

## ■ Display contents and keys functions: acting as a MELSECNET(II) local station

This section describes the screen configuration of the detailed monitor and the function of on-screen keys when the host acts as the local station on the MELSECNET(II).

### (1) Displayed contents



No.	Item	Display contents
1)	TsStf Info	<ul style="list-style-type: none"> <li>This Station's # : Indicates the station number of the host.</li> <li>This Station's : Indicates the category of the host.</li> </ul>
2)	D-Link Info	<ul style="list-style-type: none"> <li>Total of L-Sta : Indicates the maximum number of the stations to be linked, which is defined by common parameters.</li> </ul>
3)	Com status	This shows the communication status of the host. (Parameter wait/Cyclic comm/Com. suspension)
4)	BWY From Master	This shows the status of receiving Device BWY from the master station. OK: Data is being received by cyclic communication. NG: Unable to receive because the host is disconnected, etc.
5)	BW From Hostmaster	This shows the status of receiving Device BW from the master station of a dual-layer system. OK: Data is being received by cyclic communication. NG: Unable to receive because the host is disconnected, etc.
6)	LoopBK Info	<ul style="list-style-type: none"> <li>FLoop : Shows the status of the forward loop lines of the host. (Normal/NG)</li> <li>RLoop : Shows the status of the reverse loop lines of the host. (Normal/NG)</li> <li>FLoop Back Station : Not displayed. ("---" is displayed.)</li> <li>RLoop Back Station : Not displayed. ("---" is displayed.)</li> <li># of Loop Switching : Not displayed. ("---" is displayed.)</li> </ul>

### (2) Key functions

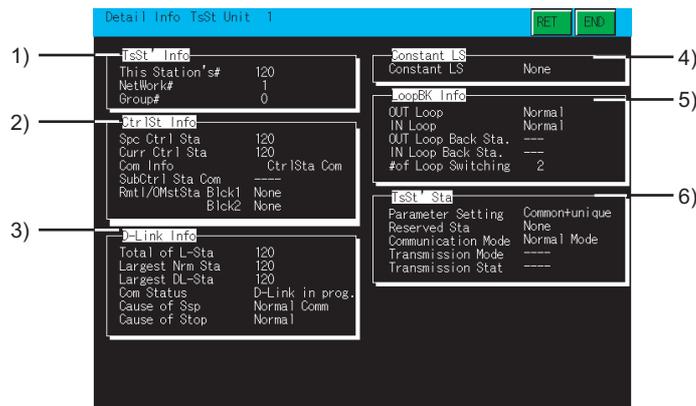
The table below shows the function of keys that are used on the detailed monitor.

Key	Function
	Returns to the line monitor.
	Exits the detailed monitor and returns to the screen where the network monitor function was started.

## ■ Display contents and keys functions when monitoring CC-Link IE controller network

This section describes the screen configuration of the detailed monitor and the functions of on-screen keys when the GOT monitors a control station or normal station on the CC-Link IE controller network set as the host station.

### (1) Displayed contents



No.	Item	Display contents
1)	TsSt Info	<ul style="list-style-type: none"> <li>• This Station's# : Displays the host station number.</li> <li>• NetWork# : Displays the network number of the host station.</li> <li>• Group# : Displays the group number.</li> </ul>
2)	CtrlSt Info	<ul style="list-style-type: none"> <li>• Spec Ctrl Sta : Displays the station number set as the control station.</li> <li>• Curr Ctrl Sta : Displays the station number of the station currently operating as the control station.</li> <li>• Com Info : Displays whether the GOT communicates with the control station or sub-control station.</li> <li>• SubCtrl Sta Com : Not displayed ([---] is displayed.)</li> <li>• Rmtl/OMstSta : Displays the station numbers of the I/O master stations for block 1 and block 2. [None] is displayed with no setting.</li> </ul>
3)	D-Link Info	<ul style="list-style-type: none"> <li>• Total of L-Sta : Displays the total number of stations on the monitored network set for common parameters.</li> <li>• Largest Nrm Sta : Displays the maximum station number of the station communicating normally.</li> <li>• Largest DL-Sta : Displays the maximum station number of the station performing a data link.</li> <li>• Com Status : Displays the current communication status of the host station. (D-Link in prog., D-Link stopped, B-Pass excut, B-Pass stopped, Offline test, Offline)</li> <li>• Cause of Ssp<sup>*1</sup> : Displays the reason for the interrupted communication. [Normal Comm] is displayed with normal communications. (Cable disconnct, Wrong cable, Checking cables, Disconnect/retrn, Offline mode, Offline test, Self-check mode)</li> <li>• Cause of Stop<sup>*2</sup> : Displays the reason for the interrupted data link. [Normal] is displayed with normal data links. (Stop disgnat, D-Link time up, Testing line, Param not rcvcd, Invlid Host No., Set Rsvd Sta., Dup Host No., Dup CtrlSta No., Sta No. not set, Invlid NTWK No., Host Para error, Params in comm., CPU stop error, CPU pwr stp err)</li> </ul>

(Continued to next page)

No.	Item	Display contents
4)	Constant LS	Displays the set contact link scan time.
5)	LoopBK Info	<ul style="list-style-type: none"> <li>• OUT Loop : Displays the OUT-side loop line status of the host station. (Normal, LoopBK Trans, All Sta. NG)</li> <li>• IN Loop : Displays the IN-side loop line status of the host station. (Normal, LoopBK Trans, All Sta. NG)</li> <li>• OUT Loop Back Sta. : Displays the station number of the OUT-side loopback station. [---] is displayed with normal loopbacks.</li> <li>• IN Loop Back Sta. : Displays the station number of the IN-side loopback station. [---] is displayed with normal loopbacks.</li> <li>• #of Loop Switching : Displays the accumulated number of switching loops.</li> </ul>
6)	TsSt' Sta	<ul style="list-style-type: none"> <li>• Parameter Setting : Displays [No parameters], [Common Param], [Unique param], or [Common+unique].</li> <li>• Reserved Sta : Displays whether a reserved station exists or not.</li> <li>• Communication Mode : Displays [Normal Mode] or [Constant LS].</li> <li>• Transmission Mode : Not displayed ([---] is displayed.)</li> <li>• Transmission Stat : Not displayed ([---] is displayed.)</li> </ul>

- \*1 When the station is in the hardware test mode, self-loopback test mode, circuit test mode, or station-to-station test mode, [Offline test] is displayed.
- \*2 For duplication of the control station or station number, [Dup CtrlSta No.] is displayed.

## (2) Key functions

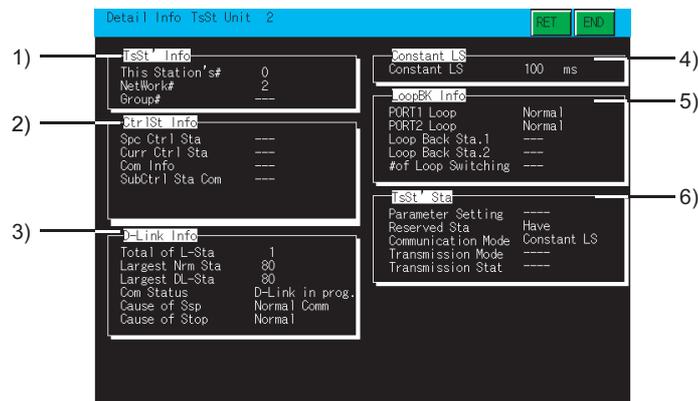
The table below shows the function of keys that are used on the detailed monitor.

Key	Function
	Returns to the line monitor.
	Exits the detailed monitor and returns to the screen where the network monitor function was started.

## ■ Display contents and keys functions when monitoring a master/local station on the CC-Link IE field network

This section describes the screen configuration of the detailed monitor and the functions of on-screen keys when the GOT monitors a master station or local station on the CC-Link IE field network set as the host station.

### (1) Displayed contents



No.	Item	Display contents
1)	TsSt' Info	<ul style="list-style-type: none"> <li>• This Station's# : Displays the host station number.</li> <li>• NetWork# : Displays the network number of the host station.</li> <li>• Group# : Not displayed ([---] is displayed.)</li> </ul>
2)	CtrlSt Info	<ul style="list-style-type: none"> <li>• Spc Ctrl Sta : Not displayed ([---] is displayed.)</li> <li>• Curr Ctrl Sta : Not displayed ([---] is displayed.)</li> <li>• Com Info : Not displayed ([---] is displayed.)</li> <li>• SubCtrl Sta Com : Not displayed ([---] is displayed.)</li> </ul>

(Continued to next page)

No.	Item	Display contents
3)	D-Link Info	<ul style="list-style-type: none"> <li>• Total of L-Sta : Displays the total number of stations on the monitored network set for common parameters.</li> <li>• Largest Nrm Sta : Displays the maximum station number of the station communicating normally.</li> <li>• Largest DL-Sta : Displays the maximum station number of the station performing a data link.</li> <li>• Com Status : Displays the current communication status of the host station. (D-Link in prog., B-Pass excut, B-Pass stopped, Offline test, Offline)</li> <li>• Cause of Ssp*1 : Displays the reason for the interrupted communication. [Normal Comm] is displayed with normal communications. (Cable disconnct, Disconnct/retrn, Offline mode, Offline test)</li> <li>• Cause of Stop : Displays the reason for the interrupted data link. [Normal] is displayed with normal data links. (Stop disgnat, D-Link time up, No Slave Sta., Param not rcvd, Invlid Host No., Set Rsvd Sta., Dup Host No., Dup Master Sta., Sta No. not set, Host Para error, Params in comm., Station Type, CPU stop error, Ring connection)</li> </ul>
4)	Constant LS	Displays the set contact link scan time.
5)	LoopBK Info	<ul style="list-style-type: none"> <li>• PORT1 Loop : Shows the status of the PORT1-side loop. (Normal/LoopBK Trans/D-Link Impo)</li> <li>• PORT2 Loop : Shows the status of the PORT2-side loop. (Normal/LoopBK Trans/D-Link Impo)</li> <li>• Loop Back Sta.1 : Indicates the station number of a station that executes the loopback. [---] is displayed with normal loopbacks.</li> <li>• Loop Back Sta.2 : Indicates the station number of a station that executes the loopback. [---] is displayed with normal loopbacks.</li> <li>• #of Loop Switching : Displays the accumulated number of switching loops.</li> </ul>
6)	TsSt <sup>1</sup> Sta	<ul style="list-style-type: none"> <li>• Parameter Setting : Not displayed ([---] is displayed.)</li> <li>• Reserved Sta : Displays whether a reserved station exists or not.</li> <li>• Communication Mode : Displays [Normal Mode] or [Constant LS].</li> <li>• Transmission Mode : Not displayed ([---] is displayed.)</li> <li>• Transmission Stat : Not displayed ([---] is displayed.)</li> </ul>

\*1 When the station is in the hardware test mode, offline test mode, or self-loopback test mode, [Offline test] is displayed.

## (2) Key functions

The table below shows the function of keys that are used on the detailed monitor.

Key	Function
RET	Returns to the line monitor.
END	Exits the detailed monitor and returns to the screen where the network monitor function was started.

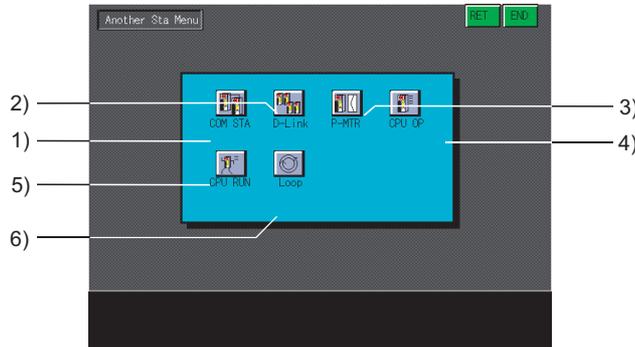
### 5.4.3 Other station monitor

This section describes the structure of the monitor screen and the common operations used when executing the other station monitor.

#### ■ Display contents and keys functions: other station monitor menu

This section describes the other station monitor menu screen and the function of on-screen keys. The menu screen for the other station monitor is displayed by touching a module number displayed on the host monitor screen. By this other station monitor menu, each of the other station monitor can be specified.

##### (1) Displayed contents



No.	Item	Display contents
1)	COM STA	Switches to the communication status monitor for other stations. <sup>*1</sup> ( ➡ 5.4.4 Other station communication status monitor)
2)	D-Link	Switches to the data link status monitor for other stations. <sup>*2</sup> ( ➡ 5.4.5 Other station data link status monitor)
3)	P-MTR	Switches to the parameter status monitor for other stations. <sup>*1</sup> ( ➡ 5.4.6 Other station parameter status monitor)
4)	CPU OP	Switches to the CPU operation status monitor for other stations. <sup>*3</sup> ( ➡ 5.4.7 Other station CPU operation status monitor)
5)	CPU RUN	Switches to the CPU RUN status monitor for other stations. <sup>*3</sup> ( ➡ 5.4.8 Other station CPU RUN status monitor)
6)	Loop	Switches to the loop status monitor for other stations. <sup>*4</sup> ( ➡ 5.4.9 Other station loop status monitor)

\*1 This cannot be selected when a MELSECNET(II) local station is selected using the line monitor.

\*2 This cannot be selected when a MELSECNET(II) master station or local station is selected using the line monitor.

\*3 This cannot be selected when a remote I/O station is selected using the line monitor.

\*4 The other station loop status monitor is not available in the following conditions.

- When a local station on the MELSECNET(II) network system is selected using the line monitor
- When a MELSECNET network system with coaxial cables is used
- When a station on the CC-Link IE controller network or CC-Link IE field network is selected using the line monitor

##### (2) Key functions

The table below shows the function of keys to be used for the other station monitor operations.

Key	Function
 to 	Switches to each monitor for other stations.
	Returns to the line monitor.
	Exits the other station monitor screen and returns to the screen where the network monitor function was started.

## 5.4.4 Other station communication status monitor

This section describes the screen configuration of the other station communication status monitor and the function of keys displayed on it.

This screen cannot be displayed for a MELSECNET(II) local station.

### (1) Displayed contents



No.	Display contents
1)	Displays the communication status by station number. (OK/ERR) The station numbers displayed do not indicate the number of station numbers in the network, rather the maximum number of communication stations. For CC-Link IE field network, station number 1 to 120 are displayed regardless of the number of station numbers in the network.
2)	Any station in an abnormal condition is highlighted.
3)	Reserved stations are displayed as normal stations.

### (2) Key functions

The table below shows the functions of the keys that are used for the other station communications status monitor operations.

Key	Function
RET	Returns to the other station monitor.
END	Exits the other station communication statuses monitor screen and returns to the screen where the network monitor was started.
▼ ▲	Switches the screen display of stations. (1 to 80 stations/81 to 120 stations)

## 5.4.5 Other station data link status monitor

This section describes the screen configuration of the other station data link status monitor and the function of on-screen keys.

This screen cannot be displayed for a MELSECNET(II) master station or local station.

### (1) Displayed contents



No.	Display contents
1)	Displays the data link status by station number. (OK/NO) The station numbers displayed do not indicate the number of station numbers in the network, rather the maximum number of communication stations. For CC-Link IE field network, station number 1 to 120 are displayed regardless of the number of station numbers in the network.
2)	Any station to which data link is not performed is highlighted.
3)	Reserved stations are displayed as having a data link established.

### (2) Key functions

The table below shows the function of keys that are used for the operations of other station data link status monitor.

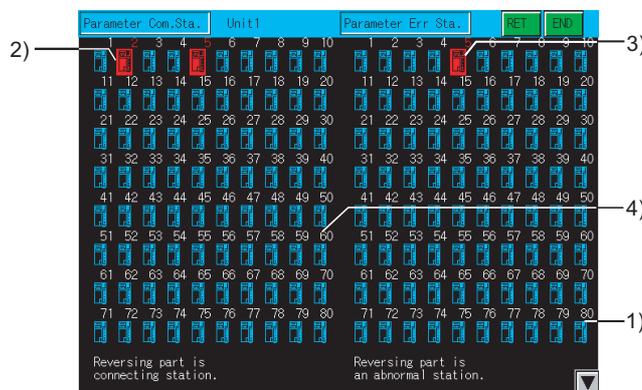
Key	Function
	Returns to the other station monitor.
	Exits the other station data link status monitor screen and returns to the screen where the network monitor was started.
	Switches the screen display of stations. (1 to 80 stations/81 to 120 stations)

## 5.4.6 Other station parameter status monitor

This section describes the screen configuration of the other station parameter status monitor and the function of on-screen keys.

This screen cannot be displayed for a MELSECNET(II) local station.

### (1) Displayed contents



No.	Display contents
1)	Displays the parameter status by station number. The station numbers displayed do not indicate the number of station numbers in the network, rather the maximum number of communication stations. For CC-Link IE field network, station number 1 to 120 are displayed regardless of the number of station numbers in the network.
2)	Any station whose parameters are monitored is highlighted.*1
3)	Any station in an abnormal condition is highlighted.
4)	Reserved stations are displayed as normal stations.

\*1 Only [Parameter Err Sta.] is displayed when connecting to a MELSECNET(II) master station.

### (2) Key functions

The table below shows the function of keys that are used for the operations of the other station parameter status monitor.

Key	Function
RET	Returns to the other station monitor.
END	Exits the other station parameter status monitor screen and returns to the screen where the network monitor was started.
▼ ▲	Switches the screen display of stations. (1 to 80 stations/81 to 120 stations)

## 5.4.7 Other station CPU operation status monitor

This section describes the screen configuration of the other station CPU operation status monitor and the function of on-screen keys.

This screen cannot be displayed for a remote I/O network system.

### (1) Displayed contents



No.	Display contents
1)	Displays the CPU operation status by station number. (OK/ERR) The station number displayed does not indicate the station number in the network, rather the maximum number of communication stations. For CC-Link IE field network, station number 1 to 120 are displayed regardless of the number of station numbers in the network.
2)	Any station that stays in an abnormal condition or out of operation is highlighted.
3)	Reserved stations and unconnected stations are displayed as normal stations.

### (2) Key functions

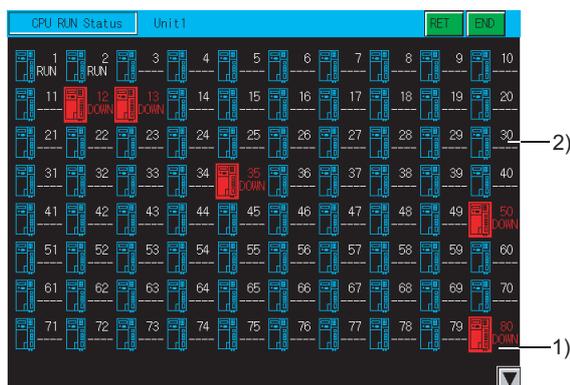
The table below shows the function of keys that are used for the operations of the other station CPU operation status monitor.

Key	Function
	Returns to the other station monitor.
	Exits the other station CPU operation status monitor screen and returns to the screen where the network monitor was started.
	Switches the screen display of stations. (1 to 80 stations/81 to 120 stations)

## 5.4.8 Other station CPU RUN status monitor

This section describes the other station CPU RUN status monitor and the function of on-screen keys. This screen cannot be displayed for a remote I/O network system.

### (1) Displayed contents



No.	Display contents
1)	Displays the CPU operation status by station number. (RUN/STOP) "DOWN" is displayed for stations with communication errors. Up to 64 stations are displayed regardless of the number of stations in a network. For CC-Link IE controller network or CC-Link IE field network, station number 1 to 120 are displayed regardless of the number of station numbers in the network.
2)	"---" is displayed for a reserved station and the statuses of stations beyond the maximum communication stations, or when a MELSECNET(II) local station has been selected in the line monitor.

### (2) Key functions

The table below shows the function of keys that are used for the operations of the other station CPU RUN status monitor.

Key	Function
	Returns to the other station monitor.
	Exits the other station CPU RUN status monitor screen and returns to the screen where the network monitor was started.
	Switches the screen display of stations. (1 to 80 stations/81 to 120 stations)

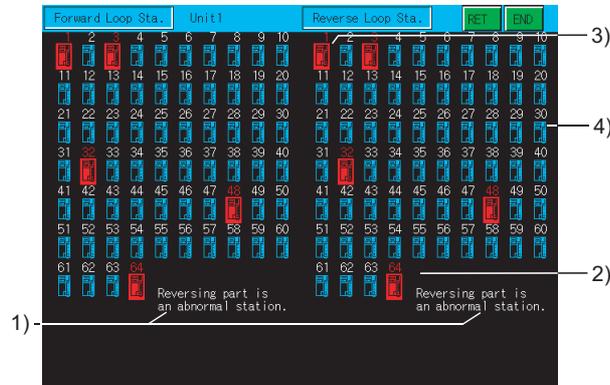
## 5.4.9 Other station loop status monitor

This section describes the screen configuration of the other station loop status monitor and the function of on-screen keys.

The other station loop status monitor is not available in the following conditions.

- When a local station on the MELSECNET(II) network system is selected using the line monitor
- When a MELSECNET network system with coaxial cables is used
- When a station on the CC-Link IE controller network or CC-Link IE field network is selected using the line monitor.

### (1) Displayed contents



No.	Display contents
1)	The F-loop (forward loop) status and the R-loop (reverse loop) status are displayed.
2)	The station numbers displayed do not indicate the number of station numbers in the network, rather the maximum number of communication stations.
3)	Any station that stays in an abnormal condition is highlighted.
4)	Reserved stations are displayed as normal stations.

### (2) Key functions

The table below shows the function of keys that are used for the operations of the other station loop status monitor.

Key	Function
RET	Returns to the other station monitor.
END	Exits the other station loop status monitor screen and returns to the screen where the network monitor was started.

## 5.5 Error Message and Corrective Action

---

The following shows the error messages that are displayed during the network monitor operation and how to handle them.

Error message	Contents of error	Action to take
Communication channel setup error	There is no channel for communication.	Set the channel number in the Communication Settings of the utility.
Can not Communication	Communication could not be established with the PLC CPU.	<ul style="list-style-type: none"><li>• Check the connections between the controller and the GOT for disconnected connectors and cables.</li><li>• Check if an error has occurred in the controller.</li></ul>
Key Word error	A keyword has been set in the parameter when monitoring the MELSECNET(II) master station of the QnACPU.	Release the set keyword.

# 6. Q MOTION MONITOR

GT 27 GT 23 Soft GOT 2000

## 6.1 Features

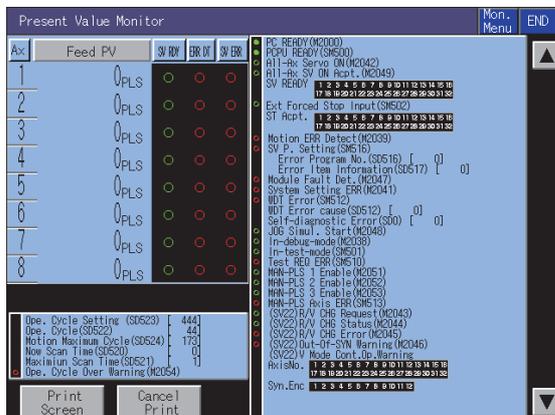
GT 27 GT 23 Soft GOT 2000

The Q motion monitor enables the servo monitoring and parameter setting of the motion controller CPU. The following are the features of the Q motion monitor.

### ■ Various servo monitor data can be displayed on multiple monitor screens

The Q motion monitor function has multiple monitor screens, on which you can monitor servo data in a variety of patterns.  
(Display examples)

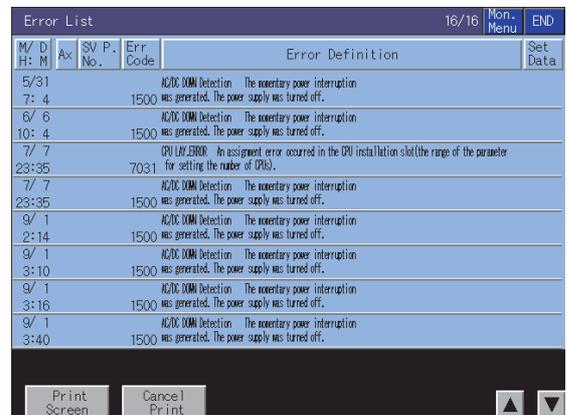
Present Value Monitor



- Monitors and displays the feed current values and actual current values of all running axes.

( ➡ 6.4.4 Present Value Monitor screen)

Error List



- Displays the history of errors that occurred on and after the leading edge of PLC ready (M2000).

( ➡ 6.4.6 Error List screen)

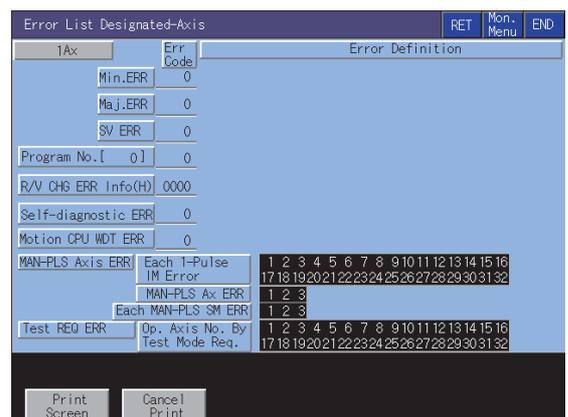
Positioning Monitor



- Monitors the details of the positioning data set to any axis.

( ➡ 6.4.8 Positioning Monitor screen)

Error List Designated-Axis

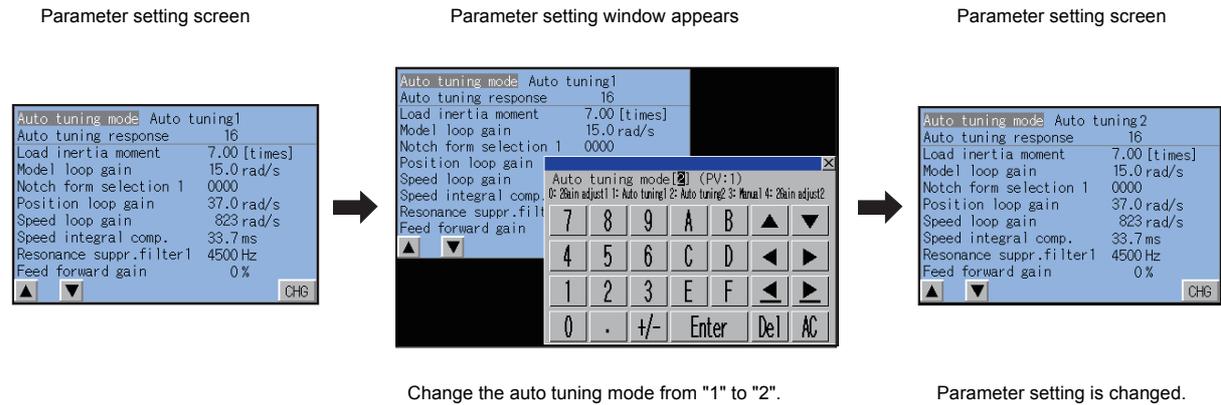


- Displays the latest errors that occurred on the specified axis.

( ➡ 6.4.7 Error List Designated-Axis screen)

## ■ Servo parameters can be changed by writing

(Write example: Changing the setting of the auto tuning function)



1. By performing writing from the parameter setting screen, write the servo parameter setting (basic parameters/adjustment parameters) to the motion controller CPU.
2. To change a servo parameter setting, enter the necessary numerical value or option number from the automatically displayed key window, and write it to the motion controller CPU.

## 6.2 Specifications

### 6.2.1 System configuration

This chapter describes the system configuration of the Q motion monitor.

For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

#### ■ Target motion controller CPU of the Q motion monitor

Motion controller CPU
Motion controller CPU (Q series) <sup>*1*2</sup>

- \*1 Use the following production number motion controller CPU when using the Q172CPU or Q173CPU.
  - For bus connection and direct CPU connection  
Q172CPU: Production number K\*\*\*\*\* or later  
Q173CPU: Production number J\*\*\*\*\* or later
  - For a connection other than bus connection and direct CPU connection  
Q172CPU: Production number N\*\*\*\*\* or later  
Q173CPU: Production number M\*\*\*\*\* or later
- \*2 When using the OS (SV13 or SV22) with the Q172CPU, Q173CPU, Q172CPUN, or Q173CPUN, install the following version.  
SW6RN-SV13Q □: 00H or later (00E or later when using the Q172CPU or Q173CPU with a bus connection or direct CPU connection)  
SW6RN-SV22Q □: 00H or later (00E or later when using the Q172CPU or Q173CPU with a bus connection or direct CPU connection)

#### ■ Connection type

This function can be used in the following connection types.

##### (1) When the GOT is connected to a QCPU (Q mode), QnACPU, or motion controller CPU

(○: Available, △: Partly restricted, X: Unavailable)

Function	Description	Connection type between GOT and controller							
		Bus connection	Direct CPU connection	Computer link connection	Ethernet connection <sup>*4</sup>	MELSEC NET/H connection, MELSEC NET/10 connection	CC-Link IE controller connection <sup>*1</sup>	CC-Link connection	
								ID <sup>*2</sup>	G4 <sup>*3</sup>
Servo monitor	Monitors the present value, positioning error and other servo-related items on a variety of monitor screens.		○		○	○	○	○	○
Parameter settings	Changes the setting of the servo parameter.								

- \*1 Indicates the CC-Link IE controller network connection.
- \*2 Indicates CC-Link connection (Intelligent device station).
- \*3 Indicates CC-Link connection (via G4).
- \*4 Q motion monitor cannot be used when using CC-Link IE field network Ethernet adapter.

## ■ Required extended system application

The extended system applications shown below are required.

➡ 1.2 Required extended system application for the function

### (1) Extended system application

Write the package data that has the extended system application for the Q motion monitor to the GOT.  
For the communication method with the GOT, refer to the following.

➡ GT Designer3 (GOT2000) Help

### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

➡ GT Designer3 (GOT2000) Help

## ■ Required special data

Write the Q motion monitor data to the GOT.

The available memory space of the user area for writing varies depending on the Q motion monitor data to be used. Refer to the capacity of the Q motion monitor data in the following table and calculate the required space for writing. For the procedure for writing to the GOT and for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

➡ GT Designer3 (GOT2000) Help

## ■ Servo amplifiers whose parameter can be set

The Q motion monitor allows you to set the parameter of servo amplifiers shown below.

Motion controller CPU	Servo amplifier
Q172CPU, Q173CPU	MR-H-B, MR-J-B, MR-J2-B, MR-J2S-B, MR-J2M, MR-J2-03B5
Q172HCPU, Q173HCPU	MR-J3-B, MR-J3-BS, MR-J3W-B, MR-J3-B-RJ006, MR-J3-B-RJ004
Q172DCPU, Q173DCPU, Q170MPCPU	MR-J3-B, MR-J3-BS, MR-J3W-B, MR-J3-B-RJ006, MR-J3-B-RJ004, MR-J3-B-RJ080W
Q172DSCPU, Q173DSCPU, Q170MSCPU	MR-J3-B, MR-J3-BS, MR-J3W-B, MR-J3-B-RJ006, MR-J3-B-RJ004, MR-J3-B-RJ080W, MR-J4-B, MR-J4W-B

## 6.2.2 Access range

---

For the MELSECNET/H, MELSECNET/10, and CC-Link IE controller network connections, the GOT can monitor the motion controller CPU on the control station only.  
In CC-Link connection (Intelligent device station), only the motion controller CPU in master station can be monitored.  
In Ethernet connection, only the motion controller CPU in host station can be monitored.  
The access range other than that mentioned above is the same as the access range when the GOT is connected to a controller.  
For details of the access range, refer to the following.

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

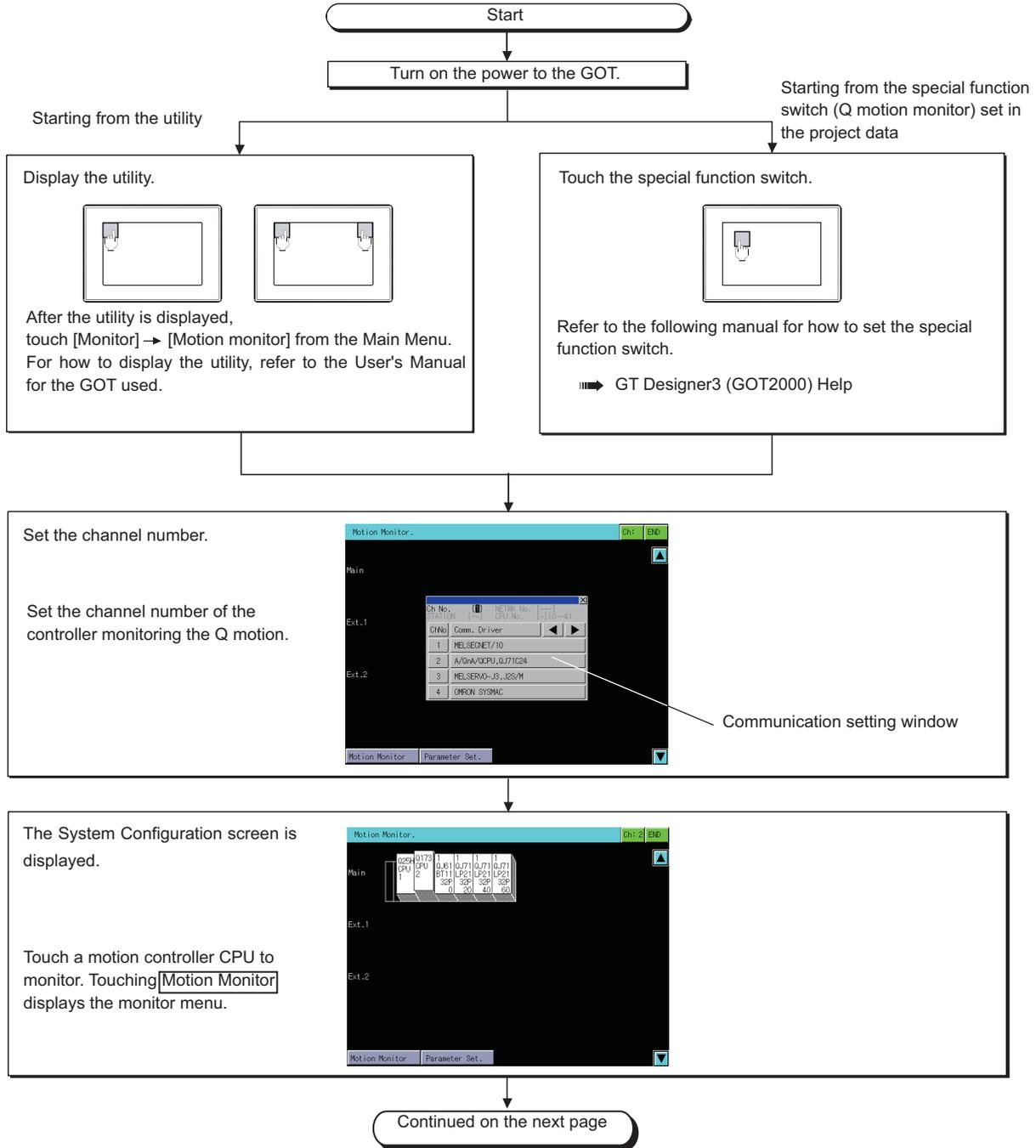
## 6.2.3 Precautions

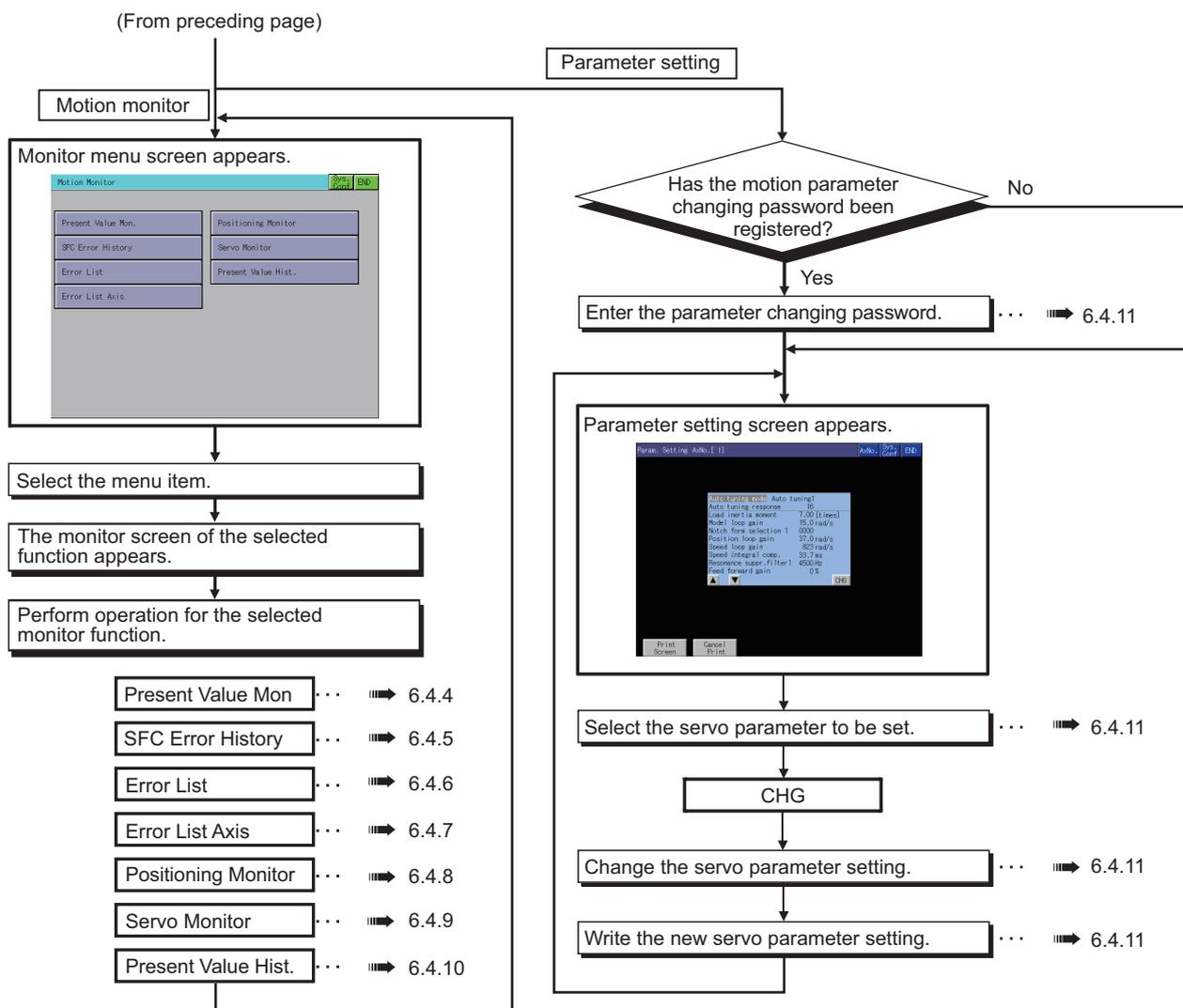
---

- (1) **Main OS software package for motion controller**  
The only Main OS software package that can be used is SV13 or SV22.
- (2) **When setting parameters for Q172HCPU or Q173HCPU**  
When setting parameters for Q172HCPU or Q173HCPU, after parameter entry, set the switch on the CPU to STOP and RUN again, or reset the CPU.

# 6.3 Operations for Display

This section describes the flow until the Q motion monitor operation screen is displayed after the Q motion monitor (Option OS) is installed in the GOT.





## POINT

### (1) How to display the utility

For how to display the utility, refer to the following.

➡ User's Manual for the GOT used

### (2) Displaying communication setting window

After turning on the GOT, the communication setting window is displayed at the first startup of the Q motion monitor only.

For displaying the communication setting window at the second or later startup, touch the Ch: button on the Q motion monitor screen. ( ➡ 6.4 Operation Procedures)

### (3) If the project data has not been downloaded

The Q motion monitor can be started from the utility even if the project data has not been downloaded to the GOT.



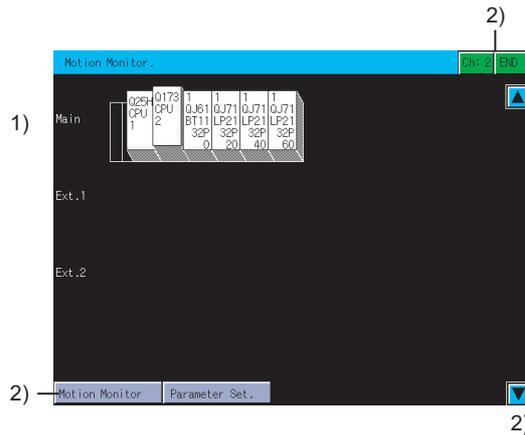
## 6.4 Operation Procedures

This section explains screen operations to be performed when using the Q motion monitor. The display screen of the Q motion monitor varies slightly with the GOT used. This section mainly uses the screen of the GT1575-V for explanation.

### 6.4.1 System configuration screen layout

This section describes the configuration of the System Configuration screen that is displayed after startup of the Q motion monitor and the functions of the keys displayed on the screen.

#### ■ Displayed contents



No.	Description
1)	The CPU numbers are displayed for CPUs and the control CPU number for the installed module. To choose the motion controller CPU for servo monitor/servo parameter setting, touch the respective display position.
2)	Displays the keys used with the operation on the System Configuration screen.(Touch input)

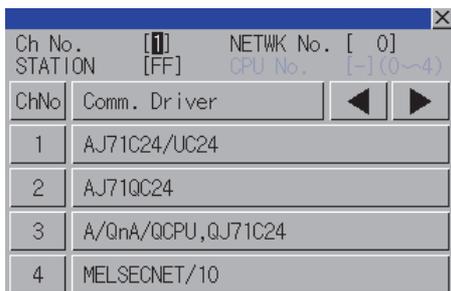
#### ■ Key functions

The table below shows the functions of the keys that are used for the operation on the System Configuration screen.

Key	Function
	Displays the communication setting window.
	Exits the monitor and returns to the screen where the Q motion monitor was started.
	Selects the motion controller CPU where servo monitor/servo parameter setting is performed.
	Changes the System Configuration screen to the monitor menu screen. ( → 6.4.3 Monitor Menu screen)
	Changes the System Configuration screen to parameter setting screen. ( → 6.4.11 Parameter setting screen)
	Scrolls the display one stage up or down to display the system configuration of the currently undisplayed stage immediately before/after the currently displayed stage. : Scrolls down one stage. : Scrolls up one stage.

## 6.4.2 Setting method for other station monitoring

The following shows the setting methods for monitoring other stations with Q motion monitor.



1. In the communication setting window, select one from channels No.1 to 4.  
For the operation on the communication setting screen, refer to the following.

➡ (1) Communication setting window

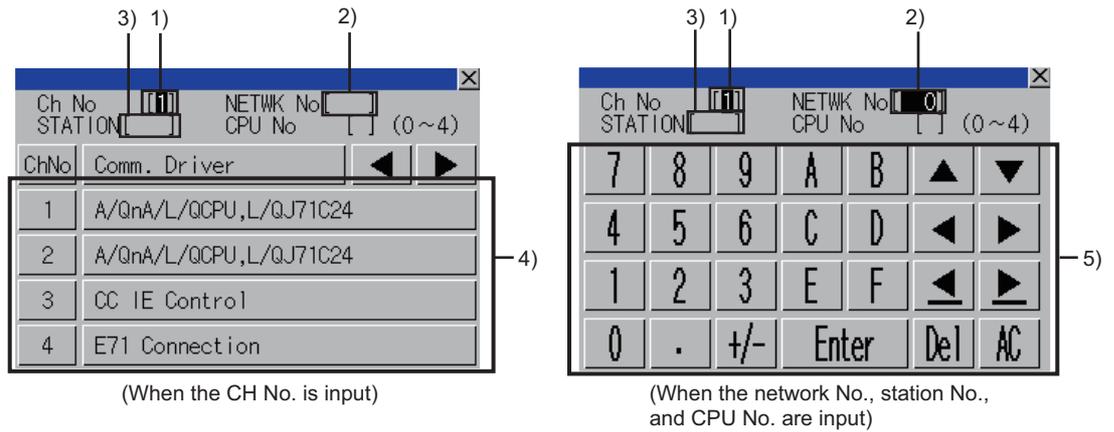


2. When the channel No. is selected, the screen on the left is displayed.  
Set the network number of the target controller and the CPU station number.

3. After selecting the station number, touch the enter key. The communication setting window closes and the system configuration of the set monitor destination is displayed.

## (1) Communication setting window

### (a) Displayed screen



The following table shows the displayed contents.

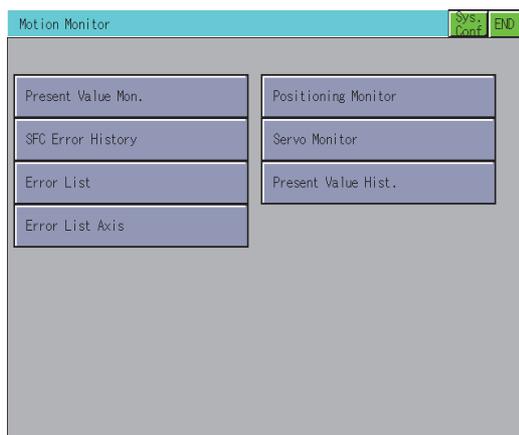
No.	Item	Description	Setting range
1)	CH No. input area	Set the CH No. for the target controller.	1 to 4
2)	Network No. input area	Set the network No. for the target controller.	Differs depending on the connection type. <ul style="list-style-type: none"> <li>Bus connection, direct CPU connection, computer link connection: 0</li> <li>Ethernet connection, CC-Link IE controller network connection: 1 to 239</li> <li>MELSECNET/H, MELSECNET/10: 0 (host loop) / 1 to 255 (specified loop)</li> <li>CC-Link (ID/G4) connection: 0</li> </ul>
3)	Station No. input area	Set the station No. of the target controller. When the station No. is set to the host station (FF), set the network No. to 0.	Differs depending on the connection type. <ul style="list-style-type: none"> <li>Bus connection, direct CPU connection, computer link connection: FF (host station)</li> <li>Ethernet connection: 1 to 64</li> <li>MELSECNET/H, MELSECNET/10: 0 (master station) / 1 to 64 (local station)</li> <li>CC-Link IE controller network connection: 1 to 120</li> <li>CC-Link (ID/G4) connection: 0 (master station) / 1 to 64 (local station)</li> </ul>
4)	CH No. selection key	Select a CH No.	-
5)	Keys	Keys for operations in the communication setting window shown in (b). (Touch input)	-

### (b) Key functions

Key	Function
	Closes the communication setting window. When any of the CH No., network No., station No., and CPU No. is not input and the monitor target is not set, the communication setting window does not close.
	Moves the cursor among the input areas.
	Deletes all the input values and characters.
	Deletes an input value or character.
	Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area. When the cursor is in the CPU No. input area and settings for the CH No., network No., and station No. are completed, the communication setting window closes and the PLC read screen appears.

## 6.4.3 Monitor Menu screen

The Q motion monitor allows you to monitor various servo monitor data on multiple monitor screens. To display any of the monitor screens, make a selection on the monitor menu screen.

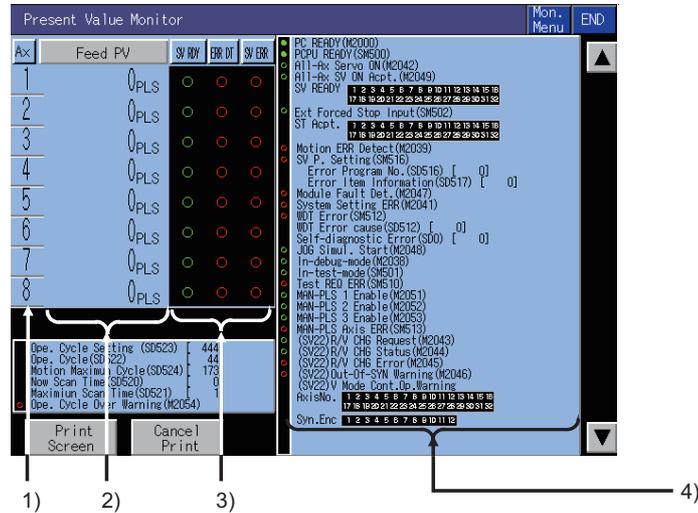


Item	Description
Present Value Mon.	Monitors and displays the feed current values and actual current values of all running axes. (  6.4.4 Present Value Monitor screen)
SFC Error History	Displays the history of errors that occurred in SFC programs from when the motion CPU was powered on or reset. (  6.4.5 SFC Error History screen)
Error List	Displays the history of errors that occurred on and after the leading edge of PLC ready (M2000). (  6.4.6 Error List screen)
Error List Axis	Displays the latest errors that occurred on the specified axis. (  6.4.7 Error List Designated-Axis screen)
Positioning Monitor	Monitors the details of the positioning data set to any axis. (  6.4.8 Positioning Monitor screen)
Servo Monitor	Monitors the servo monitor/servo amplifier. (  6.4.9 Servo Monitor screen)
Present Value Hist.	Displays the history of encoder present values, servo command values and monitor present values of the ABS axis at servo amplifier power-on/off or at home position return. (  6.4.10 Present Value History Monitor screen)

## 6.4.4 Present Value Monitor screen

This section describes the display data of the Present Value Monitor screen and the key functions displayed on the screen.

### ■ Displayed contents



No.	Item	Function
1)	Ax	The axis numbers of the running axes being monitored are displayed.
2)	Feed PV/Actual PV	The feed present values or actual present values of the running axes are displayed. Touching the display part of the monitored value switches to the positioning monitor screen of the touched axis number. ( ➡ 6.4.8 Positioning Monitor screen)
3)	SV RDY, ERR DT, SV ERR	Whether the servo ready signals, major/minor errors and servo error detection signals are ON (lit) or OFF (not lit) are displayed. Touching the error indication part "●" switches to the Error List Designated-Axis screen of the touched axis number. ( ➡ 6.4.7 Error List Designated-Axis screen)
4)	Bit device screen	The common bit devices are always monitored and displayed. <ul style="list-style-type: none"> <li>• Error detection type bit devices . . . . . Displayed in red</li> <li>• General status type bit devices . . . . . Displayed in green</li> </ul>

### ■ Key functions

The table below shows the functions of the keys used for operation of the Present Value Monitor screen.

Key	Function
<div style="border: 1px solid gray; padding: 2px; display: inline-block; margin-bottom: 5px;">Feed PV</div> / <div style="border: 1px solid gray; padding: 2px; display: inline-block; margin-bottom: 5px;">Actual PV</div>	Touching the key alternates the monitor item between the "feed present value" and "actual present value". (Only in the real mode)
<div style="border: 1px solid blue; padding: 2px; display: inline-block; color: blue;">Mon. Menu</div>	Returns to the monitor menu screen.
<div style="border: 1px solid blue; padding: 2px; display: inline-block; color: blue;">END</div>	Exits the present value monitor and returns to the screen where the Q motion monitor was started.
<div style="display: inline-block; border: 1px solid gray; padding: 2px; margin-right: 10px;">▲</div> <div style="display: inline-block; border: 1px solid gray; padding: 2px;">▼</div>	Switches the displayed axis number. (Displayed only for Q173CPU, Q173HCPU, Q173DCPU, Q170MCP, Q172DSCPU, and Q173DSCPU monitoring.)
<div style="border: 1px solid gray; padding: 2px; display: inline-block;">Print Screen</div>	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: ➡ 6.4.12 Hard copy output
<div style="border: 1px solid gray; padding: 2px; display: inline-block;">Cancel Print</div>	The operation of this key is invalid.

## 6.4.5 SFC Error History screen

This section describes the display data of the SFC Error History screen and the key functions displayed on the screen.

### ■ Displayed contents

SFC Error History screen displays the history of error which occurs in the motion SFC programs.

M/ D H: M	Program No. SFC-F/G/K-BKNo.	Err Code	Error Definition
5/31 7: 4	SFC F/G/K Block	1500	AC/DC DMM Detection The momentary power interruption was generated. The power supply was turned off.
6/ 6 10: 4	SFC F/G/K Block	1500	AC/DC DMM Detection The momentary power interruption was generated. The power supply was turned off.
7/ 7 23:35	SFC F/G/K Block	7031	CPU LAY.ERROR An assignment error occurred in the CPU installation slot (the range of the parameter for setting the number of CPUs).
7/ 7 23:35	SFC F/G/K Block	1500	AC/DC DMM Detection The momentary power interruption was generated. The power supply was turned off.
9/ 1 2:14	SFC F/G/K Block	1500	AC/DC DMM Detection The momentary power interruption was generated. The power supply was turned off.
9/ 1 3:10	SFC F/G/K Block	1500	AC/DC DMM Detection The momentary power interruption was generated. The power supply was turned off.
9/ 1 3:16	SFC F/G/K Block	1500	AC/DC DMM Detection The momentary power interruption was generated. The power supply was turned off.
9/ 1 3:40	SFC F/G/K Block	1500	AC/DC DMM Detection The momentary power interruption was generated. The power supply was turned off.

No.	Item	Description
1)	M/D H:M	Displays the dates and time when SFC errors occurred. The eight latest errors are displayed for the history of errors. The 128 errors are displayed for Q172DCPU, Q173DCPU, Q170MCP, Q172DSCPU, and Q173DSCPU.
2)	Program No.	Displays the SFC program numbers where SFC errors occurred.
3)	Err Code	Displays the error codes of the errors that occurred.
4)	Error Definition	Displays the definitions of the SFC errors that occurred.
5)	Page	Displays the page number and the total number of pages of the SFC error history. (Only with Q172DCPU, Q173DCPU, Q170MCP, Q172DSCPU, and Q173DSCPU)

### ■ Key functions

The table below shows the functions of the keys used for operation of the SFC Error History screen.

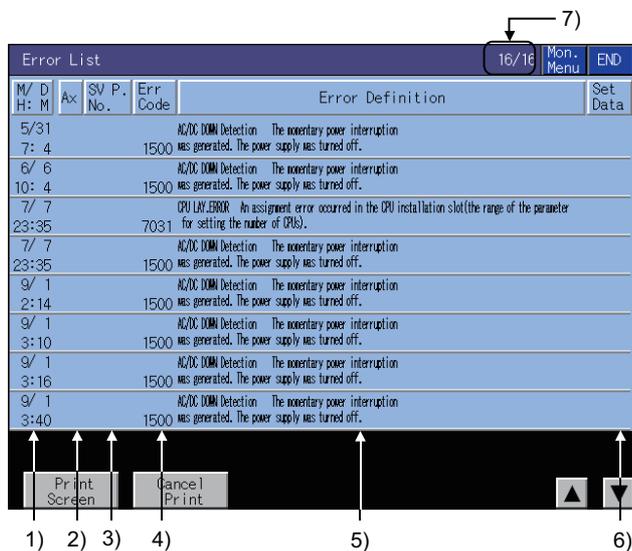
Key	Function
Mon. Menu	Returns to the monitor menu screen.
END	Exits the SFC Error History screen and returns to the screen where the Q motion monitor was started.
Print Screen	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: ( 6.4.12 Hard copy output)
Cancel Print	The operation of this key is invalid.
History Clear	Clears the error history. (Only with Q172DCPU, Q173DCPU, Q170MCP, Q172DSCPU, and Q173DSCPU)
▲ ▼	Scrolls the history display up and down by eight histories when the SFC error history is displayed. (by four histories for QVGA) (Only with Q172DCPU, Q173DCPU, Q170MCP, Q172DSCPU, and Q173DSCPU)

## 6.4.6 Error List screen

This section describes the display data of the Error List screen and the key functions displayed on the screen.

### ■ Displayed contents

The error list screen displays the error which occurs in the motion controller CPU.  
(Errors occurred in motion SFC programs are also displayed.)



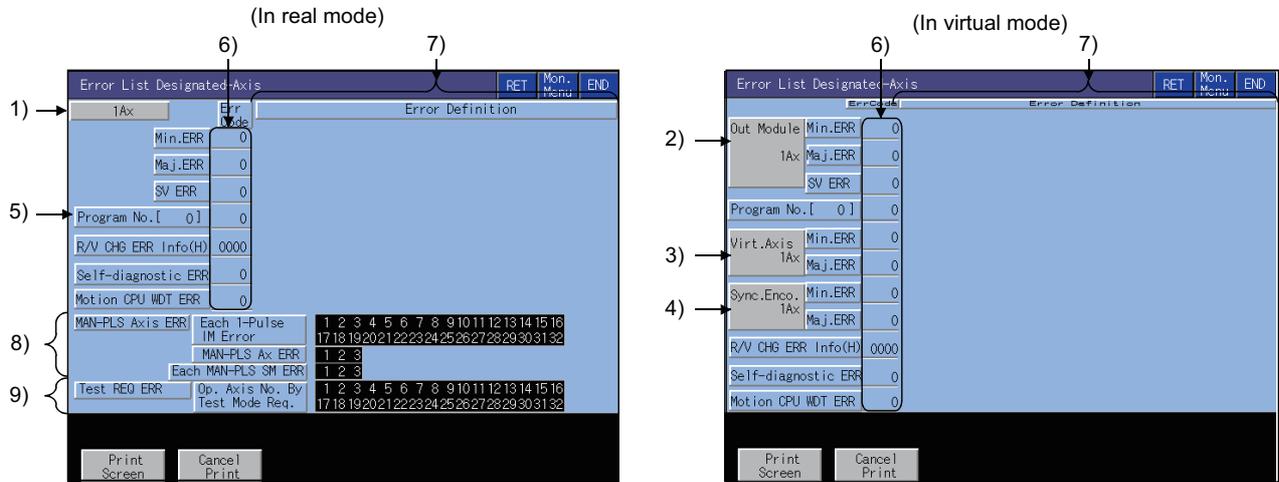
No.	Item	Description
1)	M/D H:M	The dates and time when errors occurred are displayed. The eight latest errors are displayed. The 128 errors are displayed for Q172DCPU, Q173DCPU, Q170MCP, Q172DSCPU, and Q173DSCPU.
2)	Ax	The axis numbers and axis types of the axes where errors occurred are displayed. Virtual axis : Virtual Synchronous encoder axis : Sync
3)	SV P. No.	The servo program numbers that were being executed when the error occurred are displayed. The execution destination of the servo program in error is not displayed.Using the servo program number, refer to the execution destination.
4)	Err Code	Displays the types and error codes of the errors that occurred. The error types are displayed as indicated below. <ul style="list-style-type: none"> <li>• Minor error . . . . . Minor</li> <li>• Major error . . . . . Major</li> <li>• Servo error . . . . . Servo</li> <li>• Servo program setting error . . . . . Servo P</li> <li>• Real/virtual switching . . . . . Switch</li> <li>• Test mode request error . . . . . Test</li> <li>• Manual pulse generator setting error . . . . . Manual</li> <li>• PCPU ERROR . . . . . P-WDT</li> <li>• SSCNET ERROR . . . . . Communication error</li> </ul>
5)	Error Definition	The definitions of the errors that occurred are displayed.
6)	Set Data	The program number in error is displayed if the set data has any errors.
7)	Page	Displays the page number and the total number of pages of the error list. (Only with Q172DCPU, Q173DCPU, Q170MCP, Q172DSCPU, and Q173DSCPU)



## 6.4.7 Error List Designated-Axis screen

This section describes the display data of the Error List Designated-Axis screen and the key functions displayed on the screen.

### ■ Displayed contents



No.	Item	Description	
1)	Axis No.	Displays the axis number currently being monitored.	
2)	Out Module	Displays the output module axis number currently being monitored.	
3)	Virt. Axis	Displays the virtual axis number currently being monitored.	
4)	Sync. Enco.	Displays the synchronous encoder axis number currently being monitored.	
5)	Program No.	Displays the servo program numbers that were being executed when the error occurred.	
6)	Err Code	Displays the error codes of the minor/major/servo error, servo program setting error, real/virtual switching error information (error code: hexadecimal), personal computer link communication error code and motion CPU WDT error that are currently occurring.	
7)	Error Definition	Displays the definitions of the errors that occurred.	
8)	MAN-PLS Axis ERR	Each 1-Pulse 1M Error	Displays the axes where a 1-pulse input magnification setting error occurred.
		MAN-PLS Ax ERR	Displays the errors of the axis numbers set to the manual pulse generators P1 to P3.
		Each MAN-PLS SM ERR	Displays the errors of the smoothing magnifications set to the manual pulse generators P1 to P3.
9)	Test REQ ERR	Displays the axis numbers that are being started at a test mode request.	

## ■ Key functions

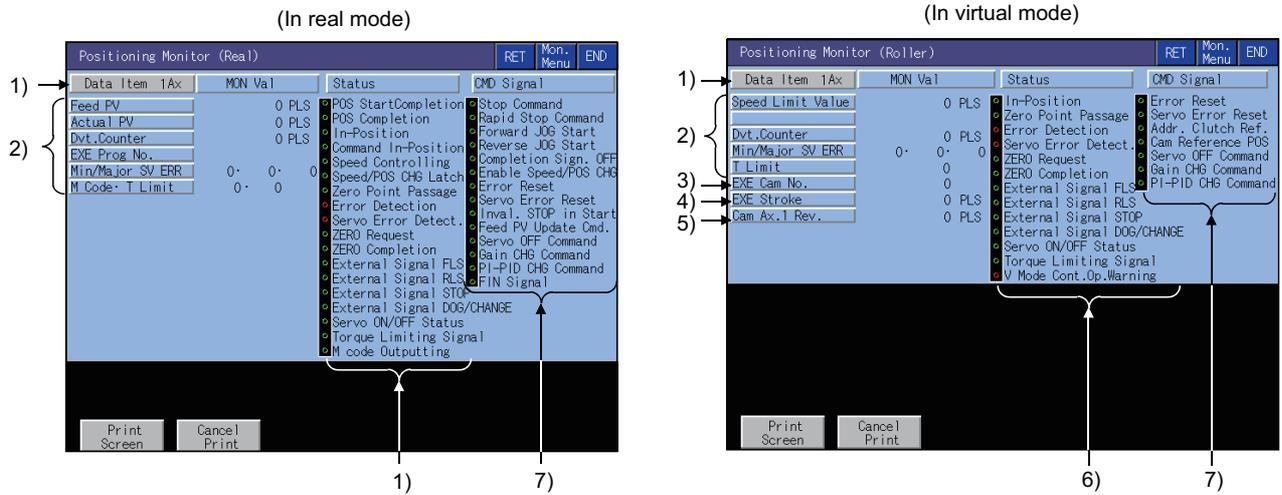
The table below shows the functions of the keys that are used for the operation of the Error List Designated-Axis screen.

Key	Function
 (Only in the real mode)  /  /  (Only in the virtual mode) (Display example: When axis 1 is monitored)	Switches the axes to be monitored.
	Returns to the previous screen.
	Returns to the monitor menu screen.
	Exits the Error List Designated-Axis monitor screen and returns to the screen where the Q motion monitor was started.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following:  6.4.12 Hard copy output
	The touch operation of this key is invalid.

## 6.4.8 Positioning Monitor screen

This section describes the display data of the Positioning Monitor screen and the key functions displayed on the screen.

### ■ Displayed contents



No.	Item	Description
1)	Data Item	Displays the axis numbers of the running axes being monitored. For the virtual axis, the axis type is displayed. <ul style="list-style-type: none"> <li>• Roller</li> <li>• Ballscrew</li> <li>• Rotary table</li> <li>• Cam</li> </ul>
2)	Feed PV	Displays the data during positioning control of the PCPU. <ul style="list-style-type: none"> <li>• Feed PV : Target address output to the servo amplifier (value of the roller surface speed for the roller axis)</li> <li>• Actual PV : Actually traveled present value (no value is displayed for the roller axis)</li> <li>• Dvt. Counter : Difference between feed present value and actual present value</li> <li>• EXE Prog No. : Servo program number in execution</li> <li>• Min/Major SV ERR : rror code of the latest minor/major/servo error</li> <li>• M Code • T Limit : The M code and torque limit of the servo program in execution</li> </ul>
3)	EXE Cam No.	Displays the cam number currently controlled.
4)	EXE Stroke	Displays the stroke amount currently controlled.
5)	Cam Ax. 1 Rev.	Displays the present value within one cam axis revolution pulse.
6)	Status	Displays ON and OFF of the symbols that represent the axis-by-axis control statuses. <ul style="list-style-type: none"> <li>• In the ON status, the symbol is lit green.</li> <li>• At error or servo error detection, the symbol is lit red.</li> </ul>
7)	CMD Signal	Displays ON and OFF of the positioning command signals. In the ON status, the signal is lit green.

## ■ Key functions

The table below shows the functions of the keys used for operation of the positioning monitor screen.

Key	Function
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Data Item 1Ax</div> (Display example: When axis 1 is monitored)	Changes the axes to be monitored.
<div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #0056b3; color: white;">RET</div>	Returns to the previous screen.
<div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #0056b3; color: white;">Mon. Menu</div>	Returns to the monitor menu screen.
<div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #0056b3; color: white;">END</div>	Exits the positioning monitor and returns to the screen where the Q motion monitor was started.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Print Screen</div>	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: <div style="margin-left: 20px;">➡ 6.4.12 Hard copy output</div>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Cancel Print</div>	The operation of this key is invalid.

## 6.4.9 Servo Monitor screen

This section describes the display data of the Servo Monitor screen and the key functions displayed on the screen.

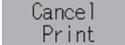
### ■ Displayed contents



No.	Item	Description
1)	Ax	Displays the axis number currently being monitored.
2)	Motor Speed	Displays the actual speed of the servo motor.
3)	Motor Current	Displays the motor current value at the rated current of 100%.
4)	Servo Alarm	Displays the alarm detected by the servo amplifier.

### ■ Key functions

The table below shows the functions of the keys that are used for operation of the servo monitor screen.

Key	Function
 (Display example: When axis 1 is monitored)	Changes the axes to be monitored.
	Returns to the monitor menu screen.
	Exits the servo monitoring and returns to the screen where the Q motion monitor was started.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following:  6.4.12 Hard copy output
	The operation of this key is invalid.

## 6.4.10 Present Value History Monitor screen

This section describes the display data of the Present Value History Monitor screen and the key functions displayed on the screen.

### ■ Displayed contents

Item	M/ D H: M	Encoder PV Multi Rev/1Rev	SV CMD Val	Monitor PV	ALM
HP Data	0/ 0 0: 0	OH·	OH	OH	0 ----
MON Val	2/24 13:32	OH·	OH	OH	0.0000 ----
PWR ON1	2/24 12:47	OH·	OH	OH	0.0000 0
PWR OFF1	2/24 12:47	OH·	OH	OH	0.0000 ----
PWR ON2	2/24 12:46	OH·	OH	OH	0.0000 0
PWR OFF2	2/24 12: 1	OH·	OH	OH	0.0000 ----
PWR ON3	2/24 11:57	OH·	OH	OH	0.0000 0
PWR OFF3	2/24 11:57	OH·	OH	OH	0.0000 ----
PWR ON4	2/24 11:54	OH·	OH	OH	0.0000 0

No.	Item	Description
1)	Ax	Displays the axis number of the axis currently being monitored.
2)	HP Data	Displays the following values monitored at home position return. <ul style="list-style-type: none"> <li>• Home position return completion time</li> <li>• Encoder present value <ul style="list-style-type: none"> <li>Multi-revolution data of absolute position reference point data</li> <li>Within-one-revolution position of absolute position reference point data</li> </ul> </li> <li>• Servo command value</li> <li>• Monitor present value</li> </ul>
3)	MON Val	Displays the following present monitor values. <ul style="list-style-type: none"> <li>• Present time</li> <li>• Encoder present value <ul style="list-style-type: none"> <li>Present multi-revolution data of encoder present value</li> <li>Present within-one-revolution position of encoder present value</li> </ul> </li> <li>• Present servo command value</li> <li>• Present monitor present value</li> </ul>
4)	PWR ON/PWR OFF	Displays the four past present values of the ABS axis at servo amplifier power-on/off. <p>[At power-on]</p> <ul style="list-style-type: none"> <li>• Power-on time</li> <li>• Encoder present value <ul style="list-style-type: none"> <li>Multi-revolution data of initial encoder</li> <li>Single-revolution data of initial encoder</li> </ul> </li> <li>• Servo command value after recovery</li> <li>• Monitor present value after recovery</li> <li>• Alarm occurrence information at present value recovery (error code of minor/major error)</li> </ul> <p>[At power-off]</p> <ul style="list-style-type: none"> <li>• Servo amplifier power-off time</li> <li>• Encoder present value <ul style="list-style-type: none"> <li>Multi-revolution data of encoder present value before servo amplifier power-off</li> <li>Single-revolution data of encoder present value before servo amplifier power-off</li> </ul> </li> <li>• Servo command at servo amplifier power-off</li> <li>• Monitor present value at servo amplifier power-off</li> </ul>

## ■ Key functions

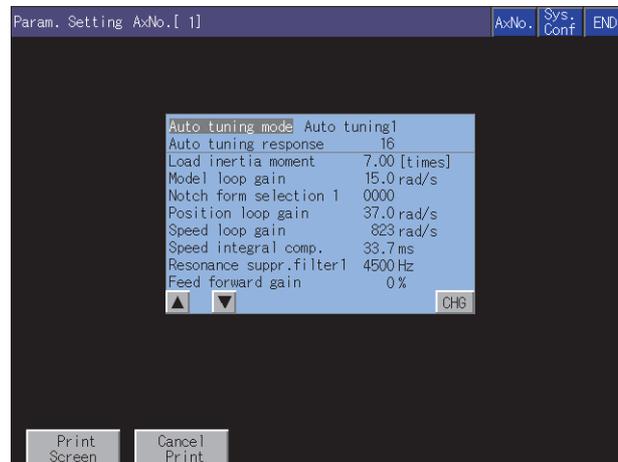
The table below shows the functions of the keys used for operation of the Present Value History Monitor screen.

Key	Function
 (Display example: When axis 1 is monitored)	Changes the axes to be monitored.
	Returns to the monitor menu screen.
	Exits the Present Value History Monitor screen and returns to the screen where the Q motion monitor was started.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: ■▶ 6.4.12 Hard copy output
	The touch operation of this key is invalid.

