MITSUBISHI ELECTRIC

GRAPHIC OPERATION TERMINAL

GOT2000 Series

User's Manual (Monitor)

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

● 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".

⚠ **WARNING**	**Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.**
⚠ **CAUTION**	**Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property 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.

[DESIGN PRECAUTIONS]

⚠WARNING

- When the GOT backlight has a failure, the GOT status will be as follows. Failure to observe this instruction may result in an accident due to incorrect output or malfunction.
  - GT27, GT25, GT23
    The POWER LED blinks (orange/blue), the display section dims, and inputs by a touch switch are disabled.
  - GT2105-Q
    The POWER LED blinks (orange/blue), and the display section dims. However, inputs by a touch switch are still available.
  - GT2107, GT2104-R, GT2104-P, GT2103-P
    The display section dims. However, inputs by a touch switch are still available.

  Even if the display section dims, inputs by a touch switch may still be available. This may cause an unintended operation of the touch switch.

  For example, if an operator assumes that the display section has dimmed because of the screen save function and touches the display section to cancel the screen save, a touch switch may be activated.

  The GOT backlight failure can be checked with a system signal of the GOT. (This system signal is not available on GT2107, GT2104-R, GT2104-P, and GT2103-P.)
- The display section of the GOT is an analog-resistive type touch panel.
  When multiple points of the display section are touched simultaneously, an accident may occur due to incorrect output or malfunction.
  - GT27
    Do not touch three points or more simultaneously on the display section. Doing so may cause an accident due to an incorrect output or malfunction.
  - GT25, GT23, GT21
    Do not touch two points or more simultaneously on the display section. Doing so may cause a touch switch near the touched points to operate unexpectedly, or may cause an accident due to an 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.
- 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, GT25 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.
- To maintain the safety of the system incorporating the GOT, take measures against unauthorized access from external devices via a network.
  To maintain the safety against unauthorized access via the Internet, take measures such as installing a firewall.

[DESIGN PRECAUTIONS]

⚠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 connects to an Ethernet network, the IP address setting is restricted according to the system configuration.
  - GT27,GT25,GT23
    When a GOT2000 series model and a GOT1000 series model are on an Ethernet network, do not set the IP address 192.168.0.18 for the GOTs and the controllers on this network.
    Doing so can cause IP address duplication at the GOT startup, adversely affecting the communication of the device with the IP address 192.168.0.18.
    The operation at the IP address duplication depends on the devices and the system.
  - GT21
    - When multiple GOTs connect to the Ethernet network:
      Do not set the IP address (192.168.3.18) for the GOTs and the controllers in the network.
    - When one GOT connects to the Ethernet network:
      Do not set the IP address (192.168.3.18) for the controllers other than the GOT in the network.

    Doing so can cause IP address duplication at the GOT startup, adversely affecting 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.
- When using the Ethernet interfaces, set an IP address for each interface to access a different network.
- 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, GT25 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.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range with a Phillips-head screwdriver No. 2.
  - GT27, GT2512, GT2510, GT2508, GT23, GT2107
    Specified torque range (0.36 N•m to 0.48 N•m)
  - GT2505, GT2105-Q
    Specified torque range (0.30 N•m to 0.50 N•m)
  - GT2104-R, GT2104-P, GT2103-P
    Specified torque range (0.20 N•m to 0.25 N•m)

  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 mounting a unit on the GOT, tighten the mounting screws in the following specified torque range.
  - GT27, GT25 (except GT25-W)
    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.
    When the GOT is installed vertically, its side interface is positioned on the bottom.
    To prevent the falling of the wireless LAN communication unit from the side interface, install or remove the unit while holding it with hands.
  - GT25-W
    When mounting the wireless LAN communication unit on the GOT, fit it to the wireless LAN communication unit interface 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.
  - GT2103-P
    When mounting the SD card unit on the GOT, fit it to the side of the GOT and tighten the tapping screws in the specified torque range (0.3 N•m to 0.6 N•m) with a Phillips-head screwdriver No. 2.

  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.
- When closing the USB environmental protection cover, note the following points to ensure the IP rating.
  - GT27, GT25 (except GT25-W and GT2505-V)
    Push the [PUSH] mark on the latch firmly to fix the cover to the GOT.
  - GT2510-WX, GT2507-W, GT2505-V, GT2107
    Push the [PULL] mark on the latch firmly to fix the cover to the GOT.
  - GT2105-Q
    Tighten the lower fixing screws of the cover in the specified torque range (0.36 N•m to 0.48 N•m) to fix the cover to the GOT.
- 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

[MOUNTING PRECAUTIONS]

⚠CAUTION

- For GT2512F-S, GT2510F-V, and GT2508F-V, attach an environmental protection sheet dedicated to the open frame model (sold separately) to the display section.
  Or, attach a user-prepared environmental protection sheet.
  Not doing so may damage or soil the GOT or cause foreign matter to enter the GOT, resulting in a failure or malfunction.
- When installing the supplied fittings on GT2512F-S, GT2510F-V, or GT2508F-V, tighten screws in the specified torque range (0.8 N•m to 1.0 N•m).
  Meld studs on the control panel to fasten the fittings.
  The studs must have strength adequate to withstand a tightening torque of 0.9 N•m or more.
  Make sure that no foreign matter such as welding waste is at and around the bases of the studs.
  Tighten nuts on the studs in the specified torque range (0.8 N•m to 0.9 N•m) with a wrench for M4 nuts.
  Undertightening a screw or nut may cause the GOT to drop, short-circuit, or malfunction.
  Overtightening a screw or nut may damage it or the GOT, causing the GOT to drop, short-circuit, or malfunction.
- Do not operate or store the GOT in the environment exposed to direct sunlight, rain, high temperature, dust, humidity, or 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.
- Do not operate the GOT with its display section frozen.
  The water droplets on the display section may freeze at a low temperature.
  Touch switches and other input objects may malfunction if the display section is frozen.

[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.
- After installation, wiring, or other work, make sure to attach the back cover to the Handy GOT before turning on the power and starting operation.
  Not doing so may cause an electrical shock.
- The Handy GOT is designed to operate on DC power.
  Supply power to the power supply, operation switch, and emergency stop switch within the specifications.
  Not doing so may cause a fire or failure.
- Correctly wire the 24 V DC power cable (terminal) of the Handy GOT and [+]/[-] of the DC power supply equipment as shown in this manual.
  Not doing so may cause a failure.
- Ground the FG terminal of the Handy GOT with a ground resistance of 100 Ω or less by using a drain wire that has a cross-sectional area of 2 mm^2 or more.
  Do not use common grounding with higher voltage systems.
  Failure to observe these instructions may cause an electric shock or malfunction.

[WIRING PRECAUTIONS]

⚠WARNING

- When making a connection cable or installing wiring, make sure that no chips or wire offcuts enter the Handy GOT.
  Not doing so may cause a fire, failure or malfunction.

[WIRING PRECAUTIONS]

⚠CAUTION

- When grounding the FG terminal and LG terminal of the GOT power supply section, note the following points.
  Not doing so may cause an electric shock or malfunction.
  - GT27, GT25, GT23, GT2107, GT2105-Q
    Make sure to ground the FG terminal and LG terminal of the GOT power supply section solely for the GOT (ground resistance: 100 Ω or less, ground cable diameter: 1.6 mm or more). (GT2705-V, GT25-W, GT2107 and GT2105-Q do not have the LG terminal.)
  - GT2104-R, GT2104-P, GT2103-P
    Make sure to ground the FG terminal of the GOT power supply section with a ground resistance of 100 Ω or less. (For GT2104-PMBLS and GT2103-PMBLS, grounding is unnecessary.)
- When tightening the terminal screws, use the following screwdrivers.
  - GT27, GT25, GT23, GT2107, GT2105-Q
    Use a Phillips-head screwdriver No. 2.
  - GT2104-R, GT2104-P, GT2103-P
    For the usable screwdrivers, refer to the following.
    ➡ GOT2000 Series User's Manual (Hardware)
- Tighten the terminal screws of the GOT power supply section in the following specified torque range.
  - GT27, GT25, GT23
    Specified torque range (0.5 N•m to 0.8 N•m)
- For a terminal processing of a wire to the GOT power supply section, use the following terminal.
  - GT27, GT25, GT23, GT2107, GT2105-Q
    Use applicable solderless terminals for terminal processing of a wire and tighten them with the specified torque.
    Not doing so can cause a fire, failure or malfunction.
  - GT2104-R, GT2104-P, GT2103-P
    Connect a stranded wire or a solid wire directly, or use a rod terminal with an insulation sleeve.
- 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 following specified torque range.
  - GT27, GT25, GT23, GT2107, GT2105-Q
    Specified torque range (0.5 N•m to 0.8 N•m)
  - GT2104-R, GT2104-P, GT2103-P
    Specified torque range (0.22 N•m to 0.25 N•m)
- 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.

[WIRING PRECAUTIONS]

⚠CAUTION

- 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, GT25 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, GT25 Only)
- When you use the Handy GOT, run the connected cable in ducts or clamp the cable.
  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 you remove a cable from the Handy GOT, do not pull 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.

[TEST OPERATION PRECAUTIONS]

⚠WARNING

- Before testing the operation of a user-created monitor screen (such as turning on or off a bit device, changing the current value of a word device, changing the set value or current value of a timer or counter, and changing the current value of a buffer memory), thoroughly read the manual to fully understand the operating procedures.
  During the 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.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠ 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.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠CAUTION

- Before cleaning the GOT, be sure to turn off the power.
  Before cleaning, check the following items.
  - Ensure that there are no problems with the installation condition of the GOT to the control panel.
  - Ensure that there are no damages on the environmental protection sheet (not replaceable).

  If the environmental protection sheet peels or the cleaning solution enters between the sheet and the display section during cleaning, stop the cleaning immediately.
  In such a case, do not use the GOT.

[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 is removed from drive A of the GOT while being accessed by the GOT, the GOT may stop processing data for about 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.
  Before removing the SD card, check the following items.
  - GT27, GT25, GT23(Excluding GT2505 and GT25HS-V)
    Check that the SD card access LED is off before removing the SD card.
  - GT2505, GT25HS-V
    Make sure to turn off the SD card access switch before removing the SD card.
    Not doing so may damage the SD card or files.
  - GT21
    Disable the SD card access in the GOT utility, and then check that the SD card access LED is off before removing the SD card.
- Do not remove the data storage from the file server (drive N) that is being accessed by the GOT, or the system operation may be affected.
  Before removing the data storage, check the relevant system signal to make sure that the data storage is not being accessed.

[PRECAUTIONS WHEN THE DATA STORAGE IS IN USE]

⚠CAUTION

- If the data storage is removed from the GOT while being accessed by the GOT, the data storage and files may be damaged.
  Before removing the data storage from the GOT, check the SD card access LED, system signal, or others to make sure that the data storage is not accessed.
- Turning off the GOT while it accesses the SD card results in damage to the SD card and files.
- When using the GOT with an SD card inserted, check the following items.
  - GT27, GT25, GT23(Excluding GT2505 and GT25HS-V)
    After inserting an SD card into the GOT, make sure to close the SD card cover.
    Not doing so causes the data not to be read or written.
  - GT2505-V, GT25HS-V
    After inserting an SD card into the GOT, make sure to turn on the SD card access switch.
    Not doing so causes the data not to be read or written.
  - GT21
    After inserting an SD card into the SD card unit, make sure to enable the SD card access in the GOT utility.
    Not doing 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.
  Not doing 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.
  Not doing so may cause the USB device to drop from the GOT, resulting in a failure or break. (GT27, GT25, and GT2107)
- Before removing the data storage 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.
  Not doing so may cause the USB device to drop from the GOT, resulting in a failure or break.

[PRECAUTIONS FOR USE]

⚠CAUTION

- When you operate the Handy GOT while holding it, slide your hand through the hand strap on the back of the GOT to prevent falling.
  The hand strap length is adjustable.
- When you remove a cable from the Handy GOT, do not pull the cable portion.
  Doing so may damage the unit or cable, or cause a malfunction due to a cable connection fault.
- Do not drop or strike the Handy GOT.
  Doing so may damage the GOT.
- When you carry or operate the Handy GOT, hold its body.
  Carrying or operating the Handy GOT while holding its cable may damage the unit or cable.
- Determine whether to use the emergency stop switch of the Handy GOT according to your risk assessment.

[PRECAUTIONS FOR USE]

⚠CAUTION

- If you use a parallel circuit (to avoid entering the emergency stop status while the Handy GOT is removed), the system may not conform to the safety standards.
  Check the safety standards required for your system before use.
- If the Handy GOT is exposed to any impact beyond the general specifications, chattering may occur in the emergency stop switch for its structural reasons.
  Check that your use conditions are proper.
- Do not touch the edges of the touch panel (display section) repeatedly.
  Doing so may result in a failure.
- Do not turn off the GOT while data is being written to the storage memory (ROM) or SD card.
  Doing so may corrupt the data, rendering the GOT inoperative.
- The GOT rugged model uses the environmental protection sheet (not replaceable) with UV protection function on the front surface.
  Therefore, it is possible to suppress deterioration of the touch panel or the liquid crystal display panel that may be caused by ultraviolet rays.
  Note that if the rugged model is exposed to ultraviolet rays for an extended period of time, the front surface may turn yellow.
  If the rugged model is likely to be exposed to ultraviolet rays for an extended period of time, it is recommended to use a UV protective sheet (option).

[PRECAUTIONS FOR REMOTE CONTROL]

⚠WARNING

- Remote control is available through a network by using GOT functions, including theSoftGOT-GOT link function, the remote personal computer operation function, the VNC server function, and the GOT Mobile function.
  If these functions are used to perform remote control of control equipment, the field operator may not notice the remote control, possibly leading to an accident.
  In addition, a communication delay or interruption may occur depending on the network environment, and remote control of control equipment cannot be performed normally in some cases.
  Before using the above functions to perform remote control, fully grasp the circumstances of the field site and ensure safety.
- When operating the server (GOT) of the GOT Mobile function to disconnect a client, notify the operator of the client about the disconnection beforehand.
  Not doing so may cause an accident.

[PRECAUTIONS FOR EXCLUSIVE AUTHORIZATION CONTROL]

⚠WARNING

- Make sure to fully understand the GOT network interaction function before using this function to control the authorization among pieces of equipment to prevent simultaneous operations.
  The exclusive authorization control of the GOT network interaction function can be enabled or disabled for each screen. (For all screens, the exclusive authorization control is disabled by default.)
  Properly determine the screens for which the exclusive authorization control is required, and set the control by screen.
  A screen for which the exclusive authorization control is disabled can be operated simultaneously from pieces of equipment. Make sure to determine the operation period for each operator, fully grasp the circumstances of the field site, and ensure safety to perform operations.

[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 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 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.

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REVISIONS

WARRANTY

List of Manuals for GT Works3

The electronic manuals related to this product are installed together with the screen design software.
If you need the printed manuals, consult your local sales office.

■1. List of Manuals for GT Designer3(GOT2000)

POINT

e-Manual

e-Manual refers to the Mitsubishi Electric FA electronic book manuals that can be browsed using a dedicated tool.

e-Manual has the following features:

- Required information can be cross-searched in multiple manuals.
- Other manuals can be accessed from the links in the manual.
- Hardware specifications of each part can be found from the product figures.
- Pages that users often browse can be bookmarked.

(1) Screen design software-related manuals

Manual name	Manual number (Model code)	Format
GT Works3 Installation Instructions	-	PDF
GT Designer3 (GOT2000) Screen Design Manual	SH-081220ENG (1D7ML8)	PDF, e-Manual
GT Converter2 Version3 Operating Manual for GT Works3	SH-080862ENG (1D7MB2)	PDF
GOT2000 Series MES Interface Function Manual for GT Works3 Version1	SH-081228ENG	PDF

(2) Connection manuals

Manual name	Manual number (Model code)	Format
GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1	SH-081197ENG (1D7MJ8)	PDF
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 1) For GT Works3 Version1	SH-081198ENG	PDF
GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 2) For GT Works3 Version1	SH-081199ENG	PDF
GOT2000 Series Connection Manual (Microcomputers, MODBUS/Fieldbus Products, Peripherals) For GT Works3 Version1	SH-081200ENG	PDF
GOT2000 Series Handy GOT Connection Manual For GT Works3 Version1	SH-081867ENG (1D7MS9)	PDF

(3) GT SoftGOT2000 manuals

Manual name	Manual number (Model code)	Format
GT SoftGOT2000 Version1 Operating Manual	SH-081201ENG	PDF, e-Manual

(4) GOT2000 series user's manuals

Manual name	Manual number (Model code)	Format
GOT2000 Series User's Manual (Hardware)	SH-081194ENG (1D7MJ5)	PDF, e-Manual

Manual name	Manual number (Model code)	Format
GOT2000 Series User's Manual (Utility)	SH-081195ENG (1D7MJ6)	PDF, e-Manual
GOT2000 Series User's Manual (Monitor)	SH-081196ENG (1D7MJ7)	PDF, e-Manual

(5) Manuals related to GT Works3 add-on projects

Manual name	Manual number (Model code)	Format
GT Works3 Add-on License for GOT2000 Enhanced Drive Control (Servo) Project Data Manual (Fundamentals)	SH-082072ENG (1D7MV1)	PDF, e-Manual
GT Works3 Add-on License for GOT2000 Enhanced Drive Control (Servo) Project Data Manual (Screen Details)	SH-082074ENG (1D7MV3)	PDF, e-Manual

Abbreviations, Generic Terms, Model Icons

The following shows the abbreviations, generic terms, and model icons used in this manual.

■1. GOT

(1) GOT2000 series

Abbreviations and generic terms			Description	Meaning of icon	
				Support	Not support
GT27	GT27-X	GT2715-X	GT2715-XTBA, GT2715-XTBD	GT 27	GT 27
	GT27-S	GT2712-S	GT2712-STBA, GT2712-STWA, GT2712-STBD, GT2712-STWD		
		GT2710-S	GT2710-STBA, GT2710-STBD		
		GT2708-S	GT2708-STBA, GT2708-STBD		
	GT27-V	GT2710-V	GT2710-VTBA, GT2710-VTWA, GT2710-VTBD, GT2710-VTWD		
		GT2708-V	GT2708-VTBA, GT2708-VTBD		
		GT2705-V	GT2705-VTBD		
GT25	All GT25 models			GT 25	GT 25
	GT25-W	GT2510-WX	GT2510-WXTBD, GT2510-WXTSD	GT 25	GT 25
		GT2507-W	GT2507-WTBD, GT2507-WTSD		
		GT2507T-W	GT2507T-WTSD		
	GT25-S	GT2512-S	GT2512-STBA, GT2512-STBD		
		GT2512F-S	GT2512F-STNA, GT2512F-STND		
	GT25-V	GT2510-V	GT2510-VTBA, GT2510-VTWA, GT2510-VTBD, GT2510-VTWD		
		GT2510F-V	GT2510F-VTNA, GT2510F-VTND		
		GT2508-V	GT2508-VTBA, GT2508-VTWA, GT2508-VTBD, GT2508-VTWD		
		GT2508F-V	GT2508F-VTNA, GT2508F-VTND		
		GT2505-V	GT2505-VTBD		
	GT25HS-V Handy GOT	GT2506HS-V	GT2506HS-VTBD	GT 2506 HS	GT 2506 HS
		GT2505HS-V	GT2505HS-VTBD	GT 2505 HS	GT 2505 HS
GT23	GT23-V	GT2310-V	GT2310-VTBA, GT2310-VTBD	GT 23	GT 23
		GT2308-V	GT2308-VTBA, GT2308-VTBD		

Abbreviations and generic terms			Description	Meaning of icon	
				Support	Not support
			All GT21 models		
	GT21-W	GT2107-W	GT2107-WTBD, GT2107-WTSD		
	GT21-Q	GT2105-Q	GT2105-QTBDS, GT2105-QMBDS		
	GT21-R	GT2104-R	GT2104-RTBD		
GT21	GT21-P	GT2104-P	GT2104-PMBD		
			GT2104-PMBDS		
			GT2104-PMBDS2		
			GT2104-PMBLS		
		GT2103-P	GT2103-PMBD		
			GT2103-PMBDS		
			GT2103-PMBDS2		
			GT2103-PMBLS		
GT SoftGOT2000			GT SoftGOT2000 Version1		

(2) GOT1000 series, GOT900 series, and GOT800 series

Abbreviations and generic terms	Description	Meaning of icon	
		Support	Not support
GOT1000 Series	GOT1000 Series	-	
GOT900 Series	GOT-A900 Series, GOT-F900 Series	-	
GOT800 Series	GOT-800 Series	-	

■2. 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
Field network adapter unit	GT25-FNADP
Ethernet communication unit	GT25-J71E71-100
RS-232/485 signal conversion adapter	GT14-RS2T4-9P

■3. Option unit

Abbreviations and generic terms	Description
Printer unit	GT15-PRN
Video input unit	GT27-V4-Z (A set of GT16M-V4-Z and GT27-IF1000)
RGB input unit	GT27-R2, GT27-R2-Z (A set of GT16M-R2-Z and GT27-IF1000)
Video/RGB input unit	GT27-V4R1-Z (A set of GT16M-V4R1-Z and GT27-IF1000)
RGB output unit	GT27-ROUT, GT27-ROUT-Z (A set of GT16M-ROUT-Z and GT27-IF1000)
Digital video output unit	GT27-VHOUT
Multimedia unit	GT27-MMR-Z (A set of GT16M-MMR-Z and GT27-IF1000)
Video signal conversion unit	GT27-IF1000
External I/O unit	GT15-DIO, GT15-DIOR
Sound output unit	GT15-SOUT
SD card unit	GT21-03SDCD

■4. Option

Abbreviations and generic terms	Description
SD card	NZ1MEM-2GBSD, NZ1MEM-4GBSD, NZ1MEM-8GBSD, NZ1MEM-16GBSD, L1MEM-2GBSD, L1MEM-4GBSD
Battery	GT11-50BAT, GT15-BAT
Protective sheet	GT27-15PSGC, GT25-12PSGC, GT25-10WPSGC, GT25-10PSGC, GT25-08PSGC, GT21-07WPSGC, GT25T-07WPSVC, GT25-05PSGC, GT25-05PSGC-2, GT21-05PSGC, GT21-04RPSGC-UC, GT21-03PSGC-UC, GT21-04PSGC-UC, GT27-15PSCC, GT25-12PSCC, GT25-10WPSCC, GT25-10PSCC, GT25-08PSCC, GT25-05PSCC, GT25-05PSCC-2, GT25-12PSCC-UC, GT25-10PSCC-UC, GT25-08PSCC-UC, GT21-07WPSCC, GT21-05PSCC, GT21-04RPSCC-UC, GT21-04PSCC-UC, GT21-03PSCC-UC, GT16H-60PSC, GT14H-50PSC
Environmental protection sheet	GT25F-12ESGS, GT25F-10ESGS, GT25F-08ESGS
Protective cover for oil	GT20-15PCO, GT20-12PCO, GT20-10PCO, GT20-08PCO, GT25T-07WPCO, GT25-05PCO, GT05-50PCO, GT21-04RPCO, GT10-30PCO, GT10-20PCO
USB environmental protection cover	GT25-UCOV, GT25-05UCOV, GT21-WUCOV

Abbreviations and generic terms	Description
Stand	GT15-90STAND, GT15-80STAND, GT15-70STAND, GT05-50STAND, GT25-10WSTAND, GT21-07WSTAND, GT25T-07WSTAND
Attachment	GT15-70ATT-98, GT15-70ATT-87, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77, GT21-04RATT-40
Panel-mounted USB port extension	GT14-C10EXUSB-4S, GT10-C10EXUSB-5S
Connector conversion box	GT16H-CNB-42S, GT16H-CNB-37S, GT11H-CNB-37S
Emergency stop switch guard cover	GT16H-60ESCOV, GT14H-50ESCOV
Wall-mounting attachment	GT14H-50ATT

■5. Software

(1) Software related to GOT

Abbreviations and generic terms	Description
GT Works3	SW1DND-GTWK3-J, SW1DND-GTWK3-E, SW1DND-GTWK3-C
GT Designer3 Version1	Screen design software GT Designer3 for GOT2000/GOT1000 series
GT Designer3	Screen design software for GOT2000 series included in GT Works3
GT Designer3 (GOT2000)	
GT Designer3 (GOT1000)	Screen design software for GOT1000 series included in GT Works3
Speech synthesis license	GT Works Text to Speech License (SW1DND-GTVO-M)
Add-on license	GT Works3 add-on license for GOT2000 enhanced drive control (servo) project data (SW1DND-GTSV-MZ)
GT Simulator3	Screen simulator GT Simulator3 for GOT2000/GOT1000/GOT900 series
GT SoftGOT2000	Monitoring software GT SoftGOT2000
GT Converter2	Data conversion software GT Converter2 for GOT1000/GOT900 series
GT Designer2 Classic	Screen design software GT Designer2 Classic for GOT900 series
GT Designer2	Screen design software GT Designer2 for GOT1000/GOT900 series
DU/WIN	Screen design software FX-PCS-DU/WIN for GOT-F900 series

(2) Software related to iQ Works

Abbreviations and generic terms	Description
iQ Works	Abbreviation of iQ Platform compatible engineering environment MELSOFT iQ Works
MELSOFT Navigator	Generic term for integrated development environment software included in the SW DNC-IQWK (iQ Platform compatible engineering environment MELSOFT iQ Works) (□ indicates a version.)
MELSOFT iQ AppPortal	SW□DND-IQAPL-M type integrated application anagement software (□ indicates a version.)

(3) Other software

Abbreviations and generic terms		Description
GX Works3		SW□DND-GXW3-E (-EA) type programmable controller engineering software (□ indicates a version.)
GX Works2		SW□DNC-GXW2-□ type programmable controller engineering software (□ indicates a version.)
Controller simulator	GX Simulator3	Simulation function of GX Works3
	GX Simulator2	Simulation function of GX Works2
	GX Simulator	SW□D5C-LLT-E (-EV) type ladder logic test tool function software package (SW5D5C-LLT (-V) or later versions) (□ indicates a version.)
GX Developer		SW□D5C-GPPW-E (-EV)/SW□D5F-GPPW (-V) type software package (□ indicates a version.)
GX LogViewer		SW□DNN-VIEWER-E type software package (□ indicates a version.)
MI Configurator		Configuration and monitor tool for Mitsubishi Electric industrial computers (SW □ DNNMICONF-M) (□ indicates a version.)
PX Developer		SW□D5C-FBDQ-E type FBD software package for process control (□ indicates a version.)
MT Works2		Motion controller engineering environment MELSOFT MT Works2(SW□DND-MTW2-E) (□ indicates a version.)
MT Developer		SW□RNC-GSV type integrated start-up support software for motion controller Q series (□ indicates a version.)
CW Configurator		C Controller module configuration and monitor tool (SW1DND-RCCPU-E) (□ indicates a version.)
MR Configurator2		SW□DNC-MRC2-E 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-WE) (□ indicates a version.)
NC Configurator2		CNC parameter setting support tool (FCSB1221)
NC Configurator		CNC parameter setting support tool
FX Configurator-FP		Parameter setting, monitoring, and testing software packages for FX3U-20SSC-H (SW□D5CFXSSCE) (□ indicates a version.)
FX3U-ENET-L Configuration tool		FX3U-ENET-L type Ethernet module setting software (SW1D5-FXENETL-E)
RT ToolBox2		Robot program creation software (3D-11C-WINE)
RT ToolBox3		Robot program creation software (3F-14C-WINE)
MX Component		MX Component Version□(SW□D5C-ACT-E, SW□D5C-ACT-EA) (□ indicates a version.)
MX Sheet		MX Sheet Version□(SW□D5C-SHEET-E, SW□D5C-SHEET-EA) (□ indicates a version.)
CPU Module Logging Configuration Tool		CPU module logging configuration tool (SW1DNN-LLUTL-E)

■6. License key (for GT SoftGOT2000)

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

■7. 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 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.
HIRATA	Hirata Corporation.
FUJI	FUJI ELECTRIC CO., LTD.
MURATEC	Muratec products manufactured by Murata Machinery, Ltd.
YASKAWA	YASKAWA Electric Corporation
YOKOGAWA	Yokogawa Electric Corporation
RKC	RKC INSTRUMENT INC.
ALLEN-BRADLEY	Allen-Bradley products manufactured by Rockwell Automation, Inc.
CLPA	CC-Link Partner Association
GE	GE Intelligent Platforms, Inc.
HMS	HMS Industrial Networks
LS IS	LS Industrial Systems Co., Ltd.
MITSUBISHI ELECTRIC INDIA	Mitsubishi Electric India Pvt. Ltd.
ODVA	Open DeviceNet Vendor Association, Inc.
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 MONITOR

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

1.1 Each Function and Related Manuals

The following lists other manuals relevant to each function.

Function	Related manual	Description
System launcher	GOT2000 Series User's Manual (Utility)	• How to start the system launcher from the utility • Enabling or disabling the online module change
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the system launcher • How to install a system application (extended function)
Device monitor	GOT2000 Series User's Manual (Utility)	• How to start the device monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the device monitor • How to install a system application (extended function)
Sequence program monitor (Ladder, iQ-R ladder, or SFC)	GOT2000 Series User's Manual (Utility)	• How to start the sequence program monitor from the utility • Configuring the sequence program monitor settings, including the ladder data save destination and automatically reading of a sequence program
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the sequence program monitor • How to install a system application (extended function)
Network monitor	GOT2000 Series User's Manual (Utility)	• How to start the network monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the network monitor • How to install a system application (extended function)
Q Motion monitor	GOT2000 Series User's Manual (Utility)	• How to start the Q motion monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the Q motion monitor • How to install a system application (extended function) • How to write special data
Intelligent unit monitor	GOT2000 Series User's Manual (Utility)	• How to start the intelligent module monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the intelligent module monitor • How to install a system application (extended function) • How to write special data
Servo amplifier monitor	GOT2000 Series User's Manual (Utility)	• How to start the servo amplifier monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the servo amplifier monitor • How to install a system application (extended function) • How to write special data
Backup/restoration	GOT2000 Series User's Manual (Utility)	• How to display the backup/restoration screen from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to display the backup/restoration screen • Setting the backup data save destination, trigger backup, and others • How to install a system application (extended function)
LOG Viewer	GOT2000 Series User's Manual (Utility)	• How to start the log viewer from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the log viewer • How to install a system application (extended function)
FX Ladder monitor	GOT2000 Series User's Manual (Utility)	• How to start the FX ladder monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the FX ladder monitor • How to install a system application (extended function)
FX List editer	GOT2000 Series User's Manual (Utility)	• How to start the FX ladder monitor from the FX list editor
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the FX list editor • How to install a system application (extended function)

Function	Related manual	Description
R Motion monitor	GOT2000 Series User's Manual (Utility)	• How to start the R motion monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the R motion monitor • How to install a system application (extended function) • How to write special data
CNC monitor	GOT2000 Series User's Manual (Utility)	• How to start the CNC monitor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the CNC monitor • How to install a system application (extended function)
CNC data I/O	GOT2000 Series User's Manual (Utility)	• How to start the CNC data I/O from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the CNC data I/O • How to install a system application (extended function)
CNC machining program edit	GOT2000 Series User's Manual (Utility)	• How to start the CNC machining program edit from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the CNC machining program edit • How to install a system application (extended function)
CNC monitor 2	GOT2000 Series User's Manual (Utility)	• How to start the CNC monitor 2 from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the CNC monitor 2 • How to install a system application (extended function)
iQSS utility	GOT2000 Series User's Manual (Utility)	• How to start the iQSS utility from the utility • Specifying a drive to save profile data
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the iQSS utility • How to install a system application (extended function)
Drive recorder	GOT2000 Series User's Manual (Utility)	• How to start the drive recorder from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the drive recorder • How to install a system application (extended function)
CC-Link IE Field Network diagnostics	GOT2000 Series User's Manual (Utility)	• How to start the CC-Link IE Field Network diagnostics from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the CC-Link IE Field Network diagnostics • How to install a system application (extended function)
Motion program editor	GOT2000 Series User's Manual (Utility)	• How to start the motion program editor from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the motion program editor • How to install a system application (extended function)
Motion program I/O	GOT2000 Series User's Manual (Utility)	• How to start the motion program I/O from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the motion program I/O • How to install a system application (extended function)
Servo amplifier graph	GOT2000 Series User's Manual (Utility)	• How to start the servo amplifier graph from the utility
	GT Designer3 (GOT2000) Screen Design Manual	• Setting a touch switch to start the servo amplifier graph • How to install a system application (extended function)

1.2 System Applications (Extended Functions) Required for Each Function

The following shows system applications (extended functions) required for each function.

Function	Required system application (extended function)
System launcher	[System Launcher]
Device monitor	[Device monitor]
Sequence program moniotr (Ladder)	[Sequence Program Monitor(Ladder)]
	[GOT Platform Library]
	[GOT Function Expansion Library]
Sequence program monitor (iQ-R ladder)	[Sequence Program Monitor(iQ-R Ladder)]
	[GOT Platform Library]
	[GOT Function Expansion Library]
	[GOT Function Expansion Library (Additional/MELSEC iQ-R)]
Sequence program monitor (SFC)	[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/restoration	[Backup/Restoration]
MELSEC-L troubleshooting	[MELSEC-L Troubleshooting Function]
Log viewer	[Log Viewer]
FX ladder monitor	[FX Ladder Monitor]
FX list editor	[FX list editor]
R motion monitor	[R motion monitor]
CNC monitor	[CNC Monitor]
CNC data I/O	[CNC Data I/O]
	[GOT Platform Library]
CNC machining program edit	[CNC Machining Program Edit]
	[GOT Platform Library]
CNC monitor 2	[CNC Monitor 2]
	[GOT Platform Library]
iQSS utility	[iQSS Utility]
Drive recorder	[Drive Recorder]
CC-Link IE Field Network diagnostics	[CC-Link IE Field Network diagnostics]
Motion program editor	[Motion Program Editor]
Motion program I/O	[Motion Program Input/Output]
	[GOT Platform Library]
Servo amplifier graph	[Servo amplifier graph]

1.3 Languages Available 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 (Traditinal)	Korean
Utility function		○	○	○	○	○
System launcher		○	○	○	○	○
Device monitor		○	○	○	○	○
Sequence program monitor (Ladder or iQ-R ladder)	File name, Title, Comment, Note, Statement	○	○	○	○	○
	Other than the above	○	○	×	×	○*1
Sequence program monitor (SFC)		○	○	○	○	○
Network monitor		○	○	○	○	○
Q motion monitor		○	○	Eng.	Eng.	Eng.
Intelligent module montor		○	○	Eng.	Eng.	Eng.
Servo amplifier monitor		○	○	Eng.	Eng.	Eng.
Backup/restoration		○	○	○	○	○
Log viewer		○	○	○	○	○
FX ladder monitor		○	○	×	×	×
FX list editor		○	○	○	○	○
R motion monitor		○	○	Eng.	Eng.	Eng.
CNC monitor*2		○	○	○	○	○
CNC data I/O		○	○	○	Eng.	Eng.
CNC machining program edit		○	○	○	Eng.	Eng.
CNC monitor 2*2		○	○	○	Eng.	Eng.
iQSS utility*3		○	○	○	○	○
Drive recorder*4		○	○	○	○	○
CC-Link IE Field Network diagnostics		○	○	○	○	○
Motion program editor		○	○	○	○	○
Motion program I/O		○	○	○	Eng.	Eng.
Servo amplifier graph		○	○	○	○	○

*1 For further information, refer to the following.

➠ 4.4.1 Switching languages of sequence programs (Supported by the sequence program monitor (ladder) only)

*2 The display language used for the monitor screen depends on the setting of the CNC parameter (#1043 lang).

*3 The language used to display profile data depends on the language version of the data.

*4 When data is read from a file, the [(At alarm occurrence)] screen displays the data in the same language as the file.

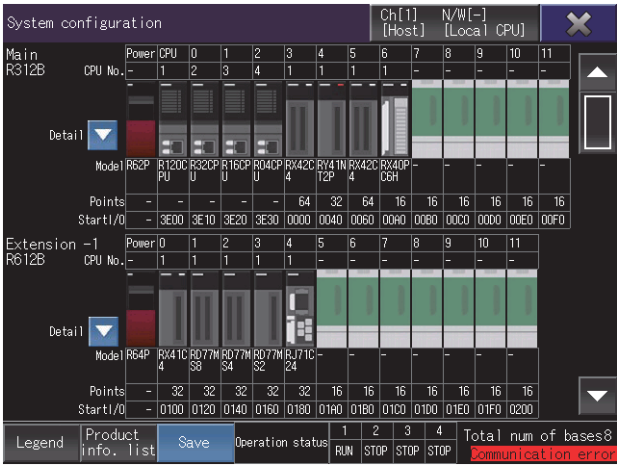
2. SYSTEM LAUNCHER

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

2.1 Features

The system launcher enables the following functions for the devices connected to the GOT.

- Displaying the status of a module
- Starting the extended functions applicable to a module
- Replacing a module of a PLC while the PLC is on line (Online module change)
- Displaying the product information of a module.
- Outputting the product information of a module to a file.



2.2 Specifications

➠ 2.2.1 System configuration
2.2.2 Precautions

2.2.1 System configuration

This section explains the system configuration of the system launcher.
For connection type settings and precautions regarding the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

Controller
QCPU (Q mode) *1
LCPU
RCPU *3
Motion controller CPU (Q series)
Motion controller CPU (MELSEC iQ-R series) *3
CNC C70
CNC C80
Robot controller *2

*1 Includes the QnP(R)(H)
*2 CRnQ-700 (Q172DRCPU), CR750-Q (Q172DRCPU), CR751-Q (Q172DRCPU), CR800-R (R16RTCPU), and CR800-Q (Q172DSRCPU) are supported.
*3 The online module change is not available.

■2. Connection type

This function can be used in the following connection types.
○: Available, ×: Unavailable

Function		Connection type between the GOT and controller								
Name	Description	Bus connection	Direct CPU connection (Serial)	Serial communication connection	Ethernet connection (using Ethernet port built in the CPU)	Ethernet connection (using Ethernet module)	MELSECNET/H connection, MELSECNET/10 connection	CC-Link IE Controller connection, CC-Link IE Field connection	CC-Link connection	
									ID	G4
System launcher	Displaying the status of modules	○	○	○	○	○	○	○	○	○
	Starting extended functions									
	Online module change									

For the connection type between the GOT and each controller, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the system launcher to the GOT.
To use an extended function compatible with the system launcher, write the package data that contains the corresponding system application (extended function) to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Applicable hardware

A USB mouse is usable.

■5. Extended function compatible with the system launcher

The following table shows the extended functions that can be started from the system launcher.

Extended function
Device monitor
Sequence program monitor (Ladder)
Sequence program monitor (iQ-R ladder)
Sequence program monitor (SFC)
Network monitor
Q motion monitor
R motion monitor
Intelligent module monitor
Backup/restoration *1
Motion SFC monitor
CNC monitor
CNC data I/O
CNC machining program edit

Extended function
CNC monitor 2
iQSS utility
Drive recorder
CC-Link IE Field Network diagnostics
System launcher (servo network)
Servo amplifier graph

*1 The CPU number setting is not transferred. Only the channel of the connected controller is in its selected state.

■6. Online module change

To enable the online module change, configure the setting in [System Launcher] of [Ext. func. set] in the utility.
Set [Online module change] to [Effective].

➠ GOT2000 Series User's Manual (Utility)

2.2.2 Precautions

■1. Display of the system configuration diagram

The system configuration diagram has two types: the system configuration diagram for the system launcher and the one for the extended function.
When you select a module supported by the system launcher, the system configuration diagram for the system launcher appears.
When you select a module unsupported by the system launcher, the system configuration diagram for the extended function used appears if it is available.
For the screen transition of the system configuration diagram for the extended function, refer to the extended function used.
When the system application (extended function) for the system launcher is not installed on the GOT, even though you select a module supported by the system launcher, the system configuration diagram for the extended function used appears.

■2. Precautions for online module change

When you replace a module of a PLC while the PLC is on line, the target module stops its operation.
Check that the operations of the PLC are not affected, and then replace the module.
The following shows the applicable modules.

- QCPU(Q mode)
  Input module, Output module, Input/Output module, Analog input module, Analog output module, Temperature input module, Temperature control module, Loop control module, Pulse input module

For the details of the online module change, refer to the following.

➠ Manual of the CPU or module used

2.3 Operations for Display

This section explains how to display the system launcher screen after the GOT is turned on.

Step 1. Turn on the GOT.

Step 2. Display the system configuration screen by one of the following methods.

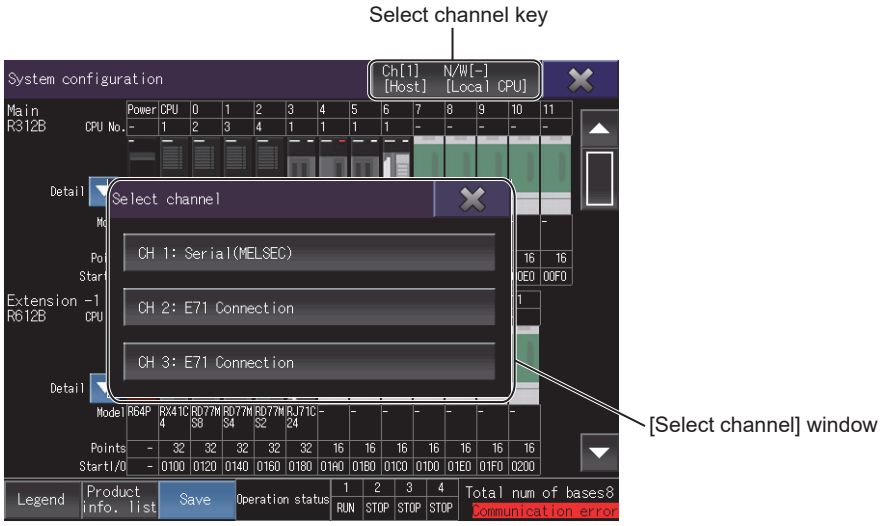
- Starting from the special function switch (System launcher) set in the project
  For how to set special function switches, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual

- Starting from the utility
  In the utility, touch [Monitor] → [System launcher] from the main menu.
  For how to display the utility, refer to the following.