## 6.4.11 Parameter setting screen

You can set the servo parameters (basic parameters/adjustment parameters) of the connected motion controller CPU. This section describes the display data of the parameter setting screen and the key functions displayed on the screen.

### ■ Displayed screen



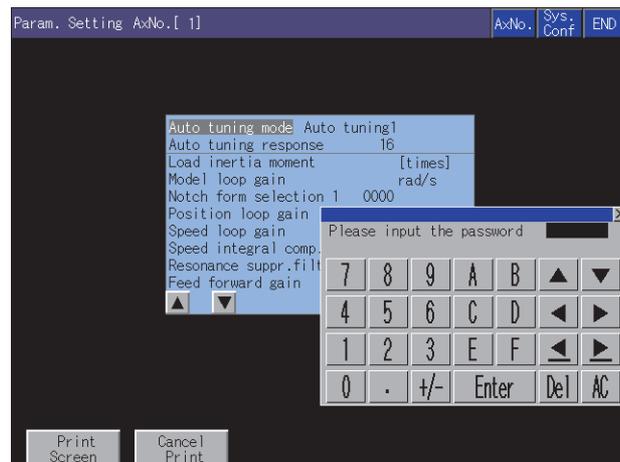
### ■ Key functions

The table below shows the functions of the keys that are used with the operation on the parameter setting screen.

Key	Function
	Changes the servo parameter setting of the selected item.
	Selects the servo parameter setting item.
	Changes the axis whose parameter setting will be made.
	Returns to the System Configuration screen.
	Exits the parameter setting and returns to the screen where the Q motion monitor was started.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: ➡ 6.4.12 Hard copy output
	The touch operation of this key is invalid.

## ■ Inputting the password

The password input key window appears for accessing the parameter setting screen when the password setting data for changing motion parameters is written to the GOT with GT Designer3.



### (1) Function

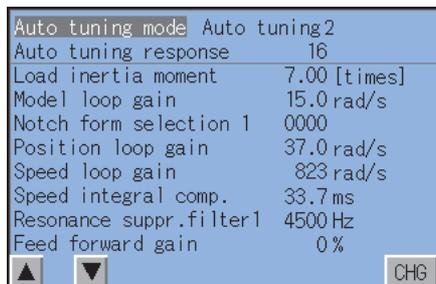
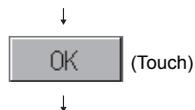
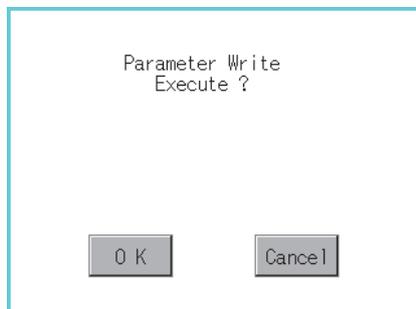
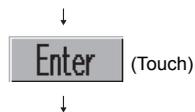
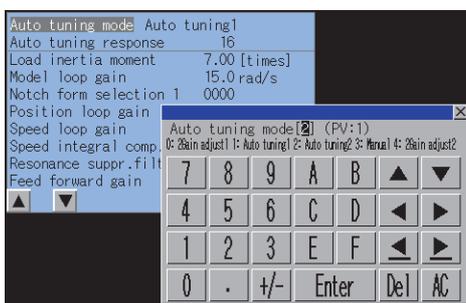
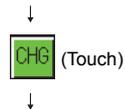
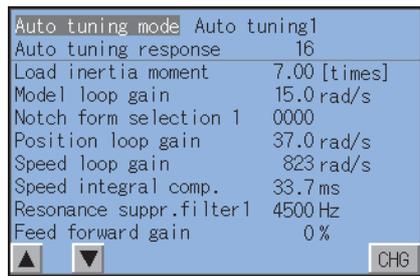
- If the password matches, the parameter setting screen is displayed.
- If the password does not match, an error message is displayed. Touching **Sys. Conf** returns to the System Configuration screen.
- Only numbers and letters A to F can be used for the password setting. (Up to 8 characters)
- The password for changing the motion parameters is set with GT Designer3.  
For details of the setting password, refer to the following.  
    ▶▶▶ GT Designer3 (GOT2000) Help

### (2) Operations

- (a) Inputting the password  
Touch the key window and enter a password.  
After entering the password, touch **Enter** to set the password.  
To edit the input characters, touch **Del** to delete the characters, and then input the new characters.
- (b) Canceling password input  
Touch **X** to return to the monitor screen.

## Parameter setting operation

The following describes the procedure of changing the setting of the [Auto Tuning] item as an example of the parameter setting operation.



1. Select the item whose parameter is to be set with the , keys, and touch the key.

2. As the parameter setting window appears, enter the parameter setting with , and touch to confirm the setting.

To cancel the parameter setting operation, touch at the top right of the screen to close the parameter setting window.

3. As the confirmation window appears, touch to write the parameter setting to the motion controller CPU.

To cancel writing of the parameter setting, touch .

4. After writing is completed, the parameter setting screen whose display has been updated to the new parameter setting is displayed.

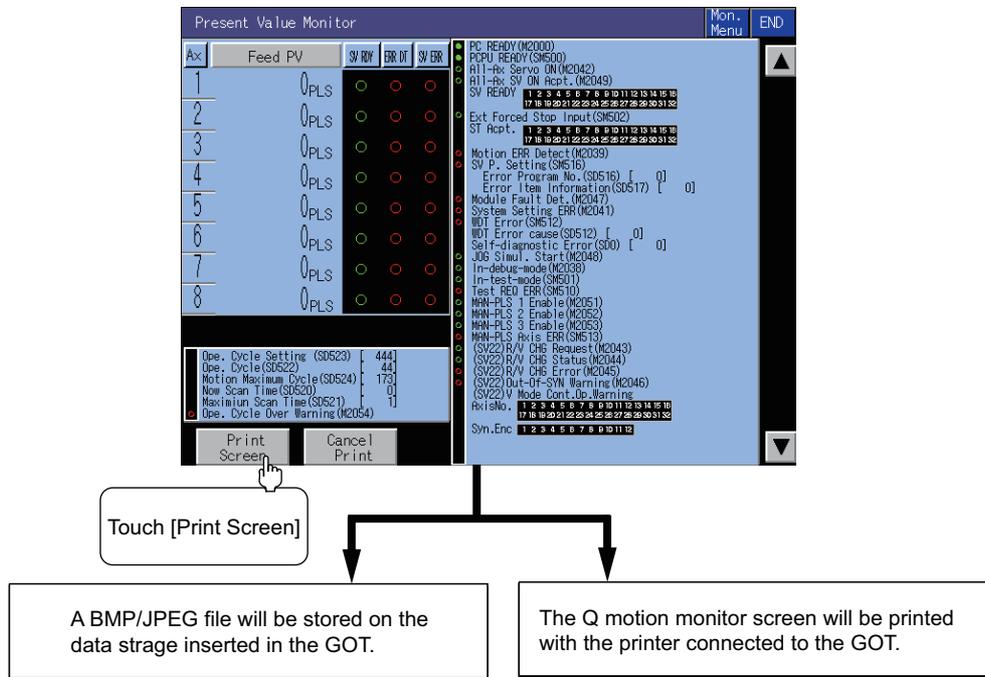
## 6.4.12 Hard copy output

This section describes how to store a screen to the data storage in BMP/JPEG file format or print it with a printer when executing the Q motion monitor.

Hard copy methods differ depending on the GOT to be used.

### (1) GOT with VGA or higher resolution

Hard copy output operations are performed by touching the "Print Screen" or "Cancel Print" key displayed on the screen.



### (2) GOT with QVGA resolution

Hard copy output operations are performed by turning ON/OFF the start or abort trigger device that has been set in the GT Designer3.

#### POINT

- Install the extended function OS (Printer) to the GOT when printing a Q motion monitor screen.
  - The output target (data storage) of hard copy can be set in [Hard Copy] of GT Designer3.
- For details of hard copy setting, refer to the following.

- ➡ GOT2000 Series User's Manual (Utility)
- ➡ GT Designer3 (GOT2000) Help

## 6.5 Error Messages and Corrective Action

This section describes the error messages that may be displayed during Q motion monitor operation and their corrective action.

Error message	Error definition	Corrective action
No. PLC Communications	Communication cannot be established with the PLC CPU of the monitor target.	<ul style="list-style-type: none"> <li>• Check the status of the connection between the controller and the GOT (disconnected or cut cables).</li> <li>• Check if an error has occurred in the controller.</li> </ul>
This PLC type is not supported	A motion controller CPU that cannot be monitored was selected on the System Configuration screen.	Select a motion controller CPU that can be monitored on the System Configuration screen. (  6.2.1 ■Target motion controller CPU of the Q motion monitor)
Controller's OS type is different	The motion controller OS installed in the motion controller CPU (Q172CPU, Q173CPU) of the monitor target is other than SV13 or SV22.	Install SV13 or SV22 in the motion controller CPU (Q172CPU, Q173CPU) of the monitor target as the motion controller OS.
It is not a version for GOT	The version of the motion controller OS installed in the motion controller CPU of the monitor target is not compatible with the Q motion monitor.	Install a motion controller OS that is compatible with the Q motion monitor in the motion controller. (  GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1)
Monitor data not found	The monitor data was not installed or was deleted.	Download the monitor data of the motion monitor.
Unused axis selected	The axis number selected has not been set.	<ul style="list-style-type: none"> <li>• Select the axis number that has been set.</li> <li>• Set the axis using the peripheral software.</li> </ul>
It is not possible to select	During servo parameter setting, an item that cannot be set has been selected.	Select an item that can be set.
Incorrect setting range	A value that is outside the setting range has been set.	Set the value within the setting range.
Unmatched password	The password that was input as the motion parameter changing password is incorrect.	Input the correct password.
Communication channel setup error	A communication driver that is compatible with the Q motion monitor is not installed.	Install a compatible communication driver.
Unsupport amp. selected	The axis number set with a servo amplifier whose parameter cannot be set has been selected.	Set the axis number with a servo amplifier whose parameter can be set.

### POINT

#### How to clear a displayed error message

For errors that occur with the connection to a controller (communication error, etc.), the error message does not disappear even after the cause of the error has been removed.

To delete the error message, restart the GOT.

# 7. INTELLIGENT MODULE MONITOR

GT 27 GT 23 Soft GOT 2000

## 7.1 Features

With the intelligent module monitor, you can use dedicated screens to monitor the buffer memory of the intelligent function module and make changes to the data. In addition, you can monitor the signal statuses of the I/O modules. The features of the intelligent module monitor are described below.

### ■ Realized monitoring with dedicated screens

You can monitor the intelligent function module(s) and I/O module(s) and make changes to the data using dedicated screens.

There is no need to create screens for monitoring or data changes, thereby reducing the drawing workload.

#### (1) For intelligent function module

As a menu of monitor items is displayed, select an item from the menu, and the corresponding monitor screen is then displayed.

Details of the buffer memory and the I/O signal statuses between the buffer memory and the PLC CPU are displayed in text, numerical values, and graphs on the monitor screens.

Select a monitor from the menu



Select a menu

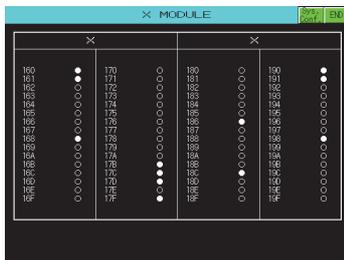
Monitor screen



#### (2) For I/O module

The status of I/O signals to and from an external module is monitored.

Monitor screen



## ■ Enabled data change by write operations

The values are written into the buffer memory of the intelligent function module by writing values from the monitor screen.

(Writing example)

Monitor screen

X	Y	Parameter	Data	Monitor	Screen	X Axis	Y Axis	X	Y	ABCD	DEF	GH	JKL	MNO	PQR	STU		
Y10	Y11	Posit. Start	Travel/Pulse					X	00000000	10/0000							ABCD	DEFF
Y12	Y13	Interpolation	Inching Trav.					Y	ABCD	DEFF								
X02	X03	Posit. Comp							11111011	11111111								
X04	X05	Zero Request	Speed Limit	120	120													
Y13	Y14	Zero Start	Acc/Dec Limit	100	100													
X03	X04	Zero Complete	Acc/Dec Time	1000	1000													
Y17	Y18	Find Jog Start	Backlash Comp	-6	2550													
Y18	Y14	Rev. Jog Start	Upper Limit	100	100													
Y15	Y16	Stop	Lower Limit	0	0													
X08	X09	Pos. Started	Error Comp.	0	0													
X04	X05	Blk																
X0E	X0F	M Code ON	Starting Bias	0	0													
X00	X0T	Err. Man. Pulse	Cmp. I./O.P. Time	300	300													
X01	X02	Err. Enable	Code/ErrCode	0	04													
X03	X04	Error																

Select writing



When changing a change-permitted channel

X	Y	Parameter	Data	Monitor	Screen	X Axis	Y Axis	X	Y	ABCD	DEF	GH	JKL	MNO	PQR	STU		
Y10	Y11	Posit. Start	Travel/Pulse					X	00000000	10/0000							ABCD	DEFF
Y12	Y13	Interpolation	Inching Trav.					Y	ABCD	DEFF								
X02	X03	Posit. Comp							11111011	11111111								
X04	X05	Zero Request	Speed Limit	120	120													
Y13	Y14	Zero Start	Acc/Dec Limit	100	100													
X03	X04	Zero Complete	Acc/Dec Time	1000	1000													
Y17	Y18	Find Jog Start	Backlash Comp	-6	2550													
Y18	Y14	Rev. Jog Start	Upper Limit	100	100													
Y15	Y16	Stop	Lower Limit	0	0													
X08	X09	Pos. Started	Error Comp.	0	0													
X04	X05	Blk																
X0E	X0F	M Code ON	Starting Bias	0	0													
X00	X0T	Err. Man. Pulse	Cmp. I./O.P. Time	300	300													
X01	X02	Err. Enable	Code/ErrCode	0	04													
X03	X04	Error																

## 7.2 Specifications

### 7.2.1 System configuration

This section describes the system configuration of the intelligent module monitor.

For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

#### ■ Targeted equipments for the intelligent module monitor

##### (1) PLC CPU

PLC
QCPU (Q mode), motion controller (Q series)*1
QSCPU
LCPU

\*1 For the motion controller CPU (Q series), only the PLC CPU area (CPU No.1) in the Q170MCPUCPU and Q170MSCPU can be monitored.

##### (2) Intelligent function module

PLC CPU	Intelligent function module
QCPU (Q mode)	Q64AD, Q68ADV, Q68ADI, QD62, Q64DA, Q62DA, QD62D, QD62E, QD65PD2, QD73A1, QD75D □ (N), QD75P □ (N), QD75MH, QD75M, QD77MS, Input module, Output module
LCPU	L60AD4, L60DA4, LD62, LD62D, LD75D, LD75P, LD77MH, LD77MS, Input module (LX40C6, LX41C4, LX42C4), Output module (LY10R2, LY41NT1P, LY42NT1P)

You can use the system monitor [BM MONITOR] to monitor intelligent function modules other than those listed above.

## ■ Connection type

This function can be used in the following connection types.

(○: Available, △: Partly restricted, ×: Unavailable)

Function		Connection type between GOT and PLC CPU							
Name	Description	Bus connection *6*7	Direct CPU connection *6*8	Computer link connection *6	Ethernet connection*9	MELSECNET/H connection*7, MELSECNET/10 connection*7	CC-Link IE controller connection*2*7, CC-Link IE field connection*3	CC-Link connection	
								ID*4*6	G4*5*6
Intelligent module monitor	Monitors buffer memory of intelligent function module and signal statuses of I/O modules	○	○	○	○	△*1	○	○	○

\*1 For the MELSECNET/10 connection, use a QCPU and network module (QJ71LP21, QJ71LP21-25, QJ71LP21S-25, and QJ71BR11) with the function version B or later.

\*2 Indicates the CC-Link IE controller network connection.

\*3 Indicates CC-Link IE field network connection.

\*4 Indicates CC-Link connection (Intelligent device station).

\*5 Indicates CC-Link connection (via G4).

\*6 The QSCPU does not support the connection type.

\*7 The LCPU does not support the connection type.

\*8 When the GOT is connected to LCPU, use L6ADP-R2.

\*9 Intelligent module monitor cannot be used when using CC-Link IE field network Ethernet adapter.

## ■ Required extended system application

The extended system application shown below are required.

⇒ 1.2 Required extended system application for the function

### (1) Extended system application

Write the package data that has the extended system application for the intelligent module monitor to the GOT. For the communication method with the GOT, refer to the following.

⇒ GT Designer3 (GOT2000) Help

### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

⇒ GT Designer3 (GOT2000) Help

## ■ Required memory space for use of the intelligent module monitor

To check the required memory space for use of the intelligent module monitor, refer to the following.

⇒ GT Designer3 (GOT2000) Help

The memory space required for storing data into the internal memory of the GOT is the same as the memory space required for storing data into the hard disk of a personal computer.

**■ When using bus connection/direct CPU connection/computer link connection**

- The intelligent module monitor can monitor intelligent function modules on the bases of the connected station and other stations.
- The intelligent module monitor can only monitor systems of the following combinations when computer link connection is applied.

PLC CPU used	Computer link/serial communication module used*1
QCPU (Q mode)	QJ71C24
LCPU	LJ71C24, LJ71C24-R2

\*1 For details of module names, refer to the GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1.

- The following restrictions apply when monitoring other stations of MELSECNET/II data link systems. Only the host and master stations can be monitored when the connected station is a local station. Regardless of the type of connected station, no stations other than ACPU can be monitored.
- When connected to a remote I/O station on the MELSECNET/H network system, the remote I/O station on the MELSECNET/H network system is displayed as QCPU in the system configuration display of the intelligent module monitor.
- A diagnosis of the remote I/O station on the MELSECNET/H network system is not performed.
- Intelligent function modules on the base of remote I/O stations other than those on the MELSECNET/H network system are not monitored.

**■ When using MELSECNET/H, MELSECNET/10, or CC-Link IE controller network connection**

- The intelligent module monitor can monitor intelligent function modules on the bases of the control station and normal stations.
- To monitor another network, routing parameters have to be set to the GOT side and PLC side. (Only with the MELSECNET/H communication unit or CC-Link IE controller network communication unit)  
For the routing parameter setting, refer to the following.  
Routing parameter setting for the GOT

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

Routing parameter setting for PLC CPU  
For MELSECNET/H communication unit

⇒ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

For CC-Link IE controller network communication unit

⇒ CC-Link IE Controller Network Reference Manual

**■ When using CC-Link IE field network connection**

The intelligent module monitor can monitor intelligent function modules on the bases of the master station and local stations.

To monitor another network, routing parameters have to be set to the GOT side and PLC side.

For the routing parameter setting, refer to the following.

Routing parameter setting for the GOT

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

Routing parameter setting for PLC CPU

⇒ The User's Manual of the CC-Link IE field network system master/local module to be used

**■ When using CC-Link connection (Intelligent device station/via G4)**

- The intelligent module monitor can monitor intelligent function modules on the bases of the master station and local stations.

## ■ When using Ethernet connection

- The intelligent module monitor can monitor the intelligent function module on the base of the PLC CPU assigned the IP address.  
(The station assigned in the Ethernet setting of GT Designer2 can be monitored.)
- To monitor another network, routing parameters have to be set to the GOT side and PLC side.  
For the routing parameter setting, refer to the following.  
Routing parameter setting for the GOT

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

Routing parameter setting for PLC CPU

➡ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

## ■ When the intelligent module monitor monitors the master station of the MELSECNET/II network on which any remote I/O station exists

- Intelligent function modules on the base of remote I/O stations are not monitored.

## 7.2.3 Precautions

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### ■ Special function modules that cannot be monitored

Modules displayed as "SP" on the System Configuration screen cannot be monitored using the intelligent module monitor.

To monitor these modules, use the system monitor function [BM MONITOR].

### ■ Monitoring intelligent function modules with restrictions

#### (1) When monitoring an I/O module

Only the output signal can be monitored for an I/O module for which "Output [ ]" is displayed on the System Configuration screen.

For input signals, monitor X of the PLC CPU device with the system monitor function.

### ■ Editing and reusing intelligent module monitor data

The project data for the intelligent module monitor cannot be edited by modifying or adding an object.  
However, the data can be used on a user-created monitor screen.

### ■ Display provided when the QA1S6 □ extension base unit is used with the QCPU (Q mode)

This precaution pertains to a situation where the QA1S6 □ extension base unit is connected to the QCPU (Q mode) in a station connected to the GOT.

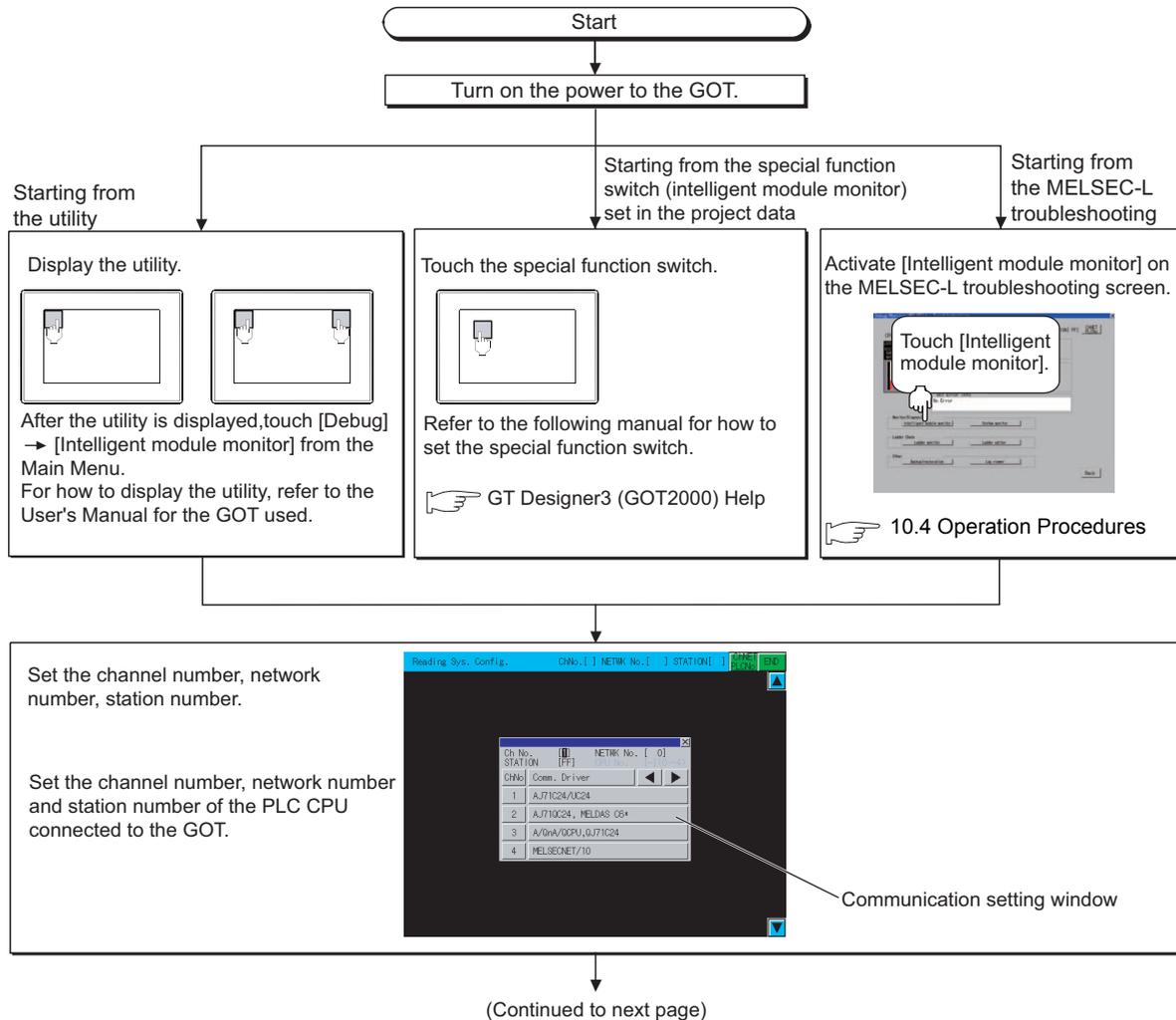
In this case, the abbreviated format is displayed for the following intelligent function modules on the System Configuration screen.

You can use the unit detail information to check the full format of the module displayed with the abbreviated format. Unsupported intelligent function modules are displayed as "SP", and the corresponding modules cannot be monitored.

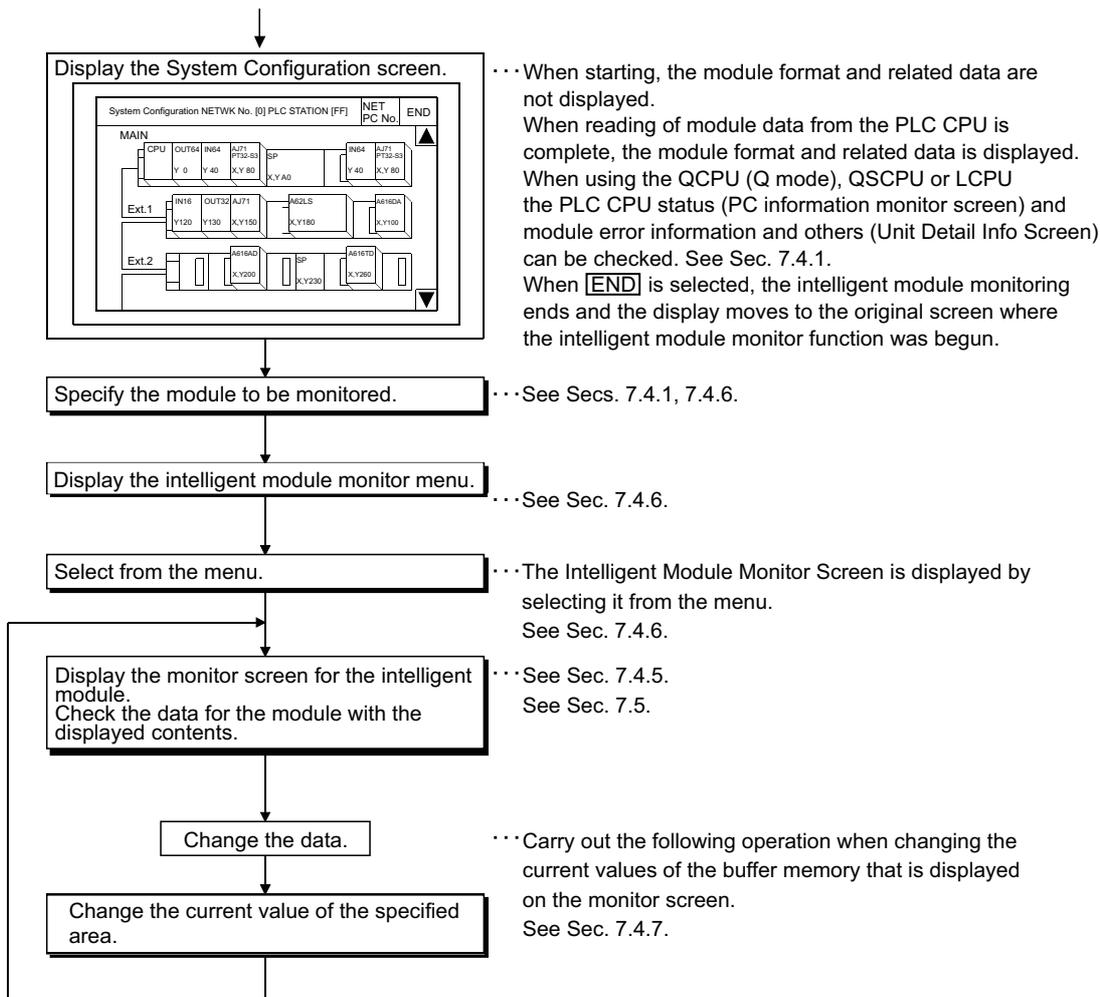
Installed module	Model name displayed
A1S63ADA	63ADA
A1SJ71PT32-S3	J71PT32-
A1SJ71ID1-R4	J71ID
A1SJ71ID2-R4-S1	
A1S64TCTT(BW)-S1	64TCTT/R
A1S64TCRT(BW)-S1	

## 7.3 Operations for Display

This subsection describes the flow until the operation screen for the intelligent module monitor is displayed after the intelligent module monitor (Option OS) is installed in the GOT.



(Continued from previous page)



## POINT

### (1) How to display the utility

For how to display the utility, refer to the following.

⇒ User's Manual for the GOT used

### (2) Displaying communication setting window

After turning on the GOT, the communication setting window is displayed at the first startup of the intelligent module monitor only.

For displaying the communication setting window at the second or later startup, touch the **ChNET PLCNo.** button on the intelligent module monitor screen.

⇒ 7.4 Operation of Each Intelligent Module Monitor Screen

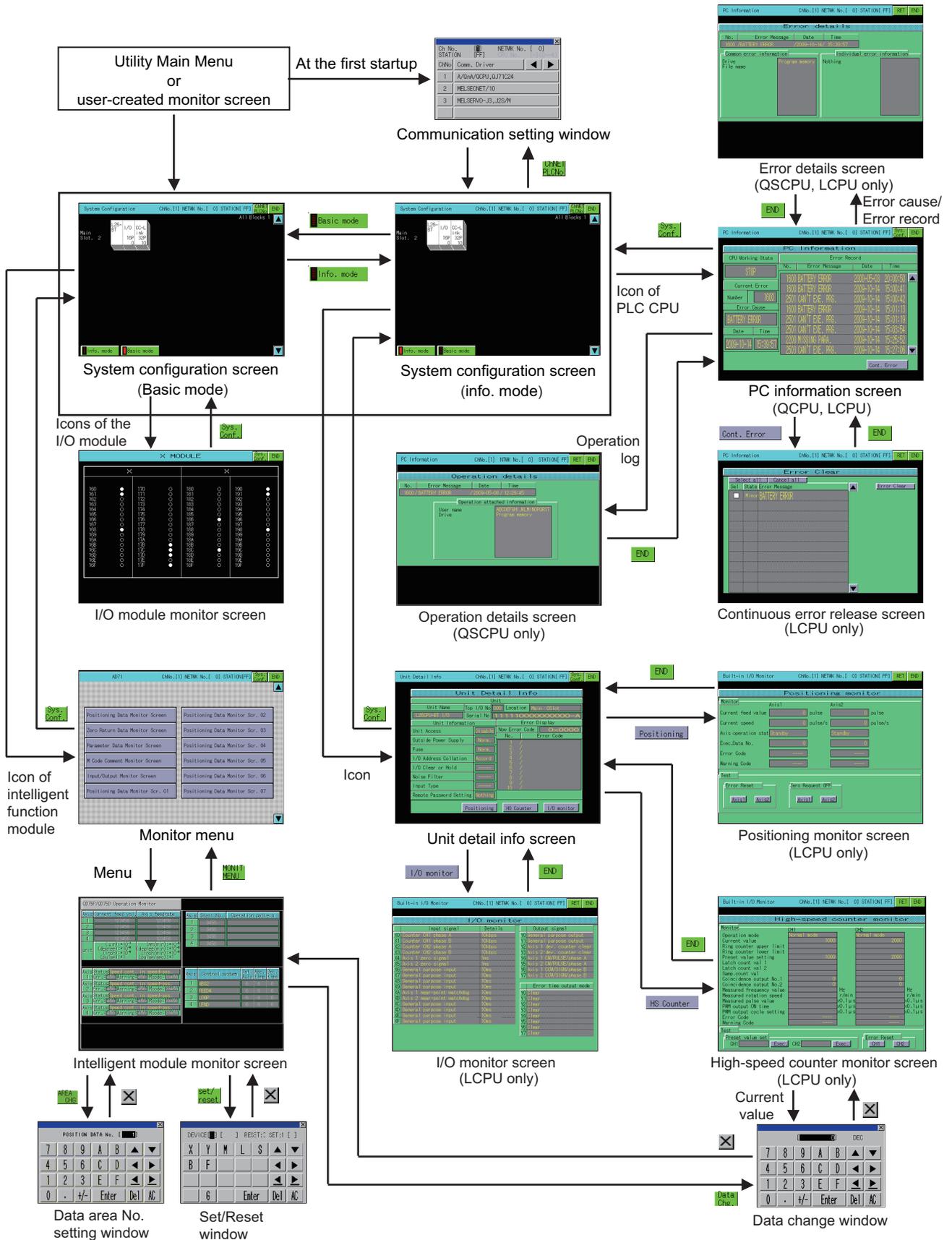
### (3) If the project data has not been downloaded

The intelligent module monitor can be started from the utility even if the project data has not been downloaded to the GOT.

## Changing screens

The following describes how to change the screen.

### (1) When using QCPU (Q mode), Q series motion controller CPU, QSCPU, or LCPU



# 7.4 Operation of Each Intelligent Module Monitor Screen

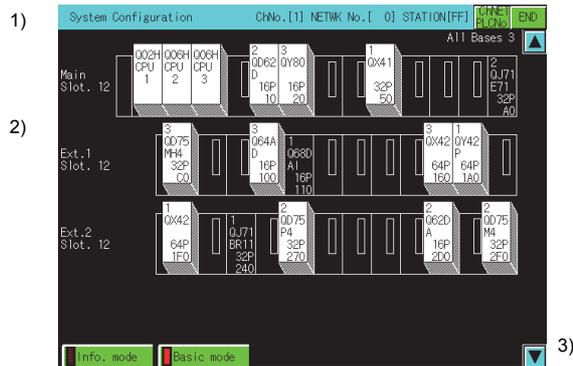
This section describes the operations of the screens when using the intelligent module monitor.

## 7.4.1 Composition of the system configuration screen and key functions

This section describes the configuration of the System Configuration screen that is displayed after startup of the intelligent module monitor and the functions of the keys displayed on the screen.

### ■ When using the QCPU (Q mode), QSCPU or LCPU

#### (1) Displayed contents



Item	Description
1)	Displays the channel number, network number and station number of the monitored station.
2)	<p>Displays the model name, I/O points, and start I/O number for the modules installed in the monitored station. The model name of the module and related data are displayed at the end of the module data readout from the PLC CPU.</p> <p>For an intelligent function module that cannot be monitored, the model name is displayed as "SP".</p> <p>The module icon becomes the key to switch to the screen where the monitoring of that module is performed.</p> <p>The communication setting window is displayed for the MELSECNET/H connection or MELSECNET/10 connection.</p> <p>➡ 7.4.2 Setting method for other station monitoring</p> <p>Displays the CPU Nos. for the CPUs and the control CPU number for the installed modules when there are multiple CPU systems.</p>
3)	Display keys used for the operations on the System Configuration screen shown in (2). (Touch input)

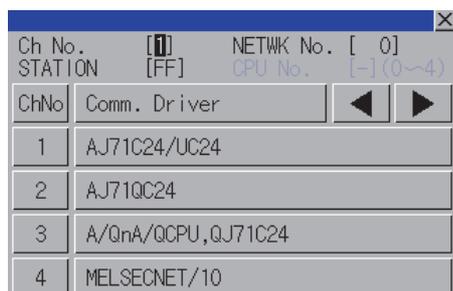
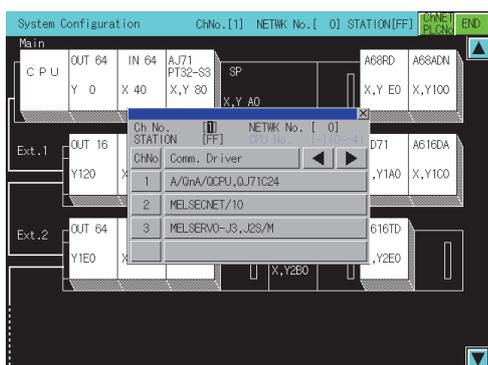
**(2) Key functions**

The table below shows the functions of the keys that are used with the operation on the DEVICE MONITOR screen.

Key	Function
	Displays the communication setting window.
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.
Icon of PLC CPU	The screen switches to the PC Information monitor screen.  7.4.3 Composition of PC Information monitor screen and key functions
Icon of intelligent function module	In intelligent module monitor mode: Switches to the screen where the intelligent module monitoring for that module is performed. In unit detail info mode: Switches to the screen displaying detailed information of the selected module.
	Switches the System Configuration screen to Info. mode.  7.4.4 Composition of the unit detail info screen and key functions
	Switches the System Configuration screen to Basic mode.
	Scrolls the display one stage up or down to display the system configuration of the currently undisplayed stage immediately before/after the currently displayed stage. Operations can be performed when the system configuration has three or more extension bases.  : Scrolls one stage up.  : Scrolls one stage down.

## 7.4.2 Setting method for other station monitoring

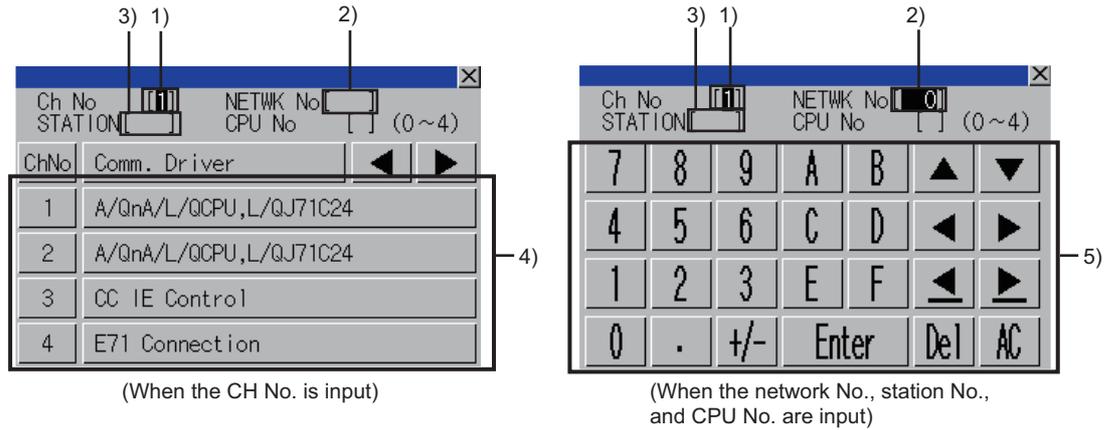
The following shows the setting methods for monitoring other stations with intelligent module monitor.



1. When the intelligent module monitor is started for the first time, the communication setting window is automatically opened by displaying the system configuration screen. Otherwise, touch the **CHNET** button in the System Configuration screen to display the communication setting window.
2. In the communication setting window, select one from channels No.1 to 4.  
For the operation on the communication setting screen, refer to the following.  
  - ➡ (1) Communication setting window
3. When the channel No. is selected, the screen on the left is displayed.  
Set the network number of the target controller and the CPU station number.
4. After selecting the station number, touch the enter key. The communication setting window closes and the system configuration of the set monitor destination is displayed.  
For further operations, refer to the following.  
  - ➡ 7.4.6 Specifying a module to monitor and selecting monitor menu

## (1) Communication setting window

### (a) Displayed screen



The following table shows the displayed contents.

No.	Item	Description	Setting range
1)	CH No. input area	Set the CH No. for the target controller.	1 to 4
2)	Network No. input area	Set the network No. for the target controller.	Differs depending on the connection type. <ul style="list-style-type: none"> <li>• Bus connection, direct CPU connection, computer link connection: 0</li> <li>• Ethernet connection, CC-Link IE controller network connection, CC-Link IE field network connection: 1 to 239</li> <li>• MELSECNET/H, MELSECNET/10: 0 (host loop) / 1 to 255 (specified loop)</li> <li>• CC-Link (ID/G4) connection: 0</li> </ul>
3)	Station No. input area	Set the station No. of the target controller. When the station No. is set to the host station (FF), set the network No. to 0.	Differs depending on the connection type. <ul style="list-style-type: none"> <li>• Bus connection, direct CPU connection, computer link connection: FF (host station)</li> <li>• Ethernet connection: 1 to 64</li> <li>• MELSECNET/H, MELSECNET/10: 0 (control station) / 1 to 64 (normal station)</li> <li>• CC-Link IE controller network connection: 1 to 120</li> <li>• CC-Link IE field network connection: 0 (master station) / 1 to 120 (local station)</li> <li>• CC-Link (ID/G4) connection: 0 (master station) / 1 to 64 (local station)</li> </ul>
4)	CH No. selection key	Set the CPU No.	-
5)	Keys	Keys for operations in the communication setting window shown in (b). (Touch input)	-

### (b) Key functions

Key	Function
	Closes the communication setting window. When any of the CH No., network No., station No., and CPU No. is not input and the monitor target is not set, the communication setting window does not close.
	Moves the cursor among the input areas.
	Deletes all the input values and characters.
	Deletes an input value or character.
	Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area. When the cursor is in the CPU No. input area and settings for the CH No., network No., and station No. are completed, the communication setting window closes and the PLC read screen appears.

## 7.4.3 Composition of PC Information monitor screen and key functions

This section describes the structure of the PC Information monitor screen that is displayed by specifying the QCPU (Q mode), QSCPU or LCPU on the System Configuration screen, and the key functions displayed on the screen. The GOT displays the PC Information monitor screen only when using the following controllers.

- QCPU (Q mode)
- QSCPU
- LCPU

### ■ When using the QCPU (Q mode) or LCPU

#### (1) The PC information monitor screen.

##### (a) Displayed contents



Item	Description
1)	Displays the channel number, network number and station number of the monitored station.
2)	Displays the keys that are used for the operation on the PC information monitor screen.
3)	Displays the operating status of the PLC CPU.
4)	Displays the currently occurring errors. When using the LCPU, touch the error cause to display the error detail screen. ▶▶▶ (2) Error details screen
5)	Displays the error record. Up to 100 error records can be displayed. When using the LCPU, touch the error record to display the error detail screen. ▶▶▶ (2) Error details screen

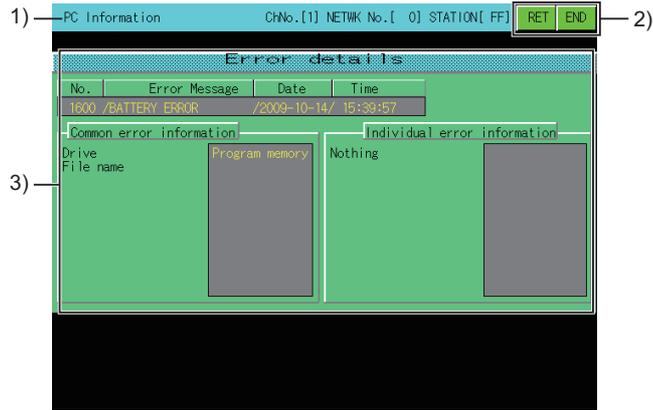
##### (b) Key functions

The table below shows the functions of the keys that are used for the operation on the PC information monitor screen.

Key	Function
	Switches the screen to the System Configuration screen. ▶▶▶ 7.4.1 Composition of the system configuration screen and key functions
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.
	Scrolls the display one page up or down. ▲ : Scrolls one page up. ▼ : Scrolls one page down.
	Displayed only when LCPU is used. Shifts to the Continuation error clear screen. ▶▶▶ (3) Continuation error clear screen

**(2) Error details screen**

(a) Displayed contents



Item	Description
1)	Displays the channel number, network number and station number of the monitored station.
2)	Displays the keys that are used for the operation on the error details screen.
3)	Displays the common error information and individual error information based on the information stored in SD4 and SD5 of the LCPU. For the common error information and the individual error information, refer to the following. <ul style="list-style-type: none"> <li>➡ MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)</li> </ul>

(b) Key functions

The table below shows the functions of the keys that are used for the operation on the error details screen.

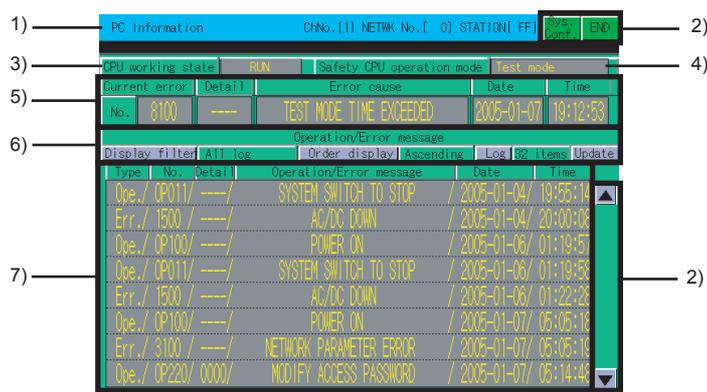
Key	Function
	Returns the screen to the PC Information monitor screen. <ul style="list-style-type: none"> <li>➡ 7.4.3 Composition of PC Information monitor screen and key functions</li> </ul>
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.



## ■ When using the QSCPU

### (1) PC Information monitor screen

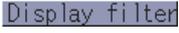
#### (a) Displayed contents



Item	Description
1)	Displays the channel number, network number, and station number of the monitored station.
2)	Displays the keys that are used for the operation on the System Configuration screen shown in (b).
3)	Displays the QSCPU operation status. (RUN/STOP)
4)	Displays the safety CPU operation mode. (Safety mode/Test mode)
5)	<p>Displays the error being occurred. Touching the error displays the Error details screen.</p> <p>(  ■When using the QSCPU (3) Error details screen)</p> <p>No. : Displays the error code.</p> <p>Detail : Displays the detail code of the error log. ([---]) is displayed when no detail code exists.)</p> <p>Error cause : Displays the error details. Touching the item displays the Error details screen.</p> <p>Date, Time : Displays the date and the time that the error occurs.</p>
6)	<p>Set the items to be displayed in the log list.</p> <p>(  ■When using the QSCPU (1) (b) Key functions)</p>
7)	<p>Displays the operation status, error information, and others of the monitored PLC CPU. (Log list)</p> <p>Type : Displays the log types. (Ope: Operation log, Err: Error log)</p> <p>No. : Displays the operation codes or error codes.</p> <p>Detail : Displays the 4-digit detail codes of the operation logs or the error logs for the errors occurred in the CC-Link Safety system remote I/O module. ([---]) is displayed when no detail code exists.)</p> <p>Operation/Error message : Displays the operation details or error messages. Displays "BROKEN OPERATION/ERROR LOG" when the log data is damaged.</p> <p>Date, Time : Displays the dates and the time of operations or the dates and time that errors occur.</p> <p>Touching an operation log displays the Operation details screen.</p> <p>(  ■When using the QSCPU (2) Operation details screen)</p> <p>Touching an error log displays the Error details screen.</p> <p>(  ■When using the QSCPU (3) Error details screen)</p>

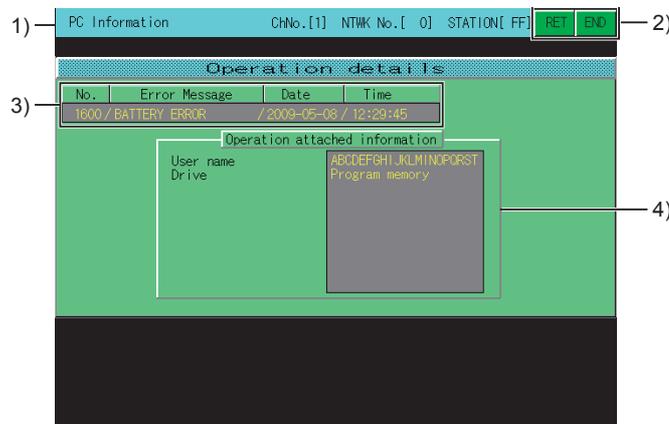
(b) Key functions

The table below shows the functions of the keys that are used for the operation on the System Configuration screen.

Key	Function
	Switches the screen to the System Configuration screen. ■■■▶ 7.4.1 Composition of the system configuration screen and key functions
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.
	Switches the log types to be displayed in the log list. All log : Displays all the logs (error logs, operation logs). Error log : Displays the error logs only. Operation log : Displays the operation logs only.
	Sorts the log list in ascending or descending order.
	Switches the numbers of logs displayed in the log list. 32 items : Displays the latest 32 logs. 100 items : Displays the latest 100 logs. (When the number of displayed logs is switched from 100 to 32, 100 logs are displayed before touching the Update key.)
	Obtains the latest log information from the PLC CPU and updates the log list. (The displayed log data before touching the Update key is deleted.)
	Scrolls the display one page up or down. ▲ : Scrolls one page up. ▼ : Scrolls one page down.

(2) Operation details screen

(a) Displayed contents



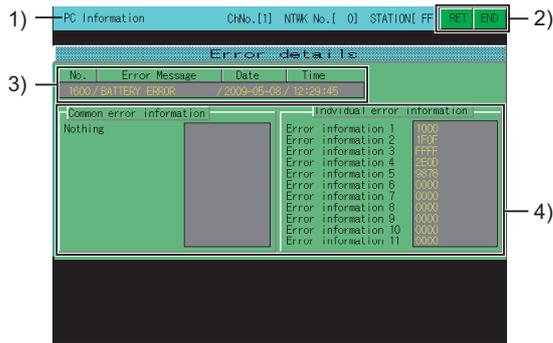
Item	Description
1)	Displays the channel number, network number, and station number of the monitored station.
2)	Displays the keys that are used for the operation on the System Configuration screen shown in (b).
3)	Displays the information of the error touched in the PC information monitor screen.
4)	Displays the detailed operating information according to the operation log information stored in the QSCPU.

(b) Key functions

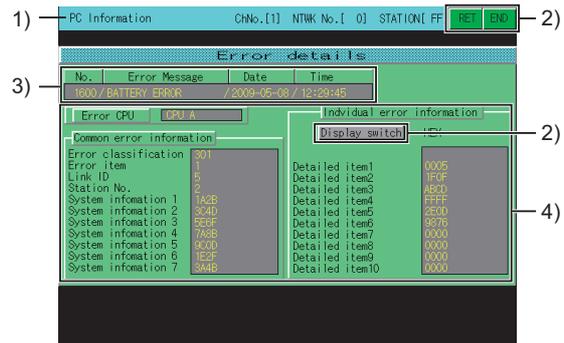
Key	Function
	Returns the screen to the PC Information monitor screen. ■■■▶ 7.4.3 Composition of PC Information monitor screen and key functions
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

### (3) Error details screen

#### (a) Displayed contents



(Example) Error details screen for safety CPU error



(Example) Displaying individual error information for safety remote I/O station

Item	Description
1)	Displays the channel number, network number, and station number of the monitored station.
2)	Displays the keys that are used for the operation on the System Configuration screen shown in (b).
3)	Displays the information of the error touched in the PC information monitor screen.
4)	<p>Displays the common error information and the individual error information according to the information stored in SD4 and subsequent devices of the QSCPU.</p> <p>For the common error information and the individual error information, refer to the following.</p> <ul style="list-style-type: none"> <li>QSCPU User's Manual (Function Explanation, Program Fundamentals)</li> </ul> <p>When the individual error information for the safety remote I/O station is displayed, the numerical notation of the displayed data can be switched between decimal and hexadecimal numbers. (When the CC-Link Safety system master module cannot receive the error information from the safety remote I/O station, [****] is displayed for unreceived items.)</p>

#### (b) Key functions

Key	Function
RET	Returns the screen to the PC Information monitor screen. <ul style="list-style-type: none"> <li>7.4.3 Composition of PC Information monitor screen and key functions</li> </ul>
END	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.
Display switch	Switches the numerical notation of the displayed data between decimal and hexadecimal numbers. (Only when the individual error information for the safety remote I/O station is displayed)

## 7.4.4 Composition of the unit detail info screen and key functions

This section describes the structure of the Unit Detail Info screen that is displayed by specifying a module on the System Configuration screen at Info. mode, and the key functions displayed on the screen.

The GOT displays the Unit Detail Info screen only when using the following controllers.

- QCPU (Q mode)
- QSCPU
- LCPU

### ■ Displayed contents



Item	Description
1)	Displays the channel number, network number and station number of the monitored station.
2)	Displays keys used for the operations on the System Configuration screen.
3)	Displays the operating status, error information and other information of the targeted PLC CPU. Up to 10 error information events can be displayed.

### ■ Key functions

The following table shows the functions of the keys used for the operation on the Unit Detail Info screen.

Key	Function
	Switches the screen to the System Configuration screen. ■ 7.4.1 Composition of the system configuration screen and key functions
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.
	Displayed only when displaying information of the LCPU built-in I/O module. This button is available when [Positioning axis 1] or [Positioning axis 2] is set to [Use] in the parameter. Shifts to the positioning monitor screen. ■ (1) Positioning monitor screen
	Displayed only when displaying information of the LCPU built-in I/O module. This button is available when [High-speed counter 1] or [High-speed counter 2] is set to [Use] in parameter. Shifts to the high-speed counter monitor screen. ■ (2) High-speed counter monitor screen
	Displayed only when displaying information of the LCPU built-in I/O module. Shifts to the I/O monitor screen. ■ (4) I/O monitor screen.

## (1) Positioning monitor screen

### (a) Displayed contents



Item	Description
1)	Displays the channel number, network number and station number of the monitored station.
2)	Displays the keys used for the operations in the positioning monitor screen.
3)	Displays the operation status of the positioning function. The operation status is displayed or hidden according to the parameter settings of built-in functions.

### (b) Key functions

The following table shows the functions of the keys used for the operation on the positioning monitor screen.

Key	Function
	Return to the unit detail info screen. ➡ 7.4.4 Composition of the unit detail info screen and key functions
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.
	Resets the error of the axis 1 or axis 2.
	Turns off the home position return request for axis 1 or axis 2.

### POINT

#### Precautions for using the positioning monitor screen.

When the parameter settings of a built-in function is changed by programming software or others of the connecting device during the positioning monitor screen display, return to the unit detail info screen and display the position monitor screen again.

## (2) High-speed counter monitor screen

### (a) Displayed contents



Item	Description
1)	Displays the channel number, network number and station number of the monitored station.
2)	Displays the keys used for the operation in the high-speed counter monitor screen.
3)	Displays the operation status of the high-speed counter function. The operation status is displayed or hidden according to the parameter settings of built-in functions.
4)	Displays the current value of the CH1 and CH2. Touch the current value and the data change window is displayed. <div style="margin-left: 20px;">  (3) Data change window         </div>

### (b) Key functions

The following table shows the functions of the keys used for the operation on the high-speed counter monitor screen.

Key	Function
	Return to the unit detail info screen. <div style="margin-left: 20px;">  7.4.4 Composition of the unit detail info screen and key functions         </div>
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.
	Reflects the preset value entered in the data change window to the PLC CPU.
	Reset the error of CH1 or CH2.

## POINT

### Precautions for using the high-speed counter monitor screen.

- (1) When the parameter settings of a built-in function is changed by programming software or others of the connecting device during the high-speed counter monitor screen display, return to the unit detail info screen and display the high-speed counter monitor screen again.
- (2) The preset value preset from the high-speed counter monitor screen is valid for the subsequent presets, unless it is set again in the sequence program.
- (3) If the preset from the high-speed counter monitor screen and the preset by the sequence program are executed simultaneously, the setting value by the sequence program may be preset.

**(3) Data change window**

(a) Displayed contents



Item	Description
1)	Displays the entered value.
2)	Displays the keys used in the operation of the data change window.

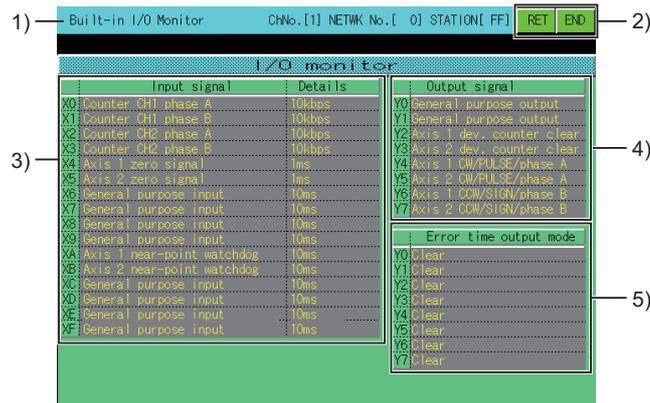
(b) Key functions

The following table shows the functions of the keys used for the operation on the data change window.

Key	Function
	Closes the data change window.
	Changes the data change target.
	Sets the entered value to the preset value.
	Deletes one character of the entered value.
	Deletes all entered values.

**(4) I/O monitor screen.**

**(a) Displayed contents**



Item	Description
1)	Displays the channel number, network number and station number of the monitored station.
2)	Displays the keys used for the operations in the I/O monitor screen.
3)	Displays the status and values of functions assigned to the input signal.
4)	Displays the status of functions assigned to the output signal.
5)	Displays the setting status of the output mode during error, for the output signal.

**(b) Key functions**

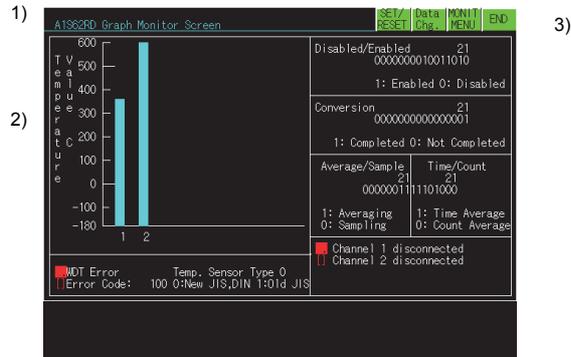
The following table shows the functions of the keys used for the operation on the I/O monitor screen.

Key	Function
	Return to the unit detail info screen. ➡ 7.4.4 Composition of the unit detail info screen and key functions
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

## 7.4.5 Composition of the intelligent module monitor screen and key functions

This section describes the structure of the monitor screen that is displayed by specifying a module on the System Configuration screen (in Basic mode when the QCPU (Q mode), QSCPU or LCPU is used), and the key functions displayed on the screen.

### ■ Displayed contents



Item	Description
1)	Displays the model name of the module being monitored.
2)	Displays the buffer memory data of the module in its current form or in a graph. The status of I/O signals to and from PLC CPU is monitored. All data are displayed when the readout from the intelligent function module is completed. When testing, execute testing after moving the cursor to the display position of the target data.
3)	Displays keys used for the operations on the monitor screen.

### ■ Key functions

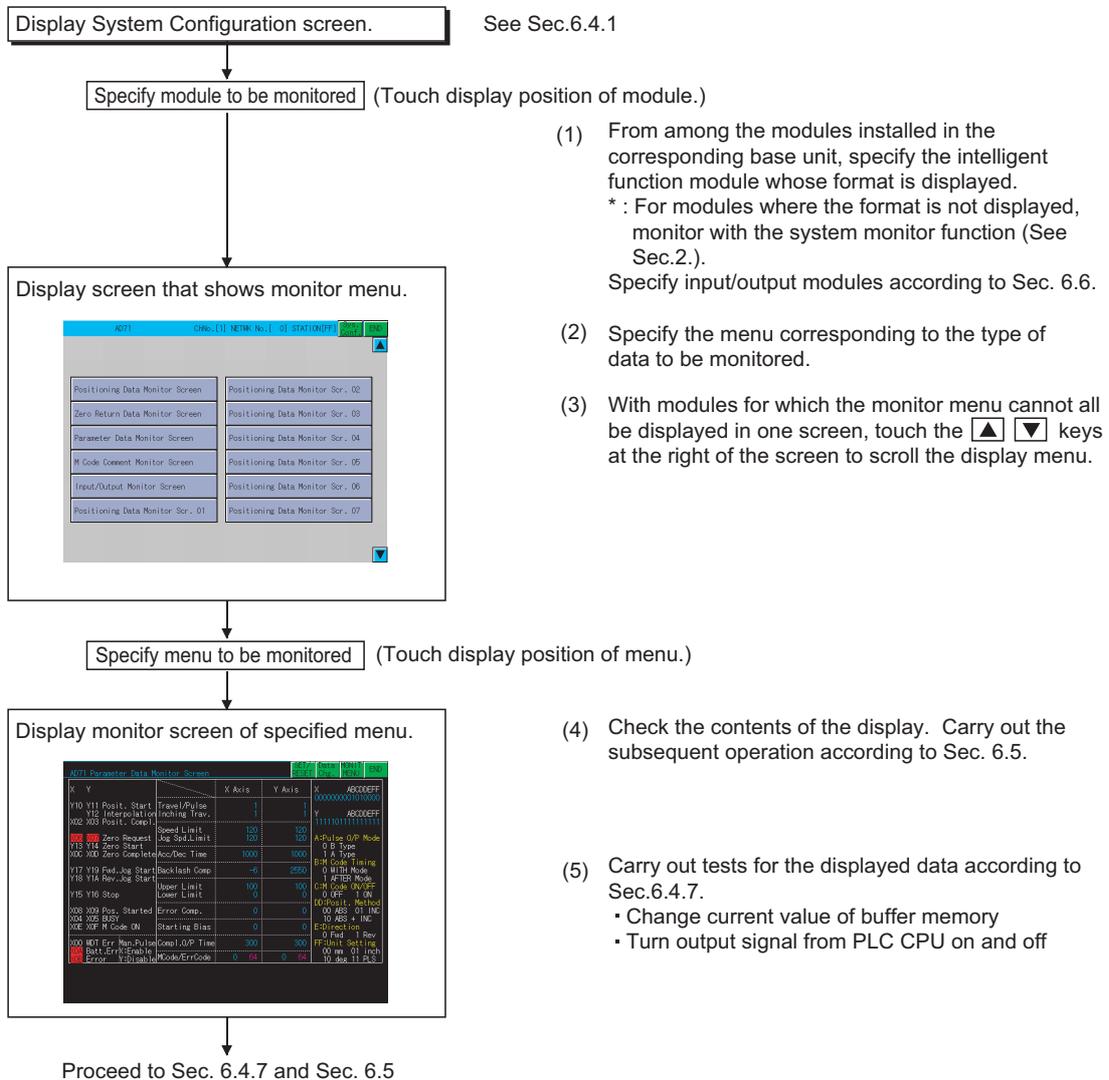
The table below shows the functions of keys that are used for the operations on the monitor screen.

Key	Function
SET/RESET	Starts testing (SET/RST) of the I/O signal between the PLC CPU and the intelligent function module.
Data Chg.	Starts changing (writing) the current values of the buffer memory of the intelligent function module displayed on the screen.
MONIT MENU	Closes the current monitor and returns to the screen displaying monitor menu. This operation can only be used when the intelligent function module has a monitor menu.
END	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

## 7.4.6 Specifying a module to monitor and selecting monitor menu

This section uses the positioning module (AD71) as an example to describe the operations when starting the intelligent module monitor to monitor a desired module.

### Operation procedure



## 7.4.7 Testing of the intelligent function module

### ! WARNING

- When testing the operation (changing a current buffer memory value) of the intelligent module monitor, read this manual carefully to fully understand the operation.  
For devices that perform significant operations for the system, never perform test operation to change data.  
Doing so can cause accidents due to false outputs or malfunctions.

Testing can be performed for all buffer memory data displayed on the current monitor screen.  
This section describes the operations for changing the current value of the buffer memory and turning on and off the output signal from the PLC CPU to the intelligent function module.

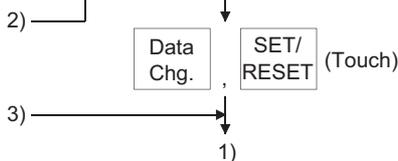
### POINT

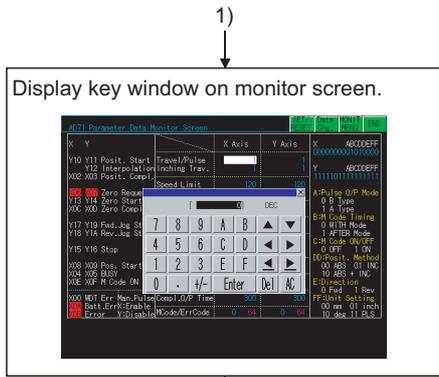
- Perform testing for the buffer memory that can be written from the PLC CPU and output signals that are output from the PLC CPU.**
- It is recommended that testing be performed with the PLC CPU in STOP status.**  
If the PLC CPU is tested during RUN status, the test monitor display returns to display values output from the sequence program and output statuses.

#### Operation procedure

Display monitor screen.

項目	X軸	Y軸	Z軸
Y10 Y11 位置決め開始 (手動時)			00000000000000
Y02 X03 位置決め完了			00000000000000
Y13 Y14 速度制御完了	120	120	00000000000000
Y15 Y16 完了	1000	1000	00000000000000
Y17 Y18 速度制御完了	2500	2500	00000000000000
Y19 Y20 完了	100	100	00000000000000
Y21 Y22 速度制御完了	0	0	00000000000000
Y23 Y24 完了	0	0	00000000000000
Y25 Y26 速度制御完了	0	0	00000000000000
Y27 Y28 完了	0	0	00000000000000
Y29 Y30 速度制御完了	0	0	00000000000000
Y31 Y32 完了	0	0	00000000000000
Y33 Y34 速度制御完了	0	0	00000000000000
Y35 Y36 完了	0	0	00000000000000
Y37 Y38 速度制御完了	0	0	00000000000000
Y39 Y40 完了	0	0	00000000000000
Y41 Y42 速度制御完了	0	0	00000000000000
Y43 Y44 完了	0	0	00000000000000
Y45 Y46 速度制御完了	0	0	00000000000000
Y47 Y48 完了	0	0	00000000000000
Y49 Y50 速度制御完了	0	0	00000000000000
Y51 Y52 完了	0	0	00000000000000
Y53 Y54 速度制御完了	0	0	00000000000000
Y55 Y56 完了	0	0	00000000000000
Y57 Y58 速度制御完了	0	0	00000000000000
Y59 Y60 完了	0	0	00000000000000



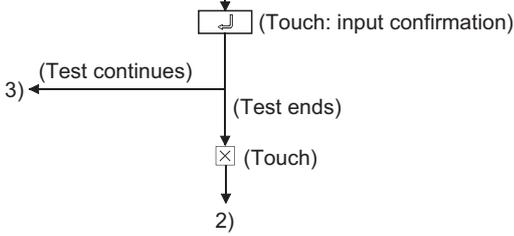


When **Data Chg.** is touched (changes current value of buffer memory)

- All of the following operations can be carried out by touching the keys in the displayed key window.
  - When you touch  at the upper left of the key window, the key window closes and the display returns to the monitor screen.
- (1) Move the cursor to the position where the data to be tested is displayed. (\*1) (   ): Up/down   ): Left/right
  - (2) Use the numeric keys to specify the value to be changed. (\*2)  
The **DEL** key can be used to clear individual characters among those input.

When **SET/RESET** is touched (tests the I/O signal)

- All of the following operations can be carried out by touching the keys in the displayed key window.
  - When you touch  at the upper left of the key window, the key window closes and the display returns to the monitor screen.
- (1) Use the alphabetic character keys to specify the name of the device to be tested, and then touch . (\*1)
  - (2) Use the numeric keys to specify the device number, and then touch .
  - (3) Use the numeric keys to specify "Set" or "Reset".  
: OFF : ON



\*1 Do not perform the following tests.

If these tests are performed, the module may not operate correctly or the buffer memory/input signal may return to the output value/output status from the intelligent function module.

- 1) Testing of read-only buffer memory from the PLC CPU.
- 2) Testing of input signals from the intelligent function module to the PLC CPU.

\*2 When testing buffer memory data, specify the change value in the following way.

- 1) For data where 16/32 bits are displayed with one number, specify a new value in decimal format.
- 2) For data where one number of 16/32 bits is displayed as a percent, such as with an A/D conversion module, specify a new value corresponding to the percentage in decimal format.

Example:

When the set value of the offset or gain is 0 to 2000 and you intend to change it to "50%", input "1000".

- 3) For data where 16 bits are displayed with "0" or "1" for each bit, specify a new value with changing the data to a decimal.

# 7.5 Intelligent Module Monitor Screens

To display the intelligent module monitor screen on the GOT, write special data (intelligent module monitor data) to be monitored.

For the capacity of the special data to be written to the GOT and the writing procedure, refer to the following.

➡ 7.2.1 System configuration

The intelligent module monitor screen differs depending on the connected module.

This section describes the screen using a typical intelligent module monitor screen.

The screen configuration may differ depending on the intelligent module monitor used.

For the buffer memory address of the module and others, refer to the following.

? User's Manual of the intelligent function module used

• Example) QD73A1 Positioning & Parameter Data Monitor Screen

QD73A1 Positioning & Parameter Data Monitor Screen		SET/ RESET	Data Chg.	MONIT MENU	END
Y11 Abs.positioning start	Feed Position	2) — 0	Current val.	0	14)
Y12 Forward Start	Actual Position	3) — 0	Current val.CHG	0	15)
Y13 Reverse Start	Feedrate	4) — 0	Travel Dist.	0	16)
Y14 Forward run JOG start	Error Counter	5) — 0	Velocity	0 PLS/s	17)
Y15 Reverse run JOG start	Pos.Address P1	— 0	Speed CHG	0	18)
Y16 Vel/pos re-start	Pos.Address P2	— 0	Jog Velocity	0 PLS/s	19)
X05 Posi.complete	Pos.Velocity V1	— 0 PLS/s	Upper Limit	0	20)
X02 DPR request flag	Pos.Velocity V2	— 0 PLS/s	Lower Limit	0	21)
Y10 DPR start	Pos.Pattern	0 — 10)	Gear Ratio	0 :	0 22)
X03 DPR complete flag	Control mode	0 — 11)	Veloc. Limit	0 PLS/s	23)
Y17 Stop	0:Positioning 1:Velocity		Accel. Time	0 ms	24)
X04 BUSY	Error Code	1: 0 2: 0	Decel. Time	0 ms	25)
X06 In-position			In-pos.Range	0	26)
Y1C speed-posl. switching			Positioning Mode	0	27)
X00 WDT, H/W error					
X07 Excessive error					
X08 Error detection					

1) [bracketed around Y11 to X08]

12) [bracketed under columns 2 and 3]

13) [bracketed under column 2]

# 7.6 Operating I/O Module Monitor Screen

This section describes the operation of the various screens in the intelligent module monitor function, when monitoring input or output modules.