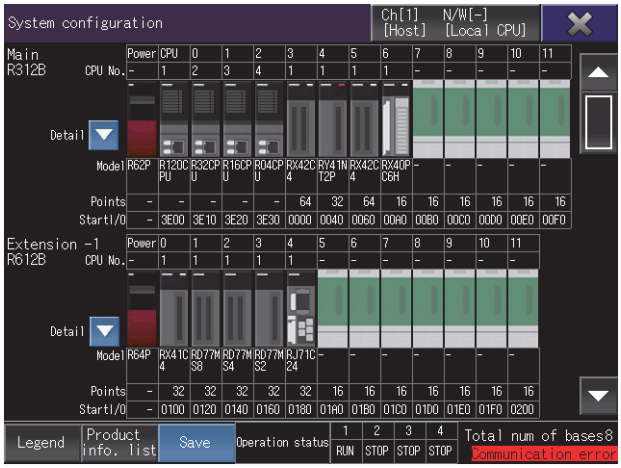
  ➠ GOT2000 Series User's Manual (Utility)

Step 3. The [Select channel] window appears only at the first startup of the system launcher.
Set the channel number of the PLC connected to the GOT.
When the channel number is not set, touching the [×] key closes the [Select channel] window and sets the channel number to [1].

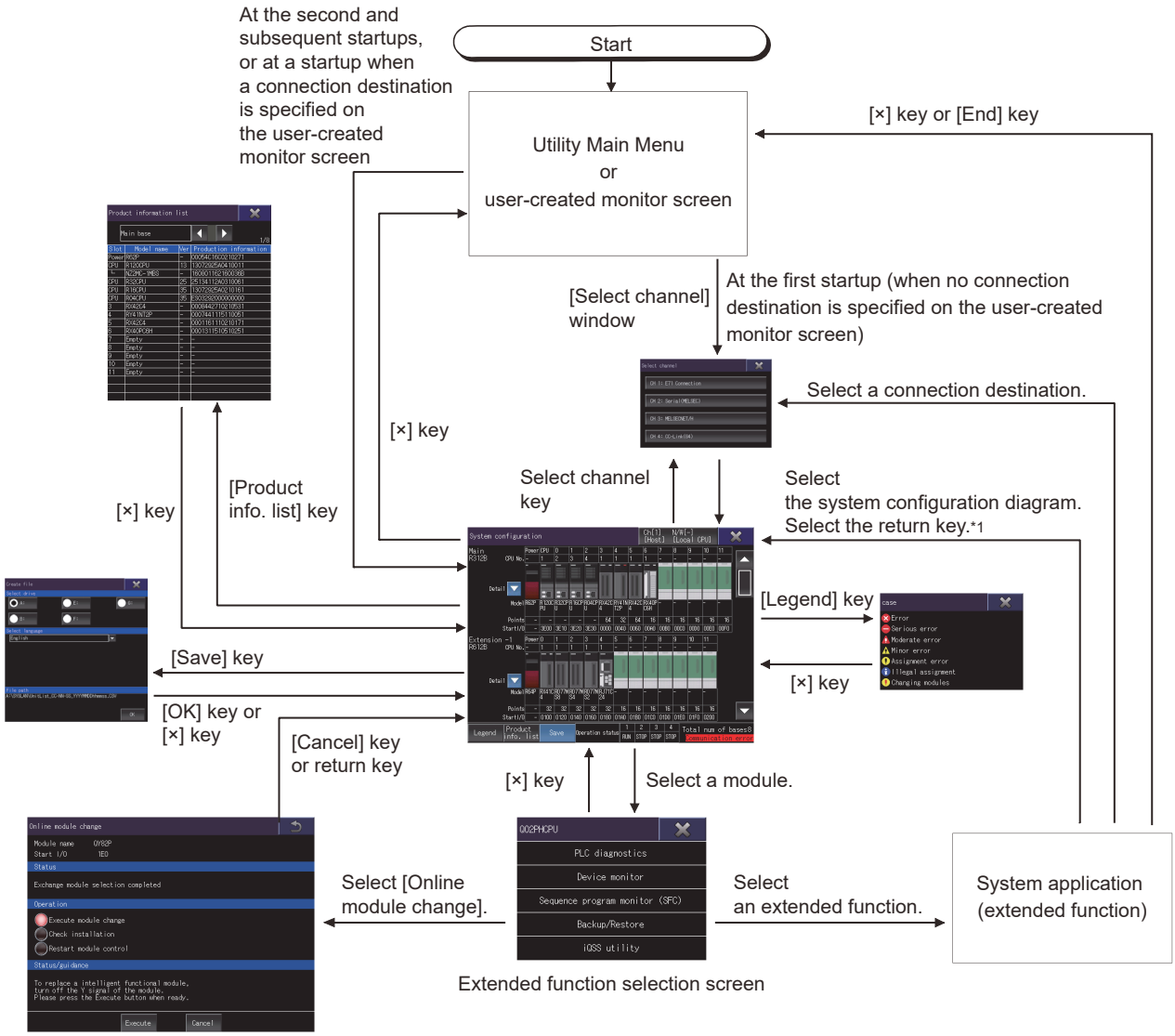


Step 4. The system configuration screen appears.
To change the connection destination, touch the select channel key on the system configuration screen.

➠ 2.4 Operating Procedure



■1. Screen transition



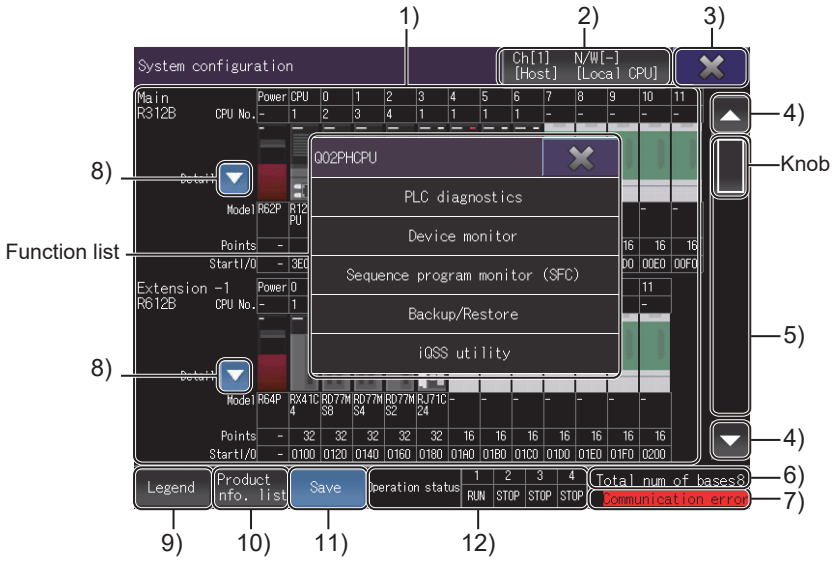
*1 Only available to the system launcher (servo network) function.

2.4 Operating Procedure

This section explains screen operations for the system launcher.
The display screen of the system launcher differs depending on the GOT used.

2.4.1 System configuration screen

The following explains the structure of the system configuration screen and the function of the keys displayed on the screen after the system launcher is started.



1) Module status display
Displays the information about [CPU No.], [Model], [Points], and [Start I/O] of the modules.
When an RQ extension base unit is connected, the system configuration screen for MELSEC iQ-R series appears.
Select a module to display the function list window.

2) Select channel key
Displays the [Select channel] window.

3) [×] key
Exits the system configuration screen and returns the screen to a screen from which the system launcher was started.

4) Scroll key
Scrolls the display up or down one stage.

5) Scroll bar
Touch an area above or below the knob to scroll one page up or down.
You can also scroll the page by sliding the knob.

6) [Total num of bases]
The number of base units displayed in the system configuration diagram.
When the monitoring target is the LCPU, [Total num of blocks] is displayed.

7) Message display
If communication with the connected PLC cannot be established, [Communication error] appears.

8) Display list key (only for MELSEC iQ-R series)
Displays the detailed information of each module on the target base unit.
The following shows the display items.

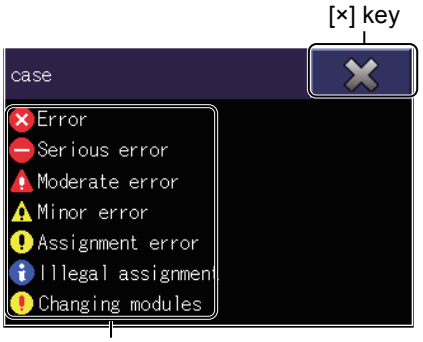
- [Error No.]
  Displays an error number (hexadecimal) for the module with the error.
- [Network info. (port 1)]
  Displays the network information of port 1.
- [Network info. (port 2)]

Displays the network information of port 2.

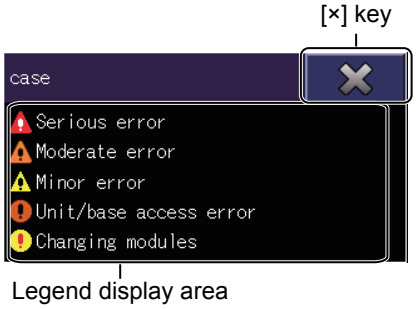
- [IP address (port 1)]
  Displays the IP address of port 1.
- [IP address (port 2)]
  Displays the IP address of port 2.
- [Module sync. status]
  Displays the synchronization status between the modules.
  - In synchronization: [ON]
  - In preparation: [OFF]
  - With an error: [ERR]

9) [Legend] key

Displays the [case] window.



QCPU,LCPU



MELSEC iQ-R series

- **[×] key**
  Exits the [case] window and returns the screen to the system configuration screen.
- **Legend display area**
  Lists the descriptions of the icons appearing on the system configuration diagram.

10) [Product info. list] key

Displays the [Product information list] window.

For the details, refer to the following.

➠ 2.4.3 [Product information list] window

11) [Save] key

Displays the [Create file] window.

For the details, refer to the following.

➠ 2.4.4 [Create file] window

12) CPU operation status (only for MELSEC iQ-R series)

Displays the operation status of each CPU.

- Running: [RUN]
- Stopped: [STOP]
- Paused: [PAUSE]
- Being initialized: [INIT]
- Being reset: [-]

2.4.2 Online module change screen

The following shows the procedure of the online module change.

Step 1. Check the following items, and then touch the [Execute] key.
- The message [Exchange module selection completed] is displayed in [Status].
- The lamp of [Execute module change] is on in [Operation].
- The Y signal of the target module is off.

Step 2. The confirmation dialog for the module change appears.
Touch the [OK] key, and then check the following items.
- The message [Module replaceable] is displayed in [Status].
- The lamp of [Check installation] is on in [Operation].

To cancel the operation and return the screen to the system configuration screen, touch the return key or [Cancel] key and then touch the [OK] button in a dialog appearing immediately after the cancellation.

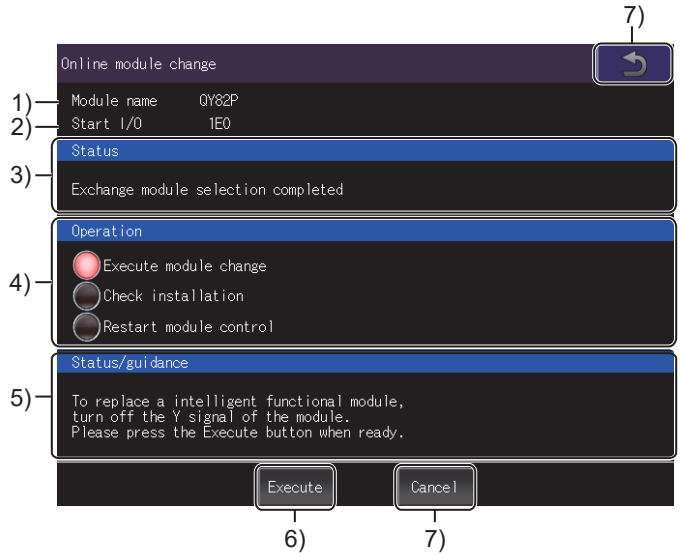
Step 3. Replace the target module, and then touch the [Execute] key.

Step 4. When the module is correctly mounted, the following appears.
- The message [Module change completed] is displayed in [Status].
- The lamp of [Restart module control] is on in [Operation].

To cancel the operation and return the screen to the system configuration screen, touch the return key or [Cancel] key and then touch the [OK] button in a dialog appearing immediately after the cancellation.

Step 5. Touch the [Execute] key. When the module control is properly restarted, the screen returns to the system configuration screen.

The following explains the structure of the [Online module change] screen and the function of the keys displayed on the screen.



1) [Module name]
Displays the module name.

2) [Start I/O]
Displays the module start I/O.

3) [Status]
Displays the status of [Operation].

4) [Operation]
Displays the items executed in the actual operation.
The lamp of the item to be executed is on.

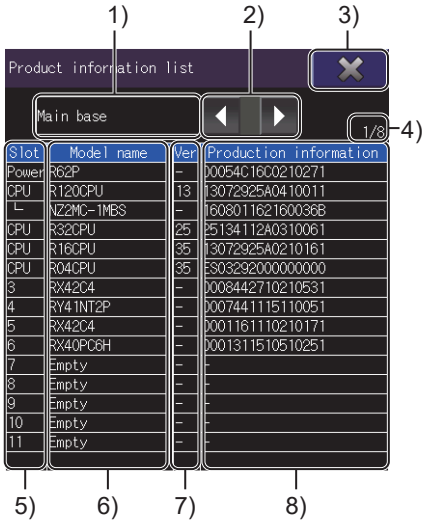
5) [Status/guidance]
Displays the procedure or precautions for [Operation].

6) [Execute] key
Executes the item whose lamp is on in [Operation].

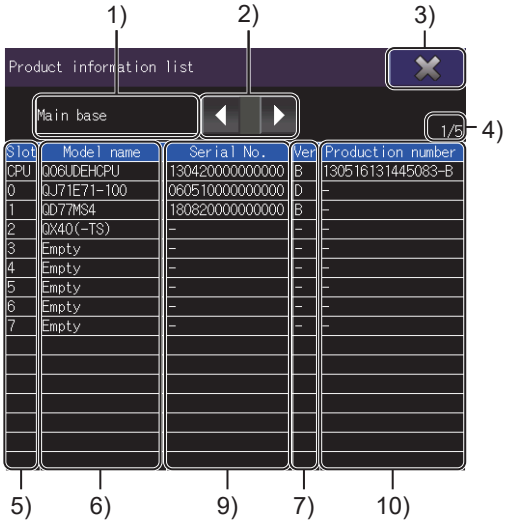
7) Return key, [Cancel] key
Exits the [Online module change] screen and returns the screen to the system configuration screen.
Cancels the operation during the module change and returns the screen to the system configuration screen.

2.4.3 [Product information list] window

Product information of the modules is listed.
For MELSEC-Q or MELSEC-L series, the power supply module is not displayed.
Information that cannot be acquired is displayed with [-].



MELSEC iQ-R series



MELSEC-Q or MELSEC-L series

1) Base unit display area
Displays the selected base unit.

2) Select base unit key
Switches the current base unit to the base unit in the upper or lower level.

3) [×] key
Closes the [Product information list] window, and returns the screen to the system configuration screen.

4) Level number
Displays the level of the selected base unit out of all base units.

5) [slot]
Displays the slot number of a module.

6) [Model name]
Displays the model of a module.

7) [Ver]
Displays the firmware version of a module.

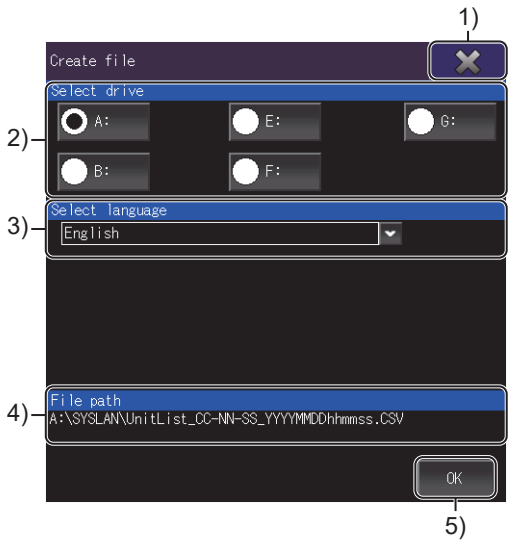
8) [Production information] (MELSEC iQ-R series)
Displays the production information of a module.
For an RQ extension base unit, the first five digits of the serial number and the firmware version are displayed.

9) [Serial No.] (MELSEC-Q or MELSEC-L series)
Displays the serial number of a module.

10) [Production number] (MELSEC-Q or MELSEC-L series)
Displays the production number of a module.
When CPU No. 1 is a Universal model QCPU with function version B01 or earlier, [-] is displayed.

2.4.4 [Create file] window

Product information of the modules is saved to a CSV file in the selected language in the selected drive.
The file is saved in Unicode with BOM.



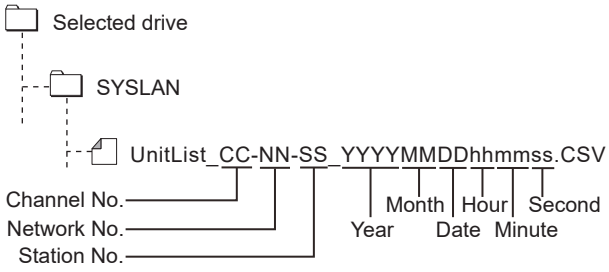
1) [×] key
Closes the [Create file] window, and returns the screen to the system configuration screen.

2) [Select drive]
Select the drive to save the CSV file.
The [Create file] window displays accessible drives only.
A folder named SYSLAN is automatically created in the selected drive.

3) [Select language]
Select the language for the CSV file.
The following shows the selectable items.

- [Japanese]
- [English]
- [Chinese (Simplified)]
- [Chinese (Traditional)]
- [Korean]

4) [File path]
Displays the path where a CSV file is to be saved.
The drive in the path has been selected in [Select drive].
The file is automatically named as shown below.
If a same-name file already exists, touch the [OK] key to display the [Checked] dialog.



5) [OK] key
Creates a CSV file.

3. DEVICE MONITOR

GT27 GT25 GT23 GT21 Soft GOT2000

For using the device monitor function on GT21, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

3.1 Features

The device monitor function monitors and changes the devices of a PLC CPU or an intelligent module.
Using this function, you can troubleshoot the system and streamline maintenance.

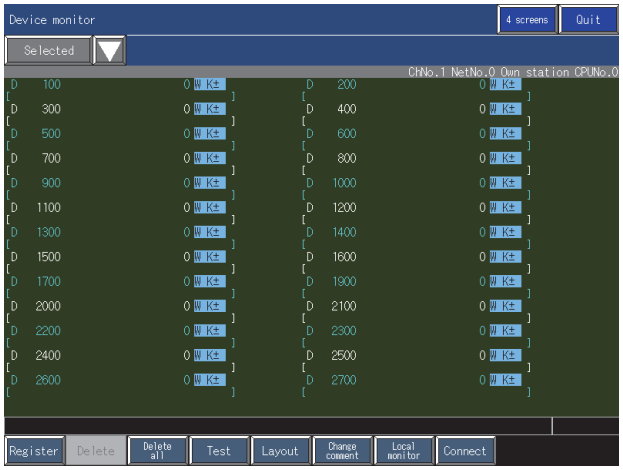
■1. Monitoring devices on four dedicated screens

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.

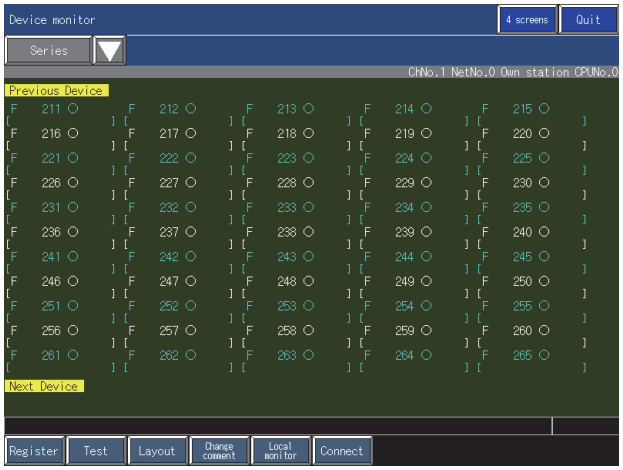
➠ 3.4 Entry Monitor



(2) Batch monitor

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

➠ 3.5 Batch Monitor



(3) TC (timer, counter) monitor

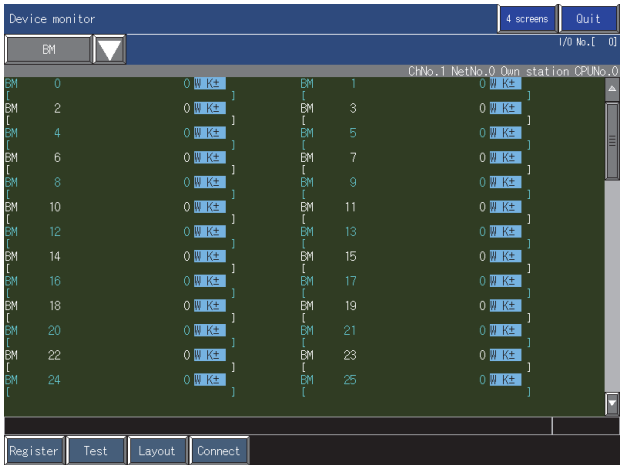
Monitors the current values, set values, contacts, and coils of timers, retentive timers, and counters of the PLC CPU in a batch.

➠ 3.6 TC Monitor (Monitoring Timers and Counters)

(4) BM (buffer memory) monitor

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

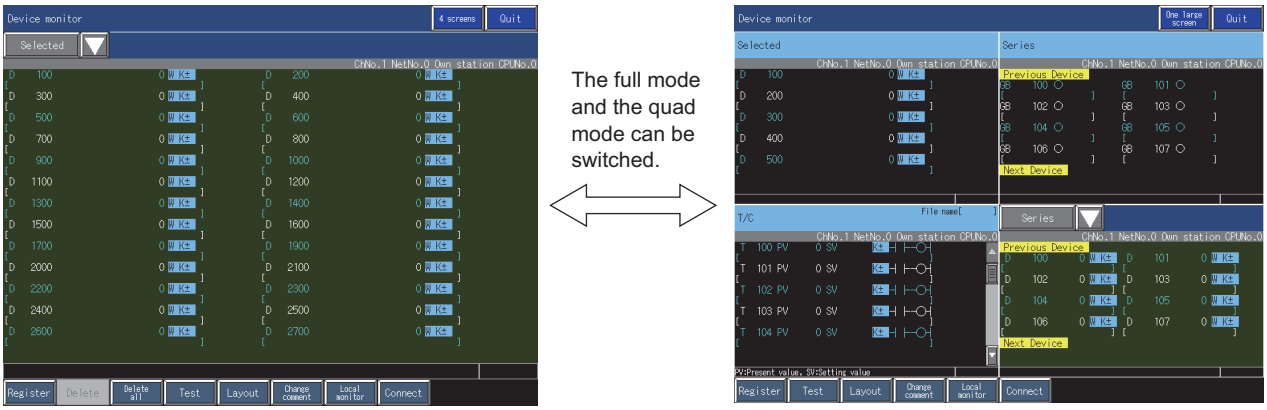
➠ 3.7 BM Monitor (Monitoring Buffer Memory)



■2. Switching between the full mode and quad mode

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.

➠ 3.3.3 Display format of the monitor screen ([One large screen], [4 screens])



■3. Changing device values using 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

➠ 3.3.8 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.

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

■5. Monitoring other stations

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.

➠ 3.2.1 System configuration

■6. Switching the display languages and supporting multiple languages

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

3.2 Specifications

3.2.1 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 Electric Products) For GT Works3 Version1

■1. Target controller

Controller	Model
RCPU *4*6	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU, R08PCPU *5, R16PCPU *5, R32PCPU *5, R120PCPU *5, R08PSFCPU *7, R16PSFCPU *7, R32PSFCPU *7, R120PSFCPU *7, R08SFCPU, R16SFCPU, R32SFCPU, R120SFCPU
C controller module (MELSEC iQ-R Series) *6	R12CCPU-V
MELSEC iQ-F *4*6	FX5U
QCPU (Q mode)	Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q02PHCPU, Q06PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU, Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU, Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, Q26UDPVCPU
C Controller module (Q Series) *6	Q12DCCPU-V, Q24DHCCPU-V, Q24DHCCPU-VG
QSCPU *1*6	QS001CPU
LCPU	L02CPU, L06CPU, L26CPU, L26CPU-BT, L02CPU-P, L26CPU-PBT, L02SCPU
QnACPU *2*6	Q2ACPU, Q2ACPU-S1, Q3ACPU, Q4ACPU, Q4ARCPU
QnASCPU *2*6	Q2ASCPU, Q2SCPU-S1, Q2ASHCPU, Q2ASHCPU-S1
FXCPU *3*6	FX0S, FX0N, FX1S, FX1N, FX1NC, FX2N, FX2NC, FX3G, FX3GC, FX3U, FX3UC, FX3S
Motion controller CPU (Q series) *6	Q172CPU *3, Q173CPU *3, Q172CPUN, Q173CPUN, Q172HCPU, Q173HCPU, Q172DCPU, Q172DCPU-S1, Q173DCPU, Q173DCPU-S1, Q172DSCPU, Q173DSCPU, Q170MCPU, Q170MCPU-S1, Q170MSCPU, Q170MSCPU-S1, MR-MQ100
Robot controller *6	CRnQ-700(Q172DRCPU), CRnD-700, CR800-R(R16RTCPU) *3*4, CR800-D *3*4, CR800-Q(Q172DSRCPU)
CNC C80 *6	R16NCCPU *3*4
MELDAS C70 *6	Q173NCCPU
MELDAS C6/C64 *6	FCA C6, FCA C64

*1 The GOT cannot write data to devices in the QSCPU. (The test operation is not available.)
*2 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.
*3 The BM monitor is not supported.
*4 The T/C monitor is not supported.
*5 When all the following conditions are satisfied, the GOT accesses the CPU (control system).
- The MELSEC redundant setting of the GOT is enabled.
- The operation mode of the PLC CPU is set to the redundant mode.

*6 The local device monitor is not supported.
*7 Mount a SIL2 function module (R6PSFM) and a redundant function module (R6RFM) next to a SIL2 process CPU on the base unit.

■2. Connection type

The device monitor function can be used for the following connection types.
○: Available, ×: Not available

Function	Controller		Direct CPU connection	Serial communication connection	Ethernet connection	CC-Link IE Controller Network connection	CC-Link IE Field Network connection	CC-Link connection	
								ID *1	G4 *2
Device monitor	RnCPU		×	○	○	○	○	○	×
	CPU with CC-Link IE (RnENCPU)		×	○	○	○	○	○	×
	Process CPU (RnPCPU)		×	○	○	○	○	○	×
	Safety CPU (RnSFCPU)		×	○	○	○	○	○	×
	C controller module (MELSEC iQ-R Series)		×	○	○	○	○	○	×
	MELSEC iQ-F		○	×	○	×	×	○	×
	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 (Q Series)		○	○	○	○	○	○	○
	QSCPU		×	×	○	○	×	×	×
	LCPU		○	○	○	×	○	○	○
	QnACPU		○	○	○	×	×	○	×
	Motion controller (Q series)		○	○	○	○ *3	○ *4	○	○
	CNC C80		○	○	○	○	○	○	○
	CNC C70		○	○	○	○	○	○	○
	MELDAS C6/C64		○	×	○	×	×	○	×
	Robot controller	CRnQ-700	○	○	○	○	○	○	○
		CRnD-700	×	×	○	×	×	×	×
	FXCPU		○	×	○ *5	×	×	×	×

*1 The GOT is connected as an intelligent device station.
*2 The GOT is connected to the CC-Link system via AJ65BT-G4-S3 or AJ65BT-R2N.
*3 Not available for the following models.
- Q172CPU, Q173CPU
- Q172CPUN, Q173CPUN
- Q172HCPU, Q173HCPU

*4 Only available for the following models.
- Q170MCPU(-S1)
- Q170MSCPU(-S1)

*5 Only available for FX3U(C).

■3. Required system application (extended function)

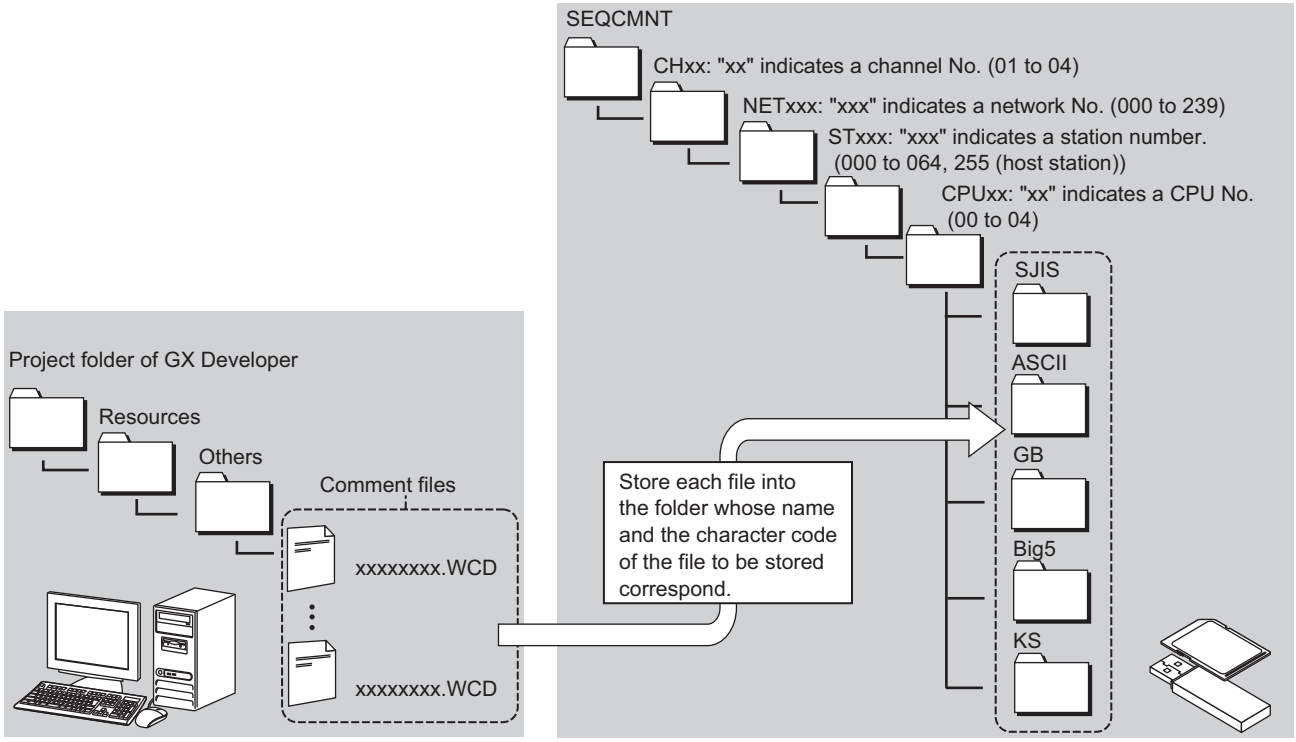
To use the device monitor function, install the following system applications (extended functions) to the GOT.

- 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.



■5. Applicable hardware

A USB mouse is usable.

3.2.2 Devices that can be monitored

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

■1. Entry monitor

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

(1) Bit device

○: Available, ×: Not available

Device	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
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)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Safety input relay (SAX)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety output relay (SAY)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety link relay (SAB)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety internal relay (SAM)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety Special relay (SASM)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

*1 The device can be monitored when Q24DHCCPU-V or Q24DHCCPU-VG is connected.

(2) Word device

○: Available, ×: Not available

Device	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	QCPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
Data register (D)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Special data register (SD)	○	○	○	○	○	○	○	○	○	×	○	○	○	○	○	○	×
Link register (W)	○	○	○	○	○	○*1	○	○	○	○	○	○	×	×	×	×	×
Timer (current value) (TN)	○	○	×	○	○	×	○	○	○	×	○	○	×	×	×	×	○
Counter (current value) (CN)	○	○	×	○	○	×	○	○	○	×	○	○	×	×	×	×	○
Retentive timer (current value) (SN)	○	○	×	○	○	×	○	○	○	×	○	×	×	×	×	×	×
Long timer (current value) (LTN)	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Long counter (current value) (LCN)	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Long retentive timer (current value) (LSN)	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Link special register (SW)	○	○	×	○	○	×	○	○	○	×	○	○	×	×	×	×	×
File register (R)	○	○	×	○	○	×	○	○	×	×	○	○	×	×	×	×	×
Extension file register (ZR)	○	○	○	×	○	×	○	○	×	×	○	×	×	×	×	×	×
Index register (Z)	○	○	×	○	○	×	○	○	×	×	×	○	×	×	×	×	×
Index register (32 bits) (LZ)	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Link register (for writing) (Ww)	○*2	×	○*2	○*2	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	○*2	×	○*2	○*2	×
Link register (for reading) (Wr)	○*2	×	○*2	○*2	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	○*2	×	○*2	○*2	×
Motion device (#)	×	×	×	×	×	×	×	×	×	○	×	×	×	×	×	×	×
GOT data register (GD)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
GOT special register (GS)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Safety timer (SAT)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety Counter (SAC)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety retentive timer (SAST)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety special relay (SASM)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety data register (SAD)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safty special register (SAS)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

Device	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	QCPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/ C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
Safety link register (SAW)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

*1 The device can be monitored when Q24DHCCPU-V or Q24DHCCPU-VG is connected.

*2 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	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	QCPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/ C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
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)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Safety input (SAX)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety output (SAY)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety link relay (SAB)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety internal relay (SAM)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×

*1 The device can be monitored when Q24DHCCPU-V or Q24DHCCPU-VG is connected.

(2) Word device

○: Available, ×: Not available

Device	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
Data register (D)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Special data register (SD)	○	○	○	○	○	○	○	○	○	×	○	○	○	○	○	○	×
Link register (W)	○	○	○	○	○	○*1	○	○	○	○	○	○	×	×	×	×	×
Timer (current value) (TN)	○	×	○	○	○	×	○	○	○	×	○	○	×	×	×	×	○
Counter (current value) (CN)	○	×	○	○	○	×	○	○	○	×	○	○	×	×	×	×	○
Retentive timer (current value) (SN)	○	×	○	○	○	×	○	○	○	×	○	×	×	×	×	×	×
Long timer (current value) (LTN)	○	×	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×
Long counter (current value) (LCN)	○	×	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×
Long retentive timer (current value) (LSN)	○	×	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×
Link special register (SW)	○	×	○	○	○	×	○	○	○	×	○	○	×	×	×	×	×
File register (R)	○	×	○	○	○	×	○	○	×	×	○	○	×	×	×	×	×
Extension file register (ZR)	○	○	○	×	○	×	○	○	×	×	○	×	×	×	×	×	×
Index register (Z)	○	×	○	○	○	×	○	○	×	×	×	○	×	×	×	×	×
Index register (32 bits) (LZ)	○	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Link register (for writing) (Ww)	○*2	○*2	×	○*2	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	○*2	○*2	○*2	○*2	×
Link register (for reading) (Wr)	○*2	○*2	×	○*2	○*2	○*2	○*2	○*2	×	○*2	○*2	○*2	○*2	○*2	○*2	○*2	×
Motion device (#)	×	×	×	×	×	×	×	×	×	○	×	×	×	×	×	×	×
GOT data register (GD)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
GOT special register (GS)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Safety timer (SAT)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety counter (SAC)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety retentive timer (SAST)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety special relay (SASM)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety data register (SAD)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Safety special relay (SAS)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×

Device	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
Safety link register (SAW)	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×

*1 The device can be monitored when Q24DHCCPU-V or Q24DHCCPU-VG is connected.

*2 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	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
Timer (contact) (TT)	×	×	×	×	○	×	○	○	○	×	×	×	×	×	×	×	○
Timer (coil) (TC)	×	×	×	×	○	×	○	○	○	×	×	×	×	×	×	×	○
Counter (contact) (CT)	×	×	×	×	○	×	○	○	○	×	×	×	×	×	×	×	○
Counter (coil) (CC)	×	×	×	×	○	×	○	○	○	×	×	×	×	×	×	×	○
Retentive timer (contact) (SS)	×	×	×	×	○	×	○	○	○	×	×	×	×	×	×	×	×
Retentive timer (coil) (SC)	×	×	×	×	○	×	○	○	○	×	×	×	×	×	×	×	×

(2) Word device

○: Available, ×: Not available

Device	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
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	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/ C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
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	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/ C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
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)	○	○	×	○	○	×	○	○	×	○	×	○	×	×	×	×	○

*1 The test operation can be performed when Q24DHCCPU-V or Q24DHCCPU-VG is connected.

(2) Word device

○: Available, ×: Not available

Device	Rn CPU RnP CPU RnEN CPU	RnSF CPU	C controller module (MELSEC iQ-R Series)	MELSEC iQ-F	Q CPU (Q mode)	C Controller module (Q Series)	L CPU	QnA CPU	QS CPU	Motion controller CPU (Q series)	CNC C80	CNC C70, MELDAS C6/C64	Robot controller				FX CPU
													CR nQ-700	CR nD-700	CR 800-R	CR 800-D	
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)	○	×	×	○	○*2	×	○	○	×	×	×	○	×	×	×	×	×
Index register (32 bits) (LZ)	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Buffer memory (intelligent function module) (BM)	○	○	×	○	○	×	○	○	×	×	×	×	×	×	×	×	×
Link register (for reading) (Wr)	○*3	○*3	×	○*3	○*3	×	○*3	○*3	×	○*3	○*3	○*3	×	×	×	×	×
Motion device (#)	×	×	×	×	×	×	×	×	×	○	×	×	×	×	×	×	×
GOT data register (GD)	○	○	×	○	○	×	○	○	×	○	×	○	×	×	×	×	○
GOT special register (GS)	○	○	×	○	○	×	○	○	×	○	×	○	×	×	×	×	○

*1 The test operation can be performed when Q24DHCCPU-V or Q24DHCCPU-VG is connected.

*2 The current value of the index register (Z) cannot be changed.

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

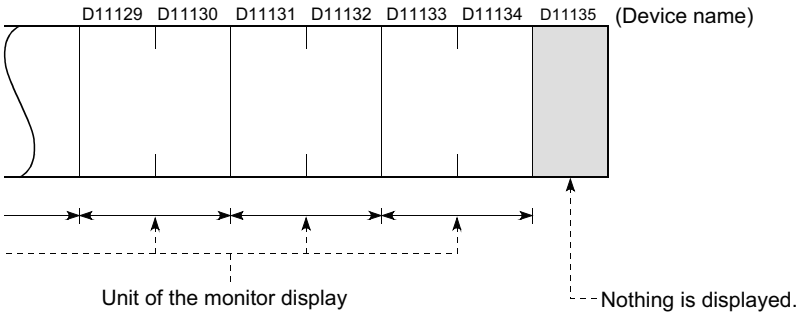
3.2.3 Access range

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.

3.2.4 Precautions

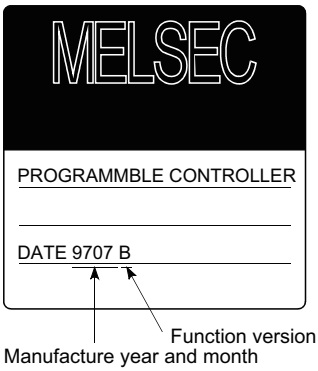
■1. Monitoring word devices by 32 bits

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 QnACPUs 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.

3.3 Operations Common to the Monitor Screens

This section describes the operations that are common to the monitor screens.

3.3.1 Displaying the monitor screen

This section describes the flow until the device monitor screen is displayed after the device monitor (system application (Extended function)) 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.

Step 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.

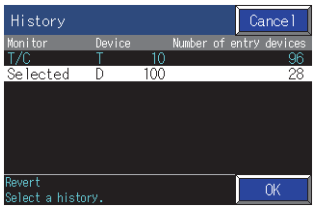
  ➠ GT Designer3 (GOT2000) Screen Design Manual

  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.

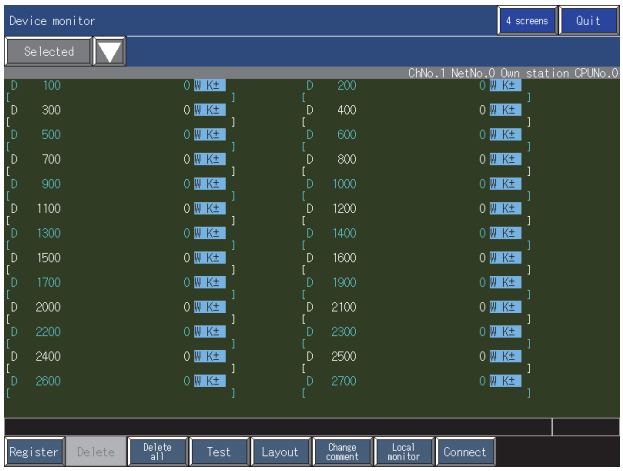
  ➠ GOT2000 Series User's Manual (Utility)

Step 2. The communication setting window appears.
Select the connection destination and communication driver of the controller to be monitored.

➠ 3.3.4 ■2. Communication setting dialog



Step 3. The [Device monitor] window appears.



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

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

Step 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) Screen Design Manual

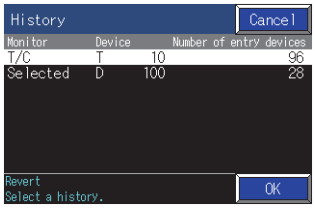
  If the project has not been written into the GOT yet, start the device monitor from the Utility.
- Starting the device monitor from the utility
  Display the utility screen and select the [Monitor] tab and [Device Monitor].
  For the display method of the utility, refer to the following.