## 7.6.1 Specifying the module to be monitored

This section describes how to start monitoring for an input or output module with the intelligent module monitor function.

Operation procedure

Display the System Configuration screen.

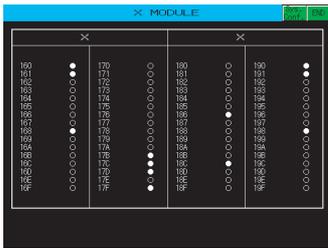
..... See Sec. 6.4.1

Specify the module to be monitored

(Touch the position at which the module is displayed.)

- (1) From among the modules installed in the corresponding base unit, specify the module whose "Input" or "Output" is displayed.  
Refer to Section 6.4.1 for the way to specify the intelligent function module.
- (2) For information on confirming the displayed contents and subsequent operation, please see Sec. 6.6.2.  
\* Tests cannot be conducted on input or output modules.

Display the monitor screen for the specified module.



To Sec. 13.2

## 7.6.2 Monitor screen configuration and key functions

This section describes the configuration of monitor screens displayed by specifying the input module on the system configuration screen, and explains the functions of keys displayed on the screen.

### ■ Displayed contents (for an input module)



Item	Description
1)	Displays the type of object module (input or output module).
2)	Displays keys used for the operations on the monitor screen.
3)	Displays the name of the signal being monitored (X or Y).
4)	Displays the number and status of the I/O signal. The statuses of input and output signals are displayed after they are read out from the corresponding module. Displays up to 64 points.(●: ON, ○: OFF)

### ■ Key functions

The table below shows the functions of keys that are used for the operations on the monitor screen.

Key	Function
	Closes the current monitor and returns to the System Configuration screen.
	Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.



# 8. SERVO AMPLIFIER MONITOR

GT 27 GT 23 Soft GOT 2000

## 8.1 Features

GT 27 GT 23 Soft GOT 2000

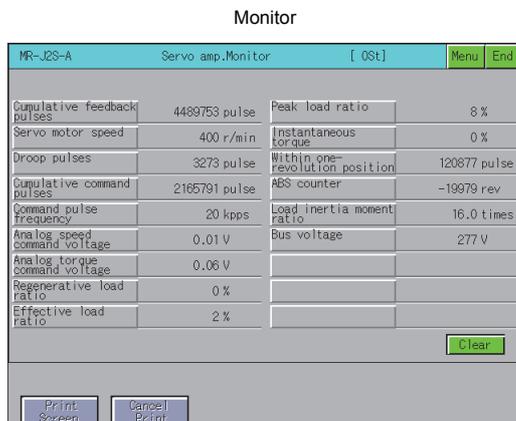
Various monitor functions, changes to the parameter settings and test operations can be performed on the servo amplifier connected to the GOT.

The features of the servo amplifier monitor are described below.

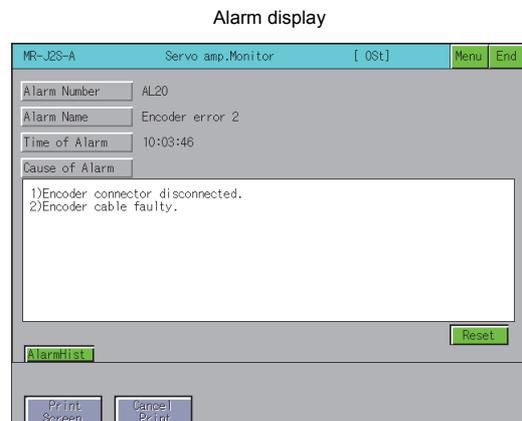
### Real-time display of the servo amplifier status

⇒ 8.4.3 Monitor functions, 8.4.4 Alarm function

A list of the status of the servo amplifier connected to the GOT and the alarm details can be displayed in real-time. (Display examples)



- Displays monitor data of the servo amplifier in a list.

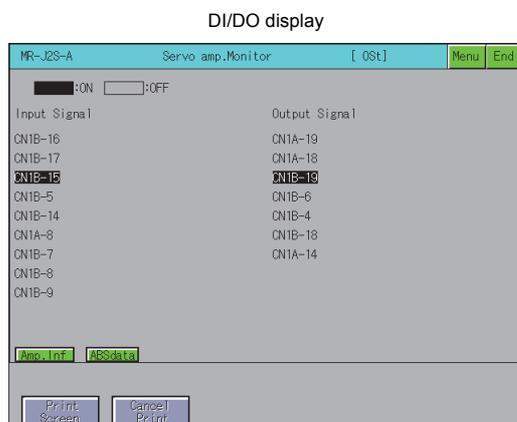


- Displays the details (number, name, occurrence time and cause of alarm) of the alarm currently occurring in the servo amplifier. The alarm can also be reset.

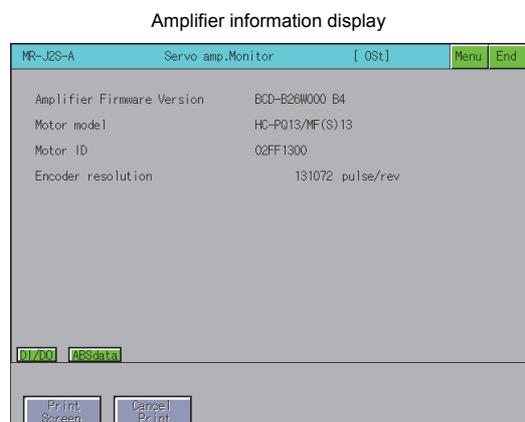
### Various diagnostics of the servo amplifier can be performed

⇒ 8.4.5 Diagnostics function

There are multiple diagnostics functions to enable various diagnostics of the servo amplifier to be performed. (Display examples)



- Displays a list of the ON/OFF status of the external I/O signals of the servo amplifier.

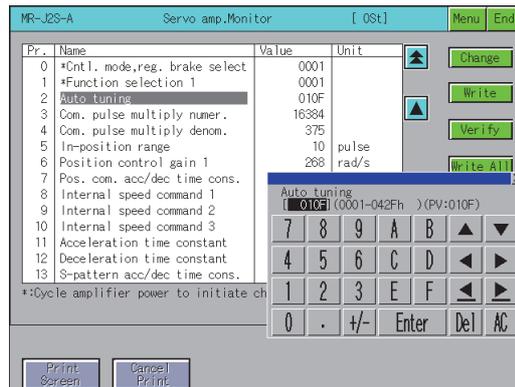


- Displays the servo amplifier software number and servo motor information (model name, ID and encoder resolution).

## ■ Writing of the servo parameters is enabled

### ⇒ 8.4.6 Parameter setting

The servo amplifier parameters can be read, changed and written to the servo amplifier.

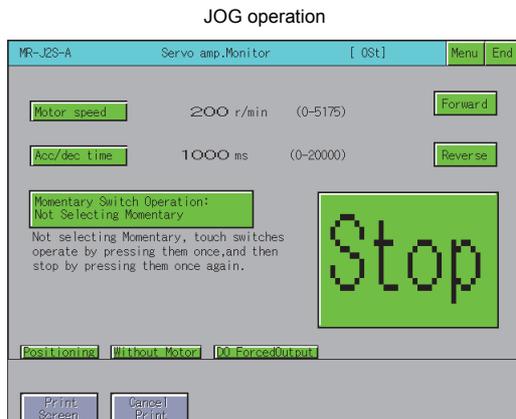


## ■ Various test operations can be performed

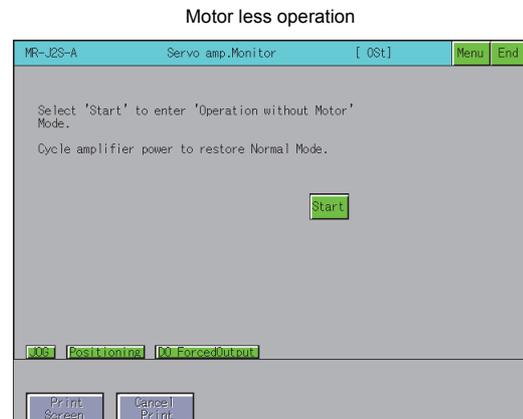
### ⇒ 8.4.7 Test operations

Various test operations can be performed on the connected servo amplifier.

(Display examples)



- The servo amplifier rotates while the Forward or Reverse key is touched.



- Simulates motion of the servo motor within the servo amplifier even when the servo motor is not connected.

## 8.2 Specifications

### 8.2.1 System configuration

This section describes the system configuration of the servo amplifier monitor.  
For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

#### ■ Servo amplifiers targeted for the servo amplifier monitor

Servo amplifier
MELSERVO-J2-Super series
MELSERVO-J2M series
MELSERVO-J3 series*1
MELSERVO-J4 series*2

\*1 Only MR-J3-□A is supported.

\*2 Only MR-J4-□A is supported.

#### ■ Connection type

This function can be used in the following connection types.

(○: Available, ✕: Unavailable)

Function		Connection type between GOT and servo amplifier
Name	Description	Direct connection
Servo amplifier monitor	Servo amplifier monitor, changing the servo parameter settings and test operations	○

#### ■ Required extended system application

The extended system applications shown below are required.

➡ 1.2 Required extended system application for the function

##### (1) Extended system application

Write the package data that has the extended system application for the servo amplifier monitor to the GOT.  
For the communication method with the GOT, refer to the following.

➡ GT Designer3 (GOT2000) Help

##### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

➡ GT Designer3 (GOT2000) Help

## ■ List of servo amplifier types that can be monitored and functions

The list of servo amplifier types that can be monitored and their functions is shown below.

### (1) MELSERVO-J2-Super series and MELSERVO-J2M series

(○ : Monitoring is possible with the servo amplifier monitor X : Monitoring is not possible with the servo amplifier monitor - : Function unavailable)

Function		MELSERVO-J2-Super series		MELSERVO-J2M series	
		MR-J2S-□A	MR-J2S-□CP	MR-J2M-P8A	MR-J2M-□DU
Setup	Model selection	○	○	○	○
	Baud rate*1	○	○	○	○
	Station No. Selection*1	○	○	-	-
	Station selection	○	○	○	○
	Axis selection	-	-	○	○
	Automatic demo	X	-	-	X
Monitor	Display all	○	○	○	○
	High speed monitor	X	X	X	X
	Multi-axis listing	-	-	X	X
	Trend graph	X	X	-	X
	I/O Input/Output display	-	-	-	-
Alarm	Display	○	○	○	○
	History	○	○	○	○
	Amplifier data	X	X	X	X
Diagnostic	I/O display	○	○	○	-
	Function device display	-	○	○	○
	No motor rotation	X	X	-	X
	Total power-on time	X	X	X	X
	Software number display	○	○	○	○
	Motor data display	○	○	-	○
	Tuning data	X	X	-	X
	Amplifier information	○	○	○	○
	Absolute encoder data	○	○	-	○
	Automatic voltage control	X	-	-	-
	Axis name setting	X	X	-	X
	Unit composition listing	-	-	○	○
	Parameters	Parameter list	○	○	-
Tuning		X	X	-	X
Change list		X	X	X	X
IFU parameter		-	-	○	○
DRU parameter		-	-	○	○
Parameter copy		-	-	-	-
Device setting		-	X	X	X
Basic setting		-	-	-	-
Gain/Filter		-	-	-	-
Extension setting		-	-	-	-
Test	I/O setting	-	-	-	-
	Jog	○	○	-	○
	Positioning	○	○	-	○
	Operation w/o motor	○	○	-	○
	Forced output	○	○	○	-
	Program test	X	-	-	X
Test	Single-step feed	-	X	-	-

(Continued to next page)

(○ : Monitoring is possible with the servo amplifier monitor ✕ : Monitoring is not possible with the servo amplifier monitor - : Function unavailable)

Function		MR-J2-Super series		MR-J2M series	
		MR-J2S-□A	MR-J2S-□CP	MR-J2M-P8A	MR-J2M-□DU
Point-data	Point table	-	✕	-	-
Advanced-function	Machine analyzer	✕	-	-	✕
	Gain search	✕	-	-	✕
	Machine simulation	✕	-	-	✕
	Robust disturbance compensation	-	-	-	-

\*1 Set the baud rate and station number setting with Communication Settings.  
For how to set the connecting device settings, refer to the following.

➡ GT Designer3 (GOT2000) Help

## (2) MELSERVO-J3 series and MELSERVO-J4 series

(○ : Monitoring is possible with the servo amplifier monitor ✕ : Monitoring is not possible with the servo amplifier monitor - : Function unavailable)

Function		MELSERVO-J3 series	MELSERVO-J4 series
		MR-J3-□A	MR-J4-□A
Setup	Model selection	○	○
	Station selection	○	○
	Connection Setting	✕	✕
Monitor	Display all	○	○
	I/O Monitor <sup>*1</sup>	○	○
	Trend graph	✕	✕
Diagnostic	Display	○	○
	History	○	○
	Alarm Onset Data	✕	✕
	Drive Recorder	-	✕
	No motor rotation	✕	✕
	System Configuration <sup>*2</sup>	○	○
	Life Diagnosis	✕	✕
	Machine Diagnosis	-	✕
	Amplifier information <sup>*2</sup>	○	○
	Absolute encoder data	○	○
I/O Display <sup>*1</sup>	○	○	
Parameters	Parameter Setting	○	○
	Axis Name Setting	✕	✕
Test	Jog	○	○
	Positioning	○	○
	Operation w/o motor	○	○
	Forced output	○	○
	Program test	✕	✕
	Test Mode Information	✕	✕
Adjustment	One-touch Tuning	-	✕
	Tuning	✕	✕
	Machine Analyzer	✕	✕
	Advanced Gain Search	✕	✕

\*1 It is displayed with "DI/DO display screen" in "Diagnostic".

\*2 It is displayed with "Amplifier information display screen" in "Diagnostic".

## ■ Required special data

Download the package data in the servo amplifier monitor data above to the GOT.

The available memory space shown in the table above is required in the user area to download the servo amplifier monitor to the GOT.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

➡ GT Designer3 (GOT2000) Help

## 8.2.2 Access range

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The access range is the same as the access range when the GOT is connected to a controller.

For details of the access range, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

## 8.2.3 Precautions

---

### (1) Before using the servo amplifier monitor

Read the manual of the connected servo amplifier carefully and make sure you understand the contents before performing servo amplifier monitoring.

### (2) Test operation

Be sure to read the precautions listed below before performing a test operation.

➡ 8.4.7 Test operations

### (3) Time displayed on the servo amplifier monitor

If the time data of the GOT is incorrect, the time on the servo amplifier monitor will not be displayed correctly.

Refer to the following for the GOT clock data.

➡ GT Designer3 (GOT2000) Help

### (4) Setting details

Use the same settings for the servo amplifier monitor on the GOT (Setup screen ( ➡ 8.4.2)) and the servo amplifier.

If the settings are different, proper communications may not be performed.

### (5) Servo amplifier monitored

One servo amplifier can be selected to be monitored among 32 servo amplifiers.

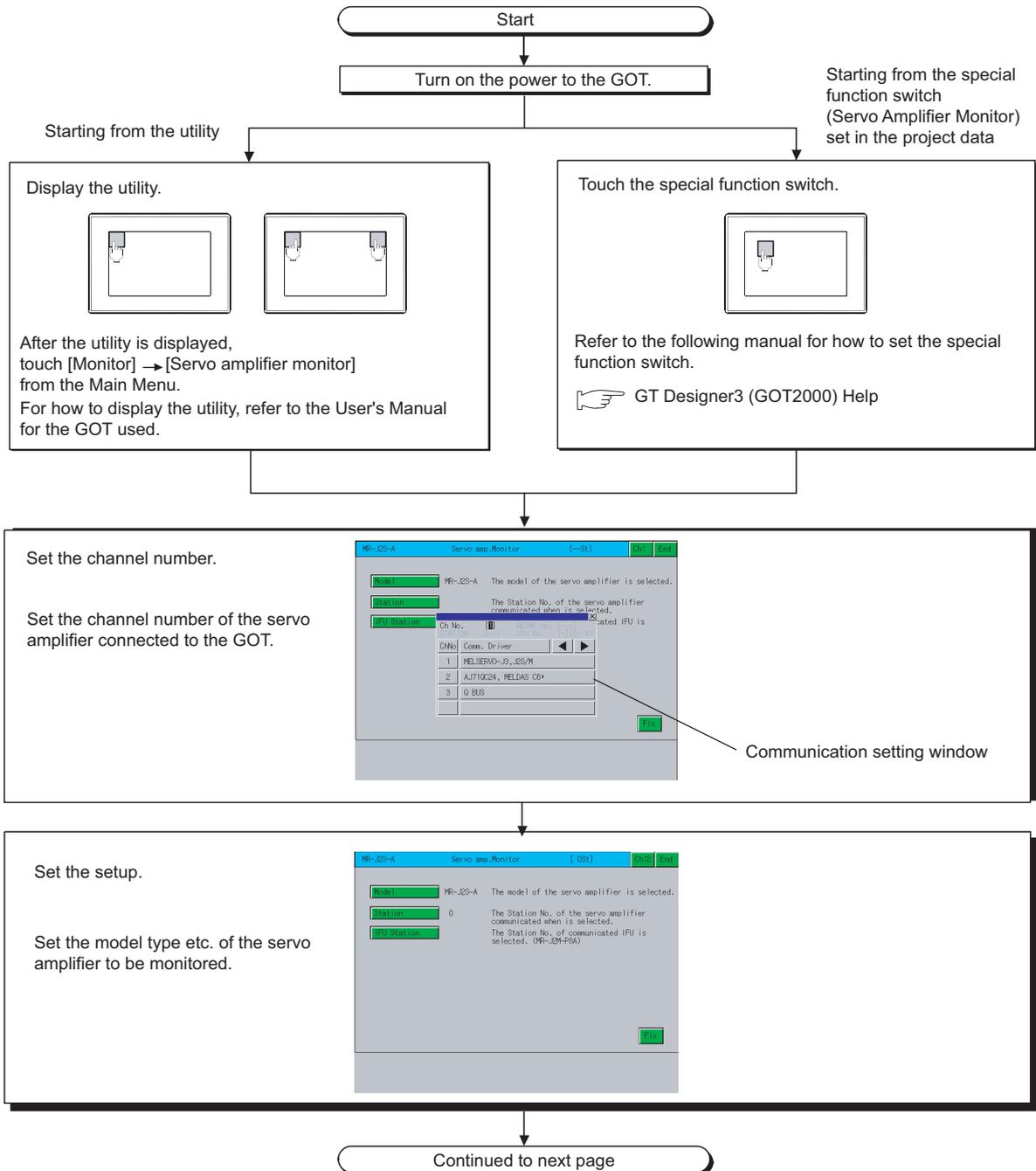
If multiple servo amplifiers are connected, select one servo amplifier to monitor.

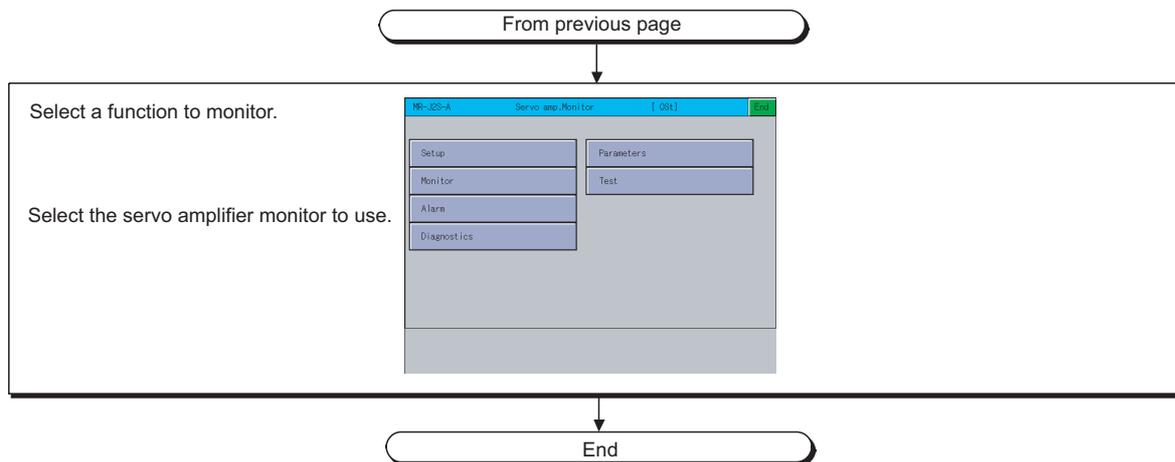
### (6) Background processing during parameter being input or output

Do not monitor the device of the servo amplifier parameter by the function which is operated background (such as device data transfer, logging, recipe, advanced recipe) while parameters are being input or output. Data may not be written or read normally or a communication error may occur.

## 8.3 Operations of Display

This section describes the flow until the servo amplifier monitor operation screen is displayed after the servo amplifier monitor (Option OS) is installed in the GOT.





## POINT

### (1) How to display the utility

For how to display the utility, refer to the following.

⇒ GOT2000 Series User's Manual (Utility)

### (2) Displaying communication setting window

After turning on the GOT, the communication setting window is displayed at the first startup of the servo amplifier monitor only.

For displaying the communication setting window at the second or later startup, touch the  button on the servo amplifier monitor screen.

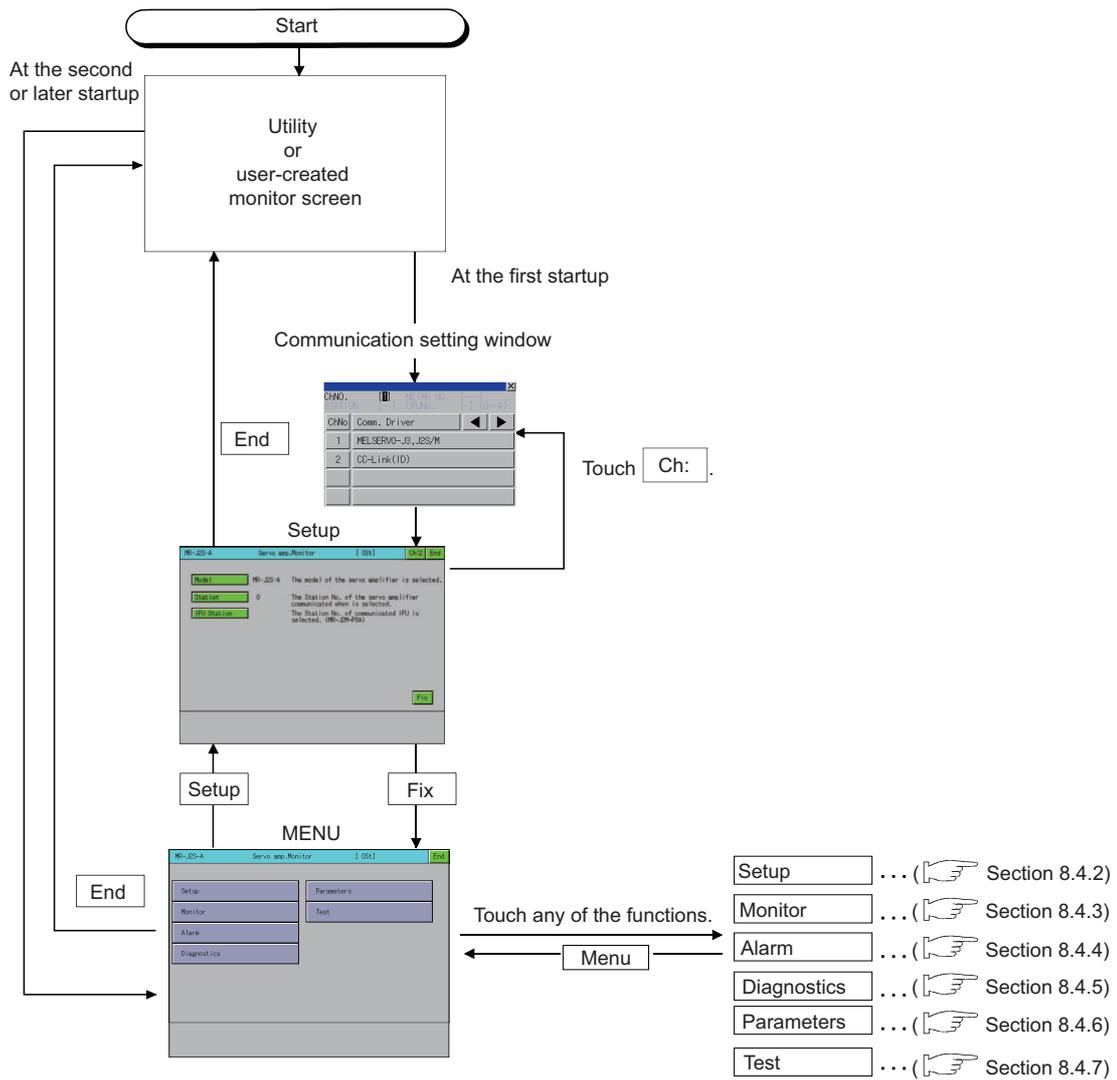
( ⇒ 8.4 Operations of Servo Amplifier Monitor Screens)

### (3) If the project data has not been downloaded

The servo amplifier monitor can be started from the utility even if the project data has not been downloaded to the GOT.

## ■ Changing screens

The following describes how to change the screen.



### To exit by touching **End**

At next startup of the servo amplifier monitor, the last exited screen is displayed.

If using the same screen frequently, exiting with the **End** button is convenient.

However, the last exited screen is not displayed if the servo amplifier monitor screen data was deleted due to an installation of package data, turning the GOT power from off to on, or a reset.

# 8.4 Operations of Servo Amplifier Monitor Screens

This section describes the operations of the screens when using the servo amplifier monitor. The display screen of the servo amplifier monitor varies slightly with the GOT used.

## 8.4.1 Servo amplifier monitor

With the servo amplifier monitor, various monitor functions, parameter setting changes and test operations can be performed on the servo amplifier connected to the GOT. To display a function, make a selection on the function selection menu screen.

(Function selection menu screen)



- 1)Setup . . . . . Selects the servo amplifier type to monitor, the station number setting (station number selection), and the IFU station number.  
(   ➡ 8.4.2)
  
- 2)Monitor . . . . . Displays all monitor data of the servo amplifier in real-time.  
(   ➡ 8.4.3)
  
- 3)Alarm . . . . . Displays the alarm that is currently occurring and the history. Also resets the alarm and clears the history.  
(   ➡ 8.4.4)
  
- 4)Diagnostics . . . . . Performs the following various diagnostics on the connected servo amplifier.  
(   ➡ 8.4.5)
  - DI/DO display : Displays the ON/OFF status of the external I/O signals.
  - Function device display : Displays the ON/OFF status of the I/O function devices.
  - Amplifier information display : Displays the model name, ID and encoder resolution of the servo motor connected to the servo amplifier.
  - ABS data display : Displays the absolute position data of the absolute position detection system.
  - Unit composition list display : Displays a list of servo amplifier unit composition.
  
- 5)Parameters . . . . . Displays the parameter data and changes the parameter settings.  
(   ➡ 8.4.6)
  
- 6)Test . . . . . Performs various test operations (JOG operation, positioning operation, motor-less operation and DO forced output).  
(   ➡ 8.4.7)

## 8.4.2 Setup

This is used to set the communication with the servo amplifier.

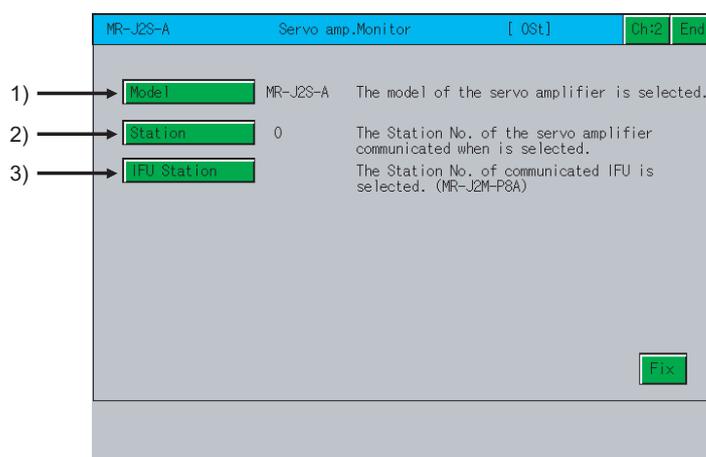
### POINT

- (1) **Before making the settings on the setup screen, also make the same settings on the servo amplifier side.**  
If the settings on this screen and the settings on the servo amplifier do not match, proper communications may not be performed.
- (2) **The settings on the setup screen return to the initial state when the GOT is turned off or reset.**  
After turning on the power to the GOT, perform the settings on the setup screen again.

### ■ Setup screen

This section describes the display data of the setup screen and the key functions displayed on the screen.

#### (1) Displayed contents



\* [Axis number] and [Capacity setting] cannot be set.

No.	Item	Description
1)	Model	Displays the model of the servo amplifier to be connected.
2)	Station	Displays the station number (00 to 31) of the servo amplifier to communicate with.
3)	IFU Station	Displays the serial communication station number of the IFU (interface unit).

## (2) Key functions

The table below shows the functions of the keys that are used for the operations of the setup screen.

Key	Function
Model	Sets the model of the servo amplifier to be connected.
Station	Sets the station number (00 to 31) of the servo amplifier to communicate with.
IFU Station <sup>*1</sup>	Sets the serial communication station number of the IFU (interface unit).
Fix	Sets the setup details and returns to the function selection menu screen.
End	Exits the servo amplifier monitor.
Ch:2	Displays the communication setting window.

\*1 This is valid only when MR-J2M-P8A is connected.

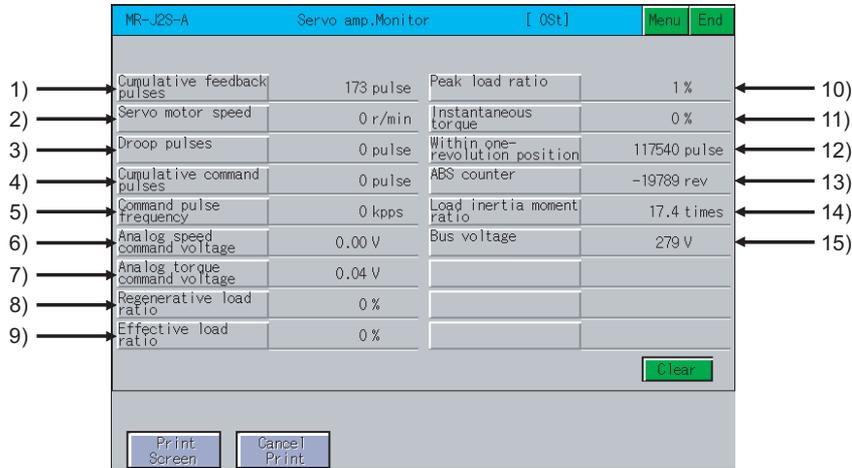
## 8.4.3 Monitor functions

Displays all monitor data of the servo amplifier in real-time.

### ■ Monitor screen

The following describes the display data of the monitor screen and the key functions displayed on the screen.

#### (1) Displayed contents



No.	Item	Description
1)	Cumulative feedback pulses	Counts the feedback pulses from the servo motor encoder and displays the result. • When the set value exceeds "9999999", counting begins from "0". • During reverse rotation, the – sign is added.
2)	Servo motor speed	Displays the speed of the servo motor. • The value is displayed with the 0.1r/min unit rounded off. • During reverse rotation, the – sign is added.
3)	Droop pulses	Displays the droop pulses of the deviation counter. • During reverse rotation, the – sign is added.
4)	Cumulative command pulses	Counts the position command input pulses and displays the result. • Since the value before multiplication of the electrical gear (CMX/CDV) is displayed, it may not match the cumulative feedback pulse display. • During reverse rotation command, the – sign is added.
5)	Command pulse frequency	Displays the frequency of the position command input pulse. • The value before multiplication of the electrical gear (CMX/CDV) is displayed. • During reverse rotation command, the – sign is added.
6)	Analog speed command voltage (during speed control mode) <sup>*1</sup>	Displays the input voltage of the analog speed command (VC).
	Analog speed limit voltage (during torque control mode) <sup>*1</sup>	Displays the input voltage of the analog speed limit (VLA).
7)	Analog torque command voltage (during position/speed control mode) <sup>*1</sup>	Displays the voltage of the analog torque limit (TLA).
	Analog torque limit voltage (during torque control mode) <sup>*1</sup>	Displays the voltage of the analog torque limit (TC).

(Continued to next page)

No.	Item	Description
8)	Regenerative load ratio	Displays the ratio of the regenerative power to the permissible regenerative power in %. <ul style="list-style-type: none"> <li>The permissible regenerative power differs depending on the presence/absence of the regenerative brake option. Set parameter No. 0 correctly according to the regenerative brake option. (Set to 80% or lower as a guide.)</li> </ul>
9)	Effective load ratio	Displays the continuous effective load torque. <ul style="list-style-type: none"> <li>The effective value is displayed on the assumption that the rated torque is 100%.</li> </ul>
10)	Peak load ratio	Displays the maximum torque generated. <ul style="list-style-type: none"> <li>The maximum value for the past 15 seconds is displayed on the assumption that the rated torque is 100%.</li> </ul>
11)	Instantaneous torque	Displays the instantaneous torque. <ul style="list-style-type: none"> <li>The value of the generated torque is displayed in real time on the assumption that the rated torque is 100%.</li> </ul>
12)	Within one-revolution position	Displays the within one-revolution position in the servo motor in pulse units of the encoder. <ul style="list-style-type: none"> <li>When the value exceeds the maximum pulse count, it returns to 0.</li> </ul>
13)	ABS counter	Displays the distance from the home position (0) in the absolute position detection system as the multi-revolution counter value of the absolute position encoder.
14)	Load inertia moment ratio	Displays the estimated ratio of the servo motor shaft-equivalent load inertia moment to the servo motor's inertia moment.
15)	Bus voltage	Displays the voltage (between P and N) of the main circuit converter.

\*1: This is displayed only when the MR-J2S-□ A is connected.

## (2) Key functions

The table below shows the functions of the keys that are used for the operations on the monitor screen.

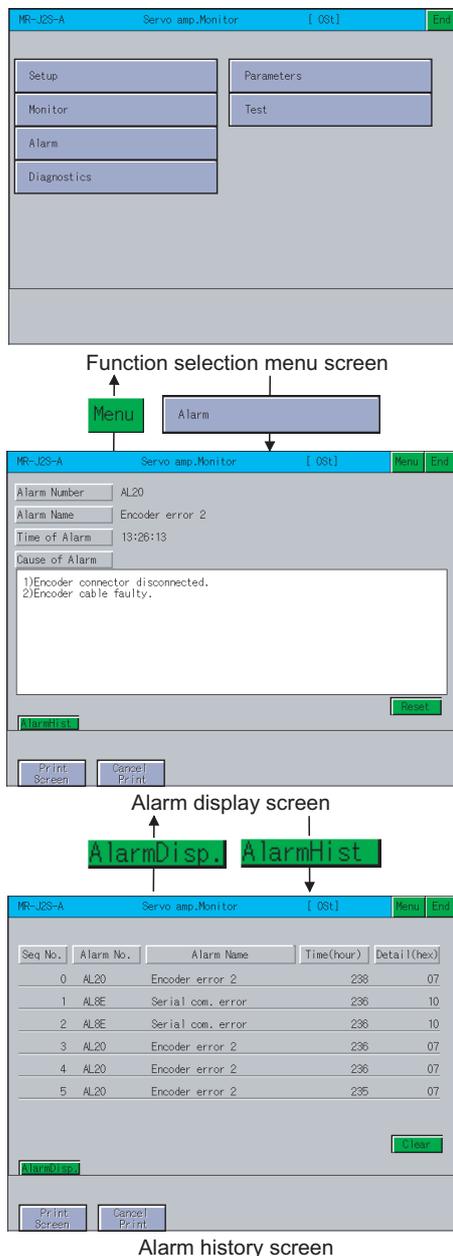
Key	Function
	Clears the values of [Cumulative feedback pulses] and [Cumulative command pulses] to 0.
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: <ul style="list-style-type: none"> <li>6.4.12 Hard copy output</li> </ul>
	The touch operation of this key is invalid.

## 8.4.4 Alarm function

The following alarms are displayed.

- Alarm display : Displays the alarm that is currently occurring. ( ■Alarm display screen)
- Alarm history : Displays the history of alarms that occurred. ( ■Alarm history screen)

The screen changes as follows after **Alarm** is selected on the function selection menu screen.



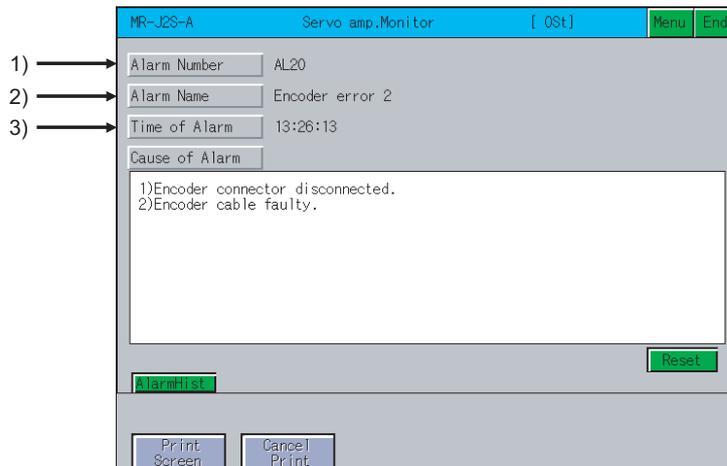
### POINT

If the alarm display screen data has not been downloaded to the GOT, the message "Monitor data not found" is displayed and the subsequent screens are not displayed.

## ■ Alarm display screen

The following describes the display data of the alarm display screen and the key functions displayed on the screen.

### (1) Displayed contents



No.	Item	Description
1)	Alarm Number	Displays the number of the alarm that occurred.
2)	Alarm Name	Displays the name of the alarm that occurred.
3)	Time of Alarm	Displays the date and time when the alarm occurred. <ul style="list-style-type: none"> <li>The alarm occurrence time is displayed on the basis of the clock data of the GOT.</li> <li>If there is an error in the servo amplifier before it is connected to the GOT, an alarm is displayed when the servo amplifier is connected to the GOT. In this case, the time when the servo amplifier is connected to the GOT is displayed as the alarm occurrence time.</li> </ul>

### (2) Key functions

The table below shows the functions of the keys that are used for operations of the alarm display screen.

Key	Function
	Resets the alarm. <ul style="list-style-type: none"> <li>The reset alarm is stored as the latest alarm.</li> </ul>
	Changes to the alarm history screen (  ■Alarm history screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: <ul style="list-style-type: none"> <li> 8.4.8 Hard copy output</li> </ul>
	The touch operation of this key is invalid.

## ■ Alarm history screen

The following describes the display data of the alarm history screen and the key functions displayed on the screen.

### (1) Displayed contents

Seq No.	Alarm No.	Alarm Name	Time(hour)	Detail(hex)
0	AL20	Encoder error 2	238	07
1	AL8E	Serial com. error	236	10
2	AL8E	Serial com. error	236	10
3	AL20	Encoder error 2	236	07
4	AL20	Encoder error 2	236	07
5	AL20	Encoder error 2	235	07

No.	Item	Description
1)	Seq No.	Displays the alarm history, starting from the latest alarm, in order. • Later alarms have smaller Seq Nos. (0 indicates the latest alarm) • Up to six alarms can be displayed in the alarm history.
2)	Alarm No.	Displays the number of the alarm that occurred.
3)	Alarm Name	Displays the name of the alarm that occurred.
4)	Time (hour)	Displays the energization time of the servo amplifier until alarm occurrence on the assumption that the time at factory shipment is "0".
5)	Detail (hex)	Displays the code for detailed alarm information.

### (2) Key functions

The table below shows the functions of the keys that are used for operations of the alarm history screen.

Key	Function
	Clears the alarm history stored in the servo amplifier.
	Changes to the Alarm Display screen (  ■Alarm display screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: 8.4.8 Hard copy output
	The touch operation of this key is invalid.

## 8.4.5 Diagnostics function

---

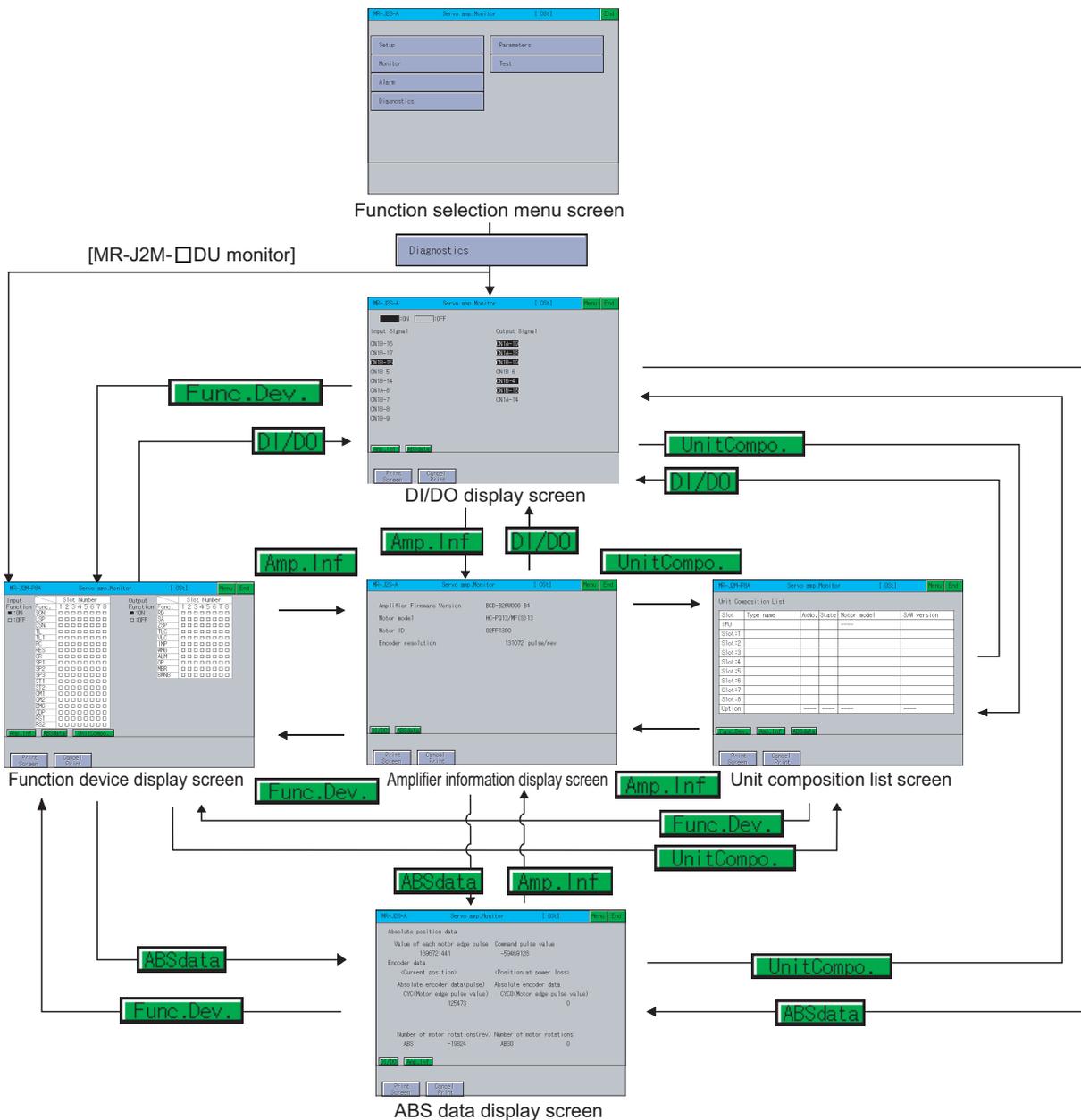
This function performs the following various diagnostics on the connected servo amplifier.

- DI/DO display : Displays the ON/OFF status of the external I/O signals.  
(  ■DI/DO display screen)
- Function device display : Displays the ON/OFF status of the I/O function devices.  
(  ■Function device display screen)
- Amplifier information display : Displays the model name, ID and encoder resolution of the servo motor connected to the servo amplifier.  
(  ■Amplifier information display screen)
- ABS data display : Displays the absolute position data of the absolute position detection system.  
(  ■ABS data display screen)
- Unit composition list display : Displays a list of servo amplifier unit compositions.  
(  ■Unit composition list display screen)

## (1) Changing screens

The screen changes as follows after **Diagnostics** is selected on the function selection menu screen. Depending on the model of the connected servo amplifier, some screens may not be displayed. Refer to the following for the screens that cannot be displayed.

### 8.2.1 List of servo amplifier types that can be monitored and functions



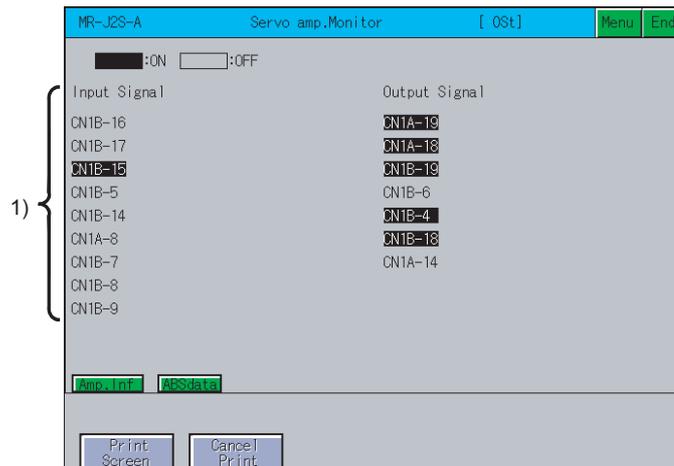
### POINT

If the DI/DO display screen data or function device display screen data (only when monitoring the MR-J2M-□DU) has not been downloaded to the GOT, "Monitor data not found" is displayed and the subsequent screens are not displayed.

## DI/DO display screen

The following describes the display data of the DI/DO display screen and the key functions displayed on the screen.

### (1) Displayed contents



No.	Item	Description
1)	Input/Output Signal	Displays whether the DI/DO signal is ON (lit) or OFF (not lit).

### (2) Key functions

The table below shows the functions of the keys that are used for the operations of the DI/DO display screen.

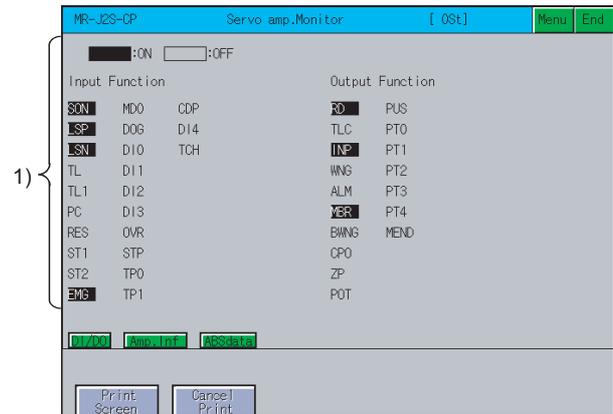
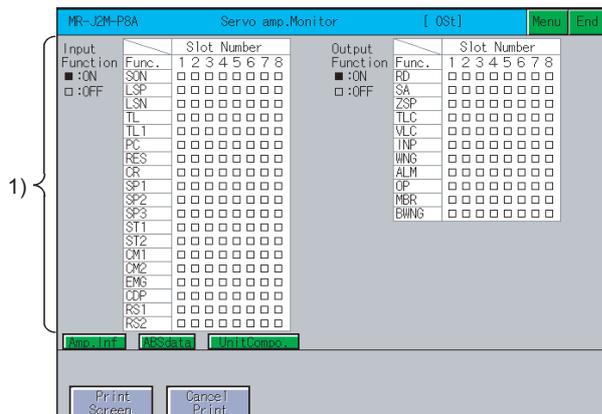
Key	Function
	Displays the DI/DO signal of the extension IO unit.
	Changes to the function device screen (  ■Function device display screen).
	Changes to the amplifier information screen (  ■Amplifier information display screen).
	Changes to the unit composition list screen (  ■Unit composition list display screen).
	Changes to the ABS data screen (  ■ABS data display screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: 8.4.8 Hard copy output
	The touch operation of this key is invalid.

\*1 This is valid only when MR-J2M-P8A is connected.

## Function device display screen

The following describes the display data of the function device display screen and the key functions displayed on the screen.

### (1) Displayed contents



[When MR-J2S- □CP is monitored]

No.	Item	Description
1)	Input/Output Function	Displays the ON (■) or OFF (□) status for each I/O signal.

### (2) Key functions

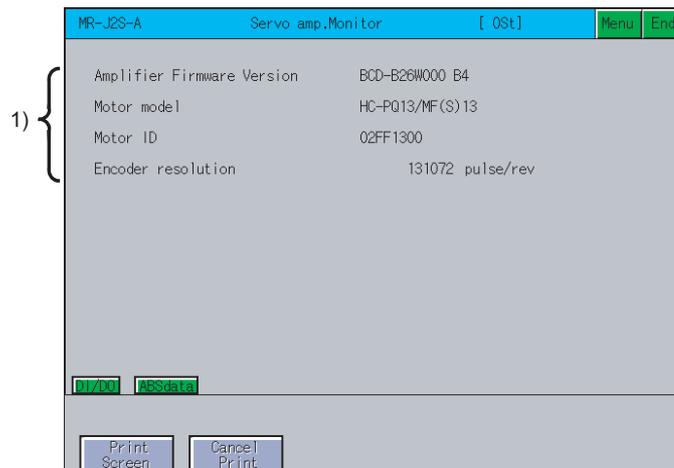
The table below shows the functions of the keys that are used for the operations of the function device display screen.

Key	Function
	Changes to the DI/DO display screen ( ■DI/DO display screen).
	Changes to the ABS data screen ( ■ABS data display screen).
	Changes to the amplifier information screen ( ■Amplifier information display screen).
	Changes to the unit composition list screen ( ■Unit composition list display screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format it with a printer. For further information about hard copies, refer to the following: ■ 8.4.8 Hard copy output
	The touch operation of this key is invalid.

## ■ Amplifier information display screen

The following describes the display data of the amplifier information display screen and the key functions displayed on the screen.

### (1) Displayed contents



No.	Item	Description
1)	Servo amplifier model.*1	Displays the model name of the servo amplifier.
	Amplifier Firmware Version	Displays the software number of the servo amplifier connected to the GOT.
	Accumulated power-on time*1	Displays the cumulative time of the control power-on after the product was shipped from the factory.
	Num. of inrush cur. sw. time*1	Displays the number of times the rush relay has been turned on/off after the product was shipped from the factory.
	Optional card model*1	Displays the model name of the option card installed in the servo amplifier. If no option card is installed, then "No connection" is displayed.
	Motor model*2	Displays the model name of the servo motor connected to the servo amplifier.
	Motor ID*2	Displays the ID of the servo motor connected to the servo amplifier.
	Encoder resolution*2	Displays the encoder resolution of the servo motor connected to the servo amplifier.

\*1 This is displayed only for MR-J3-□A or MR-J4-□A.

\*2 This is not displayed when monitoring the MR-J2M-P8A.

### (2) Key functions

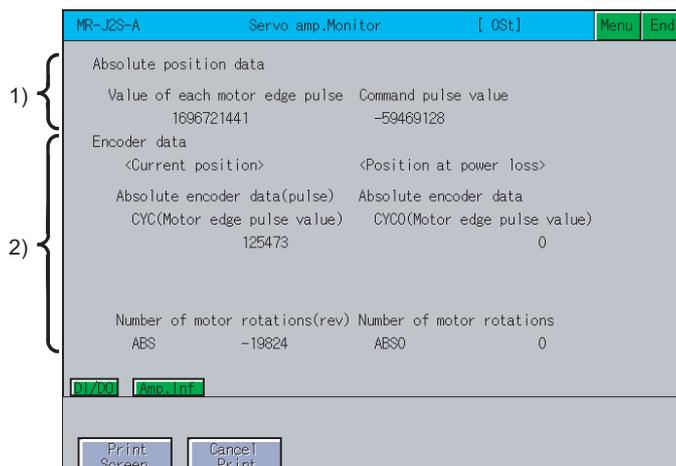
The table below shows the functions of the keys that are used for the operations of the amplifier information display screen.

Key	Function
	Changes to the DI/DO display screen (  ■DI/DO display screen).
	Changes to the function device screen (  ■Function device display screen).
	Changes to the ABS data screen (  ■ABS data display screen).
	Changes to the unit composition list screen (  ■Unit composition list display screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: 8.4.8 Hard copy output
	The touch operation of this key is invalid.

## ■ ABS data display screen

The following describes the display data of the ABS data display screen and the key functions displayed on the screen.

### (1) Displayed contents



No.	Item	Description
1)	Absolute position data	Displays the absolute position data in the absolute position detection system with the following items. <ul style="list-style-type: none"> <li>• Motor edge pulse value</li> <li>• Command pulse value</li> </ul>
2)	Encoder data	Displays the encoder data with the following items. <p>Current position</p> <ul style="list-style-type: none"> <li>• Absolute encoder data</li> <li>• CYC (Motor edge pulse value)</li> <li>• CYC (Command pulse value)</li> <li>• Number of motor rotations ABS</li> </ul> <p>Position at power loss</p> <ul style="list-style-type: none"> <li>• Absolute encoder data</li> <li>• CYC0 (Motor edge pulse value)</li> <li>• CYC0 (Command pulse value)</li> <li>• Number of motor rotations ABS0</li> </ul>

### (2) Key functions

The table below shows the functions of the keys that are used for the operations of the ABS data display screen.

Key	Function
	Changes to the DI/DO display screen (  ■DI/DO display screen).
	Changes to the function device screen (  ■Function device display screen).
	Changes to the unit composition list screen (  ■Unit composition list display screen).
	Changes to the amplifier information screen (  ■Amplifier information display screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: 8.4.8 Hard copy output
	The touch operation of this key is invalid.

## ■ Unit composition list display screen

The following describes the display data of the unit composition list screen and the key functions displayed on the screen.

### (1) Displayed contents

Slot	Type name	AxNo.	State	Motor model	S/W version
IFU				----	
Slot:1					
Slot:2					
Slot:3					
Slot:4					
Slot:5					
Slot:6					
Slot:7					
Slot:8					
Option		----	----	----	----

No.	Item	Description
1)	Type name	Displays the model name of the drive unit (DRU), interface unit (IFU) and option unit installed in each slot.
2)	AxNo.	Displays the axis number of the drive unit (DRU) and interface unit (IFU).
3)	State	Displays status of the drive unit (DRU) and interface unit (IFU) and the alarm/warning number.
4)	Motor model	Displays the model name of the motor connected to the drive unit (DRU).
5)	S/W version	Displays the software number of the drive unit (DRU) and interface unit (IFU).

### (2) Key functions

The table below shows the functions of the keys that are used for the operations of the unit composition list screen.

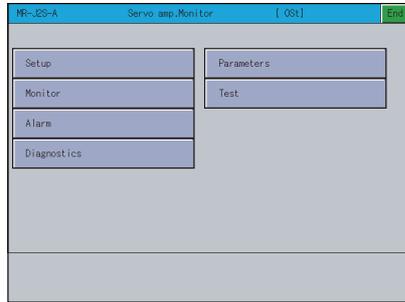
Key	Function
	Changes to the DI/DO display screen (  ■DI/DO display screen).
	Changes to the ABS data screen (  ■ABS data display screen).
	Changes to the amplifier information screen (  ■Amplifier information display screen).
	Changes to the function device screen (  ■Function device display screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: 8.4.8 Hard copy output
	The touch operation of this key is invalid.

## 8.4.6 Parameter setting

You can use the parameter setting function to set the servo parameters (basic parameters/expansion parameter 1, 2) of the connected servo amplifier.

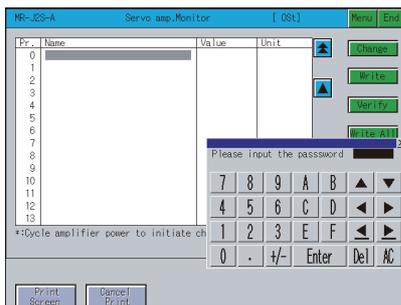
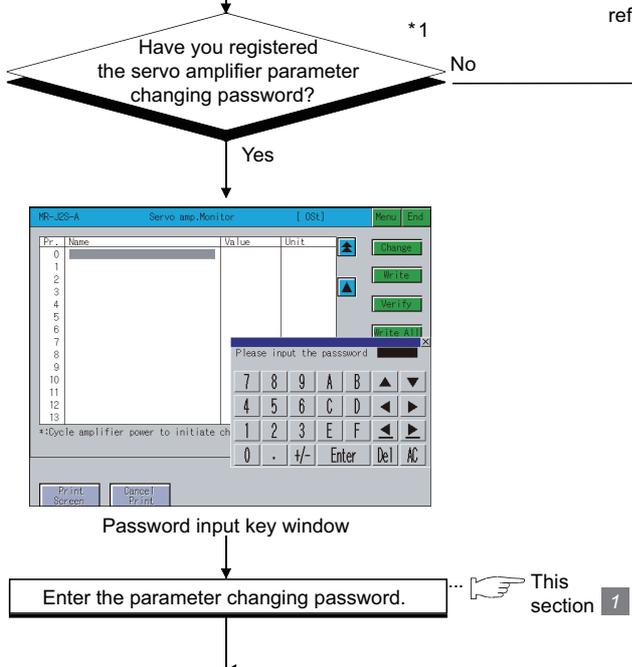
The password input key window appears for accessing the parameter setting screen of the servo amplifier monitor when the password is set with GT Designer3.

The screen changes as follows after **Parameters** is selected on the function selection menu screen.



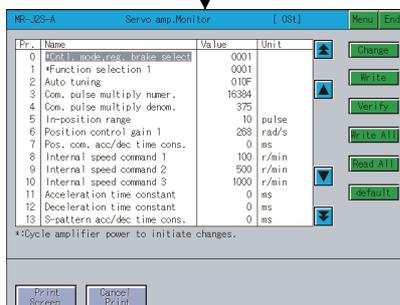
Function selection menu screen (Section 9.4.2)

\*1 Set the servo parameter changing password on GT Designer3.  
For details of the parameter setting, refer to the GT Designer3 (GOT2000) Help.



Password input key window

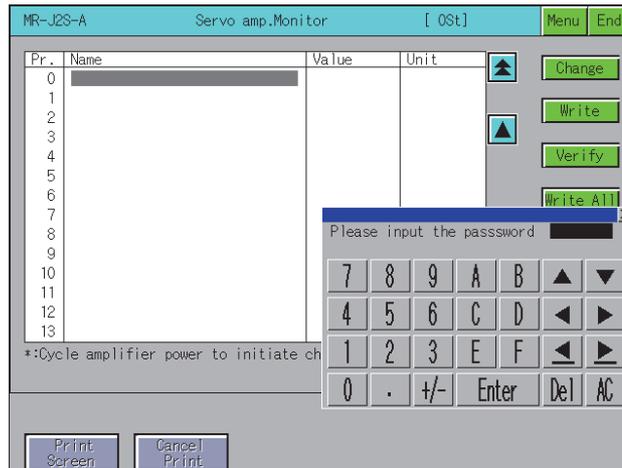
Enter the parameter changing password. ... This section 1



Parameter setting screen

## ■ Password input operation procedure

The following describes the procedure for inputting the password for changing the servo parameters.



### (1) Functions

- If the input password matches, the parameter setting screen is displayed.
- If the input password does not match, an error message is displayed.  
Touching  returns to the function selection menu screen.
- Numerical numbers and letters A to F can be used for a password.

### (2) Operations

#### (a) Inputting the password

Touch  to  and  to  to input the password.

After inputting the password, touch  to set the password.

To edit the input characters, touch  to delete the characters, and then input the new characters.

#### (b) Canceling password input

Touch  to return to the monitor screen.

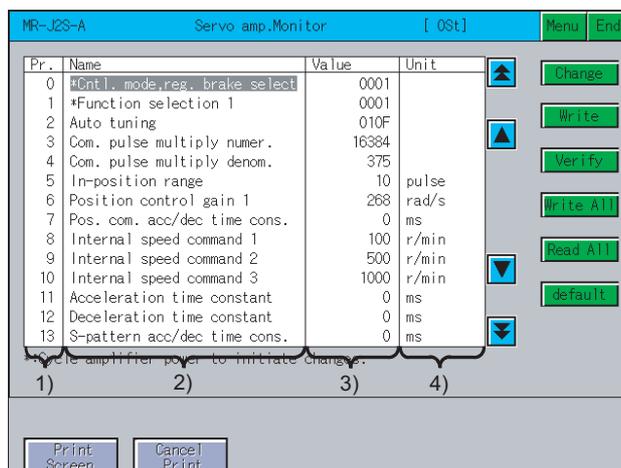
## Parameter setting screen

The following describes the display data of the parameter setting screen and the key functions displayed on the screen.

### POINT

Parameters with an asterisk (\*) preceding the name become valid after the parameters are set and the power of the servo amplifier is turned off and then on again.

### (1) Display screen



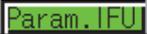
No.	Item	Description
1)	Pr.	Displays the parameter number.
2)	Name	Displays the parameter name.
3)	Value	Displays the present set value of the parameter.
4)	Unit	Displays the setting unit for each parameter.

### (2) Key functions

The table below shows the functions of the keys that are used with the operations on the parameter setting screen.

Key	Function
	Selects the servo parameter setting item.
	Displays the parameter items with scrolling a page up/down.
	Changes the servo parameter settings read to the GOT internal memory.
	Writes the servo parameter settings of the selected items to the servo amplifier.
	Matches all parameter values presently displayed on the GOT with the servo amplifier parameter values.
	Writes all parameter values presently displayed on the GOT to the parameters of the servo amplifier.
	Reads all parameter values from the servo amplifier to the GOT and displays those values.
	Returns all parameter values to their initial values.

(Continued to next page)

Key	Function
  *1	Switches between the parameter display for the drive unit (DRU) and interface unit (IFU) each time this is touched.
 *1	Selects the slot number of the drive unit (DRU).
 *2	Changes the gain filter parameter.
  *2	Changes the extension setting parameter.
 *3	Changes the extension setting 2 parameter.
 *3	Changes the extension setting 3 parameter.
 *2	Changes the I/O setting parameter.
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following:  8.4.8 Hard copy output
	The touch operation of this key is invalid.

\*1: This is displayed only when MR-J2M-P8A is connected.

\*2: This is displayed only when MR-J3-□A or MR-J4-□A is connected.

\*3: This is displayed only when MR-J4-□A is connected.

## POINT

### Operations of when is executed for the MR-J3-□A parameters

The operation when  is executed differs depending on the displayed parameter screen, as shown in (1) and (2) below.

#### (1) Basic setting, gain/filter or extension setting parameter screen

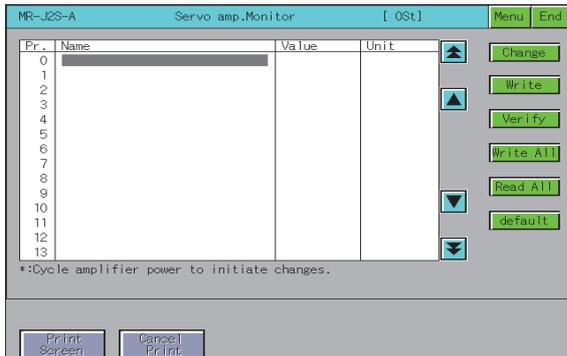
The 000BH processing (reference/writing is possible only for basic setting, gain/filter and extension setting parameter) is performed.

#### (2) I/O setting parameter screen

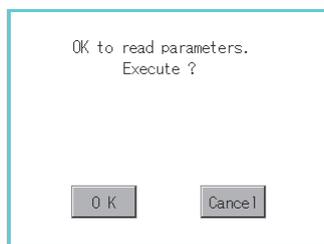
The 000CH processing (reference/writing is possible for all parameters) is performed.

## Parameter setting operation

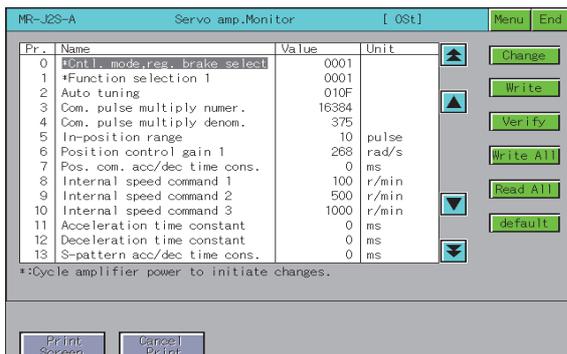
The following describes the procedure of changing the setting of the "Auto tuning" item as an example of the parameter setting operation.



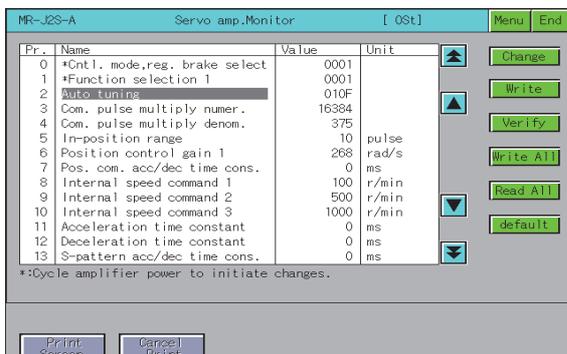
1. Touch the **Read All** key.  
The parameter values within the servo amplifier are displayed on the screen.



2. The parameter read confirmation window is displayed.  
Touch the **OK** key to read the parameter values within the servo amplifier to the GOT.



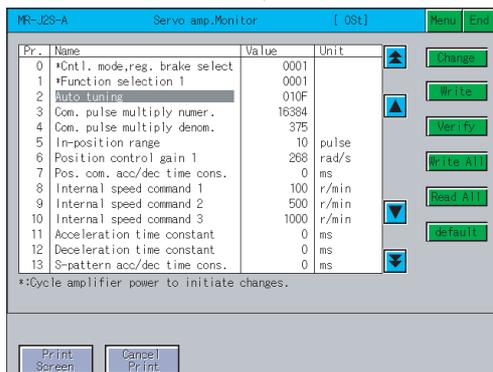
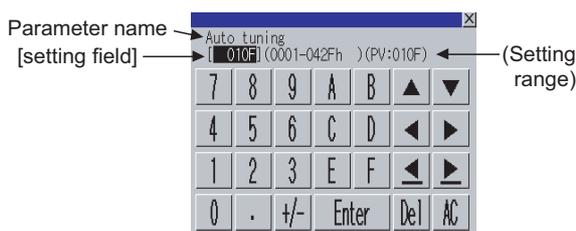
3. The read parameter values within the servo amplifier are displayed on the screen.  
Parameters that cannot be written or read are not displayed on the parameter setting screen.



4. Select the item whose parameter is to be set with the **▲** or **▼** key, and touch the **Change** key.

(To next page)

(From previous page)



5. As the parameter setting window appears, enter the parameter setting with alphanumeric keys, and touch **Enter** to confirm the setting.  
To cancel the parameter setting operation, touch **X** to close the parameter setting window.
6. The parameter setting is changed on the parameter setting screen. Select the changed parameter item, and touch the **Write** key.  
If there are multiple parameter items with changed settings, touch the **Write All** key to write all parameter items with changed settings.
7. A confirmation window appears.  
Touch the **OK** key to write the parameter setting(s) to the servo amplifier.  
To cancel writing of the parameter setting(s), touch **Cancel** key.  
This completes the writing operation of the parameter setting.

## POINT

- (1) **The changes to the parameter setting are written to the E2PROM of the servo amplifier.**  
Consequently, the written parameter setting is retained even if the power of the amplifier is off.
- (2) **If the following parameter settings are changed on the servo amplifier, be sure to also change the settings on the GOT setup screen ( 8.4.2) in the same way.**  
If the settings on the setup screen and the servo amplifier do not match, normal communications with the servo amplifier may not be performed.
  - Station number setting
  - IFU station number setting

## 8.4.7 Test operations

---

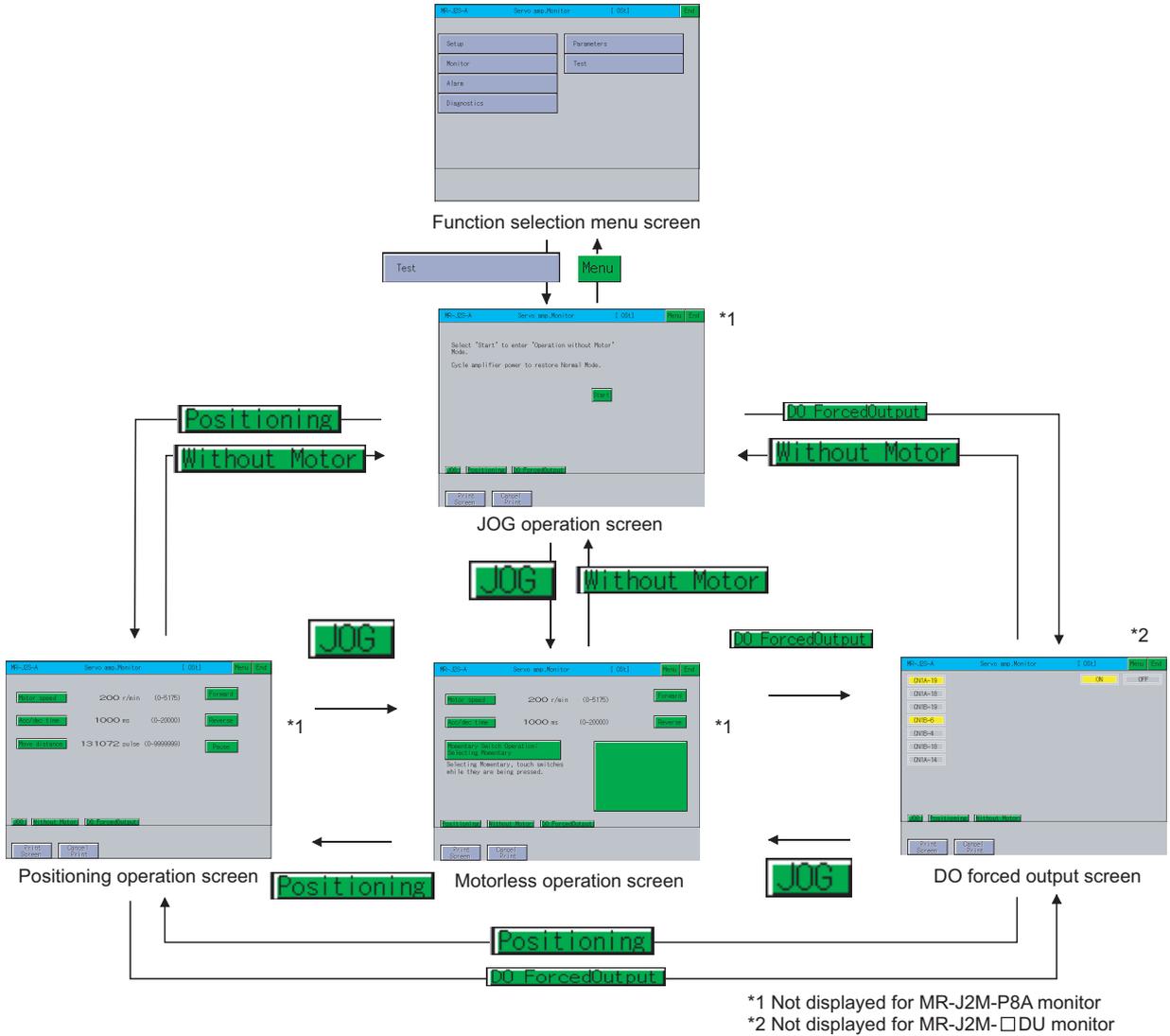
This function performs the following test operations on the connected servo amplifier.

- JOG operation : The servo motor rotates while the Forward or Reverse key is touched.  
(  ■JOG operation screen)
- Positioning operation : This operation starts when the Forward or Reverse key is touched, and the servo motor rotates by the preset distance.  
(  ■Positioning operation screen)
- Motor-less operation : Simulates the motion of the servo motor within the servo amplifier even when the servo motor is not connected.  
(  ■Motor-less operation screen)
- DO forced output : Forcibly turns the output signals ON/OFF regardless of the output conditions of the servo amplifier output signals.  
(  ■)

**(1) Changing screens**

The screen changes as follows after **Test** is selected on the function selection menu screen. Depending on the model of the connected servo amplifier, some screens may not be displayed. Refer to the following for the screens that cannot be displayed.

8.2.1 ■List of servo amplifier types that can be monitored and functions



**POINT**

If the JOG operation screen data has not been downloaded to the GOT, "Monitor data not found" is displayed and the subsequent screens are not displayed.

## ■ Precautions for test operations

The following describes the precautions when performing a test operation of the servo amplifier monitor.

### WARNING

- Do not operate the servo amplifier switches with wet hands. Doing so can cause an electric shock.
- Do not perform operations with the front cover of the servo amplifier removed. Doing so can cause an electric shock since the high-voltage terminals and live parts are exposed.
- Do not open the front cover of the servo amplifier when the power is on or during operation. Doing so can cause an electric shock.

### CAUTION

- Be sure to read the precautions for test operation in the manuals of the servo amplifier before performing a test operation.
- Check parameters of the servo amplifier before starting operation. Unexpected operations may occur depending on the machine.
- The heat sink, regenerative brake resistor, servo motor and other parts of the servo amplifier may be hot while the power is on or for a period after the power is turned off; therefore, do not touch or bring parts (cables etc.) close to them. Doing so can cause fire or damage to the parts.

#### (1) Servo on

For test operation of JOG operation/positioning operation, the SON digital input signal of the servo amplifier is turned on automatically in the servo amplifier to start operation, regardless of the ON/OFF status of the SON signal of the digital I/O signal of the servo amplifier.

In addition, the servo amplifier does not accept any external command pulses and input signals (excluding emergency stop) until the test operation screen is exited.

The SON automatically turns on when touching the **Forward** or **Reverse** key on the JOG operation screen or positioning operation screen of the servo amplifier monitor.

#### (2) Stop

### POINT

To perform an emergency stop, turn off the emergency stop signal of the servo amplifier or turn off the input power.

- (a) Use the following procedure to stop test operation from the servo amplifier monitor.
  - JOG operation: Release the **Forward** or **Reverse** key.
  - Positioning operation: Touch the **Pause** key.
- (b) The servo motor stops if any of the following states occurs during test operation.
  - The communication cable is disconnected.
  - The screen is switched to another servo amplifier monitor screen or the servo amplifier monitor is exited. However, during motor-less operation, the test mode is not canceled until the servo amplifier is powered off.

## ■ Preparations for test operations

When performing test operations, it is necessary to make the test operation settings on the connected servo amplifier.

Refer to the manual of the connected servo amplifier for details of making settings on the servo amplifier to perform test operations.

## ■ JOG operation screen

This section describes the display data of the JOG operation screen and the key functions displayed on the screen.

### (1) Displayed contents



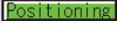
No.	Item	Description
1)	Motor speed	Displays the set speed of the servo motor.
2)	Acc/dec time	Displays the set acceleration/deceleration time constant.
3)	Momentary Switch Operation	Displays how to operate the JOG operation.

### (2) Operation

- (a) When selecting **Momentary Switch Operation: Selecting Momentary**
  - Start operation  
Touch the **Forward** or **Reverse** key.
  - Stop operation  
Release the **Forward** or **Reverse** key.
- (b) When selecting **Momentary Switch Operation: Not Selecting Momentary**
  - Start operation  
Touch the **Forward** or **Reverse** key.
  - Stop operation  
Touch the **Pause** key.

### (3) Key functions

The table below shows the functions of the keys that are used for the operations of the JOG operation screen.

Key	Function
	Runs the servo motor in the forward rotation (CCW) direction.
	Runs the servo motor in the reverse rotation (CW) direction.
	Changes the speed of the servo motor.
	Changes the acceleration/deceleration time constant.
 	Touching this changes the operation mode (momentary operation/no momentary operation). <b>Momentary Switch Operation: Selecting Momentary</b> The servo motor rotates while the  or  key is touched. (Releasing your finger from these keys stops the operation.) <b>Momentary Switch Operation: Not Selecting Momentary</b> The servo motor rotates while the  or  key is touched, stops when the  key is touched.
	Changes to the positioning operation screen (  ■Positioning operation screen).
	Changes to the motor-less operation screen (  ■Motor-less operation screen).
	Changes to the DO forced output screen (  ■).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following:  8.4.8 Hard copy output
	The touch operation of this key is invalid.

## ■ Positioning operation screen

The following describes the display data of the positioning operation screen and the key functions displayed on the screen.

### (1) Displayed contents



No.	Item	Description
1)	Motor speed	Displays the set speed of the servo motor.
2)	Acc/dec time	Displays the set acceleration/deceleration time constant.
3)	Move distance	Displays the set distance.

### (2) Operation

#### (a) MELSERVO-J2-Super series and MELSERVO-J2 series

- Start operation

Touch the **Forward** or **Reverse** key.

To resume operation that has been paused, touch the **Forward** key to resume forward rotation or the **Reverse** key to resume reverse rotation.

- Stop operation

When the set distance has been reached, operation stops.

Touching the **Pause** key pauses the operation.

If touch the **Pause** key again after the operation is paused, the remaining distance is erased.

#### (b) MR-J3-□A and MR-J4-□A

- Start operation

Touch the **Forward** or **Reverse** key.

To resume the operation that has been paused, touch the **Restart** key to resume the rotation.

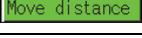
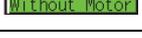
- Stop operation

When the set distance has been reached, operation stops.

Touching the **Pause** key pauses the operation. If touch the **Clear** key again after the operation is paused, the remaining distance is erased.

### (3) Key functions

The table below shows the functions of the keys that are used for the operations of the positioning operation screen.

Key	Function
	Runs the servo motor in the forward rotation (CCW) direction.
	Runs the servo motor in the reverse rotation (CW) direction.
 *1	Stops the rotation of the servo motor temporarily.
 *2	Resumes the rotation of the paused servo motor.
 *2	Deletes the remaining distance of the paused servo motor.
	Changes the rotation speed of the servo motor.
	Changes the acceleration/deceleration time constant.
	Changes the distance.
	Changes to the JOG operation screen (  ■JOG operation screen).
	Changes to the motor-less operation screen (  ■Motor-less operation screen).
	Changes to the DO forced output screen (  ■).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following:  8.4.8 Hard copy output
	The touch operation of this key is invalid.

\*1: This is displayed only when MELSERVO-J2-Super series or MELSERVO-J2M series is connected.

\*2: This is displayed only when MR-J3-□A series or MR-J4-□A is connected.

## Motor-less operation screen

The following describes the display data of the motor-less operation screen and the key functions displayed on the screen.

### POINT

Start and end of the motor-less operation with MR-J4-□A.

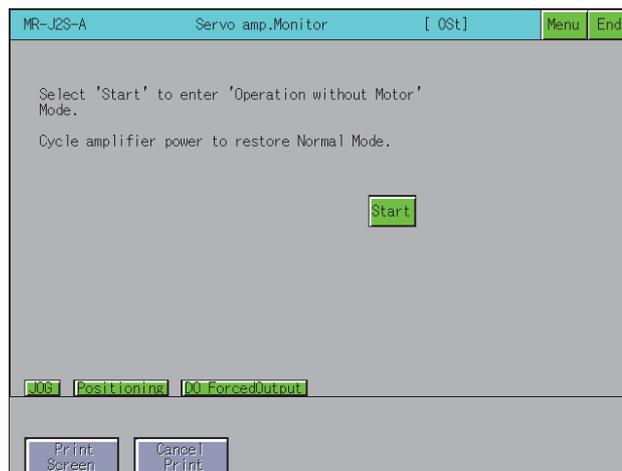
Changing the parameter PC60 (\*COPD) starts and ends the motor-less operation.

PC60 (\*COPD) can be changed by [Ext. setting] in the parameter setting screen.

#### Parameter setting screen

- Start: After setting PC60 (\*COPD) to 1, turn on the servo amplifier again.
- End: After setting PC60 (\*COPD) to 0, turn on the servo amplifier again.

### (1) Displayed contents



### (2) Operation

- Start operation
  - Touch the **Start** key.
- Stop operation
  - To cancel the motor-less operation, turn the power of the servo amplifier off.

### (3) Key functions

The table below shows the functions of the keys that are used for the operations of the motor-less operation screen.

Key	Function
<b>Start</b>	Starts motor-less operation.
<b>JOG</b>	Changes to the JOG operation screen ( <b>JOG operation screen</b> ).
<b>Positioning</b>	Changes to the positioning operation screen ( <b>Positioning operation screen</b> ).
<b>DO ForcedOutput</b>	Changes to the DO forced output screen ( <b>DO forced output screen</b> ).
<b>Menu</b>	Returns to the function selection menu screen.
<b>End</b>	Exits the servo amplifier monitor.
<b>Print Screen</b>	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following: 8.4.8 Hard copy output

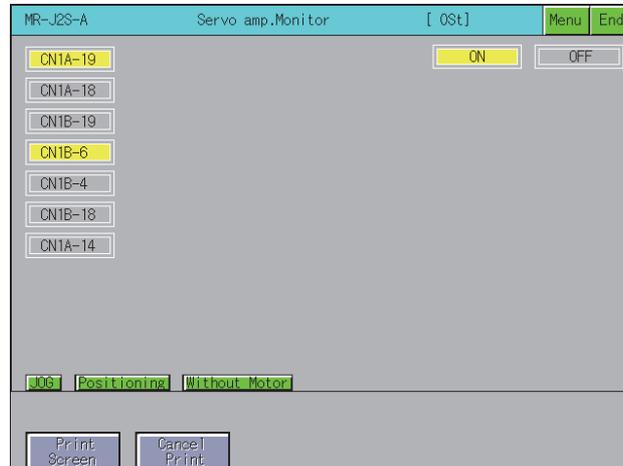
(Continued to next page)

Key	Function
	The touch operation of this key is invalid.

## ■ DO forced output screen

The following describes the display data of the DO forced output screen and the key functions displayed on the screen.

### (1) Displayed contents



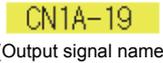
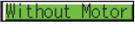
No.	Item	Description
1)	ON/OFF status of output signals	Displays the ON/OFF status of the servo amplifier output signals. • After this screen has been switched to another screen, all external I/O signals are turned off.

### (2) Operation

When the name of an output signal is touched, the ON/OFF status of that signal is inverted and written to the servo amplifier.

### (3) Key functions

The table below shows the functions of the keys used for the operations of the DO forced output screen.

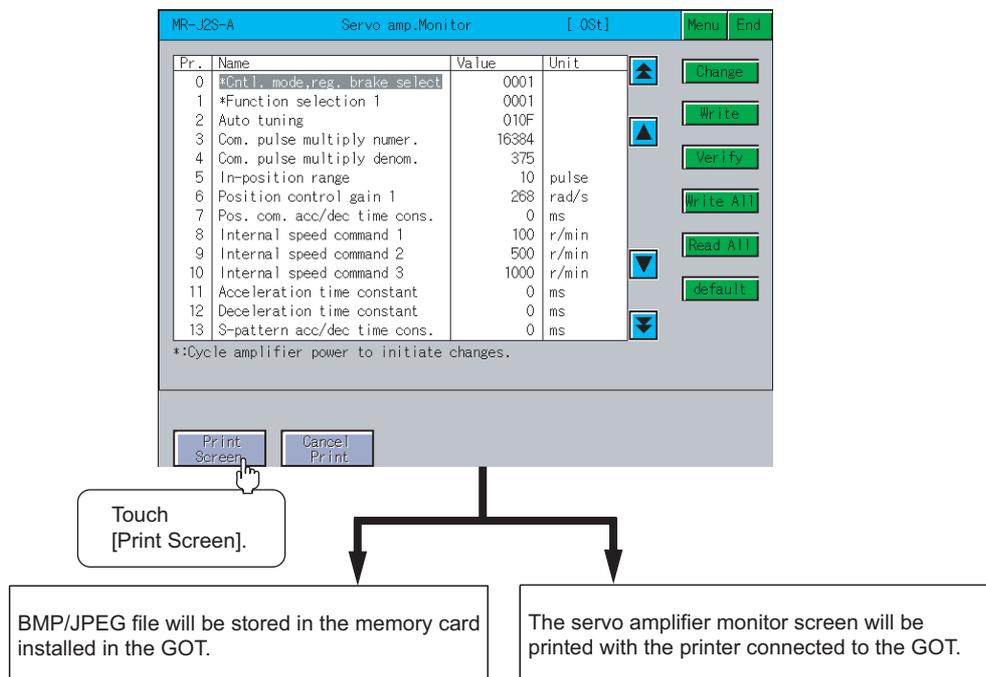
Key	Function
 (Output signal name)	Touching the signal name of an output signal sets or resets the status for that signal. • If the present output signal is ON, then the signal is turned off (RESET). • If it is OFF, then it is turned on (SET).
 *1	Displays the external output signals of the extension I/O unit.
	Changes to the JOG operation screen (  ■JOG operation screen).
	Changes to the positioning operation screen (  ■Positioning operation screen).
	Changes to the motor-less operation screen (  ■Motor-less operation screen).
	Returns to the function selection menu screen.
	Exits the servo amplifier monitor.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, refer to the following:  8.4.8 Hard copy output
	The touch operation of this key is invalid.

\*1: This is displayed only when the MR-J2M-P8A is connected.

## 8.4.8 Hard copy output

This section describes how to store a screen to the SD card in BMP/JPEG file format it with a printer when executing the amplifier monitor.

Hard copy output operations are performed by touching the "Print Screen" or "Cancel Print" key displayed on the screen.



### POINT

The output target of hard copy can be set in [Hard Copy] of GT Designer3. For details of hard copy setting, refer to the following.

GT Designer3 (GOT2000) Help

## 8.5 Error Messages and Corrective Action

This section describes the error messages that may be displayed during servo amplifier monitor operation and their corrective action.

Error message	Error definition	Corrective action
Monitor data not found	The monitor data have not installed or have been deleted.	Download the monitor data of the servo amplifier monitor.
It is not possible to set.	An item that cannot be set was selected.	Select an item that can be set.
No AMP Communications	Communication can not be established with the servo amplifier set as the monitor destination.	<ul style="list-style-type: none"> <li>• Check the connection state between the servo amplifier and the GOT (connector disconnection, cable wire break).</li> <li>• Check if an error has occurred in the servo amplifier.</li> <li>• Set the same values to the setup screen on the servo amplifier monitor and the parameter setting on the servo amplifier.</li> </ul>
This test mode cannot be selected. Operation without Motor rotation.	Another test operation function has started.	Exit the other test operation function.
SON Make sure that operation is at a stop.	The servo amplifier SON signal is ON.	Turn off the servo amplifier SON signal.
Incorrect setting range	A value outside the setting range was set when setting the servo parameter of the servo amplifier.	Set the servo parameter of the servo amplifier within the setting range.
Servo alarm has occurred. Alarm:**	An alarm occurred on the connected servo amplifier.	Reset the alarm on the servo amplifier.
Unit not found	The drive unit is not installed in the selected slot.	Select the slot where the drive unit is installed.
Unmatched password	The password that was input as the password for changing the servo amplifier parameter is incorrect.	Input the correct password.
Can't write to servo amp. Normally.	Failed to write the parameter.	<ul style="list-style-type: none"> <li>• Check the write data.</li> <li>• Check the setup information.</li> </ul>
Please confirm forward or reversal stroke end (LSP or LSN)	The servo amplifier LSP/LSN signal is OFF.	Turn on the servo amplifier LSP/LSN signal.
Communication channel setup error	The channel No. setting or communication driver setting is incorrect.	Check the communication settings.
It is not possible to select.	<ul style="list-style-type: none"> <li>• MR-J2M-P8A, MR-J3-□A, or MR-J4-□A was selected with the station No. selection setting set to [No].</li> <li>• A channel with no station number was selected for the MR-J2M-P8A.</li> </ul>	<ul style="list-style-type: none"> <li>• Set the station No. selection setting to [Yes].</li> <li>• Select a channel with a station number.</li> </ul>



# 9. BACKUP/RESTORE

GT 27 GT 23 Soft GOT 2000

## 9.1 Features

Setting data, including a sequence program, parameters, and setting values, for a controller connected to the GOT can be saved (backed up) in a memory card or USB memory in the GOT. The following shows features of the backup/restore function.



### GOT backup

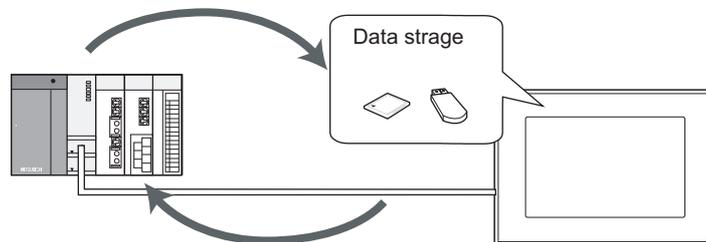
The backup/restore function is applicable to controllers connected to the GOT. For backing up the GOT setting data, use the GOT data package acquisition function. For the GOT data package acquisition function, refer to the following.

➡ GOT2000 Series User's Manual (Utility)

### ■ Backing up or restoring system without personal computer for reducing downtime

Setting data for a controller connected to the GOT can be backed up, and the data can be restored to the controller. With backing up setting data for a controller, the data can be restored to the controller with the GOT connected to the controller even though the controller has to be replaced because of problems, including failures. As a result, the system can be easily restored.

Backing up setting data to a data storage



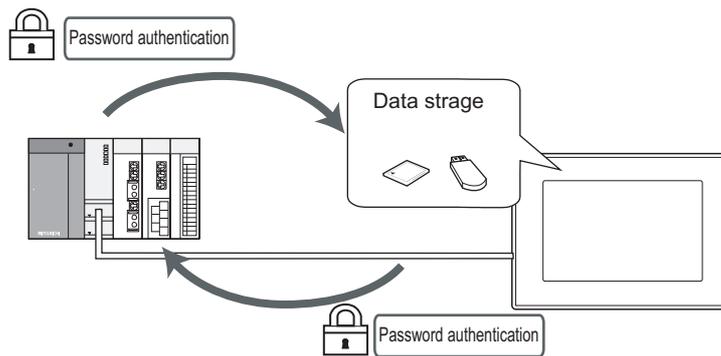
Restore the backup data to the controller.

### ■ Enabling creating the same system without personal computer

With restoring the backed up setting data to controllers in other systems, the same system can be created without a personal computer.

## Improving security

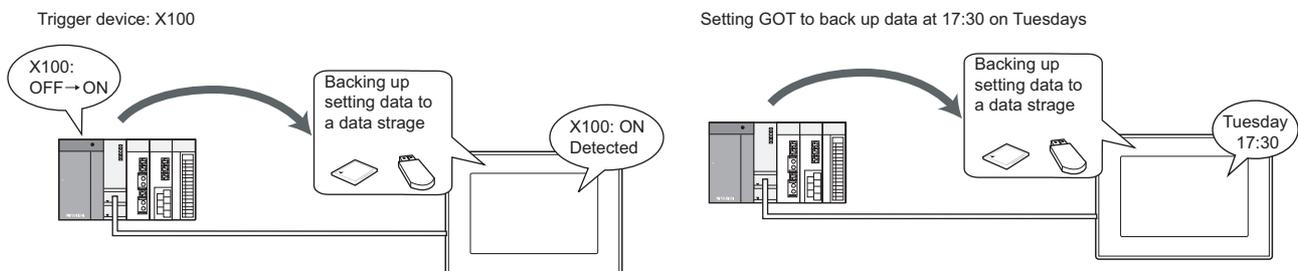
When the backup/restore function is used, browsing and changing setting data is limited with a password and the security is improved.



## Automatically backing up data with trigger

By setting the trigger device or the days and time, the GOT can automatically back up setting data for controllers. By controlling the backup with the set trigger device, the GOT can automatically back up setting data for controllers after the data are changed.

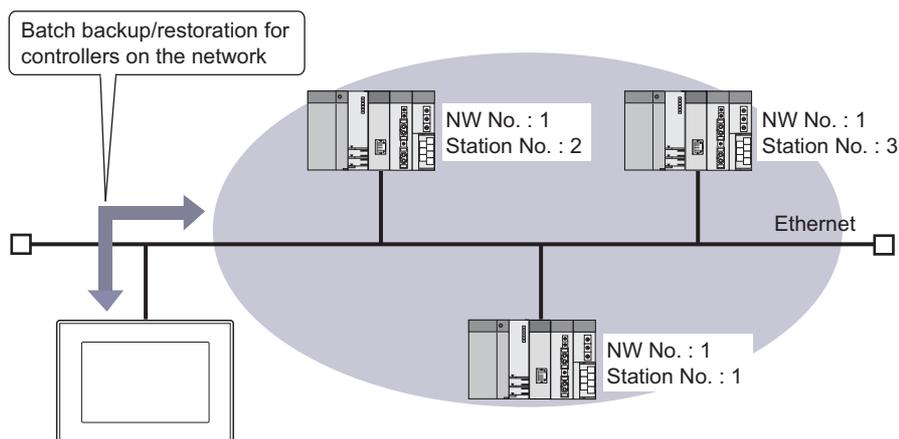
By setting the days and time, the GOT can back up setting data for controllers periodically.



## Batch backup/restoration can be performed to multiple controllers on the network

Batch backup/restoration can be performed to multiple controllers on the network per channel. Target controllers for the backup/restoration can be specified per station.

### 9.3.4 Network batch backup/restore



## 9.2 Specifications

### 9.2.1 System configuration

This section describes the system configuration for the backup/restore function.

For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

#### ■ Target controller

Controller*1
QCPU(Q mode)*2*3*4
LCPU
Motion controller CPU(Q Series)*5*6
FXCPU*7

\*1 When executing the network batch backup/restoration, use controllers compatible with the Ethernet connection. For the controllers compatible with Ethernet connection, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

\*2 Excluding the Q12PRHCPU, Q25PHCPU.

\*3 Use a PLC CPU with the function version of B or later.

\*4 The backup/restore function cannot be used with the redundant CPU.

\*5 Use the following production number motion controller CPU when using the Q172CPU or Q173CPU.

- For bus connection and direct CPU connection  
Q172CPU: Production number K\*\*\*\*\* or later  
Q173CPU: Production number J\*\*\*\*\* or later
- For connections other than bus connection and direct CPU connection  
Q172CPU: Production number N\*\*\*\*\* or later  
Q173CPU: Production number M\*\*\*\*\* or later

\*6 The operation system software of SV13 and SV22 are available only.

Use a motion controller CPU with the following OS installed when using the Q172CPU, Q173CPU, Q172CPUN, or Q173CPUN.

- SW6RN-SV13Q□:00H or later  
(00E or later for using the Q172CPU or Q173CPU with the bus connection or direct CPU connection)
- SW6RN-SV22Q□:00H or later  
(00E or later for using the Q172CPU or Q173CPU with the bus connection or direct CPU connection)

\*7 To restore the backup data containing a special parameter, use the following version of CPU.

- FX3U(C) version: 3.10 or later
- FX3G(C) version: 2.00 or later

#### ■ Connection type

This function can be used in the following connection types.

(○: Applicable, △: Partly restricted, ✕: Inapplicable)

Function		Connection type between GOT and controller			
Name	Description	Bus connection *1	Direct CPU connection	Computer link connection	Ethernet connection
Backup/restore	Backs up setting data for a controller connected to the GOT and restores the data to the controller.	△*4	○*2	△*5	△*3*5

\*1 The LCPU does not support the connection type.

\*2 When the GOT is connected to LCPU, use L6ADP-R2.

\*3 Backup/Restore cannot be used when using CC-Link IE field network Ethernet adapter.

\*4 When the multiple CPU system is used, the restoration cannot be performed to a QCPU with the factory-settings or whose memory is formatted.

\*5 The restoration cannot be performed to a QCPU with the factory-settings or whose memory is formatted.

#### ■ Required hardware

The backup / restore, data storage is required.

## ■ Required extended system application

The extended system applications shown below are required.

⇒ 1.2 Required extended system application for the function

### (1) Extended system application

Write the package data that has the extended system application for the backup/restore to the GOT.  
For the communication method with the GOT, refer to the following.

⇒ GT Designer3 (GOT2000) Help

### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

⇒ GT Designer3 (GOT2000) Help

## ■ Data to be backed up and restored

The following shows data to be backed up and restored.

Data other than the the following data cannot be backed up and restored.

### (1) Basic model QCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter	Parameter for intelligent function modules	IPARAM.QPA
Sequence program	Program that the CPU operates	MAIN.QPG
SFC program	Sequence program with the SFC programming format	MAIN-SFC.QPG
File register	Data stored in file registers	MAIN.QDR
Device comment	Device comment to be stored in a programmable controller	MAIN.QCD
Device initial value	Setting the device initial value	MAIN.QDI

- \*1 The file register in the Flash card installed in the CPU is always restored without confirming saving.  
Select whether restoring or not the file register stored in the SRAM card or standard RAM in the dialog box displayed when restoration is executed.  
When the file register is not restored, the existing file register is deleted.  
Therefore, programs of the controller may not work normally.  
If a problem occurs in the operation of the controller after restoration, perform the restoration again, including to the file register.

## (2) High Performance model QCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter	Parameter for intelligent function modules	IPARAM.QPA
Program	Program that the CPU operates (Including SFC program)	***.QPG
Device comment	Device comment to be stored in a programmable controller	***.QCD
Boot operation specification file	Batch file for starting programs stored in ROM and others	AUTOEXEC.QBT
Device initial value	Setting the device initial value	***.QDI
File register <sup>*1</sup>	Data stored in file registers	***.QDR
Sampling trace file <sup>*2</sup>	Sampling trace data that the specified device data is continuously collected with the specified timing	***.QTD
Failure history data <sup>*2</sup>	Failure history data that are recorded self-diagnostic results	***.QFD
Programmable controller user data	Any user-created data stored in a memory card	***.*** (Optional)

- \*1 The file register in the Flash card installed in the CPU is always restored without confirming saving. Select whether restoring or not the file register stored in the SRAM card or standard RAM in the dialog box displayed when restoration is executed. When the file register is not restored, the existing file register is deleted. Therefore, programs of the controller may not work normally. If a problem occurs in the operation of the controller after restoration, perform the restoration again, including to the file register.
- \*2 The item can be backed up only.

## (3) Universal model QCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter	Parameter for intelligent function modules	IPARAM.QPA
Program	Program that the CPU operates (Including SFC program)	***.QPG
Device comment	Device comment to be stored in a programmable controller	***.QCD
Boot operation specification file	Batch file for starting programs stored in ROM and others	AUTOEXEC.QBT
Device initial value	Setting the device initial value	***.QDI
File register <sup>*1</sup>	Data stored in file registers	***.QDR
Sampling trace file <sup>*2</sup>	Sampling trace data that the specified device data is continuously collected with the specified timing	***.QTD
Programmable controller user data	Any user-created data stored in a memory card	***.*** (Optional)
File for storing device data	Device data used for the SP.DEVST and S.DEVLD instructions	DEVSTORE.QST
Drive heading	The heading of the drive	QN.DAT
Remote password	Remote password settings	00000000.QTM
Monitor sequence extension	Data to increase the speed of monitors from other stations.	MONITOR.Q0*
Latch data backup file	Stores the backup data for the latch data backup function to the standard ROM.	LCHDAT00.QBK

- \*1 The file register in the Flash card installed in the CPU is always restored without confirming saving. Select whether restoring or not the file register stored in the SRAM card or standard RAM in the dialog box displayed when restoration is executed. When the file register is not restored, the existing file register is deleted. Therefore, programs of the controller may not work normally. If a problem occurs in the operation of the controller after restoration, perform the restoration again, including to the file register.
- \*2 The item can be backed up only.

#### (4) LCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter	Parameter for intelligent function modules	IPARAM.QPA
Program	Program that the CPU operates (Including SFC program)	***.QPG
Device comment	Device comment to be stored in a programmable controller	***.QCD
Boot operation specification file	Batch file for starting programs stored in ROM and others	AUTOEXEC.QBT
Device initial value	Setting the device initial value	***.QDI
File register <sup>*1</sup>	Data stored in file registers	***.QDR
Sampling trace file <sup>*2</sup>	Sampling trace data that the specified device data is continuously collected with the specified timing	***.QTD
Programmable controller user data	Any user-created data stored in a memory card	***.*** (Optional)
File for storing device data	Device data used for the SP.DEVST and S.DEVLD instructions	DEVSTORE.QST
Drive heading	The heading of the drive	QN.DAT
Remote password	Remote password settings	00000000.QTM
Monitor sequence extension	Data to increase the speed of monitors from other stations.	MONITOR.Q0*
Latch data backup file	Stores the backup data for the latch data backup function to the standard ROM.	LCHDAT00.QBK
Data logging setting file	Setting the data logging	LOGCOM.QLG LOG01.QLG to LOG10.QLG
Menu definition file	Menu defining files	MENUDEF.QDF

- \*1 The file register in the Flash card installed in the CPU is always restored without confirming saving.  
Select whether restoring or not the file register stored in the SRAM card or standard RAM in the dialog box displayed when restoration is executed.  
When the file register is not restored, the existing file register is deleted.  
Therefore, programs of the controller may not work normally.  
If a problem occurs in the operation of the controller after restoration, perform the restoration again, including to the file register.
- \*2 The item can be backed up only.

## (5) Q series motion controller CPU

Item	Description	File name
Motion SFC program conversion file (control code)	File where SFC code, G-code and F/FS code files are combined and converted into CPU's Motion SFC program code memory storage format	sfcprog.cod
Motion SFC program conversion file (text)	File where G list and F/FS list files are combined and converted into CPU's Motion SFC program text memory storage format	sfcprog.bin
Motion SFC parameter file	Motion SFC control parameter setting information files	sfcprmD.bin <sup>*1</sup>
		sfcprm.bin <sup>*2</sup>
K code file	Internal code files of servo program	svprog.bin
System setting data file	System setting data information files	svsystemD.bin <sup>*1</sup>
		svsystemH.bin <sup>*3</sup>
		svsystem.bin <sup>*4</sup>
High speed read setting file	High speed read setting information files	svlatchD.bin <sup>*1</sup>
		svlatch.bin <sup>*2</sup>
Optional data monitor setting file	Optional data monitor information files	svsysmonD.bin <sup>*1</sup>
		svsysmon.bin <sup>*2</sup>
Servo data file	Axis data parameter block information files	svdataD.bin <sup>*1</sup>
		svdataH.bin <sup>*3</sup>
	Servo parameter information files	svparaH.bin <sup>*3</sup>
	Servo parameter information files	svdata.bin <sup>*4</sup>
		svdata2.bin <sup>*4</sup>
Limit switch setting data information files	svls.bin	
Mechanical system program conversion file	File after conversion of mechanical system program edit information file into internal codes	svmchprm.bin <sup>*5</sup>
Cam data conversion file	Cam data files of cam No.1 to 64	svcamprm.bin <sup>*5</sup>
	Cam data files of cam No.101 to 164	svcampr2.bin <sup>*5</sup>
	Cam data files of cam No.201 to 264	svcampr3.bin <sup>*5</sup>
	Cam data files of cam No.301 to 364	svcampr4.bin <sup>*5</sup>
Cam Edit data	Cam Edit data files	svcameditD.bin
Vision sensor parameter	Vision sensor parameter setting information files	visionD.bin
User safety sequence program	Safety sequence program files	safetyD.bin
Mark detection setting data	Mark detection setting data	svmarkD.bin
Q series PLC common parameter file	Data files of Multiple CPU setting, I/O assignment, and others	param.wpa
Multiple CPU high speed refresh setting	Multiple CPU high speed refresh setting information files	svrefresh.bin <sup>*1</sup>

\*1 The data can be backed up or restored only with the Q172DCPU, Q173DCPU, Q170MCP, or Q170MSCPU.

\*2 The data can be backed up or restored only with the Q172HCPU, Q173HCPU, Q172CPU, Q173CPU, Q172CPUN, or Q173CPUN.

\*3 The data can be backed up or restored only with the Q172HCPU or Q173HCPU.

\*4 The data can be backed up or restored only with the Q172CPU, Q173CPU, Q172CPUN, or Q173CPUN.

\*5 The data can be backed up or restored with the SV22 operating system software only.

\*6 The data can be backed up or restored only with the Q172HCPU, Q173HCPU, Q172DCPU, Q173DCPU, Q170MCP, or Q170MSCPU.

**(6) FX CPU**

Item	Description	File name
Parameter	Parameter for operating a programmable controller	INFO.FPG
Device comment	Device comment to be stored in a programmable controller	
Sequence program	Program that the CPU operates	
Special program <sup>*1</sup>	Positioning setting/Initial value parameter	
File register	Data stored in file registers	
Extension file register <sup>*2</sup>	Data stored in extension file registers	
Built-in CC-Link/LT setting <sup>*3</sup>	CC-Link/LT parameter	
Special parameter <sup>*1</sup>	Special adapter/special block parameter saved in the main unit	

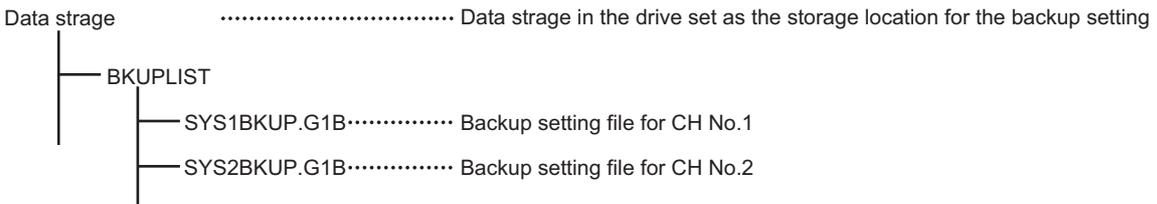
- \*1 The data can be backed up or restored with the FX3U(C) series and FX3G(C) series only.
- \*2 The data can be backed up or restored with the FX3U(C) series only.
- \*3 The data are stored in the FX3U-32MT-LT-2 only.

**(7) Data for software**

Item	Description	File name
Label program	Data for GX Developer	PROJINFO.CAB
Symbolic data	Symbolic data for PX Developer	#FBDQINF.BIN
Source information	Simple project (with label)	GX Works2 data SRCINFOM.CAB SRCINFOM.C32
	Structured project	GX Works2 data SRCINFOI.CAB SRCINFOI.C32
New source information	Simple project (with label)	GX Works2 data SRCINF1M.CAB SRCINF2M.CAB SRCINF1M.C32 SRCINF2M.C32
	Structured project	GX Works2 data SRCINF1I.CAB SRCINF2I.CAB SRCINF1I.C32 SRCINF2I.C32

**Backup setting**

Backup settings are created when executing the backup, and are stored in a data strage with the following folder structure.



For how to set the storage location for the backup setting, refer to the following.

- ➡ 9.3.1 Setting storage location for backup data
- GT Designer3 (GOT2000) Help

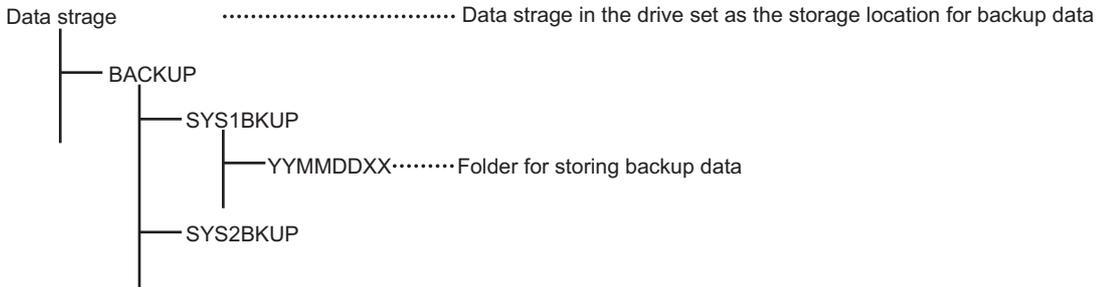
## ■ Backup data

### (1) Storing backup data

When backups for the same channel are executed several times, the backup data are stored in a data strage. (Backup data stored in the data strage are not overwritten.)

### (2) Storage location for backup

Backup data are stored in a data strage with the following folder structure.



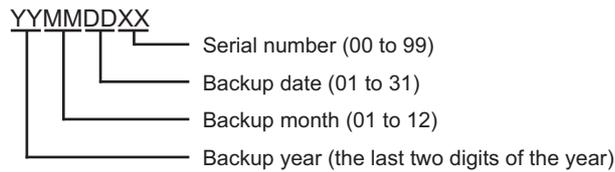
For how to set the storage location for backup data, refer to the following.

➡ 9.3.1 Setting storage location for backup data

GT Designer3 (GOT2000) Help

### (3) Folders for backup data

Backup data are stored by the folder, and a folder name (YYYYMMDDXX) is set as follows.



Example) Folder name for the 10th backup data for Ch.1 on September 15th, 2013

Folder name: 13091509

When names of folders for backup data include XX of 99, the backup data cannot be stored.

Up to 100 backups can be executed per channel in a day.

## ■ Log files for backing up or restoring

When backing up or restoring, the controllers and files to be backed up or restored are recorded in log files (When backing up or restoring, they are overwritten.)

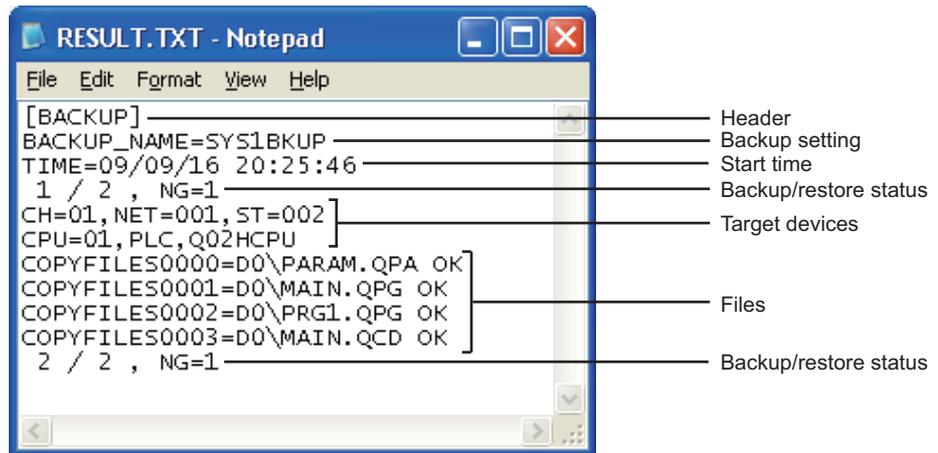
Log files are created in the folder where each backup data is stored.

### ■ Backup data

#### (a) File format

Item	Setting
File name, extension	result.txt
File format	ASCII text format

#### (b) Format



Item	Setting
Header	Displays the executed operation type. ([BACKUP]: Backup, [RESTORE]: Restore)
Backup setting	Displays the backup setting name.
Start time	Displays the start time for backing up or restoring.
Target devices	Displays the CH No., network No., station No., CPU No., unit type, and model of the target device when backing up or restoring. The following shows the display contents for unit types. <ul style="list-style-type: none"> <li>• PLC: PLC CPU</li> <li>• MC : Motion controller</li> <li>• SV : Servo Amplifier</li> <li>• INV : Inverter</li> </ul>
Files	Displays the backed up or restored files.
Backup/restore status	Recorded only when network batch backing up or restoring. Displays the number of controllers which the backup/restore is completed, the number of all target controllers, the number of controllers which backup/restore is completed, and the number of errors, by station.

## 9.2.2 Access range

### (1) Access range with connection types

The following shows a target controller of the backup/restore execution with each connection type.

Connection type	Target controller
Bus connection, Direct CPU connection, computer link connection, Ethernet connection	Host station
Ethernet connection	Host station, Other station

### (2) With multi-channel function

With the multi-channel function, the backup and restoration is executed per channel.

### (3) Backing up/restoring data for multiple CPU system

For the backup, the batch backup for all CPUs or specified backup of CPU No. 1 to 4 can be selected with the utility setting.

The restoration is executed with specifying CPU No. 1 to 4.

When the backup or restoration is executed with specifying CPU No. 1 to 4, multiple CPUs (CPU No. 1 to 4) can be specified.

## 9.2.3 Precautions

### ■ Precautions for backup

#### (1) Data that cannot be backed up

The GOT cannot back up device current values and data stored in device memories.

For collecting device current values, use the recipe function.

For how to use the recipe function, refer to the following manual.

⇒ GT Designer3 (GOT2000) Help

For collecting data stored in device memories, use GX Developer.

#### (2) Names of files to be backed up

When characters other than the characters defined in the shift JIS code and ASCII code are used for file names, the file names may not be correctly displayed with the data backed up on the GOT.

For using the backup/restore function, use characters in the JIS code and ASCII code for file names.

#### (3) Backing up data stored in file registers

Because backing up data stored in file registers takes a long time, some file register data may have different time stamps in one backup data. Therefore, synchronism of the data is not assured.

Backing up intelligent function module parameters

#### (4) Backing up intelligent function module parameters

For backing up an intelligent function module parameter (IPARAM.QPA), only the parameters that can be stored in the PLC CPU are the target parameters.

To store other intelligent function module parameters than those, GX Configurator applied to GX Works2 and the intelligent function module is required.

For the intelligent function module parameters that can be stored in the PLC CPU, refer to the following.

⇒ GX Works2 Version 1 Operating Manual (Intelligent Function Module)

### ■ Precautions for restore

#### (1) Communication status between GOT and target controllers

For restoring data, enable the target controllers of the restoration to communicate with the GOT.

When the target controllers of the restoration cannot communicate with the GOT, the restoration cannot be executed.

#### (2) STOP status during restoration

CPUs for the programmable controller and motion controller are in the STOP status with the remote STOP before the restoration.

For the CNC C70, the CNC ladder is in the STOP status.

The CPUs and CNC ladder remain in the STOP status after the restoration is completed.

Restart the controllers.

**(3) When restoration is canceled**

When the restoration is canceled, all the data are not restored to the controllers and the controllers may not correctly operate.

When the restoration is canceled, be sure to execute the restoration again.

The CPUs and CNC ladder remain in the STOP status after the restoration is canceled.

Restart the controllers.

**(4) System configuration with controllers for restoration**

Set the same system configuration with the controllers for the restoration as those for the backup.

Failure to do so disables the GOT to restore data to the controllers.

When the system configuration with the controllers for the restoration is the same as those for the backup, the GOT can restore data to the controllers even if the connection type and CH No. for the restoration differ from those for the backup.

**(5) Controller operations**

Controllers may malfunction by changing set values, device values, and others during the restoration.

Check that data to be restored is the appropriate data, and then execute the restoration with paying attention to the controller operations.

**Common precautions for backup and restore**

**(1) Password for backup/restore**

When a password for a controller is changed after setting the password for the backup/restore, set a new password for the backup/restore.

For setting the password for the backup/restore, refer to the following.

⇒ 9.3.2 Security and password

**(2) Precautions for GT Designer3**

Do not execute the following operations with GT Designer3 during the backup/restore.

Operation with GT Designer3
-----------------------------

BootOS installation,  
package data, the communication driver, the standard monitor OS, and the extended function system application download

When the above operations are executed, the backup/restore is stopped.

**(3) Precautions for GX Developer**

(a) Do not access the target controller of the backup/restore with GX Developer during the backup/restore. Doing so stops the backup/restore.

(b) Do not execute the backup/restore on the GOT while the target controller of the backup/restore is accessed by GX Developer. Doing so causes a communication error on GX Developer. (The backup/restore is executed.)

**(4) CPU with a security key**

The backup/restore cannot be executed on the CPU on which the security key is set.

To execute the backup/restore, check the setting of the CPU.

When the target controllers of the backup/restore include both the CPU with the security key and the CPU without the security key, the backup/restore is executed only for the CPU without the security key.

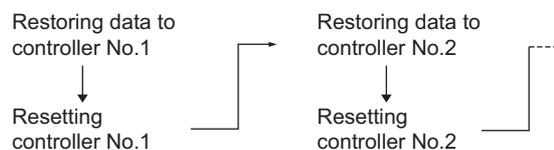
**Precautions for QCPU**

The restoration to QCPU with the factory-settings or whose memory is formatted is available only in the following cases.

- For a single CPU system: When the connection type is the bus connection or direct CPU connection
- For a multiple CPU system: When the connection type is the direct CPU connection

However, in a multiple CPU system which includes a QCPU with the factory-settings or whose memory is formatted, batch restoration to multiple controllers cannot be performed.

Restore each controller with the following procedure.



## ■ Precautions for motion controller CPUs

### (1) OS for motion controller CPU

The OS for the motion controller CPU cannot be backed up or restored.

For backing up or restoring setting data for the motion controller CPU, install an appropriate OS on the motion controller CPU in advance.

### (2) Backup/restore target

The GOT backs up or restores data stored in the SRAM built in the motion controller CPU, regardless of the operation mode.

For writing data to the FLASH ROM built in the motion controller CPU, restore the data to the SRAM, and then write the data in the SRAM to the FLASH ROM with MT Developer.

### (3) Backup

For backing up data for controllers including the motion controller CPU, do not set the motion controller CPU to the installation mode.

When the motion controller CPU is set to the installation mode, the GOT does not back up data for the motion controller CPU. (The GOT backs up data for the other controllers on the same base unit.)

### (4) Restoration

For restoring data to controllers including the motion controller CPU, do not set the motion controller CPU to the installation mode or test mode.

Doing so stops the restoration operation of the GOT.

When the restoration is stopped, be sure to execute the restoration again.

Failure to do so causes the GOT not to write all the data into the controllers, resulting in incorrect operations of the controllers.

## ■ Precautions for FXCPU

### (1) Attaching a memory cassette

When a memory cassette is attached to a FXCPU, data in the memory cassette is backed up.

When a memory cassette is not attached to the FXCPU, data in the built-in memory is backed up.

### (2) Keyword setting

The following table shows whether the backup/restore function is executed or not by each keyword setting.

(Executed: ○ Not executed: ×)

Function	Protection that cannot be disabled by keyword			With keyword						Without keyword
	Write protection	Read/Write protection	All operation protection	Write protection		Read/Write protection		All operation protection		
	Enabled	Enabled	Enabled	Enabled	Disabled	Enabled	Disabled	Enabled	Disabled	
(Trigger) Backup	○	×	×	○	○	×	○	×	○	○
Restore	×	×	×	×	○	×	○	×	○	○

### (3) Keyword for restoring data

When data are restored to a target FXCPU, a keyword in the FXCPU is held.

For setting or disabling a keyword for the FXCPU, refer to the following manual.

⇒ GOT2000 Series User's Manual (Utility)

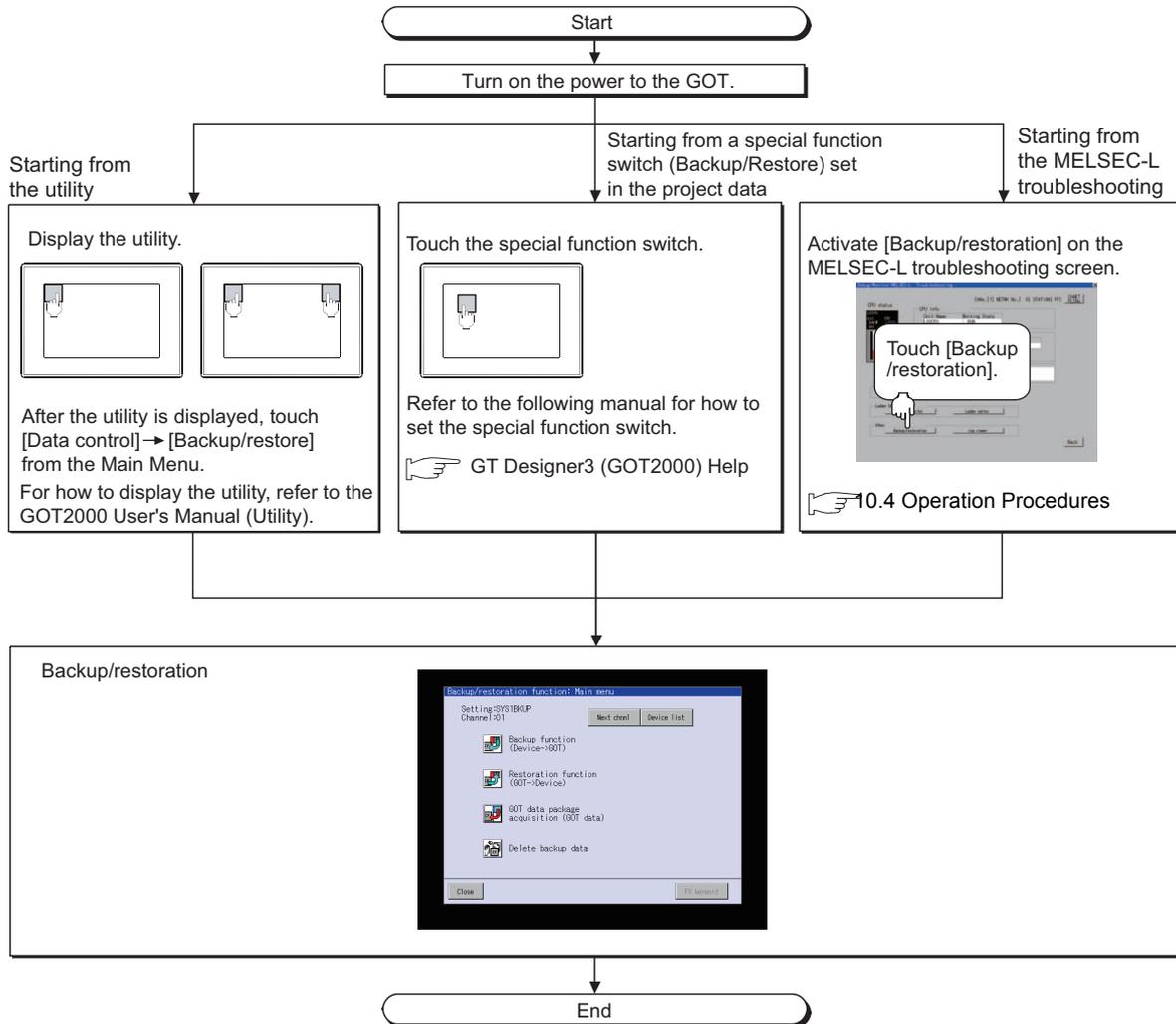
Programming manual for the FXCPU used

### (4) Backup data which contains source information

When the target FXCPU of the restoration does not support source information, the backup data which contains source information cannot be restored.

## 9.3 Operations for Display

The following describes the outline for displaying the operation screen for the backup/restore after installing Backup/Restore (extended system application) on the GOT.



### POINT

**(1) How to display the utility**

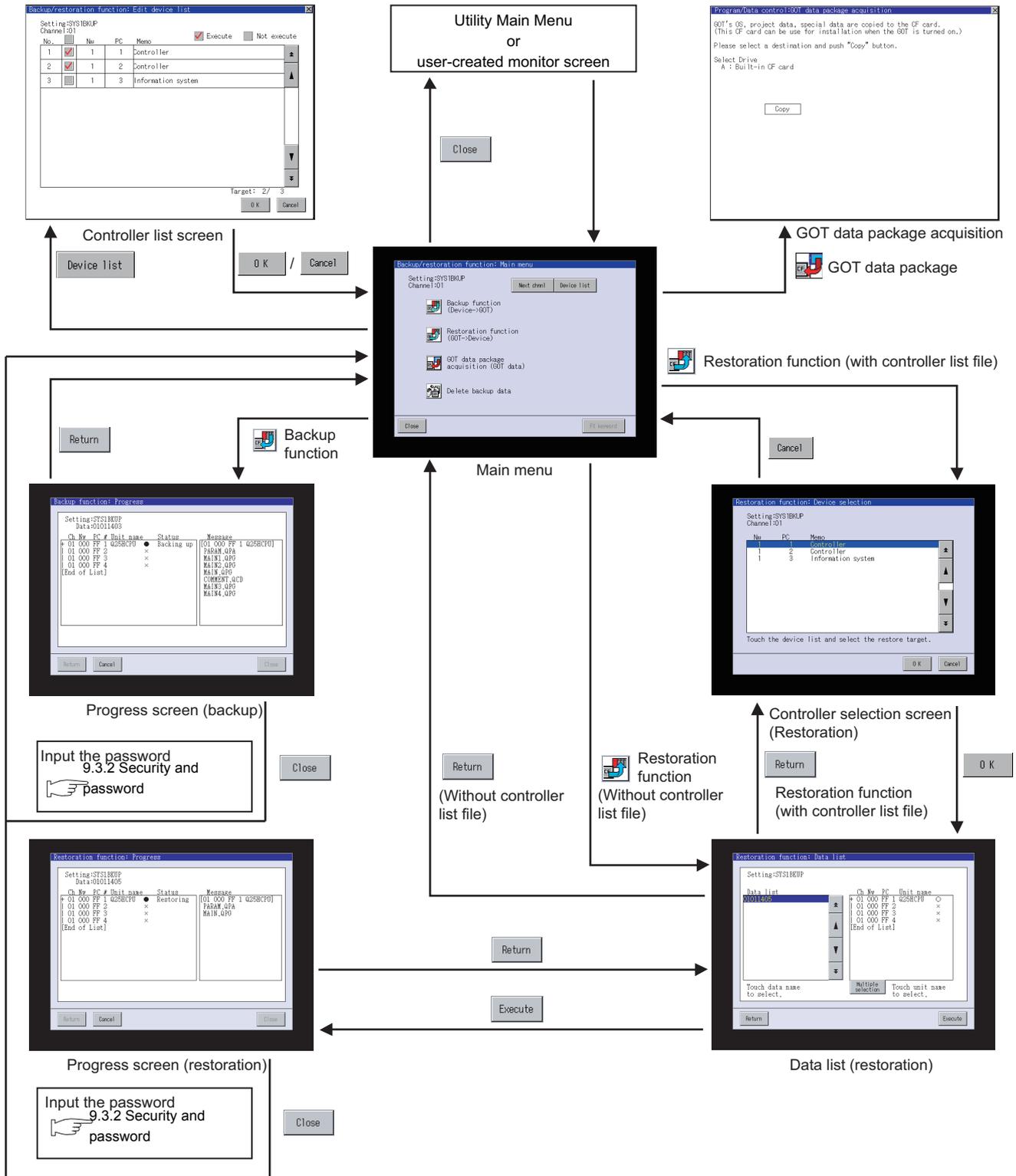
For how to display the utility, refer to the following.

➡ GOT2000 Series User's Manual

**(2) When GOT has no project data**

The backup/restoration can be started with the utility even though the GOT has no project data.

# Changing screens



## ■ Background processing stop

By the background processing stop signal (GS522.b0), background processing by other functions (alarm, logging, device monitoring) can be stopped during the backup/restoration.

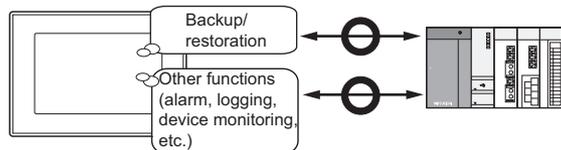
When background processing is performed, the backup/restoration and other functions are alternately performed. Therefore, backup/restoration takes much time, but the monitoring of the controller continues.

When background processing is not performed, processing of other functions stop until the backup/restoration is completed.

Therefore, the monitoring of the controller stops, but the backup/restoration takes less time.

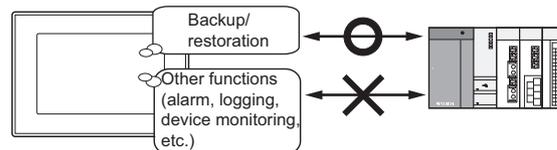
· When background processing is performed

Backup/restoration and other functions alternately perform communication.



· When background processing is stopped

Other functions stop communication until backup/restoration is completed.



GOT special register	Description	
Background processing stop signal (GS522.b0)	OFF	In the backup/restoration, background processing is performed.
	ON	In the backup/restoration, background processing is not performed.

### POINT

#### (1) Log file save setting

Before background processing is stopped, set the file saving for the functions that collect log data such as the alarm and logging.

Without setting the file saving, all log data such as alarm data and logging data are lost after backup/restoration is completed.

#### (2) Functions disabled during background processing stop

When background processing is stopped, in the backup/restoration, all functions stop except for the backup/restoration.

Therefore, the following functions that collect log data cannot acquire the data in the backup/restoration.

- Alarm function
- Operation log function
- Logging function
- Recipe function

#### (3) Background processing stop for trigger backup

During the trigger backup, turning on the background processing stop signal (GS522.b0) does not stop background processing.

Background processing is always performed.

## 9.3.1 Setting storage location for backup data

Set the storage location that backup data are stored.

Set the storage location for backup data in the backup/restoration setting of the utility.

### ■ Display procedure

Select [Utility] → [Data Control] → [Backup/restoration setting] from the utility.

### ■ Settings

Debug:Debug setting:Backup/restration setting

Drive for backup setting

Drive for backup data

Trig bkup setting

Max. of bkup data (1-50, 0: No limit)

Enable CPU No. setting

OK Cancel

Item	Description
Drive for backup setting	Specify the drive for storing backup settings, including parameters and passwords for controllers.
Drive for backup data	Specify the drive for storing backup data.
Trigger backup setting	The GOT automatically backs up data when triggers (Rise, Time) specified for each backup setting are met.
Max. of backup data	Set the maximum number of backup data to be stored. (When 0 is specified, the GOT does not check the number of backup data to be stored.)
Enable CPU No. setting	Set whether to enable the CPU No. setting or not. (When [Enabled] is selected, the GOT starts to communicate with only the specified PLC. Therefore the network batch backup/restoration on the multiple PLCs cannot be executed.)

### POINT

#### Setting on GT Designer3

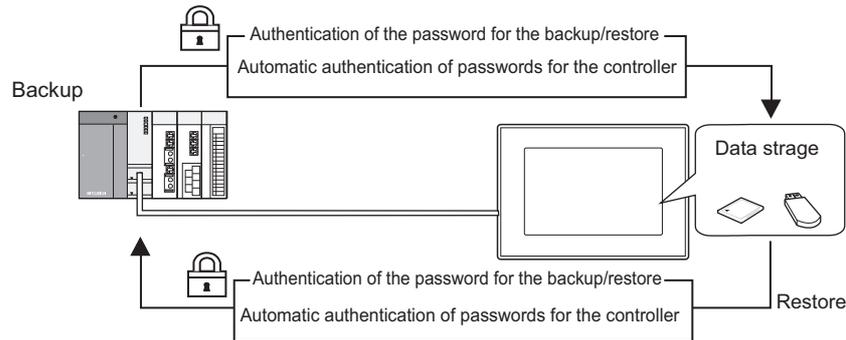
The backup/restoration setting can also be set in the GOT setup on GT Designer3.

For the GOT setup of GT Designer3, refer to the following.

➡ GT Designer3 (GOT2000) Help

## 9.3.2 Security and password

By setting the passwords, the password authentication is available when the backup/restore is executed. The password authentication uses the password for the backup/restore and passwords for controllers.



The following shows the passwords used for the backup/restore.

Password	Description
Password for backup/restore	Password for the backup/restore function Set the password on the GOT at the first backup. Before setting the password, set passwords for controllers in advance.
Passwords for controllers	Passwords set for the files for the target controllers of the backup/restore Set the passwords with software for the controllers when writing the files to the controllers.

After the first backup (after setting the password for the backup/restore), the user has no need to input the passwords for the controllers. (The passwords for the controllers are automatically verified.)

The following shows the security advantages.

User	Advantage
Administrator	No need to disclose the passwords for the controllers to the operator (Preventing anyone other than the administrator to browse or edit setting data for the controllers.)
Operator	The backup/restore is executed by using the password for the backup/restore only. (No need to input passwords for the controllers)

### POINT

#### Before setting password for backup/restore

When the user forgets the password for the backup/restore, the backup/restore cannot be executed. In that case, execute the backup again by using a formatted or new data storage.

For how to set the password for the backup/restore, refer to the following.

- ▣ Setting password for backup/restore

How to use the password for the backup/restore, refer to the following.

- ▣ How to use password for backup/restore

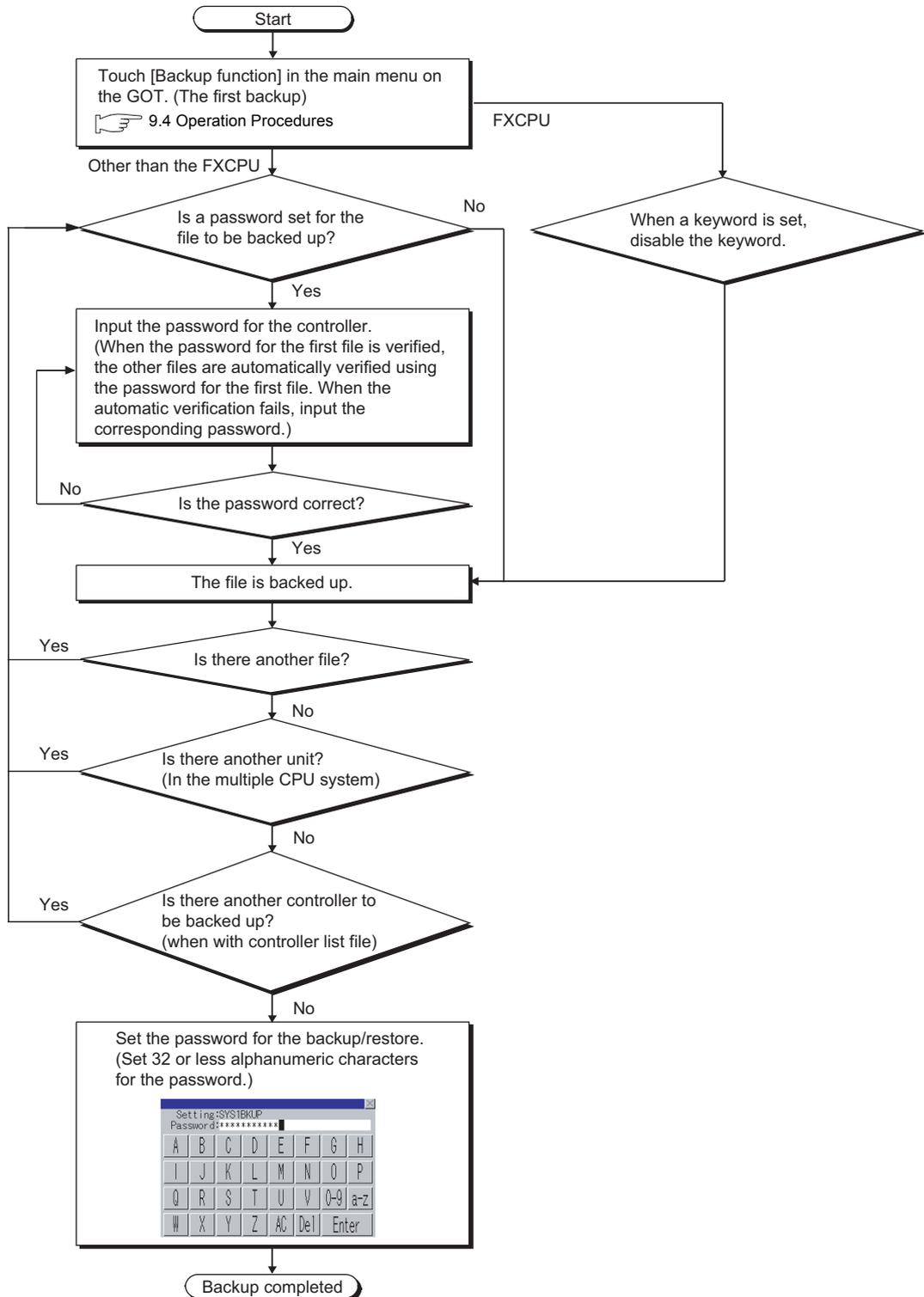
## ■ Setting password for backup/restore

The password for the backup/restore can be set only when the following condition is satisfied at the first backup.

- When passwords are set for the files for the backup target controller

At the first backup, the password authentication for the controller is required.

The following shows the operating procedure at the first backup.



## POINT

### (1) Setting password

For ensuring the security, setting a password of 8 or more characters that cannot be easily guessed is recommended.

When the password is leaked, the same system can be created. Pay enough attention to managing the password.

### (2) Passwords for motion controller CPU

#### (a) File name

When a password for a motion controller CPU data is input, the GOT does not display the file name.

The GOT displays the data type only.

#### (b) Setting passwords for data without any contents

When contents of the following motion controller CPU data do not exist, do not set any passwords for the data.

- SFC program
- Mechanical system program
- Cam data

When passwords are set for the data without any contents, the automatic password authentication is unavailable when the GOT executes the backup.

As a result, the user must input the passwords each time.

### (3) FXCPU keyword

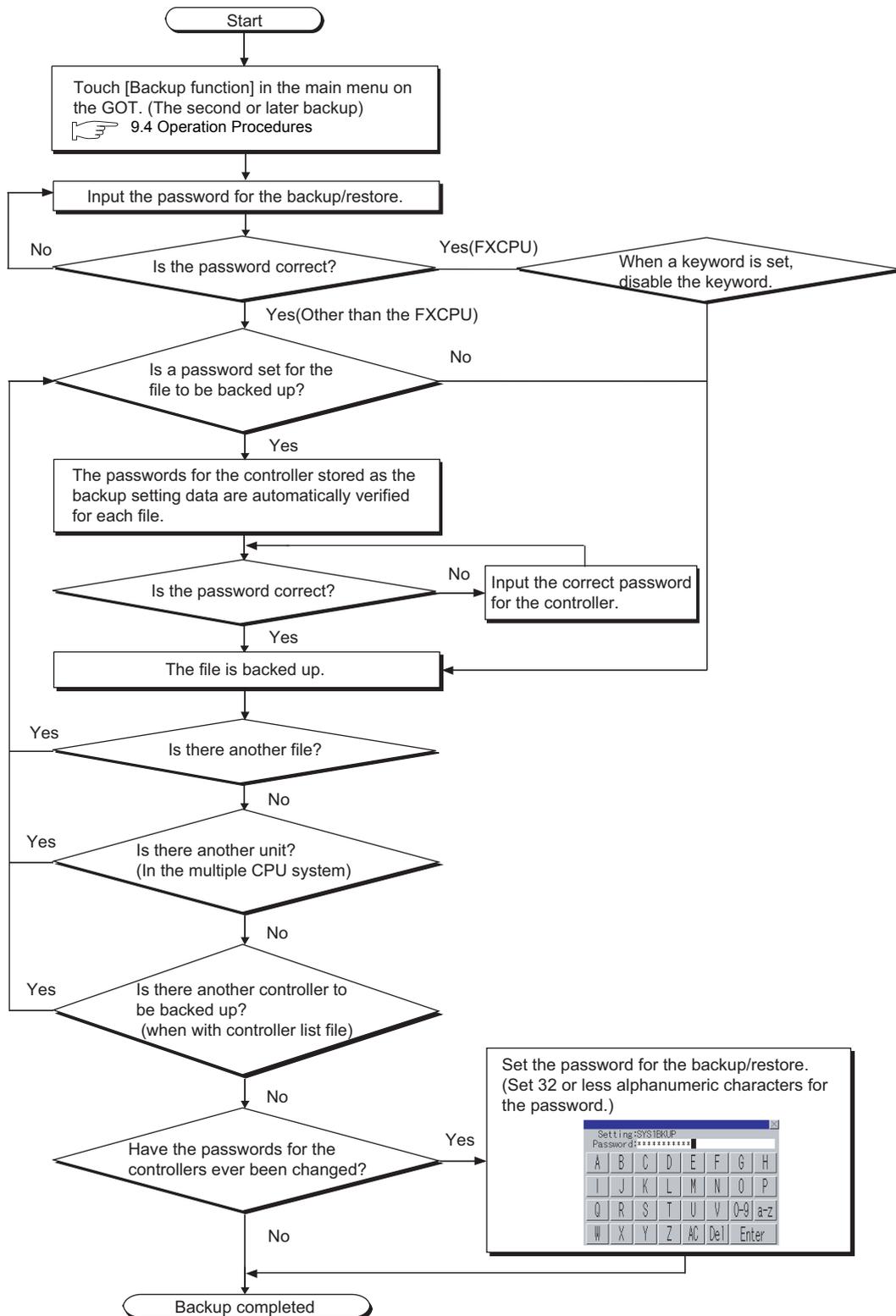
To back up or restore data in the FXCPU, disable a keyword in advance.