  ➠ 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.

  ➠ 11. MELSEC-L TROUBLESHOOTING

Step 2. The [History] dialog appears.

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

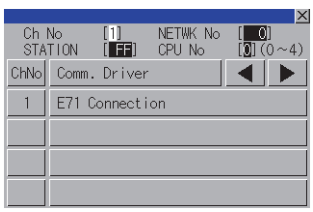


If you want to change the monitor target, touch the [Cancel] button.

The communication setting dialog appears.

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

➠ 3.3.4 ■2. Communication setting dialog



Step 3. The [Device monitor] screen appears.

3.3.2 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.

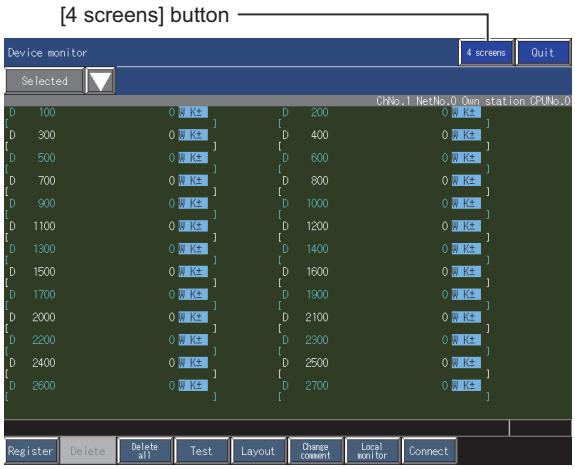
9) Sub menu key
Use this key to register a device, execute test operation, or switch the display format on each monitor screen.
Keys to be displayed vary depending on the monitor category.

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

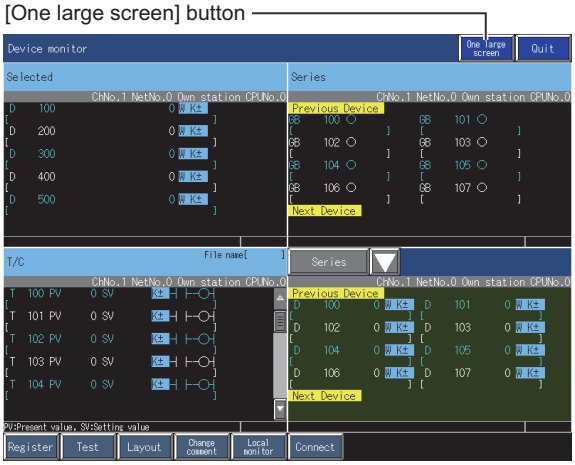
In the device monitor, the screen display format can be switched between the full mode and the quad mode.

■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.



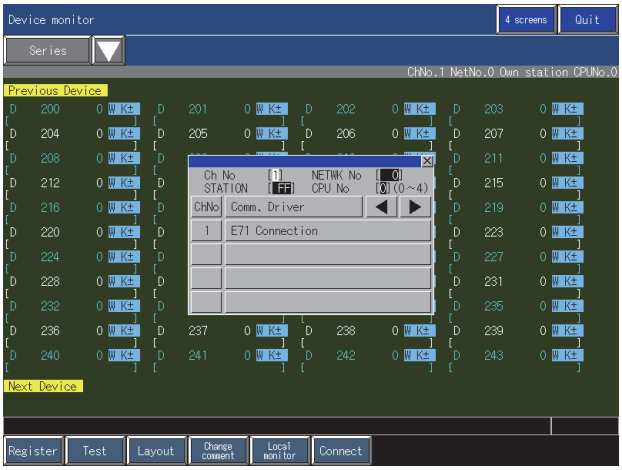
3.3.4 Destination path setting ([Connect])

■1. Setting procedure for the destination path

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

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

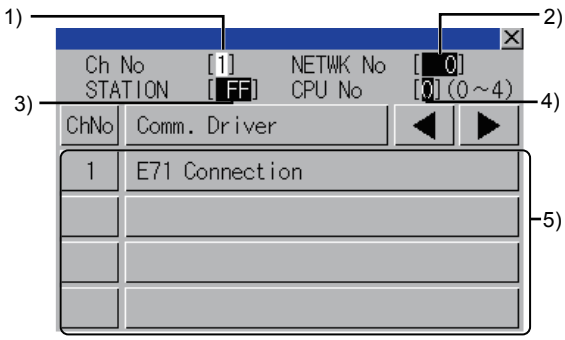
➠ 3.3.4 ■2. Communication setting dialog



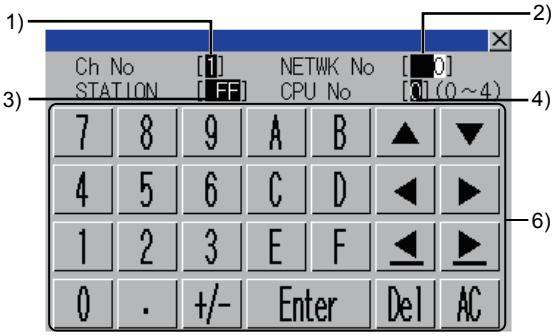
■2. Communication setting dialog

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

(1) Screen display



When the CH No. is input



When the network No., station No., and CPU No. are input

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, serial communication 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, serial communication 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].

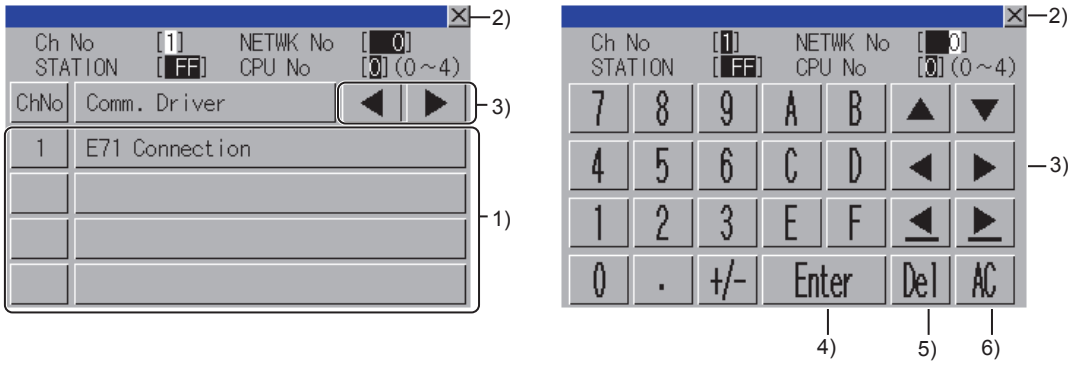
5) CH No. selection key

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.

3.3.5 Entering devices ([Register])

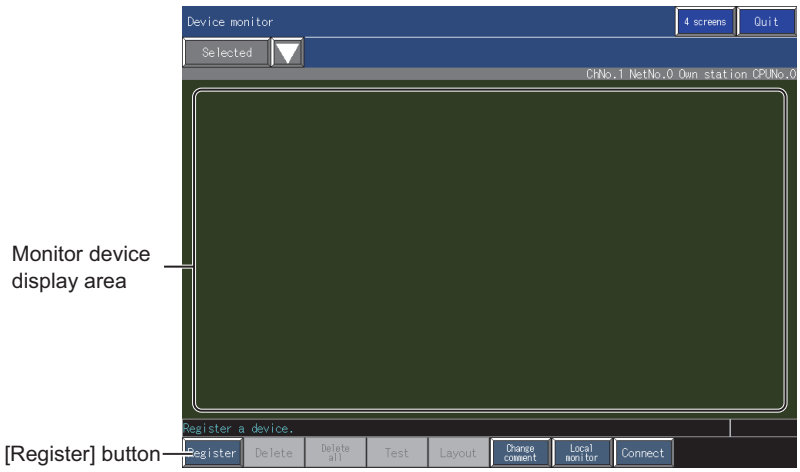
Enter devices to be monitored for all monitor categories.

■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.

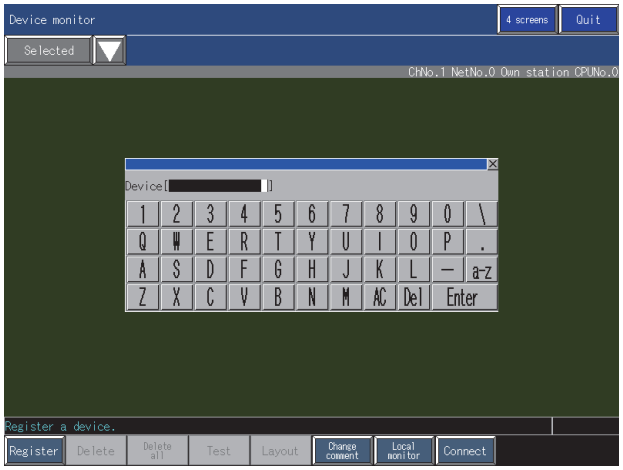
Step 1. Display the window for entering the device by either of following operations in each monitor.

- 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.



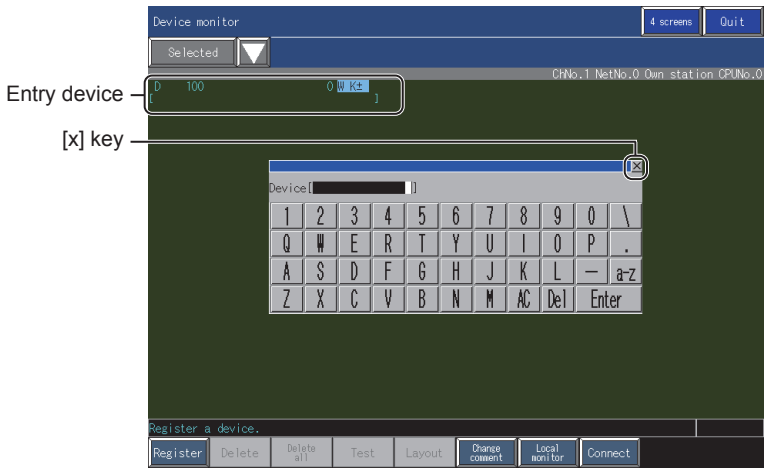
Step 2. The window for entering the device appears.
Set the destination with referring to the following.

➠ 3.3.5 ■2. Window for entering the device



Step 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.

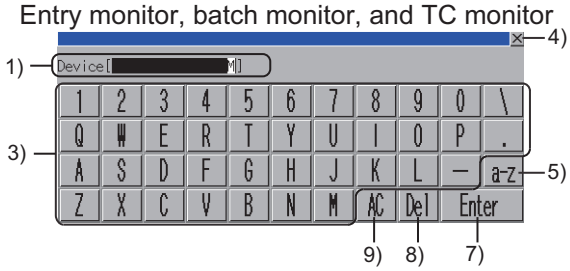
Step 4. When using the entry monitor, the window for entering the device is displayed successively. After entering the device, close the dialog with the [×] key.



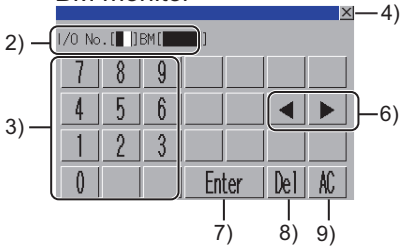
■2. Window for entering the device

The display contents of the window for entering the device differ depending on the monitor category.

Entry monitor, batch monitor, and TC monitor



BM monitor



1) Device display area
Set a device to be entered when using the entry monitor, batch monitor, and TC monitor.

2) Memory address display area
Set the memory address to be entered when using the BM monitor.

3) Input keys for device and memory address
Use these keys to input a device or a memory address.

4) [×] key
Closes the window for entering the device.

5) Character type switch key
Switches the character type of the key.
- [a-z] key: Switches the character type to alphabetic characters (lowercase).
- [A-Z] key: Switches the character type to alphabetic characters (uppercase).
- [Sign] key: Switches the character type to symbol.

6) Input area move key
Moves the cursor among the input areas.
Use this key only when using the BM monitor.

7) [Enter] key
Enters the device input in the device display area or the memory address area.

8) [Del] key
Deletes an input value or character.

9) [AC] key
Deletes all the input values and characters.

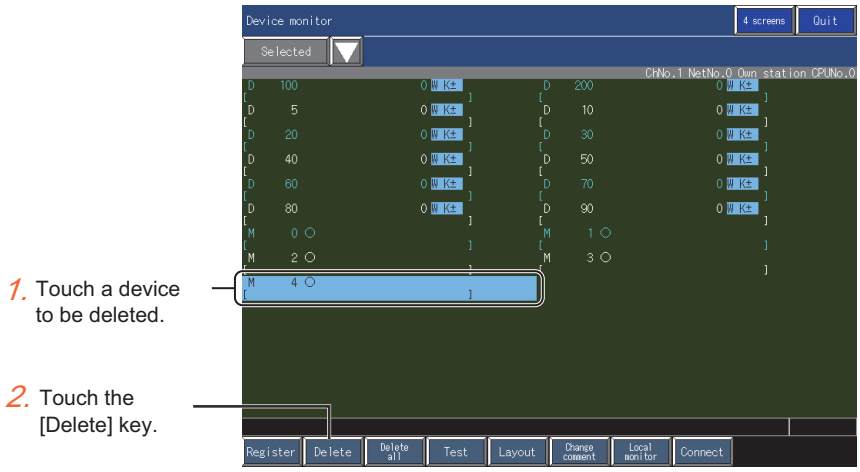
3.3.6 Deleting a device ([Delete])

Delete a device entered in the entry monitor.

■1. How to delete a device

Step 1. Touch a device to be deleted in the entry monitor.

Step 2. Touch the [Delete] key.



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

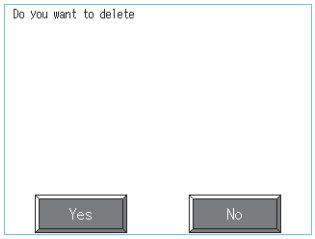
3.3.7 Deleting devices at a time ([Delete all])

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

■1. How to delete devices at a time

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

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



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

Test devices.

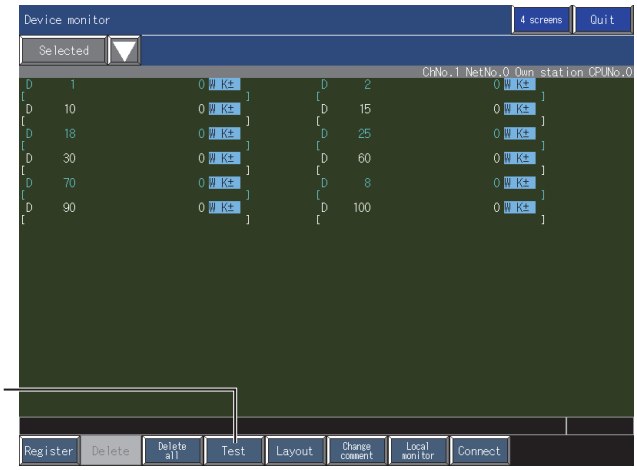
⚠WARNING

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

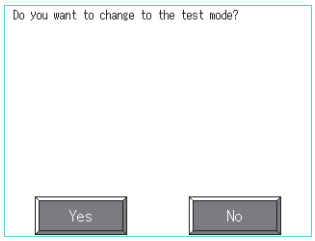
This subsection takes a test operation of the D100 device as an example to describe the test operation procedure.

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

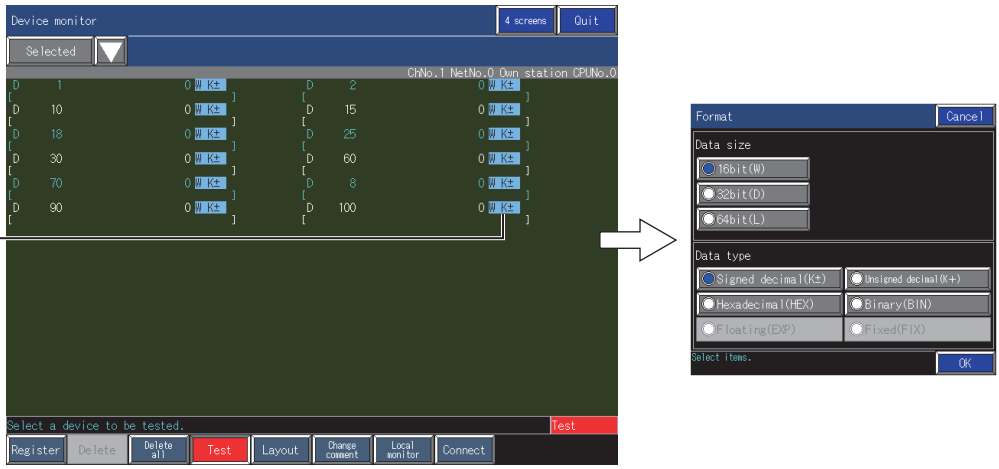


[Test] key

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

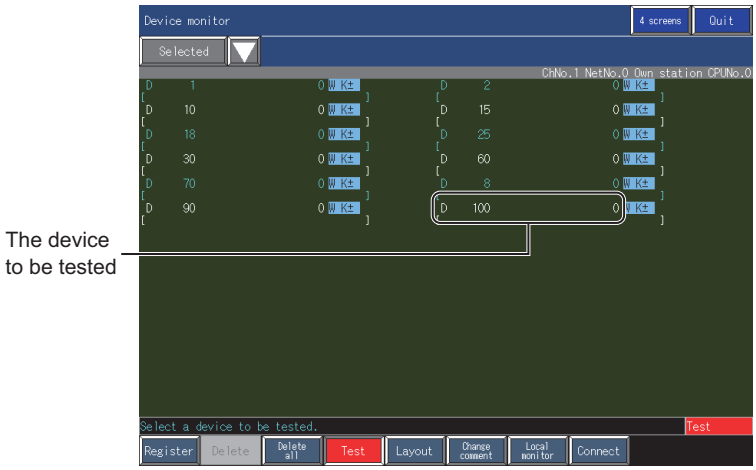


Step 3. When switching the device value display format, touch the corresponding device value display format.



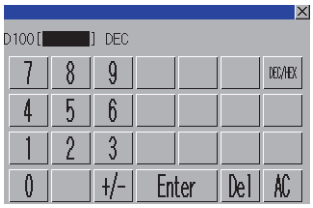
Display format of the device value

Step 4. Touch a device targeted to the test operation.



Step 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.

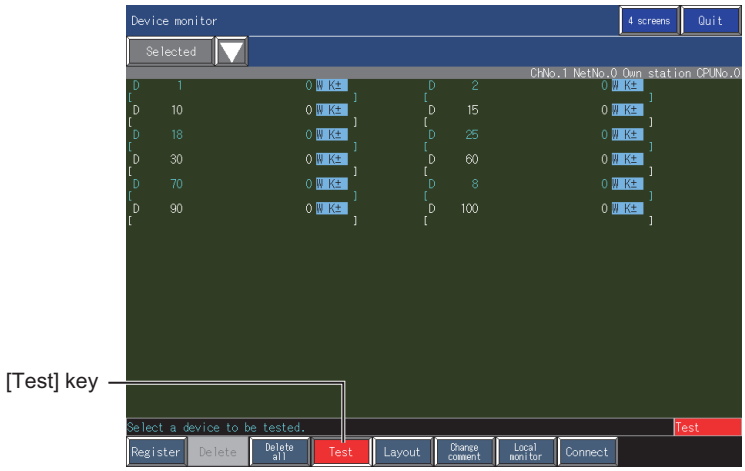
➠ 3.3.8 ■3. Dialogs for setting the device value



Step 6. The set value is reflected in the device.

■2. Ending the test mode

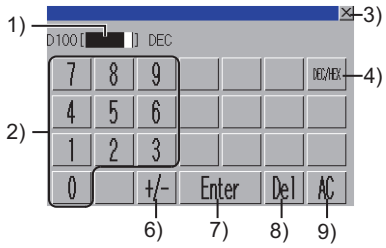
To end the test mode, touch the [Test] key.



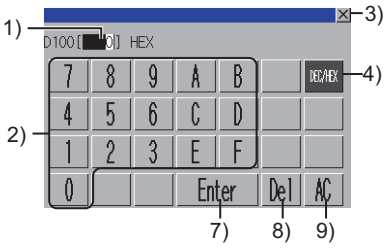
■3. Dialogs for setting the device value

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

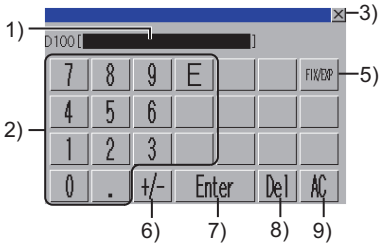
For decimal number



For binary or hexadecimal number



For real number



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).

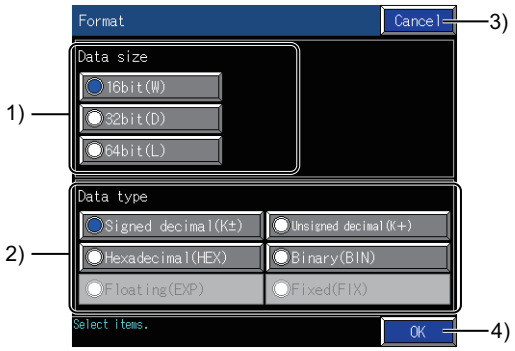
6) [+/-] key
Switches positive and negative of the input value.

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±)]
- [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.

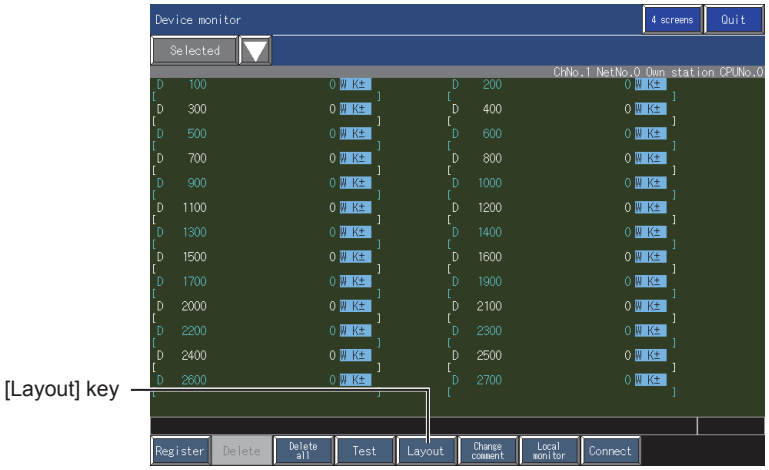
3.3.9 Switching the display (number or columns, comment display) ([Layout])

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

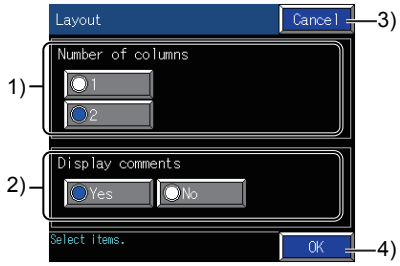
■1. Procedure for switching the display

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

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



Step 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.

Step 3. The display items are switched.

3.3.10 Monitoring local devices ([Local monitor])

Monitor local devices.

POINT

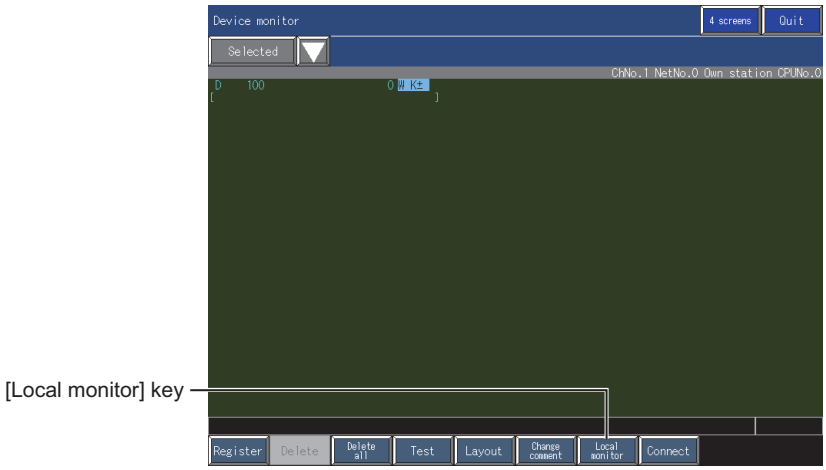
Scan time while the GOT is using the local device monitor

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

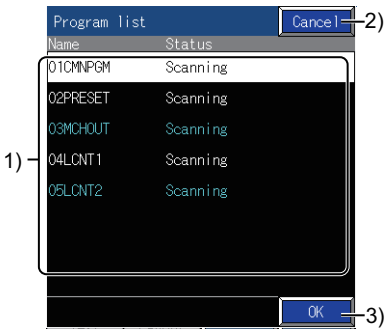
■1. Monitoring procedure of local devices

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

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



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

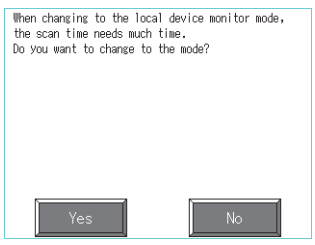


1) Program file list
Represents the program file list of the local device monitor target.
A file can be selected by touching the file name.

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.

Step 3. 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.

3.3.11 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.

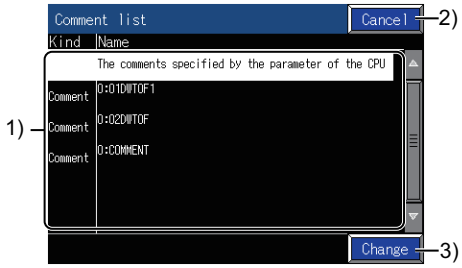
- Common comment files
- Comment files for the target programs for monitoring
  The comment files can be displayed only when the local device monitor or TC monitor is used.
- All the comment files stored in a data storage installed on the GOT
  The comment files can be displayed only when the local device 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.

Step 1. Touch the [Comment] key.

Step 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.

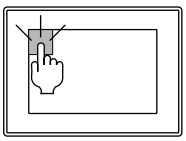
3) [OK] key
Closes the comment file list dialog and displays the selected comment file.
When four screens are displayed and a comment file is set for one of the four screens, the comment file is also set for other screens connected to the same monitor target and no comment file is set for.

Step 3. The comment file on display is switched.

3.3.12 Screen transition (common operation)

Starting the device monitor from the utility

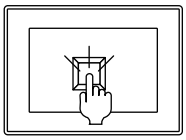
1. Display the utility.



2. Touch the [Devie monitor] in the [Monitor] tab.

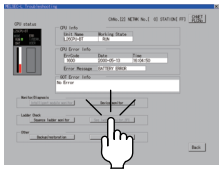
Starting the device monitor from the special function switch (system monitor)

1. Touch the special function switch (system monitor) on the monitor screen.

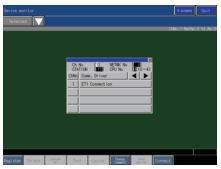


Starting the device monitor from the MELSEC-L troubleshooting

1. Touch the [Device monitor] on the MELSEC-L troubleshooting screen.



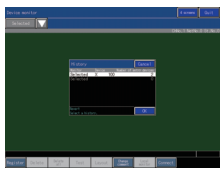
First-time startup



Set the communication path in the communication setting dialog.

[Cancel]

From the second-time startup



In the monitor history list, select the past monitor entry to use.

[OK]

[ENTER]

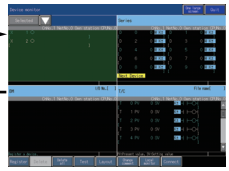
The device monitor starts. (Example. Entry monitor)

[End]

Screens that started the device monitor
·Utility screen
·User-created screen
·MELSEC-L troubleshooting screen

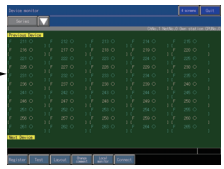
[4 screens]

[One large screen]



Display format

[Series]



[Register]

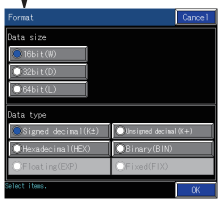
[Layout]

[Change comment]

[Connect]

[Local monitor]

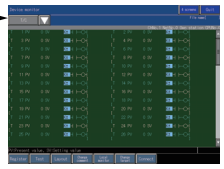
Display items



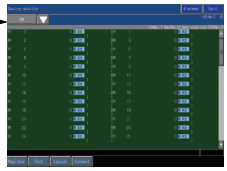
Display format

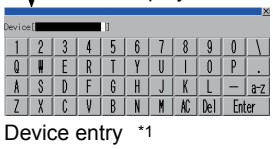
[TC Monitor]

Program list *1

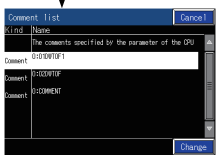


[BM Monitor]

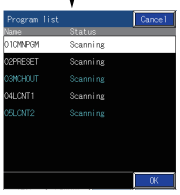




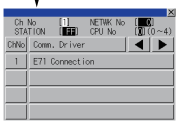
Device entry *1



Comment file list *1



Program list *1

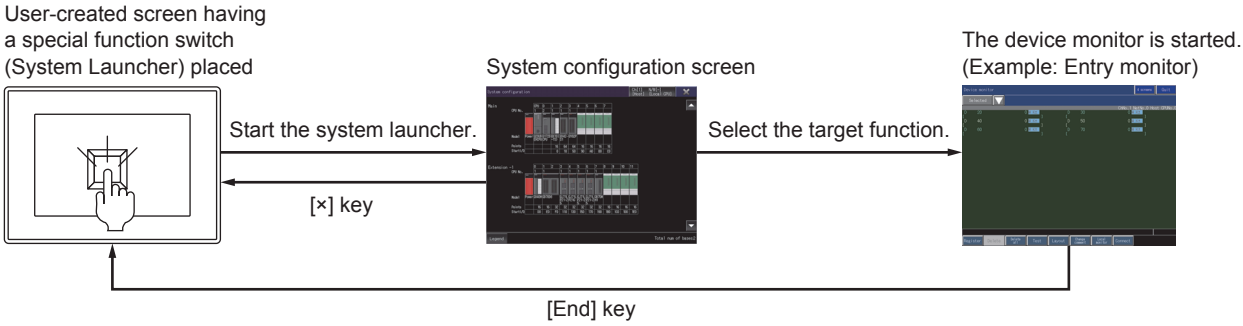


Communication setting

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

■1. Starting the function by using the special function switch (System launcher)

You can start the device monitor from a user-created screen by selecting the connection destination with a special function switch (System launcher).



POINT

When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.

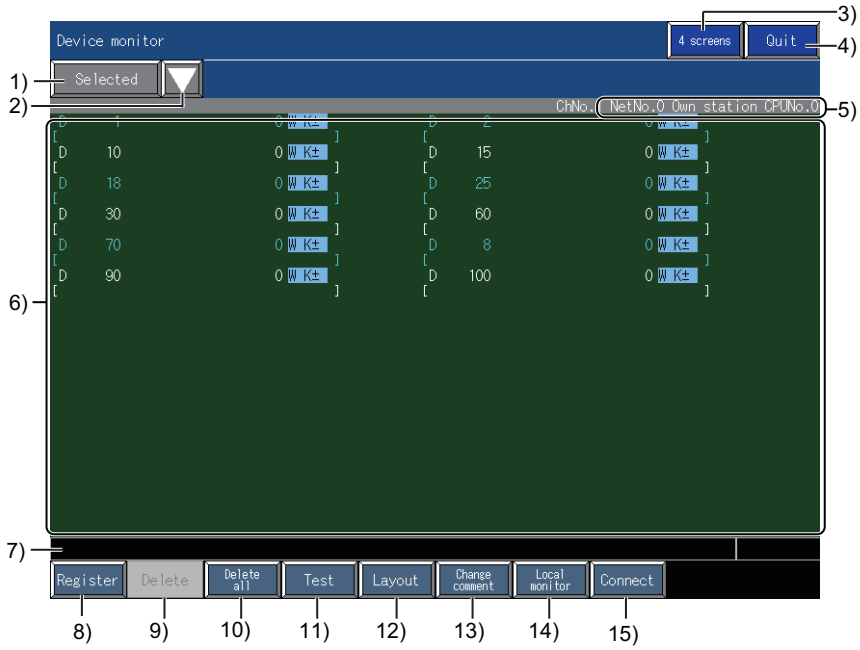
For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

3.4 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.

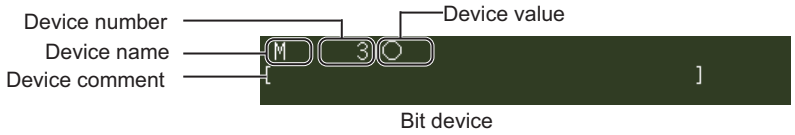
2) Monitor category change key
Use this button to select a monitor category.
Select from [Series], [TC monitor], and [BM monitor].

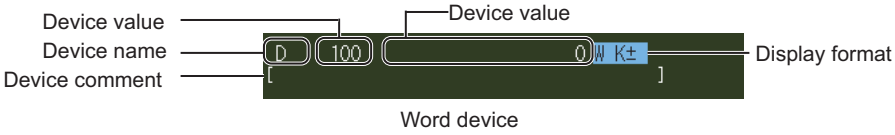
3) Screen switching key ([4 screens], [One large screen])
Switches the screen display between the full screen display and the quad screen display.

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.





Item	Description
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

Item	Description
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+]: Unsigned decimal • [HEX]: Hexadecimal • [BIN]: Binary • [EXP]: Exponential notation • [FIT]: Decimal representation 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.

➠ 3.3.5 ■2. Window for entering the device

9) [Delete] key

Deletes a selected registered device.

➠ 3.3.6 Deleting a device ([Delete])

10) [Delete all] key

Deletes all the registered devices.

➠ 3.3.7 Deleting devices at a time ([Delete all])

11) [Test] key

Carries out a test operation.

➠ 3.3.8 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)

➠ 3.3.9 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.

➠ 3.3.11 File switching for comment display ([Change comment])

14) [Local monitor] key

Starts or ends the local device monitor.

➠ 3.3.10 Monitoring local devices ([Local monitor])

15) [Connect] key

Switches the monitor target for the device monitor.

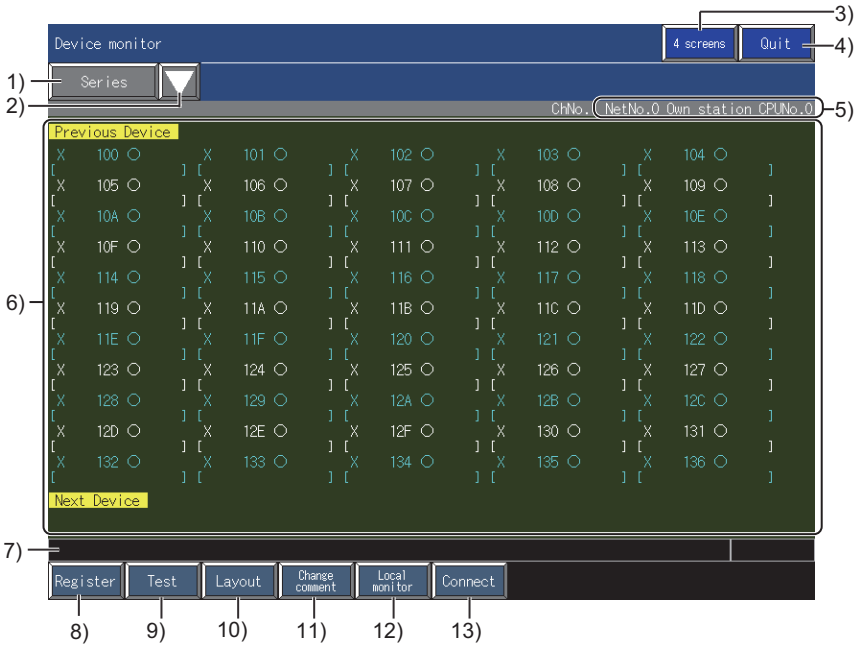
Touch the key to display the communication setting dialog.

➠ 3.3.4 ■2. Communication setting dialog

3.5 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.

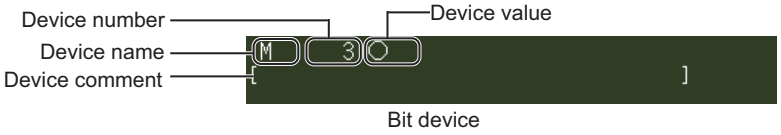
2) Monitor category change key
Use this button to select a monitor category.
Select from [Selected], [TC monitor], and [BM monitor].

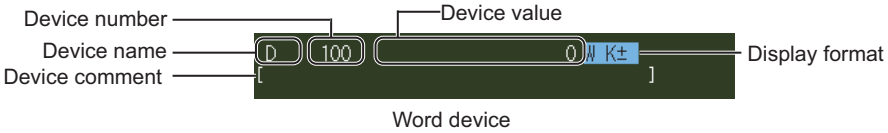
3) Screen switching key ([4 screens], [One large screen])
Switches the screen display between the full screen display and the quad screen display.

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.





Item	Description
[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

Item	Description
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+]: Unsigned decimal • [HEX]: Hexadecimal • [BIN]: Binary • [EXP]: Exponential notation • [FIT]: Decimal representation

7) Message display

Displays error messages.

8) [Register] key

Registers the start device of monitor targets.

Displays the device entry window when touched.

➠ 3.3.5 ■2. Window for entering the device

9) [test] key

Carries out a test operation.

➠ 3.3.8 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)

➠ 3.3.9 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.

➠ 3.3.11 File switching for comment display ([Change comment])

12) [Local monitor] key

Starts or ends the local device monitor.

➠ 3.3.10 Monitoring local devices ([Local monitor])

13) [Connect] key

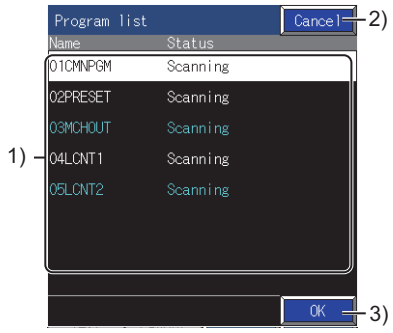
Switches the monitor target for the device monitor.

Touch the key to display the communication setting dialog.

➠ 3.3.4 ■2. Communication setting dialog

3.6 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.

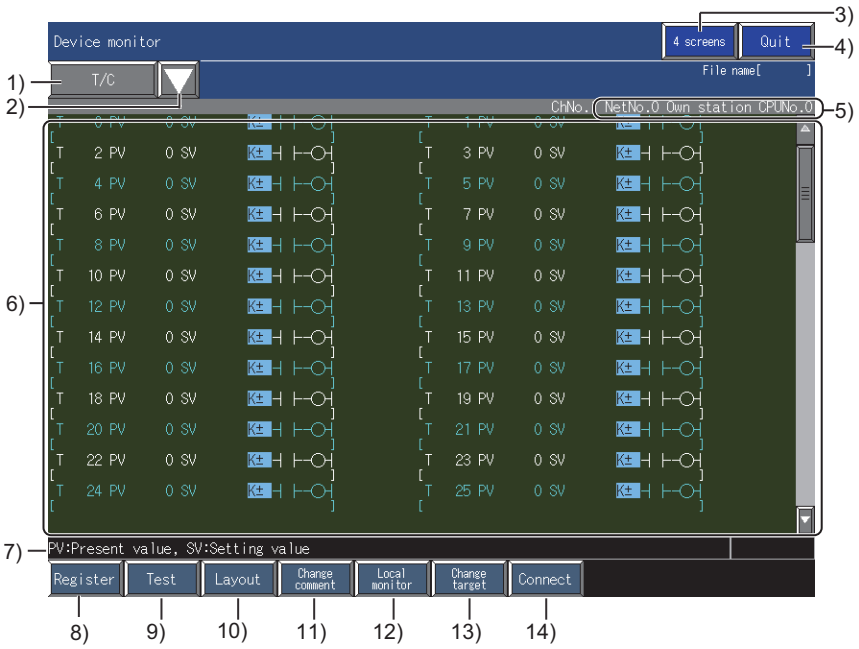


1) Program file list
Lists program files that can be the targets for the TC monitor.
A file can be selected by touching the file name.

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].

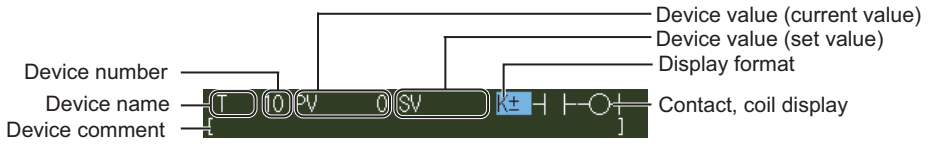
3) Screen switching key ([4 screen], [One large screen])
Switches the screen display between the full screen display and the quad screen display.

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.



Item	Description
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]: Hexadecimal The display format can be changed when touched.
Contact, coil display	Indicates the status of the contact or coil. · Contact : Bit ON : Bit OFF · Coil : Bit ON : Bit OFF

7) Message display

Displays error messages.

8) [Register] key

Registers devices.

Displays the device entry window when touched.

➠ 3.3.5 ■2. Window for entering the device

9) [Test] key

Carries out a test operation.

➠ 3.3.8 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)

➠ 3.3.9 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.

➠ 3.3.11 File switching for comment display ([Change comment])

12) [Local monitor] key

Starts or ends the local device monitor.

➠ 3.3.10 Monitoring local devices ([Local monitor])

13) [Connect] key

Switches the monitor target for the device monitor.