⇒ 9.4 ■ Key functions

## ■ How to use password for backup/restore

### (1) Backup

The following shows the operating procedure for the backup after setting the password for the backup/restore.



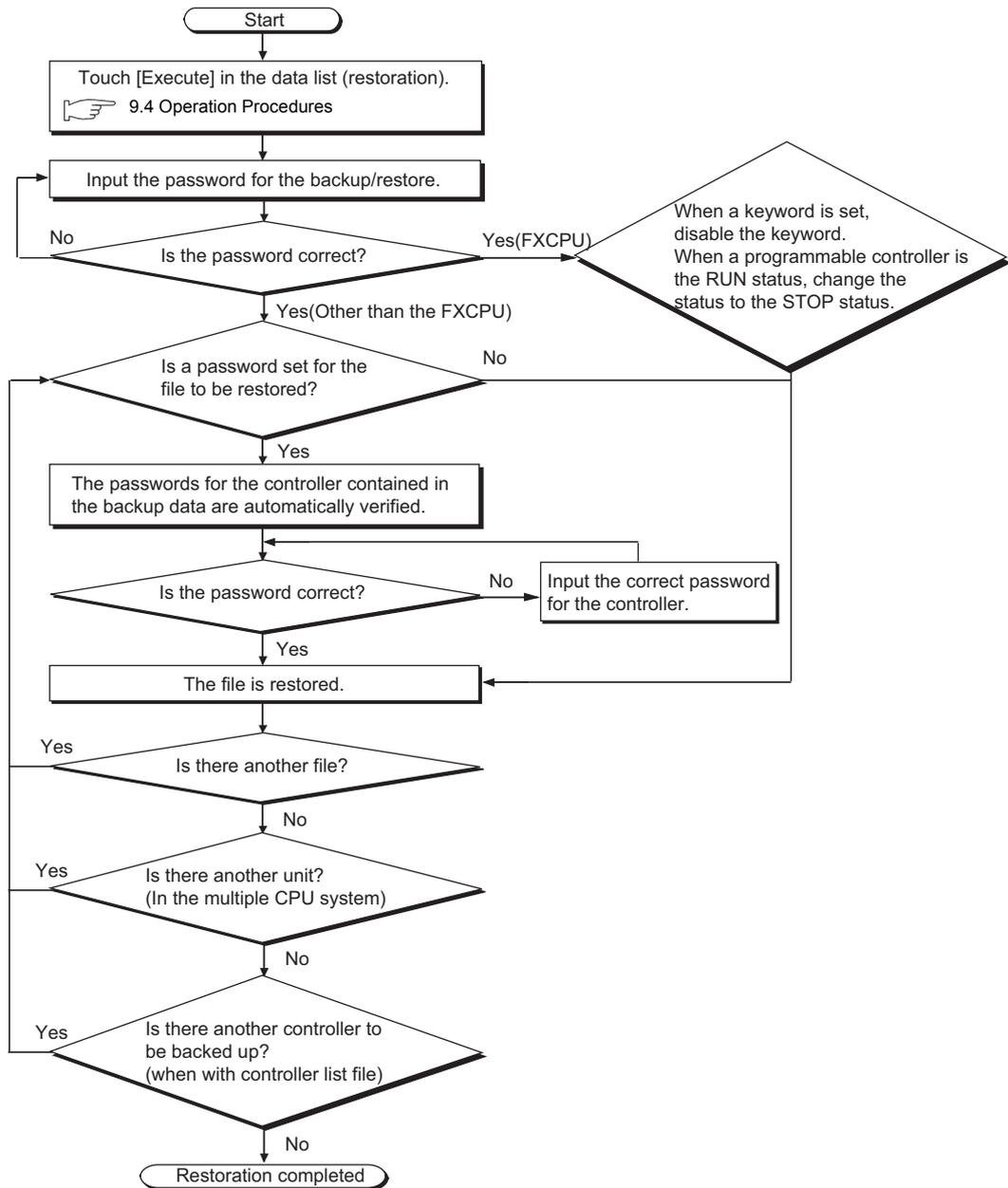
**POINT**

**When passwords for controllers are changed**

When the password input is cancelled and the backup is stopped, the backed up files until the backup is stopped are all deleted.

**(2) Restoration**

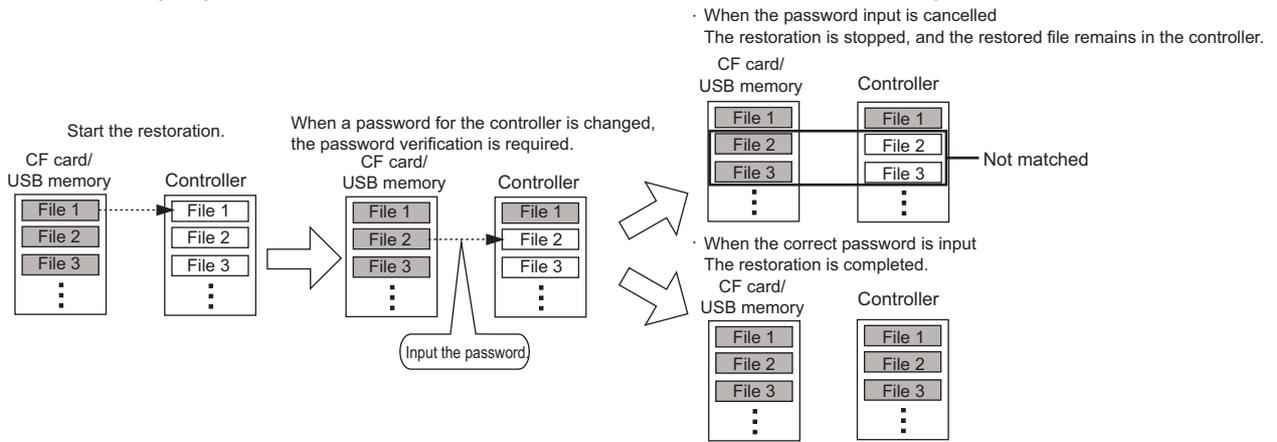
The following shows the operating procedure for the restoration after setting the password for the backup/restore.



**When passwords for controllers are changed**

When the password input is cancelled and the restoration is stopped, the restored files until the restoration is stopped remain in the controller.

When only any of the files are restored, the data can be inconsistent in the the entire system.



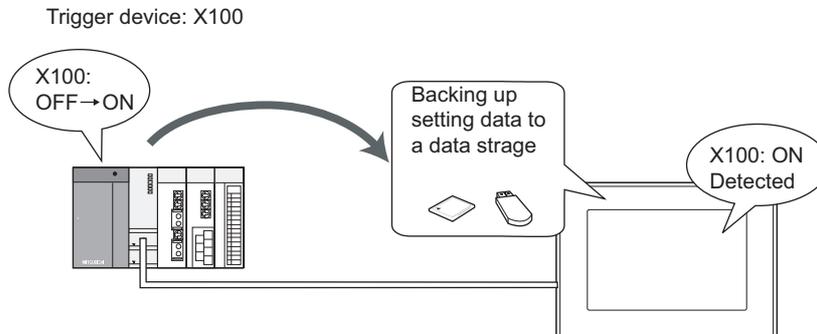
### 9.3.3 Trigger backup

The GOT can automatically back up setting data for controllers with the trigger device or the days and time set. Setting the trigger type selects whether to execute the backup with the trigger device or with the days and time.

#### (1) When trigger type is set to [Rise]

The GOT executes the backup when the set trigger device turns on.

Use the backup with the trigger device for automatically backing up setting data for controllers after the setting data are changed.



#### (2) When trigger type is set to [Time]

The GOT executes the backup at the specified time on the specified days.

Use the backup with the time for backing up setting data periodically.

Setting GOT to back up data at 17:30 on Tuesdays

#### (3) Maximum number of backup data

With the trigger backup, the maximum number of backup data to be stored can be specified.

When the number of backup data exceeds the maximum number of backup data, the GOT automatically deletes the oldest backup data.

Therefore, the GOT does not fail to store the latest backup data.

#### (4) Checking backup data changes

When performing backup, the GOT compares the previous backup data with the setting data, for each controller. When the current setting data for any of the controllers differ from the previous backup data, the GOT backs up setting data for all the controllers on the same base unit.

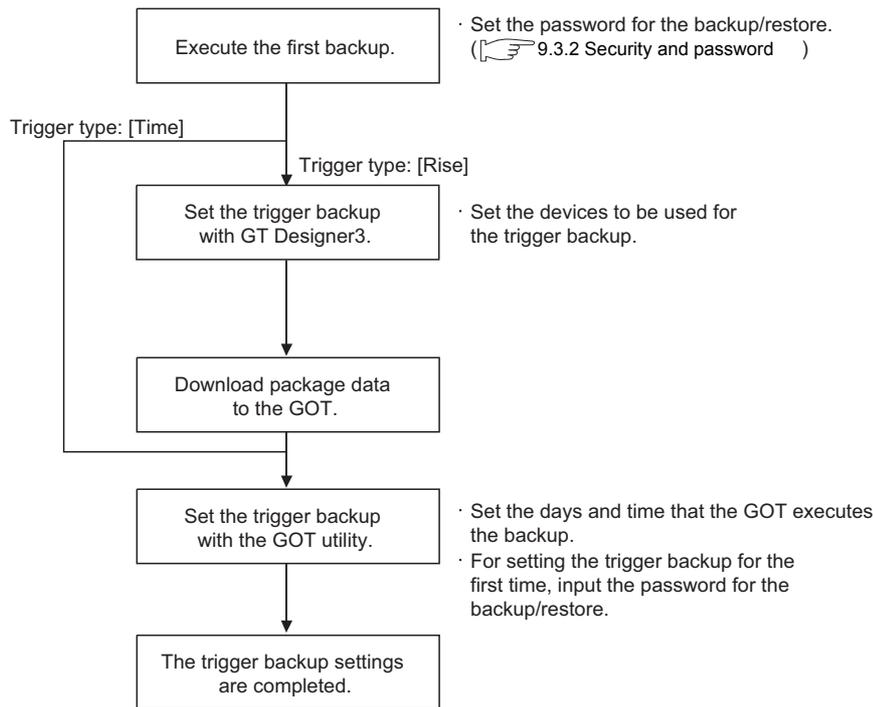
When the current setting data for all the controllers are the same as the previous backup data, the GOT does not execute the backup.

Therefore, the GOT does not store the same backup data.

## ■ How to set trigger backup

### (1) Flow of settings

The following shows the flow of settings for using the trigger backup.



### POINT

#### Inputting password for backup/restore

The GOT automatically executes the backup when the trigger condition is met.

The password authentication with the password for the backup/restore is not executed.

By executing the password authentication with the password for the backup/restore when setting the trigger backup with the GOT utility, unauthorized users cannot execute the backup.

Without inputting the password for the backup/restore when setting the trigger backup, an error occurs and the GOT does not execute the backup even if the trigger condition is met.

Input the password for the backup/restore in the trigger backup setting of the GOT utility.

For setting the trigger backup with the GOT utility, refer to the following.

⇒ GOT2000 Series User's Manual (Utility)

### (2) Setting items for trigger backup

Set the trigger backup with GT Designer3 and the GOT utility.

For the setting items for GT Designer3, refer to the following.

⇒ GT Designer3 (GOT2000) Help

For the setting items for the GOT utility, refer to the following.

⇒ GOT2000 Series User's Manual (Utility)

## ■ Controlling backup with devices

The GOT controls the trigger backup with devices.

The following shows the devices to be used for the trigger backup.

- Trigger device
- Process notification device
- Backup error notification device
- Trigger backup processing setting No. notification (GS657)
- Trigger backup data send delay (GS521)

For the devices and how to set the devices, refer to the following.

▶▶▶ GT Designer3 (GOT2000) Help

### (1) When normal backup is executed

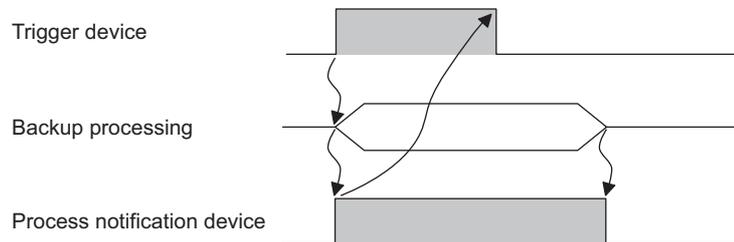
#### (a) When trigger type is set to [Rise]

Turn on the trigger device, and then the GOT starts the backup.

When the backup is started, the process notification device turns on.

Turn off the trigger device right after the process notification device turns on. (The trigger device does not automatically turn off.)

When the backup is completed, the process notification device turns off.

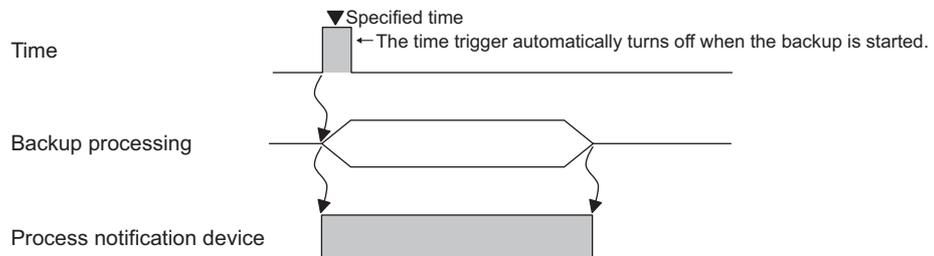


#### (b) When trigger type is set to [Time]

The GOT starts the backup at the time specified for the trigger backup.

When the backup is started, the process notification device turns on, and the time trigger automatically turns off.

When the backup is completed, the process notification device turns off.

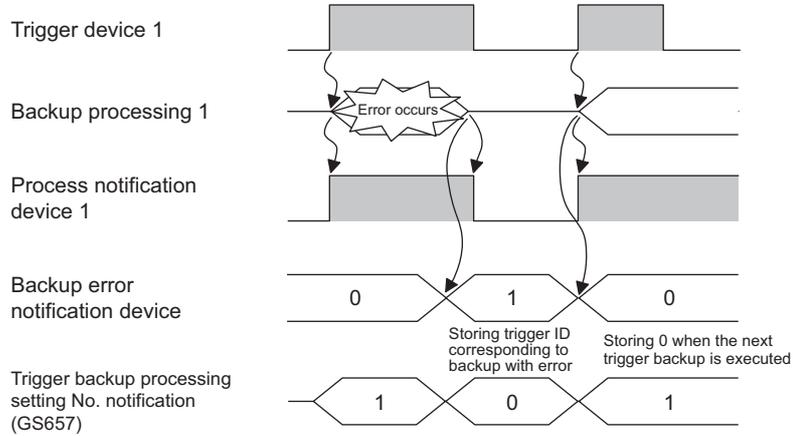


**(2) Error handling**

When an error occurs during the trigger backup, the backup error notification device stores the trigger ID corresponding to the trigger setting set for the backup with the error, and a system alarm occurs. Check the system alarm, and then remove error causes. For system alarms and corrective actions, refer to the following manual.

➡ GT Designer3 (GOT2000) Help

The backup error notification device stores 0 when the next trigger backup is executed.



**(3) Setting send delay time**

The backup/restore function can set the delay time for backup communication intervals. Setting of the delay time can reduce the load of other processes (such as monitoring objects) with the backup process. The actually time set by the set value is listed as follows.

Set value	Delay time
0	None
1 to 100	Set value × 5(ms)
101 or more	500(ms)

**POINT**

**Setting of trigger backup data send delay**

Backup communication times are longer than a default when the trigger backup data send delay is set. Set the suitable delay time to match the processing condition of backup function and others (such as monitoring objects).

## ■ Precautions for trigger backup

The following shows precautions for the trigger backup.

### (1) GOT operations during trigger backup

The GOT may take a long time to monitor devices and to operate during the trigger backup.

Execute the trigger backup when the operator does not operate the GOT.

Updating data with the functions that collect device values, including the logging function, may also take a long time.

### (2) Displaying device name on GOT

When the trigger device is set to [Rise], the GOT displays the device name of [??] without the device name converter installed.

For displaying the device name correctly, install the device name converter on the GOT.

### (3) First backup

The trigger backup is unavailable for the first backup.

Manually execute the first backup, and then set the password for the backup/restore and passwords for controllers. After the settings, set the trigger backup.

### (4) Passwords for controllers

When passwords for controllers stored in the backup setting differ from current passwords for the controllers, the backup operation is canceled.

For executing the trigger backup, check that passwords for controllers have no changes.

When the backup operation is canceled, manually execute the backup again, and then input correct passwords.

### (5) Checking file register changes

When the trigger backup is frequently executed, set [Check the file register changes] to [Not execute] with the GOT utility because data stored in file registers frequently changes.

When [Check the file register changes] is set to [Execute], the GOT backs up data stored in the file registers every time the trigger condition is met even if the other setting data for the controller are not changed.

As a result, the number of backup data increases in the SD card. When the number of backup data exceeds the maximum number of backup data, old backup data are deleted.

For obtaining data stored in file registers only, use the recipe function.

For how to use the recipe function, refer to the following.

▶▶▶ GT Designer3 (GOT2000) Help

### (6) Backup on a motion controller CPU or FXCPU

If the following are to be backed up, the GOT does not compare the previous backup data with the controller setting data.

- A motion controller CPU is mounted on the same base unit.
- FXCPU

As a result, the GOT executes the backup even if the setting data for the controllers have no changes.

For backing up setting data only when the data are changed, set the trigger type to [Rise].

Create a sequence program so that the trigger device turns on only when the setting data are changed.

Therefore, the number of backup data can be minimized.

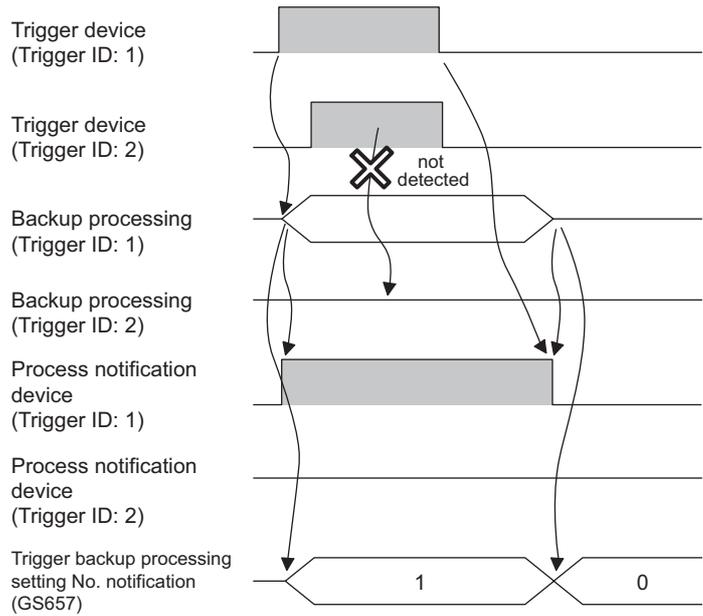
**(7) Screens that trigger backup can be executed**

The trigger backup can be executed only when the GOT displays a monitor screen.

- (a) When the trigger condition is met while the GOT displays a screen other than monitor screens, including the utility screen and ladder monitor screen, the GOT does not execute the backup.  
When a screen other than monitor screens is switched to a monitor screen, the GOT executes the backup.
- (b) When a monitor screen is switched to a screen other than monitor screens during the trigger backup, the GOT stops the backup and the GOT deletes the data in process.  
When the screen is switched to a monitor screen, the GOT executes the backup again.
- (c) When the following are operated, the GOT does not execute the backup even if a screen other than monitor screens is switched to a monitor screen.
  - Restarting the GOT
  - Changing the trigger backup setting with the GOT utility

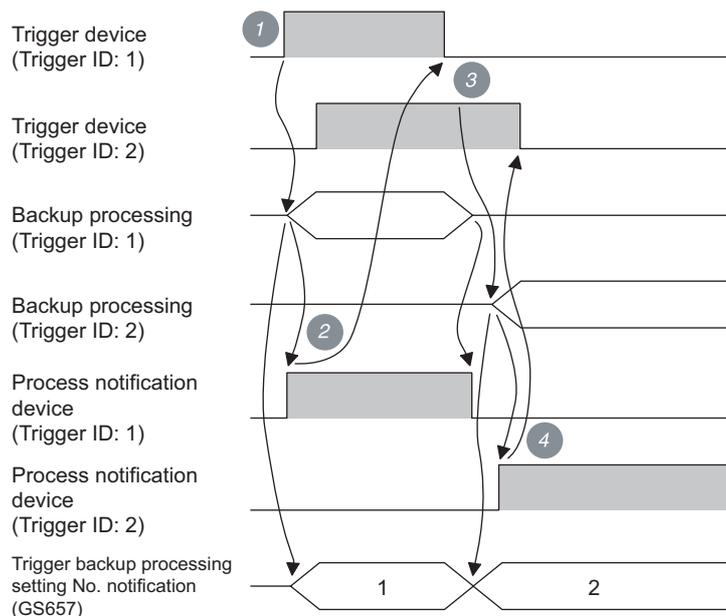
**(8) When another trigger condition is met during backup**

The GOT cannot detect that another trigger condition is met.



For ensuring the trigger backup, establish a handshake with the trigger device and the process notification device.

An example of a handshake is shown on the next page.



1. The trigger device (Trigger ID: 1) turns on, and then the GOT starts the backup (Trigger ID: 1).
2. When the backup is started, the process notification device (Trigger ID: 1) turns on, and the trigger backup processing setting No. notification (GS657) stores the trigger ID. When the process notification device turns on, the trigger device (Trigger ID: 1) turns off.
3. When the backup (Trigger ID: 1) is completed, the GOT recognizes that the trigger device (Trigger ID: 2) is on and the GOT starts the backup (Trigger ID: 2).
4. When the backup is started, the process notification device (Trigger ID: 2) turns on, and the trigger backup processing setting No. notification (GS657) stores the trigger ID. When the process notification device turns on, the trigger device (Trigger ID: 2) turns off.

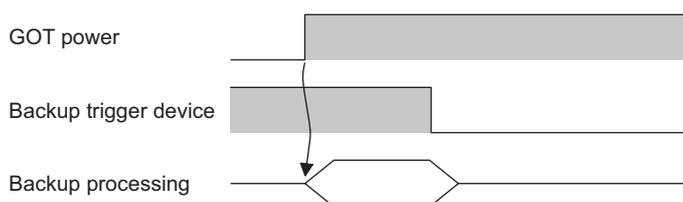
**(9) When multiple trigger conditions are simultaneously met**

The GOT executes the backup with the smallest trigger ID first.

**(10) When trigger device is on at GOT startup**

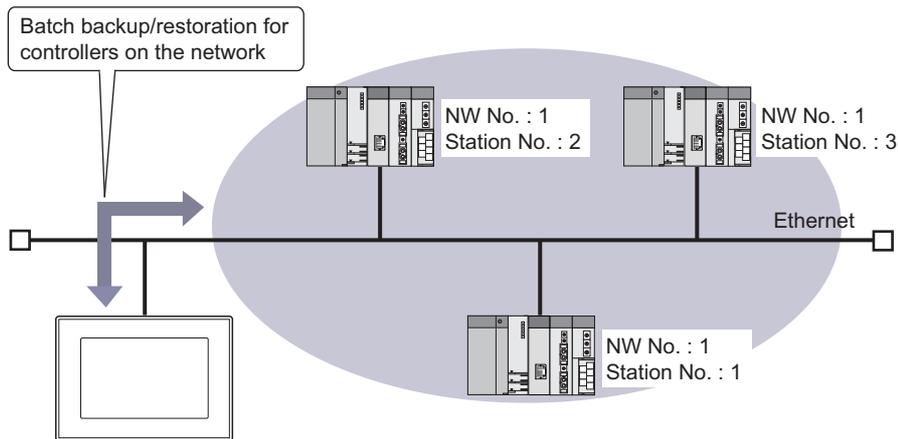
The GOT recognizes that the trigger condition is met, and then the GOT executes the backup.

Create a sequence program so that the trigger device turns off after the GOT checks that the process notification device turns on.



## 9.3.4 Network batch backup/restore

The backup or restoration can be executed to multiple controllers on the network system.



To backup or restore multiple controllers on the network, create a controller list file.

### POINT

#### Before performing network batch backup/restoration

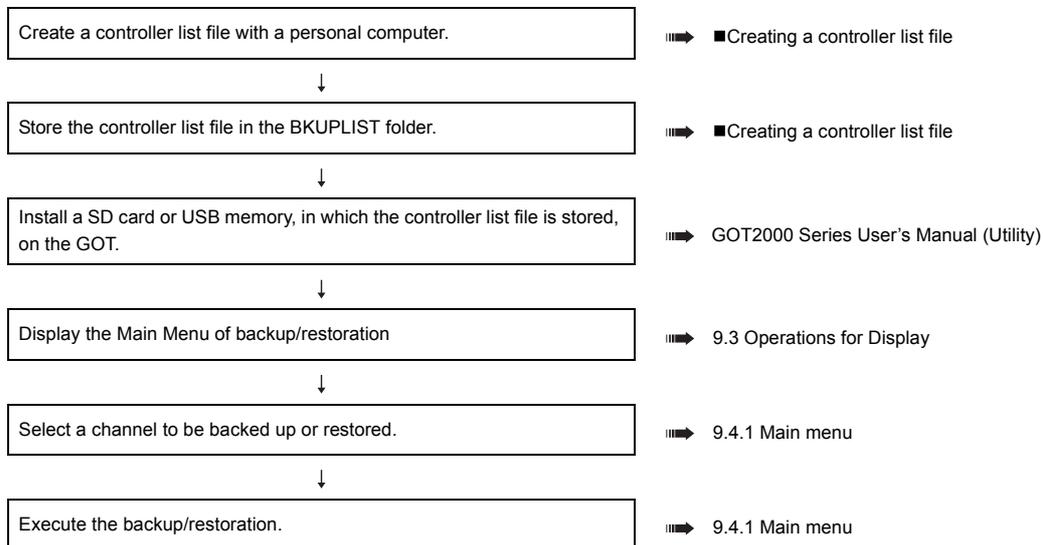
When backing up or restoring to controllers on the network, set the parameters to the controllers for communicating with the GOT.

If the controller cannot communicate with the GOT, the backup or restoration cannot be performed.

For how to connect controllers with the GOT, refer to the following.

- ➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

### Flow to perform the network batch backup/restoration



For the operation after executing the network batch backup/restore, refer to the following.

- ➡ ■Operation after executing the network batch backup or restoration



## (2) Controller list file creation

The controller list file must be created by the user. The following shows how to create it with Microsoft Excel®

1. Start Microsoft Excel® and set the controllers to be backed up or restored, according to the format.

	A	B	C	D
1	#BKUPRSTR_NET_TARGET_LIST			
2	#DATA_VERSION	1		
3	#ACT	NET	ST	NOTE
4	1	1	1	Controller
5	1	1	2	Controller
6	0	1	3	Information system
7				

For the format of the file, refer to the following.

⇒ (1) Controller list file specification

2. Select [File] → [Save As...] to display the [Save As...] dialog box.
3. Select [Unicode Text (\*.txt)] in [Save as type].
4. Enter the file name according to the CH No. to be used and press the [Save] button with the extension INI.  
For the specification of the file name, refer to the following.

⇒ (1) Controller list file specification

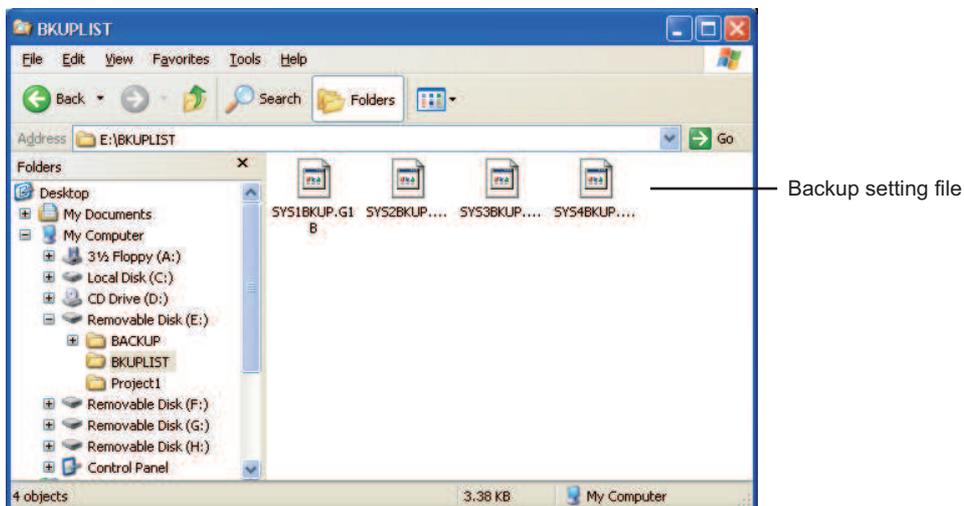
## (3) Controller list file storage

Store the created controller list file in the same folder as the backup setting.

For the storage location for the backup setting, refer to the following.

⇒ 9.2.1 System configuration

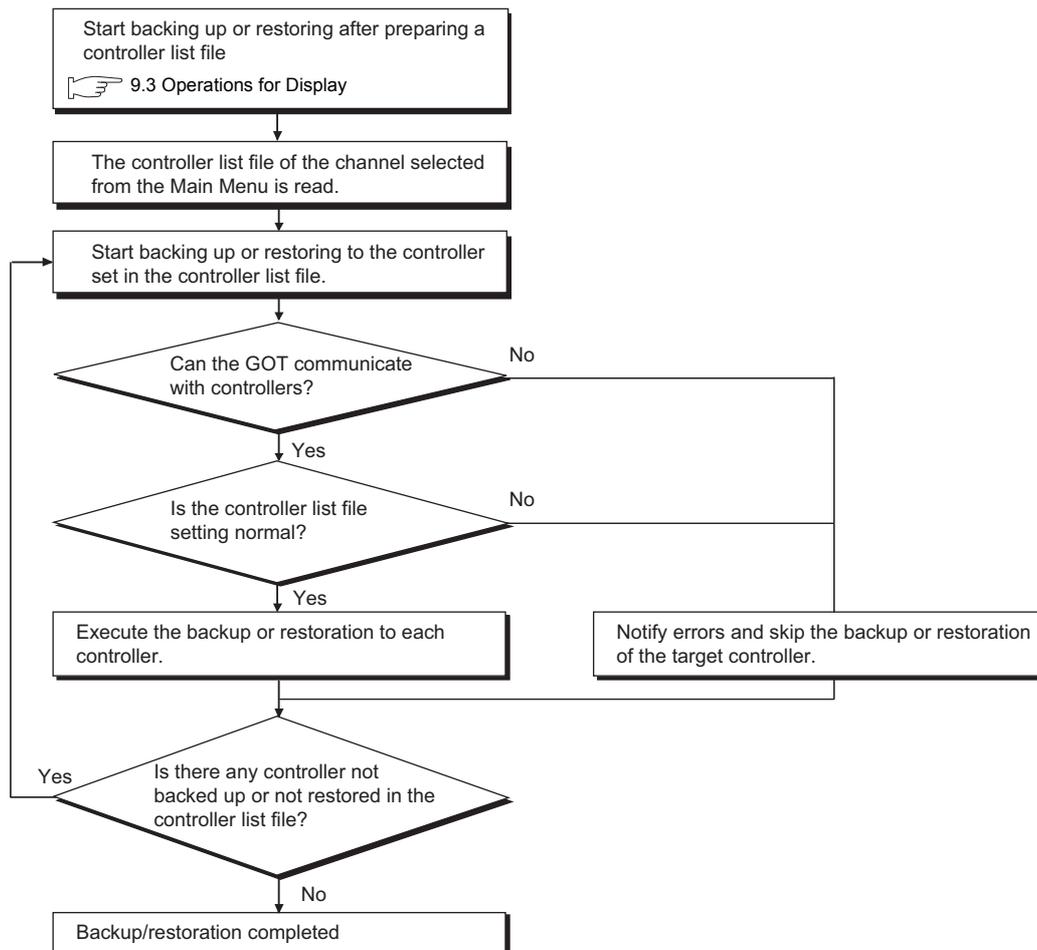
1. Check whether a storage folder for the backup (BKUPLIST) exists in the SD card or not.  
(If the backup is executed, the folder is automatically created)  
If no storage folder exists, create it.



2. Store the created controller list file in the storage folder for the backup.

## ■ Operation after executing the network batch backup or restoration

When the network batch backup/restoration is executed, the following operations are performed.



### (1) Operations if an error occurs during backup

If an error occurs, the backup being executed is canceled and the error dialog box is displayed. (The error is displayed by the controller set in the controller list file.)

After the error dialog box is closed, the backup to the next controller set in the controller list file is continued. However, the backup data cannot be written because a SD card is not installed or does not have sufficient capacity, the backup to all controllers is canceled.

### (2) Handling of the backup data when the backup is canceled

Backup data of controllers canceled for an error occurrence or a cancellation of password input on the controller is deleted by the controller set in the controller list file.

Backup data backed up normally remains by the controller set in the controller list file.

### (3) Operations if a password on the controller is set to the backup target

If the password input on the controller is canceled, the backup being executed is canceled and the backup to the next controller set in the controller list file is continued.

If a password for backup or restoration is set on the GOT, a password on the controller can be input to the controller, for which the password input was canceled, at the next time.

By inputting the correct password, password input is not required at the next execution.

For the password for backup or restoration, refer to the following.

⇒ 9.3.2 Security and password

### (4) Operation for trigger backup

- The backup does not executed if the GOT cannot communicate with controllers because of a communication error or others.
- If no previous backup data to be compared exists, the backup is executed.
- Even if the backup being executed is canceled for an error occurrence, the backup to the next controller set in the controller list file is continued.

# 9.4 Operation Procedures

This section describes the backup/restore display details and the functions of the keys displayed on the screen.

## 9.4.1 Main menu

The following describes the display and the key functions on the Backup/restoration function : Main menu screen.

### ■ Display details



No.	Display details
1)	Displays the target channel No. of the backup and the setting name for the backup/restore (Fixed).

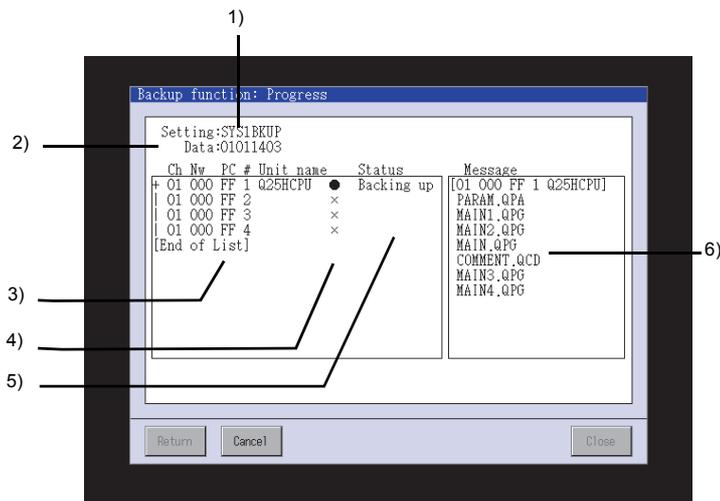
### ■ Key functions

Key	Function
	Switches the target channels of the backup/restore.
	Available when the controller list file is stored in the same folder as the backup setting. ■▶ 9.3.4 Network batch backup/restore Shifts to the controller list screen. If a SD card which stores the controller list file is installed on the GOT after displaying the Main Menu or switching a channel, the [Device List] button is not valid. To validate the [Device List] button, switch a channel and select the same channel again.
Backup function	Starts the backup.
Restoration function	Switches the screen to the Restoration function: Data list screen.
GOT data package	Switches the screen to the setting screen of the GOT data package acquisition. ■▶ GOT2000 Series User's Manual (Utility)
Delete backup data	Deletes the oldest data among backup data already stored in a SD card or USB memory in the GOT.
	Ends the backup/restore, and then the screen is switched to the backup/restore startup screen.
	Displays the FX keyword screen. (This key is displayed only when the FXCPU is connected.) For the operation of a keyword including disabling a keyword, refer to the following manual. ■▶ GOT2000 Series User's Manual (Utility)

## 9.4.2 Progress screen (backup)

This following describes the display details and the key functions on the Backup function: Progress screen.

### ■ Display details



No.	Display details
1)	Displays the setting name for the backup/restore (Fixed).
2)	Displays the backup data name.
3)	Displays the channel No., network No., station No., CPU No., and module name for the target controller in a list. When the CPU No. setting is enabled, select the controller to be backed up by touching it. Displays also the progress situation of each station when the network batch backup is executed. ([Progression: (Number of completed controllers)/(Number of set controllers) NG = (Number of error controllers)])
4)	Displays the target controller status of the backup. ● : Backup target ○ : Not backup target × : Access disabled
5)	Displays the backup progress status. Backing up : The backup is in processing. Aborting : The backup cancellation is in processing. Completed : The backup is completed.
6)	Displays the file name in processing.

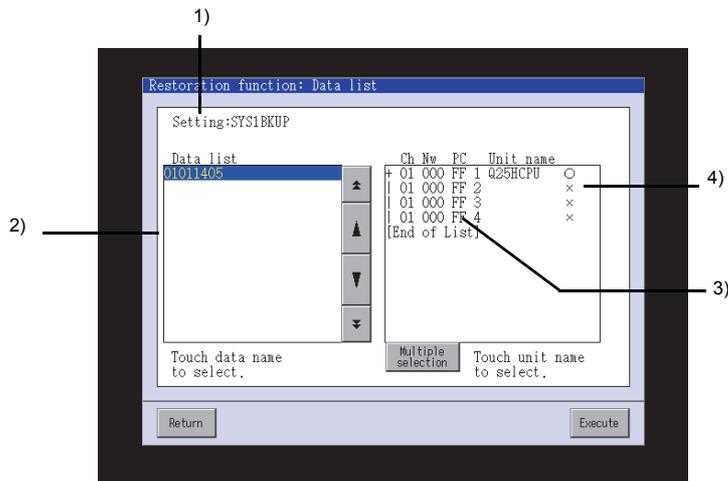
### ■ Key functions

Key	Function
	Switches the screen to the Backup/restoration function: Main menu screen.
	Cancels the backup.
	Ends the backup/restore, and then the screen is switched to the backup/restore startup screen.

### 9.4.3 Data list (restoration)

The following describes the display details and the key functions on the Restoration function: Data list screen.

#### ■ Display detail



No.	Display details
1)	Displays the setting name for the backup/restore (Fixed).
2)	Displays backup data stored in a SD card or USB memory. Select a backup data to be restored with touching the data.
3)	Displays the channel No., network No., station No., module No., and unit name for the target controller of the restoration.
4)	Displays the target controller status of the restoration. Select a target controller of the restoration with touching the controller. <ul style="list-style-type: none"> <li>● : Restoration target</li> <li>○ : Not restoration target</li> <li>× : Access disabled</li> </ul>

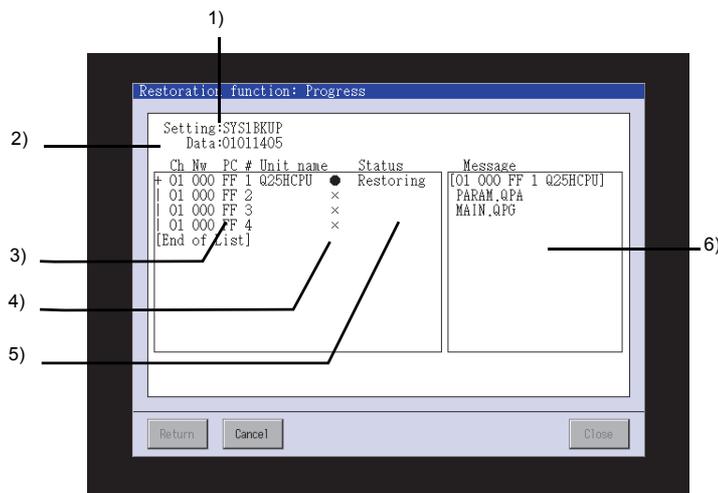
#### ■ Key functions

Key	Function
	Scrolls the data list up and down by one line.
	Scrolls the data list up and down by one page.
	Switches the number of target controllers of the restoration. <ul style="list-style-type: none"> <li>• Single selection: Select [Single selection] when selecting only one target controller of the restoration.</li> <li>• Multiple selection: Select [Multiple selection] when selecting multiple target controllers of the restoration.</li> </ul>
	Return to the previous screen, before shifting to the Data list screen.
	Starts the restoration.

## 9.4.4 Progress screen (restoration)

This following describes the display details and the key functions on the Restoration function: Progress screen.

### ■ Display details



No.	Display details
1)	Displays the setting name for the backup/restore (Fixed).
2)	Displays the backup data name.
3)	Displays the channel No., network No., station No., module No., and unit name for the target controller of the restoration.
4)	Displays the target controller status of the restoration. ● : Restoration target ○ : Not restoration target x : Access disabled ? : Restoration failed
5)	Displays the restoration progress status. Restoring : The restoration is in processing. Aborting : The restoration cancellation is in processing. Completed : The restoration is completed. Abort : The restoration cancellation is completed. Comm.error : The restoration is failed with the communication failed. Data error : The restoration is failed with backup data errors.
6)	Displays the file name in processing.

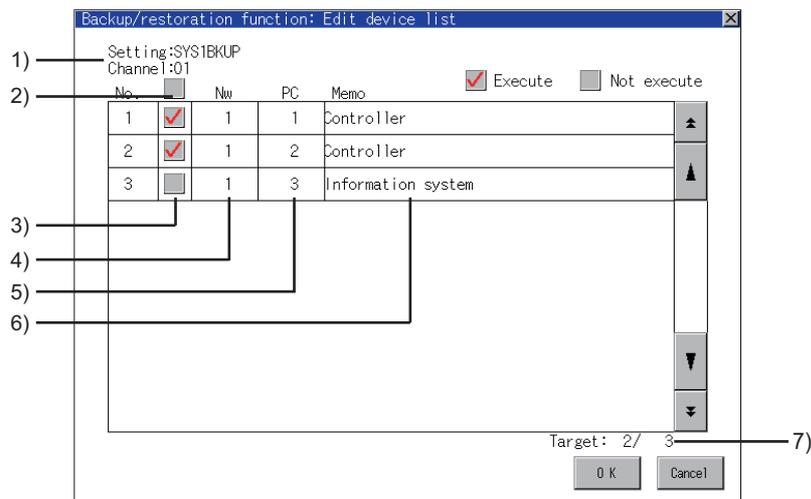
### ■ Key functions

Key	Function
Return	Switches the screen to the Backup/restoration function: Main menu screen.
Cancel	Cancels the restoration.
Close	Ends the backup/restore, and then the screen is switched to the backup/restore startup screen.

## 9.4.5 Controller list screen

The following describes the display details and the key functions on the Controller list screen.

### ■ Display details



No.	Display details
1)	Displays the target channel No. of the backup/restore and the setting name for the backup/restore (Fixed).
2)	Switches execution/non-execution of all settings.
3)	Switches execution/non-execution of each setting.
4)	Displays the network number.
5)	Displays the station number.
6)	Displays the memo.
7)	Displays the target number of the backup/restore. (Executed/all settings)

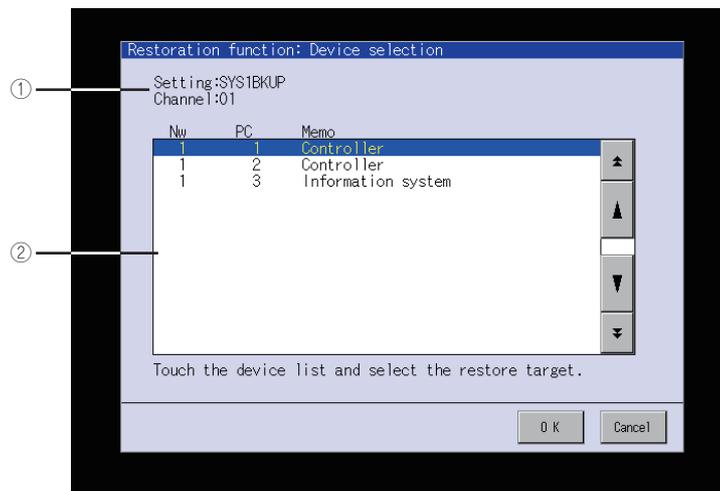
### ■ Key functions

Key	Function
	Scrolls the data list up and down by one line.
	Scrolls the data list up and down by one page.
	Saves the edited information in the controller list file and switches the screen to the Backup/restoration function: Main menu screen.
	The edited information is deleted and switches the screen to the Backup/restoration function: Main menu screen.

## 9.4.6 Controller selection screen (Restoration)

The following describes the display and the key functions on the Restoration function: Controller selection screen.

### ■ Display details



No.	Display details
1)	Displays the target channel No. of the backup/restore and the setting name for the backup/restore (Fixed).
2)	Displays all settings in the controller list file. By touching a line, whether restore or not each controller can be switched. The controller in the highlighted line to be restored.

### ■ Key functions

Key	Function
	Scrolls the data list up and down by one line.
	Scrolls the data list up and down by one page.
	Switches the screen to the Restoration function: Data list screen.
	Switches the screen to the Backup/restoration function: Main menu screen.



## 9.5.2 How to install and start Backup Data Conversion Tool

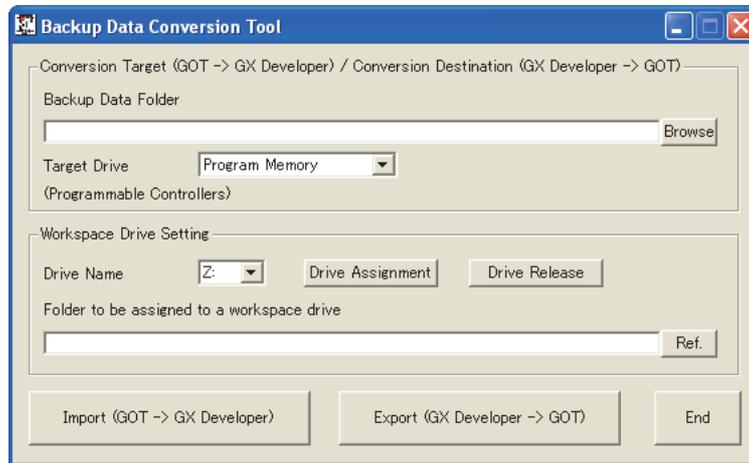
Installing Backup Data Conversion Tool is not required.  
Start Backup Data Conversion Tool with the following procedures.

1. Copy BkupRstrDataConv.exe to the hard disk and others on the personal computer.  
Get the above file from one of the followings.
  - CD-ROM of GT Works3, BkupRstrDataConv folder in the Disc2
  - GTD3 folder on the personal computer
  - Contact your local distributor.
2. Double-click the copied BkupRstrDataConv.exe, and then the tool starts. Refer to the following, and set the tool.

## 9.5.3 How to use Backup Data Conversion Tool

### ■ Setting items

The following shows the setting items of Backup Data Conversion Tool.



Item	Description
Conversion Target	Specify data to be converted.
Backup Data Folder* <sup>1</sup>	Specify the storage location of the backup data (setting data: UNITINFO.G1B) created with the backup/restore function by clicking the <b>[Browse]</b> button.
Target Drive	Select the PLC drive that has setting data to be converted.
Workspace Drive Setting	Set the settings for editing backup data with GX Developer.
Drive Name	Specify [IC Card drive] to be specified for [Read IC memory card] and [Write IC memory card] on GX Developer.
Folder to be assigned to a workspace drive* <sup>1</sup>	Specify the target folder of [Drive Name] by clicking the <b>[Ref.]</b> button.
<b>[Drive Assignment]</b>	Click the item, and then [Folder to be assigned to a workspace drive] is assigned to [Drive Name]. ([Folder to be assigned to a workspace drive] is automatically assigned to [Drive Name] normally. Use the button when the drive assignment setting is canceled by clicking the <b>[Drive Release]</b> button and a drive is assigned again.)
<b>[Drive Release]</b>	Click the item, and then the drive assignment setting is canceled.
<b>[Import (GOT → GX Developer)]</b>	Converts the backup data to data editable with GX Developer
<b>[Export (GX Developer → GOT)]</b>	Converts data edited by GX Developer to data applicable to the backup/restore.
<b>[End]</b>	Ends Backup Data Conversion Tool.

For details of \*1, refer to the following.

**\*1 Folder name and file name**

(a) Number of characters set for folder and file names

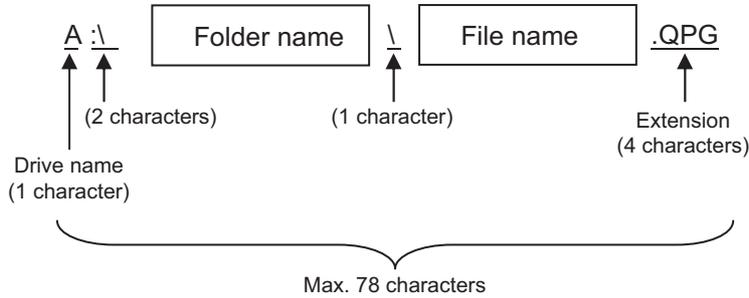
The GOT recognizes the file location with a path as shown below.

Set the folder and file names so that the total number of characters in the path is within 78 characters.

The user can set the folder name and file name only.

(Other than the folder and file names are automatically set.)

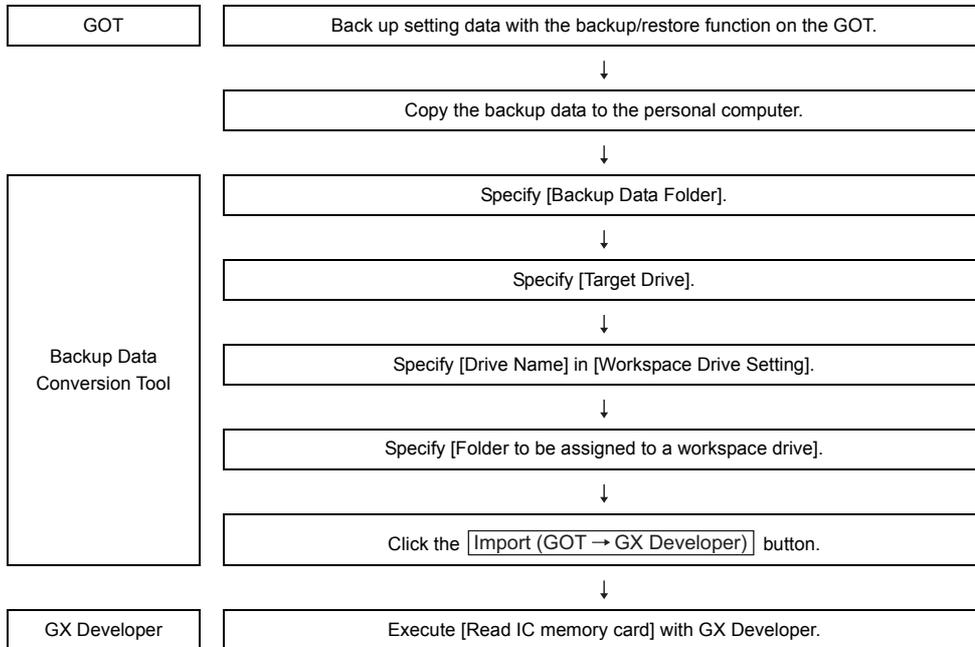
Example) Path of QPG file to be stored in memory card



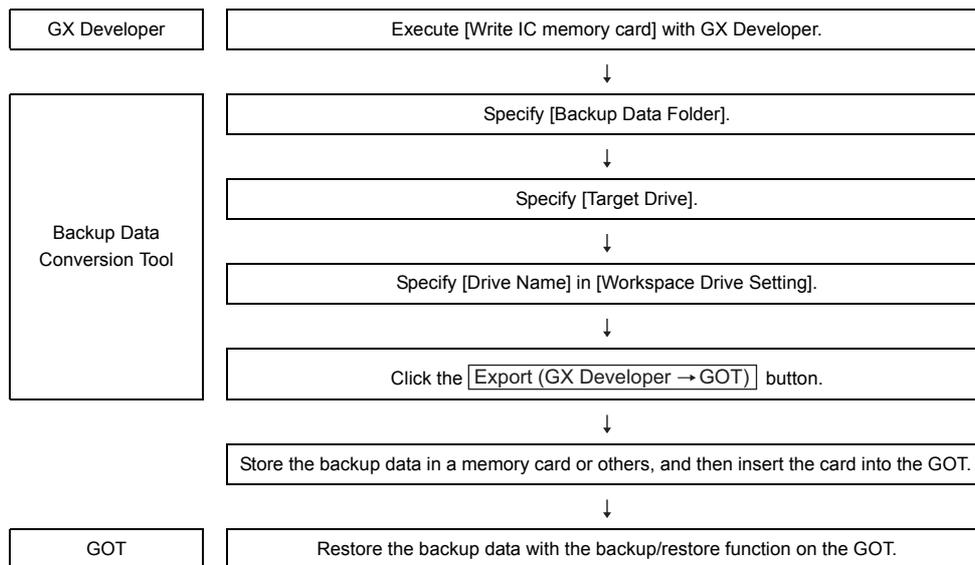
**Operation flow**

The following shows the operation flow for Backup Data Conversion Tool.

**(1) Editing backup data with GX Developer**



## (2) Restoring data edited by GX Developer



## 9.5.4 Precautions

### ■ Precautions for the backup data conversion

- (1) Backup data of a PLC CPU not compatible with the integrated circuit memory card**

The Q00JCPU, Q00CPU, Q01CPU, and FXCPU do not support the read/write IC memory card function of GX Developer. Therefore, backup data converted with Backup Data Conversion Tool cannot be edited.
- (2) Backup data of a sequence program created in GX Works2**

Once backup data created with GX Works2 is converted by using Backup Data Conversion Tool, the data can be edited with GX Works2. To edit the data with GX Works2, use GX Works2?Ver.1.73B or later.



Error	Cause	Corrective action
Setting data (files and data) cannot be obtained from the controller.	The GOT cannot communicate with the controller.	Check the following. GOT <ul style="list-style-type: none"> <li>• Check if the cable is correctly connected to the GOT.</li> <li>• Check if the correct communication driver is installed on the GOT.</li> <li>• Check if the communication settings are correctly set.</li> </ul> Controller <ul style="list-style-type: none"> <li>• Check if the parameters are set.</li> <li>• Check if the cable is correctly connected to the controller.</li> <li>• Check if the controller is turned on.</li> </ul>
The backup cannot be executed because passwords for files of the controller are set.	<ul style="list-style-type: none"> <li>• The user does not remember the password.</li> <li>• The password is incorrect. (The first backup)</li> <li>• Passwords for files of the controller are changed.</li> </ul>	Check with the administrator of the system regarding the passwords for files of the controller.

## ■ Restoration

Error	Cause	Corrective action
Setting data (files and data) cannot be written into the controller.	The GOT cannot communicate with the controller.	Check the following. GOT <ul style="list-style-type: none"> <li>• Check if the cable is correctly connected to the GOT.</li> <li>• Check if the correct communication driver is installed on the GOT.</li> <li>• Check if the communication settings are correctly set.</li> </ul> Controller <ul style="list-style-type: none"> <li>• Check if the parameters are set.</li> <li>• Check if the cable is correctly connected to the controller.</li> <li>• Check if the controller is turned on.</li> </ul>
	The target controller of the restoration is a different kind of controller from the target controller of the backup.	<ul style="list-style-type: none"> <li>• Check if the system configuration for the restoration is the same as that for the backup.</li> <li>• Check if the target controller of the restoration is the same as that of the backup or the same kind of controller.</li> </ul>
The restoration cannot be executed because passwords for files of the controller are set.	<ul style="list-style-type: none"> <li>• The passwords for files written in the controller are changed.</li> </ul>	Check with the administrator of the system regarding the passwords for files of the controller.



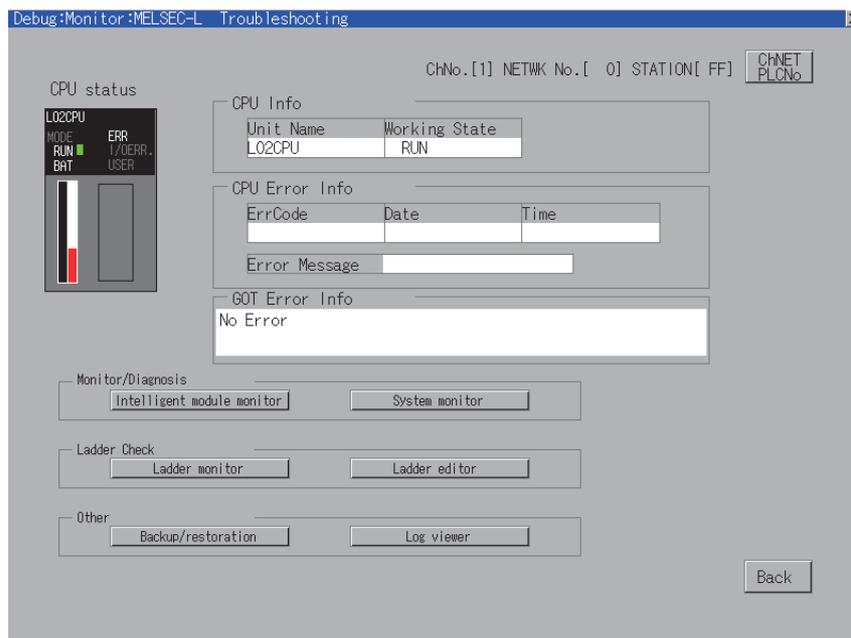
# 10. MELSEC-L TROUBLESHOOTING

GT 27 GT 23 Soft GOT 2000

## 10.1 Features

MELSEC-L troubleshooting enables you to display the status and errors of the LCPU connected to the GOT and the errors of the GOT.

In addition, you can start the sequence program monitor or others from the MELSEC-L troubleshooting screen.



# 10.2 Specifications

## 10.2.1 System configuration

This section describes the system configuration of the MELSEC-L troubleshooting.  
For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

### ■ Target controller

Controller
LCPU

### ■ Connection type

This function can be used in the following connection types.

(○: Available, ×: Unavailable)

Function		Connection type between GOT and LCPU				
Name	Description	Direct CPU connection	Computer link connection	Ethernet connection <sup>*4</sup>	CC-Link connection	
					ID <sup>*1</sup>	G4 <sup>*2</sup>
MELSEC-L troubleshooting	Displays the status and errors of the LCPU and starts various monitor functions.	○ <sup>*3</sup>	○	○	○	○

\*1 Indicates CC-Link connection (Intelligent device station).

\*2 Indicates CC-Link connection (via G4).

\*3 When the GOT is connected to LCPU, use L6ADP-R2.

\*4 MELSEC-L troubleshooting cannot be used when using CC-Link IE field network Ethernet adapter.

### ■ Required Extended system application

The extended system applications shown below are required.

➡ 1.2 Required extended system application for the function

#### (1) Extended system application

Write the package data that has the extended system application for the MELSEC-L troubleshooting to the GOT.  
For the communication method with the GOT, refer to the following.

➡ GT Designer3 (GOT2000) Help

#### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

➡ GT Designer3 (GOT2000) Help

## 10.2.2 Access range

### ■ When using direct CPU connection/computer link connection

The LCPU of the host station can be monitored.

### ■ When using Ethernet connection

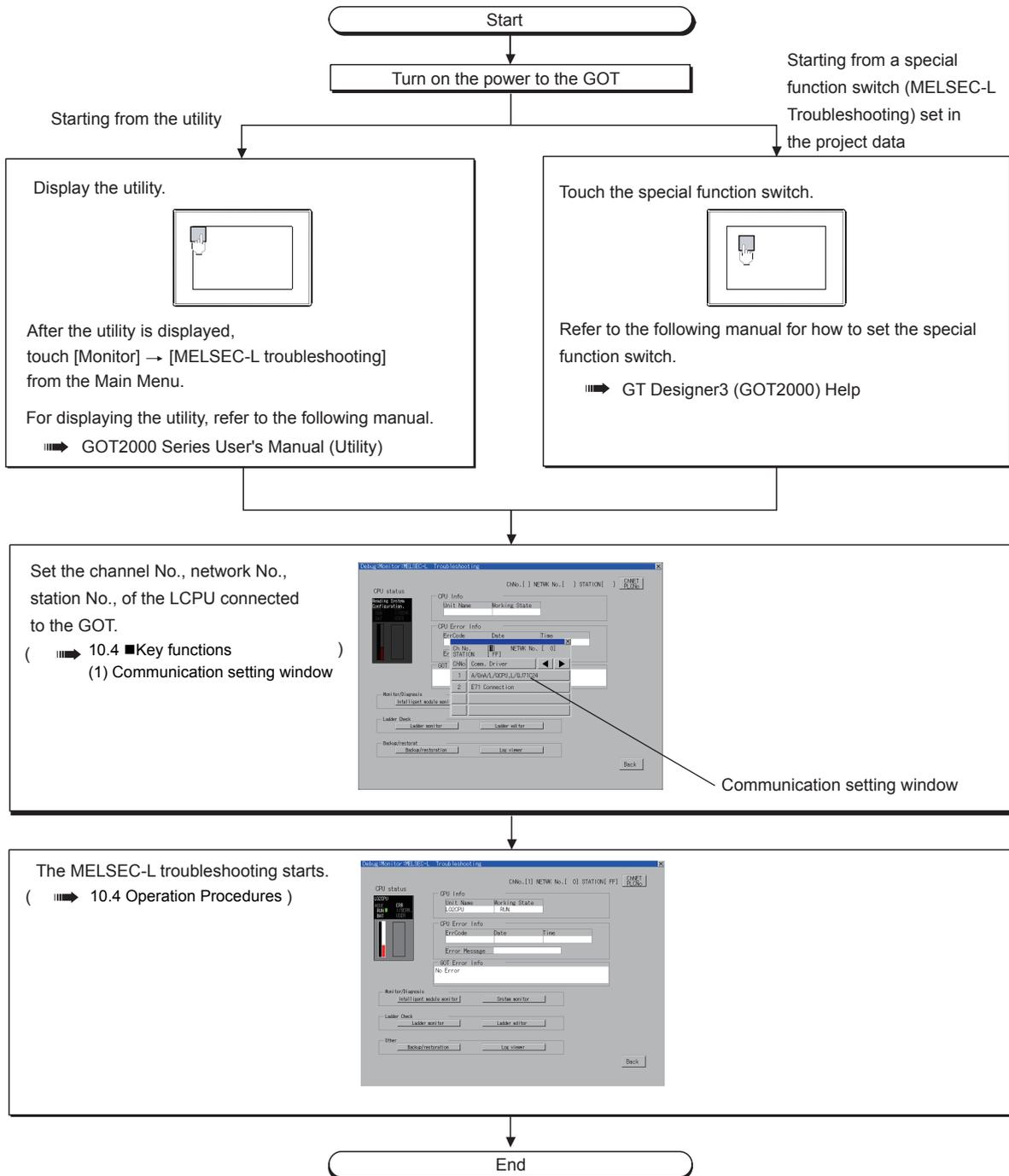
The LCPU of the host and other stations can be monitored.

### ■ When using CC-Link connection (Intelligent device station/via G4)

The LCPU of the master and local stations can be monitored.

# 10.3 Operation for Display

This section describes the flow until the MELSEC-L troubleshooting operation screen is displayed, after the MELSEC-L troubleshooting is installed in the GOT.



**(1) How to display the utility**

For how to display the utility, refer to the following.

➡ GOT2000 Series User's Manual (Utility)

**(2) Displaying communication setting window**

After turning on the GOT, the communication setting window is displayed at the first startup of the MELSEC-L troubleshooting only.

For displaying the communication setting window at the second or later startup, touch the **ChNET PLCNo** button on the MELSEC-L troubleshooting screen.

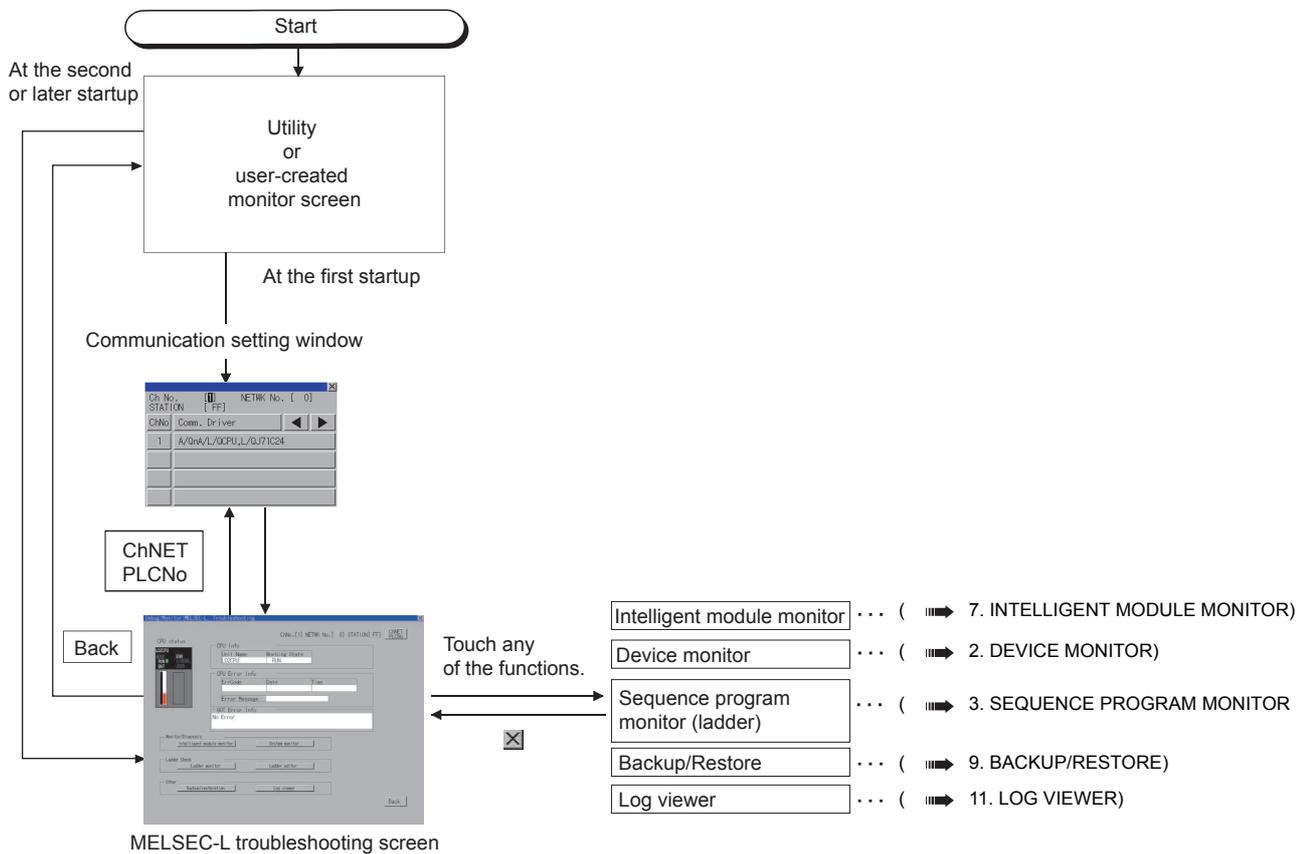
➡ 10.4 Operation Procedures

**(3) If the project data has not been downloaded**

The MELSEC-L troubleshooting can be started from the utility even if the project data has not been downloaded to the GOT.

**Changing screens**

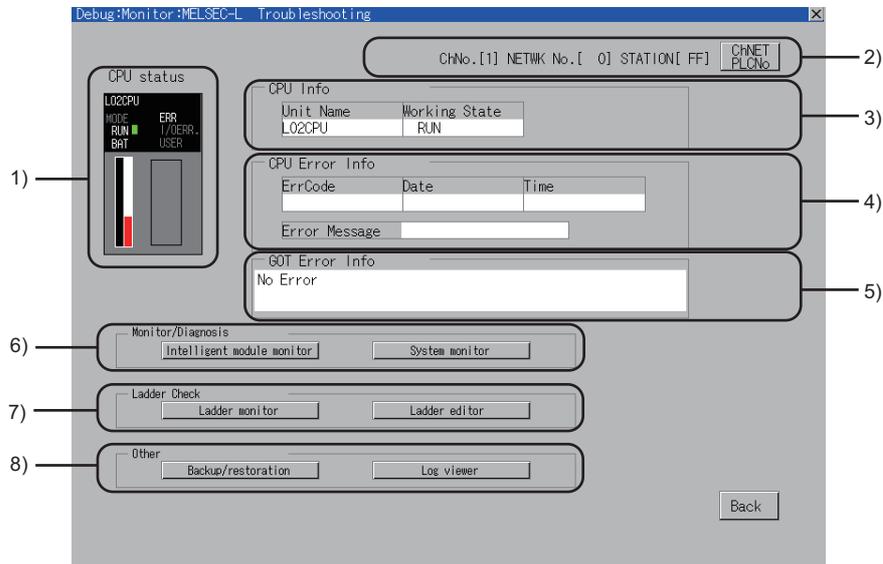
This section describes how to change the screen.



# 10.4 Operation Procedures

This section describes the display details for the MELSEC-L troubleshooting and the functions of the keys displayed on the screen.

## ■ Displayed contents



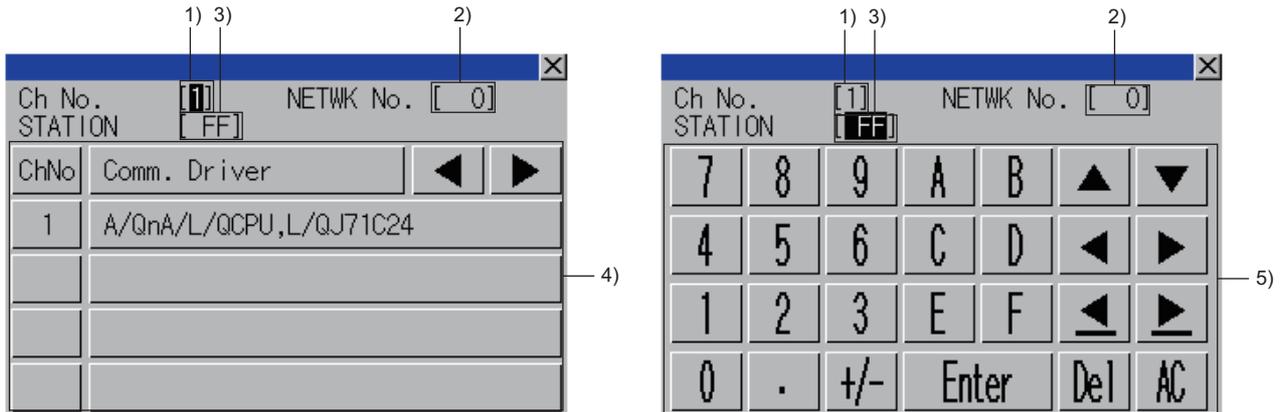
No.	Item	Display contents
1)	CPU status	Displays the LCPU status. (Only LED of BAT, RUN, and ERR is lit.) The LED on the screen and the LED display on the PLC body may not match depending on the error status.
2)	Channel information	Displays the set channel number, network number, and station number.
3)	CPU Info	Displays the model and the operation status of the LCPU.
4)	CPU Error Info	Displays error information of the LCPU.
5)	GOT Error Info	Displays error information of the GOT. The alarm can be canceled with the [Reset] button on the System alarm display screen. ➡ GT Designer3 (GOT2000) Help
6)	Monitor/Diagnosis	Displays buttons to start the intelligent module monitor and device monitor (ladder).
7)	Ladder Check	Displays buttons to start the sequence program monitor.
8)	Backup/restoration	Displays buttons to start the backup/restore and log viewer.

## ■ Key functions

Key	Function
	Displays the communication setting window. ➡ (1) Communication setting window
	Starts the intelligent module monitor. ➡ 7. INTELLIGENT MODULE MONITOR
	Starts the device monitor. ➡ 2. DEVICE MONITOR
	Starts the sequence program monitor (ladder). ➡ 3. SEQUENCE PROGRAM MONITOR (LADDER)
	Starts the backup/restore. ➡ 9. BACKUP/RESTORE
	Starts the log viewer. ➡ 11. LOG VIEWER
	Closes the MELSEC-L troubleshooting and returns the screen to the one for starting the MELSEC-L troubleshooting.

## (1) Communication setting window

### (a) Display monitor



The information shown in the table below is displayed.

No.	Item	Display contents
1)	CH No. input area	Set the CH No. for the target controller.
2)	Network No. input area	Set the network No. for the target controller.
3)	Station No. input area	Set the station No. of the target controller. When the station No. is set to the host station (FF), set the network No. to 0.
4)	CH No. selection key	Select a CH No.
5)	Keys	Displays the keys used in the operation in the communication setting window.

### (b) Key functions

Key	Function
	Closes the communication setting window. When any of the CH No., network No., and station No. is not input and the monitor target is not set, the communication setting window does not close.
	Moves the cursor among the input areas.
	Deletes all the input values and characters.
	Deletes an input value or character.
	Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area.

## 10.5 Error Messages and Corrective Action

---

The following shows the error messages for the MELSEC-L troubleshooting and the corrective actions.

Error message	Description	Corrective action
Communications error	Communication could not be established with the PLC CPU.	Connections between the PLC CPU and the GOT (disconnected or cut cables). Has an error occurred in the PLC CPU.



# 11. LOG VIEWER

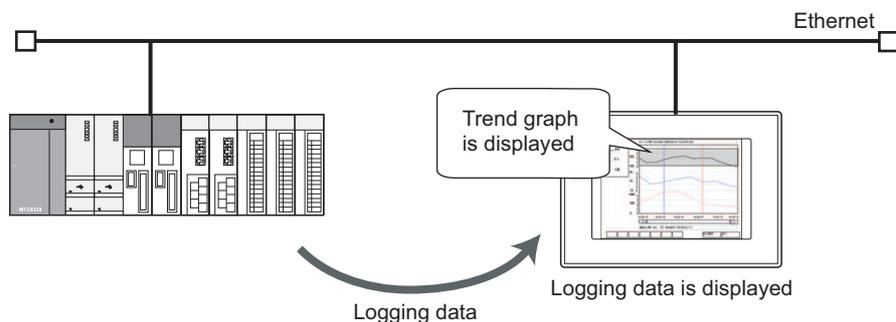
GT 27 GT 23 Soft GOT 2000

## 11.1 Features

With the log viewer function, the GOT displays the logging data acquired from the high speed data logger module, the PLC CPU, and the BOX data logger, and controls the files. The features of the log viewer are shown below.

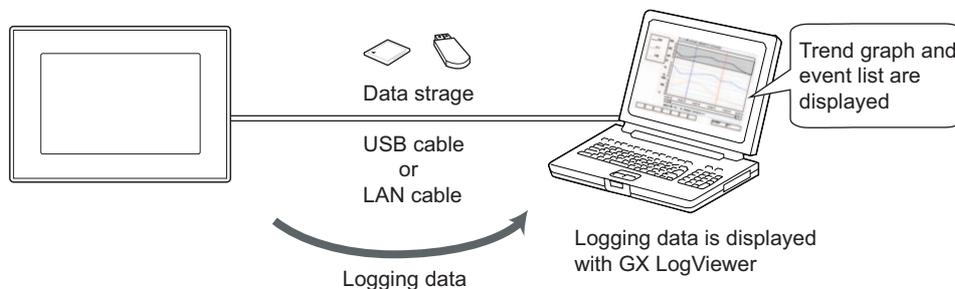
### ■ Displaying logging data without a personal computer

- Using the log viewer function, the logging data stored in the CF card attached to the high speed data logger module or the BOX data logger, or the SD card attached to the PLC CPU is viewed on the GOT.
- The logging data can be stored in a SD card or USB memory attached to the GOT, and displayed on the GOT.



### ■ Logging data can be retrieved from GOT

The logging data acquired from the high speed data logger module, the PLC CPU, and the BOX data logger can be retrieved from the GOT to the personal computer.



# 11.2 Specifications

## 11.2.1 System configuration

This section describes the system configuration of the log viewer.

### Target controller

#### (1) High Speed Data Logger Module

Model
QD81DL96

#### (2) PLC CPU

PLC
LCPU*1, QnUDVCPU

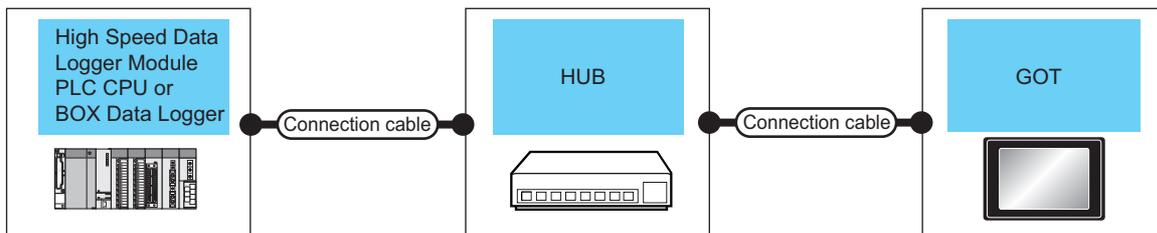
\*1 L02SCPU and L02SCPU-CM are not available.

#### (3) BOX Data Logger

Model
NZ2DL

### Connection type

This function can be used in the following connection types.



PLC		Connection cable*1*2	Max. distance*4	GOT		Number of connectable equipment
Model	Connection type			Option device	Model	
QD81DL96*5	Ethernet connection	Shielded twisted pair cable (STP), Unshielded twisted pair cable (UTP) Category 3, 4 and 5	100m	- (Built into GOT)	GT27	16 GOTs
LCPU*6						
QnUDVCPU*6						
NZ2DL						

\*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system. Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.

Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

\*2 A straight cable is available for the high speed data logger module.

A straight cable or a crossing cable are available for the PLC CPU.

The high speed data logger module and the GOT cannot be directly connected with an Ethernet cable. The connection is available via the HUB.

\*3 A length between a hub and a node.

\*4 For the system configuration of high speed data logger module, refer to the following manual.

➡ High Speed Data Logger Module User's Manual

\*5 For the system configuration of the PLC CPU with the built-in Ethernet interface, refer to the following manual.

➡ MELSEC-L CPU Module User's Manual (Built-In Ethernet Function)

QnUCPU User's Manual (Communication via Built-in Ethernet Port)

### Required hardware

A data strage is necessary in the following cases.

- Displaying or managing logging data stored in a data storage
- Reading out and displaying logging data of 4MB or more from the controller

## 11.2.2 GOT Side Settings

### ■ Setting communication interface

To use the log viewer function, [GOT IP Address] must be set in any of the following procedures.

Setting method	Reference section
Set [Destination I/F] of [Ethernet Download] in the [PC (Data Transfer)] dialog box.	GT Designer3 (GOT2000) Help
Set the Ethernet driver in [Driver] in the [Controller Setting] dialog box.	GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1
Select [Communication Setting] of [Gateway] in the [Controller Setting] dialog box and select the [Use the function of Gateway] check box.	GT Designer3 (GOT2000) Help

After completing the setting on GT Designer3, install the required OS to the GOT.

### ■ Required Extended system application

The extended system applications shown below are required.

⇒ 1.2 Required extended system application for the function

#### (1) Extended system application

Write the package data that has the extended system application for the log viewer to the GOT.  
For the communication method with the GOT, refer to the following.

⇒ GT Designer3 (GOT2000) Help

#### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

⇒ GT Designer3 (GOT2000) Help

## 11.2.3 Access range

The high speed data logger module, the PLC CPU module, or the BOX data logger which is connected to the GOT via the HUB using the Ethernet cable, can be monitored.

Monitoring via the Internet cannot be performed.

For details of the high speed data logger module, refer to the following.

⇒ High Speed Data Logger Module User's Manual

For details of the PLC CPU module, refer to the following.

⇒ MELSEC-L CPU Module User's Manual (Built-In Ethernet Function)

QnUCPU User's Manual (Communication via Built-in Ethernet Port)

## 11.2.4 Precautions

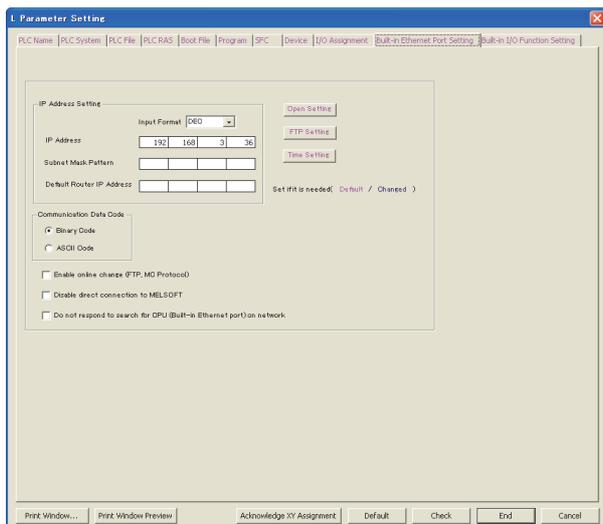
### (1) Handling data storage during the access

Do not remove the data storage and do not open the SD card slot during the access.  
Doing so may damage files in the GOT or in the data storage.

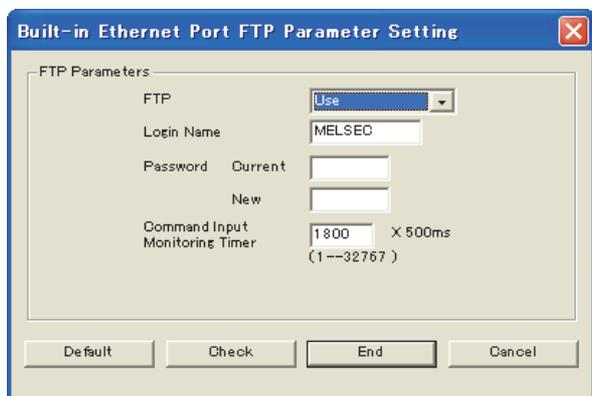
### (2) Connection to the PLC CPU

To use the log viewer function using the PLC CPU, [FTP Setting] is required on the PLC CPU.  
The FTP setting method for GX Works2 is described below.  
For details of GX Works2, refer to the following.

- ⇒ GX Works2 Version1 Operating Manual (Common)
- MELSEC-L CPU Module User's Manual (Built-In Ethernet Function)
- QnUCPU User's Manual (Communication via Built-in Ethernet Port)



1. Click the [Built-in Ethernet Port setting] tab in the [L Parameter setting] window.
2. Click the [FTP Setting] button.



3. Switch the item of [FTP] to [Use].

**(3) Access to storing files**

[Storing file] is for use in temporarily storing the data currently collected by the high speed data logger module, the PLC CPU, or the BOX data logger.

Precautions for accessing to [Storing file] are different according to the controller.

(a) High speed data logger module and BOX data logger

- During the file switching from [Storing file] to [saved file], [Storing file] and [saved file] may not exist temporarily.
- When [Storing file] is selected and an error message saying that the file cannot be found appears, select [Storing file] again.
- Since data is stored in [Storing file] as needed, the copied file size may be larger than the size of when [Storing file] is selected.
- The data is also stored as needed even when [Storing file] is being copied, so the copying file size may appear larger than the file size of when selected.

➡ High Speed Data Logger Module User's Manual

(b) PLC CPU

Reference and copying are not available since [Storing file] cannot be selected.

When [Storing file] is full, the data cannot be browsed until the file is switched to [saved file].

➡ QnUDVCP/LCPU User's Manual (Data Logging Function)

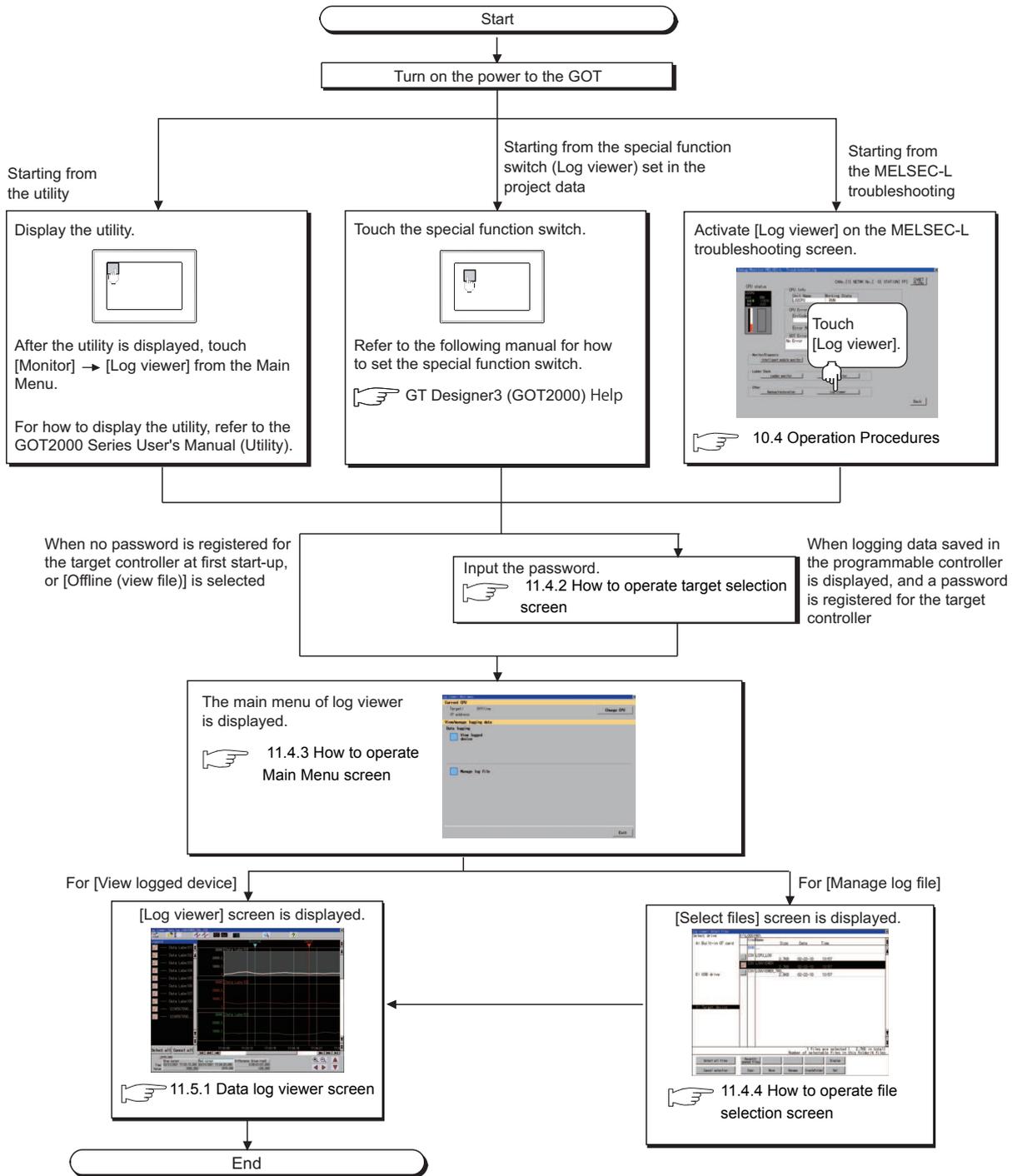
The following shows the storage location of [Storing file] and [saved file].

```
/LOGGING ..... Folder for log viewer function (the folder name is fixed)
/LOG01 ..... Folder for setting No.1 (the folder name is specified by the user)
  LOG01.CSV *1 ..... [Storing file] (saved just below the user specified folder)
  /00000001 ..... [saved file] storage folder (automatically created in serial number)
                    [saved file] (moved to the [saved file] storage folder when [Storing file] becomes full)
    00000001.CSV }
    00000002.CSV } Referring and copying are enabled.
    00000003.CSV }
    /00000101
    .....
/LOG02 ..... Folder for setting No.2
  LOG02.CSV *1 ..... [Storing file]
/LOG03 ..... Folder for setting No.3
  LOG03.CSV *1 ..... [Storing file]
  .....
```

\*1 Operations such as referring or copying are not enabled. (Only confirmation of the file name is enabled.)

# 11.3 Operations for Display

This section describes the flow until the log viewer operation screen is displayed, after the log viewer (Option OS) is installed in the GOT.



**POINT**

**(1) How to display the utility**

For how to display the utility, refer to the following.

▶▶▶ GOT2000 Series User's Manual (Utility)

**(2) Displaying target setting window**

For displaying the target setting window, touch the [Change CPU] button on the Main Menu screen of log viewer.

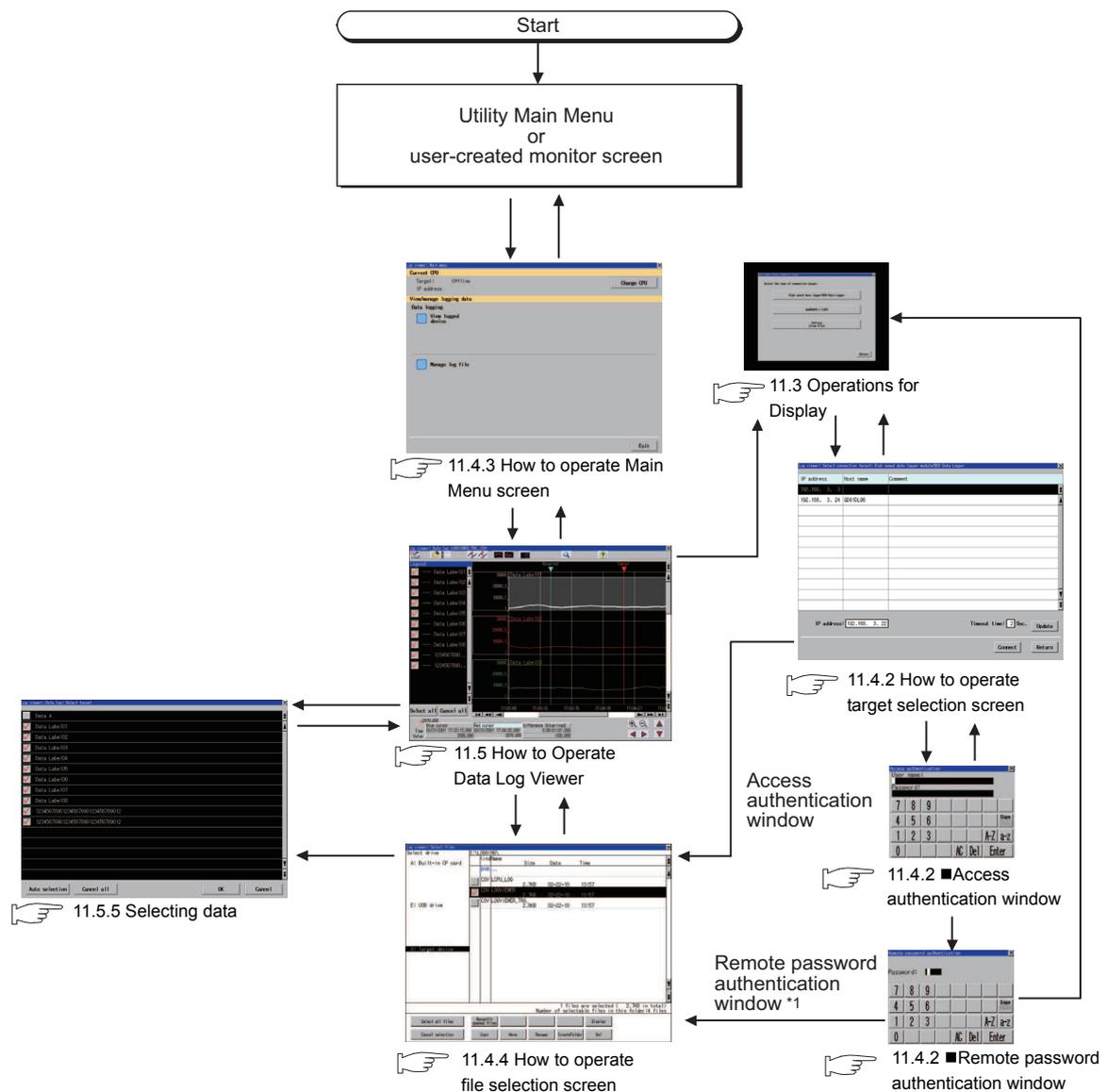
To display the connection selection screen, touch the [High speed data logger module / BOX data logger]/ [QnUDVCPU / LCPU] button.

Touch the [Offline (view file)] button to display the file selection screen.

**(3) If the project data has not been downloaded**

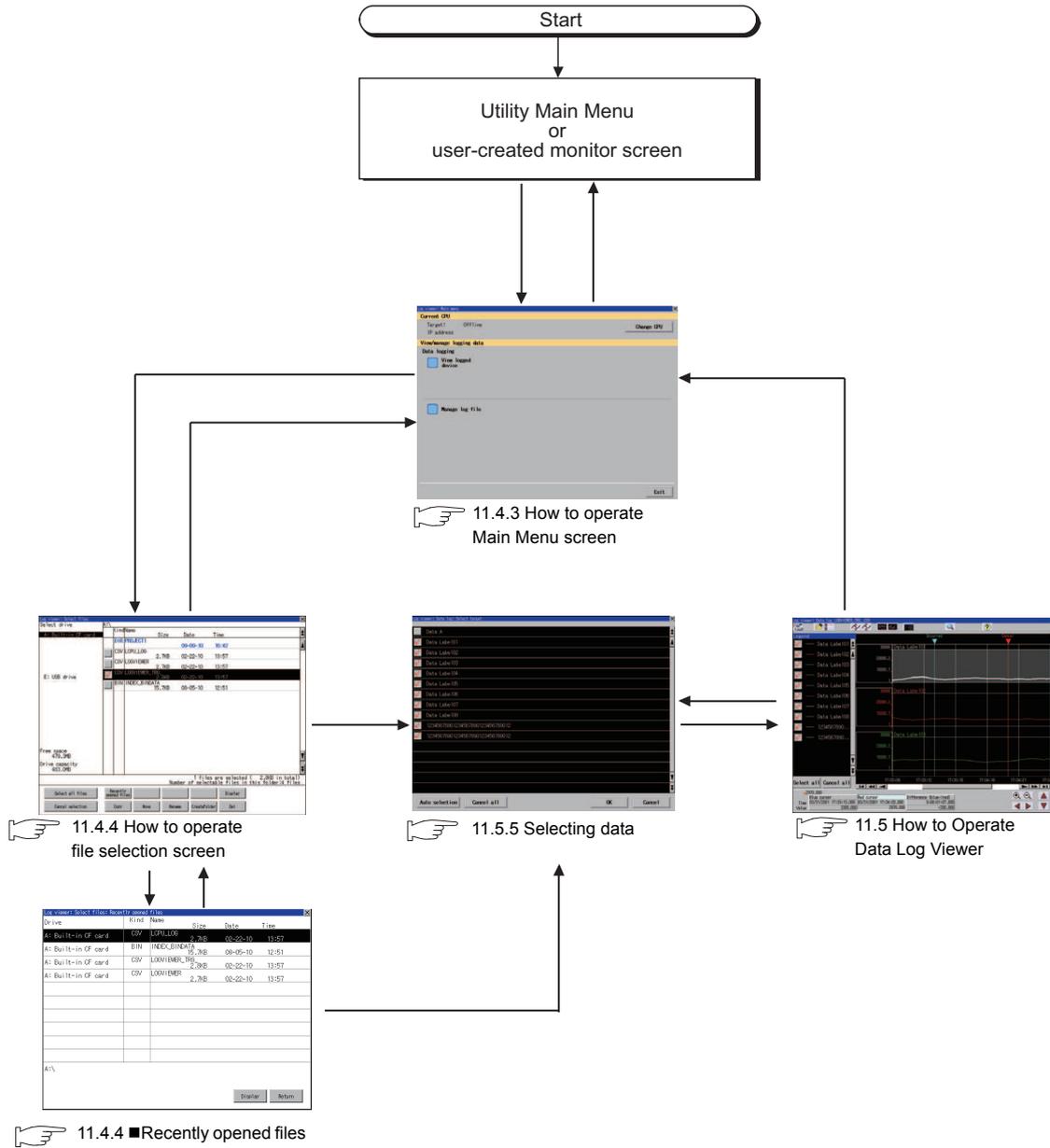
The log viewer can be started with the utility even though the GOT has no project data.

**11.3.1 Changing screens when view logged device is selected**



\*1 Displayed only when LCPU is selected and the remote password is set.

## 11.3.2 Changing screens when manage log file is selected

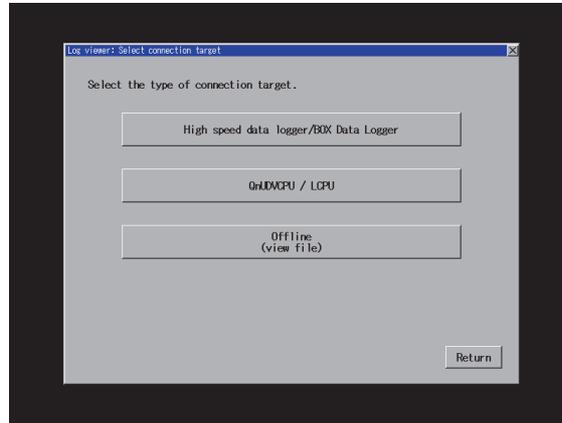


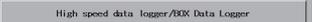
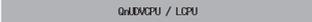
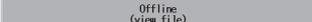
# 11.4 How to Operate Various Selection Screens

This section describes each screen contents displayed in log viewer and the functions of the keys displayed on the screen.

## 11.4.1 How to operate target setting window

Touch the [Change CPU] button in [Main Menu] to display the following screen.



Key	Function
 / 	Closes the target setting window and returns to the Main Menu screen.
 / 	Displays the target selection screen. ■■■▶ 11.4.2 How to operate target selection screen
	Displays the Main Menu screen. ■■■▶ 11.4.3 How to operate Main Menu screen

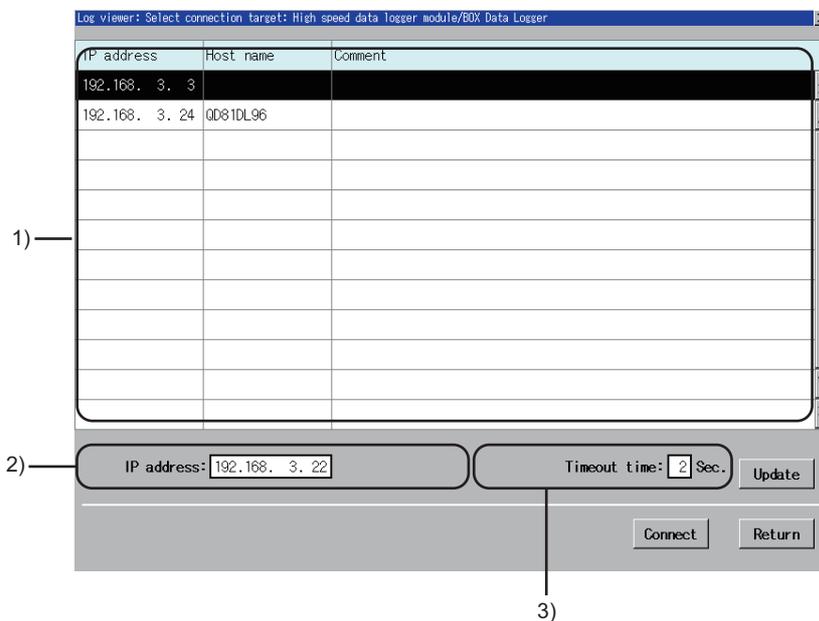
## 11.4.2 How to operate target selection screen

When [High speed data logger module / BOX data logger] or [QnUDVCPU / LCPU] is selected in the target setting window, the following screen appears.

### ■ Target selection screen

The following screen appears when [High speed data logger module] is selected. A similar screen also appears when [QnUDVCPU / LCPU] is selected.

#### (1) Displayed contents



No.	Item	Display contents
1)	Connection target list display area	Displays the list of the high speed data logger modules or the PLC CPUs which can be accessed from the GOT. To select a high speed data logger module or a PLC CPU, touch it in the list.
2)	IP address display area	Displays the selected IP address. ⇒ ■ IP Address input window
3)	Timeout time display area	Displays the Timeout time. ⇒ ■ Timeout time input window

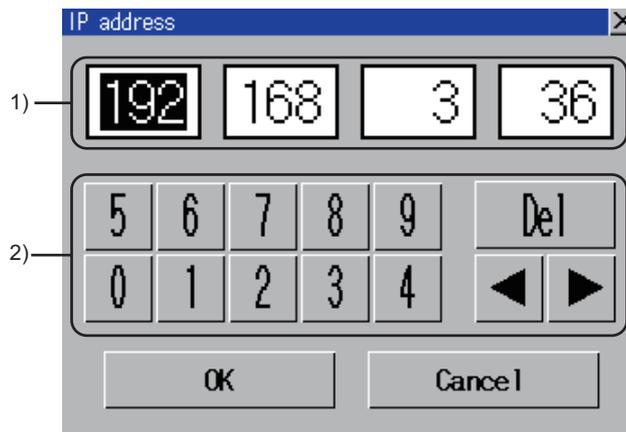
**(2) Key functions**

Key	Function
	Closes the target selection screen and returns to the target setting screen.
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
	Updates the displayed content of the connection target list.
	<p>Connects to the high speed data logger module or the PLC CPU selected from the connection target list or the IP address.</p> <p>When the password is set on the connected high speed data logger module or the PLC CPU, the access authentication window appears.</p> <p>    ▶▶▶ 11.4.2 ■ Access authentication window</p> <p>When no password is set on the connected high speed data logger module or the PLC CPU, the Main Menu screen appears.</p> <p>    ▶▶▶ 11.4.3 ■ How to operate Main Menu screen</p>

**■ IP Address input window**

Touch the IP address input display area to display the following window.

**(1) Displayed contents**



No.	Item	Display contents
1)	IP address input area	Set the IP address.
2)	Input keys	Keys for operations in the IP address input window.

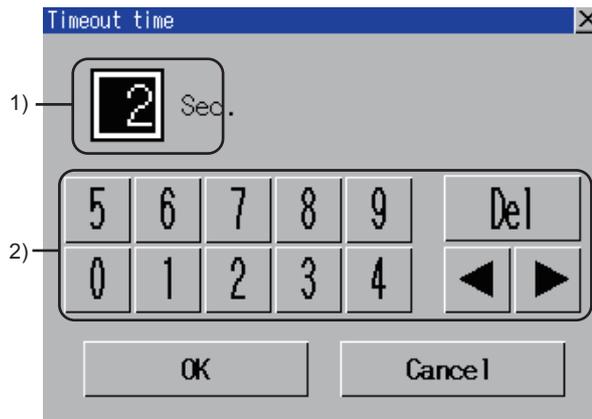
**(2) Key functions**

Key	Function
	Closes the IP address input window and cancels the IP address input operation.
	The IP address of the input numerical value is reflected.
	Deletes one character of the entered numerical value.
	Moves the cursor among the input areas.

## ■ Timeout time input window

Touch the Timeout time display area to display the following window.

### (1) Displayed contents



No.	Item	Display contents
1)	Timeout time input area	Set the Timeout time.
2)	Input keys	Keys for operations in the Timeout time input window.

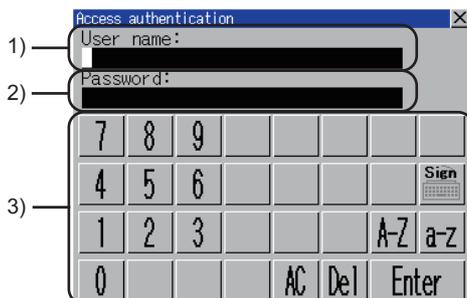
### (2) Key functions

Key	Function
/ Cancel	Closes the Timeout time window and cancels the Timeout time input operation.
	The Timeout time of the input numerical value is reflected.
	Deletes one character of the entered numerical value.
	Moves the cursor among the input areas.

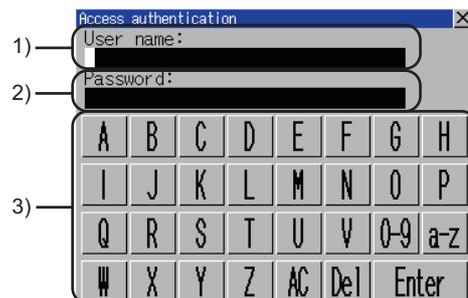
## ■ Access authentication window

When the password is set to the connection target, touch the [Connect] button on the target selection screen to display the following window.

### (1) Displayed contents



For numerical input



For alphabet input (upper case characters)

No.	Item	Display contents
1)	User name input area	Set the user name to input.
2)	Password input area	Set the password to input.
3)	Keys	Keys for operations in the user name input area and password input area shown in (2).

**(2) Key functions**

Key	Function
	Closes the Access authentication window and cancels the user name and password input operation.
	Switches the key type to the symbol.
	Switches the key type to the value.
	Switches the key type to the alphabet (uppercase).
	Switches the key type to the alphabet (lowercase).
	A space is input at the cursor position.
	Deletes all the input values and characters.
	Deletes an input value or character.
	Verifies the user name and password set in the user name input area and password input area. When the remote password is set on the connected PLC CPU, the remote password authentication window appears. <ul style="list-style-type: none"> <li>⇒ 11.4.2 ■ Remote password authentication window</li> <li>When no remote password is set on the connected PLC CPU, the Main Menu screen appears.</li> <li>⇒ 11.4.3 ■ How to operate Main Menu screen</li> </ul>

**■ Remote password authentication window**

When the remote password is set, the following window appears after access authentication is completed.

**(1) Displayed contents**



No.	Item	Display contents
1)	Password input area	Set the password to input.
2)	Keys	Keys for operations in the password input area shown in (2).

**(2) Key functions**

The key functions are the same as those of [Access authentication].  
For details of key functions, refer to the following.

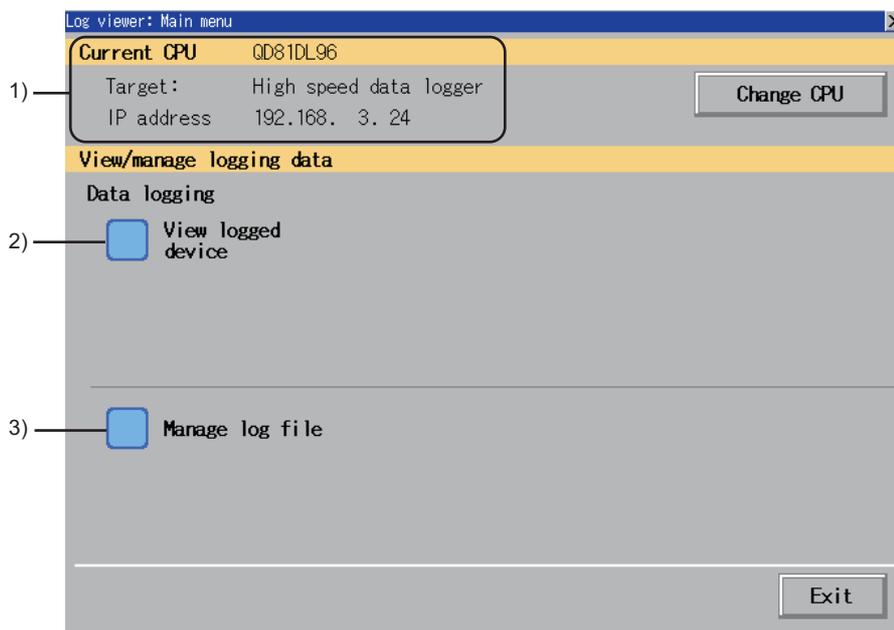
- ⇒ ■ Access authentication window (2) Key functions

## 11.4.3 How to operate Main Menu screen

After the target is selected, the following screen appears.

### ■ Displayed contents

The following screen appears when [High speed data logger module / BOX data logger] is selected. A similar screen also appears when [QnUDVCPU / LCPU] is selected.



No.	Item	Display contents
1)	Target controller display area	Displays the target device name and IP address.
2)	View logged device	Displays the logging data stored in the target device as a graph. ■▶▶ 11.5 How to Operate Data Log Viewer
3)	Manage log file	Controls the logging data stored in the target device. ■▶▶ 11.4.4 How to operate file selection screen

### ■ Key functions

Key	Function
 / 	Closes the Main Menu and returns to the target setting screen. ■▶▶ 11.4.2 How to operate target selection screen
	Displays the target setting window. ■▶▶ 11.3 Operations for Display

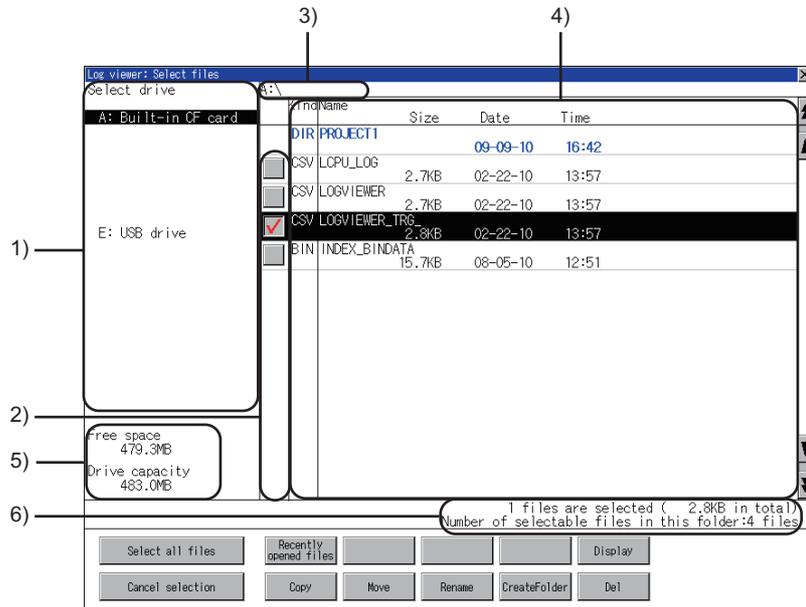
## 11.4.4 How to operate file selection screen

Select in the following procedure to display the file selection screen.

- Touch [View logged device] in the Main Menu screen
- Touch the folder icon on the data log viewer screen.

### ■ File selection screen

#### (1) Displayed contents



No.	Item	Display contents
1)	Target drive list	The corresponding drive can be selected.
2)	Check box	If the check box is selected, up to 512 files can be selected.
3)	Path name	Displays the path name of drive/folder which is currently displayed.
4)	File list	Displays the files stored in the selected drive in a list. Only the CSV format <sup>*1</sup> , BIN format <sup>*2</sup> , and XLS format <sup>*3</sup> are displayed.
5)	The size of drive	Displays the size in use and the entire size of the drive which is selected by drive selection. Not displayed when [X:Target device] is selected.
6)	Number of folders and files	Displays the total number of displayed folders and files.

\*1 Only logging data acquired from the high speed data logger, the PLC CPU, or the BOX data logger can be displayed as a graph in the data log viewer.

\*2 Only logging data acquired from the high speed data logger or the BOX data logger can be displayed as a graph in the data log viewer.

\*3 Cannot be displayed as a graph in data log viewer.

### POINT

#### Restrictions when [X:Target device] is selected in select drive.

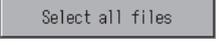
The logging data stored in the high speed data logger module, the PLC CPU, or the BOX data logger is displayed in a list.

Regarding graph display, logging data of up to 4MB can be displayed as a graph. However, logging data exceeding 4MB cannot be displayed as a graph.

To display logging data exceeding 4MB as a graph, copy it to the USB memory/SD card of the GOT and select the logging data in the copy destination.

The logging data stored in the CF card or the USB memory attached to the GOT cannot be copied to the high speed data logger module, the PLC CPU, or the BOX data logger.

## (2) Key functions

Key	Function
	Closes the file selection screen and returns to the target setting window.
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
 / 	Multiple files can be selected or canceled at once. Touch the [Select all files] button to select all files. If the number of the displayed files is exceeds 513, the first 512 files are selected.
	Displays a list of recently opened files.  11.4.4 ■Recently opened files screen
	Displays the selected file in log viewer.  11.5 How to Operate Data Log Viewer
	Copies the selected file.* <sup>1</sup>
	Moves the selected file.* <sup>1</sup> * <sup>2</sup>
	Renames the selected file.* <sup>1</sup> * <sup>2</sup>
	Creates a folder.* <sup>1</sup> * <sup>2</sup>
	Deletes the selected file.* <sup>1</sup> * <sup>2</sup>

\*1 For how to operate, refer to the following.

 GOT2000 Series User's Manual (Utility)

\*2 If [X:Target device] is selected in select drive, the key functions are disabled.

## Recently opened files screen

Touch the [Recently opened files] button in the file selection screen to display the following screen.

### (1) Displayed contents

Drive	Kind	Name	Size	Date	Time
A: Built-in CF card	CSV	LCPU_LOG	2.7KB	02-22-10	13:57
A: Built-in CF card	BIN	INDEX_BINDATA	15.7KB	08-05-10	12:51
A: Built-in CF card	CSV	LOGVIEWER_TRG	2.8KB	02-22-10	13:57
A: Built-in CF card	CSV	LOGVIEWER	2.7KB	02-22-10	13:57

1) [Table area]

2) [A:\ input field]

No.	Item	Display contents
1)	File list	Displays a list of recently opened files. From the recently opened files, the latest one is displayed in the first line, and the oldest one is displayed in the last line. (Up to 10 files)
2)	Target drive display area	Displays the path of the selected drive. Files in [X:Target device] have also the information of connected controllers displayed.

### (2) Key functions

Key	Function
/ Return	Closes the recently opened files screen and returns to the file selection screen.
	Displays the selected file in log viewer. ➡ 11.5 How to Operate Data Log Viewer

## POINT

### Recently opened files screen history specifications

- Up to 10 files are saved, and when the 11th file is saved, the oldest file is deleted.
- Even if opening the same file multiple times, it is counted as one file.
- If files with the same path and file name are stored in multiple controllers, the history of opening each file is counted as one file.
- The history is deleted when restarting GOT or when turning the GOT power supply OFF.
- The size at the last time the file was opened is displayed in the file list.
- If the selected drive is [X:Target device], connection operation is performed to controllers which are not connected to other devices. Also, if the controller is connected to another device, the connection operation is performed to the newly selected controller.

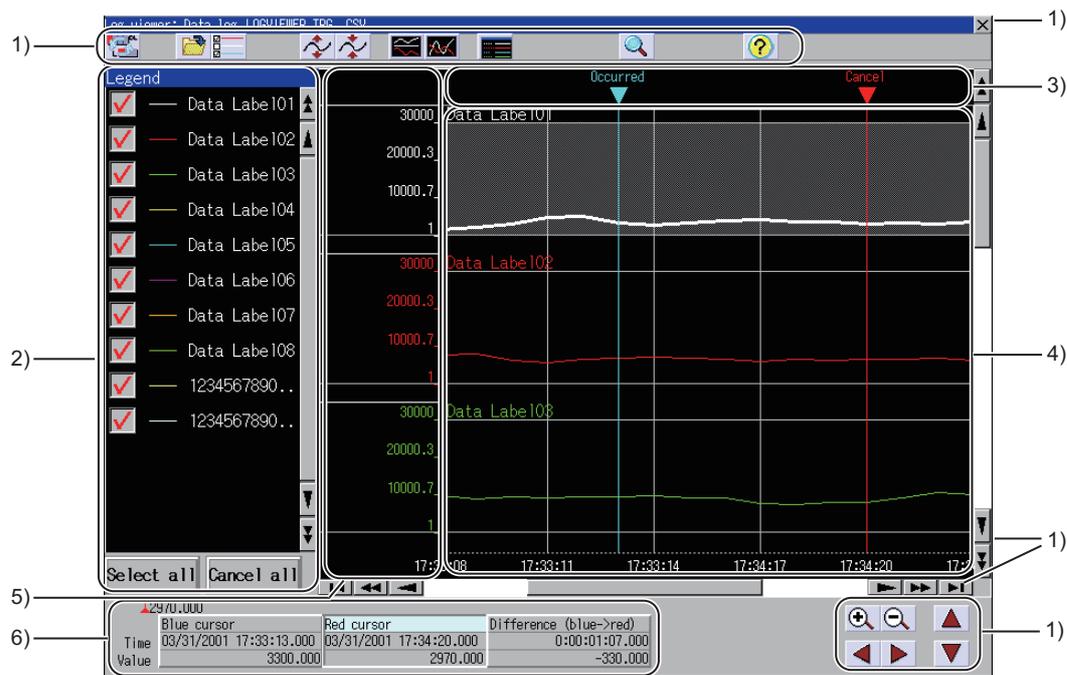
# 11.5 How to Operate Data Log Viewer

On the data log viewer screen, the logging data stored in the high speed data logger module/PLC CPU/BOX data logger or CF card/USB memory is displayed as a graph.  
The following describes how to operate the data log viewer screen.

## 11.5.1 Data log viewer screen

### ■ Displayed contents

This section describes the screen configuration displayed on the data log viewer screen and the functions of the keys displayed on the screen.



No.	Item	Display contents
1)	Keys	Keys for operations in the data log viewer screen.
2)	Legend display area	Data to be displayed in the graph display area can be selected. The line type and logging data name displayed in the graph display area are displayed. ➡ 11.5.2 Legend display
3)	Trigger mark display area	The trigger mark appears when the target data is the logging data to which the trigger is set. When the trigger conditions are satisfied, it is displayed as [Occurred] in blue. When the trigger is restored, it is displayed as [Cancel] in red. The trigger mark appears only when the target data is trigger logging.
4)	Graph display area	Displays the data name, graph, and cursor of the target data. The background of the selected graph is displayed in gray. The maximum number of sampling points that are displayable on the graph differs according to the GOT resolution.*1
5)	Scale display area	Displays the scale of the target data. Touch the scale display area to display the upper and lower limit values change window. Then the upper and lower limit values can be changed. ➡ 11.5.3 Upper and lower limit values setting
6)	Cursor position information display area	Touch the [Blue cursor]/[Red cursor] button in the cursor position information display area to move [Blue cursor]/[Red cursor] displayed in the graph display area to any position. The time and value at the selected position of the graph are displayed. The changed amount of the time and difference from [Blue cursor] to [Red cursor] is also displayed. ➡ 11.5.4 Cursor position information

For details of \*1, refer to the following.

Name	Resolution (dots)	With legend display	Without legend display
GT27*-S	800 × 600	482	674
GT27*-V	640 × 480	321	513

## POINT

### Graph display area

#### (1) Graph display when missing some logging data

When some logging data is missing, the corresponding part in the graph line is displayed with an interruption. A long and short dash-alternate vertical line is displayed before and after the missing part.

The cursor position information will not be displayed when the missing part is between [Blue cursor]/[Red cursor] or at the cursor.

#### (2) Graph horizontal axis display

When the logging data includes time information, the horizontal axis is displayed in time (hour: minute: second).

When the logging data does not include time information, the horizontal axis is displayed in index number (integer).

## Key functions

Key	Function
	Closes the data log viewer screen, and returns to the previous screen.
	Displays the target setting screen. ⇒ 11.4.2 How to operate target selection screen
	Opens the file selection screen and displays the list of the files stored in the high speed data logger module/PLC CPU or SD card/USB memory. ⇒ 11.4.4 How to operate file selection screen
	Select the data to view. ⇒ 11.5.5 Selecting data
	Enlarges vertically the graph selected in the graph display area.
	Reduces vertically the graph selected in the graph display area.
	Arranges the graph selected in the graph display area horizontally.
	Cascades the graph selected in the graph display area.
	Displays or hides the legend display area. ⇒ 11.5.2 Legend display
	Searches the time/index data specified by the graph which is selected in the graph display area. ⇒ 11.5.6 Searching data
	Displays the help screen for icon. ⇒ 11.5.7 Help
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
	Scrolls the display area right and left by one sampling.

(Continued to next page)



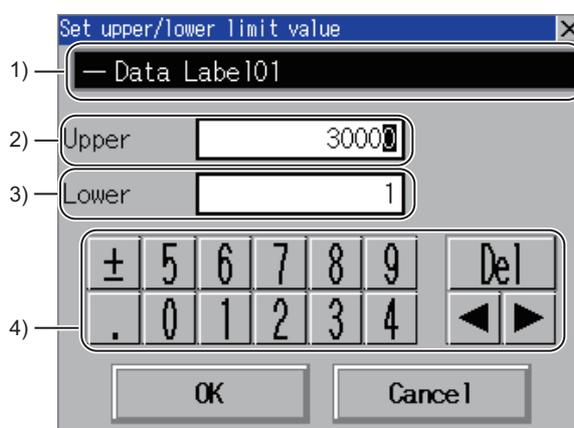
## ■ Key functions

Key	Function
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
	Displays or hides all graphs.

### 11.5.3 Upper and lower limit values setting

The following explains the upper and lower limit values setting.  
Touch the scale display area to display the following window.  
The scale can be changed by changing the upper and lower limit values.

## ■ Displayed contents



No.	Item	Display contents
1)	Target data display area	Displays the data name and line type of the target data.
2)	Upper limit value display area	Set the value and exponent of the target data upper limit value.
3)	Lower limit value display area	Set the value and exponent of the target data lower limit value.
4)	Keys	Keys for operations in the upper and lower limit values setting window.

## ■ Key functions

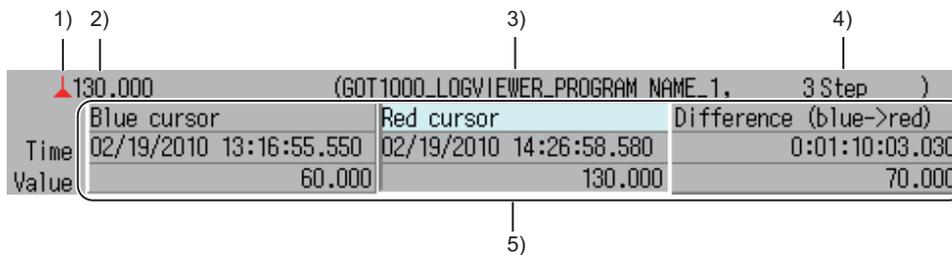
Key	Function
	Closes the upper and lower limit values setting window and cancels the upper and lower limit values input operation.
	The values which are input as upper and lower limits are displayed on the scales.
	Deletes an input value or character.
	Moves the cursor among the input areas.

## 11.5.4 Cursor position information

The display screen shows the status that the red cursor is selected.

Time and value of the blue cursor/red cursor whose graph is selected are displayed in the graph area.

### ■ Displayed contents



No.	Item	Display contents
1)	Selecting cursor color	Displays the color of the selected cursor. The above chart shows the status that [Red cursor] button is touched.
2)	Cursor read value	Displays the value of the intersection of graph and cursor selected in the graph display area. The above chart shows the value that [Red cursor] button is touched.
3)	Program name	Displays the program name executed in the PLC CPU. The program name is displayed only when the PLC CPU is selected.
4)	Step number	Displays the step number of the program executed in the PLC CPU. The step number is displayed only when the PLC CPU is selected.
5)	Cursor display area	Select a graph in the graph display area, to display the time at the cursor position and the value of the intersection of the selected graph. Touch the [Blue cursor]/[Red cursor] button to select the target cursor for operating. The target cursor can be moved by touching the graph display area or the cursor moving buttons. For [ Difference(blue → red)], the changed amount of [Red cursor] is displayed from [Blue cursor].  ➡ 11.5.1 Data log viewer screen

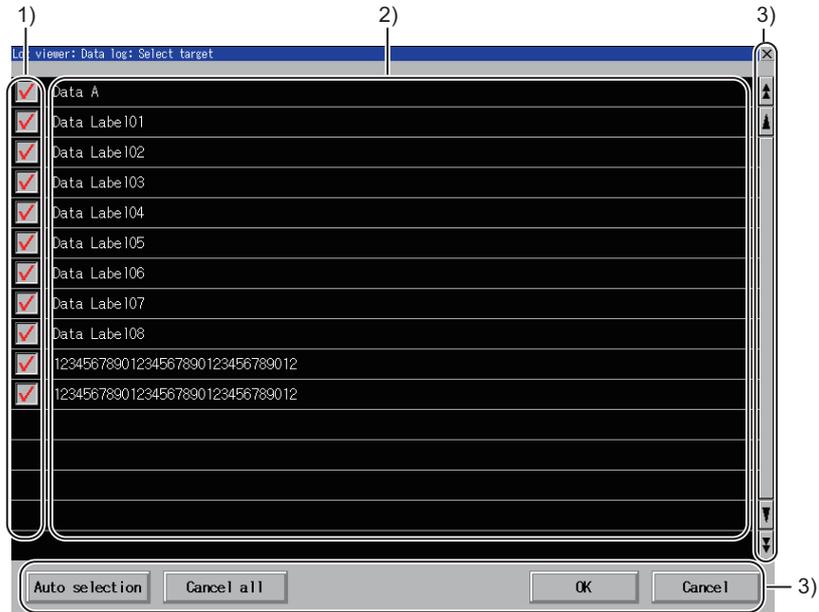
## 11.5.5 Selecting data

Data selection screen displays the data list of the files stored in the selected high speed data logger module/PLC CPU/BOX data logger or CF card/USB memory.

Up to 16 pieces of data can be selected in the data selection screen.

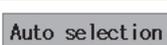
The following explains the data selection screen.

### ■ Displayed contents



No.	Item	Display contents
1)	Check box	Graph is displayed in the data log viewer by selecting the check box.
2)	Data name list display area	Displays the data names.
3)	Keys	Keys for operations in the data selection screen.

### ■ Key functions

Key	Function
 / 	Closes the data selection screen, and returns to the log viewer screen.
	The logging data selected in the data selection screen is displayed on the data log viewer.
 	Scrolls the display area up and down by one line.
 	Scrolls the display area up and down by one page.
	Selects up to 16 logging data displayed in the data name list display area, from the top.
	Cancels all the selected data.

## 11.5.6 Searching data

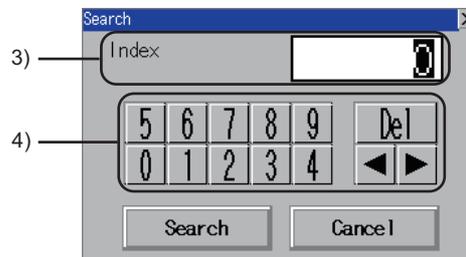
On the data search screen, input the time/index to search the data in the graph which is displayed in the data log viewer screen and shows the data of the files stored in the high speed data logger module/PLC CPU/BOX data logger or CF card/USB memory.

The following explains the data search screen.

### ■ Displayed contents



When the logging data includes time information



When the logging data does not include time information,

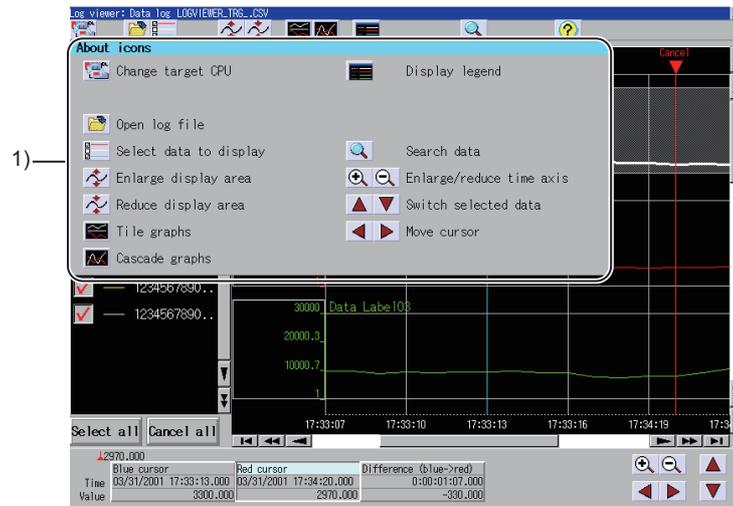
No.	Item	Display contents
1)	Date input area	Input the date to be searched. When this screen is displayed, the date on the right of the graph at screen opening is displayed.
2)	Time input area	Input the time to be searched. When this screen is displayed, the time on the right of the graph at screen opening is displayed.
3)	Index number input area	Input the index number to be searched. When this screen is displayed, the index on the right of the graph at screen opening is displayed.
4)	Keys	Displays the key to be used at the operation in the data search screen.

### ■ Key functions

Key	Function
	Closes the data search screen.
	Searches the graph displayed in the data log viewer screen with the values input in the data search screen.

## 11.5.7 Help

The following explains the help window.  
 Help window displays the contents of icons.



No.	Item	Display contents
1)	Help window display area	<p>Displays functions of the icons in the window.</p> <p>Help window closes by touching any place in the help window display area.</p> <p>While the help window is displayed, touching other than the help window display area is invalid.</p>

## 11.6 Error Messages and Corrective Actions

This section describes the error messages for the log viewer and the corresponding corrective actions.

Error message	Error	Corrective action
Failed to communicate with the specified destination (IP address). Confirm the IP address and communication line.	The GOT cannot communicate with the high speed data logger module or the PLC CPU.	(1) Check the communications between the GOT and the high speed data logger module or the PLC CPU, and make sure that the GOT communicates with the high speed data logger module or the PLC CPU. (2) Check that the GOT and the high speed data logger module or the PLC CPU are connected in a connection type that can be communicated.
Authentication failed. Please enter operator name and password again.	The GOT cannot authenticate because the operator name and password are incorrect in access authentication.	Enter the correct operator name and password.
Authentication failed. Please enter password again.	The GOT cannot authenticate because the password is incorrect in remote password.	Enter the correct password.
Failed to obtain the data.	The GOT cannot access the file in which the logging data is stored.	Select the file in which the logging data is stored on the log viewer screen.
The selected data is not the data of data logging. Please check the file.	The GOT cannot display the selected data because it does not comply with data log viewer.	Select a file which complies with log viewer.
The size of the log file is too large to view with this function.	The log file cannot be viewed because the file size of the view target log file is larger than the file maximum size that can be viewed with log viewer.	Select a logging data with a file size compatible with log viewer.
The selected file was not found. The file structure may have been changed since the file was previously viewed. Select a file from the file selection screen.	The file selected in the recently opened files list screen does not exist.	Select a file from the file selection screen.
Data has not been selected. Select data.	No data is selected.	Select the data to display in log viewer.
The maximum number of data has already been selected and additional data cannot be selected. Cancel unnecessary data and select data again.	Data cannot be selected additionally because the number of selected data reaches the upper limit (16) on the data selection screen.	Cancel unnecessary data and select data again.
The entered value is invalid. Review the value of year, month, date, hour, minute, and second.	The GOT cannot search because the entered date and time value is invalid.	Enter the correct value.
Error The entered value is invalid. The result should be as follows. Upper limit > lower limit	The GOT cannot display the value because it is invalid during the upper and lower limit values setting.	Enter numerical values that comply with the following. Upper limit > lower limit

# 12. FX LADDER MONITOR

GT 27 GT 23 Soft GOT 2000

## 12.1 Features

The FX ladder monitor enables you to monitor the sequence program within the target controller and change device values.

It is intended to troubleshoot and maintain the PLC system efficiently.

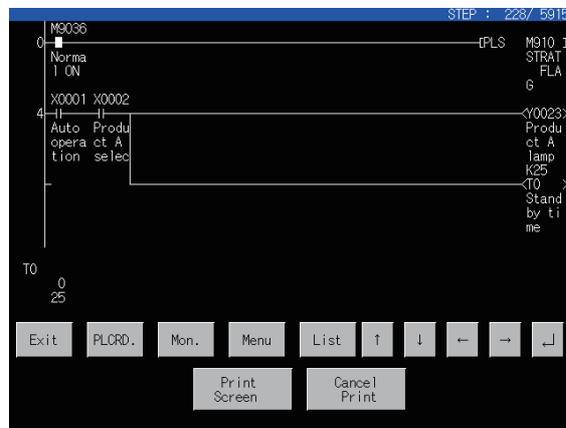
The features of the FX ladder monitor are shown below.

### ■ The program with ladder symbols can be monitored

You can monitor PLC CPU programs in ladder diagram format and save displayed screens in BMP or JPEG format.

( ➡ 12.4 Operation Procedure Common)

(Display example)

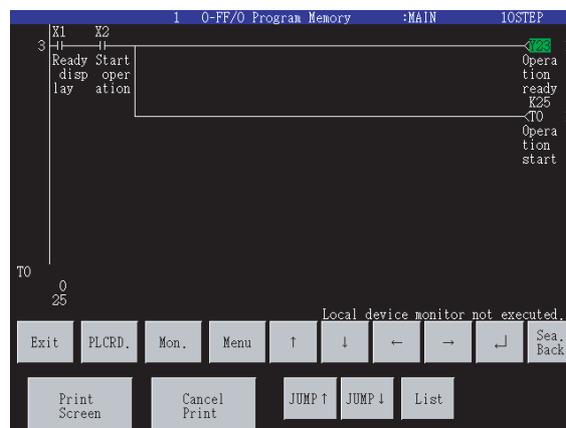


### ■ The display format, device comment display and language can be switched

The following can be switched. ( ➡ 12.5 Switching the Display Format)

- Display format of device values, timer and counter values
- Comment display/non-display of the target device

(Display example)



**(1) Switching the display format**

The present value of a word device is displayed in a decimal of hexadecimal number in the lower area of the screen.

➡ 12.5.2 Display switching of decimal numbers/hexadecimal numbers

**(2) Device comment display**

Comments of the devices used in the sequence program (comments written in the controller) are displayed.

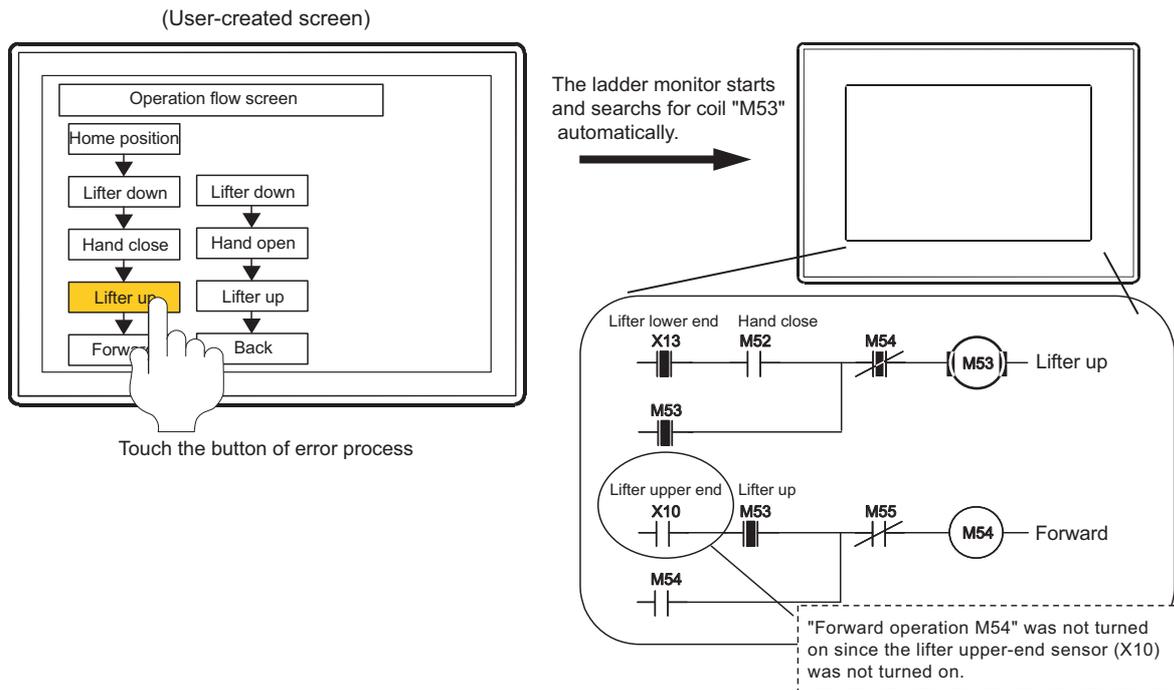
➡ 12.5.3 Switching comment/no-comment display

**Enhanced interaction with objects**

Only by touching an object on a user-created screen, a target device can be searched and displayed. (One-touch ladder jump function)

Even a person who is not the operator familiar with the equipment inside can trace the source of the equipment error without fail by simple operations, reducing time to stop the error.

Example) Coil searching by touching a touch switch



# 12.2 Specifications

## 12.2.1 System configuration

This section describes the system configuration of the FX ladder monitor. For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

### ■ Target controller

Controller
FXCPU*1

\*1 The FX3G does not support the FX ladder monitor function.

### ■ Connection type

This function can be used in the following connection types.

(○: Available, △: Partly restricted, ✕: Unavailable)

Function		Connection form between GOT and controller		Reference section
Name	Description	Direct CPU connection	Ethernet connection	
Search operation	Device search, defect search, etc.	○	○	12.6
Display switching	Displaying word devices in DEC or HEX	○	○	12.5
	Displaying device comments, etc.	○	○	
Test operation	Changing device values, etc.	△**2	△**2	12.7
Hard copy	Storing FX ladder monitor screen in BMP/JPEG format	○	○	12.4.2

\*1 The present value of V and Z cannot be changed.

\*2 The set values of T and C cannot be changed.

### ■ Required Extended System application

The extended system applications shown below are required.

➡ 1.2 Required extended system application for the function

#### (1) Extended System application

Write the package data that has the extended system application for the FX ladder monitor to the GOT. For the communication method with the GOT, refer to the following.

➡ GT Designer3 (GOT2000) Help

#### (2) Extended system application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

➡ GT Designer3 (GOT2000) Help

### ■ Display screen for the FX ladder monitor

A sequence program of up to 8 lines (one line: up to 11 contacts (12 or more contacts will be looped back)) is displayed on a single screen.

In addition, the current values of up to 8 word devices (9 or more devices are displayed by switching the display with the arrow key) etc. are displayed.

## 12.2.2 Devices and range that can be monitored

(○: Possible, ✕: Impossible)

Device	Device range	Ladder display	Device monitor display	Search operation
Input	X000 to X337 (octadecimal)	○	○	○
Output	Y000 to Y337 (octadecimal)	○	○	○
Auxiliary relay	M0 to M8511	○	○	○
State	S0 to S4095	○	○	○
Timer contact	T0 to T511	○	○	○
Counter contact	C0 to C255	○	○	○
Data register	D0 to D8511	○	○	○
Index register	V0 to V7	○	○	○
Index register	Z0 to Z7	○	○	○
Nesting	N0 to N7	○	✕	✕
Pointer	P0 to P4095	○	✕	✕
Interrupt pointer	I00* to I30* (four points) : Fx0 I00* to I50* (six points) : Fx1, Fx2 I6** to I8** (three points) : Fx1, Fx2 I010 to I060 (six points) : Fx1, Fx2	○	✕	✕
Extension register	R0 to R32767	○	○	○

## 12.2.3 Access range

For the FX ladder monitor can monitor only the host station.

## 12.2.4 Precautions

### (1) Precautions to be taken while the FX ladder monitor is activated

While the FX ladder monitor is activated, do not perform the following for the GOT.  
Otherwise, the stored data may be deleted or the FX ladder monitor may not operate normally.