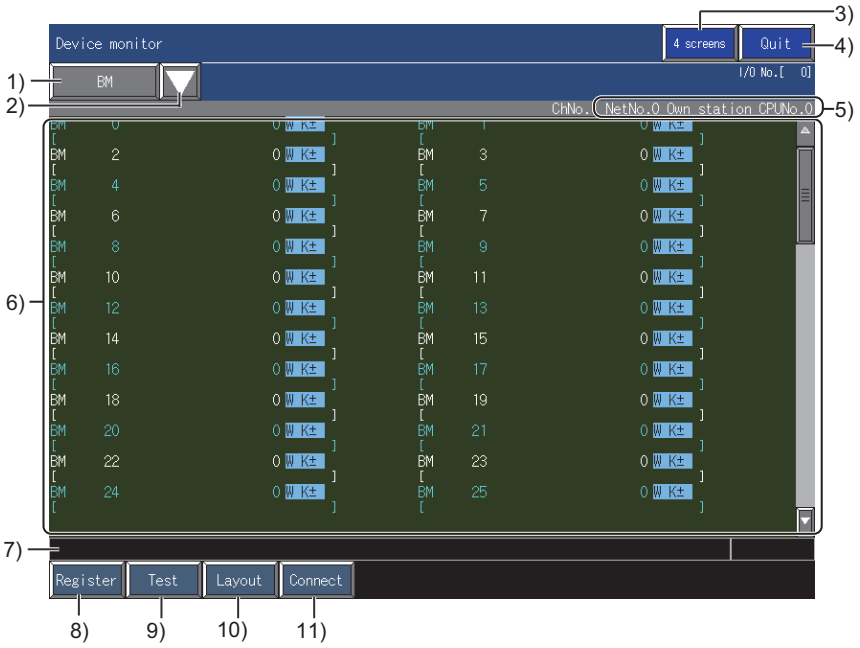
Touch the key to display the communication setting dialog.

➠ 3.3.4 ■2. Communication setting dialog

3.7 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.

Word device

Item	Description
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.

Item	Description
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+]: Unsigned decimal • [HEX]: Hexadecimal • [BIN]: Binary • [EXP]: Exponential notation • [FIT]: Decimal representation 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.

➠ 3.3.5 ■2. Window for entering the device

9) [Test] key

Carries out a test operation.

➠ 3.3.8 Test operation for the monitor device ([Test])

10) [Layput] 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)

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

11) [Connect] key

Switches the monitor target for the device monitor.

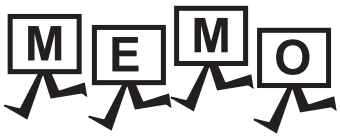
Touch the key to display the communication setting dialog.

➠ 3.3.4 ■2. Communication setting dialog

3.8 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.	• Check the connection (a connector disconnection, a break in a cable) between the PLC and GOT. • Check if the PLC has caused an error. • Refer to the following to check if a network error has occurred. ➠ GOT2000 Series User's Manual (Monitor)
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 rage 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.	• Check the range of devices with the parameter of the PLC. • Check the device test authorization device for the system security setting.
Reading a comment file has failed.	• 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. • No stored comment file exists on the SD card or USB memory that has been connected to the GOT.	• Close the SD card slot cover and select the comment file again. • In the comment file list dialog, select an existing comment file.
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.


MEMO

4. SEQUENCE PROGRAM MONITOR (LADDER, iQ-R LADDER)

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

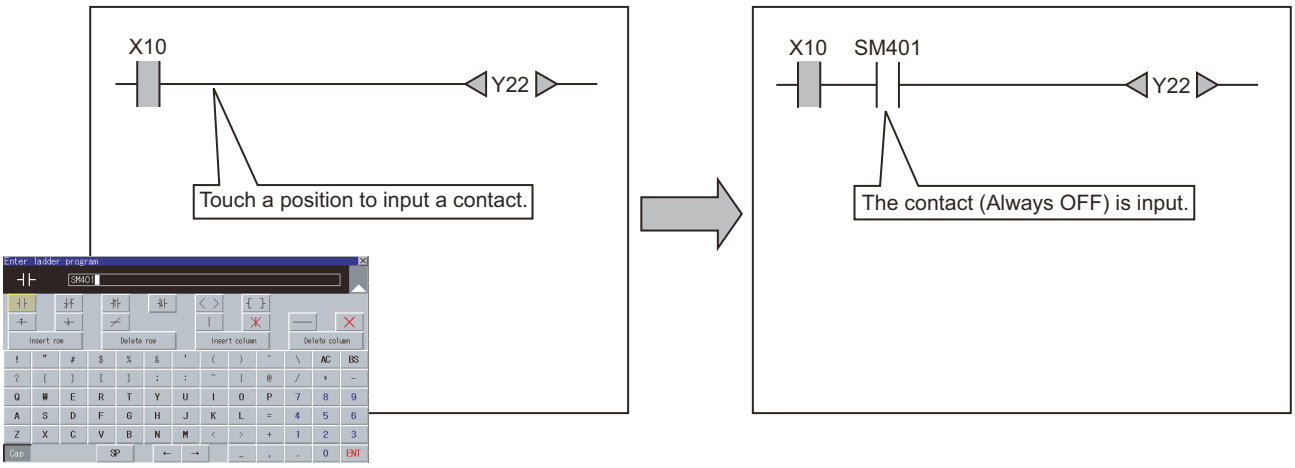
The sequence program monitor has two types: the sequence program monitor (Ladder) for QCPU and LCPU, and the sequence program monitor (iQ-R ladder) for RCPU.

4.1 Features

With the sequence program monitor (Ladder or iQ-R ladder), the GOT monitors a sequence program of a controller in the ladder diagram format. The program is editable, and the current device values of the program are changeable.
The following shows features of the sequence program monitor (Ladder) and the sequence program monitor (iQ-R ladder).

■1. Editing sequence programs on the GOT

Sequence programs are editable in the ladder diagram format by using the sequence program monitor (Ladder).



The following screens are displayed with the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder).

- PLC read screen

  ➠ 4.5 How to Operate PLC Read Screen

- Ladder monitor screen

  ➠ 4.6 How to Operate Ladder Monitor Screen)

- Ladder editor screen

  ➠ 4.7 How to Operate Ladder Editor Screen)

■2. 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 (for the sequence program monitor (Ladder))

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 comment files created in each character code are stored in a data storage, you can switch the language to display a comment, regardless of the language selected in the utility.

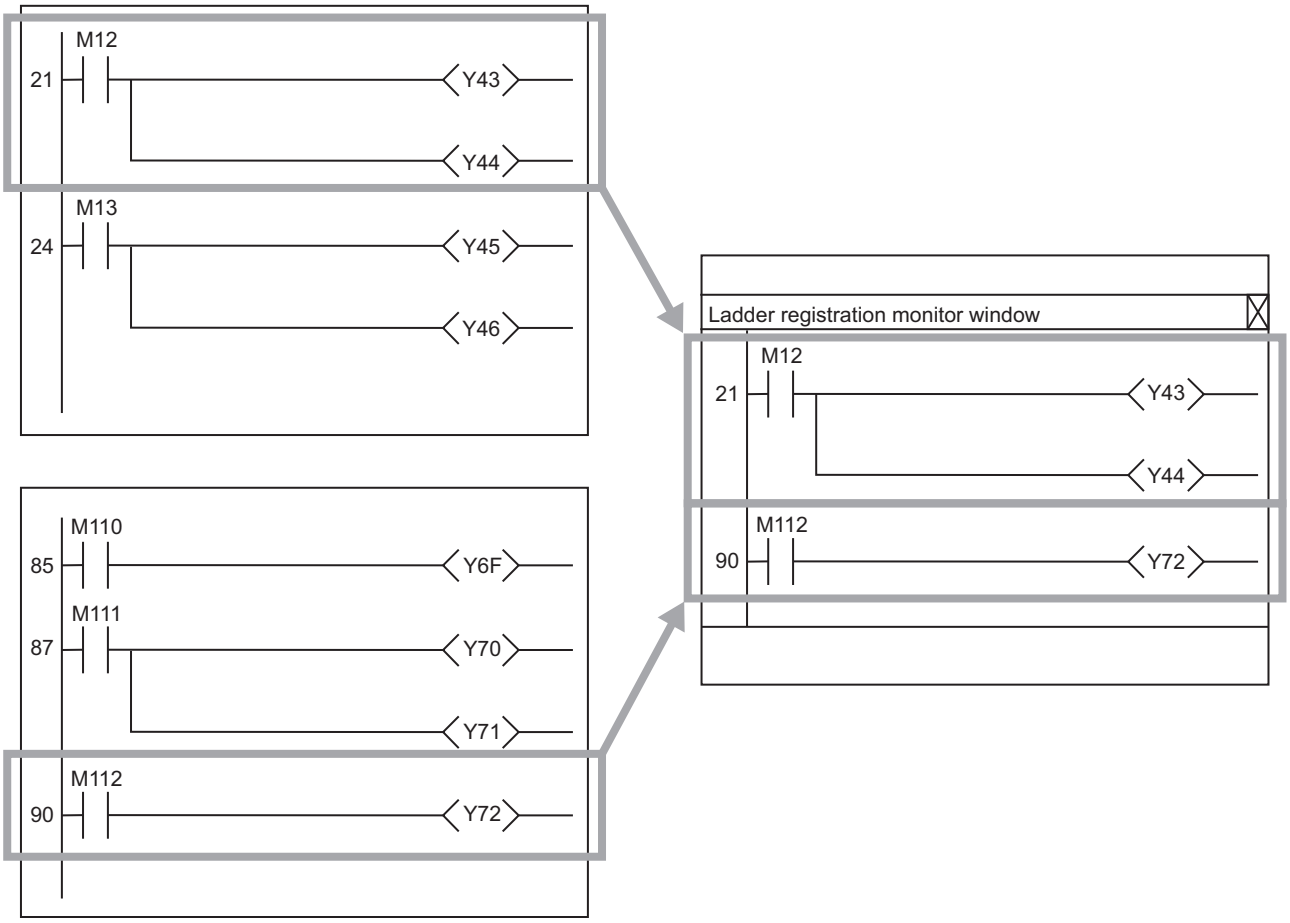
(3) Switching languages (for the sequence program monitor (iQ-R ladder))

When the system language is switched in the utility, the language of the file header and comment is switched accordingly.
When comment files in different languages are written in an RCPU, you can switch the language to display a comment, regardless of the language selected in the utility.

■3. Displaying registered ladder blocks is available

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

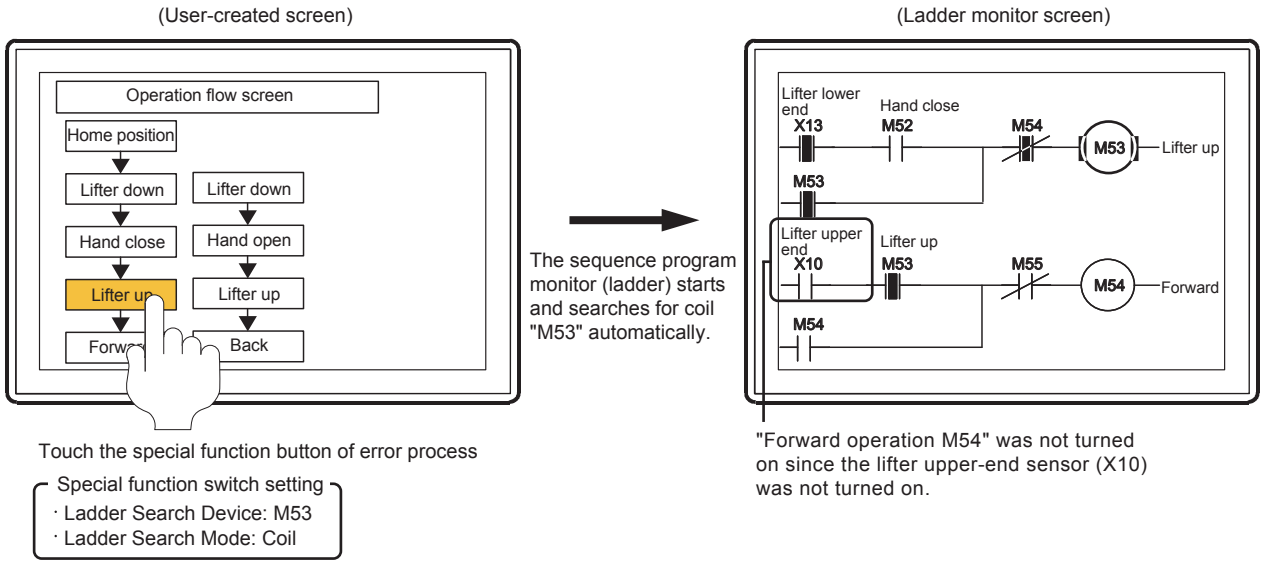
➠ 4.6.3 ■3. Display menu (1) Ladder registration monitor window



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

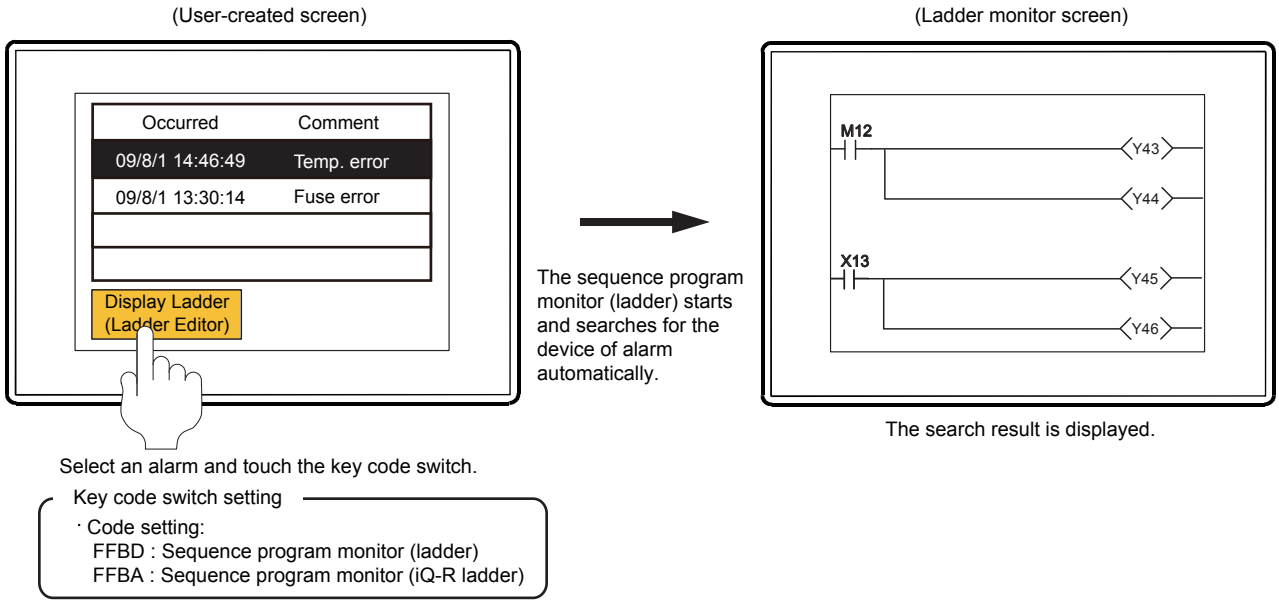
(1) Interaction with the special function switch

The automatic PLC read or the device automatic search can be executed at startup of the sequence program monitor (Ladder) or sequence program monitor (iQ-R ladder) by the following method. Place a special function switch on a user-created screen, specify the search file and search device in the special function switch setting, and then touch the special function switch.
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

The sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) can be started to search for a device having an alarm by the following method. Select an alarm in the alarm display, and touch a key code switch (Display ladder (Ladder Editor)).



■5. Reading program files and comment files

The GOT reads a program file and comment file from an RCPU, QCPU, or LCPU, and stores the read data to the data storage. Therefore, from the next startup of the sequence program monitor, the startup time and the data read time are shortened.

■6. Comment files written to an SD card with GX Works3

The comment files written to an SD card with GX Works3 can be used for displaying device comments by storing them in the data storage in the GOT.

4.2 Specifications

4.2.1 System configuration

This section explains the system configuration of the sequence program monitor (Ladder) and the sequence program monitor (iQ-R ladder).
For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

Controller		Model
RCPU*10*11*12*13*14*15		R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU*1, R120CPU*1, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU*1, R120ENCPU*1, R08PCPU*5, R16PCPU*5, R32PCPU*1*5, R120PCPU*1*5, R08SFCPU*6*7*9, R16SFCPU*6*7*9, R32SFCPU*1*6*7*9, R120SFCPU*1*6*7*9
QCPU (Q mode)	Basic model	Q00JCPU, Q00CPU, Q01CPU
	High Performance model	Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU
	Universal model*2	Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU*1, Q100UDEHCPU*1, Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU
LCPU		L02SCPU, L02SCPU-P, L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT
Motion controller CPU (Q series)*3		Q170MCPU, Q170MCPU-S1, Q170MSCPU, Q170MSCPU-S1
CNC C70*4		Q173NCCPU
CNC C80*8		R16NCCPU-S1

*1 A sequence program that has 260 k steps or more cannot be read.

*2 To write a sequence program containing the following instructions to a PLC CPU, the PLC CPU must have a serial number starting with 10102 or later in the first 5 digits.

Instruction
DBKCMP=(P), DBKCMP<>(P), DBKCMP>(P), DBKCMP>=(P), DBKCMP<(P), DBKCMP<=(P), DBK+(P), DBK-(P), DFMOV(P), SFTBR(P), SFTBL(P), SFTWR(P), SFTWL(P), MEAN(P), DMEAN(P), STRINS(P), STRDEL(P), POW(P), POWD(P), LOG10(P), LOG10D(P), SCL(P), DSCL(P), SCL2(P), DSCL2(P), LDDT=, ANDDT=, ORDT=, LDDT<>, ANDDT<>, ORDT<>, LDDT>, ANDDT>, ORDT>, LDDT>=, ANDDT>=, ORDT>=, LDDT<, ANDDT<, ORDT<, LDDT<=, ANDDT<=, ORDT<=, LDTM=, ANDTM=, ORTM=, LDTM<>, ANDTM<>, ORTM<>, LDTM>, ANDTM>, ORTM>, LDTM<=, ANDTM<=, ORTM<=, LDTM<, ANDTM<, ORTM<, LDTM>=, ANDTM>=, ORTM>=, LDPI, LDFI, ANDPI, ANDFI, ORPI, ORFI, CCOM(P)

A sequence program containing the following instruction cannot be written to a PLC CPU.

Instruction
TYPERD

*3 Only the PLC CPU area (CPU No.1) can be monitored.

*4 The function version must be A2 or later.

*5 This model can be monitored only when its operation mode is the process mode.

*6 The safety program of the PLC CPU cannot be edited.

*7 The device test is not supported.

*8 The ladder editor and the device test are not supported.

*9 While the safety device is being monitored, the safety program cannot be read.

*10 The following instructions cannot be displayed.

Instruction
LD=_U, LD<>_U, LD>_U, LD>=_U, LD<_U, LD<=_U, AND=_U, AND<>_U, AND>_U, AND>=_U, AND<_U, AND<=_U, OR=_U, OR <>_U, OR >_U, OR >=_U, OR <_U, OR <=_U, LDD=_U, LDD<>_U, LDD>_U, LDD>=_U, LDD<_U, LDD<=_U, ANDD=_U, ANDD<>_U, ANDD>_U, ANDD>=_U, ANDD<_U, ANDD<=_U, ORD=_U, ORD<>_U, ORD>_U, ORD>=_U, ORD<_U, ORD<=_U, DI, EI, COM, M.DDRD, MP.DDRD, M.DDWR, MP.DDWR, M.GINT, MP.GINT, M.BITWR, MP.BITWR, M.CHGA, MP.CHGA, M.CHGAS, MP.CHGAS, M.CHGT, MP.CHGT, M.CHGV, MP.CHGV, M.CHGVS, MP.CHGVS, M.MCNST, MP.MCNST, M.SFCS, MP.SFCS, QMSEND

*11 The following instructions are available to RnPCPU only.

Instruction
S.IN, S.OUT1, S.OUT2, S.MOUT, S.DUTY, S.BC, S.PSUM, S.PID, S.2PID, S.PIDP, S.SPI, S.IPD, S.BPI, S.R, S.PHPL, S.LLAG, S.I, S.D, S.DED, S.HS, S.LS, S.MID, S.AVE, S.LIMIT, S.VLMT1, S.VLMT2, S.ONF2, S.ONF3, S.DBND, S.PGS, S.SEL, S.BUMP, S.AMR, S.FG, S.IFG, S.FLT, S.SUM, S.TPC, S.ENG, S.IENG, S.ADD, S.SUB, S.MUL, S.DIV, S.SQR, S.ABS, S.>, S.<, S.=, S.>=, S.<=, S.AT1

*12 The following instructions are not available to RnSFCPU only.

Instruction
LD Sn/BLm\Sn, LDI Sn/BLm\Sn, AND Sn/BLm\Sn, ANI Sn/BLm\Sn, OR Sn/BLm\Sn, ORI Sn/BLm\Sn, LD BLm, LDI BLm, AND BLm, ANI BLm, OR BLm, ORI BLm, MOV K4Sn/BLm\K4Sn, MOVP K4Sn/BLm\K4Sn, DMOV K4Sn/BLm\K4Sn, DMOVP K4Sn/BLm\K4Sn, BMOV K4Sn/BLm\K4Sn, BMOVP K4Sn/BLm\K4Sn, SET BLm, RST BLm, PAUSE BLm, RSTART BLm, SET Sn/BLm\Sn, RST Sn/BLm\Sn, BRSET, D.DDRD, DP.DDRD, D.DDWR, DP.DDWR, D.GINT, DP.GINT

*13 The following instructions are not available to R00CPU.

Instruction
SP.FREAD, SP.FWRITE, LOGTRG, LOGTRGR

*14 The following instructions are not available to R00CPU, R01CPU, and R02CPU.

Instruction
DBOPEN, DBOPENP, DBCLOSE, DBCLOSEP, DBINSERT, DBINSERTP, DBUPDATE, DBUPDATEP, DBSELECT, DBSELECTP, DBDELETE, DBDELETEP, DBIMPORT, DBIMPORTP, DBEXPORT, DBEXPORTP, DBTRANS, DBTRANSP, DBCOMMIT, DBCOMMITP, DBROLBAK, DBROLBAKP

*15 The following instructions are not available to RnSFCPU and RnPCPU.

Instruction
CMP, CMPP, CMP_U, CMPP_U, DCMP, DCMPP, DCMP_U, DCMPP_U, ZCP, ZCPP, ZCP_U, ZCPP_U, DZCP, DZCPP, DZCP_U, DZCPP_U, SFTR, SFTRP, SFTL, SFTLP, WSFR, WSFRP, WSFL, WSFLP, SMOV, SMOVP, DSWAP, DSWAPP, ECMP, ECMPP, EDCMP, EDCMPP, EZCP, EZCPP, EDZCP, EDZCPP, CCD, CCDP, SERMM, SERMMP, DSERMM, DSERMMP, BON, BONP, DBON, DBONP, SQRT, SQRTP, DSQRT, DSQRTP, CRC, CRCP, TCMP, TCMPP, TZCP, TZCPP, HOURM, DHOURM, SP.SLMPSND, SP.FTPPUT, SP.FTPGET, PID

■2. 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 *1	Direct CPU connection *2	Serial communication connection	Ethernet connection *9	MELSECNET/H connection*1, MELSECNET/10 connection*1*3	CC-Link IE controller connection*1*4, CC-Link IE field connection*5*6	CC-Link connection	
								ID*7	G4*8
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.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system applications (extended functions) for the sequence program monitor (Ladder) and the sequence program monitor (iQ-R ladder) to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Required hardware

The following hardware is required.

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

■5. Applicable hardware

A USB mouse is usable.

4.2.2 Devices and range that can be monitored

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

■1. When RCPU is connected

(○: Possible, ×: Impossible)

Device[*1]	Device range	Program display	Device monitor display	Search operation	Device comment display
Input	RCPU: X0 to X2FFF, DX0 to DXFFF CNC C80: X0 to X1FFF	○	○	○	○
Output	RCPU: Y0 to Y2FFF, DY0 to DYFFF CNC C80: Y0 to Y1FFF	○	○	○	○
Internal relay	Rn(EN)CPU: M0 to M161882111 RnPCPU: M0 to M94773247 RnSFCPU: M0 to M94674943 CNC C80: M0 to M61439	○	○	○	○
Latch relay	RCPU: L0 to L32767 CNC C80: L0 to L1023	○	○	○	○
Link relay	Rn(EN)CPU: B0 to B9A61FFF RnPCPU: B0 to B5A61FFF RnSFCPU: B0 to B5A49FFF CNC C80: B0 to BDFFF	○	○	○	○
Timer	Rn(EN)CPU: T0 to T8993439 RnPCPU: T0 to T5265151 RnSFCPU: T0 to T5259711 CNC C80: T0 to T2047	○	○	○	○
Long timer	Rn(EN)CPU: LT0 to LT2529407 RnPCPU: LT0 to LT1480831 RnSFCPU: LT0 to LT1479295	○	○	○	○
Retentive timer	Rn(EN)CPU: ST0 to ST8993439 RnPCPU: ST0 to ST5265151 RnSFCPU: ST0 to ST5259711 CNC C80: ST0 to ST127	○	○	○	○
Long retentive timer	Rn(EN)CPU: LS0 to LS2529407 RnPCPU: LS0 to LS1480831 RnSFCPU: LS0 to LS1479295	○	○	○	○
Counter	Rn(EN)CPU: C0 to C8993439 RnPCPU: C0 to C5265151 RnSFCPU: C0 to C5259711 CNC C80: C0 to C512	○	○	○	○
Long counter	Rn(EN)CPU: LC0 to LC4761215 RnPCPU: LC0 to LC2787391 RnSFCPU: LC0 to LC2784543	○	○	○	○
Data register	Rn(EN)CPU: D0 to D10117631 RnPCPU: D0 to D5923327 RnSFCPU: D0 to D5917183 CNC C80: D0 to D8191	○	○	○	○
Link register	Rn(EN)CPU: W0 to W9A61FF RnPCPU: W0 to W5A61FF RnSFCPU: W0 to W5A49FF CNC C80: W0 to W2FFF	○	○	○	○
Annunciator	RCPU: F0 to F32767 CNC C80: F0 to F2047	○	○	○	○
Edge relay	RCPU: V0 to V32767 CNC C80: V0 to V511	○	×	○	○

Device[*1]	Device range	Program display	Device monitor display	Search operation	Device comment display
File register	Rn(EN)CPU: R0 to 32767, ZR0 to ZR10027007 RnPCPU: R0 to R32767, ZR0 to ZR5832703 RnSFCPU: R0 to R32767, ZR0 to ZR5832703 CNC C80: R0 to R32767	○	○	○	○
Link special relay	Rn(EN)CPU: SB0 to SB9A61FFF RnPCPU: SB0 to SB5A61FFF RnSFCPU: SB0 to SB5A49FFF CNC C80: SB0 to SB3FF	○	○	○	○
Link special register	Rn(EN)CPU: SW0 to SW9A61FF RnPCPU: SW0 to SW5A61FF RnSFCPU: SW0 to SW5A49FF CNC C80: SW0 to SW3FF	○	○	○	○
Step relay	RCPU: S0 to S16383	○	×	○	×
Index register	RCPU: Z0 to Z23	○	○	○	×
Long index register	RCPU: LZ0 to LZ11	○	○	○	×
Special relay	RCPU:SM0 to SM4095	○	○	○	○
Special register	RnSFCPU: SD0 to SD4095 CNC C80: SD0 to SD4095	○	○	○	○
Function input	RCPU: FX0 to FXF	○	×	○	×
Function output	RCPU: FY0 to FYF	○	×	○	×
Function register	RCPU: FD0 to FD4	○	×	○	×
Link direct device	RCPU: J□□\□□	○	×	×	○
Module access device	RCPU: U□□\□□, U3En□□\□□	○	×	×	○
Nesting	RCPU: N0 to N14	○	×	×	×
Pointer	RCPU: P0 to P32767	○	×	○[*2]	○
Interrupt pointer	RCPU: I0 to I1023	○	×	○[*2]	○
SFC block device	RCPU: BL0 to BL319, BL□□\S□□	○	×	○	○
Network No. specification device	RCPU: J0 to J255	○	×	×	○
I/O No. specification device	RCPU: U0 to U1FF, U3E0 to U3E3	○	×	×	○
Module refresh device	RCPU: RD0 to RD1048575	○	○	○	○
Safety input relay	RnSFCPU: SA\X0 to SA\X2FFF	○	○	○	○
Safety output relay	RnSFCPU: SA\Y0 to SA\Y2FFF	○	○	○	○
Safety link relay	RnSFCPU: SA\B0 to SA\B9BFFF	○	○	○	○
Safety internal relay	RnSFCPU: SA\M0 to SA\M638975	○	○	○	○
Safety timer	RnSFCPU: SA\T0 to SA\T35487	○	○	○	○
Safety counter	RnSFCPU: SA\C0 to SA\C35487	○	○	○	○
Safety retentive timer	RnSFCPU: SA\ST0 to SA\ST35487	○	○	○	○
Safety special relay	RnSFCPU: SA\SM0 to SA\SM4095	○	○	○	○
Safety data register	RnSFCPU: SA\D0 to SA\D39935	○	○	○	○
Safety special register	RnSFCPU: SA\SD0 to SA\SD4095	○	○	○	○
Safety link register	RnSFCPU: SA\W0 to SA\W9BFF	○	○	○	○

*1 For applicable devices and device ranges, refer to manual of the PLC CPU.
*2 Device cannot be replaced.

■2. When QCPU or LCPU is connected

(○: Possible, ×: Impossible)

Device[*1]	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[*1]	M0 to 8191 to 61439	○	○	○
Latch relay	L0 to 32767	○	○	○
Link relay[*2]	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[*2]	D0 to 4910079	○	○	○
Extended link register[*2]	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	○	×	○[*3]
Interrupt pointer	I0 to 255	○	×	○[*3]
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.

4.2.3 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 Electric Products) For GT Works3 Version1

4.2.4 Precautions

■1. Precautions for sequence program monitor (Ladder)

(1) Operation while the sequence program monitor (Ladder) is running

Do not perform the following operations with the GOT during sequence program monitor (Ladder) startup.
Doing so may cause the stored data to be deleted, or the sequence program monitor (Ladder) to run improperly.

- 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 a sequence program with the sequence program monitor (Ladder), make sure to back up the program with the backup/restoration function so that you can restore the original program.

➠ 10. BACKUP/RESTORATION

(3) Precautions for the online program change

Precautions for the online program change 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.

- 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.

■2. Precautions for sequence program monitor (iQ-R Ladder)

(1) Operation while the sequence program monitor (iQ-R ladder) is running

Do not perform the following operations on the GOT while the sequence program monitor (iQ-R ladder) is running. Doing so may cause the stored data to be deleted, or the sequence program monitor (iQ-R ladder) to run improperly.

- 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 a sequence program with the sequence program monitor (iQ-R ladder), make sure to back up the program with the backup/restoration function so that you can restore the original program.

➠ 10. BACKUP/RESTORATION

(3) Files and programs that cannot be displayed on the ladder display

The ladder display does not support the following files and programs.

- File with a security key
- File with a block password
- Ladder block that includes structured text/inline structured text

(4) Programs that cannot be edited

The following programs cannot be edited with the ladder editor.

- Program consisting of multiple program blocks
- Program other than the ladder program
- Program using a label
- Program using an inline ST
- Program using an MC/MCR instruction
- Program using a statement that exceeds 64 one-byte characters
- Program using a character string constant that exceeds 32 one-byte characters
- Program using a note that exceeds 32 one-byte characters
- Program using a peripheral statement or note
- Program using a line feed in a statement, note, or character string constant
- Program using the special character ($") in a character string constant
- Safety program
- Program using an FB or FUN

(5) Display of programs using FBs or FUNs

The display of programs using FBs or FUNs differs between GX Works3 and the ladder monitor screen. The ladder monitor screen does not display the programs contained in FBs or FUNs.

(6) Displayable FBs and FUNs

The following shows FBs and FUNs that are displayable in the sequence program monitor (iQ-R ladder).

- Subroutine type function block (created by users)
- Standard function block
- Function block and function included in the application library or MELSOFT Library (Sample library)
- Function (created by users)
- Standard function

(7) Available constants

Only the constants available for QCPU are editable with the sequence program monitor (iQ-R ladder). The constants available for QCPU are as follows.

- K: Decimal constant
- H: Hexadecimal constant
- E: Real number
- "": Character string

When GX Works3 displays a ladder program using constants other than the above, the constants are displayed as they are.
If you edit the constants with the sequence program monitor (R ladder) and then GX Works3 reads the program, the display and settings of the constants are changed to those available for QCPU.

(8) When $" is included in a character string constant

When $" is included in a character string constant, $" and subsequent characters are not displayed on the ladder monitor screen and the ladder editor screen.

(9) When a line feed character is included

When a line feed character is included in a note or statement, the line feed character and subsequent characters are not displayed on the ladder editor screen.

4.3 Display Operation

This section explains how to display the operation screen for the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) after the GOT is turned on.

Step 1. Power on the GOT.

Step 2. Display the sequence program monitor (Ladder) screen or the sequence program monitor (iQ-R ladder) screen.
The display methods include the following two types.

- Using the special function switch (Sequence program monitor (Ladder) or Sequence program monitor (iQ-R ladder)) set in the project
  For how to set the special function switch, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  To start the sequence program monitor (Ladder), touch [Monitor] → [Seq.program monitor(Ladder)] from the main menu.
  To start the sequence program monitor (iQ-R ladder), touch [Monitor] → [Seq. program monitor (iQ-R Ladder)] from the main menu.
  For how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel No., network No., station number, and CPU number in the communication setting dialog.

➠ 4.5.2 ■1. Communication setting window

Step 4. Read data from the PLC and display the program list window.

➠ 4.5.2 ■2. Program list window

Reading data from the PLC is not required when the GOT is restarted, because sequence programs and comment files are stored in a data storage with the sequence program monitor (Ladder).
Reading data from the PLC is not required when the GOT is restarted, because sequence programs are stored in a data storage with the sequence program monitor (iQ-R ladder).

Step 5. Select a program to be displayed from the program list and display the ladder monitor screen.

➠ 4.6 How to Operate Ladder Monitor Screen

Step 6. Display the ladder editor screen from the edit menu of the ladder monitor screen.

➠ 4.7 How to Operate Ladder Editor Screen

For information on how to start the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) using the one-touch ladder jump function, refer to the following.

➠ ■1. Start operation when using the One-touch Ladder Jump function

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

➠ 4.3.5 Setting the security

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

By using a special function switch, alarm display (user), or others, you can start the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) to automatically read sequence program files or search for a device.
The following shows objects which can use the One-touch Ladder Jump function.

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

(1) Before executing the automatic PLC read

(a) 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 (GOT2000) or in the utility.
For the setting of automatic PLC read, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual
GOT2000 Series User's Manual (Utility)

(b) 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 (GOT2000) 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

To start the sequence program monitor (Ladder), touch a special function switch that has the following settings: [Sequence Program Monitor (Ladder)] is selected for [Switch Action], and [Use One-touch Ladder Jump] is selected.
To start the sequence program monitor (iQ-R ladder), touch a special function switch that has the following settings: [Sequence Program Monitor (iQ-R ladder)] is selected for [Switch Action], and [Use One-touch Ladder Jump] is selected.
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) Screen Design Manual

(○: 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

Starting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) → Automatic PLC read (The set sequence program file) → Automatic search for Ladder Search Device (Coil/Factor) → Ladder monitor screen (The search result is displayed.)

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

Starting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) → Automatic PLC read (All sequence program files) → Automatic search for Ladder Search Device (Coil/Factor) → Ladder monitor screen (The search result is displayed.)

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

Starting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) → Automatic PLC read (The set sequence program file) → Ladder monitor screen

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

Starting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) → PLC read screen

POINT

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.

➠ 4.3 Display Operation

(3) Starting from the alarm display (user)

The sequence program monitor (Ladder) or (iQ-R ladder) can be started and a device having an alarm can be searched for by selecting an alarm in an alarm display (User) and touching a key code switch (to which a key code for [Display Ladder (Ladder Editor)]) is set).
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) Screen Design Manual

(○: Set, ×: 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

Starting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) → Automatic PLC read (The set sequence program file) → Automatic search for Ladder Search Device (Coil/Factor) → Ladder monitor screen (The search result is displayed.)

(b) Operations for setting the Ladder Search Mode

Starting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) → Automatic PLC read (All sequence program files) → Automatic search for Ladder Search Device (Coil/Factor) → Ladder monitor screen (The search result is displayed.)

(4) 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.

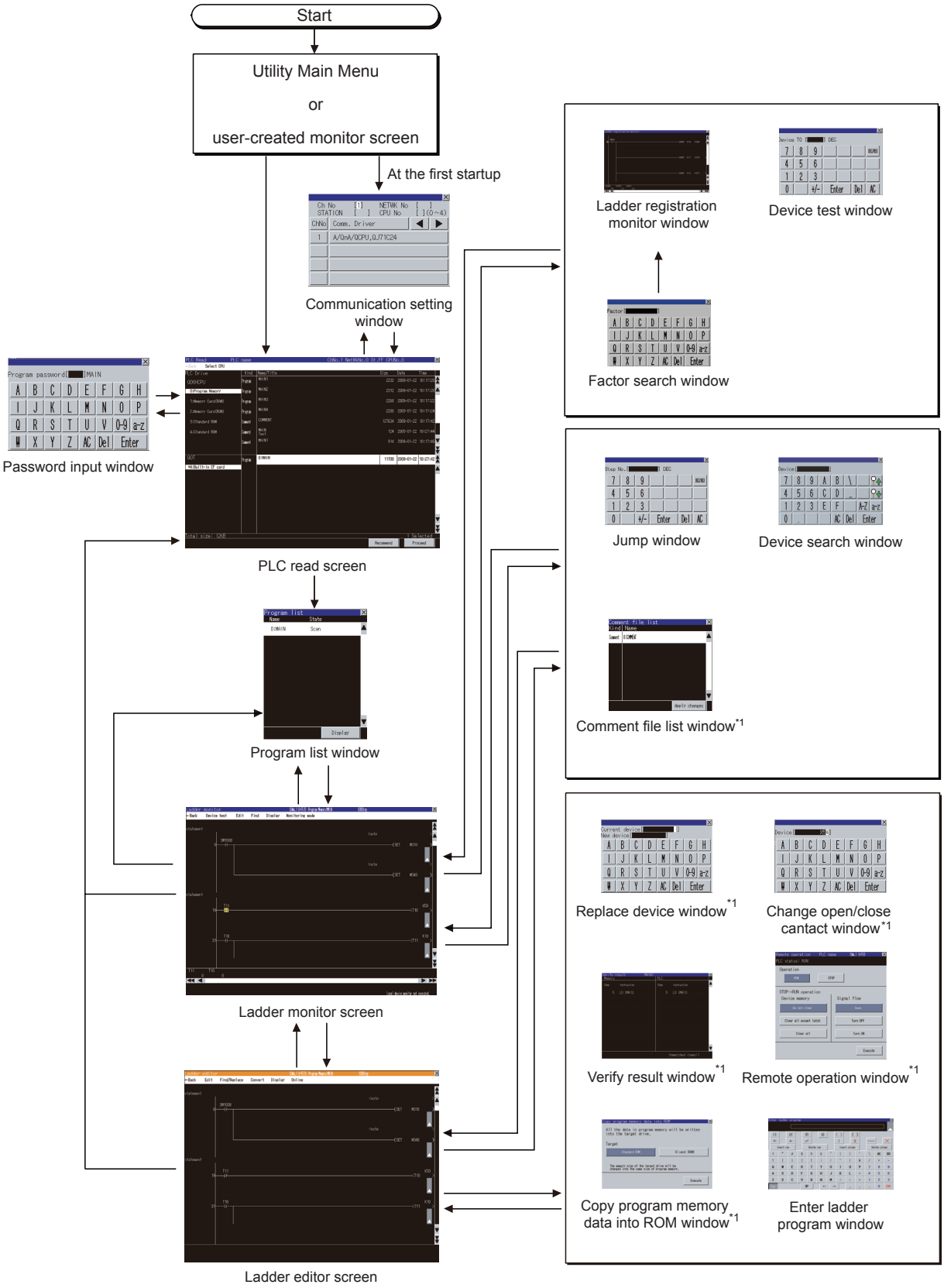
Starting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) → Automatic PLC read (All sequence program files) → Automatic search for Ladder Search Device (Coil) → Ladder monitor screen (The search result is displayed.)

For the simple alarm display, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■2. Changing screens

The following describes how to change the screen.



*1 Only for the sequence program monitor (Ladder)

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.

➠ 4.2.4 ■1. 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.

➠ 4.3.5 Setting the security

4.3.1 Setting ladder data storage location

■1. Setting ladder data storage location

Up to 512 files of ladder data (sequence programs and device comments) used for the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) 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 (GOT2000)

➠ GT Designer3 (GOT2000) Screen Design Manual

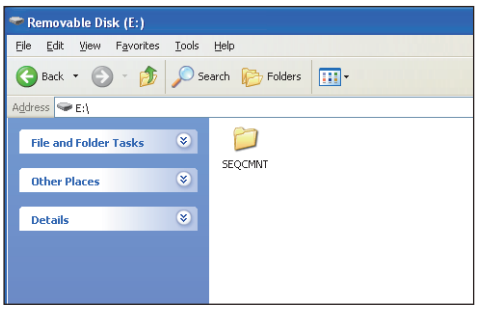
4.3.2 Reading comment files from data storage (Sequence program monitor (Ladder))

The sequence program monitor (Ladder) uses the comment files that are stored in the data storage in the GOT.

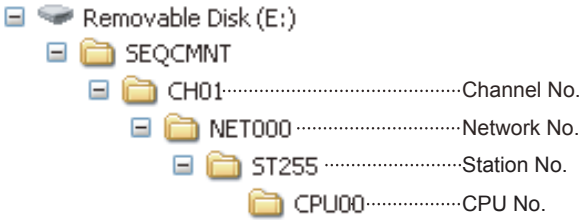
■1. Procedure for using comment files stored in data storage

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

Step 1. Create a SEQCMNT folder in a data storage.
When the SEQCMNT folder already exists, creating a new SEQCMNT folder is not required.