- Open or close the SD card cover
- Installing/removing the data storage

### (2) Ladder display

Up to 24 lines can be displayed per ladder block.

If a sequence program is written in which 24 or more lines are used in a ladder block, the ladder cannot be correctly displayed. It is advisable to divide such programs.

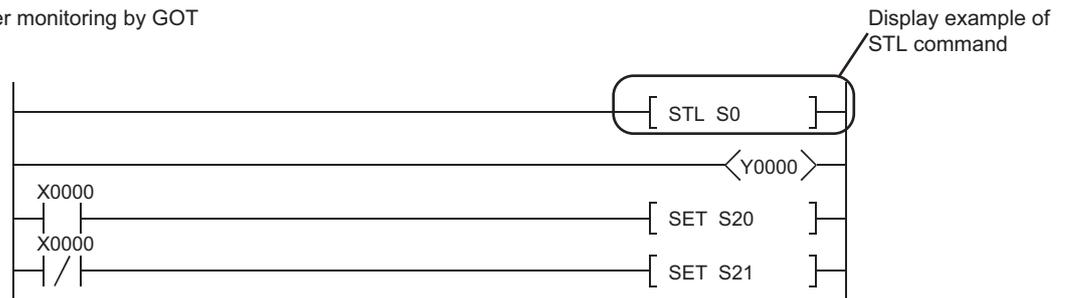
### (3) During PLC reading

During PLC reading, only the host station is read.

### (4) Notes on reading the contents

(a) An STL (step ladder) command, a dedicated command for the FXCPU, is displayed as shown below.

Ladder monitoring by GOT



(b) How an INV command is displayed

Ladder monitoring by GOT



(c) When searching an STL command, use "S (state)" in a device search.

(d) The 32-bit counters are displayed in 32-bit fixed display in the device monitor.

(e) When using FX3U(C), if the memory capacity is set to 32,000 or higher with the GX Developer PLC parameters, sequence programs cannot be displayed.

When displaying a sequence program with the GOT, set the memory capacity to 16,000 or less.

(f) Changes to T/C set values are reflected on the ladder monitor display only when they are made with the device monitor or test function.

When a value is changed by numerical input or other object, the change is reflected on the display after the GOT is restarted.

### (5) Reading comment files

Only files with the file names (program names) with one-byte alphanumeric characters are applicable to the GOT.

When project data are created on GX Developer, use only one-byte alphanumeric characters for file names (program names).

**Reflecting value changes in display of FX ladder monitor screen**

For opening the test menu screen from the device monitor screen or user-created screen, even if the set values of the timer and counter are changed, the changed values are not reflected in the display of the ladder monitor screen.

For reflecting the changed values in the display of the ladder monitor screen, read the program again.

- (a) The following shows the GOT operation when the program in a safety function block has the target of the search operation.

Search operation	GOT operation
Device search Contact point search Coil search	The GOT adds and displays the ladder block that shows the FB definition name in the application instruction format in the last row. For the continuous search, when the program in the safety function block has multiple target devices, the ladder block is added to the last row only one time.
Step search	The GOT displays the ladder block that shows the FB definition name in the application instruction format corresponding to the searched step.
Defect search	The GOT adds and displays the ladder block that shows the FB definition name in the application instruction format in the last row and ends the defect search. (The operaiton is the same as that when all the defective devices are searched.)

## 12.3 Operation for Display

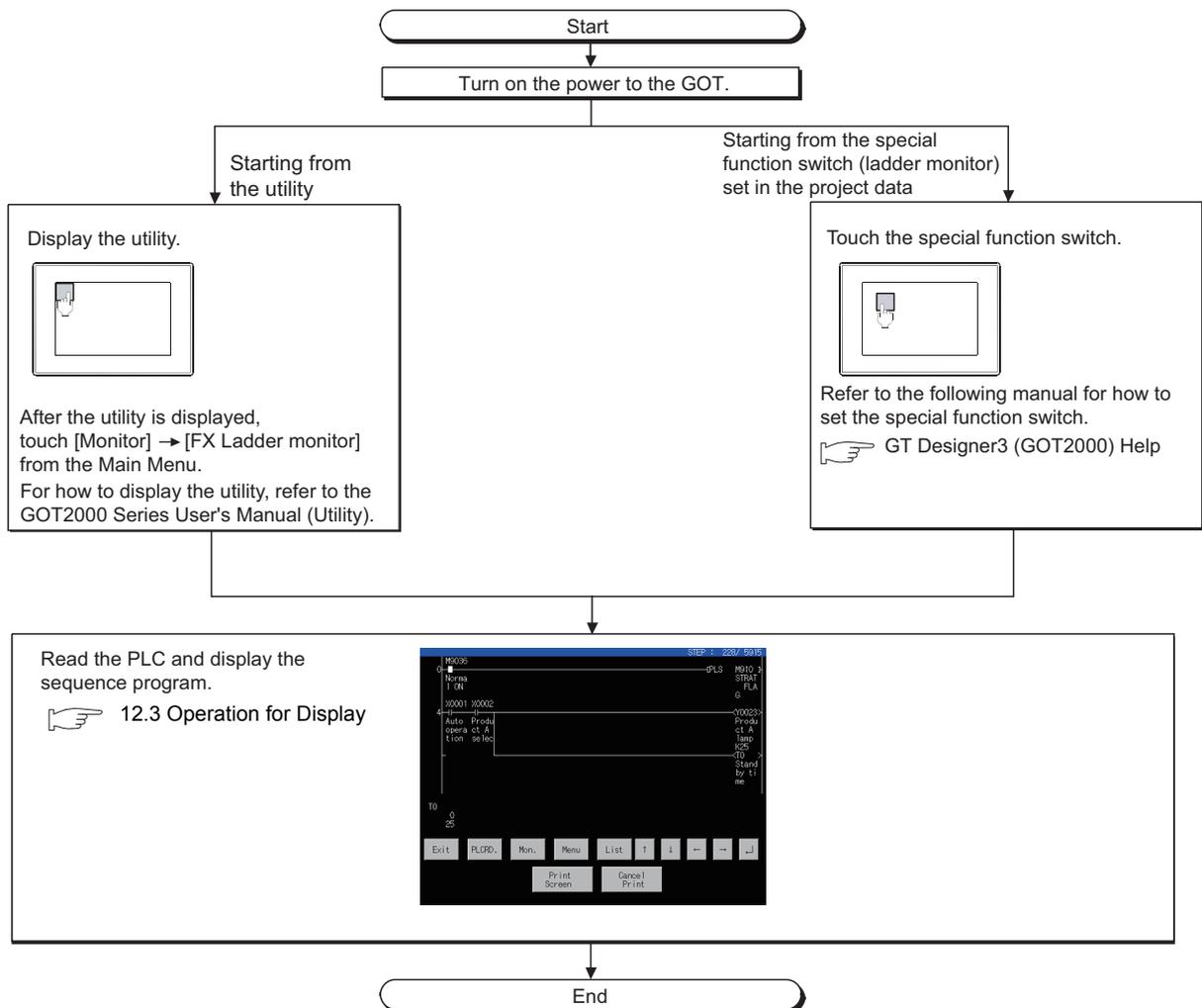
This section describes the operation procedure from turning on the power to the GOT to ladder monitor function display. For the ladder monitor start operation when using one-touch ladder jump function, refer to the following.

- ▶ Start operation when using the One-touch Ladder Jump function

### Start operation for the FX ladder monitor

#### (1) Normal operation

This subsection describes the flow until the FX ladder monitor operation screen is displayed after an FX ladder monitor is installed in the GOT.



### POINT

#### (1) How to display the utility

For how to display the utility, refer to the following.

- ▶ GOT2000 Series User's Manual (Utility)

#### (2) If the project data has not been downloaded

The FX ladder monitor can be started from the utility even if the project data has not been downloaded to the GOT.

## ■ Start operation when using the One-touch Ladder Jump function

By using the special function switch, advanced user alarm display, or others, start the FX ladder monitor, and sequence program files can be read automatically and devices can be searched automatically.

The following shows objects which can use the One-touch Ladder Jump function.

Object
Special function switch, Alarm display, Simple alarm display

### POINT

#### Before executing the automatic PLC read

##### (1) Setting the automatic PLC read

When reading a sequence program file or a comment file from controllers, the automatic PLC read have to be set on GT Designer3 or in the utility.

For the setting of automatic PLC read, refer to the following.

⇒ GT Designer3 (GOT2000) Help

GOT2000 Series User's Manual (Utility)

##### (2) Specifying an automatic PLC read file

With the special function switch or advanced user alarm display, the target sequence program of automatic PLC read can be specified in each object setting.

However, the operation differs depending on the automatic PLC read setting on GT Designer3 or in the utility.

Automatic PLC read setting of GT Designer3/utility	File name specification in objects	Operation
Done	Done	The specified sequence program file is read automatically.
	None	All sequence program files are read automatically.
None	Done	No sequence program file is read. To search automatically, if a sequence program file of the specified file name among the sequence program files read in the GOT exists, it is executed.
	None	No sequence program file is read. To search automatically, if a sequence program file read in the GOT exists, it is executed to all files.

**(2) Starting from the special function switch**

Select [FX ladder monitor] in [Switch Action], and the [Use One-touch Ladder Jump] check box of the special function switch. By touching this switch, FX ladder monitor can be started.

Operation at start differs depending on the setting contents of the special function switch.

For the setting items for the special function switch, refer to the following.

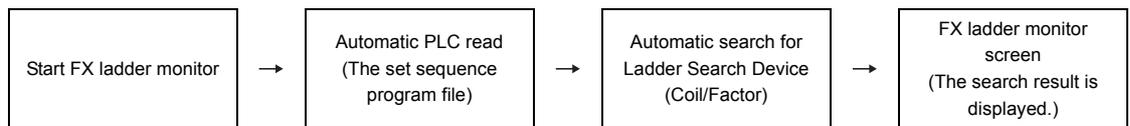
➡ GT Designer3 (GOT2000) Help

(O: Set, x: Not set)

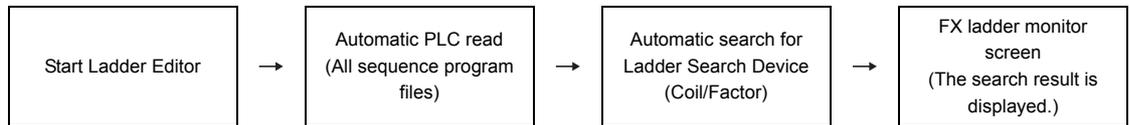
Setting		Operation for touching the special function switch
Search Method	Specify Search File	
Specify Search Device*1	O	➡ (a)
	x	➡ (b)

\*1 When [Specify Search Device] is selected, set [Ladder Search Device] and [Ladder Search Mode].  
The setting of PLC station number is included in the [Ladder Search Device] setting.

(a) Operations for searching a device with specifying the file name



(b) Operations for searching a device without specifying the file name



**Operations for the special function switch when not using the One-touch Ladder Jump function**

When the [Use One-touch Ladder Jump] is not selected, the operation for touching the special function switch is the same as when starting from the utility.

In this case, the automatic PLC read is not executed.

➡ ■ Start operation for the FX ladder monitor

**(3) Starting from the alarm display or simple alarm display**

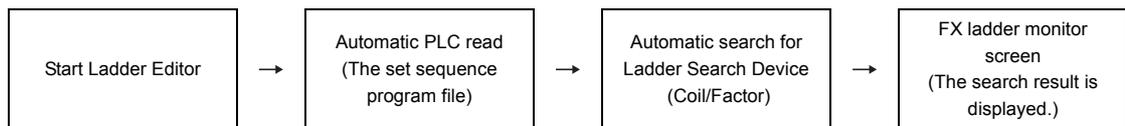
By selecting an alarm in the alarm display or simple alarm display and touching the key code switch (setting the key code of [Display Ladder]), the FX ladder monitor can be started and the device of alarm can be searched. Operation at start differs depending on the setting contents of the advanced user alarm observation. For the setting items for advanced user alarm observation, refer to the following.

➡ GT Designer3 (GOT2000) Help

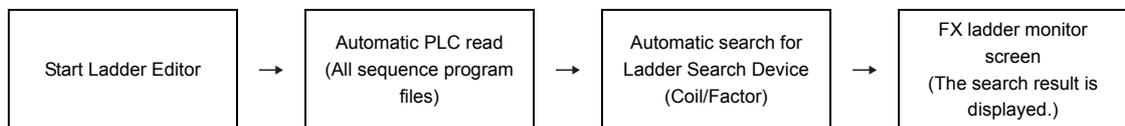
(○: Set, ×: Not set)

Ladder search setting		Operation for touching the special function switch
Ladder Search Mode	Specify Search File	
○	○	➡ (a)
○	×	➡ (b)

(a) Operations for setting the Ladder Search Mode and file name

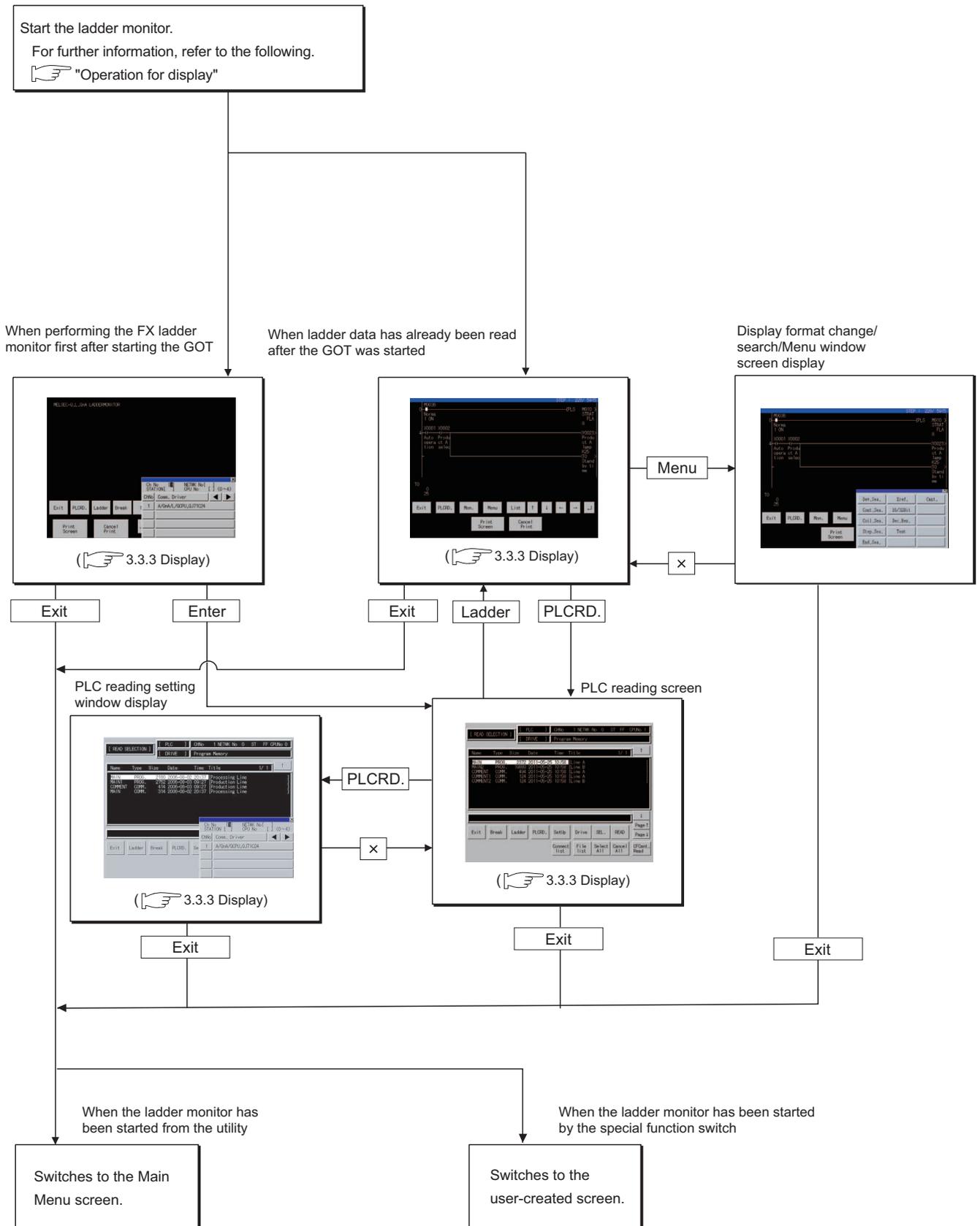


(b) Operations for setting the Ladder Search Mode



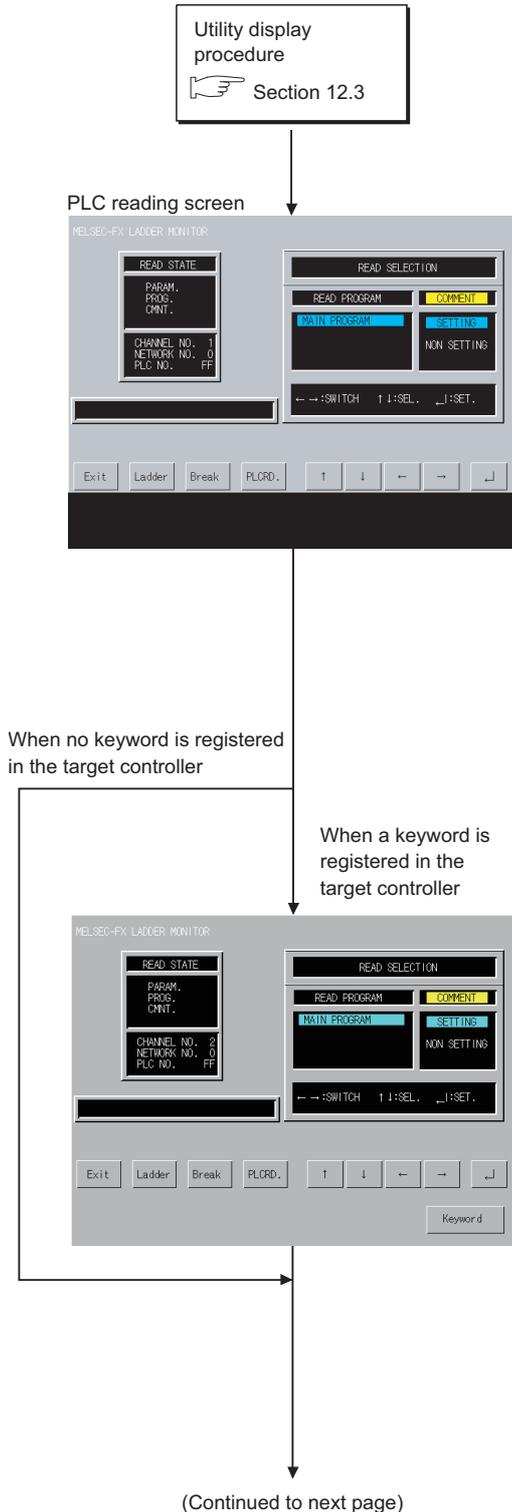
## ■ Changing screens

Screen changes of the FX ladder monitor is the same.



## 12.3.1 Display

This subsection describes the procedure for reading the PLC to read the sequence program from the target controller when the FX ladder monitor is executed, and until the FX ladder monitor screen is displayed.



1. Touch the , , , and keys to specify the following items listed under "READ SECTION."  
SETTING/NON SETTING for comment reading

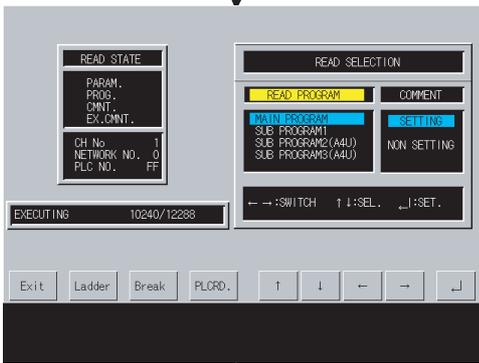
### POINT

#### Displaying the FX ladder monitor screen

The MELSEC-FX ladder monitor screen displays the sequence program that was executed when the PLC was read. If any of the set values of the sequence program is changed, re-read the PLC.

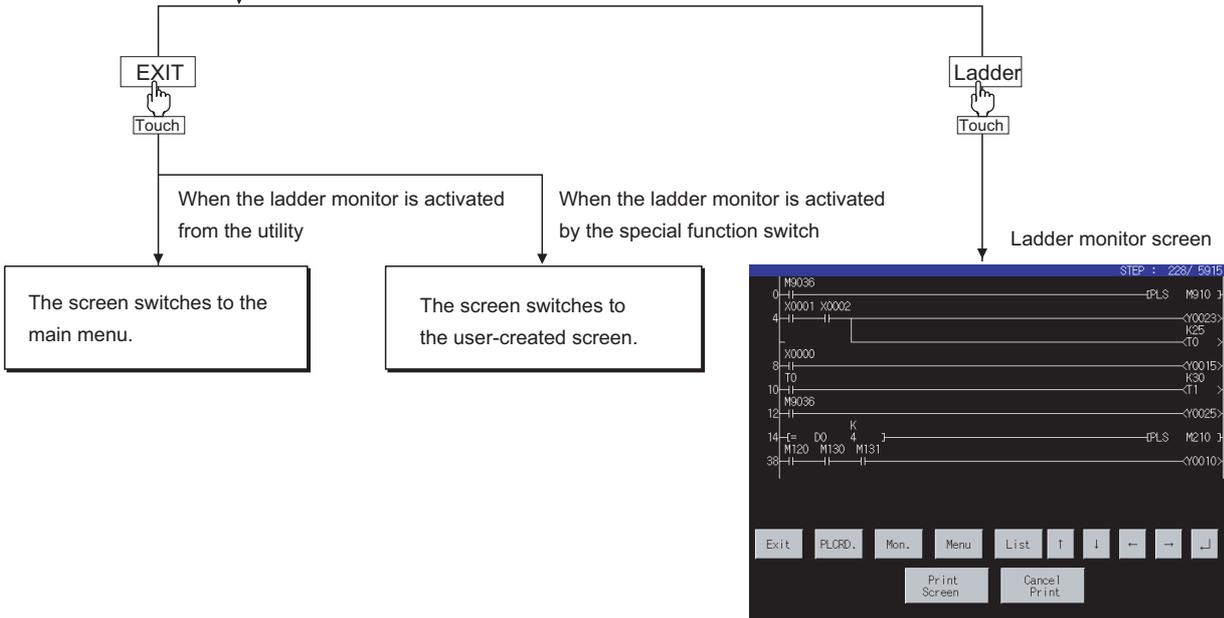
2. Touch the key to enter the keyword registered in the target PLC CPU.  
For the FX CPU keyword, refer to the following.  
➡ GOT2000 Series User's Manual (Utility)

(From previous page)



3. The sequence program is read.
  - The message "EXECUTING" is displayed.
  - The entire size of the program and the portion already read are displayed.  
Portion already read/entire program size
  - The reading of the PLC stops by touching the **Break** key.

4. The reading of the sequence program is completed.  
The message "OPERATION COMPLETE" is displayed.



## POINT

### Reading the PLC in the following operations

Once the PLC is read, you do not have to read it in the following operations.

However, it must be re-read after you read it and then downloaded project data and when the power to the GOT is turned on again.

## 12.3.2 Searching from the monitor screen

---

When starting an FX ladder monitor with object, coil-search/defect search can be automatically performed to the read sequence program and the result can be displayed on the monitor.

### ■ Usable objects and functions list

The following table shows the types of objects can be searched from a monitor screen and functions usable in each object.

For object setting to display searching result on ladder monitor, refer to the following manual.

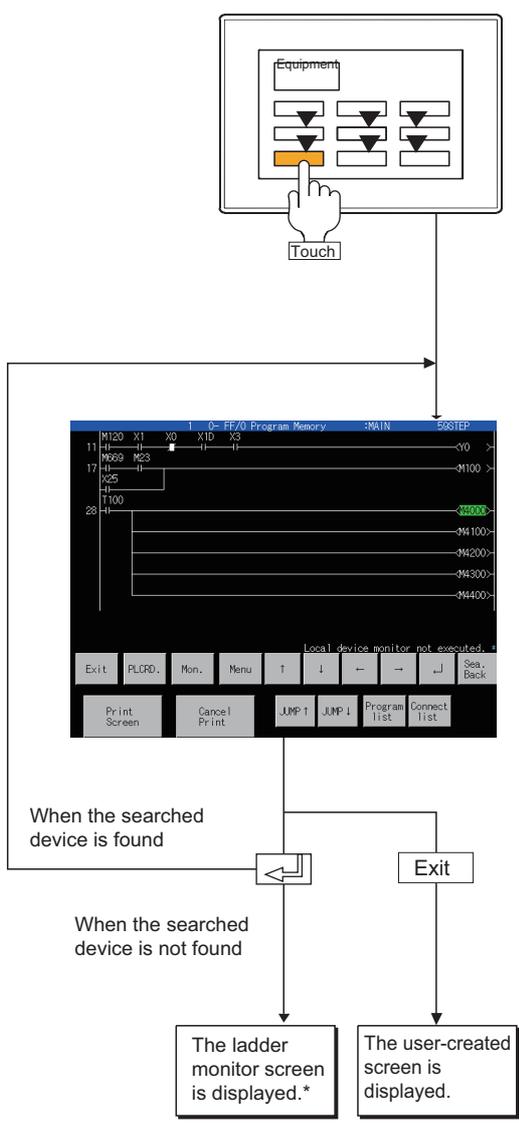
⇒ GT Designer3 (GOT2000) Help

(○: Applicable ×: Inapplicable)

Object	Function			
	Automatic PLC read	Specify Search File	Coil	Factor
Special Function Switch	×	×	○	×
Alarm Display	×	×	○	×
Simple Alarm Display	×	×	○	×

### ■ Searching operation

The following explains the procedure from touching the Key Code Switch for advanced alarm display or Special Function Switch and performing coil-search or defect search to display of a ladder block.



1. Touch a key in monitor screen.
2. After the read program is searched, the result is displayed.
3. Touching the  button searches consecutively. Touching the  button completes searching halfway.
4. If the searched device is not found in the read program, the message "DEVICE NOT FOUND" appears and searching is completed. After searching, the program that has been read first is displayed on the FX ladder monitor screen.

\* After coil-search, monitoring of the displayed ladder starts automatically.

# 12.4 Operation Procedure Common

This section describes the information and key functions displayed on the FX ladder monitor screen.

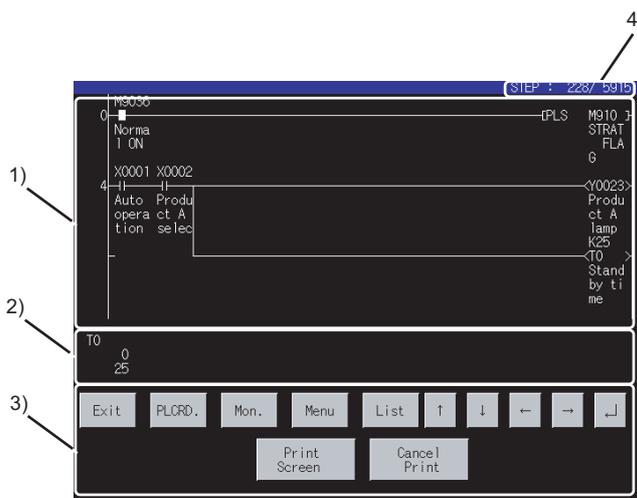
## 12.4.1 Information and key functions displayed on the screen

**POINT**

After executing PLC reading, if the controller comment or comment capacity is changed, the comment may not be correctly displayed on the FX ladder monitor screen.  
When changing the comment or comment capacity, re-start the GOT.

**(1) When the FX ladder monitor is executed**

(a) Display monitor



When comment is not displayed :maximum 8 lines  
When comment is displayed :maximum 3 lines

ON/OFF status display for ladder monitor

- ON status :
- OFF status :

\* The MCR command is normally displayed as

The information shown in the table below is displayed.

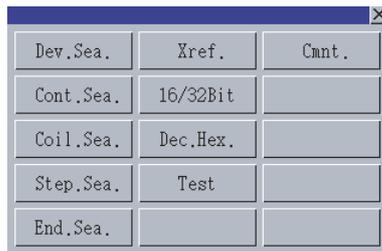
No.	Description
1)	Sequence program is displayed. A maximum of 11 contact points is displayed in one line of a ladder; for 12 contact points or more, move to the next line. When a comment display is specified, a comment is also displayed; expanded comments are given priority. For the method of displaying comments, see the following: ▶▶▶ 12.5.3 Switching comment/no-comment display
2)	A maximum of eight devices is displayed for the word device current value, timer and counter current value (upper row), and set value (lower row). When the set value is an indirect specification, the value of the indirectly specified device is displayed. To switch between decimal and hexadecimal for the displayed value, see the following: ▶▶▶ 12.5.2 Display switching of decimal numbers/hexadecimal numbers
3)	Display the keys used with the operation on the FX ladder monitor screen shown in (b) (Touch input).
4)	The display step number (left) and the remaining step number (right) are displayed.

(b) Key functions

Key	Function
	Returns the screen to the one displayed when the FX ladder monitor was activated.
	Switches the screen to the PLC reading screen to read from the controller the sequence program to be monitored. For further information about PLC reading, see the following: ➡ 12.3.1 Display
	Starts monitoring the displayed sequence program.
	Displays the Menu window for FX ladder monitor ( ➡ (2) Menu window for the FX ladder monitor).
	Starts the list editor for FX. For details on the FX list editor, refer to the following. ➡ · 13. FX LIST EDITOR
	Scrolls the information upward by a ladder block.
	Scrolls the information downward by a ladder block.
	When the number of devices whose present and set values are within the display range shown in 2) on the preceding page is nine or more, the devices to be displayed are switched.
	Scrolls the information downward by a screen. In search operation, a search is continuously performed under the same conditions.
	Stores the displayed screen to the memory card in BMP/JPEG file format or prints it with a printer. For further information about hard copies, see the following: ➡ 12.4.2 Hard copy output
	The operation of this key is invalid.

**(2) Menu window for the FX ladder monitor**

(a) Display screen

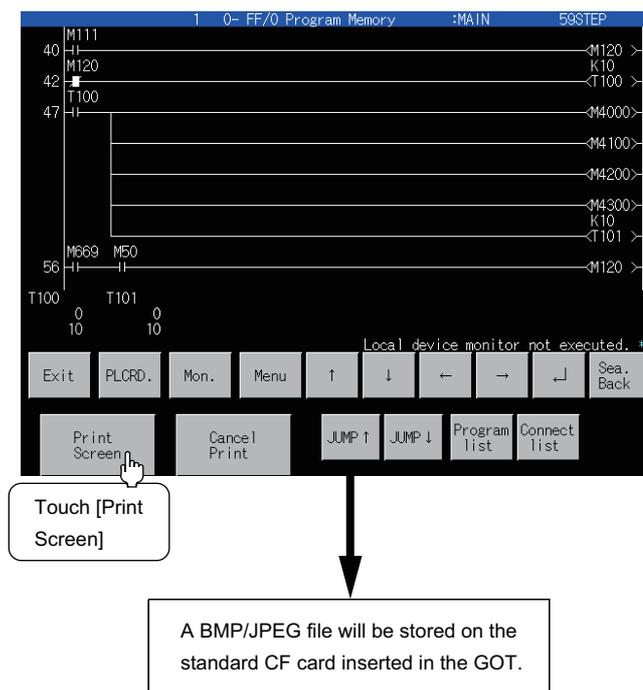


(b) Key functions

	Key	Function
Search operation	Dev.Sea.	Displays the ladder block containing the specified device. ■■■▶ 12.6.1 Device search
	Cont.Sea	Displays the ladder block containing the specified device. ■■■▶ 12.6.2 Contact point search
	Coil.Sea.	Displays the ladder block containing the specified coil. ■■■▶ 12.6.3 Coil search
	Step.Sea	Displays the ladder block containing the specified step number. ■■■▶ 12.6.4 Step search
	End.Sea.	Displays the last ladder block of the sequence program. ■■■▶ 12.6.5 Ladder end search
	Xref.	Searches the ladder blocks for the status of continuity/non-continuity of the contact point that turned on or off the coil on the sequence program. ■■■▶ 12.6.6 Defect search
Display format switching	16/32Bit	Switches the word device and timer/counter values displayed on the FX ladder monitor screen to the 16-bit (one-word) or 32-bit (two-word) module. ■■■▶ 12.5.1 Display switching of 16-bit (one-word)/32-bit (two-word) modules
	Dec.Hex.	Switches the word device and timer/counter values displayed on the FX ladder monitor screen to decimal or hexadecimal numbers. ■■■▶ 12.5.2 Display switching of decimal numbers/hexadecimal numbers
	Cmnt.	Switches whether to display the comments added to the word and bit devices displayed on the FX ladder monitor screen. ■■■▶ 12.5.3 Switching comment/no-comment display
Test operation	TEST	Changes device values on the screen when the FX ladder monitor is executed. For further information, see the following: ■■■▶ 12.7 Test Operation

## 12.4.2 Hard copy output

This section describes how to store an FX ladder monitor screen to the data storage in BMP/JPEG file format or print it with a printer.



### POINT

- The output target of hard copy can be set in Hard Copy of GT Designer3. For details of hard copy setting, refer to the following.
  - ⇒ GT Designer3 (GOT2000) Help
- When outputting a hard copy, the display can be inverted between white and black. For invert colors setting, refer to the following.
  - ⇒ GT Designer3 (GOT2000) Help

## 12.5 Switching the Display Format

You can switch the display format (16-bit (one-word) module/32-bit (two word) module or decimal number/hexadecimal number) of word device and timer/counter values displayed on the FX ladder monitor screen, and whether to display the comments to the target devices.

### 12.5.1 Display switching of 16-bit (one-word)/32-bit (two-word) modules

During monitoring, the present values of word devices (except timers and counters) are displayed in the 16-bit or 32-bit module. These modules switch alternately each time you press the **16/32Bit** key.

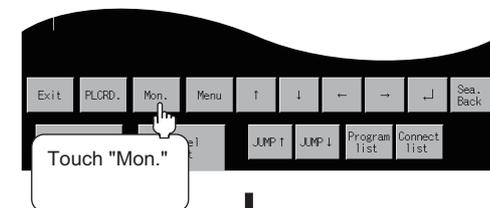
#### POINT

##### Displaying timers and counters

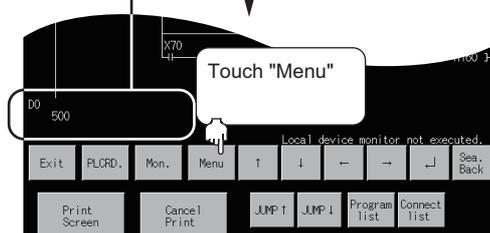
You cannot switch the 16-bit (one-word) or 32-bit (two-word) module with regard to the present and set values of timers and counters. The GOT automatically selects to display them in the 16-bit (one-word) or 32-bit (two-word) module.

(Operation example: Switch 16-bit (one-word) module display to 32-bit (two-word) module display.)

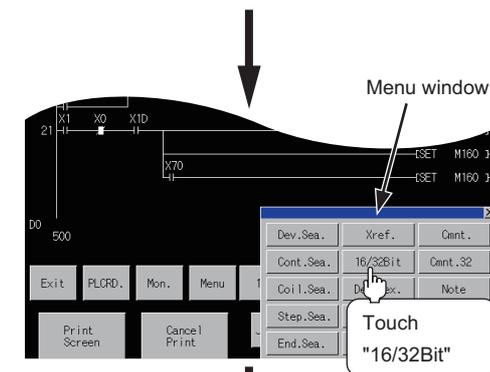
1. Touch **Mon.**



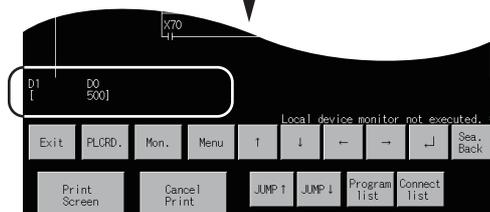
Device values displayed



2. Touch **Menu**



3. Touch **16/32Bit**

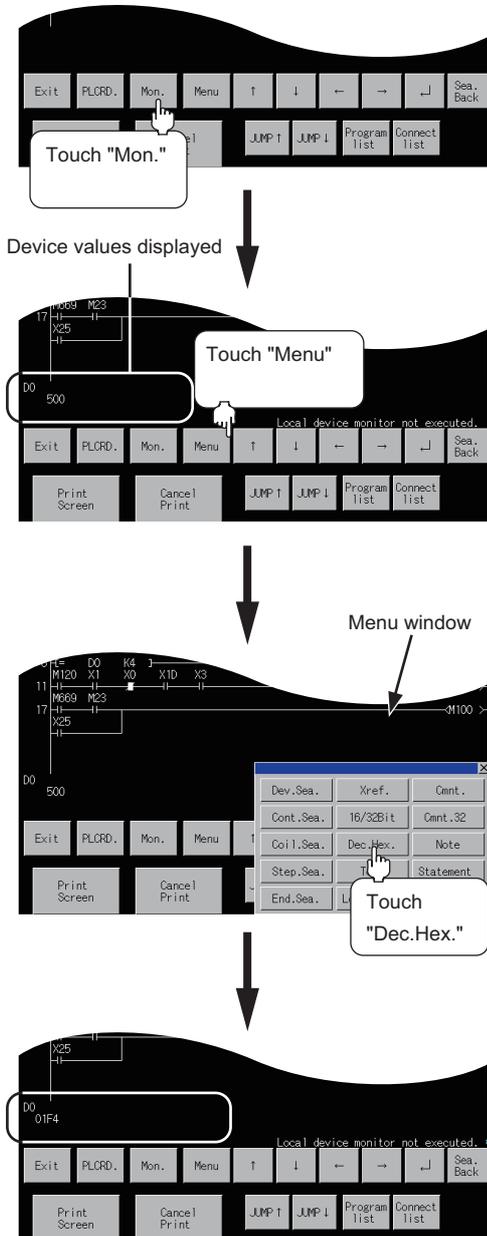


4. The word devices are displayed in the 32-bit (two-word) module.

## 12.5.2 Display switching of decimal numbers/hexadecimal numbers

During monitoring, the present values of word devices and the present values (upper values) and set values (lower values) of timers/counters are displayed in decimal or hexadecimal numbers. The display formats switch alternately each time you press the **Dec.Hex.** key.

(Example of operation: Switching the decimal display to the hexadecimal display.)



1. Touch **Mon.**

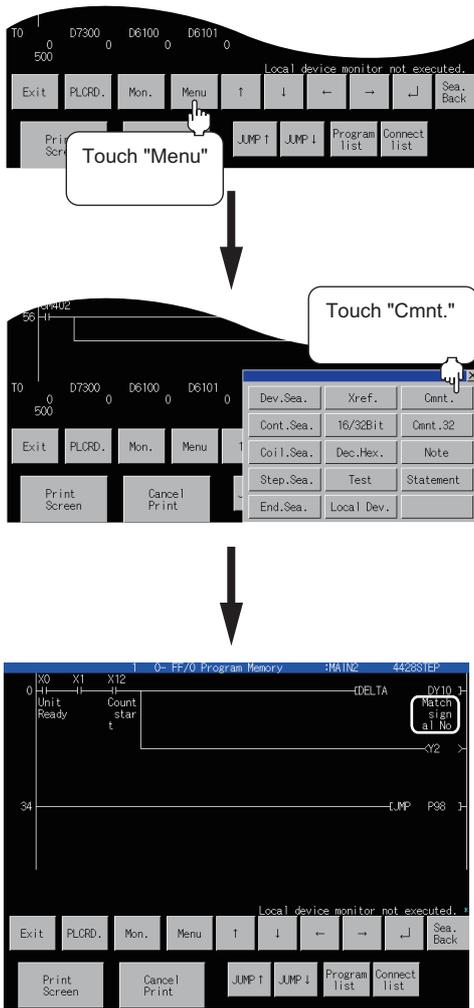
2. Touch **Menu**

3. Touch **Dec.Hex.**

4. The values are displayed in hexadecimal numbers.

## 12.5.3 Switching comment/no-comment display

Comments written in the target controller are displayed. Comment display and no-comment display switch alternately each time you press the **Cmnt.** key.



1. Touch **Menu** .

2. Touch **Cmnt.** .

3. Comments are displayed.  
Each comment is displayed in five characters on three lines.

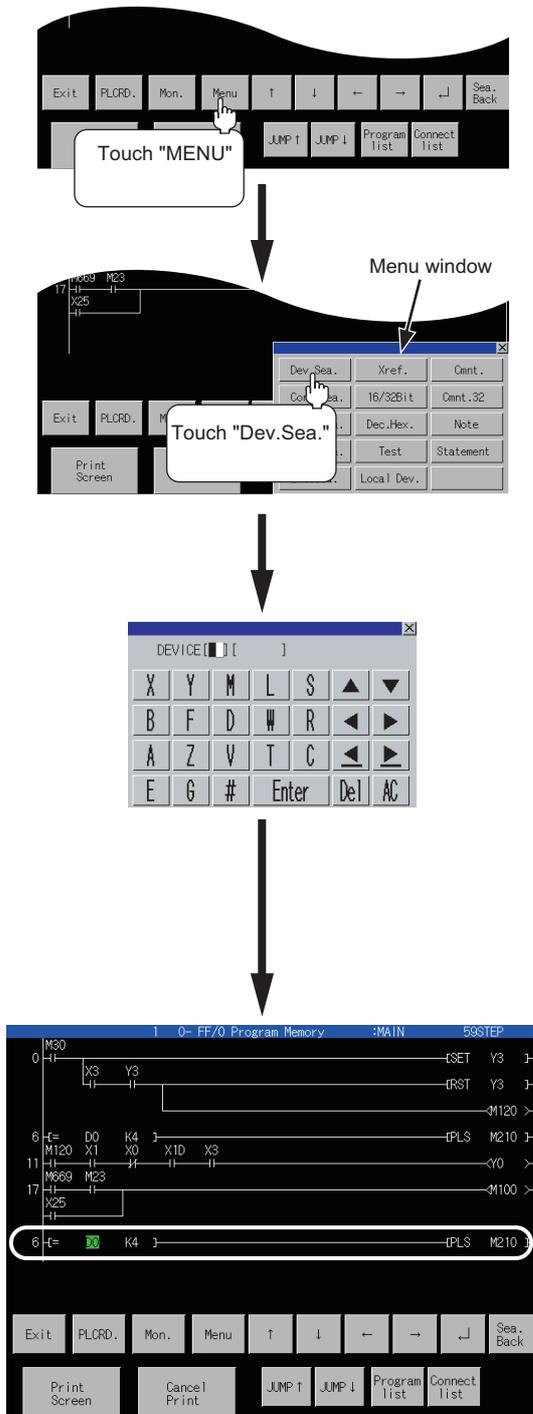
# 12.6 Search Operation

This section describes device search, contact point search, coil search, step search, ladder end search, defect search, and touch search.

## 12.6.1 Device search

Device search displays the ladder block that contains a specified device.

<Operation procedure>



1. Touch **Menu** .

2. Touch **Dev.Sea.** .

3. Using the **◀** and **▶** keys, switch the input area, and enter a device name and its number. \*1  
 Example: Specify D0.  
 After the device name and its number are entered, touch the **Enter** key. Input is completed, and the keyboard closes.

\*1 The data entered can be corrected with the following keys:

**Del** key: Used to delete a character of the entered information.

**AC** key : Used to delete all characters entered.

4. The ladder block containing the specified device is displayed.  
 The device is highlighted as shown in the display example below.  
 (Display example)

**D0**

**(1) Continuous read based on the same device**

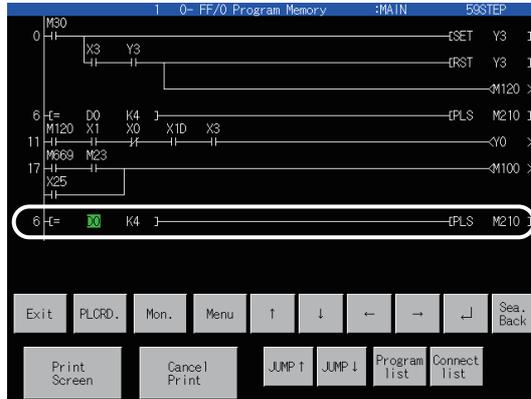
After a search, a continuous search can be performed based on the same device by touching  on the screen.

If you touch  another key, the continuous read function will be canceled.

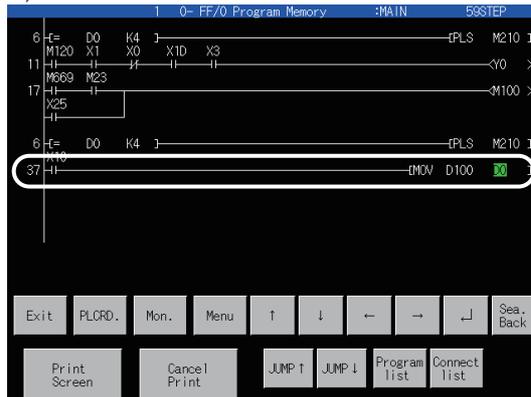
**(2) FX ladder monitor display after a search**

The ladder block containing the searched device is displayed.

Example) 1) When the entered device you want to search is "D0"



2) When the same search is continued

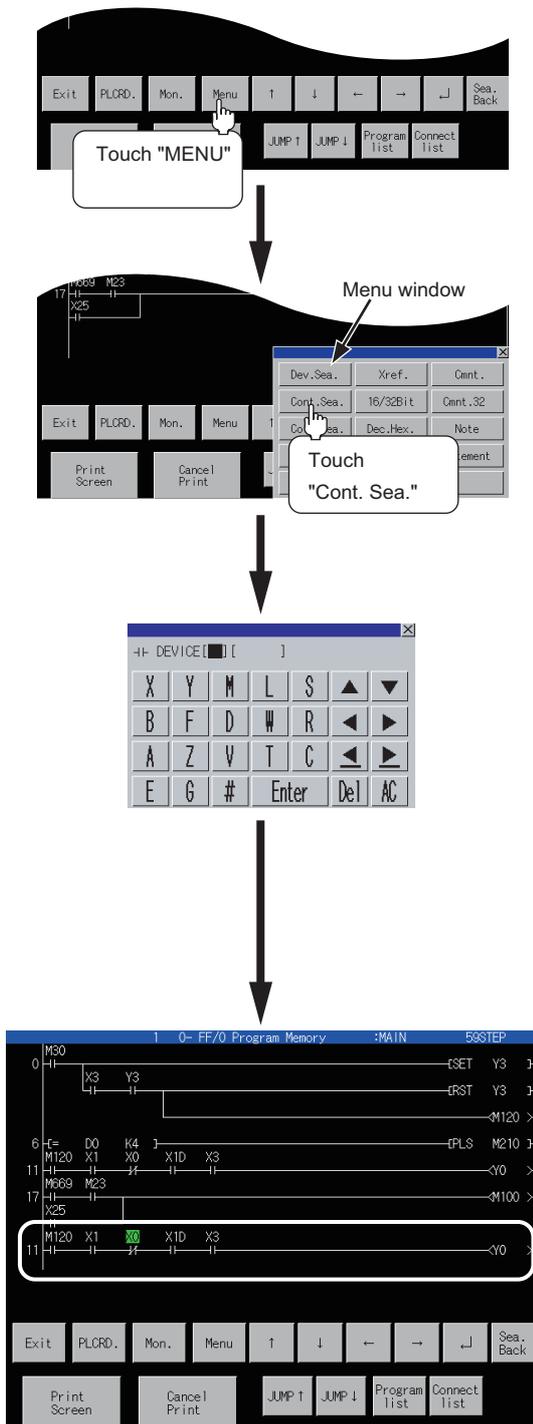


The ladder is displayed on the following line.

## 12.6.2 Contact point search

Contact search displays the ladder block that contains a specified contact point.

<Operation procedure>



1. Touch **Menu**.

2. Touch **Cont.Sea.**

3. Using the **◀** and **▶** keys, switch the input area, and enter a device name and its number.<sup>\*1</sup>  
 Example: Specify X1.  
 After the device name and its number are entered, touch the **Enter** key. Input is completed, and the keyboard closes.

<sup>\*1</sup> The data entered can be corrected with the following keys:

**Del** key: Used to delete a character of the entered information.

**AC** key: Used to delete all characters entered.

4. The ladder block containing the specified contact point is displayed.  
 The contact point is highlighted as shown in the display example below.  
 (Display example)

**X1**

**(1) Continuous read based on the same contact point**

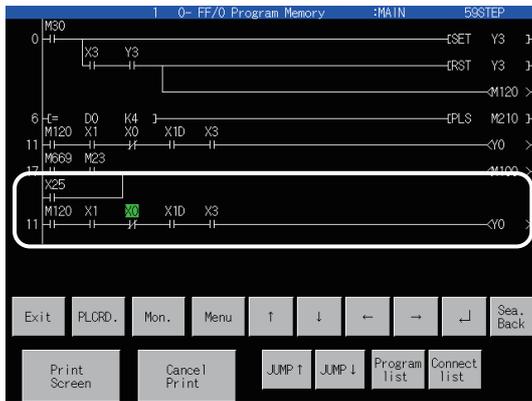
After a search, a continuous search can be performed based on the same contact point by touching  on the screen.

If you touch another  key, the continuous read function will be canceled.

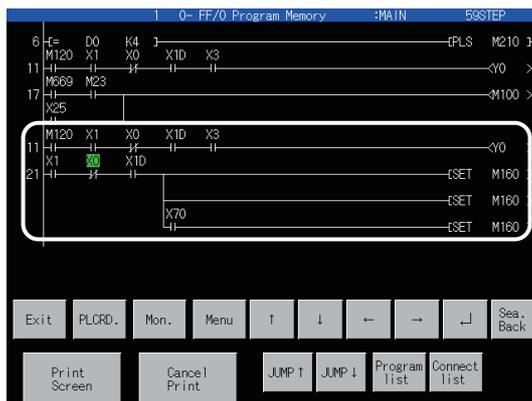
**(2) FX ladder monitor display after a search**

The ladder block containing the searched contact point is displayed.

Example) 1) When the entered contact point you want to search is "X1"



2) When the same search is continued

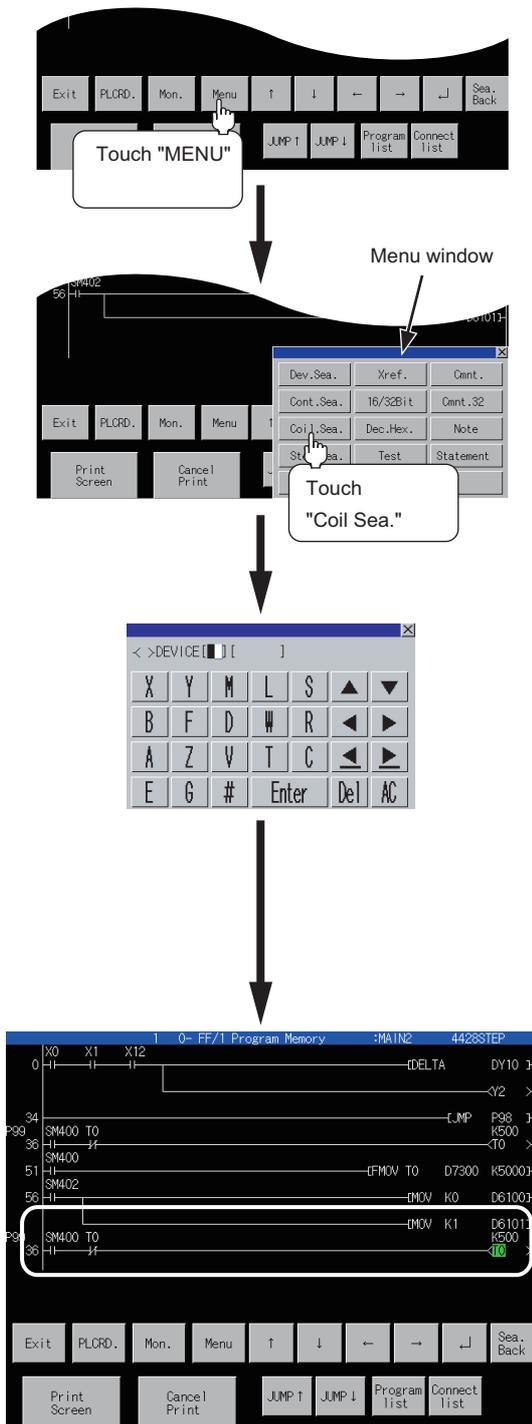


The ladder is displayed on the following line.

## 12.6.3 Coil search

Coil search displays the ladder block that contains a specified coil.

<Operation procedure>



1. Touch **Menu**.

2. Touch **Coil.Sea.**

3. Using the **◀** and **▶** keys, switch the input area, and Enter a device name and its number.\*1  
 Example: Specify T0.  
 After the device name and its number are entered, touch the **Enter** key. Input is completed, and the keyboard closes.

\*1 The data entered can be corrected with the following keys:

**Del** key: Used to delete a character of the entered information.

**AC** key: Used to delete all characters entered.

4. The ladder block containing the specified coil is displayed.

The coil name is highlighted as shown in the display example below.  
 (Display example)

**T0**

**(1) Continuous read based on the same coil**

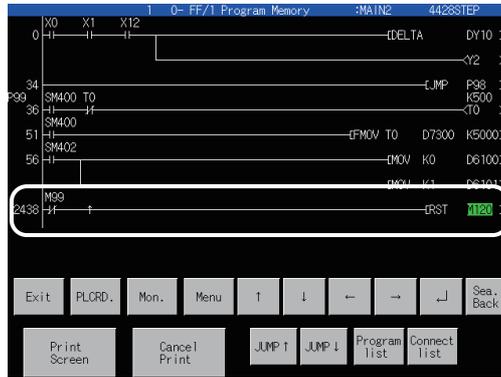
After a search, a continuous search can be performed based on the same coil by touching  on the screen.

 If you touch another key, the continuous read function will be canceled.

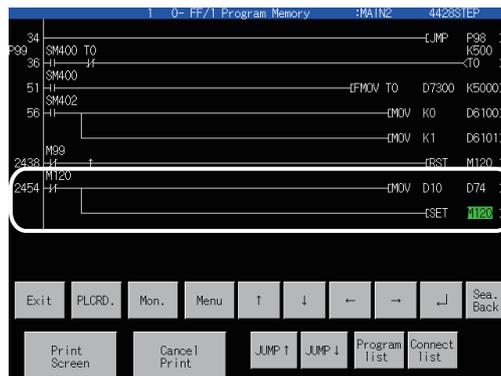
**(2) FX ladder monitor display after a search**

The ladder block containing the searched coil is displayed.

Example) 1) When the entered coil you want to search is "M120"



2) When the same search is continued

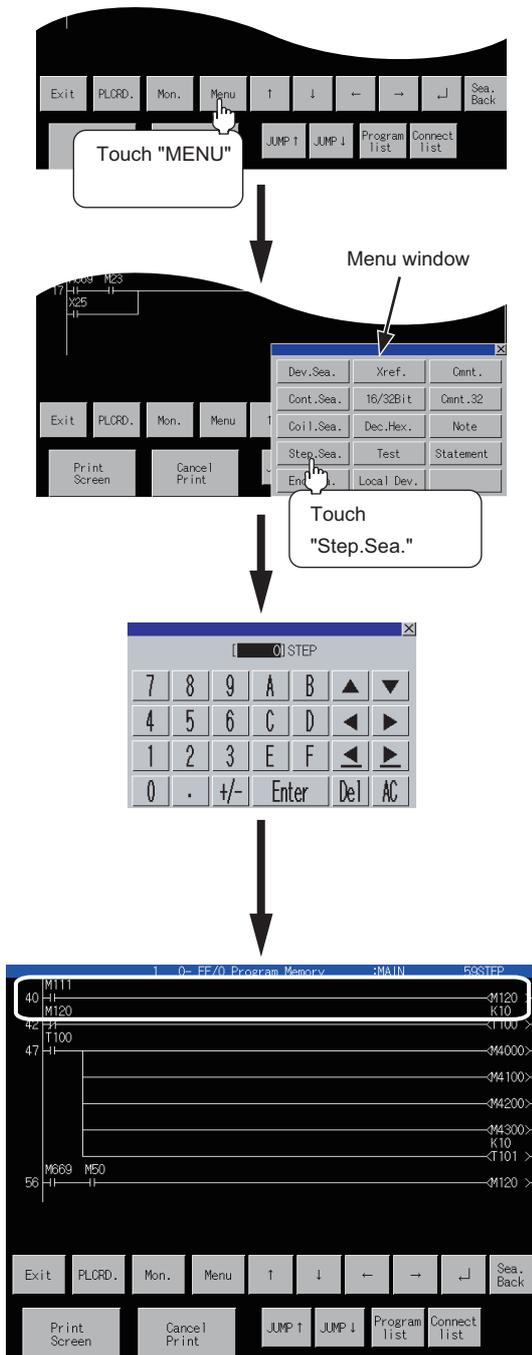


The ladder is displayed on the following line.

## 12.6.4 Step search

Step search displays the ladder block that contains a specified step number.

<Operation procedure>



1. Touch **Menu**.

2. Touch **Step.Sea.**

3. Enter a step number.\*1  
 Example: Specify step No. 40.  
 After the step number is entered, touch the **Enter** key. Input is completed, and the keyboard closes.

\*1 The data entered can be corrected with the following keys:

**Del** key: Used to delete a character of the entered information.

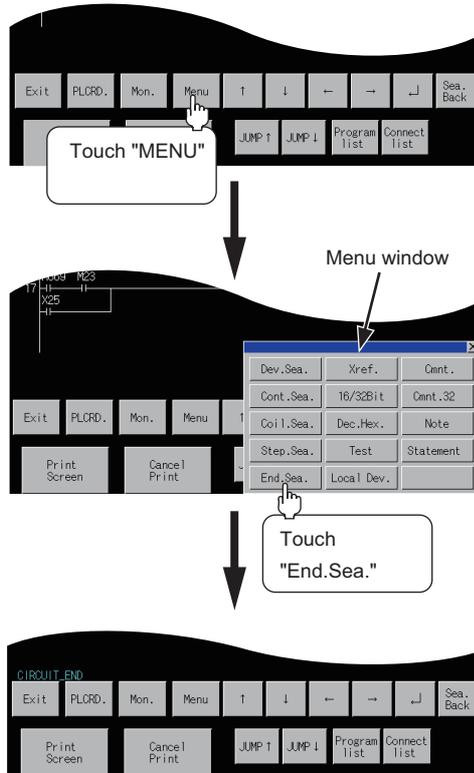
**AC** key: Used to delete all characters entered.

4. The ladder block is displayed with the specified step number at the top.  
 (Display example)  
 The ladder block of step No. 40 is displayed.

## 12.6.5 Ladder end search

Ladder end search displays the last ladder block of the sequence program.

<Operation procedure>



1. Touch **Menu**.

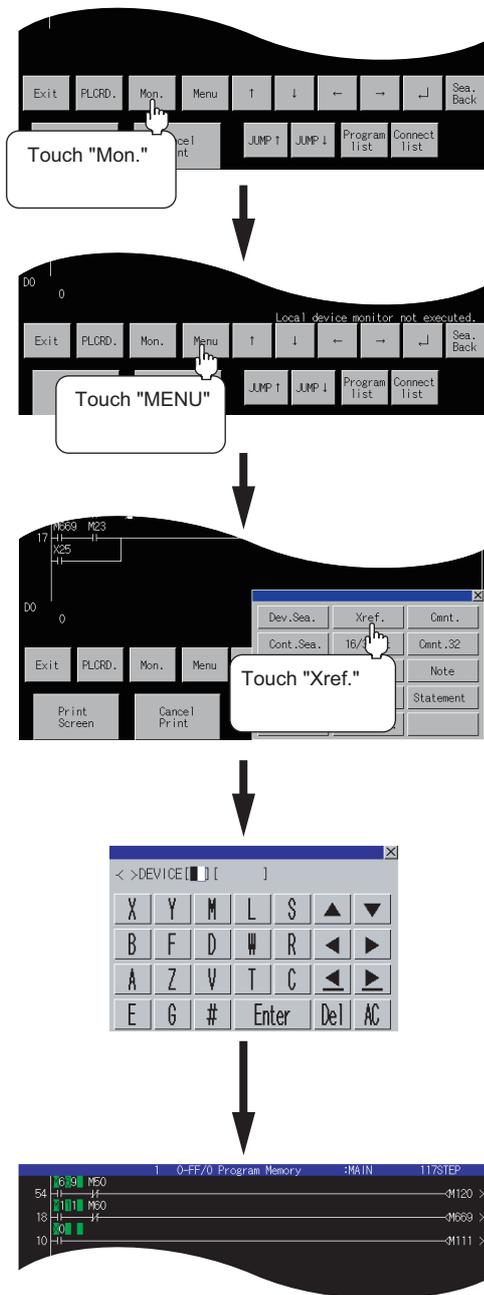
2. Touch **End.Sea.**

3. The last ladder block is displayed (the end command is not displayed).  
The message "CIRCUIT\_END" will be displayed.

## 12.6.6 Defect search

Defect search searches the ladder block for the status of conductive/non-conductive of the contact point that turned on or off the coil on the sequence program.

<Operation procedure>



1. Touch **Mon.**.

2. Touch **Menu**.

3. Touch **Xref.**.

4. Select a coil, if necessary.  
Using the **◀** and **▶** keys, switch the input area, and enter the device name and its number of the selected coil.\*1  
Example: Specify M120.  
After the device name and its number are entered, touch the **Enter** key. Input is completed, and the keyboard closes.

\*1 The data entered can be corrected with the following keys:

**Del** key: Used to delete a character of the entered information.

**AC** key : Used to delete all characters entered.

5. A search for the device begins, and the research result is displayed.  
To cancel a defect search, touch **ESC**.  
During a defect search, all key operations except **ESC** and **Exit** are invalid.

**Operation before a defect search**

In the case of the FX ladder monitor, touch **Mon.** before starting a defect search.

If you touch **Xref.** without touching **Mon.**, the message "NO MONITORING" will be displayed.

**(1) Search result**

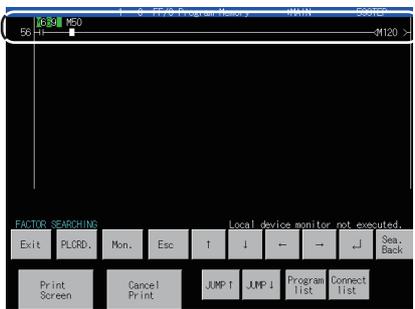
Search results reveal any occurrences of the search device. They are useful when you determine whether a defective device is conductive or nonconductive.

If any occurrence of the search device is not found as a result of the search, a message appears on-screen, telling that "PROGRAM NOT FOUND."

(a) When an occurrence of the search device is found:

If an occurrence of the search device is found as a result of the search, the search for another defective device will automatically be started.

Example: After searching for Device M120 that is in the OFF state, "M669" will be displayed as a device that caused a failure.

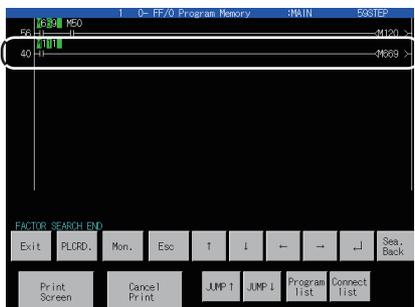


After searching for Coil M120 that is in the OFF state, "M669" is displayed as a device that is not conductive.

Example: **M669**

\* After searching for a device that is in the ON state, a device that is conductive is displayed. The entire field of the device name and number is highlighted on-screen.

Example: **M669**



After searching for Coil M669 that is in the OFF state, "M111" is displayed as a device that is not conductive.

Example: **M111**

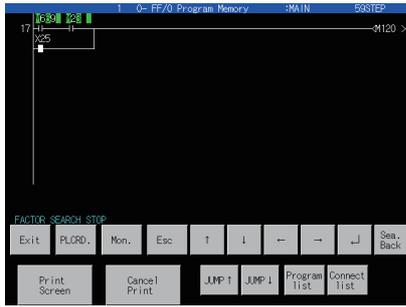


The next defect is automatically searched.

When there is no more defect, the "FACTOR SEARCH STOP" will be displayed, and the defect search will end.

- (b) When two occurrences of the search device are found.  
If there are two or more devices that caused a failure, the "the defect search is interrupted" message appears and the defect search is terminated.

Example: After searching for Device M120 that is in the OFF state, "M669" and "M23" will be displayed as devices that caused a failure.



After searching for coil M120 that is in the OFF state, "M669" and "M23" are displayed as devices that are not conductive.

Example: **M669**, **M23**

\* After searching for a device that is in the ON state, devices that are conductive are displayed. The entire field of the device name and number is highlighted on-screen.B

Example: **M669**, **M23**

When resuming the defect search, specify either of the found contacts M669 and X0025. After touching **ESC** to change it into **Menu**, execute the defect search.

## POINT

### Precautions for making defect search

#### (1) When the contact point searched is a b contact point

If a B-contact is found defective as a result of the defect search, a search for the cause of the ON/OFF state will be automatically switched.

#### (2) Screen display after a defect search

After the end of the defect search, the GOT stops monitor and displays the search result. Hence, the monitor screen of the GOT shows the result retained during the defect search.

#### (3) Display of defect search results

While the search result is displayed after the end of the defect search, the searched ladder can be displayed backwards by pressing **↑** **↓** (single ladder block scroll) or **JUMP↑** **JUMP↓**. Up to 100 ladders can be displayed on-screen. The following messages will appear at the start or the end of the search results.

- When viewing the start of search results: "This is the start of search results."
- When viewing the end of the search results: "This is the end of search results."

#### (4) Display of contact point and coil ON/OFF

1) During automatic search execution

Displays ON/OFF in the entire ladder displayed on the screen.

2) During search result display

The ON/OFF of the ladder block searched last and the monitor results of word devices are displayed.

#### (5) Switching the **Menu** / **ESC** key switch

When the defect search starts, **Menu** change into **ESC**.

Touch **ESC** during the defect search to stop the defect search and display the search result.

Further, touch **ESC** to change **ESC** into **Menu** and display the normal ladder.

#### (6) Screen display during a defect search

1) If the display data exceeds one screen during the defect search

The screen is scrolled automatically.

2) If the ladder step searched during the defect search exceeds one screen

The screen is scrolled automatically to the last line of the ladder step.

**(7) Screen display when you touch the ESC key**

Touching ESC can stop the defect search. Search results are continuously displayed on-screen until ESC is touched.

The ladder step searched last is displayed as described below.  
ON/OFF display is not provided.

---

# 12.7 Test Operation

You can change device values and turn on and off bit devices on the screen when the FX ladder monitor is executed. This section describes how to display the test menu screen. For the procedure for changing device values and turning on and off bit devices, see the following.

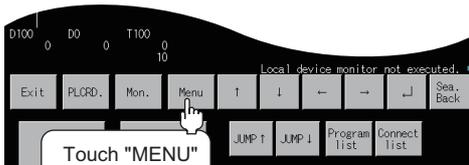
➡ 2.3.8 Test operation for the monitor device ([Test])

## 12.7.1 Displaying the test menu screen

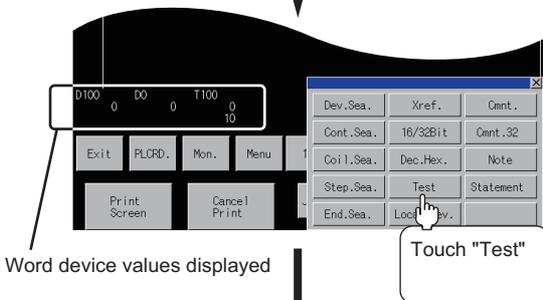
### (1) Displaying the test menu screen

The procedure for displaying the test menu screen during FX ladder monitoring is described below.

1. Touch **Menu**.

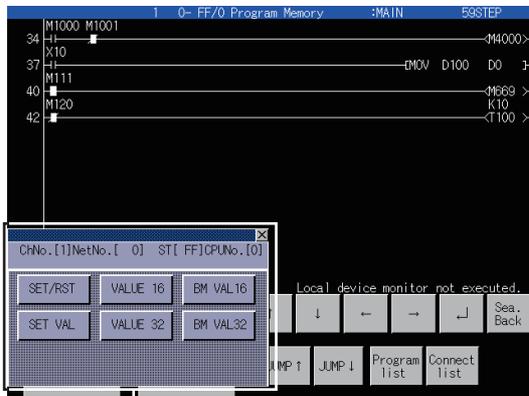


2. Touch **TEST**.



3. The test menu screen is displayed. Change device values by operating the window. For further information about the operation procedure, see the following:

➡ 2.3.8 Test operation for the monitor device ([Test])



Test menu screen

### POINT

The present and set values of word devices are hidden behind the test menu screen. You can display hidden present and set values by scrolling them to the right or left using the **←** or **→** key.

## 12.8 Error Messages and Corrective Action

This section describes the error messages displayed when the FX ladder monitor function is executed, and corrective action.

Error message	Description	Corrective action
ENTRY CODE MISMATCH	The specified keyword is different from the keyword that is registered in the object PLC CPU.	Check the keyword that is registered in the object PLC CPU and specify again.
FILE NOT FOUND	(1) An attempt was made to switch to the FX ladder monitor screen when a sequence program had not been read. (2) When the file is selected and the "Read" key is pressed, the selected file does not exist in the PLC drive.	Read the sequence program that written in the object PLC CPU.
PLC COMMUNICATION ERROR	(1) Cannot communicate with PLC CPU of the specified network No. or station No. (2) The specified drive does not exist.	Check and correct the following: (1) Does the specified PLC CPU exist? (2) Is it online? (Data communication status?) (3) Has an error occurred? (4) Power on the GOT again. and so on.
No END instruction.	The sequence program has no END instruction.	Check the sequence program with the peripheral device (GX Developer).
Instruction code abnormal.	The sequence program has an abnormal command code.	Check the sequence program with the peripheral device (GX Developer).
Ladder creation bad.	The sequence program has an abnormal circuit.	Check the sequence program with the peripheral device (GX Developer).
Please release the keyword.	Communication is not possible because a keyword is registered in the target PLC. (For FX3U(C) only)	Release the keyword for the target PLC.
The keyword is registered.	A keyword is set to the PLC that is targeted to the PLC reading on the PLC reading screen.	Release the keyword for the target PLC.
PLC is protected.	The sequence program is protected by a block password at the PLC reading. (For FXCPU only)	Release the block password for the sequence program.