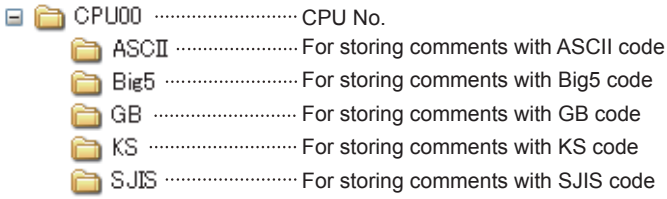
Step 2. In the SEQCMNT folder, create folders for CH No., network No., station No., and CPU number of the monitored controller with a hierarchy as shown below.



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

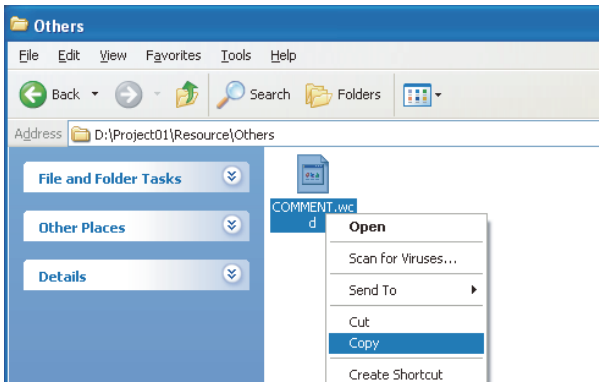
Assign numbers to "*" marks.
(When the CH No. is 1, the folder name is CH01. When the monitor target is the host station, the folder name is ST255.)

Step 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 GB code	GB
Folder for Big5 code	Big5
Folder for KS code	KS
Folder for ASCII code	ASCII

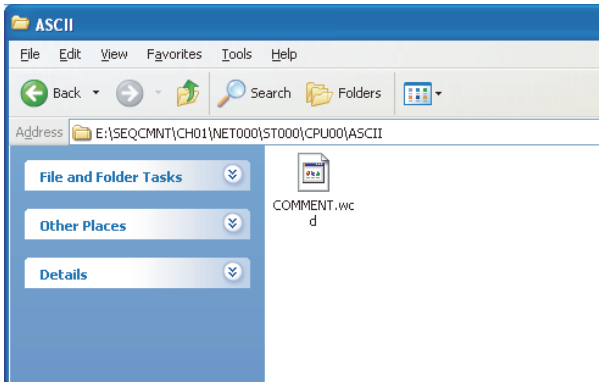
Step 4. Copy a comment file (.wcd) in the saved project.



When the GX Works2 project is used, the creation method of a comment file (.wcd) differs depending on whether the project used can be or cannot be saved in the GX Developer format.

- Project that can be saved in the GX Developer format
  A comment file (.wcd) is created when the project is saved in the GX Developer format.
- Project that cannot be saved in the GX Developer format
  Export the project by using [Write IC Memory Card] of GX Works2, and change the extension of the comment file from [.qcd] to [.wcd].

Step 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.



Step 6. Install the data storage with the comment file on the GOT.

POINT

(1) 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.

(2) Displaying comments in a language different from the language of the utility
Store the comment file corresponding to the language to display comments in the data storage.
Switch comment files on the Ladder monitor screen for displaying the comments in appropriate language.

4.3.3 Reading comment files from data storage (Sequence program monitor (iQ-R ladder))

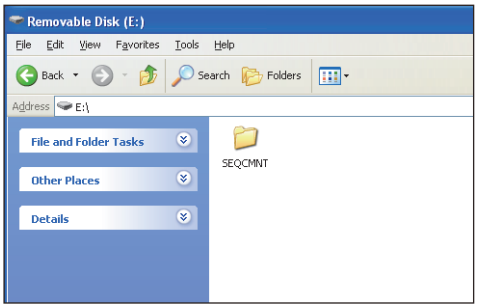
The sequence program monitor (iQ-R ladder) uses the comment files that are stored in the data storage in the GOT.
The following shows the characters and the number of characters usable for the name of a comment file.

- One-byte alphanumeric characters
- Symbols
- When the comment files are used for all the controllers: 60 one-byte characters or less
- When the comment files are used for a specified controller: 38 one-byte characters or less

■1. Procedure for using comment files stored in data storage

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

Step 1. Create a SEQCMNT folder in a data storage.
When the SEQCMNT folder already exists, creating a new SEQCMNT folder is not required.



Step 2. 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.)

Step 3. When the comment files are used for a specified controller, store the comment files (.DCM) and SourceInfo.CAB in the CPU number folder corresponding to the monitored controller.
When the comment files are used for all the controllers, store the comment files (.DCM) and SourceInfo.CAB directly under the [SEQCMNT] folder.

Step 4. Install the data storage with the comment file on the GOT.

POINT

Displaying comments in a language different from the language of the utility
Store the comment file corresponding to the language to display comments in the data storage. Switch comment files on the Ladder monitor screen for displaying the comments in appropriate language.

4.3.4 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.
Only the sequence program monitor (Ladder) supports the program update check.

■1. Specification of the program update check

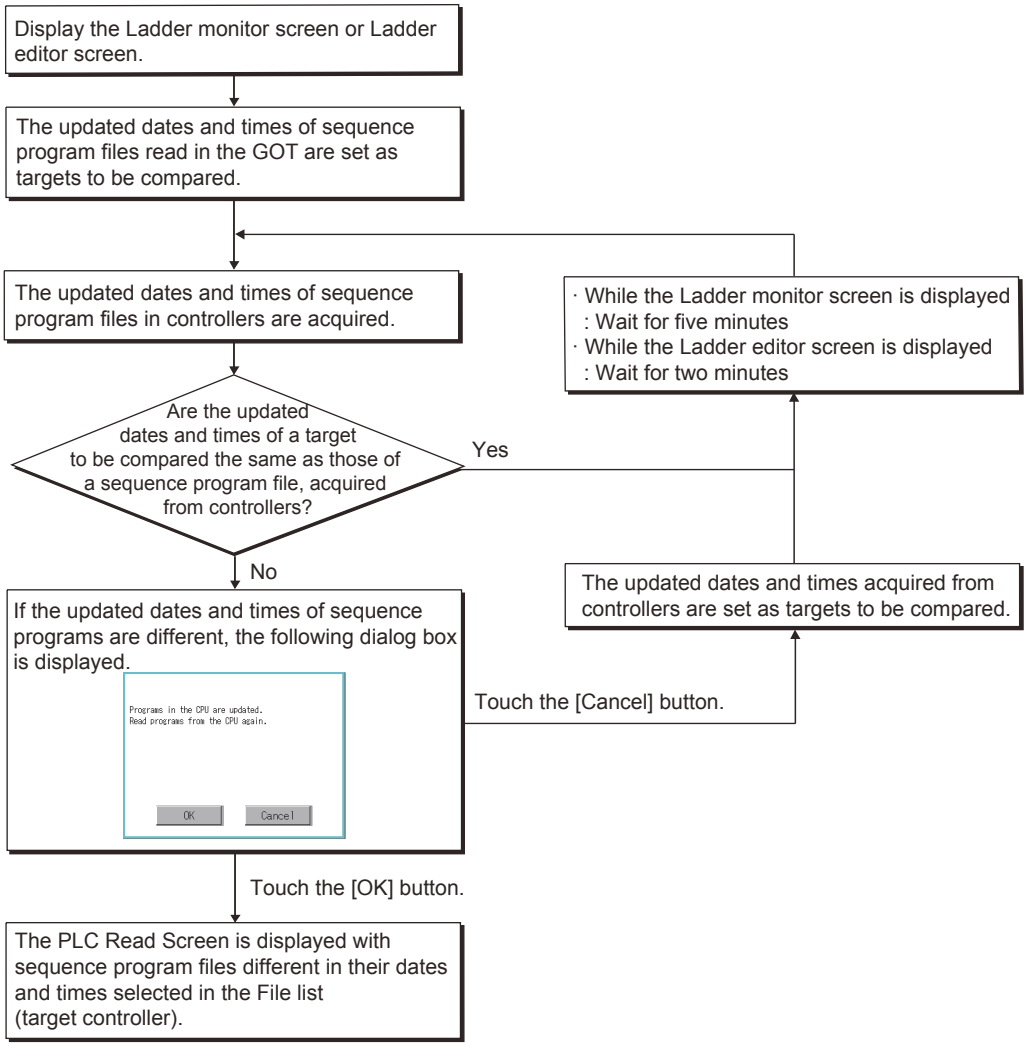
(1) Check criterion

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.

■2. Operations for the program update check



4.3.5 Setting the security

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

■1. 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

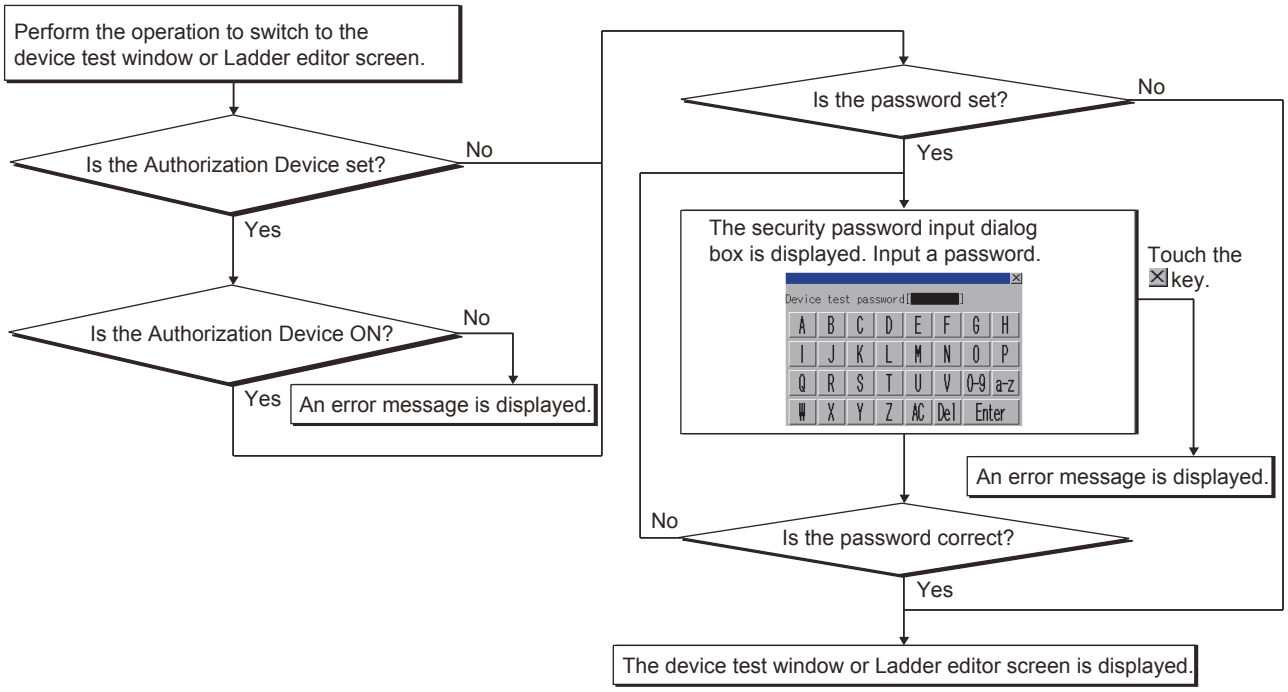
To configure the security settings, select [Common] → [GOT Environmental Setting] → [Security] from the menu of GT Designer3 to display the [Environmental Setting] window, and select the [Functional Operation Security] tab. The following shows the setting method for each security type.

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.

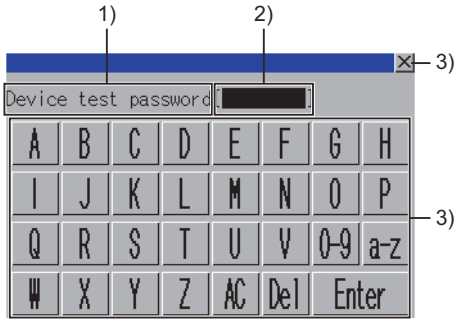
➠ GT Designer3 (GOT2000) Screen Design Manual

■2. Changing screens when setting the security



■3. perations 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.

4.3.6 User authentication function

The user authentication function prevents unauthorized operation of the PLC CPU.
This function is applicable to Safety CPU (RnSFCPU) only.

■1. Specifications of the user authentication function

(1) Operations that requires the user authentication

To perform the following operations, the user authentication is required.

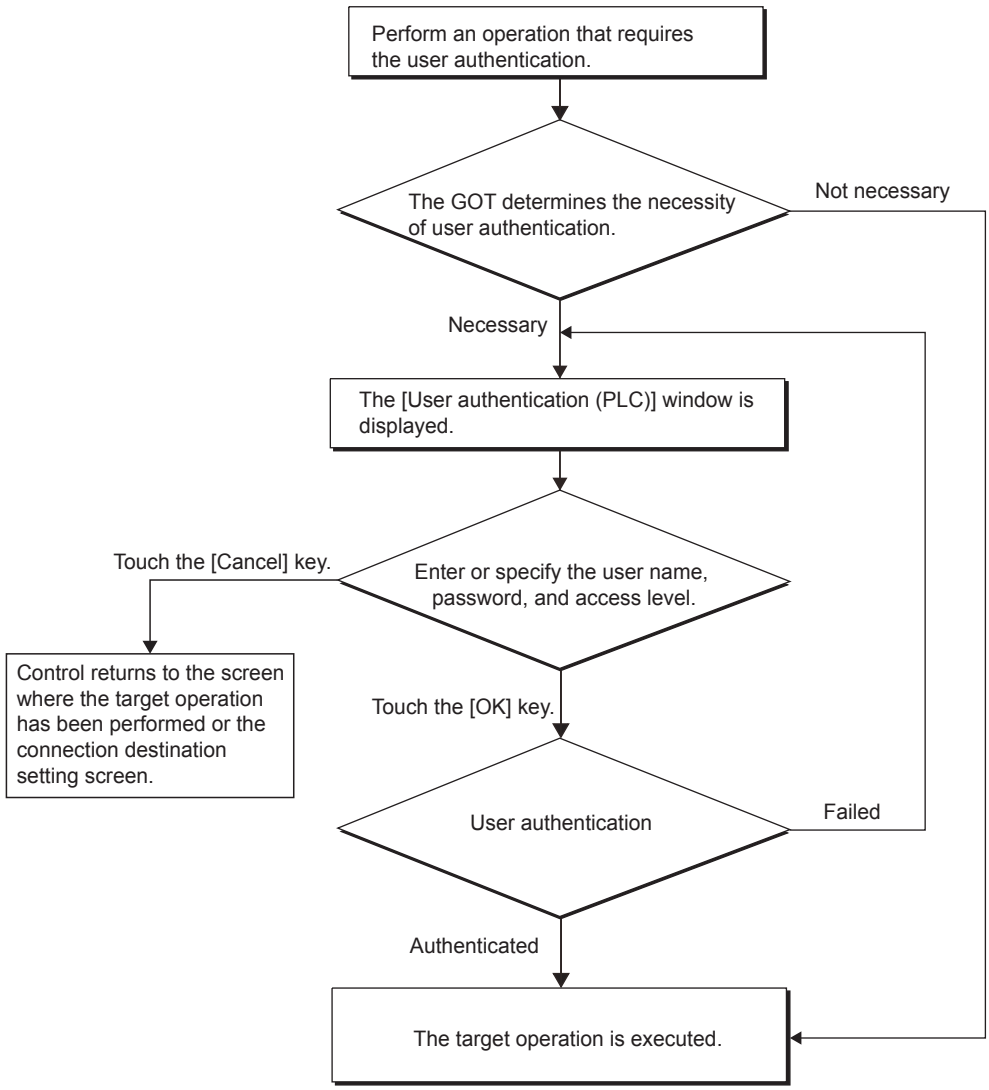
Operations
Connect the GOT to the PLC CPU by the following methods: • Using the [Specify connection destination] dialog • Using the one-touch ladder jump function • Restarting the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder)
Select a file in the PLC CPU.
Read a file from the PLC CPU.
Write a file to the PLC CPU.
Touch the [Recommend] key.

(2) User authentication method

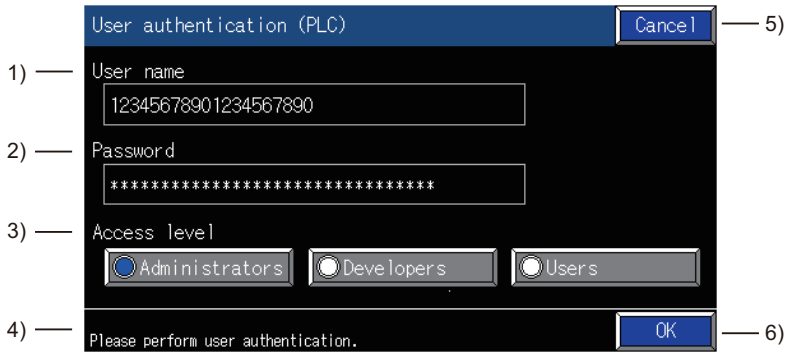
For the user authentication, enter or specify the following items.

- User name
- Password
- Access level

■2. Screen transition when the authentication function is used



■3. Operations on the [User authentication (PLC)] window



No.	Item	Description
1)	[User name]	Enter a user name for authentication.
2)	[Password]	Enter a password.
3)	[Access level]	Select an access level.
4)	Message display area	Displays messages.
5)	[Cancel] key	Cancels the user authentication.
6)	[OK] key	Executes the user authentication.

4.4 Setting Display Format

On the screen of the sequence program monitor (Ladder) or (iQ-R ladder), the display format of word device values or display language can be switched and the display mode of sequence programs can be changed.

4.4.1 Switching languages of sequence programs (Supported by the sequence program monitor (ladder) only)

The display languages (Japanese, Simplified Chinese, Traditional Chinese, or Korean) can be switched for the Sequence program monitor (Ladder or R ladder) at monitoring.
For switching languages, comment files in the language to be displayed must be created in advance.

➠ 4.3.2 Reading comment files from data storage (Sequence program monitor (Ladder))

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

4.4.2 Switching comment display mode

For the sequence program monitor (Ladder), whether to display or hide comments, statements, and notes can be selected on the ladder monitor screen or ladder editor screen.

➠ 4.6.3 ■3. Display menu
4.7.3 ■4. Display menu

For the sequence program monitor (iQ-R ladder), whether to display statements and notes is selectable on the ladder monitor screen.

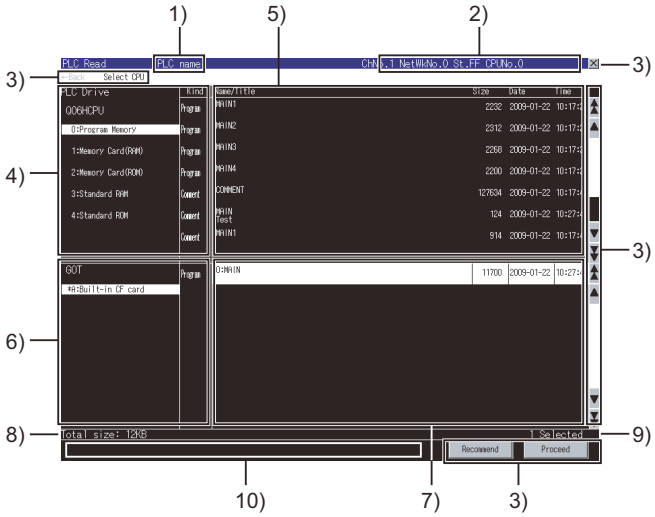
➠ 4.6.3 ■3. Display menu

4.5 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) or (iQ-R ladder).
The following describes how to operate the PLC read screen.

4.5.1 Displayed contents

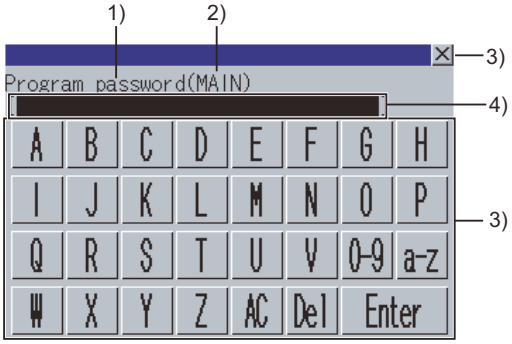
This section explains the structure of the PLC read screen and the functions of the keys displayed on the screen after the sequence program monitor (Ladder) or (iQ-R ladder) is started.



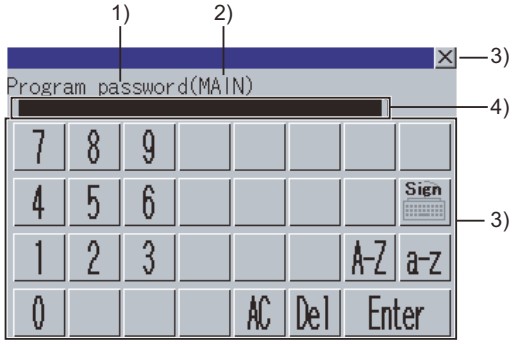
No.	Item	Description
1)	PLC name	Displays the label set in the PLC name setting for the target PLC CPU.
2)	Target controller	Displays CH No., network No., station No., and CPU No. of the target PLC CPU.
3)	Keys	Keys for operations on the PLC read screen shown in section 4.5.2. (Touch input)
4)	Target 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.
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.) When the connection destination is an RCPU, the program files and comment files read from the RCPU are displayed only. Other files in the same drive are not displayed. 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

(1) Displayed screen



(For alphabet input)



(For numerical input)

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, safety parameter password or FB/FUN 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)

(2) 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.

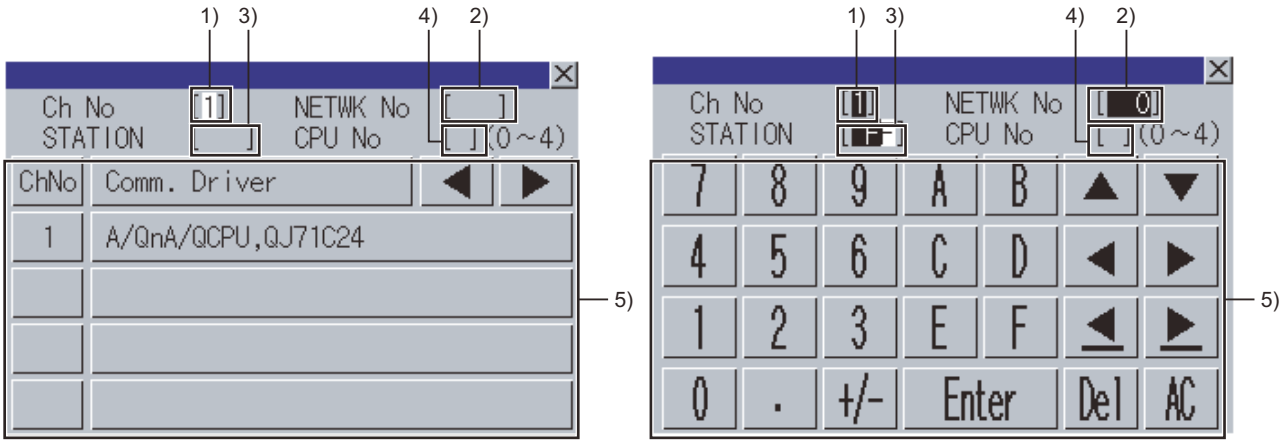
4.5.2 Key functions

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]	This key can be used when program files are displayed in the target drive list (connection destination). 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. • For sequence program files When the updated dates and times differ between the files, touching the key selects the file in the file list (target controller). When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT). • For comment files When the updated dates and times differ between the files, touching the key selects the latest file. When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT). If you have stored files directly in the SEQCMNT folder in the data storage, all the files are selected.
[Proceed]	Writes the file selected in the file list (target controller) into the data storage displayed in the target drive list (GOT). When the connection destination is an RCPU, data is read from the data storage. 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. If you have stored files directly in the SEQCMNT folder in the data storage, the files are not deleted. ➠ ■2. Program list window

■1. Communication setting window

(1) 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)

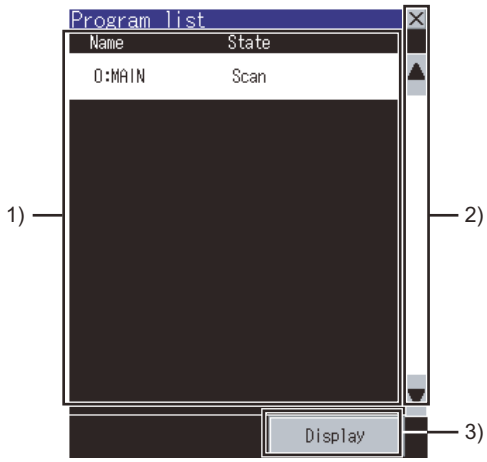
(2) Key functions

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.

(1) Displayed screen



The following table shows the displayed contents.

No.	Item	Description
1)	Sequence program file list	Displays the file names and execution states of the read sequence programs. The execution state refers to the execution type set for each program.*1 A touched sequence program file is highlighted.
2)	Keys	Keys for operations in the program list window shown in (b). (Touch input)

*1 The execution state is not displayed when the CNC C80 is connected.

(2) Key functions

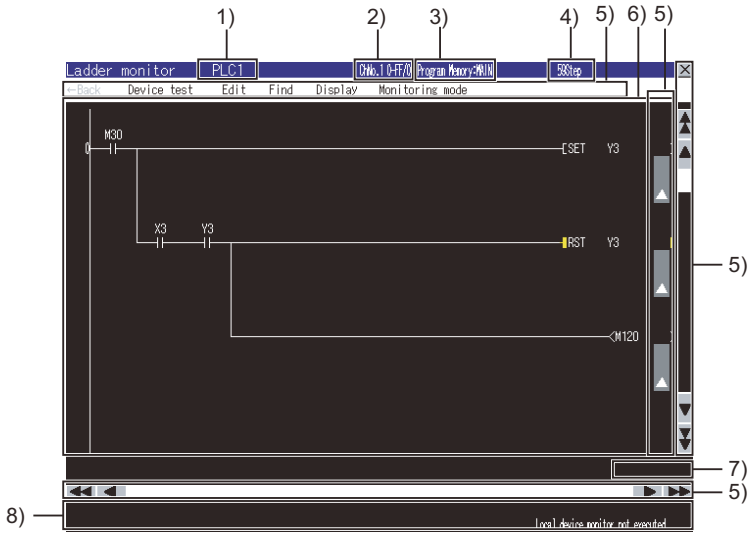
Key	Function
[X]	Closes the Program List window.
▲ ▼	Scrolls the display area up and down by one line.
[Display]	Displays the sequence program file selected in the sequence program file list on the Ladder monitor screen. ➠ 4.6 How to Operate Ladder Monitor Screen

4.6 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.

4.6.1 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 4.6.2. (Touch input)
6)	Ladder display area*1	Displays the read sequence program. By touching a device, it is selected and surrounded with a green frame. The following shows the conductive status Non-conductive status / Conductive status Contact Coil Y10 / Y10 Instruction*2 [SET M0] / SET M0 When contacts, coils, and outputs are the selection status, touching the area displays the device search window. ➠ 4.8.1 Device/Contact/Coil search 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.) ➠ 4.6.3 ■3. Display menu (1) Ladder registration monitor window
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 following shows the numbers of rows and contacts that are displayable in the ladder display area.

GOT	When comments are displayed		When comments are not displayed	
	Maximum number of displayed lines	Maximum number of displayed contacts	Maximum number of displayed lines	Maximum number of displayed contacts
GT27-X	6	11	13	11
GT27-S, GT25-S	4	11	9	11
GT27-V, GT25-V, GT25HS-V	3	11	7	11

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

4.6.2 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. ➠ 4.9 Test Operation
[Edit]	Displays the Edit menu. Touching [Start editing] displays the Ladder editor screen. ➠ 4.7 How to Operate Ladder Editor Screen
[Find]	Displays the Find menu. ➠ 4.6.3 ■2. Find menu
[Display]	Displays the Display menu. ➠ 4.6.3 ■3. Display menu
[Monitoring mode]	Displays the Monitoring Mode menu. ➠ 4.6.3 ■4. 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.

4.6.3 Menus

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

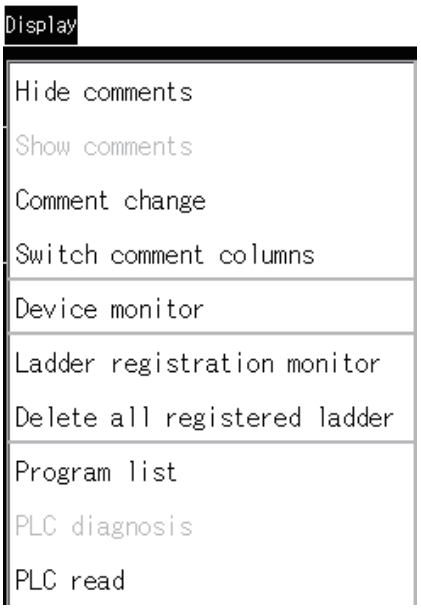
■1. Edit menu

Key	Function	Reference section
[Start editing]	Switches to the Ladder editor screen.	4.7

■2. Find menu

Key	Function	Reference section
[Jump]	Displays the jump window.	4.7.3 ■2. Find/Replace menu (only for the sequence program monitor (Ladder)) (1)
[Find device]	Displays the device search window.	4.8.1
[Find contact]	Displays the device search window	4.8.1
[Find coil]	Displays the device search window	4.8.1
[Factor search]	Displays the Factor window.	4.8.2

■3. Display menu



Key	Function	Reference section
[Hide comments]	Hides the comments, statements or notes in the ladder display area.	4.4.2
[Show comments]	Displays the comments, statements or notes in the ladder display area.	
[Comment change]	Displays the comment file list window.	4.7.3 ■4. Display menu (1)
[Switch comment columns][*1]	Displays the [Change comment column] window.	4.7.3 ■4. Display menu (2)
[Device Monitor]	Displays the window for the device monitor.	3.
[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	4.5.2 ■2.
[PLC diagnosis]][*1]	Displays the PLC diagnosis screen.	4.7.3 ■5. Online menu (2)
[PLC read]	Displays the PLC read screen.	4.5

*1 This key is not available in the sequence program monitor (Ladder).

(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.

■4. Monitoring Mode menu

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

*1 Not supported by the sequence program monitor (iQ-R ladder).

(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.

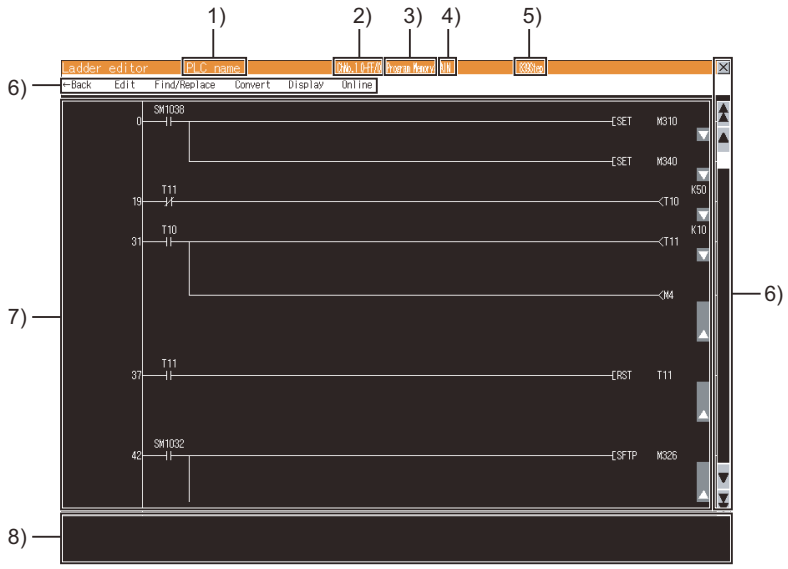
4.7 How to Operate Ladder Editor Screen

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.

4.7.1 Displayed contents

■1. 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 4.7.2. (Touch input)
7)	Ladder display area	Displays the read sequence program as follows. • 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 Displays the device comments in the comment display mode. A device comment is displayed as follows. • VGA: One-byte characters in 4 rows and 8 columns • SVGA: One-byte characters in 4 rows and 8 columns • XGA: One-byte characters in 4 rows and 12 columns
8)	Message display area	Displays error messages and others.

POINT

(1) Restrictions on the ladder block edited with the sequence program monitor (Ladder or iQ-R ladder)

A ladder block containing 25 lines or more cannot be edited with the sequence program monitor (Ladder or iQ-R ladder).

Even if a ladder block is displayed with 24 lines or less on GX Works3, GX Works2, or GX Developer, the block may be displayed with 25 lines or more on the GOT.

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

By setting the security on GT Designer3 (GOT2000), the display of the Ladder editor screen can be limited.

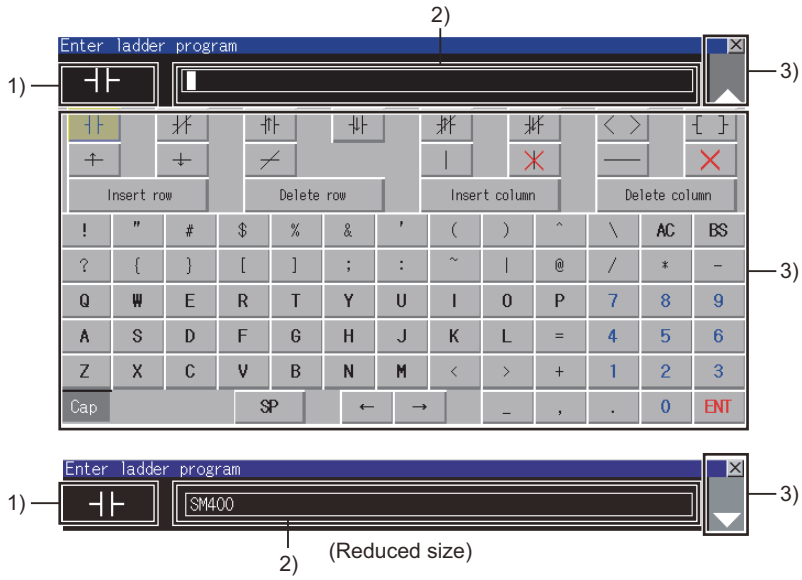
For the security setting, refer to the following.

➠ 4.3.5 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. The cursor is movable with a touch operation. 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))

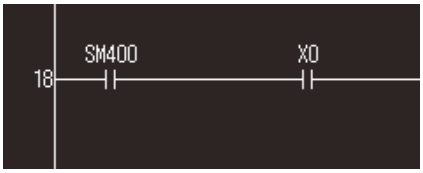
Step 1. Touch a position to input a contact (X0).

Step 2. The Enter ladder program window appears.

Step 3. Touch the  key.

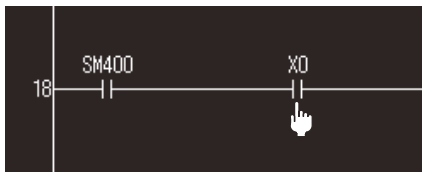
The ladder symbol corresponding to the touched key is displayed on the ladder symbol display area.
Input X0 in the text display area, and touch the [ENT] key.

Step 4. The contact (X0) is input.



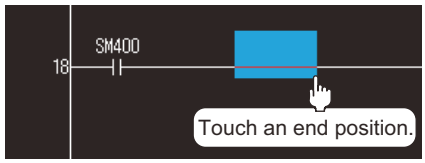
• Deleting contacts or instructions
(Operation example: Deleting a contact (X0))

Step 1. Touch a contact (X0) to be deleted.



Step 2. The Enter ladder program window appears.

Step 3. Touch the [X] key.
Touch the end position of the contact (X0).



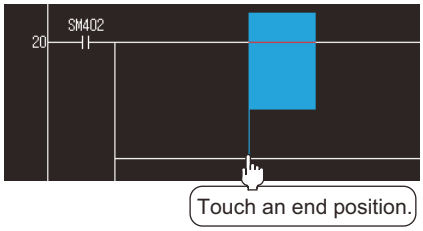
Step 4. The contact (X0) is deleted.

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

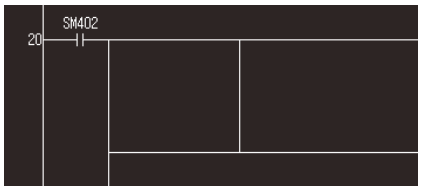
Step 1. Touch a position to input a vertical line.

Step 2. The Enter ladder program window appears.

Step 3. Touch the  key.
Touch the end position to input the vertical line.

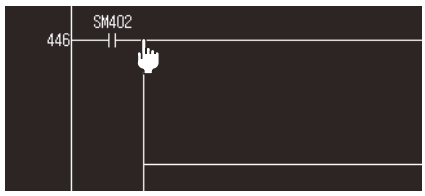


Step 4. The vertical line is input.



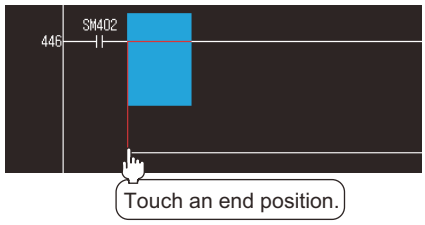
• Deleting vertical lines or horizontal lines
(Operation example: Deleting a vertical line)

Step 1. Touch a position to delete a vertical line.

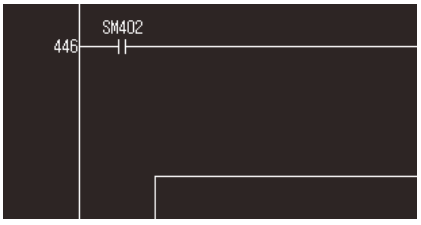


Step 2. The Enter ladder program window appears.

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

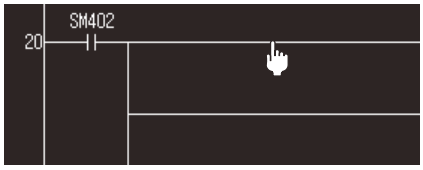


Step 4. The vertical line is deleted.



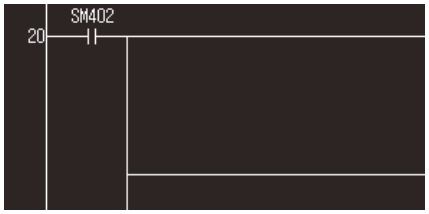
• Inputting rows and columns
(Operation example: Inputting a row)

Step 1. Touch a position to insert a row.



Step 2. The Enter ladder program window appears.

Step 3. Touch the [Insert row] key.
The Enter ladder program window is closed, and the row is inserted.



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

Step 1. Touch a position to delete a row.

Step 2. The Enter ladder program window appears.

Step 3. Touch the [Delete row] key.
The Enter ladder program window is closed, and the row is deleted.

4.7.2 Key functions

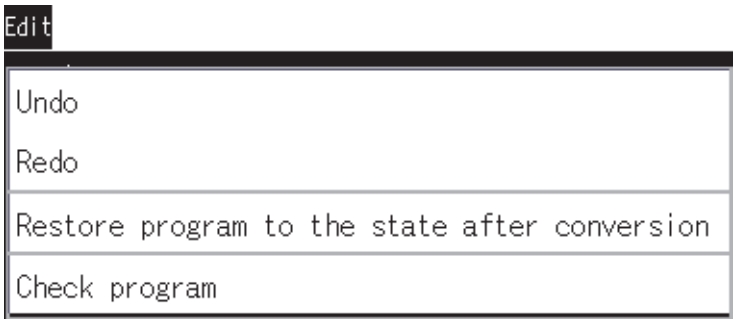
The following shows the functions of keys used for operating the Ladder editor screen.

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. ➠ 4.7.3 ■1. Edit menu
[Find/Replace]	Displays the Find/Replace menu. When the Find/Replace menu is displayed, touching the key closes the menu. ➠ 4.7.3 ■2. Find/Replace menu (only for the sequence program monitor (Ladder))
[Convert]	Displays the Convert menu. ➠ 4.7.3 ■3. Convert menu
[Display]	Displays the Display menu. ➠ 4.7.3 ■4. Display menu
[Online]	Displays the Online menu. ➠ 4.7.3 ■5. 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.

4.7.3 Menus

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

■1. Edit menu



Key	Function	Reference section
[Undo]*1	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]*1	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]*1	Executes the program check to check if programs have consistency or double coils do not exist.	-

*1 Not supported by the sequence program monitor (iQ-R ladder).

POINT

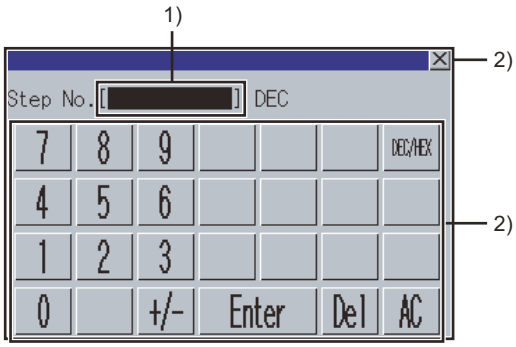
Deleting ladders which are not converted

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.

■2. Find/Replace menu (only for the sequence program monitor (Ladder))

Key	Function	Reference section
[Jump]	Displays the jump window.	(1)
[Find device]	Displays the device search window.	4.8.1
[Find contact]	Displays the device search window.	4.8.1
[Find coil]	Displays the device search window.	4.8.1
[Replace device]	Displays the replace device window.	4.8.3
[Change open/close contact]	Displays the change open/close contact window.	4.8.4

(1) Jump window



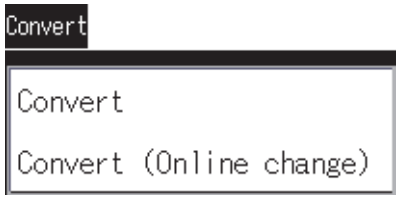
(a) Displayed contents

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.

■3. Convert menu



Key	Function	Reference section
[Convert]	Convert the editing program to the execution program.	-
[Convert (Online change)]*1	Convert the editing program to the execution program and execute the online change to controllers.	-

*1 Not supported by the sequence program monitor (iQ-R ladder).

POINT

Precautions for the online change

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

➠ 4.2.4 Precautions
Instruction Manual of the controller to use

■4. Display menu

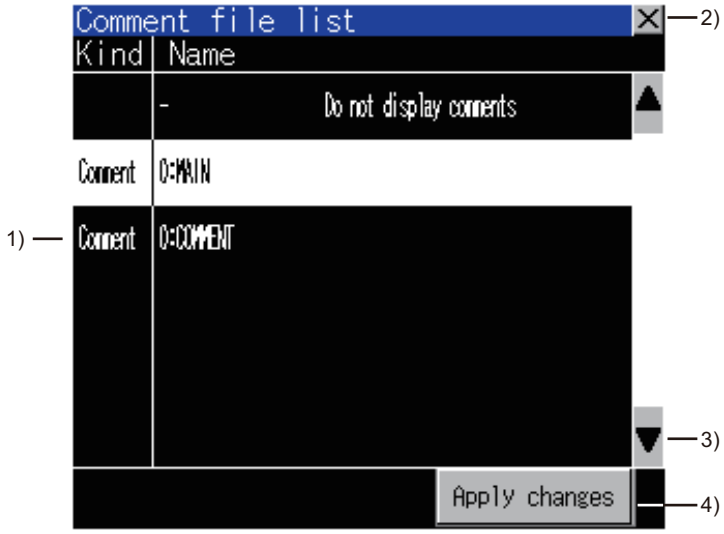
Key	Function	Reference section
[Hide comments]	Hides the comments, statements or notes in the ladder display area.	4.2.4
[Show comments]	Displays the comments, statements or notes in the ladder display area.	
[Comment change]	Displays the comment file list window.	(1)
[Switch comment column]*2	Displays the [Change comment column] window.	(2)
[Program list]	Displays the program list window	4.5.2 ■2.
[PLC diagnosis]*1	Displays the PLC diagnosis screen.	4.7.3 ■5. Online menu (2)
[PLC read]	Displays the PLC read screen.	4.5

*1 Not supported by the sequence program monitor (iQ-R ladder).
*2 This key is not available in the sequence program monitor (Ladder).

(1) Comment file list window

The GOT displays the comment file list.

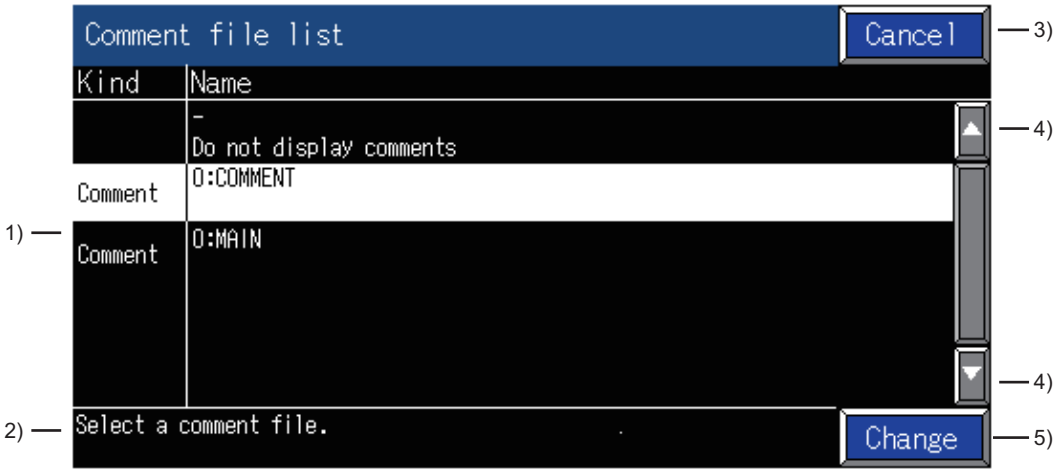
(a) For the sequence program monitor (Ladder)



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)	[X]	Closes the Comment file list window.
3)	▲ ▼	Scrolls the display area up and down by one line.

No.	Item	Description
4)	[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.

(b) For the sequence program monitor (iQ-R ladder)



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)	Message display area	Displays messages.
3)	[Cancel]	Closes the Comment file list window.
4)	▲ ▼	Scrolls the display area up and down by one line.
5)	[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.

(2) [Change comment column] window

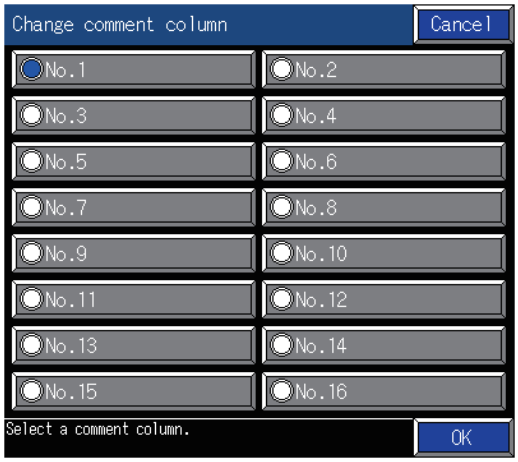
The GOT displays the comment column list of the sequence program monitor (iQ-R ladder).

No.	Item	Description
1)	Comment column list	Displays the comment titles in the multiple comments display setting of GX Works3. To change the comment columns, select the comment column to switch to. One comment column is selectable only.
2)	Message display area	Displays messages.
3)	[Cancel]	Closes the [Change comment column] window.
4)	[OK]	Closes the [Change comment column] window, and displays the ladder display area using the comment column selected from the comment column list.

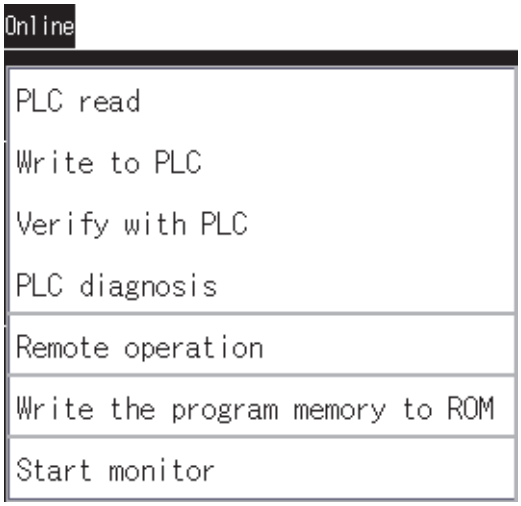
POINT

Comment title

If the comment titles cannot be acquired, the corresponding comment column numbers are displayed in the comment column list.



■5. Online menu



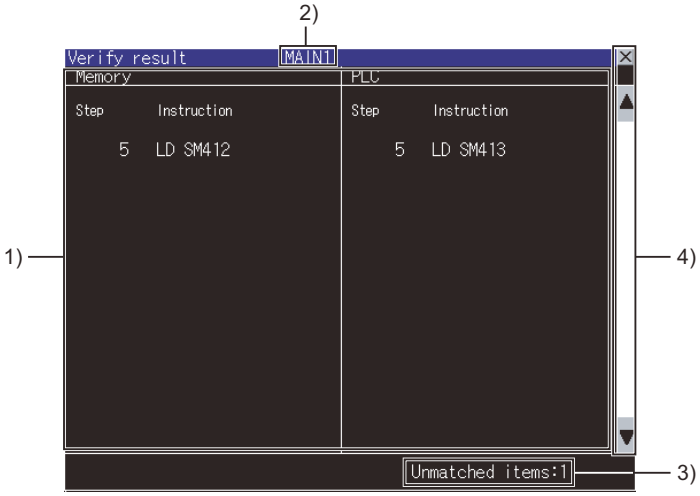
Key	Function	Reference section
[PLC read]	Displays the PLC read screen.	4.5
[Write to PLC]	Checks the edited sequence program, and writes the program into the PLC CPU. Set the PLC CPU to the STOP status, and write the program into the PLC CPU. To execute the online change, execute it using the [Convert (Online change)] in the [Convert] menu. ➠ 4.7.3 ■3. Convert menu	-
[Verify with PLC]*1	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]*1	Displays the PLC diagnosis screen.	(2)
[Remote operation]*1	Displays the Remote operation window.	(3)
[Write the program memory to ROM]*1	Displays the Copy program memory data into ROM window.	(4)
[Start monitor]	Displays the Ladder monitor screen.	4.6

*1 Not supported by the sequence program monitor (iQ-R ladder).

(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)

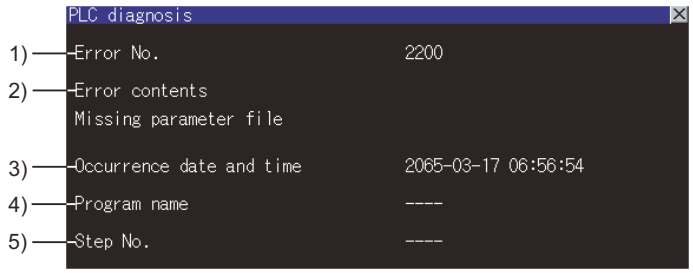
(b) Key functions

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.

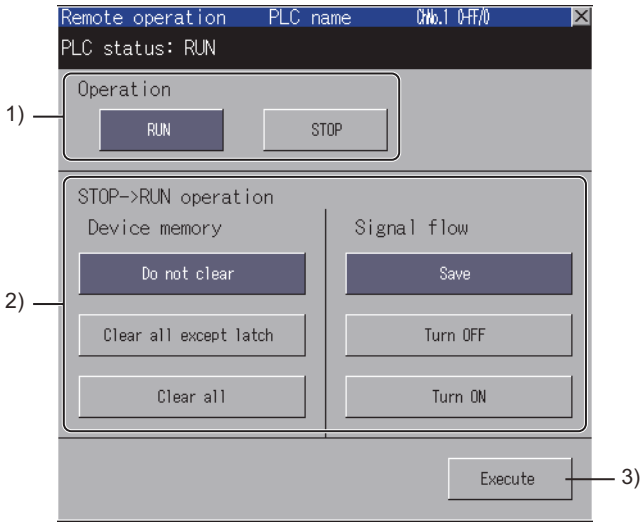
(b) Key functions

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



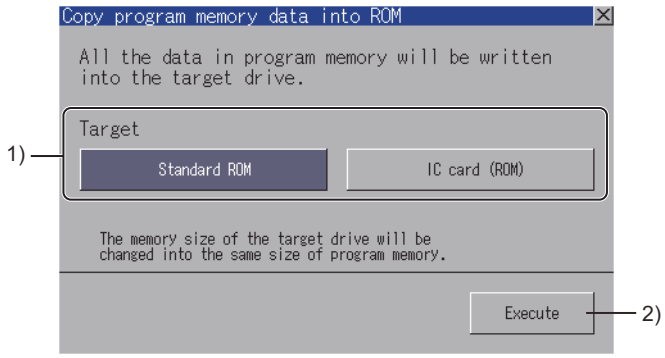
The following table shows the displayed contents.

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.

4.8 Find/Replace Operation

4.8.1 Device/Contact/Coil search

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

Step 1. 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.

Step 2. Set a device to be searched and touch the / /[Enter] key
- Displayed screen

(For alphabet input)

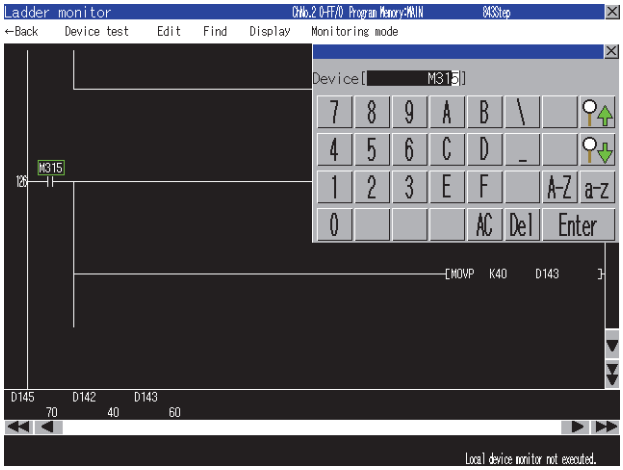
(For numerical input)

No.	Item	Description
1)	Device input area	Set a device to be searched. 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.
[Enter]	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. However, the search starts always from the start of the program in the following conditions. • When searching for the first time after the device search window is displayed. • When starting to search consecutively after searching

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



4.8.2 Factor search

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

Step 1. Touch the [Find] → [Factor] menu from the Ladder monitor screen to display the factor search window.

Step 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.

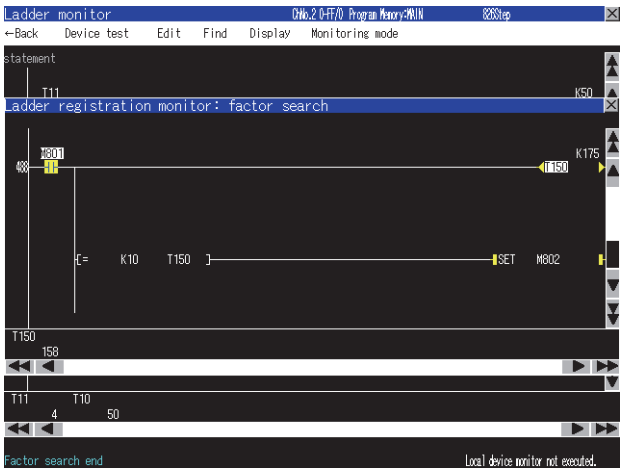
- Key functions

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

Step 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.

➠ 4.6.3 ■3. Display menu (1) Ladder registration monitor window

Step 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.

4.8.3 Replace device (Supported by the sequence program monitor (ladder) only)

The device replacement is available only in the sequence program monitor (Ladder).

Step 1. Touch the [Find/Replace] → [Replace device] menu on the Ladder editor screen to display the Replace device window.

Step 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.

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

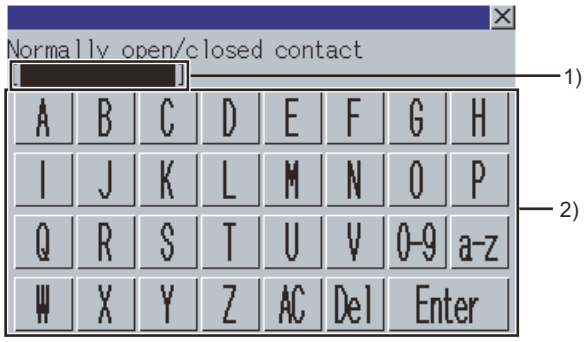
4.8.4 Change open/close cantact (Supported by the sequence program monitor (ladder) only)

The normally open/close contact switching is supported by the sequence program monitor (Ladder).

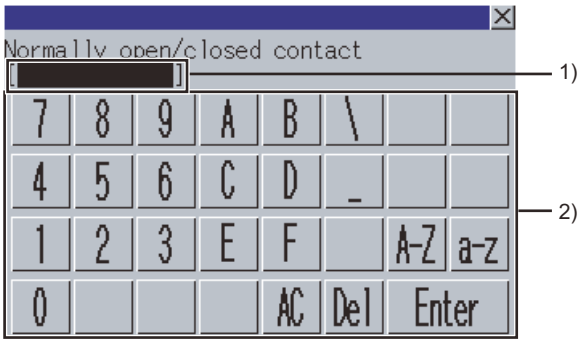
Step 1. Touch the [Find/Replace] → [Change open/close cantact] menu on the Ladder editor screen to display the Change open/close cantact window.

Step 2. Set the device to change the contact and touch the [Enter] key.

- 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 cantact window.

- Key functions

Key	Function
[X]	Closes the Change open/close cantact 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.

Step 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.

4.9 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.

➠ 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
Ladder monitor screen	4.6.2

POINT

Displaying the device test window when setting the security

By setting the security on GT Designer3 (GOT2000), the display of the device test window can be limited.
For the security setting, refer to the following.

➠ 4.3.5 Setting the security

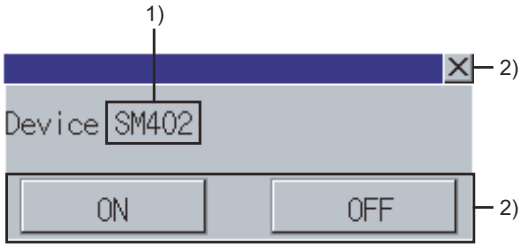
Touching a device displays the device test window.

- When touching bit devices
  A bit device is switched between ON and OFF states in the device test window.
- When touching word devices
  The GOT writes the value input in the device test window into the selected word device.

4.9.1 How to operate device test window

■1. Bit devices

(1) Displayed screen



The following table shows the displayed contents.

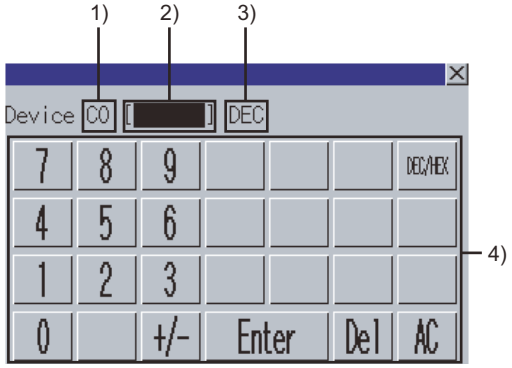
No.	Item	Description
1)	Device	Displays the selected device.
2)	Keys	Keys for operations in the device test window shown in (b).

(2) Key functions

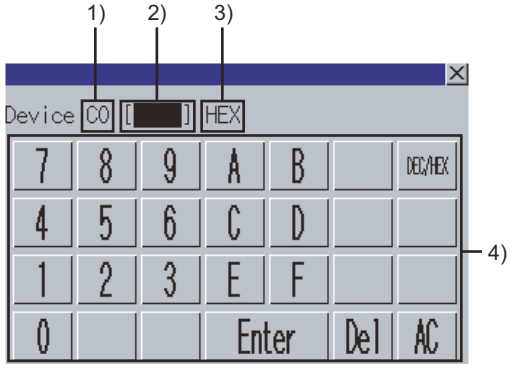
Key	Function
[X]	Closes the device test window.
[ON]	Turns on the bit device and writes the device state to the PLC CPU.
[OFF]	Turns off the bit device and writes the device state to the PLC CPU.

■2. Word devices

(1) Displayed screen



(Monitoring mode : 16-bit integer (DEC))



(Monitoring mode : 32-bit integer (HEX))

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).

(2) 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.

4.10 Error Messages and Corrective Action

This section explains the error messages displayed when the sequence program monitor (Ladder) or the sequence program monitor (iQ-R ladder) is executed, and the corrective actions.

■1. Error messages for data-storing destination access

Error message	Description	Corrective action
File access error. Please check the [drive name] drive.	• No data storage is inserted in the GOT. • The SD card cover is opened. • A data storage with a format error is inserted in the GOT. • The data storage has insufficient free space for writing a file. • The folder for the sequence program monitor (ladder) in the data storage is write-protected.	• Insert a data storage without a format error in the GOT. • Close the SD card cover. • Delete files in the data storage. • Insert a data storage with a large capacity. • Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.
Failed to write the (file name) to the [drive name] drive. Please check the [drive name] drive.	• No data storage is inserted in the GOT. • The SD card cover is opened. • A data storage with a format error is inserted in the GOT. • The data storage has insufficient free space for writing a file. • The folder for the sequence program monitor (ladder) in the data storage is write-protected.	• Insert a data storage without a format error in the GOT. • Close the SD card cover. • Delete files in the data storage. • Insert a data storage with a large capacity. • Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.
The [drive name] drive has insufficient free space. The file cannot be saved.	The data storage has insufficient free space for writing a file.	• Delete files in the data storage. • Insert a data storage with a large capacity.
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.	• The temporary file used on the Ladder editor screen or the Ladder monitor screen in the data storage is corrupted. • The writing of files into data storage is failed due to an insufficient capacity of data storage.	• Read the file from the PLC CPU again. • Delete unnecessary files in the data storage. Or insert a data storage with a larger free space.
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.	• Insert a data storage without a format error in the GOT. • Close the SD card cover. • Delete files in the data storage. • Insert a data storage with a large capacity. • Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.

Error message	Description	Corrective action
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.	• Insert a data storage without a format error in the GOT. • Close the SD card cover. • Delete files in the data storage. • Insert a data storage with a large capacity. • Cancel the write-protect setting for the folder that is used for the sequence program monitor (ladder) in the data storage.
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.

■2. Error messages for communication

Error message	Description	Corrective action
Failed to communicate with CPU.	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. • Check if the PLC CPU supports the sequence program monitor (ladder).
Failed to communicate with CPU.	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. • Check if the PLC CPU supports the sequence program monitor (ladder).
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.	• The GOT cannot communicate with the PLC CPU. • A file with faulty file name is selected.	• Check the communications between the GOT and PLC CPU, and make sure that the GOT communicates with the PLC CPU. • Select the file after changing the message display language to one which can display the file name in the utility. • Change the file name with GX Works2/GX Developer.
The CPU protect switch is ON. Turn OFF the protect switch.	• The system protect switch of the PLC CPU is on. • The PLC CPU is in the boot process.	• Turn off the system protect switch of the PLC CPU. • Wait until the boot process of the PLC CPU is completed.
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.	• Other GOTs or GX Works2/GX Developer access the connected PLC CPU. • The QCPU transfers program files from the program cache memory to the program memory.	• Access the file when other devices do not access the connected PLC CPU. • Access the file after QCPU completes the transference from the program cache memory to the program memory.

Error message	Description	Corrective action
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.	• Execute [Format PLC memory] with GX Works2/GX Developer. • If the specified drive is the flash ROM, write data to the PLC (flash ROM) again.
The specified file is under processing.	The specified drive of the PLC CPU is in use.	Execute the same operation later.
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.	• No memory card is inserted in the specified drive of the PLC CPU. • The memory card is faulty.	• Insert a memory card in the specified drive of the PLC CPU. • Format the memory card in the specified drive by using GX Works2/GX Developer.
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.	• An unsupported memory card is inserted in the specified drive of the PLC CPU. • No memory card is inserted in the specified drive of the PLC CPU. • The program memory of QnUDVCPU is written to the ROM.	• Insert a supported memory card in the specified drive. • The program memory of QnUDVCPU cannot be written to the ROM.
The CPU is write protected. Please remove the protection.	The PLC CPU is write-protected.	Cancel the write-protect setting for the PLC CPU.

Error message	Description	Corrective action
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.	• The date of the GOT is wrong. • PC writing or online change is executed to Q00JCPU, Q00CPU, or Q01CPU when the date of the GOT is Feb. 29th.	• Set the date of the GOT properly. • When executing PC writing or online change to the Q00JCPU, Q00CPU, or Q01CPU, set the date of the GOT other than Feb. 29th.
Communication of the online debug function failed.	Communication of the online debug function failed.	• Execute after registering the online debug function (online change, trace, monitor with conditions, etc.) in GX Works2/GX Developer. • Execute after confirming the communication path such as communication cables.
Specified contents of the online debug function are invalid.	Specified contents of the online debug function are invalid.	• Execute after registering the online debug function (online change, trace, monitor with conditions, etc.) in GX Works2/GX Developer. • Execute after confirming the communication path such as communication cables.
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.	• Check the contents of the specified sequence program file. • Write the program after setting the PLC CPU to the stop status.
Reserved area for online change is insufficient. Online change cannot be performed.	The file capacity is exceeded by the online change.	• Check the capacity of the specified sequence program file. • Write the program after setting the PLC CPU to the stop status.
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.	• Check if the PLC CPU type is correct. • Check the sequence program and delete the invalid instruction.
The step to be written is invalid.	• The step to be written is invalid. • The start position of the online change was not specified with a correct program step No.	• Write the program after setting the PLC CPU to the stop status. • Check if the GX Works2/GX Developer is compatible with the CPU type and CPU version set in the project.
The instruction that was written during online change is invalid.	The instruction of the online change is wrong.	• Execute the online change again. • Write the program after setting the PLC CPU to the stop status.
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.

Error message	Description	Corrective action
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.	• The function that is not supported by the specified PLC CPU is used. • The program memory of QnUDVCPU is written to the ROM.	The executed function cannot be used.
The specified file can not be accessed.	• The specified file is protected with a security key. • The specified file is protected with a block password.	The executed function cannot be used. Delete programs from the PLC CPU, initialize the memory, and then write the project data again.
Please wait for a while and execute again.	The PLC CPU locks out the user to access the specified file because a password has been entered incorrectly a specified number of times.	Wait for a while, and enter the correct password.

■3. Error messages for editing

Error message	Description	Corrective action
The instruction is incorrect.	• The input instruction is incorrect. • The instruction inapplicable to the sequence program monitor (iQ-R ladder) has been input. • The instruction unavailable for RCPU has been input.	• Input the correct instruction. • Edit the program with the MELSOFT application applicable to the PLC CPU, and write the program to the PLC CPU.
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.
The edit position is incorrect.	• A specified position is incorrect to input a ladder. • A space of a specified position is too narrow to input a ladder. • A start position and end position are not specified in the same column to input a vertical line. • An end position is specified in an upper row of the start position to input a vertical line. • A start position and end position are not specified in the same row to input a horizontal line. • A start position and end position are not specified in the same row to delete a ladder.	• Input a ladder in a correct position. • Insert columns, and then input a ladder. • Specify a correct end position for a vertical line or horizontal line, and then input the line. • Specify a correct end position, and then delete a ladder.
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.

Error message	Description	Corrective action
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.	• On a ladder block, 25 or more rows are edited. • An incomplete ladder block is edited.	• Edit the ladder block in 24 rows or less by using GX Works2/GX Developer, and then write the program into the PLC CPU. • Write the program into the PLC CPU by using GX Works2/GX Developer again because the program may be corrupted.
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).	• Check the communication setting. • Check cables. • Verify with PLC. • Operate the GOT for reading the program from the PLC.
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.
Cannot edit because NOP is in selected range.	You tried to edit a ladder block including NOP in the edit range.	• Exclude NOP from the edit range. • Delete NOP with the MELSOFT application, and write the program to the PLC CPU.
Unusable command is specified.	• The instruction inapplicable to the sequence program monitor (iQ-R ladder) has been input. • The instruction unavailable for RCPU has been input.	Edit the program with the MELSOFT application, and write the program to the PLC CPU.

Error message	Description	Corrective action
The program is not editable.	You tried to edit a program that is in the following conditions. • Multiple program blocks are defined. • The target program is not a ladder program. • A label is used. • An inline ST is used. • An MC/MCR instruction is used. • A statement that exceeds 64 one-byte characters is used. • A note that exceeds 32 one-byte characters is used. • A character string constant that exceeds 32 one-byte characters is used. • A peripheral statement or note is used. • A line feed is used in a statement, note, or character string constant. • The special character ($") is used in a character string constant. • The target program is a safety program. • An FB or FUN is used.	Perform the following operations with the MELSOFT application, and write the program to the PLC CPU. • Define one program block. • Use a ladder program. • Delete the label. • Delete the inline ST. • Delete the MC/MCR instruction. • Delete the statement that exceeds 64 one-byte characters. • Delete the note that exceeds 32 one-byte characters. • Delete the character string constant that exceeds 32 one-byte characters. • Delete the peripheral statement/note. • Delete the line feed in the statement, note, or character string constant. • Delete the special character ($") in the character string constant. • Edit the safety program with the MELSOFT application. • Delete the FB or FUN.

■4. 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.
Adding/deleting ladder blocks is not allowed.	The number of ladder blocks in the edit range is different before and after the edit.	Make sure that the total number of ladder blocks and line statements in the edit range is the same before and after the edit, and then convert the program.

■5. 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.	• Use the sequence program monitor (SFC) to monitor SFC programs. • Use GX Works2 or GX Developer to monitor SFC programs.
The specified file is too large to read.	A program file having 260k steps or more is selected.	Split the program.

■6. Error messages for user authentication

Error message	Description	Corrective action
User authentication with PLC is not completed. Sequence program monitor cannot be used. Do you want to reset the connection status with the PLC and display the PLC Read screen?	The user authentication to connect to the PLC CPU is canceled when the sequence program monitor is restarted.	Execute the user authentication.
User authentication with PLC is not completed. Sequence program monitor cannot be used.	The user authentication to connect to the PLC CPU is canceled.	Execute the user authentication.
User authentication with PLC is not completed. This function cannot be used.	The user authentication is canceled when a file is selected or read/written from/to the PLC.	Execute the user authentication.
The user name or password does not match.	The entered user name or password is incorrect for authentication to the PLC CPU.	Enter the correct user name and password.
The access level does not match.	The access level specified for the user name is incorrect for authentication to the PLC CPU.	Specify the correct access level.
You cannot log on because the number of logged-on users exceeds the limit.	The user authentication cannot be executed because the number of logged-in users exceeds the limit.	Reduce the number of logged-in users.
Please wait for a while and execute again.	The user authentication has failed more than a specified number of times.	Wait for a while, and execute the user authentication.

5. SEQUENCE PROGRAM MONITOR (SFC)

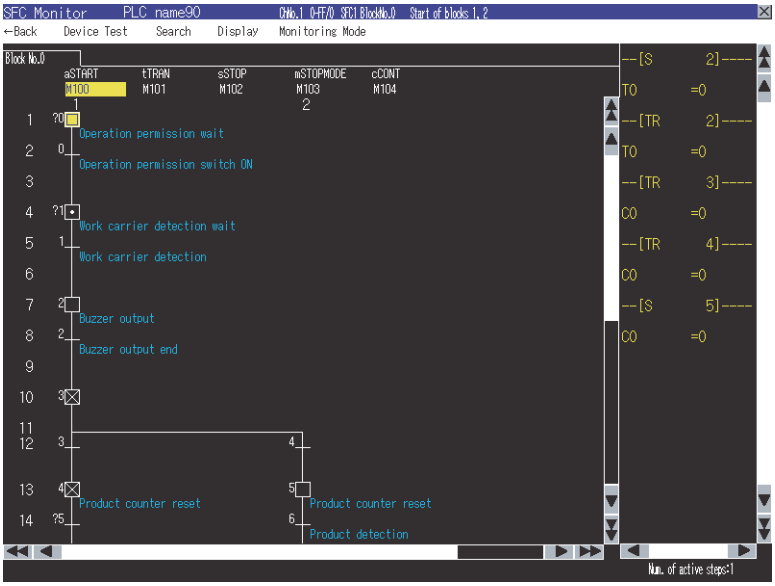
GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

5.1 Features

With the sequence program monitor (SFC), 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 sequence program monitor (SFC).

■1. 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 sequence program monitor (SFC).

- PLC read screen

  ➠ 5.4 How to Operate PLC Read Screen

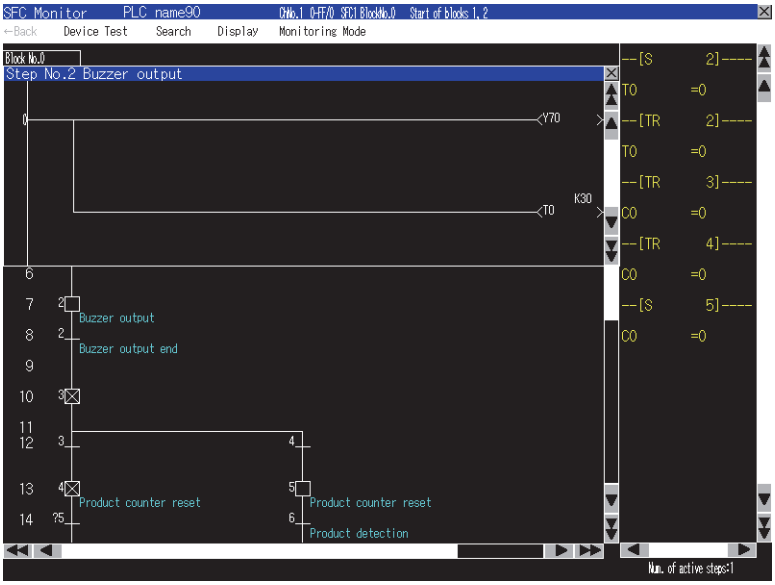
- Block list screen

  ➠ 5.5 How to Operate Block List Screen

- SFC diagram monitor screen

  ➠ 5.6 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.



■2. 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.

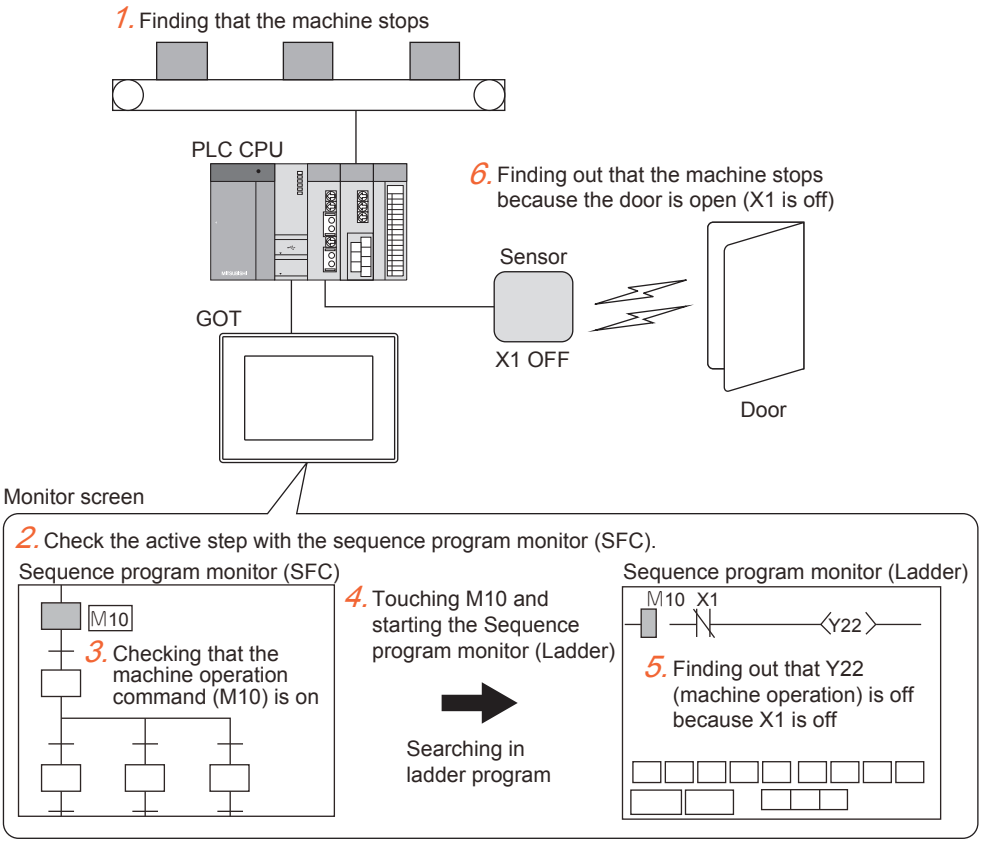
■3. Interaction with ladder monitor function

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.

➠ 5.6.3 ■2. [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) Outputting a signal by using a ladder program including an interlock condition, instead of using an SFC program



5.2 Specifications

5.2.1 System configuration

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

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

Controller
QCPU (Q mode)*1
LCPU

*1 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. Connection type

This function can be used in the following connection types.
(○: Available, ×: Unavailable)

Function		Connection type between GOT and controller							
Name	Description	Bus connection*8	Direct CPU connection*9	Serial communication connection	Ethernet connection*7	MELSECNET/H connection*8, MELSECNET/10 connection*1*8	CC-Link IE controller connection*2*8, CC-Link IE field connection*3	CC-Link connection	
								ID*4	G4*4*5
Sequence program monitor (SFC)	Monitors SFC programs.	○*6*7	○	○	○	○	○	○	○

*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 Q12PRHCPU and Q25PRHCPU are not available.
*7 Sequence program monitor (SFC) cannot be used when using CC-Link IE field network Ethernet adapter.
*8 The LCPU does not support the connection type.
*9 When the GOT is connected to LCPU, use L6ADP-R2.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the sequence program monitor (SFC) to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Required hardware

The following hardware is required.

Hardware
Data storage (Such as an SD card and USB memory)

■5. Applicable hardware

A USB mouse is usable.

5.2.2 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 4045FF	○	○	○
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.

5.2.3 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 Electric Products) For GT Works3 Version1

5.2.4 Precautions

■1. Precautions for operations during sequence program monitor (SFC) startup

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

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

■2. Precautions for devices

- The GOT cannot search for indexing devices.
- The GOT cannot monitor local devices.

■3. Precautions for setting [Locus] for line graphs

The sequence program monitor (SFC) is not available when [Locus] is set for line graphs.
For using the sequence program monitor (SFC), 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).

■5. CPU with a security key

(1) When RCPU or the motion controller CPU (MELSEC iQ-R series) is used

The backup/restoration can be executed even for a CPU module to which a security key is set.

(2) When QnUDVCPU, QnUDPVCPU, Q17nDSCPU, or Q170MSCPU is used

The backup/restoration cannot be executed on the CPU on which the security key is set.
To execute the backup/restoration, check the setting of the CPU.
When the target controllers of the backup/restoration include both the CPU with the security key and the CPU without the security key, the backup/restoration is executed only for the CPU without the security key.

5.3 Operations for Display

This section explains how to display the operation screen for the sequence program monitor (SFC) after the GOT is turned on. The GOT must have the GOT Platform Library and GOT Function Expansion Library (system applications (extended functions)) installed on it.

■1. Starting the sequence program monitor (SFC)

Step 1. Turn on the GOT.
Display the sequence program monitor (SFC) screen.
The display methods include the following two types.

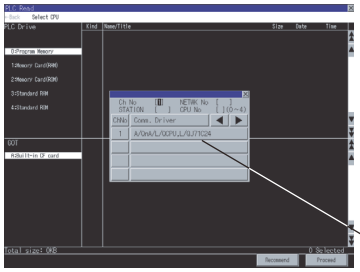
- Starting from the utility
  For how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)
- Using the special function switch (Sequence program monitor (SFC)) set in the project
  For how to set the special function switch, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual

Step 2. Set the channel No., network No., station number, and CPU number in the communication setting dialog.

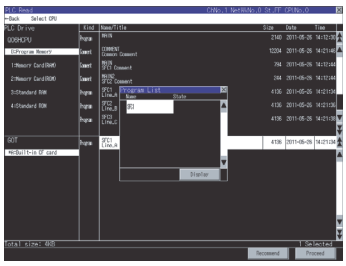
➠ 5.4.1 ■3. Communication setting window



Step 3. Read data from the PLC and display the program list window.

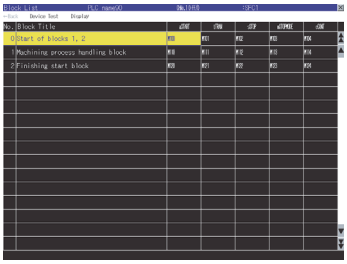
➠ 5.4 How to Operate PLC Read Screen

Reading data from the PLC is not required when the GOT is restarted, because SFC programs and comment files are stored in an SD card with the sequence program monitor (SFC).



Step 4. Select a program in the program list to display the block list screen.

➠ 5.5 How to Operate Block List Screen



Alternatively, display the block list screen with the special function switch (Sequence program monitor (SFC)) for which [Block List] is selected for [Display Screen] in the switch setting.

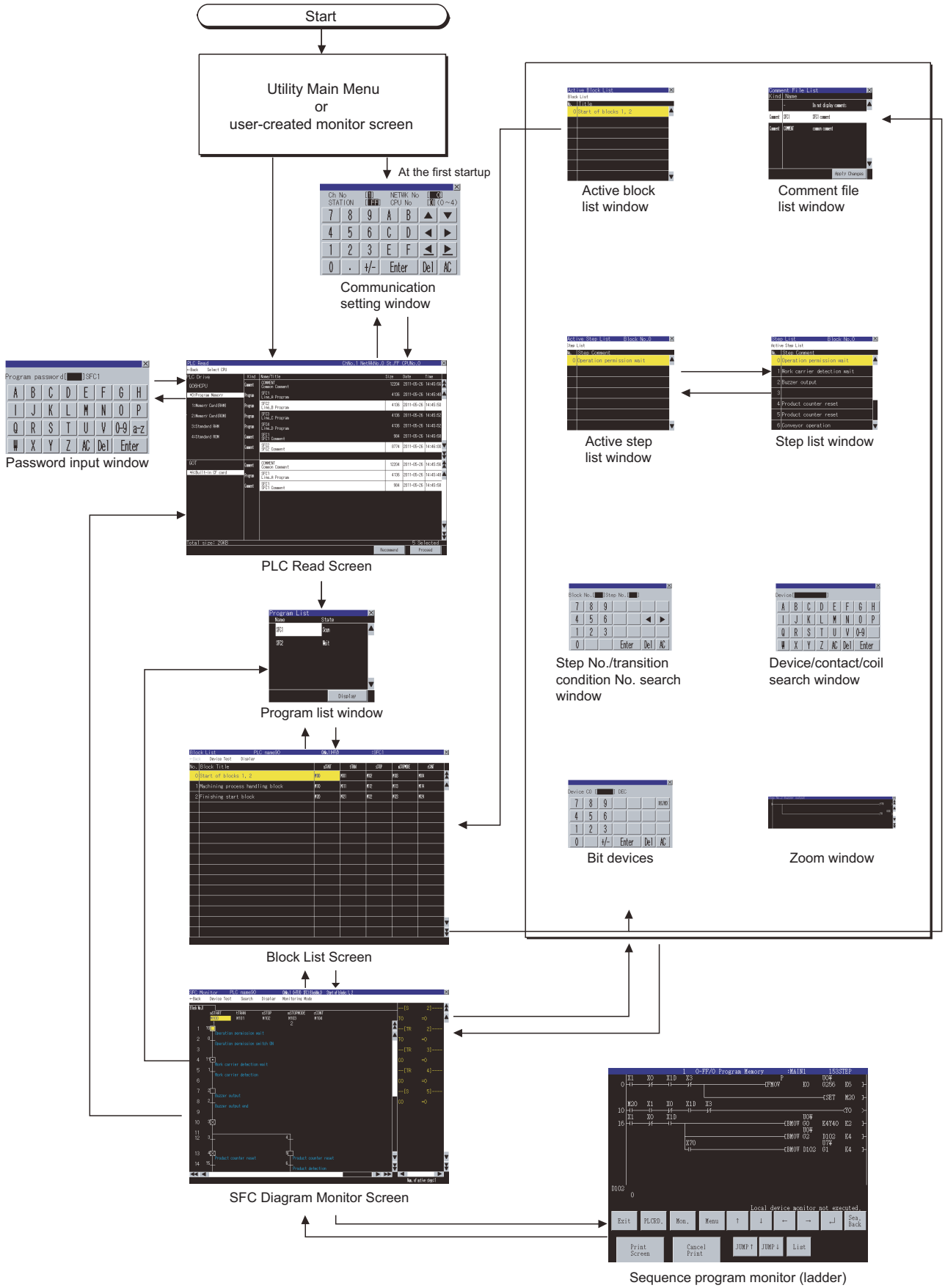
Step 5. Select a block on the block list screen to display the SFC diagram monitor screen.