# 13. FX LIST EDITOR

GT 27 GT 23 Soft GOT 2000

## 13.1 Features

The MELSEC-FX list editor enables you to change the sequence program in the FX PLC. This function is intended to troubleshoot the PLC system and to streamline maintenance operations. The features of the MELSEC-FX list editor are described below.

### ■ Parameters and sequence programs are easy to maintain.

You can check or partly correct, change or add FX PLC CPU parameters and sequence programs simply by operating keys.

You can easily edit sequence programs without preparing any peripheral unit other than the GOT.

(Example of changing sequence program commands)

Changed

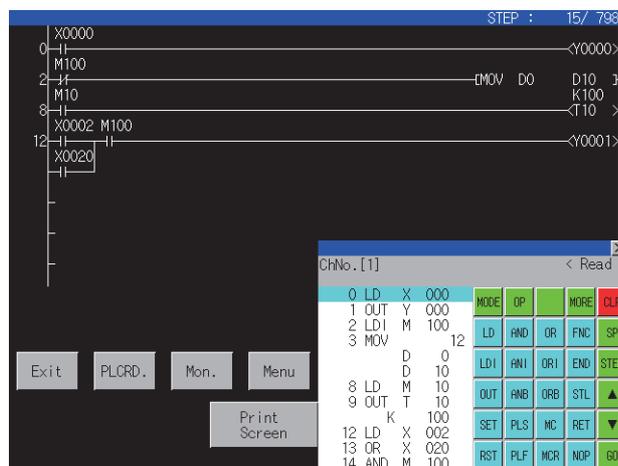
LD X000	→	LD X000
OUT Y020		OUT Y030
LD X001		LD X001

### ■ Combination with the FX ladder monitor

You can open the MELSEC-FX List Editor window from the Ladder Monitor screen with a single touch.

You can edit PLC program while checking the ladder.

You can also display a list from the step line displayed by the ladder monitor.



■ **Errors that occur during list editing can be checked easily.**

Error messages, error codes, and number of steps for errors that occur in the FX PLC can be checked. Details can be checked immediately even for errors that occur during list editing.

Error message	Detail	Step
I/O configuration error	1010	
PC/HPP communication error	6201	

■ **Commands and devices can be searched and displayed.**

Commands and devices used in sequence programs can be searched. The correction position can be searched for cases such as when you want to correct a specific device.

Searched device  
M800

ChNo. [1]		< Read >			
Search device		MODE	OP	MORE	CLR
M 800		.	V	Z	SP
D	0				STEP
D	10				
8 LD	M 10	8	9		▲
9 OUT	T 10				
K	100	4	5	6	7
12 LD	X 002				▼
13 OR	X 020				
14 AND	M 100	0	1	2	3
					GO

→ Displays the searched device.

LD	M 800
OUT	T 10
	K 100
LD	X 002

# 13.2 Specifications

## 13.2.1 System configuration

This section describes the system configuration of the MELSEC-FX list editor.

For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

⇒ GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1

### ■ Controllers that can be edited with the MELSEC-FX list editor

Target controller
FXCPU

### ■ Connection forms

This function can be used in the following connection types.

(○: Available, x: Unavailable)

Function name		Connection form between GOT and PLC		
Name	Description	Direct CPU connection	Ethernet connection <sup>*1</sup>	
MELSEC-FX list editor	Sequence program writing, parameter setting, PLC diagnostics and keyword registration, etc.	○	○ <sup>*2</sup>	x

\*1 MELSEC-FX list editor cannot be used when using CC-Link IE field network Ethernet adapter.

\*2 Available only when using FX3U or FX3UC.

### ■ Required extended system application

The extended system applications shown below are required.

⇒ 1.2 Required extended system application for the function

#### (1) Extended System Application

Write the package data that has the extended system application for the intelligent module monitor to the GOT. For the communication method with the GOT, refer to the following.

⇒ GT Designer3 (GOT2000) Help

#### (2) Extended System Application space

To write the extended system application to the GOT, certain space of the user area must be reserved for the application.

For the procedure for checking the available memory space of the user area and information about the data using other user areas, refer to the following.

⇒ GT Designer3 (GOT2000) Help

## ■ Functions list and monitor conditions

The following shows the memory that can be monitored by the MELSEC-FX list editor and the FX PLC status conditions.

(○ : Can be monitored △ : Can be monitored under certain conditions × : Cannot be monitored)

Function		Memory that can be monitored *2				FX PLC status	Reference
		Built-in memory	RAM memory cassette	EEPROM memory cassette, flash memory cassette	EPROM memory cassette		
Reading sequence programs	Displaying sequence programs	○	○	○	○	RUN/STOP	Section 5.4.3
	Searching commands/devices						Section 5.4.4
Writing sequence programs	Writing commands						Section 5.4.5
	Changing operands/set values						Section 5.4.6
Inserting commands		○	○	△*1	×	For Stop only	Section 5.4.5
Deleting commands							Section 5.4.7
Sequence program all clear							Section 5.4.8
PLC diagnostics		○	○	○	○	RUN/STOP	Section 5.4.9
Parameter setting	Display						Section 5.4.10
		Set	○	○	△*1	×	For Stop only
Keyword		○	○	○	○	RUN/STOP	Section 5.4.11

\*1 The operation is available only when the protect switch is OFF.

\*2 The available memory differs depending on the FX PLC being used.  
For further information, see the following.

➡ The hardware manual of the FX PLC being used

## 13.2.2 Access range

For the FXCPU in Ethernet connection, the GOT can monitor only the host station.  
The access range other than the above is the same as the access range when the GOT is connected to a controller.  
For details of the access range, refer to the following.

➡ GOT2000 Series Connection Manual (Mitsubishi Product) For GT Works3 Version1

## 13.2.3 Precautions

### (1) Inapplicable GOT

The MELSEC-FX list editor cannot be used with the GOTs shown below.

GOT	Inapplicable GOT
GT10	GT1030, GT1020

### (2) Using other peripheral equipment for sequence program/parameter change

When using the MELSEC-FX list editor, do not change programs or parameters in the PLC CPU from other peripheral equipment.

If you make a change, temporarily exit the MELSEC-FX list editor after the change is made, then start the MELSEC-FX list editor again.

If you carelessly change the program on one PLC from multiple units of peripheral equipment (including GOT), the contents of the program in the PLC CPU and the peripheral equipment may not be the same, resulting in an unintended operation of the PLC CPU.

### (3) Sequence program change

Stop the FX PLC before changing (writing, inserting, deleting) a sequence program or changing parameters. Operation is not possible with the FX PLC running.

### (4) If you press the **GO** key but the system does not proceed to the next operation (for example, a search)

Check the input contents (applied instruction number, device value, etc.).

### (5) When used together with the FX ladder monitor

Even if you execute the MELSEC-FX list editor with the FX ladder monitor activated, edited information will not be reflected on the FX ladder monitor screen.

To reflect such edited information, perform the PLC reading of the FX ladder monitor again.

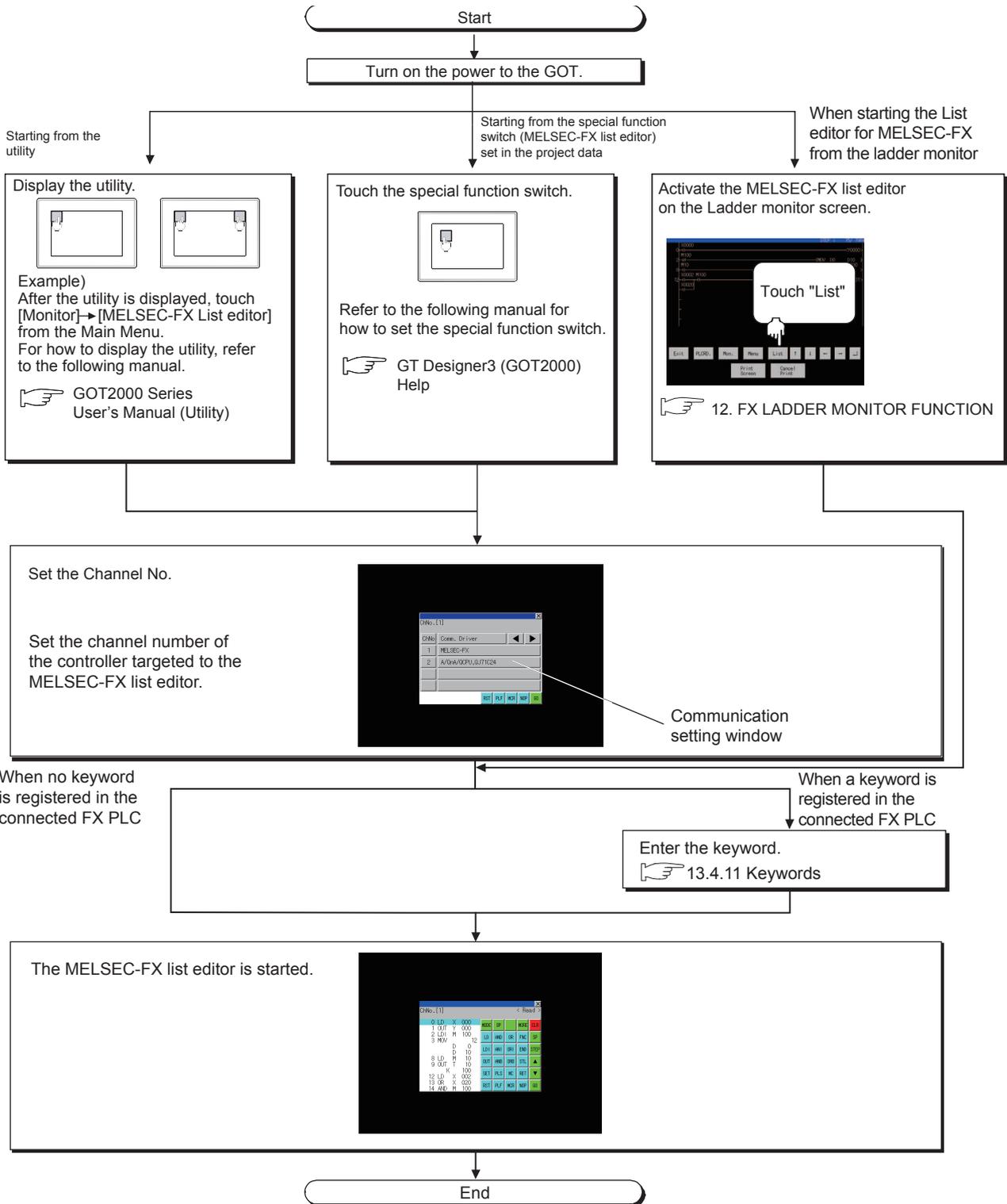
### (6) When using list monitor

Only devices to be used for basic instructions can be monitored.

The status of devices (word, bit) to be used for application instructions cannot be monitored.

# 13.3 Operations for Display

This subsection describes an outline until the device monitor screen is displayed after List editor for MELSEC-FX (Option OS) is installed in the GOT.



## POINT

**(1) How to display the utility**

For how to display the utility, refer to the following.

▣▣▣▣ GOT2000 Series User's Manual (Utility)

**(2) Displaying communication setting window**

After turning on the GOT, the communication setting window is displayed at the first startup of the MELSEC-FX list editor only.

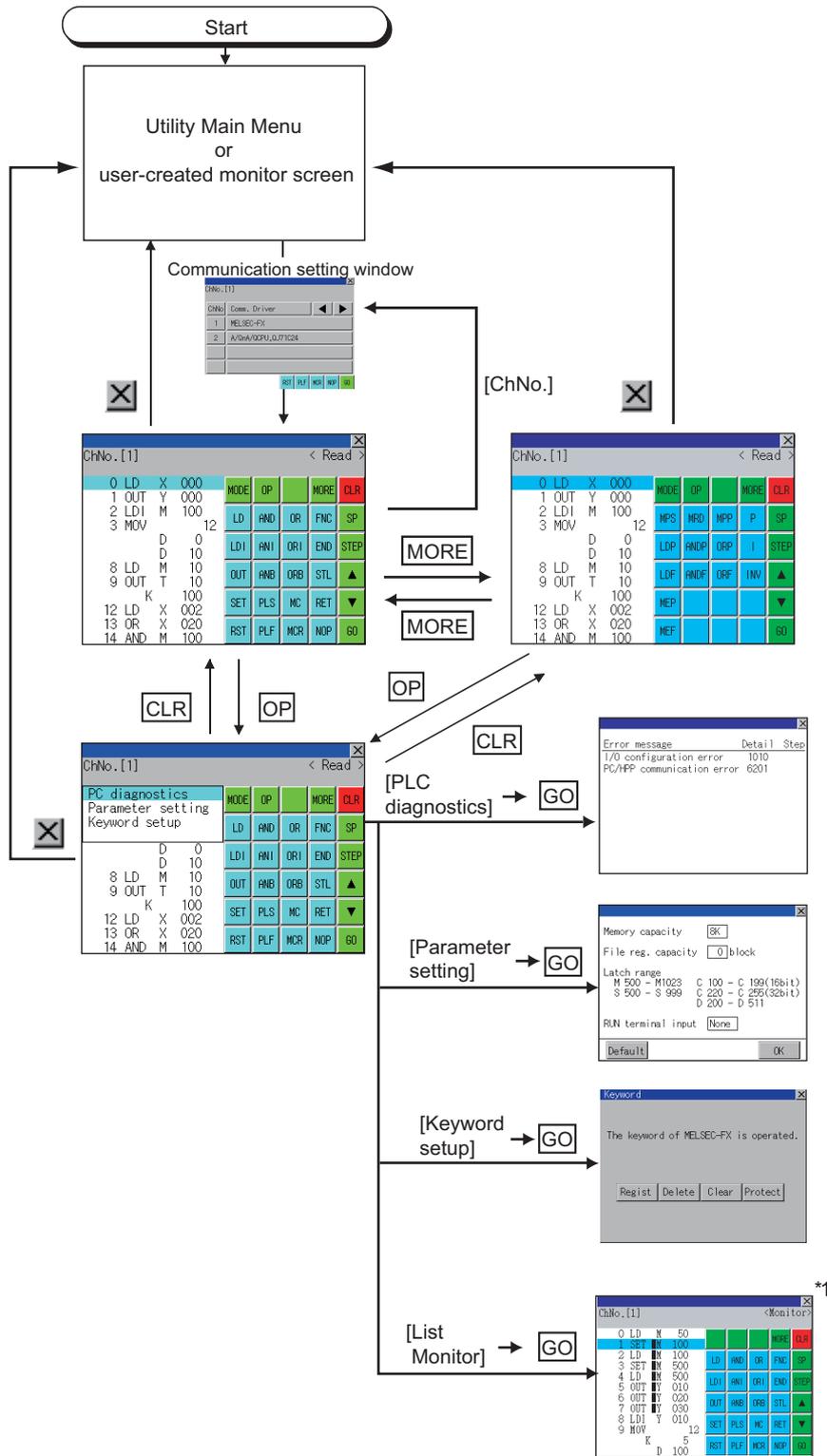
For displaying the communication setting window at the second or later startup, touch [ChNo.] on the MELSEC-FX list editor screen. (▣▣▣▣ 13.4 Operation Procedures)

**(3) If the project data has not been downloaded**

The MELSEC-FX list editor can be started from the utility even if the project data has not been downloaded to the GOT.

## Change screens

This section describes how to change the screen.



\*1 With setting special function switches (FX list monitor), the list monitor can be started on the monitor screen. When the list monitor is started on the monitor screen, the list editor cannot be used. For how to set special function switches, refer to the following.

➡ GT Designer3 (GOT2000) Help

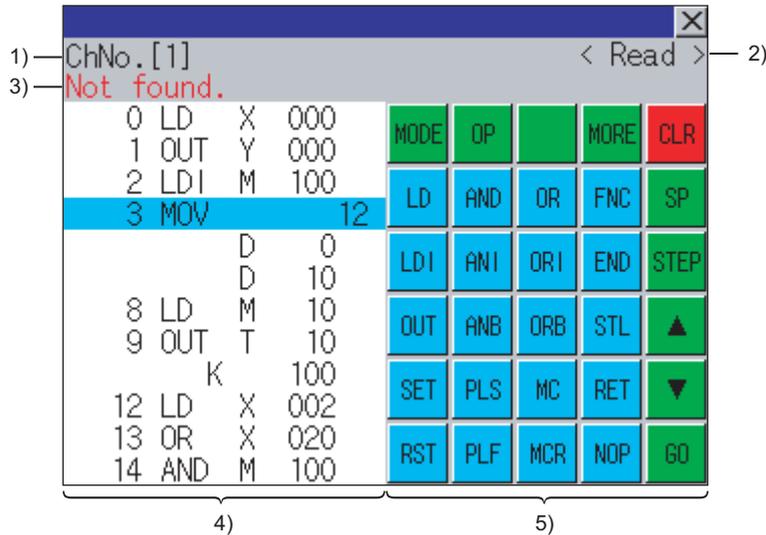
# 13.4 Operation Procedures

This section describes the contents of the MELSEC-FX list editor and the key functions displayed on the screen.

## 13.4.1 Key arrangement and a list of key functions

The arrangement and functions of the keys displayed on the MELSEC-FX List Editor window are described below.

### ■ Displayed contents



No.	Item	Description
1)	Channel No.	Displays the currently selected channel number. Touching "ChNo." displays the communication setting window. The communication setting window is not displayed if the MELSEC-FX list editor is started from the FX ladder monitor.
2)	Mode	Displays a mode for MELSEC-FX list editor. ( ➡ 13.4.2 Selection and operation of modes) [Monitor] is displayed when the list monitor is executed. ( ➡ 13.4.12 List monitor)
3)	Error message	Displays the contents of errors that occur with the MELSEC-FX list editor. ( ➡ 13.5 Error Messages and Corrective Actions)
4)	List display area	Displays the sequence program in list format (12 digits). The position (line) that can be edited is displayed with a bar.
5)	Key area	Displays the keys that can be used with the MELSEC-FX list editor.

## Key functions

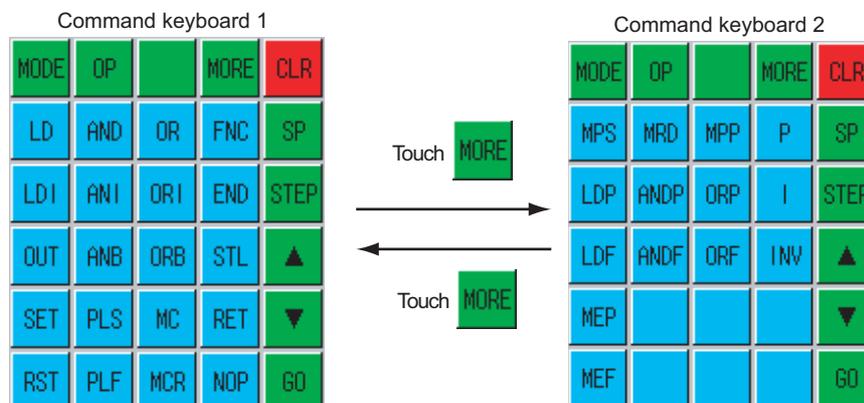
The table below shows the functions of the keys that are used for the operation on the MELSEC-FX list editor screen.

Key	Function
	Displays the communication setting window. The communication setting window is not displayed if the MELSEC-FX list editor is started from the FX ladder monitor.
	Selects a mode for MELSEC-FX list editor. (  13.4.2 Selection and operation of modes)
	Displays the PLC diagnostics, parameter setting, and keyword selection menu.
	Switches between command keyboard 1 and command keyboard 2. (   Keyboard switching)
	When inputting commands: Cancels the key input when only part of the command has been input. (  13.4.14 Action for an incorrect key input) When option menu is displayed: Closes the option menu. Commands cannot be deleted with this key. (  13.4.7 Deleting commands)
	Space key. This key is used when setting timers and counters, writing applied commands, etc.
	Displays the list from a specified step No. when the step No. is input.
	Moves the list display area bar up and down and switches the line being edited.
	Determines the key operation.
	Inputs commands, device names, etc. The key contents depend on the input contents. The commands that can be used differ depending on the target FX PLC. Refer to the manual for the FX PLC to be used.
	Exits the MELSEC-FX list editor.

## Keyboard switching

Touching the button switches the command keyboard 1 and command keyboard 2.

When you touch the button for a keyboard function, the optimum keyboard for input for that function is displayed automatically.



## 13.4.2 Selection and operation of modes

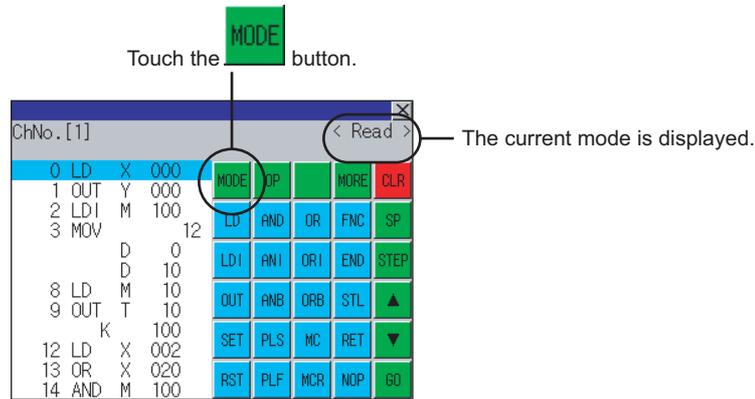
The MELSEC-FX list editor has four modes: READ, WRITE, INSERT, and DELETE.  
Select an appropriate mode for the intended operation.

For more information on the mode to select, refer to the function operations from subsection 5.4.3 onward.

### ■ How to change modes

Touch the **MODE** button.

Each time you touch this button, the mode changes.



### ■ In the case the mode cannot be changed

In the following cases, only READ mode is allowed.

If you try to change to other than READ mode, an error message is displayed.

To change to other than READ mode, take the action below.

Error Message	Description	Corrective action
PLC is running	The FX PLC is in the RUN status.	Stop the FX PLC.
Can not write.	The protect switch of the EEPROM memory cassette is on.	Switch off the protect switch of the EEPROM memory cassette.
	The EPROM memory cassette is enabled.	Set a memory other than EPROM as the memory to write to.

### 13.4.3 Sequence program display

Sequence programs are read from the FX PLC to the GOT and displayed. There are two displaying methods: specifying the step number, and scrolling one screen at a time.

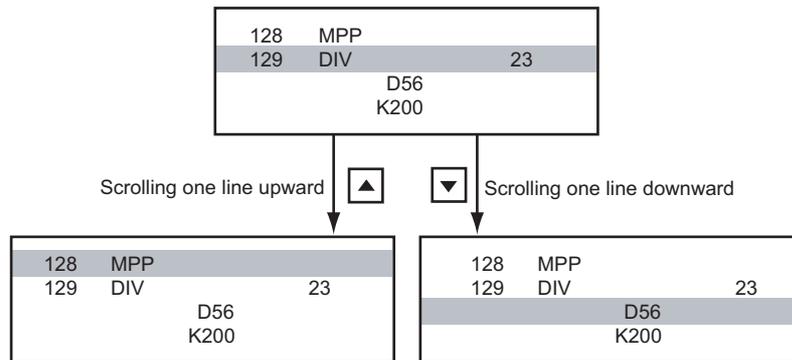
#### ■ Display using cursor keys

##### (1) Operation

Scroll with  or .

##### (2) Example

Scroll one line upward or downward.



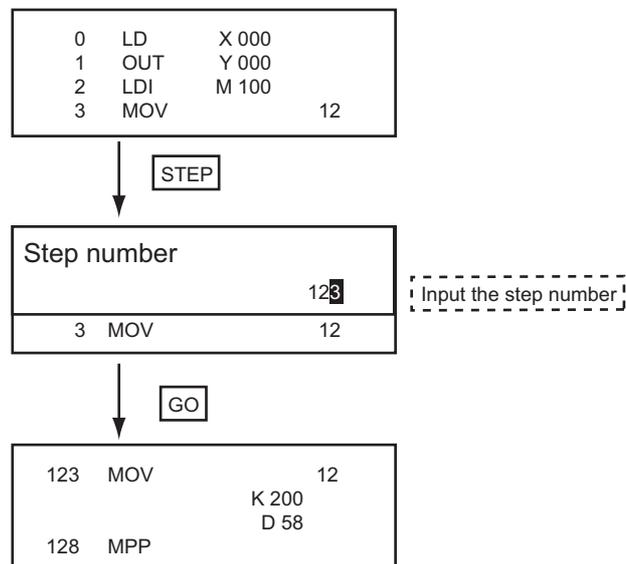
#### ■ Display specifying the step number

##### (1) Operation

 → [Input the step number.] → 

##### (2) Example

Displaying step number 123.



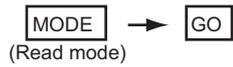
#### HINT

##### When the specified step number is the operand of an applied instruction

If the specified step number is a timer (T) or counter (C) set value or the operand of an applied instruction, that command section is displayed at the head.

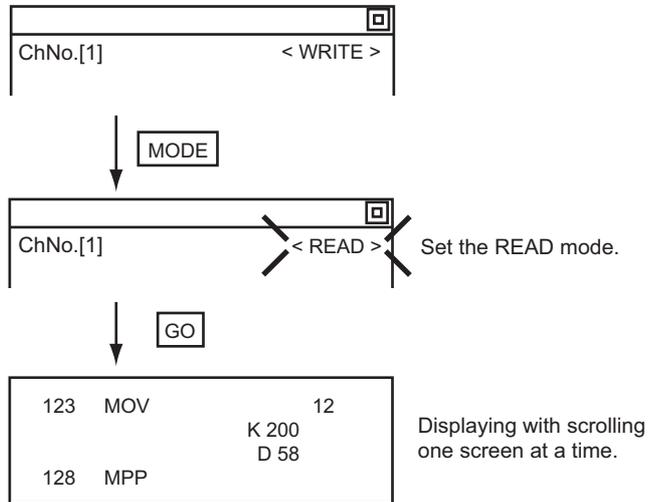
## ■ Display scrolling one screen at a time

### (1) Operation



### (2) Example

Displaying with scrolling one screen at a time.



## 13.4.4 Searching commands and devices

Displays a command or device by searching it in sequence program from Step 0.

### Command search

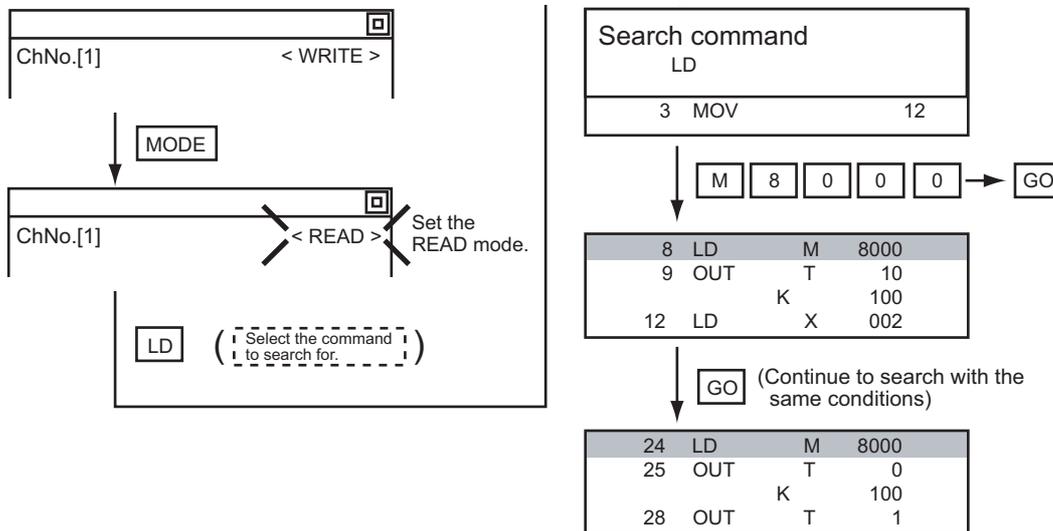
#### (1) Operation



- \*1 If the command you want to search for is not on the keyboard, touch the **MORE** key to switch to the other keyboard. When searching for an applied instruction, touch the **FNC** key and input the applied instruction number. When searching for a label, touch **P** or **I** and input the pointer number.  
( [13.4.5 Writing applied instructions](#) )
- \*2 Input only when searching for commands requiring a device name and device number.
- \*3 After the search results are displayed, you can continue searching with the same conditions by touching the **GO** key. Touching any key other than the **GO** key ends the search.

#### (2) Example

Searching for LD M8000



### POINT

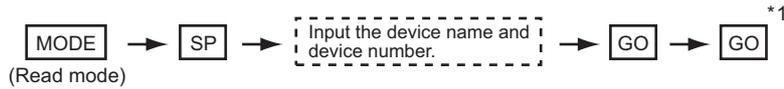
#### Pointer (P, I) searches

For pointer searches, only labels are searched.

Pointers specified as operands in applied instructions are not searched.

## ■ Device search

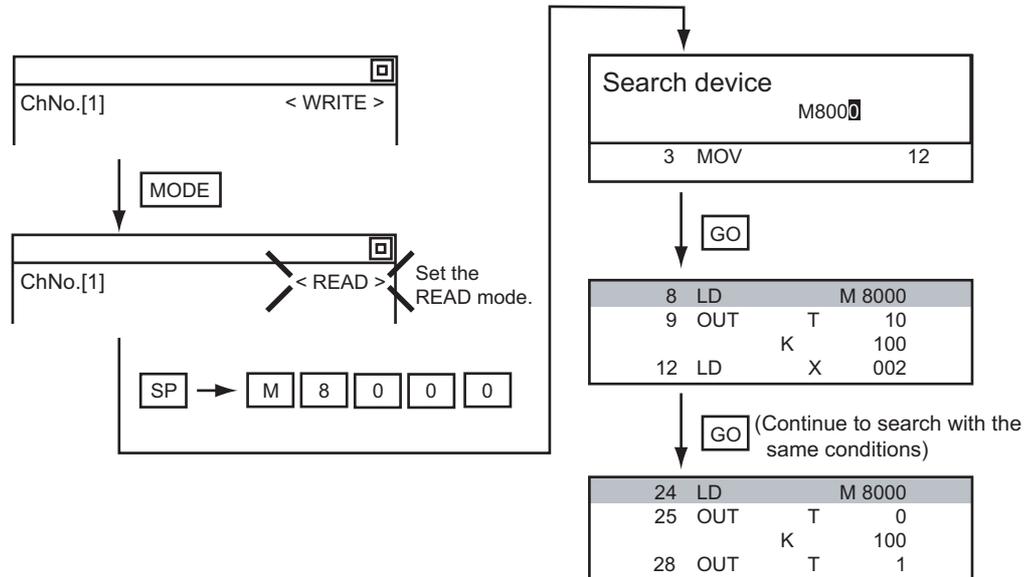
### (1) Operation



\*1 After the search results are displayed, you can continue searching with the same conditions by touching the **GO** key.  
Touching any key other than the **GO** key ends the search.

### (2) Example

Searching for LD M8000



## POINT

### Devices that cannot be searched

The following devices cannot be searched.

- Pointers, interrupt pointers
- Constant K, constant H, constant E
- Bit devices with specifying numbers only
- Special function unit/block buffer memory
- Devices specified with the operand of an applied instruction

Pointers and interrupt pointers can be searched for with command searches.

( **⇨** ■Command search )

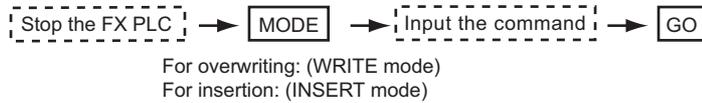
## 13.4.5 Writing commands

Writes a sequence program to the FX PLC. (Overwrite/Insert)

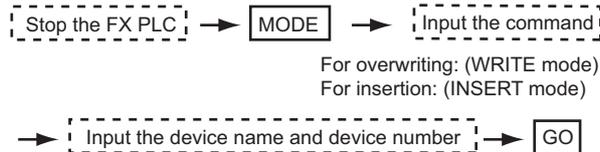
### ■ Writing basic commands

#### (1) Operations

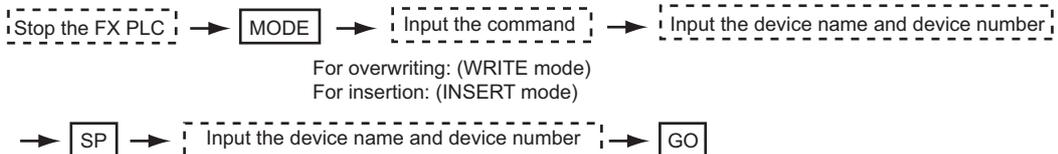
- (a) Inputting command only (Ex.: ANB, ORB command etc.)



- (b) Inputting command and device (LD, AND commands etc.)



- (c) Inputting command, No. 1 device, No. 2 device (MC, OUT (T, C) commands, etc.)



### POINT

#### Moving the cursor to the position to write the command

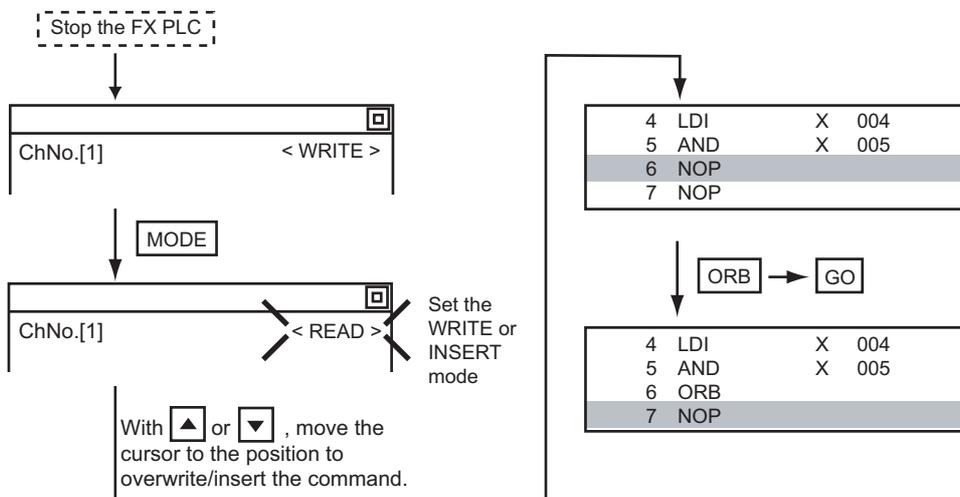
When starting to write a command, place the cursor on the command line (the line on which the step number is displayed).

You cannot write a command with the cursor on an operand or set value line.

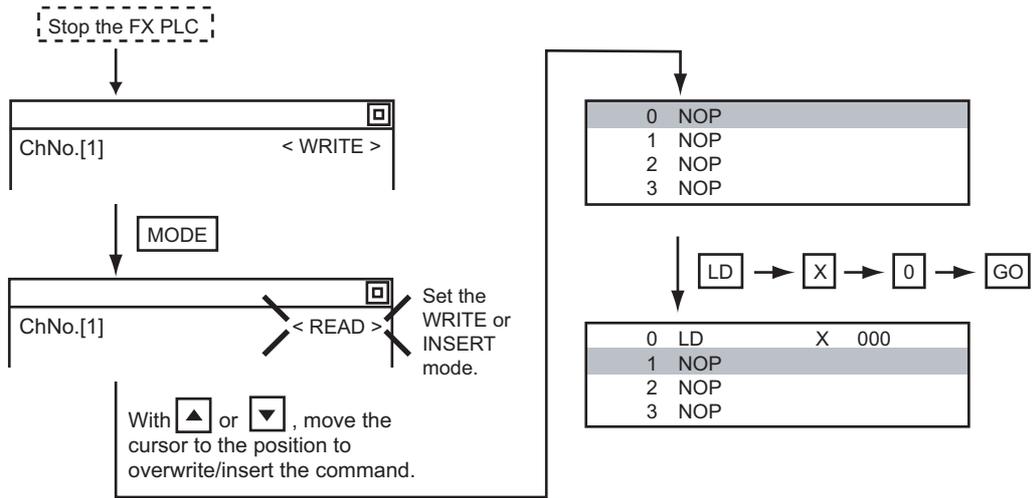
2	LDI	M	100	} Command line (Place the cursor on this line.)
3	MOV		12	
		D	0	} Operand, set value line (Cannot operate on this line.)
		D	10	

#### (2) Example

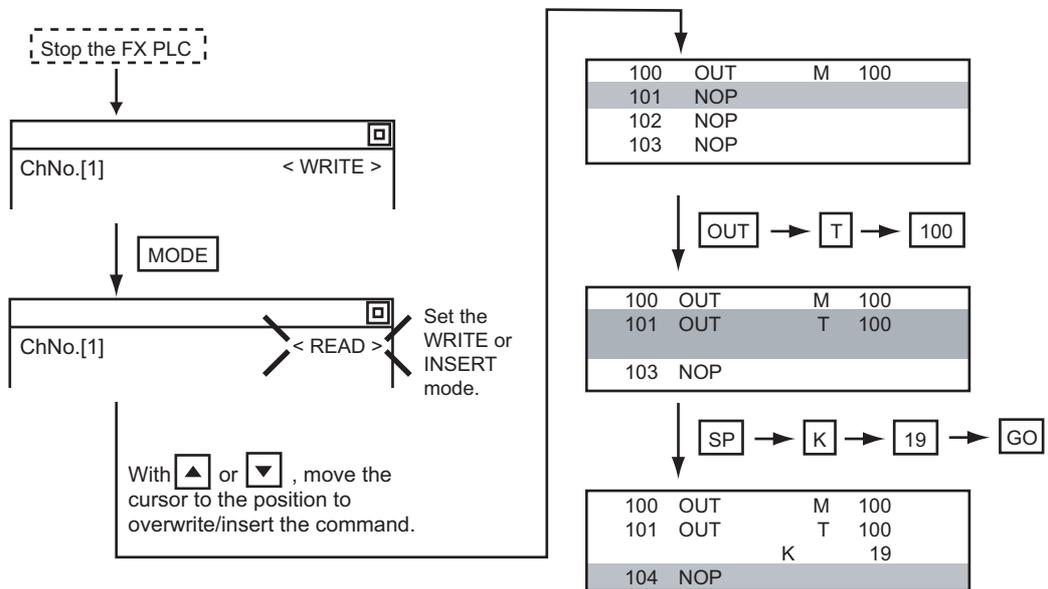
- (a) Writing ORB command



(b) Inputting LD X000

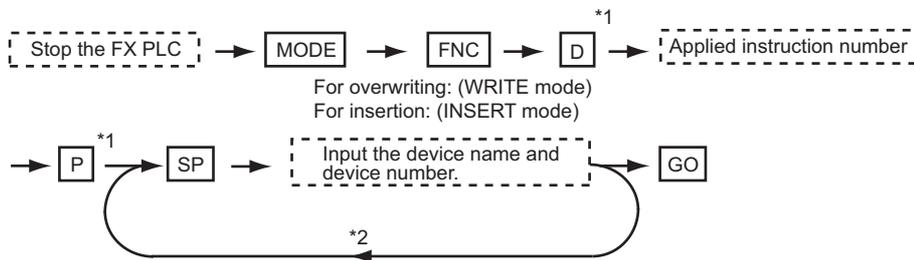


(c) Inputting OUT T100 K19



■ Writing applied instructions

(1) Operations



\*1 [D] (double word command) and [P] (pulse execution format command) can also be input after the applied instruction number is input.

Inputting in the order [P] → [D] is also possible.

\*2 When a command specifies multiple devices for operations, input the [SP] key followed by the device name and device number.

**(1) Moving the cursor to the position to write the command**

When starting to write a command, place the cursor on the command line (the line on which the step number is displayed).

You cannot write a command with the cursor on any other line.

2	LDI	M	100	} Command line (Place the cursor on this line.)
3	MOV		12	
		D	0	} Operand, set value line (Cannot operate on this line.)
		D	10	

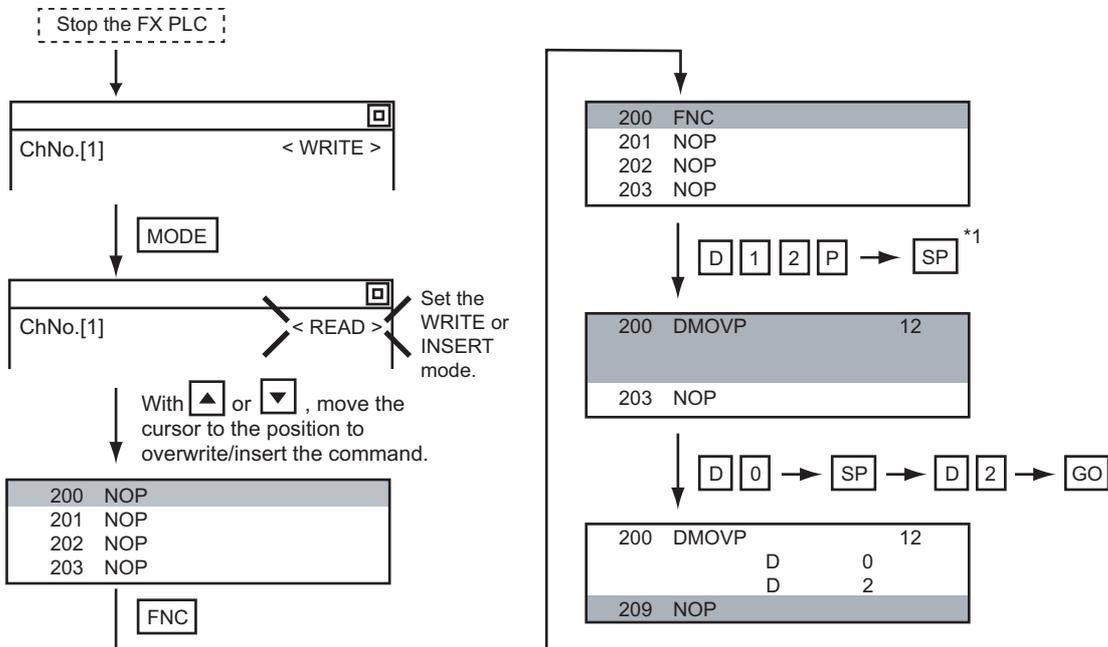
**(2) Commands using a text string constant for a command operand (such as ASC command)**

With the MELSEC-FX list editor, text string constants cannot be written as operands. (such as ASC commands)

Use GX Developer for writing such commands.

**(2) Example**

Input "DMOVP D0 D2".

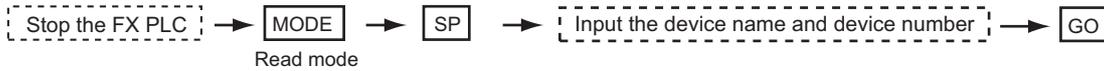


\*1 The MOV command is FNC12.

## 13.4.6 Changing operands, set values

Changes the operand section of an applied instruction and OUT (T, C) command set value.

### ■ Operation



- \*1 For decimal numbers, input K, then the number.  
For hexadecimal numbers, input H, then the number.

### POINT

#### Moving the cursor to the line on which the operand or set value is to be changed

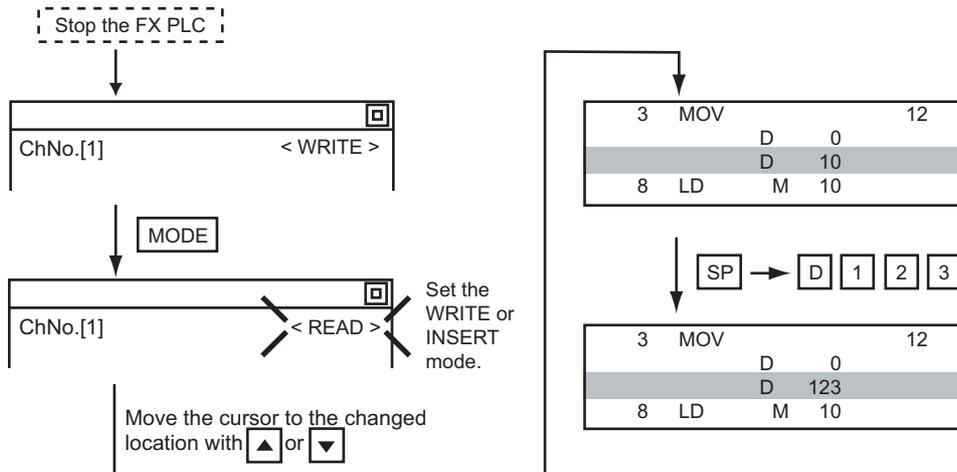
When starting to change an operand or a set value, place the cursor on the line of the operand or set value to be changed (the line on which the step number is not displayed).

If you place the cursor on the command line, the input operation is not possible.

2	LDI	M	100	} Command line (Cannot operate on this line.)
3	MOV		12	
		D	0	} Operand, set value line (Place the cursor on this line.)
		D	10	

### ■ Example

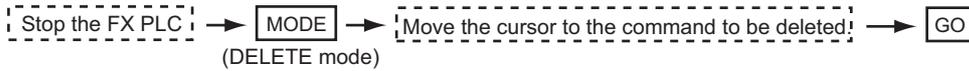
Changing "MOV D0 D10" to "MOV D0 D123"



## 13.4.7 Deleting commands

Deletes one command at a time from a sequence program.

### ■ Operation



### POINT

**When moving the cursor to the position where the command is to be deleted.**

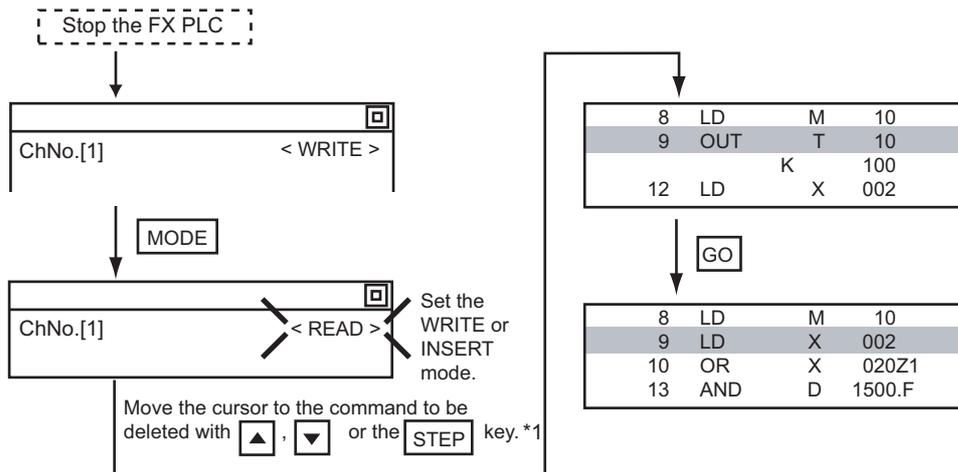
Place the cursor on the command line (the line on which the step number is displayed).

You cannot delete the command if the cursor is placed on the line of an operand or set value.

2	LDI	M	100	} Command line (Place the cursor on this line.)
3	MOV		12	
		D	0	} Operand, set value line (Cannot operate on this line.)
		D	10	

### ■ Example

Deleting "OUT T10 K100"



## 13.4.8 Sequence program all clear

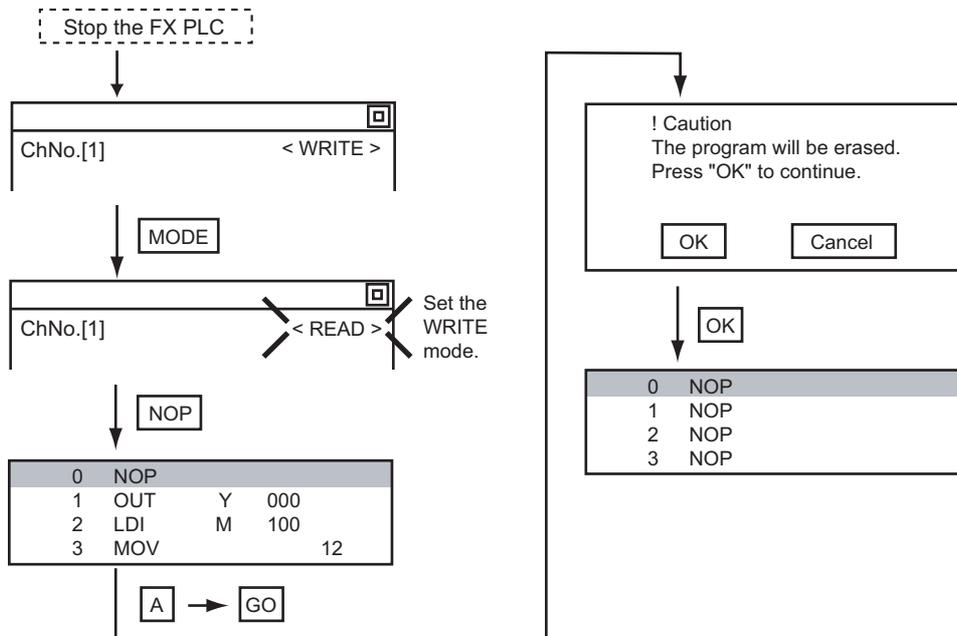
Clears all the sequence programs.

### ■ Operation



### ■ Example

Clears all the sequence programs.



### POINT

#### Items cleared when All Clear for a sequence program is performed

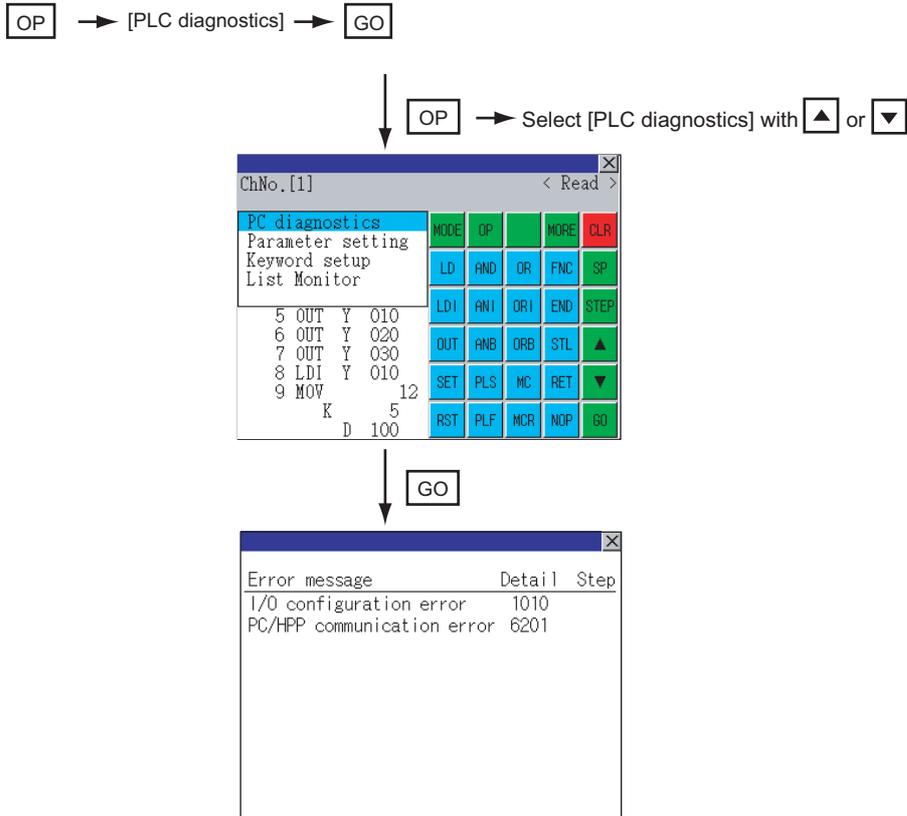
When All Clear is executed, the parameters before program execution are initialized and Latch Clear is executed. The memory space becomes the default value, the comment area a 0 block, the file register space a 0 block, and keywords unregistered.

After All Clear, set the above parameters etc. again.

## 13.4.9 PLC diagnostics

Displays the FX PLC error message, error code, and step at which the error occurred.

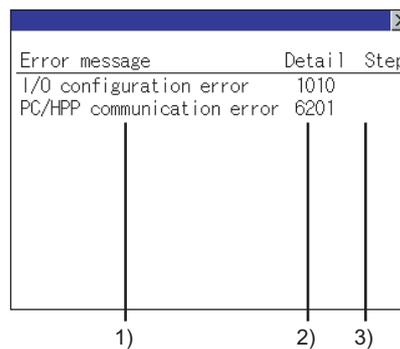
### ■ Operation



### ■ PLC diagnostics screen

The following describes the contents displayed on the PLC diagnostics screen and the function of on-screen key.

#### (1) Displayed contents



No.	Item	Display contents
1)	Error message	Displays the error message. (I/O configuration error/PLC hardware error/PC/HPP communication error/Serial communication error/Parameter error/Syntax error/Circuit error/Operation error)
2)	Detail	Displays the error code.
3)	Step	Displays the step number in the sequence program at which the error occurred. (This is displayed only for a syntax error, circuit error, or operation error.)



## 13.4.10 Parameter setting

Sets FX PLC parameters.

### Parameters that can be changed and change targets

#### (1) Parameters that can be changed

The parameters that can be changed with the MELSEC-FX list editor and the target FX PLCs are as follows.

(○ : Can be set/changed × : Cannot be set/changed)

Item	Target CPU								
	FX0(S) /FX0N	FX1	FX2(C)	FX1S	FX1N(C)	FX2N(C)	FX3S	FX3G(C)	FX3U(C)
Memory space setting	×	○	○	×	×	○	○	○	○
File register space setting	○ <sup>*1</sup>	×	○	○	○	○	○	○	○
Latch range setting	×	○	○	×	×	○	×	×	○
RUN terminal setting	×	×	×	○	○	○	○	○	○
Initialization of parameters	○	○	○	○	○	○	○	○	○

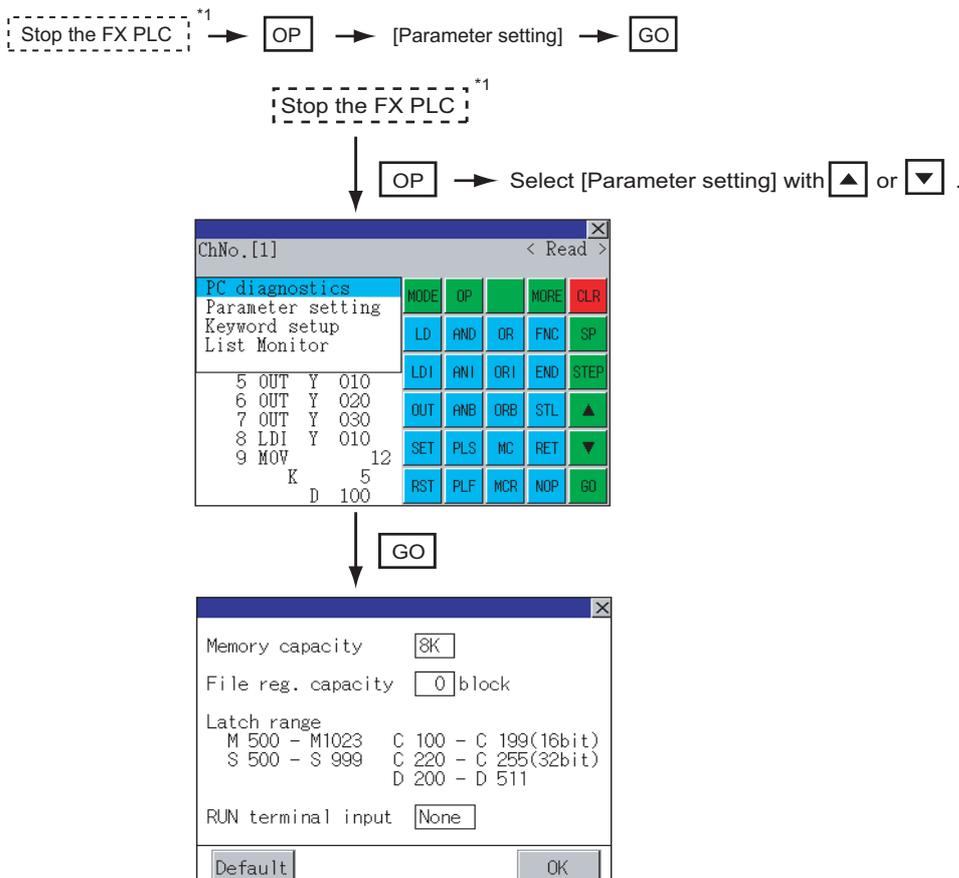
\*1 When connecting an FX0(S), set "0".  
Setting other than "0" causes a parameter error.

\*2 When the parameters are initialized, the display on the MELSEC-FX list editor is different from the FX PLC default values, but do not change the latch range. Changing the latch range causes an error.

#### (2) Change targets

When a memory cassette is mounted, the parameters in the memory cassette are targeted for changes.

### Operation



\*1 When checking parameters (not changing), it is not necessary to stop the PLC.

## Parameter setting screen

The following describes the contents displayed on the PLC diagnostics screen and the function of on-screen keys.

### (1) Displayed contents

1) Memory capacity

2) File reg. capacity  block

3) Latch range  
M 500 - M1023 C 100 - C 199(16bit)  
S 500 - S 999 C 220 - C 255(32bit)  
D 200 - D 511

4) RUN terminal input

5)

No.	Item	Display contents
1)	Memory capacity	Sets the memory space (number of steps). If you touch the <input type="text" value="*K"/> section, you can change the memory space.
2)	File reg. capacity	Sets the memory space (number of blocks) allocated to the file register. Touch the <input type="text" value=""/> section and input the number of blocks.
3)	Latch range	Sets the latch range (power failure hold area). Touch the number display section and input the value.
4)	RUN terminal input	Sets whether or not to use one of the FX PLC input terminals for RUN input. Touch the <input type="text" value=""/> section and set the device to be set for the RUN terminal.
5)	Default	Initializes the parameters

### POINT

#### Memory space for kana comments after changing memory space, file register space

If the memory space is set smaller than the total of the file register space and kana comment space, the kana comment space is automatically reduced.

(With the MELSEC-FX list editor, the kana comment space is not displayed.)

Note that if any setting as described below is made, the kana comment space is reduced.

(Settings that reduce kana comment space and the kana comment space after setting change)

Settings resulting in  $N_m < N_f \times 500 + N_k \times 500 + 500$

$$\text{Kana comment space (steps) after setting change} = \frac{N_m - N_f \times 500 - 500}{500}$$

$N_m$  : Memory space after change (steps)

$N_f$  : File register space after change (blocks)

$N_k$  : Comment space before change (blocks)

### HINT

#### Settable range and default value

The settable range and the default value depend on the FX PLC type.

For details of the settable range and the default value, refer to the following.

➡ Programming manual for the FX PLC used

**(2) Key functions**

The table below shows the functions of the keys that are used for the operation on the parameter setting screen.

Key	Function
	Initializes the parameters
	Completes the changed setting contents.
	Ends parameter setting.

## 13.4.11 Keywords

Registers, deletes, releases protection for, and sets protection for the FX PLC keywords.

### ■ Function usability of the MELSEC-FX list editor for keyword protection levels

The functions that can be used with the MELSEC-FX list editor depend on the keyword protection level.

(○: Available, ×: Unavailable)

Function		Keyword protection level				Reference
		All operation protect (All on-line operation protect) *2	Read/Incorrect write protection (Read/ write protect) *2	Incorrect write protect (Write protect) *2	Keyword not registered/keyword protection canceled	
Reading sequence programs	Displaying sequence programs	×	×	○	○	5.4.3
	Searching commands/ devices	×	×	○	○	5.4.4
Writing sequence programs	Writing commands	×	×	×	○	5.4.5
	Changing operands/set values	×	×	×	○	5.4.6
Inserting commands		×	×	×	○	5.4.5
Deleting commands		×	×	×	○	5.4.7
Sequence program all clear		×	×	×	○	5.4.8
PLC diagnostics		○*1	○	○	○	5.4.9
Parameter setting		×	×	×	○	5.4.10

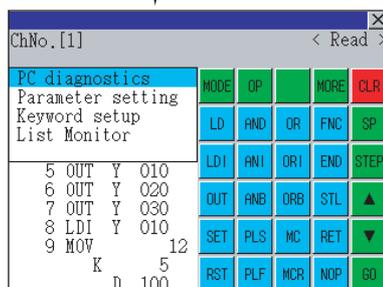
\*1 When the 2nd keyword is set to an FX PLC that supports 2nd keyword, it becomes "×" (cannot be used).

\*2 The names within the parentheses ( ) are for when a keyword + 2nd keyword is set.

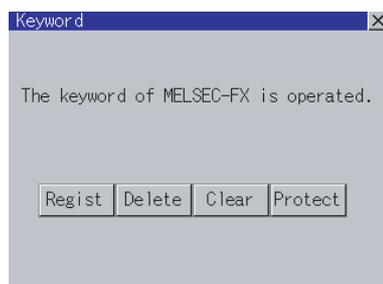
### ■ Operation

→ [Keyword setup] →

↓  
 → Select [Keyword setup] with  or .



↓



## ■ Keyword screen and protection level

When [Keyword setup] is selected with the MELSEC-FX list editor, the keyword screen is displayed.  
For the keyword operation, refer to the following.

⇒ GOT2000 Series User's Manual (Utility)



### **Keywords**

For details of the keyword, refer to the following.

⇒ Programming manual for the FX PLC used

---

## 13.4.12 List monitor

The status of contacts and coils in a sequence program is displayed.

### ■ Operation

OP → [ List Monitor ] → GO

↓

OP → Select [List Monitor] with  

ChNo. [1] < Read >

PC diagnostics				MODE	OP	MORE	CLR
Parameter setting				LD	AND	OR	FNC
Keyword setup				LDI	ANI	ORI	END
List Monitor				OUT	ANB	ORB	STL
5	OUT	Y	010	SET	PLS	MC	RET
6	OUT	Y	020	RST	PLF	MCR	NOP
7	OUT	Y	030				
8	LDI	Y	010				
9	MOV		12				
		K	5				
		D	100				

↓

GO

ChNo. [1] < Monitor >

0	LD	M	50				MORE	CLR
1	SET	M	100	LD	AND	OR	FNC	SP
2	LD	M	100	LDI	ANI	ORI	END	STEP
3	SET	M	500	OUT	ANB	ORB	STL	▲
4	LD	M	500	SET	PLS	MC	RET	▼
5	OUT	Y	010	RST	PLF	MCR	NOP	GO
6	OUT	Y	020					
7	OUT	Y	030					
8	LDI	Y	010					
9	MOV		12					
		K	5					
		D	100					

When the list monitor is started on the FX list editor screen, the step numbers displayed on the FX list editor screen is displayed on the list monitor screen.

### POINT

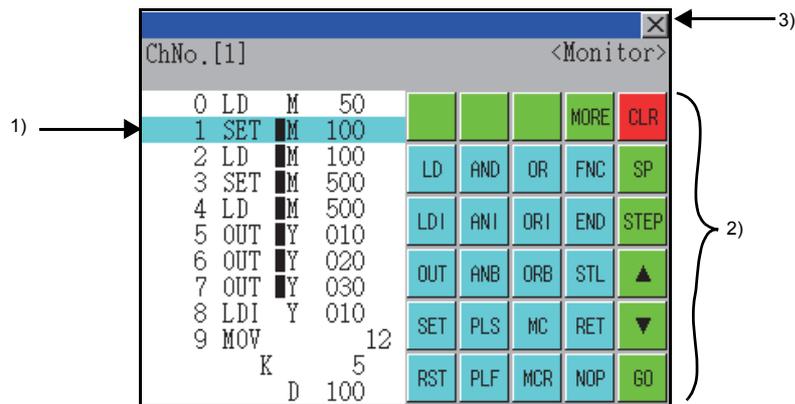
#### Starting list monitor with special function switches (FX list monitor)

With setting special function switches (FX list monitor), the list monitor can be started on the monitor screen. When the list monitor is started on the monitor screen, the list editor cannot be used. For how to set special function switches, refer to the following.

➡ GT Designer3 (GOT2000) Help

## ■ Displays and key functions

The following describes the displays for the list monitor.



No	Item	Display contents
1)	List display area*1	The status of contacts and coils is displayed on the left of device displays.
2)	Keys	The same operations as in the READ mode of the FX list editor can be executed. 13.4.3 Sequence program display
3)		Ends the list monitor. When the list monitor is executed on the FX list editor screen, the screen is switched to the FX list editor screen.

\*1 The status of contacts and coils is displayed as below.

Type of instructio	Description	Status	
		Displayed	Not displayed
LD, AND, ORC(contact instruction (Normal open))	Contact	ON	OFF
LDI, ANI, ORI(Contact instruction (Normal close))	Contact	OFF	ON
OUT, SET	TC: Coil	ON	OFF
	Except TC: Contact	ON	OFF
RST	TC: Reset	ON	OFF
	Word device	Value: 0	Value: Except 0
	Except TC and word device: Contac	OFF	ON
MC, STL	Contact	ON	OFF
LDP, ANDP, ORP, LDF, ANDF, ORF (Rise or fall contact instruction)	Not monitored	Always  not displayed	

## 13.4.13 Hard copy output

---

Screens of the MELSEC-FX list editor can be stored to a data storage in BMP/JPEG file format. Refer to the following for the hard copy.

- Starting the MELSEC-FX list editor from the FX ladder monitor
  - ➡ 12.4.2 Hard copy output
- Setting the hard copy with GT Designer3
  - ➡ GT Designer3 (GOT2000) Help

## 13.4.14 Action for an incorrect key input

---

If an incorrect key is input, cancel the input contents.

### ■ Operation

**(1) Before touching the  key (before reading/writing the input contents)**

Before touching the  key, touch the  key.

**(2) After touching the  key (after reading/writing the input contents)**

Write the command again. ( ➡ 13.4.5 Writing commands)

Commands finalized by writing and inserting operations are revised (overwritten) with the program writing.

## 13.5 Error Messages and Corrective Actions

This section describes the error messages displayed when the MELSEC-FX list editor is executed, and corrective action.

Error Message	Description	Corrective action
Can not display while protected.	The all-operation protect, anti-plagiarism, or incorrect write protect keyword is set.	<ul style="list-style-type: none"> <li>• Check the protected operation.</li> <li>• Clear the keyword protection or delete the keyword.</li> </ul> <p>➡ 13.4.11 Keywords</p>
Can not operate while protected.		
PLC parameter error.	An FX PLC parameter is defective.	Set correct parameters in the FX PLC.
PLC communications error.	The communication with the FX PLC is defective.	<ul style="list-style-type: none"> <li>• Check the FX PLC, cable, and GOT for abnormality.</li> <li>• Check whether the communication settings are correct or not.</li> </ul>
PLC is running.	A writing operation etc. has been made while the FX PLC is running.	Stop the FX PLC.
Can not write.	<ul style="list-style-type: none"> <li>• The memory to write to is EPROM.</li> <li>• The protect switch of the EEPROM is on.</li> </ul>	<ul style="list-style-type: none"> <li>• Set other than EPROM for the memory to write to.</li> <li>• Switch off the protect switch of the EEPROM.</li> </ul>
Step number is out of a range.	The specified step number exceeded the maximum number.	Specify a step number below the maximum value.
Not found.	The specified command cannot be found.	Proceed to the next operation.
Not found.	The specified device cannot be found.	Proceed to the next operation.
Step overflow.	The program may exceed the available space. (Writing is not executed.)	Check the program memory space and delete commands to keep it within the space. <p>➡ 13.4.7 Deleting commands</p>
Command error.	An invalid command (non-existent command) was specified.	Input the correct command.
Protected by a block password.	The sequence program is protected by a block password at the PLC reading.	Release the block password for the sequence program.

### POINT

#### How to erase an error message

An error message is not erased even if the cause of the error is eliminated.

To erase an error message, touch a key on the MELSEC-FX list editor screen.

# REVISIONS

\* The manual number is given on the bottom left of the back cover.

Print Date	* Manual Number	Revision
Sep., 2013	SH(NA)-081196ENG-A	First printing : GT Designer3 Version1.100E
Nov., 2013	SH(NA)-081196ENG-B	Compatible with GT Works3 Version1.104J <ul style="list-style-type: none"> <li>• Description of SAFETY PRECAUTIONS changed</li> <li>• Abbreviations and generic terms changed</li> <li>• NZ2DL is added to the compatible models for the BOX data logger.</li> </ul>

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# **WARRANTY**

Please confirm the following product warranty details before using this product.

## **1. Gratis Warranty Term and Gratis Warranty Range**

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company. However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

### **[Gratis Warranty Term]**

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

### **[Gratis Warranty Range]**

- (1) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.  
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expense.  
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.
- (2) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (3) Even within the gratis warranty term, repairs shall be charged for in the following cases.
  1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
  2. Failure caused by unapproved modifications, etc., to the product by the user.
  3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
  4. Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
  5. Replacing consumable parts such as the battery, backlight and fuses.
  6. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
  7. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
  8. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

## **2. Onerous repair term after discontinuation of production**

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.  
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

## **3. Overseas service**

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

## **4. Exclusion of loss in opportunity and secondary loss from warranty liability**

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

## **5. Changes in product specifications**

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

## **6. Product application**

- (1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- (2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the graphic operation terminal applications.  
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation equipment for recreation and amusement, and safety devices, shall also be excluded from the graphic operation terminal range of applications.  
However, in certain cases, some applications may be possible, providing the user consults the local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at our discretion.  
In some of three cases, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required.

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# GOT2000 Series User's Manual (Monitor)

MODEL	GOT2000-U-MONITOR-E
MODEL CODE	1D7MJ7
SH(NA)-081196ENG-B(1311)MEE	

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

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