➠ 5.6 How to Operate SFC Diagram Monitor Screen

Alternatively, display the SFC diagram monitor screen with the special function switch (Sequence program monitor (SFC)) for which [SFC Diagram] is selected for [Display Screen] in the switch setting.

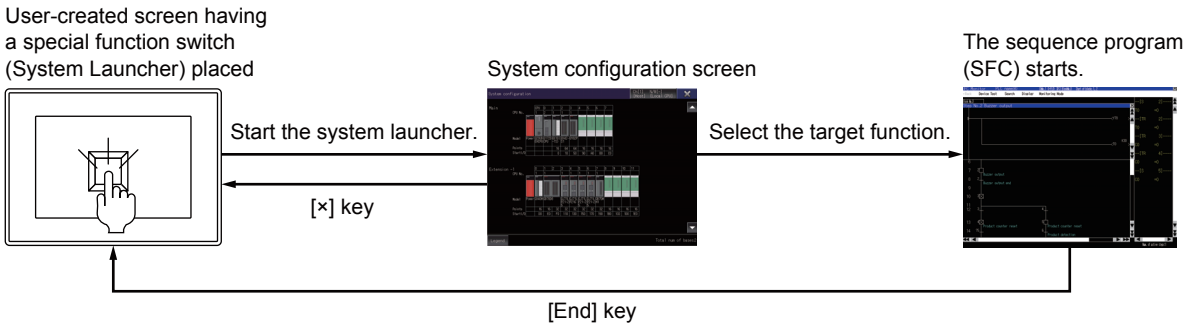
■2. Changing screens

The following describes how to change the screen.



(1) Starting the function by using the special function switch (System launcher)

To start the sequence program monitor (SFC) from a user-created screen, place a special function switch (System launcher) and set the connection destination for the switch.



POINT

When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.

For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

5.3.1 Setting SFC data storage location

■1. 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 sequence program monitor (SFC).
SFC data are stored in the storage location that stores ladder data for the ladder monitor function.
Only drive A (standard SD card) or drive B (USB drive) is usable 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 (GOT2000)

➠ GT Designer3 (GOT2000) Screen Design Manual

5.3.2 Reading comment files from SD card

The sequence program monitor (SFC) uses comment files stored in a SD card installed in the GOT.

■1. Procedure for using comment files stored in SD cards

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

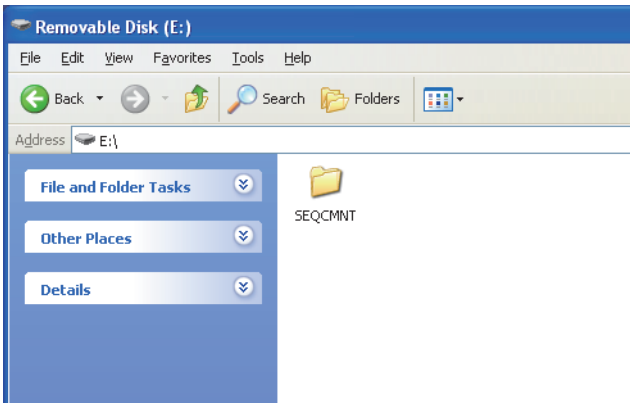
(1) When displaying comments in language set for language switching of GOT utility

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.

➠ 5.4 How to Operate PLC Read Screen

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

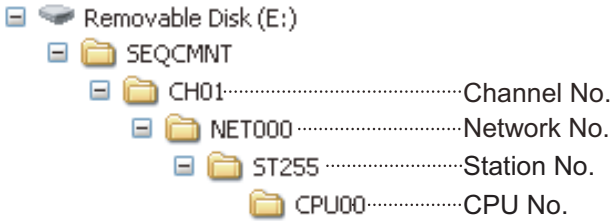
Step 1. Create a SEQCMNT folder in a SD card.
When the SEQCMNT folder already exists, creating a new SEQCMNT folder is not required.



Step 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 below.

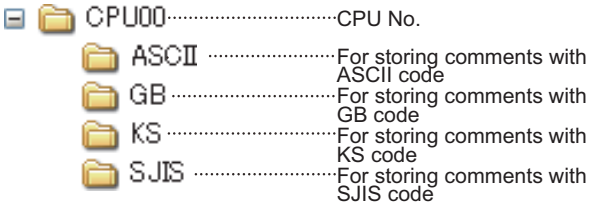
Item	Folder name
CH No.	CH**
Network No.	NET***
Station No.	ST***
CPU No.	CPU**

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.)

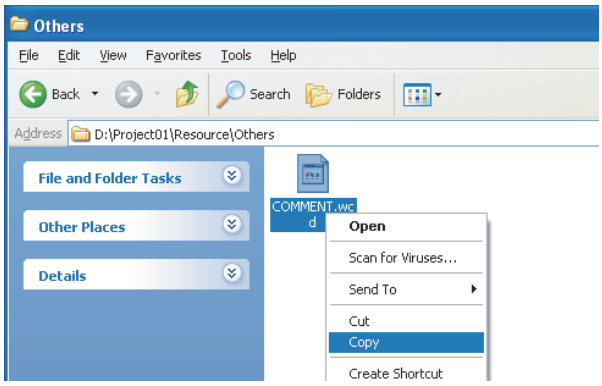


Step 3. In the CPU No. folder, create folders for storing comment files by character code.

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



Step 4. Copy a comment file (.wcd) in the saved project.



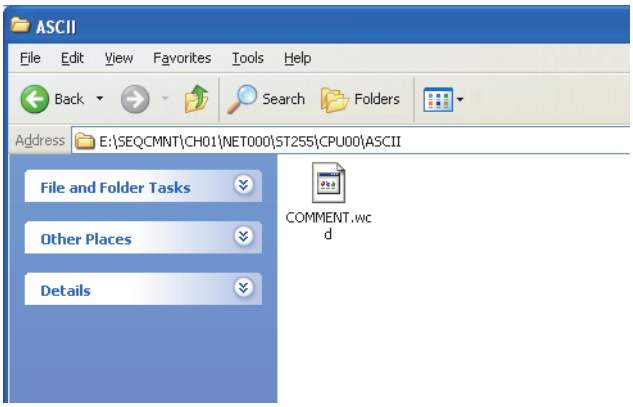
When the GX Works2 project is used, the creation method of a comment file (.wcd) differs depending on whether the project used can be or cannot be saved in the GX Developer format.

- Project that can be saved in the GX Developer format
  A comment file (.wcd) is created when the project is saved in the GX Developer format.
- Project that cannot be saved in the GX Developer format
  Export the project by using [Write IC Memory Card] of GX Works2, and change the extension of the comment file from [.qcd] to [.wcd].

Step 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

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



Step 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.

5.3.3 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.

■1. Switching languages of SFC programs

Languages (Japanese/Korean/Simplified Chinese) of comments to be displayed on the sequence program monitor (SFC) screens can be switched during monitoring.
For switching languages, comment files in the language to be displayed must be created in advance.

➠ 5.3.2 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

■2. Setting display mode of SFC programs

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

➠ 5.6.3 ■2. [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.

■3. Setting zoom comment display mode

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

➠ 5.6.3 ■3. Monitoring Mode menu

■4. Switching display formats between decimal and hexadecimal numbers

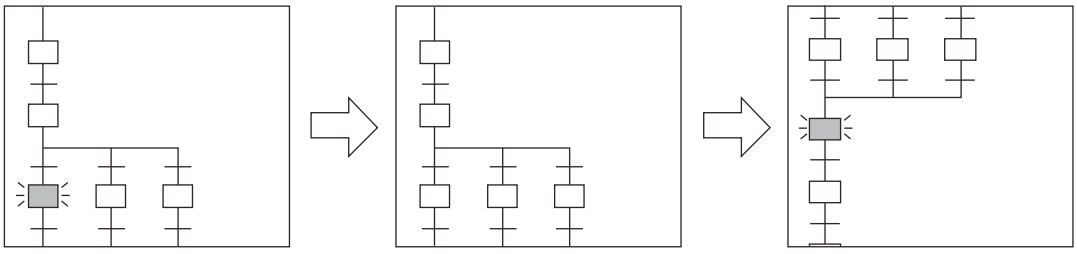
The display formats of word device values on the SFC diagram monitor screen can be switched between decimal and hexadecimal numbers.

➠ 5.6.3 ■2. [Display] menu

■5. 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.

➠ 5.6.3 ■2. [Display] menu

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

➠ 5.6 How to Operate SFC Diagram Monitor Screen

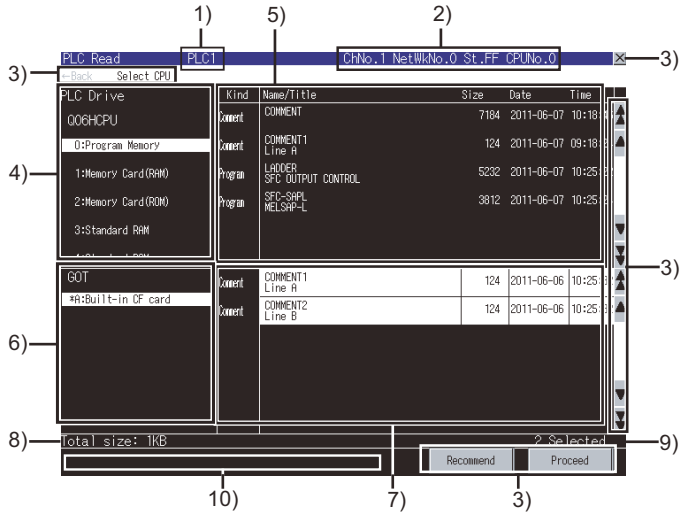
5.4 How to Operate PLC Read Screen

On the PLC read screen, the GOT reads SFC programs and comment files used for the sequence program monitor (SFC) from the PLC.
The following describes how to operate the PLC read screen.

5.4.1 Displayed contents

■1. PLC read screen

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



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 the operations on the PLC read screen (Touch input)

➠ 5.4.2 Key functions

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.

➠ 5.4.1 ■2. Password input window

6) Target drive list (GOT)
Lists the names of the drives to which data is saved.
An asterisk (*) is placed before the name of the drive that stores the files displayed in the file list (GOT).

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.

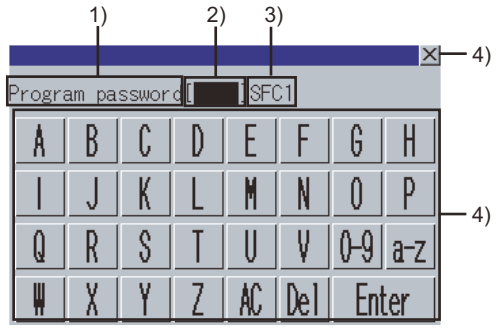
8) Total file size
Displays the total data size of files selected in the file list (target controller) and file list (GOT).

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.

■2. 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.)



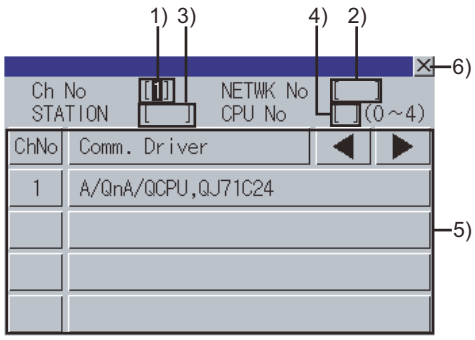
1) Password type
Displays the type of the password to be input.
- Program password
- Comment password

2) Password input area
Set the password.

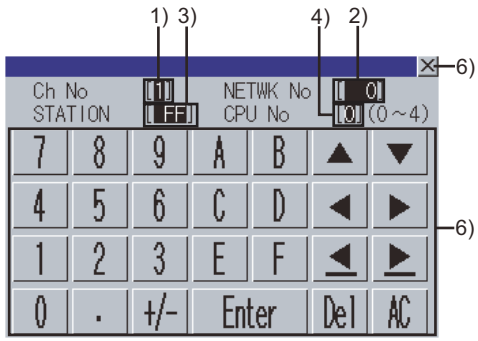
3) File name
Displays the file name.

4) Keys
Keys for operations in the password input window shown in (b) (Touch input)

■3. Communication setting window



(When the CH No. is input)



(When the network No., station No., and CPU No. are input)

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.

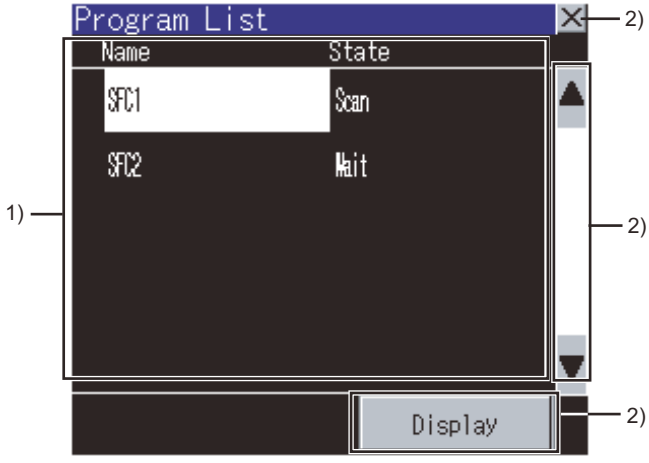
4) CPU No. input area
Set the CPU No.

5) CH No. selection key
Select a CH No.

6) Keys
Keys for operations in the communication setting window shown in (b). (Touch input)

➠ 5.4.2 Key functions

■4. Program list window



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.

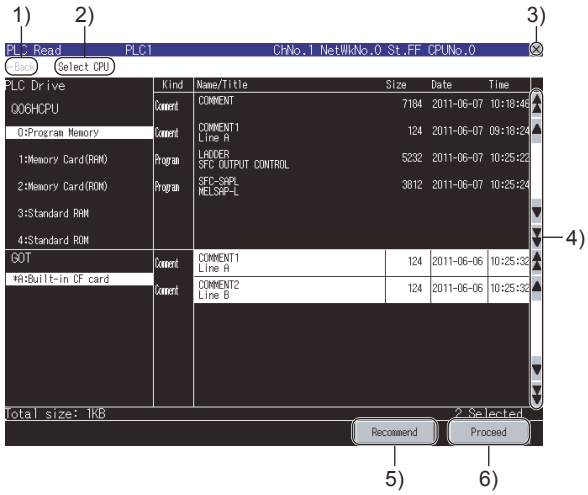
2) Keys
Keys for operations in the program list window shown in (b). (Touch input)

5.4.2 Key functions

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

■1. PLC read screen

The following shows the functions of the operation keys on the PLC read screen.



1) [←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.

2) [Select CPU]

Displays the communication setting window.

➠ 5.4.1 ■3. Communication setting window

3) Exit key

Exits the sequence program monitor (SFC) and returns the screen to the sequence program monitor (SFC) startup screen.

4) Scroll key

Scrolls the display up or down.

5) [Recommend] key

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.

- For SFC program files
  When the updated dates and times differ between the files, touching the key selects the file in the file list (target controller).
  When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT).
- For comment files
  When the updated dates and times differ between the files, touching the key selects the latest file.
  When the updated dates and times are the same between the files, touching the key selects the file in the file list (GOT).

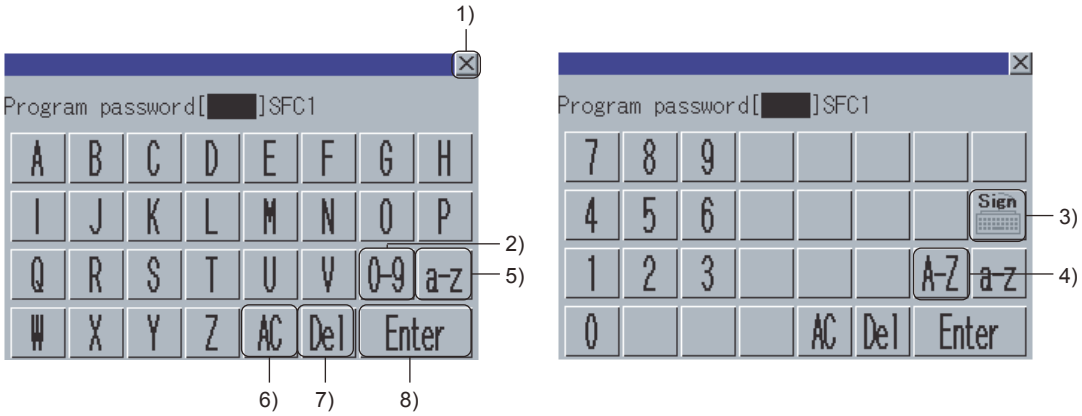
6) [Proseed] key

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.

➠ 5.4.1 ■4. Program list window

■2. Password input window

The following shows the functions of the operation keys on the password input dialog.



(Alphabet input) (Numeric input)

1) Cancel key
Closes the password input window and cancels the password input operation.

2) Numeric key
Switches the key type to the value.

3) Symbol key
Switches the keys to symbol keys.

4) Alphabet key (uppercase)
Switches the key type to the alphabet (uppercase).

5) Alphabet key (lowercase)
Switches the key type to the alphabet (lowercase).

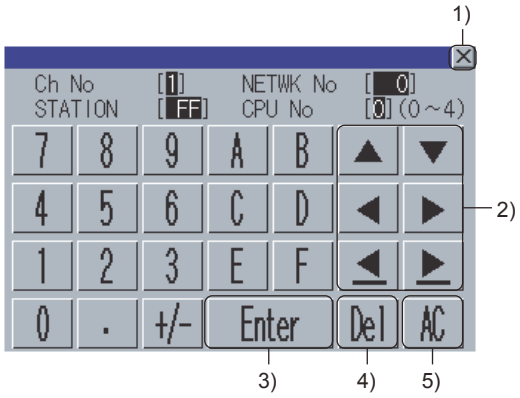
6) Delete all key
Deletes all the input values and characters.

7) Delete key
Deletes an input value or character.

8) Enter key
Authenticates the password set in the password input area.

■3. Communication setting window

The following shows the functions of the operation keys on the communication setting dialog.



1) Close 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.

2) Cursor keys
Moves the cursor among the input areas.

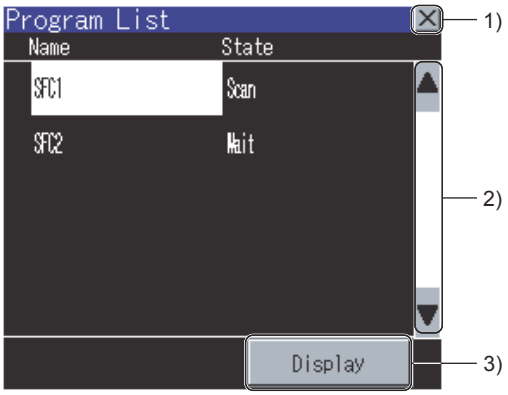
3) Enter key
Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area.
When the cursor is in the CPU No. input area and settings for the CH No., network No., and station No. are completed, the communication setting window closes and the PLC read screen appears.

4) Delete key
Deletes an input value or character.

5) Delete all key
Deletes all the input values and characters.

■4. Program list window

The following shows the functions of the operation keys on the program list window.



1) Cancel key
Closes the program list window.

2) Scroll key
Scrolls the display area up and down by one line.

3) [Display] key
Displays the blocks of the SFC program file selected in the SFC program file list on the block list screen.

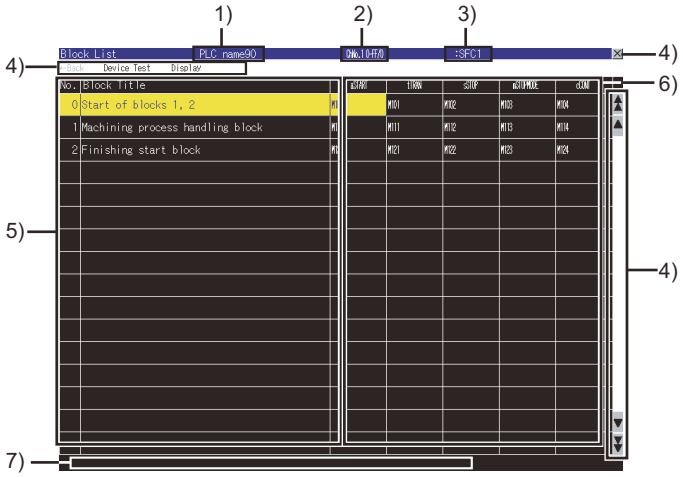
➠ 5.5 How to Operate Block List Screen

5.5 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.

5.5.1 Displayed contents

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



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
The keys used for the operations on the block list screen.

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.

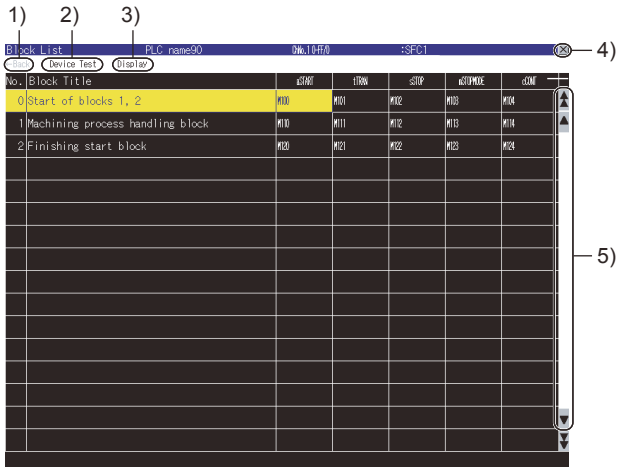
➠ 5.6 How to Operate SFC Diagram Monitor Screen

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.

5.5.2 Key functions

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



1) [←Back] key
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.

2) [Device Test] key
Sets the device test mode.
Touching the key in the device test mode cancels the device test mode.

➠ 5.7 Test Operation

3) [Display] menu
Displays menus used for operations on the block list screen.

➠ 5.5.3 ■1. [Display] menu

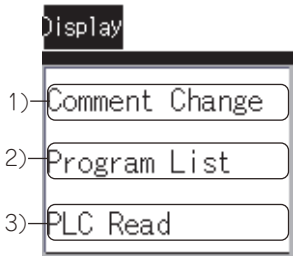
4) Exit key
Exits the sequence program monitor (SFC) and returns the screen to the sequence program monitor (SFC) startup screen.

5) Scroll key
Scrolls the display up and down.

5.5.3 Menus

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

■1. [Display] menu



1) [Comment change]
Displays the comment file list window.

➠ 5.6.3 ■2. (1) Comment file list window

2) [Program List]
Displays the program list window.

➠ 5.4.2 ■4. Program list window

3) [PLC Read]
Displays the PLC read screen.

➠ 5.4 How to Operate PLC Read Screen

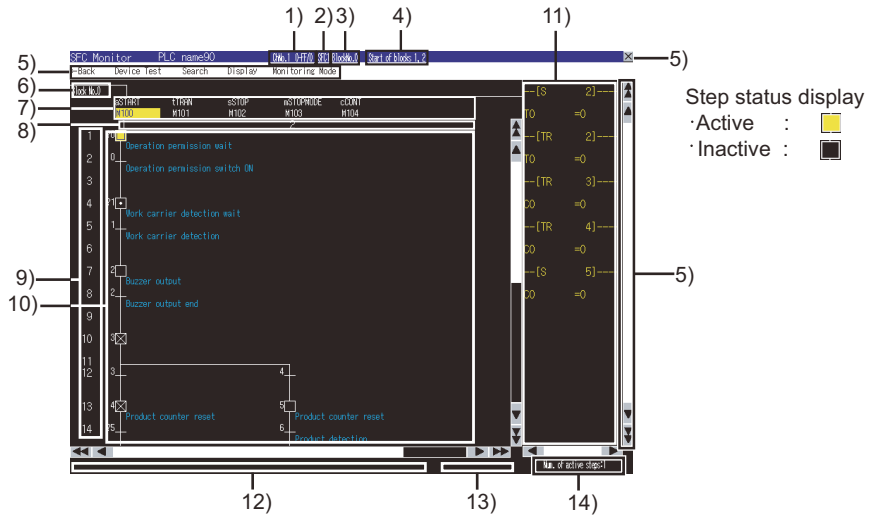
5.6 How to Operate SFC Diagram Monitor Screen

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.

5.6.1 Displayed contents

■1. SFC diagram monitor screen

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



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 the operations on the SFC diagram monitor screen

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.

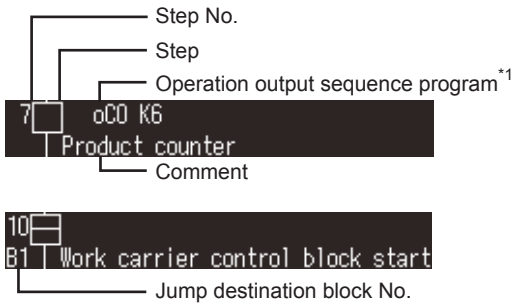
8) Column No.
Displays the column numbers.

9) Row No.
Displays the row numbers.

10) SFC diagram display area

Displays a SFC program in the SFC diagram format.

- Step display



*1 An operation output sequence program is displayed only in the MELSAP-L program display mode.

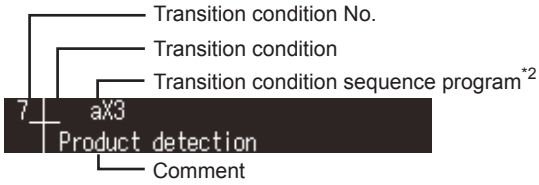
➠ 5.6.3 ■2. [Display] menu

Touching a step displays the zoom window.

➠ 5.6.1 ■2. Zoom window

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.

- Transition condition display



*2 A transition condition sequence program is displayed only in the MELSAP-L program display mode.

➠ 5.6.3 ■2. [Display] menu

Touching a transition condition displays the zoom window.

➠ 5.6.1 ■2. Zoom window

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

Displays [Scrolling automatically] with the automatic scroll mode.
Nothing is displayed without the automatic scroll mode.

14) Number of active steps

Displays the number of active steps in the displayed block.
Touching the item displays the active step list window.

➠ 5.6.3 ■2. (2) Active step list window

(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.

➠ 5.3.3 ■2. Setting display mode of SFC programs

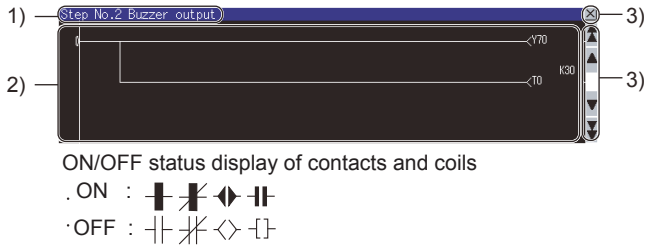
(2) Comment display at first display of SFC diagram monitor screen

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

■2. Zoom window

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



1) Type

- For displaying operation output sequence program
  The step number and step comment are displayed.
- For displaying transition condition sequence program
  The transition condition number and transition condition comment are displayed.

2) Ladder program display area

Displays an operation output/transition condition sequence program.
Comments and notes are displayed in the zoom comment display mode.

➠ 5.6.3 ■2. [Display] menu

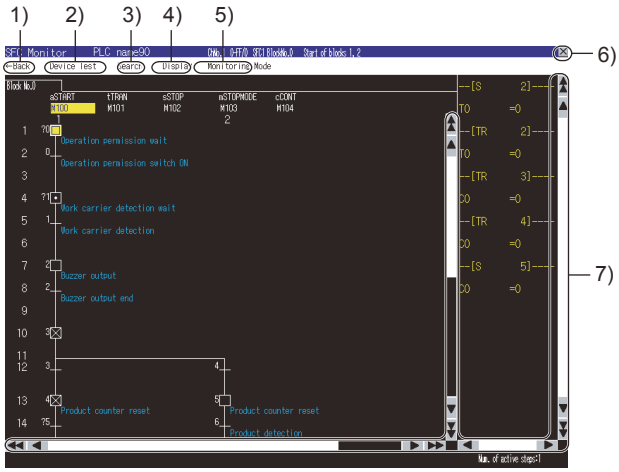
3) Keys

The keys used for the operations on the zoom window

5.6.2 Key functions

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

■1. SFC diagram monitor screen



1) [←Back] key
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.

2) [Device] key
Sets the device test mode.
Touching the key in the device test mode cancels the device test mode.

➠ 5.7 Test Operation

3) [Search] menu
Displays menus used for operations on the SFC diagram monitor screen.

➠ 5.6.3 ■1. [Search] menu

4) [Display] menu
Displays menus used for operations on the SFC diagram monitor screen.

➠ 5.6.3 ■2. [Display] menu

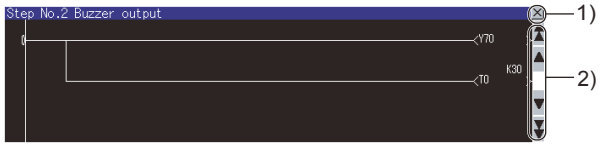
5) [Monitoring Mode] menu
Displays menus used for operations on the SFC diagram monitor screen.

➠ 5.6.3 ■3. Monitoring Mode menu

6) Exit key
Exits the sequence program monitor (SFC) and returns the screen to the sequence program monitor (SFC) startup screen.

7) Scroll key
Scrolls the display up, down, left, or right.

■2. Zoom window



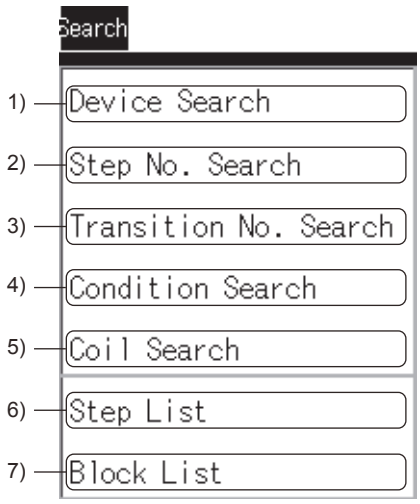
1) Cancel key
Closes the zoom window.

2) Scroll key
Scrolls the display up and down.

5.6.3 Menus

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

■1. [Search] menu



1) [Device Search]
Displays the device search dialog.

➠ 5.6.3 ■1. (1) Device/contact/coil search window

2) [Step No. Search]
Displays the step No. search dialog.

➠ 5.6.3 ■1. (2) Step No./transition condition No. search window

3) [Transiton No. Search]
Displays the transition condition No. search dialog.

➠ 5.6.3 ■1. (2) Step No./transition condition No. search window

4) [Condition Search]
Displays the contact search dialog.

➠ 5.6.3 ■1. (1) Device/contact/coil search window

5) [Coil Search]
Displays the coil search dialog.

➠ 5.6.3 ■1. (1) Device/contact/coil search window

6) [Step List]
Displays the step list window.

➠ 5.6.3 ■1. (3) Step list window

7) [Block List]
Displays the block list screen.

➠ 5.5 How to Operate Block List Screen

(1) Device/contact/coil search window

The GOT can search for devices in a SFC program.

(For alphabet input)

(For numerical input)

1) Device input area

Set a device to be searched.

2) Delete all key

Deletes all the input values and characters.

3) Delete key

Deletes an input value or character.

4) Numeric character key

Switches the key type to the value.

5) Enter key

Searches for the set device.

6) Search key

Searches for the set device in an upward or downward direction.

When the set device is searched for across multiple blocks, the search is conducted in descending or ascending order of block numbers.

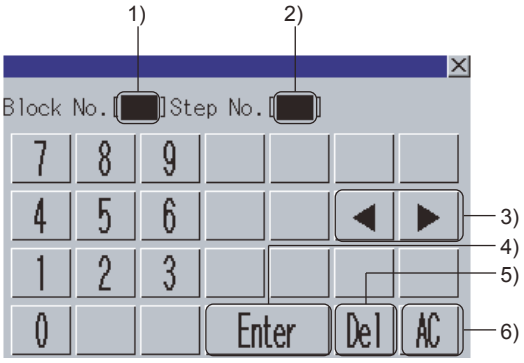
When the set device is found and the MELSAP-L program display mode is canceled, the zoom window displays the step or the transition condition where the set device is used.

7) Alphabet key

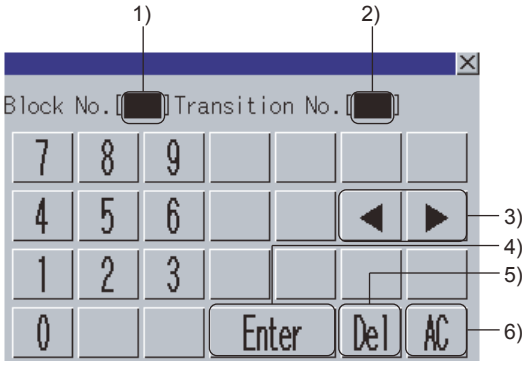
Switches the key type to the alphabet.

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

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



(Step No. search window)



(Transition condition No. search window)

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) Cursor keys

Moves the cursor among the input areas.

4) Enter key

- When the cursor is in the block No. input area
  Moves the cursor to the step No./transition condition No. input area.
- 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.)

5) Delete key

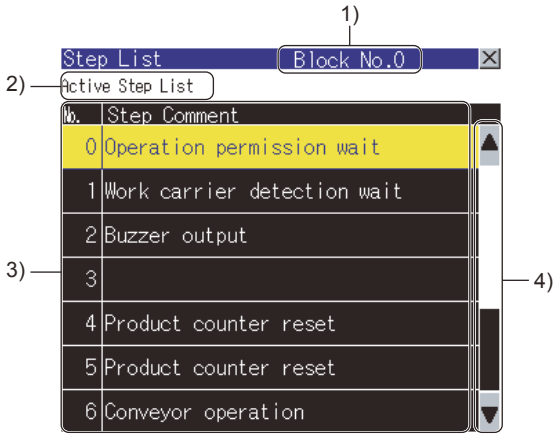
Deletes an input value or character.

6) Delete all key

Deletes all the input values and characters.

(3) Step list window

The GOT displays steps in a block.



1) Block No.

Displays the block No. of the displayed block.

2) [Active Step List] key

Displays the active step list window.

➠ 5.6.3 ■2. (2) Active step list window

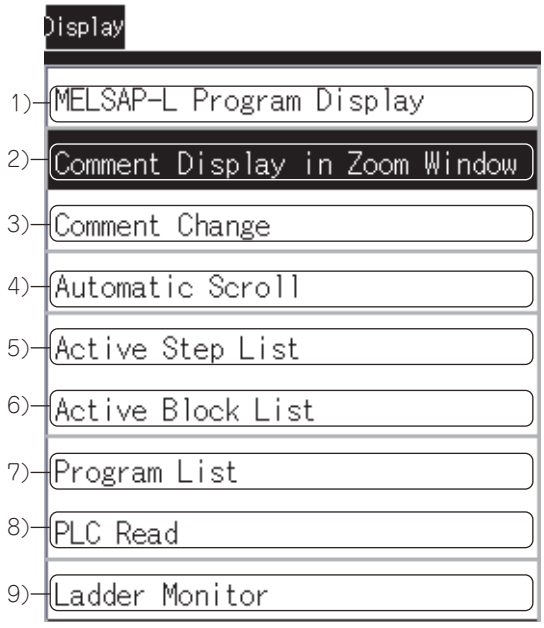
3) Step list

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.)

4) Scroll key

Scrolls the display area up and down by one line.

■2. [Display] menu



1) [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.

➠ 5.3.3 ■2. Setting display mode of SFC programs

2) [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.

➠ 5.3.3 ■3. Setting zoom comment display mode

3) [Comment change]

Displays the comment file list window.

➠ 5.6.3 ■2. (1) Comment file list window

4) [Automatic Scroll]

Sets the automatic scroll mode.

Touching the key in the automatic scroll mode cancels the automatic scroll mode.

➠ 5.3.3 ■5. Setting automatic scroll mode

5) [Active Step List]

Displays the active step list window.

➠ 5.6.3 ■2. (2) Active step list window

6) [Active Block List]

Displays the active block list window.

➠ 5.6.3 ■2. (3) Active block list window

7) [Program List]

Displays the program list window.

➠ 5.4.1 ■4. Program list window

8) [PLC Read]

Displays the PLC read screen.

➠ 5.4 How to Operate PLC Read Screen

9) [Ladder Monitor]

Starts the sequence program monitor (ladder).

Touching the key with a device selected can automatically search for the device with the sequence program monitor (ladder).

For the automatic search with the sequence program monitor (ladder), settings for automatically reading sequence programs are required.

For settings for automatically reading sequence programs, refer to the following.

- When setting with GOT utility

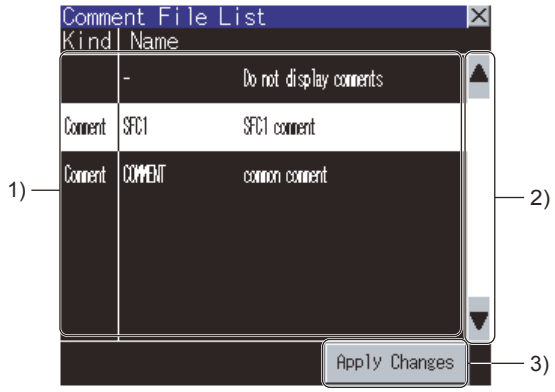
  ➠ GOT2000 Series User's Manual (Utility)

- When setting with GT Designer3 (GOT2000)

  ➠ GT Designer3 (GOT2000) Screen Design Manual

(1) Comment file list window

The GOT displays the comment file list.



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) Scroll key

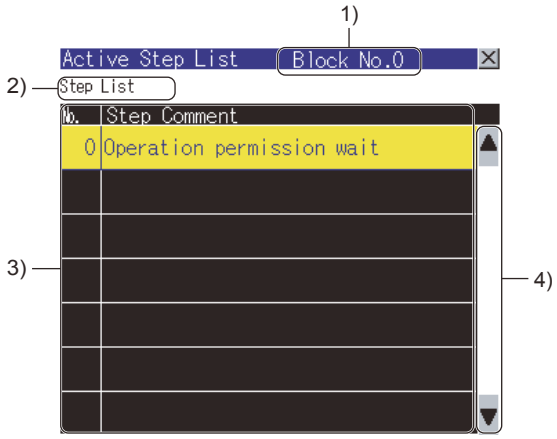
Scrolls the display area up and down by one line.

3) [Apply Changes] button

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.



1) Block No.

Displays the block No. of the displayed block.

2) [Step List] key

Displays the step list window.

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.

4) Scroll key

Scrolls the display area up and down by one line.

POINT

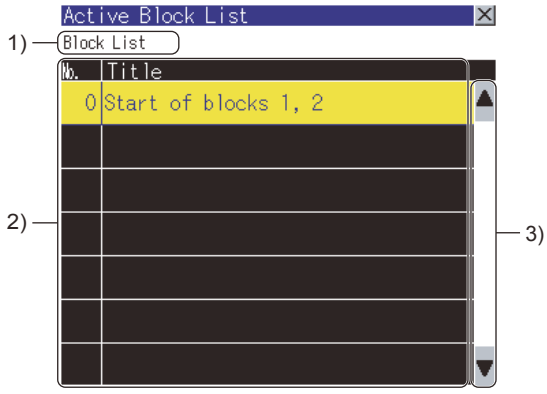
Precautions for active step list window

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.

➠ 5.6.3 ■1. (3) Step list window

(3) Active block list window

The GOT displays active blocks in the read SFC program.



1) [Block List] key

Displays the block list screen.

➠ 5.5 How to Operate Block List Screen

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.

3) Scroll key

Scrolls the display area up and down by one line.

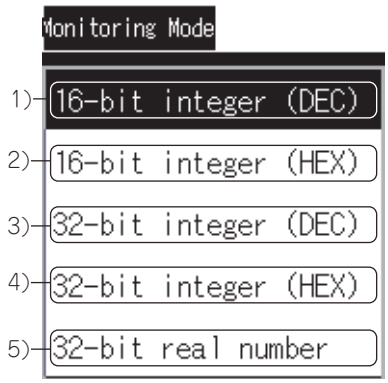
POINT

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.

➠ 5.5 How to Operate Block List Screen

■3. Monitoring Mode menu



1) [16-bit integer (DEC)]
Displays the device values in the device current value display area as 16-bit decimal numbers.

➠ 5.3.3 ■4. Switching display formats between decimal and hexadecimal numbers

2) [16-bit integer (HEX)]
Displays the device values in the device current value display area as 16-bit hexadecimal numbers.

➠ 5.3.3 ■4. Switching display formats between decimal and hexadecimal numbers

3) [32-bit integer (DEC)]
Displays the device values in the device current value display area as 32-bit decimal numbers.

➠ 5.3.3 ■4. Switching display formats between decimal and hexadecimal numbers

4) [32-bit integer (HEX)]
Displays the device values in the device current value display area as 32-bit hexadecimal numbers.

➠ 5.3.3 ■4. Switching display formats between decimal and hexadecimal numbers

5) [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.

➠ 5.3.3 ■4. Switching display formats between decimal and hexadecimal numbers

5.7 Test Operation

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

➠ 5.5.2 Key functions
5.6.2 Key functions

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

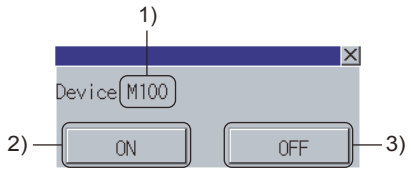
Screen applicable to device test mode	Reference section
Block information list on the block list screen	5.5.1 Displayed contents
SFC diagram display area on the SFC diagram monitor screen	5.6 How to Operate SFC Diagram Monitor Screen
Device current value display area on the SFC diagram monitor screen	
Ladder program display area in the zoom window	5.6.2 ■1. SFC diagram monitor screen

Touching a device displays the device test window.

- When touching bit devices
  A bit device is switched between ON and OFF states in the device test window.
- When touching word devices
  The GOT writes the value input in the device test window into the selected word device.

■1. How to operate device test window

(1) Bit devices

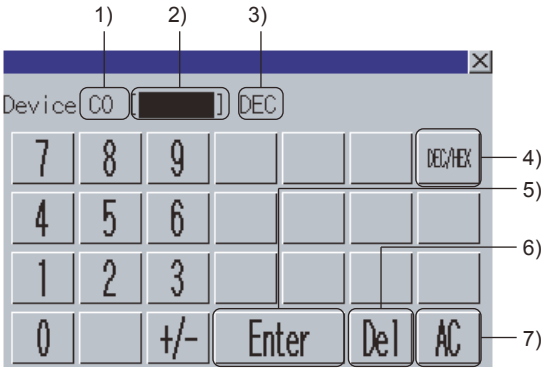


1) Device
Displays the selected device.

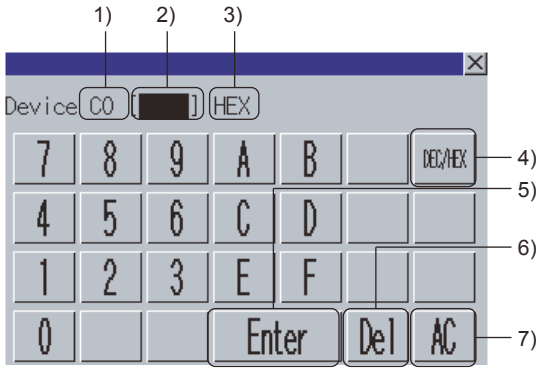
2) [ON] button
Turns on the bit device and writes the device state to the PLC CPU.

3) [OFF] button
Turns off the bit device and writes the device state to the PLC CPU.

(2) Word devices



(Monitoring mode : 16-bit integer (DEC))



(Monitoring mode : 32-bit integer (HEX))

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) Input mode switching key
Switches the input modes. (DEC, HEX)

5) Enter key
Writes the value input in the device value input area into the PLC CPU.

6) Delete key
Deletes an input value or character.

7) Delete all key
Deletes all the input values and characters.

5.8 Error Messages and Corrective Action

The following shows the error messages for the sequence program monitor (SFC) 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 prameters 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.	• The GOT cannot communicate with the PLC CPU. • A file with faulty file name is selected.	• Check the communications between the GOT and PLC CPU, and make sure that the GOT communicates with the PLC CPU. • Select the file after changing the message display language to one which can display the file name in the utility. • Change the file name with GX Developer.
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 sequence program monitor (SFC) is started with [Data save location] is set to a drive other than [A: Built-in SD card] and [B:Memory card] in the sequence program monitor (ladder) setting.	Set [Data save location] to [A: Built-in SD card] or [B:Memory card] in the sequence program monitor (ladder) 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.

Error message	Description	Corrective action
The device range has been changed. Please read the file again.	The GOT cannot read the target device values of the sequence program monitor (SFC) because the device range is changed in the PLC parameter setting during the sequence program monitor (SFC).	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.

6. NETWORK MONITOR

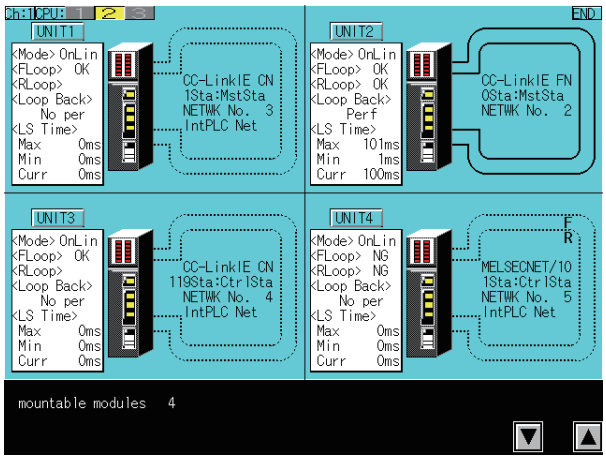
GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

6.1 Features

The network monitor function enables the GOT to monitor and display the status of the MELSECNET/H network, MELSECNET/10 network, MELSECNET(II) network, CC-Link IE Controller Network, and CC-Link IE Field Network. The features of the network monitor are described below.

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

The line monitor enables you to monitor the status of all network lines connected to the host station.
In addition, you can also perform detailed monitoring of a desired network and monitoring of other stations by touch input on the line monitor.



■2. Monitoring available for the detailed network information with the detailed monitor

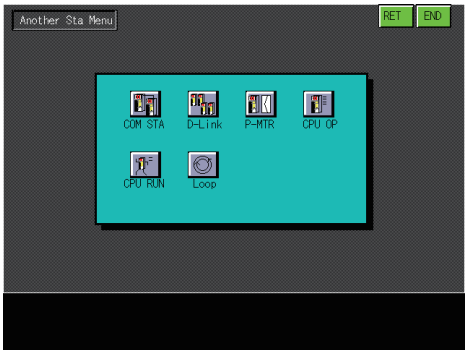
Dedicated monitor screens are displayed according to the network type of the connected host station.
The following shows the network types.

- 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

■3. Monitoring available for other stations status with the other station monitor

You can monitor the following status 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

6.2 Specifications

6.2.1 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 Electric Products) For GT Works3 Version1

■1. Target controller

Controller	Model
RCPU	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU
QCPU (Q mode)	Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, Q00UJCPU, Q00UCPU, Q00UJCPU-S08, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDCPU, Q06UDCPU, Q13UDCPU, Q26UDCPU, Q10UDHCPU, Q20UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU
LCPU	L02CPU, L26CPU-BT, L02CPU-P, L26CPU-PBT

■2. Connection type

This function can be used in the following connection types.

(1) RCPU

○: Available, ×: Unavailable

Function		Connection type between GOT and controller							
Name	Description	Bus connection	Direct CPU connection	Serial communication connection	Ethernet connection	MELSEC NET/H connection, MELSEC NET/10 connection	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. • CC-Link IE controller network • CC-Link IE field network	×		○	○	×	○	○	×

*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).

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

○: Available, ×: Unavailable

Function		Connection type between GOT and controller							
Name	Description	Bus connection	Direct CPU connection	Serial communication connection	Ethernet connection*6	MELSECNET/H connection, MELSECNET/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. • MELSECNET/H network • MELSECNET/10 network • MELSECNET(II) network • CC-Link IE controller network • CC-Link IE field network	○	○	○	○	○*4	○	○	○

*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.

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

○: Available, ×: Unavailable

Function		Connection type between GOT and controller						
Name	Description	Bus connection	Direct CPU connection	Computer link connection	Ethernet connection*6	MELSECNET/10 connection*5	CC-Link connection	
							ID*1	G4*2
Network monitor	Monitors the statuses of the following networks. • MELSECNET/H network • MELSECNET/10 network • MELSECNET(II) network • CC-Link IE controller network • CC-Link IE field network	○	○	○*3	○	○	○	○

*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.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the sequence program monitor (SFC) to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Applicable hardware

A USB mouse is usable.

6.2.2 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	MELSECNET(II) master station	MELSECNET(II) local station	MELSECNET/10, MELSECNET/H control station	MELSECNET/10, MELSECNET/H normal station	MELSECNET/10, MELSECNET/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	×	○*1	×	×	×	×	×	×	×

Function		Network Information	MELSECNET(II) master station	MELSECNET(II) local station	MELSECNET/10, MELSECNET/H control station	MELSECNET/10, MELSECNET/H normal station	MELSECNET/10, MELSECNET/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	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	×	○	×	×	×	×	×	×	×

Function		Network Information	MELSECNET(II) master station	MELSECNET(II) local station	MELSECNET/10, MELSECNET/H control station	MELSECNET/10, MELSECNET/H normal station	MELSECNET/10, MELSECNET/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	○	○	○*2	○*2	○*2	○*3	○*3	×	×
		Reverse loop status	○	○	○*2	○*2	○*2	○*3	○*3	×	×
		Loopback station (forward loop)	○	×	○*2	○*2	○*2	○*3	○*3	×	×
		Loopback station (reverse loop)	○	×	○*2	○*2	○*2	○*3	○*3	×	×
		Loop switching frequency	○	×	○*2	○*2	○*2	○	○	×	×
		PORT1 Loop	×	×	×	×	×	×	×	○*4	×
		PORT2 Loop	×	×	×	×	×	×	×	○*4	×
		Loop Back Sta.1	×	×	×	×	×	×	×	○*4	×
		Loop Back Sta.2	×	×	×	×	×	×	×	○*4	×
		Loop Switching	×	×	×	×	×	×	×	×	×
	Host status	Parameter settings	×	×	○	○	×	○	○	×	×
		Designation of reserved station	×	×	○	○	○	○	○	○	○
		Communications mode	×	×	○	○	○	○	○	○	○
		Designation of transmission	×	×	○*2	○*2	○*2	○	○	×	×
		Transmission status	×	×	○*2	○*2	○*2	○	○	×	×
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	○	×	○*2	○*2	○*2	×	×	×	×

*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.

- "Forward loop" for the MELSECNET/H, MELSECNET/10, and MELSECNET(II) networks refers to "OUT-side loop" for the CC-Link IE Controller Network.
- "Reverse loop" for the MELSECNET/H, MELSECNET/10, and MELSECNET(II) networks refers to "IN-side loop" for the CC-Link IE Controller Network.

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

6.2.3 Access range

In the bus connection, direct CPU connection, serial communication 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 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 Electric Products) For GT Works3 Version1

6.2.4 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, serial communication connection	Connected station (target)
Ethernet connection	Station set as the host with the Ethernet setting of GT Designer3 (GOT2000)
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.

(1) 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.

(2) When the network parameter has been changed

The network monitor cannot be displayed correctly when the network parameter is changed.
Restart the network monitor.

(3) 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.

(4) 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.

(5) 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.

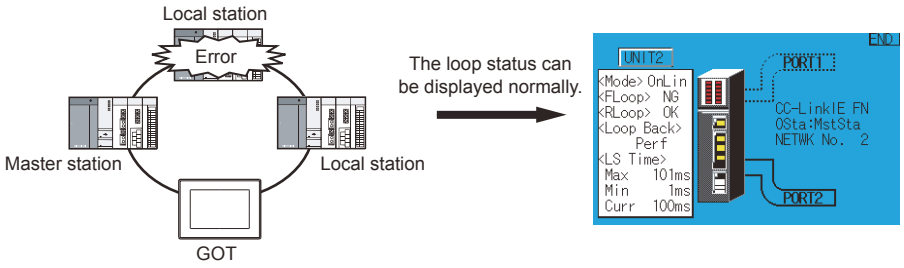
■5. When the CPU type of the connection target of the GOT is AnNCPU or AnACPU

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

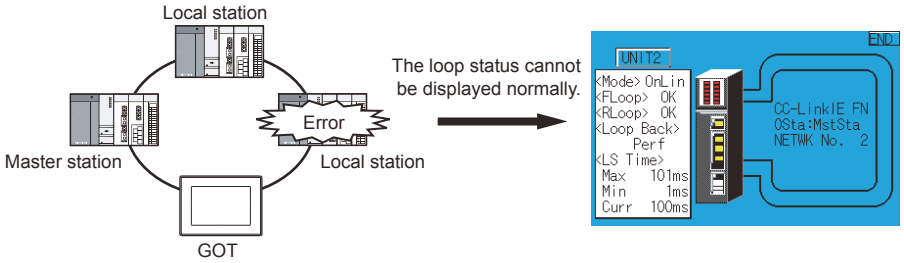
■6. Display of loop status for CC-Link IE field network

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



6.3 Operations for display

This section explains how to display the network monitor screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the network monitor screen by one of the following methods.

- Starting from the special function switch (Network monitor) set in the project data
  For information on how to set special function switches, refer to the following

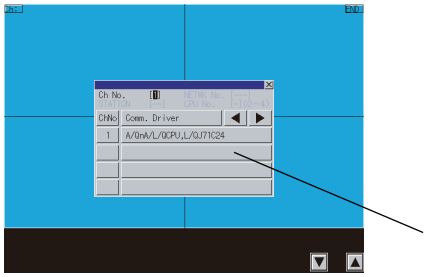
  ➠ GT Designer3 (GOT2000) Screen Design Manual

- Starting from the utility
  In the utility, touch [Monitor] → [Network monitor] from the Main Menu.
  For information on how to display the utility, refer to the following.

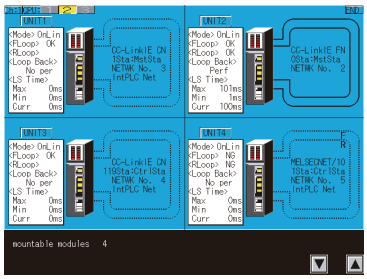
  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number.
Set the channel number of thecontroller targeted to the network.
After the GOT is turned on, the communication setting window is displayed automatically only at the first startup of the network monitor.
To display the communication setting window after the first startup, touch the [Ch:] key on the network monitor screen.

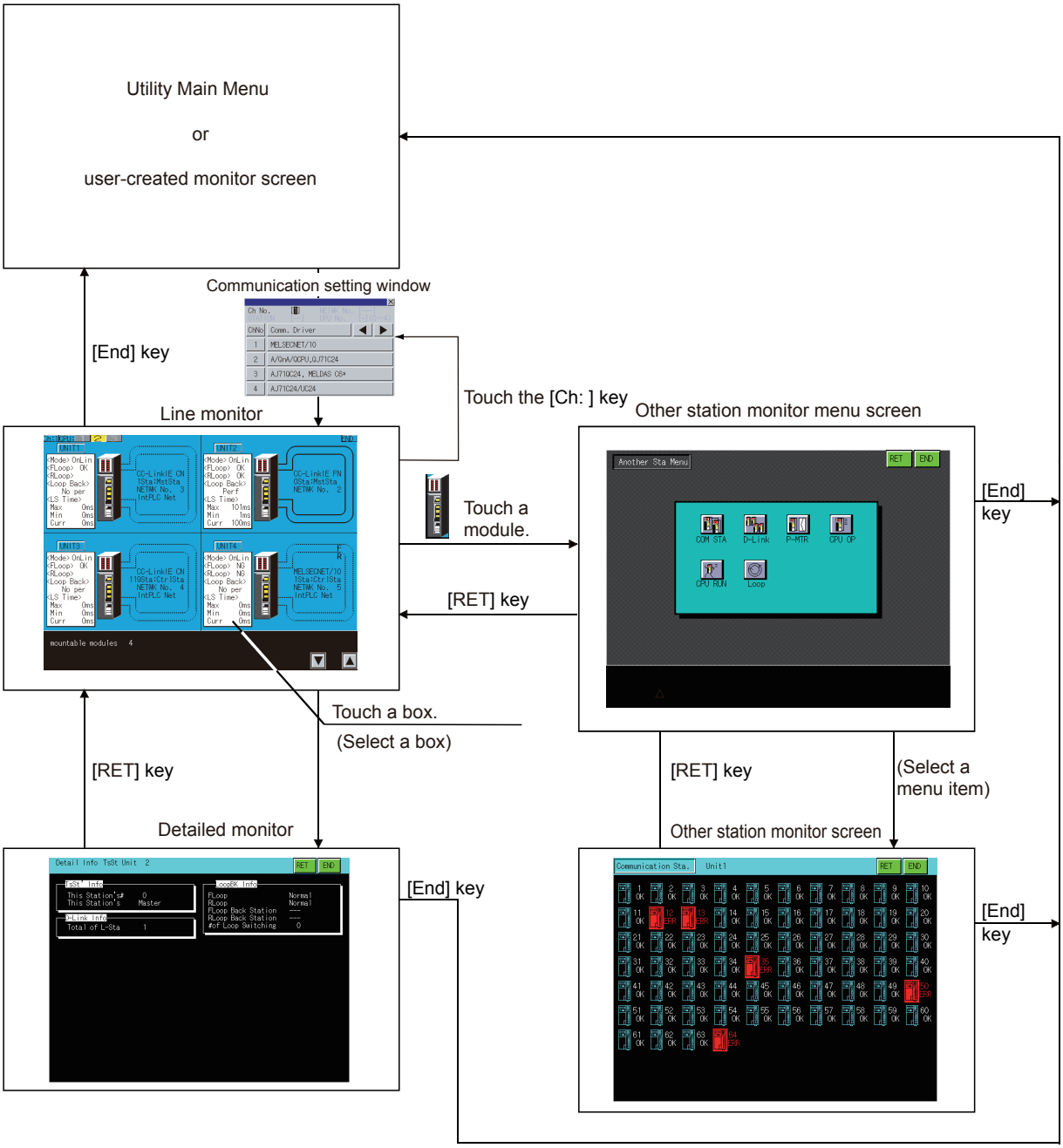
➠ 6.4 Operation Procedures



Step 4. The network monitor startup.
The network monitor starts after a channel number is selected.

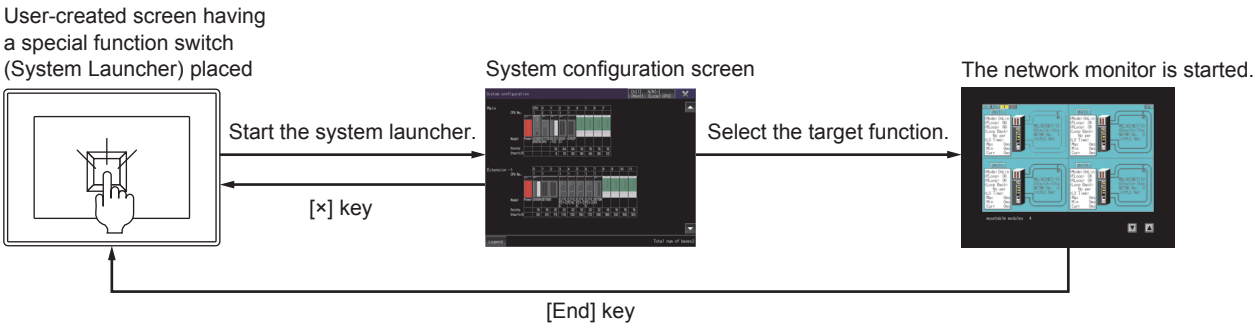


■1. Changing screens



(1) Starting the function by using the special function switch (System launcher)

You can start the network monitor from a user-created screen by selecting the connection destination with a special function switch to which [System Launcher] is set.



POINT

When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.

For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

6.4 Operation Procedures

This section describes the information and key functions displayed on the network monitor screen.
The display screen of the network monitor varies depending on the GOT used.

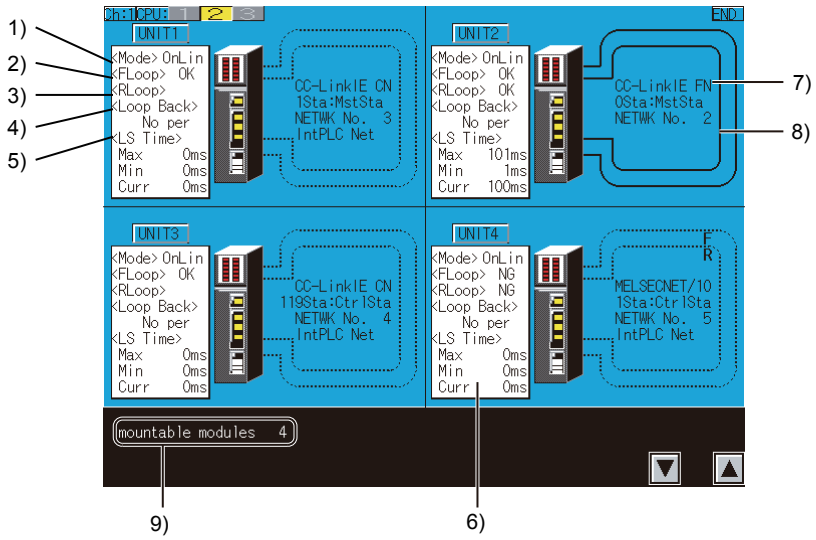
6.4.1 Line monitor

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

■1. Display contents and keys functions

(1) Displayed contents

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



1) [Mode]

This shows the operation mode of the host.
The following shows the display items.

- [On-line]
- [Off-line]
- [Test]

[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) [F-loop]

This shows the status of the F-loop (Forward loop).

The following shows the display items.

- [OK]
- [NG]

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

3) [R-loop]

This shows the status of the R-loop (Reverse loop).

The following shows the display items.

- [OK]
- [NG]

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
Reverse loop	IN-side loop	PORT2-side loop

4) [Loop back]

This shows whether the loopback was executed or not.

The following shows the display items.

- [Executed]
- [Not executed]

5) [Link scan time]

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.

The following shows the display items.

Item	Description
[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) Communication status

This shows the communication status of the host.

The status of only a local station in the MELSECNET(II) network is displayed.

The following shows the display items.

Item	Description
[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

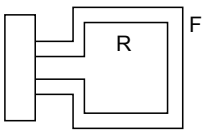
7) Network name

This shows the network category, network number, and station number.

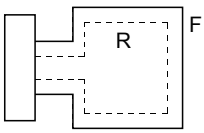
8) Loop status

For the MELSECNET/H and MELSECNET/10 network systems, the loop status is displayed as shown below.
F indicates the forward loop and R indicates the reverse loop.

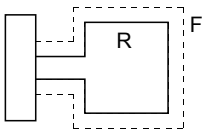
Forward loop: OK
Reverse loop: OK



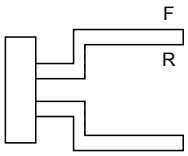
Forward loop: OK
Reverse loop: NG



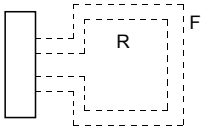
Forward loop: NG
Reverse loop: OK



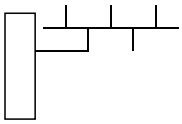
Loopback in execution



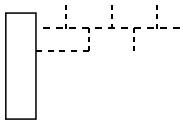
Forward loop: NG
Reverse loop: NG



MELSECNET/10
coaxial bus (OK)

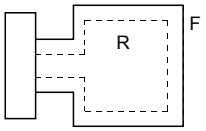


MELSECNET/10
coaxial bus (NG)

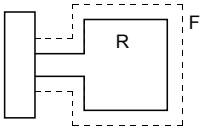


For the MELSECNET(II)network system, the loop status is displayed as shown below.
F indicates the forward loop and R indicates the reverse loop.

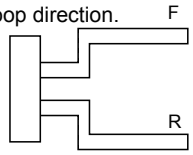
Data link in execution
in forward loop



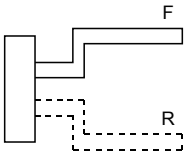
Data link in execution
in reverse loop.



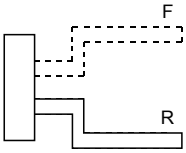
Loopback is performed
in the forward, reverse
loop direction.



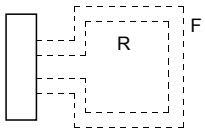
Loopback is performed in the
forward loop direction only



Loopback is performed in the
reverse loop direction only.

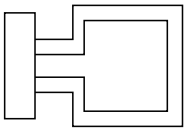


Data link is not available.

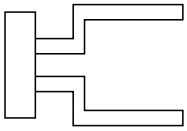


For the CC-Link IE controller network, the loop status is displayed as shown below.

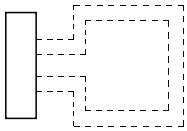
Normal status



Loopback in execution

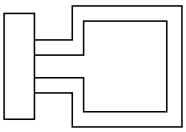


All stations with errors

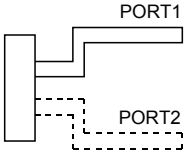


For the CC-Link IE field network, the loop status is displayed as shown below.

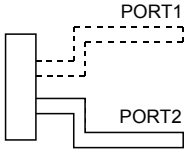
Normal status (ring topology)



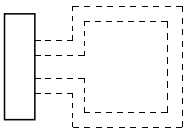
Loopback in execution on
PORT1side (ring topology)



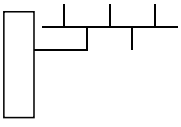
Loopback in execution on
PORT2 side (ring topology)



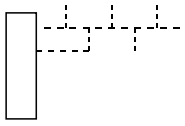
Error status (ring topology)



Normal status
(star topology, line topology)



Error status
(star topology, line topology)



9) [Number of installed network modules]

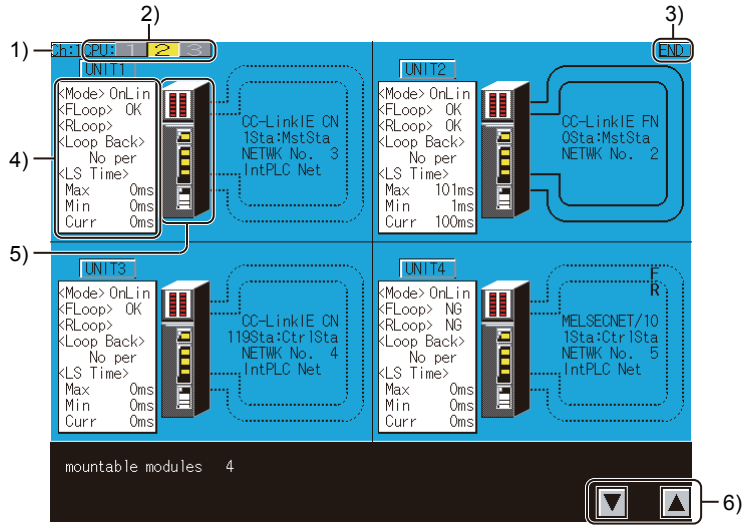
This shows the number of installed network modules.

(a) 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



1) [Ch: 1] key

Displays the communication setting window.

2) Monitoring target CPU

The monitoring target CPU is changeable by switching the CPU number only when the CPU is in the multiple CPU system.
The CPU number is displayed according to the number of mounted CPU modules.

3) [END] key

Exits the line monitor and returns to the screen where the network monitor function was started.

4) Detailed monitor

Switches to the detailed monitor screen that corresponds to the module displayed on the current monitor screen.
This key is effective for each screen.

5) Other station monitor

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.

6) Module display switching key

Switches the module display.

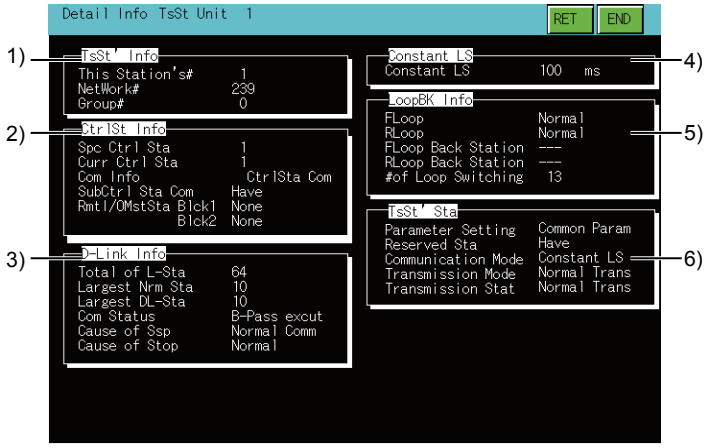
6.4.2 Detailed monitor

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

■1. 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



1) [TsSt' Info]

The following shows the display items.

Item	Description
[This Station's #]	Indicates the station number of the host.
[Network #]	Indicates the network number.
[Group #]	Indicates the group number.

2) [Ctrl St Info]

The following shows the display items.

Item	Description
[Spc Ctrlr Sta]	Indicates the station number of the station that is specified as a control station.
[Curr Ctrl Sta]	Indicates the station number of a station that is currently acting as the control station.
[Com Info]	Indicates whether the host is communicating with the control station or the sub-control station.
[SubCtrl Sta Com]	Indicates whether there is a sub-control station link.
[Rmt I/OMstSt]	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. This is not displayed when the CPU type of the GOT connection target is AnNCPU or AnACPU

3) [D-Link Info]

The following shows the display items.

Item	Description
[Total of L-Sta]	Indicates the maximum number of the communication stations that is defined with common parameters.
[Largest Nrm Sta]	Indicates the maximum station number of the station performing a communication in a normal condition.
[Largest DL-Sta]	Indicates the maximum station number of the station that is data-linked.

Item	Description
[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.]
[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)]
[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)]

4) [Constant LS]

The following shows the display items.

Item	Description
[Constant LS]	Indicates the predetermined time of constant link scans.

5) [LoopBK Info]

The following shows the display items.

Item	Description
[FLoop]	Shows the status of the forward loop lines of the host. • [Normal] • [LoopBK Trans] • [D-Link Impo]
[RLoop]	Shows the status of the reverse loop lines of the host. • [Normal] • [LoopBK Trans] • [D-Link Impo]
[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.
[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.
[# of Loop Switching]	Indicates the cumulative number of times for which loops have been switched. "---" is displayed when coaxial bus connections are established.

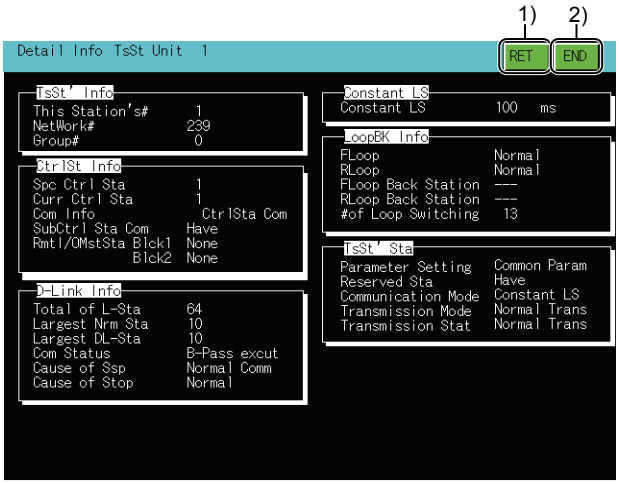
6) [TsSt' Sta]

The following shows the display items.

Item	Description
[Parameter Setting]	Displays [Common Param], [Common+Specif], [Default Param], or [Default+Specif].
[Reserved Sta]	Indicates the availability of a reserved station. (Have/None)
[Communication Mode]	Indicates either "Normal mode" or "Constant LS."
[Transmission Mode]	Indicates either "Normal Trans" or "Multiple Trans." "---" is displayed when coaxial bus connections are established.
[Transmission Stat]	Indicates either "Normal Trans" or "Multiple Trans. "---" is displayed when coaxial bus connections are established.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the detailed monitor screen.



1) [RET] key

Returns to the line monitor.

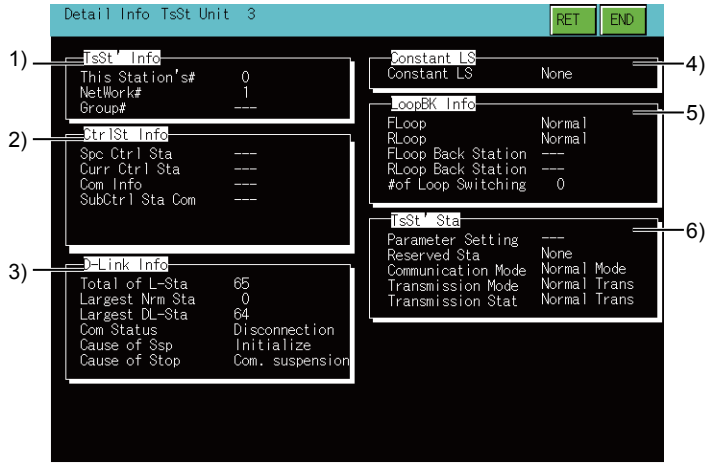
2) [END] key

Exits the detailed monitor and returns to the screen where the network monitor function was executed.

■2. 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



1) [TsSt' Info]

The following shows the display items.

Item	Description
[This Sations #]	Indicates the station number of the host.
[Network #]	Indicates the network number.
[Group #]	"---" is displayed.

2) [Ctrl St Info]

The following shows the display items.

Item	Description
[Spc Ctrl Sta]	"---" is displayed.
[Curr Ctrl Sta]	"---" is displayed.
[Com Info]	"---" is displayed.
[SubCtrl-Sta Com]	"---" is displayed.

3) [D-Link Info]

The following shows the display items.

Item	Description
[Total of L-Sta]	Indicates the maximum number of the stations to be linked, which is set by common parameters.
[Largest Nrm Sta]	Indicates the maximum station number of the station that is connected in a normal condition.
[Largest DL-Sta]	Indicates the maximum station number of the station that is performing data link.
[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]

4) [Constant LS]

The following shows the display items.

Item	Description
[Constant LS]	Indicates the predetermined time of constant link scans.

5) [LoopBK Info]

The following shows the display items.

Item	Description
[FLoop]	Shows the status of the forward loop lines of the host. • [Normal] • [LoopBK Trans] • [D-Link Impo]
[RLoop]	Shows the status of the reverse loop lines of the host. • [Normal] • [LoopBK Trans] • [D-Link Impo]
[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.
[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.
[# of Loop Switching]	Indicates the cumulative number of times for which loops have been switched.

"---" is displayed when coaxial bus connections are established.

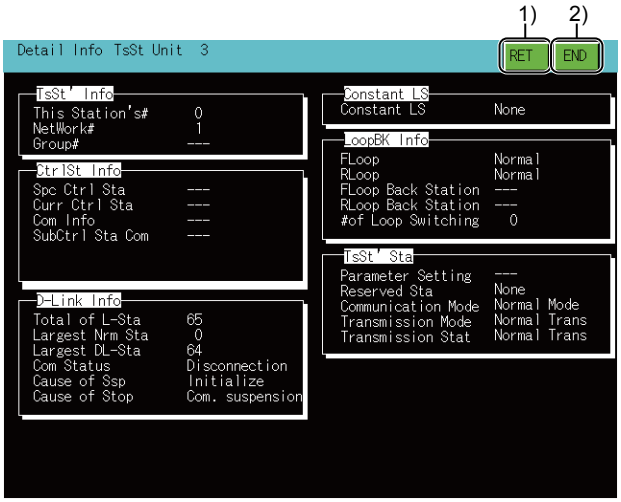
6) [TsSt' Sta]

The following shows the display items.

Item	Description
[Parameter Setting]	"---" is displayed.
[Reserved Sta]	Indicates the availability of a reserved station. (Have/None)
[Communication Mode]	Indicates either "Normal mode" or "Constant LS."
[Transmission Mode]	Indicates either "Normal Trans" or "Multiple Trans." "---" is displayed when coaxial bus connections are established.
[Transmission Stat]	Indicates either "Normal Trans" or "Multiple Trans." "---" is displayed when coaxial bus connections are established.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the detailed monitor screen.



1) [RET] key

Returns to the line monitor.

2) [END] key

Exits the detailed monitor and returns to the screen where the network monitor function was started.

■3. 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

1) [TsSt' Info]

The following shows the display items.

Item	Description
[This Station's #]	This shows the station number of the host.
[This Station's]	Indicates the category of the host.

2) [D-Link Info]

The following shows the display items.

Item	Description
[Total of L-Sta]	Indicates the maximum number of the stations to be linked, which is defined by common parameters.

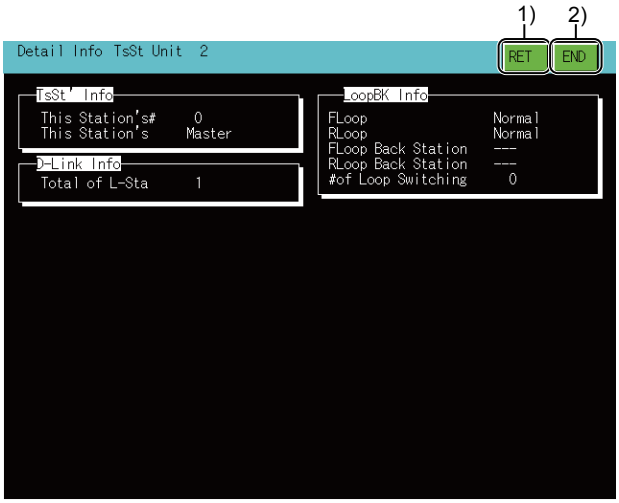
3) [LoopBK Info]

The following shows the display items.

Item	Description
[FLoop]	Shows the status of the forward loop lines of the host. • [Normal] • [NG]
[RLoop]	Shows the status of the reverse loop lines of the host. • [Normal] • [NG]
[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.
[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.
[# of Loop Switching]	Indicates the cumulative number of times for which loops have been switched.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the detailed monitor screen.



1) [RET] key

Returns to the line monitor.

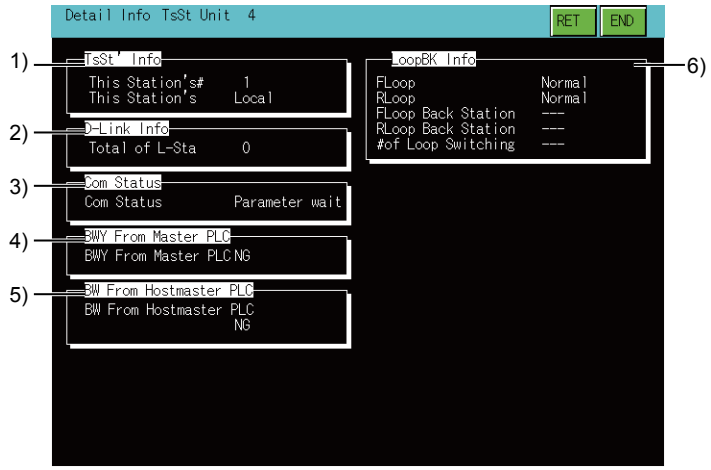
2) [END] key

Exits the detailed monitor and returns to the screen where the network monitor function was started.

■4. 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



1) [TsSt' Info]

The following shows the display items.

Item	Description
[This Station's #]	Indicates the station number of the host.
[This Station's]	Indicates the category of the host.

2) [D-Link Info]

The following shows the display items.

Item	Description
[Total of L-Sta]	Indicates the maximum number of the stations to be linked, which is defined by common parameters.

3) [Com status]

The following shows the display items.

Item	Description
[Com status]	This shows the communication status of the host. • [Parameter wait] • [Cyclic comm] • [Com. suspension]

4) [BWY From Master]

The following shows the display items.

Item	Description
[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]

The following shows the display items.

Item	Description
[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.

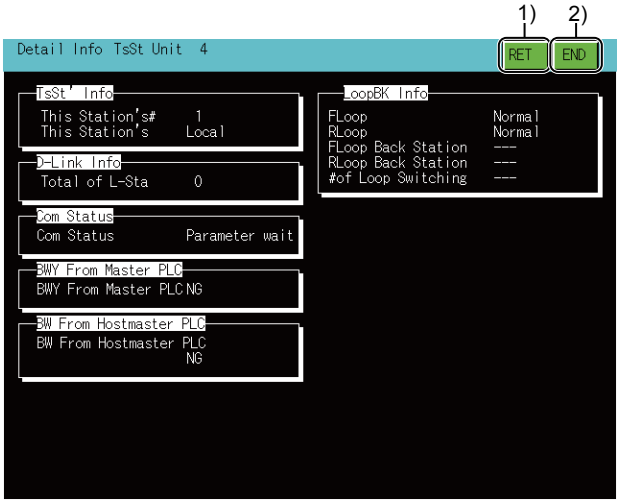
6) [LoopBK Info]

The following shows the display items.

Item	Description
[FLoop]	Shows the status of the forward loop lines of the host. • [Normal] • [NG]
[RLoop]	Shows the status of the forward loop lines of the host. • [Normal] • [NG]
[FLoop Back Station]	"---" is displayed.
[RLoop Back Station]	"---" is displayed.
[# of Loop Switching]	"---" is displayed.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the detailed monitor screen.



1) [RET] key

Returns to the line monitor.

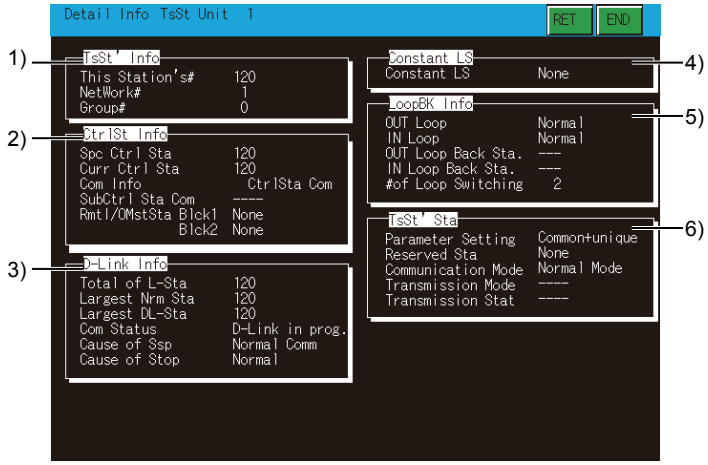
2) [END] key

Exits the detailed monitor and returns to the screen where the network monitor function was started.

■5. 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



1) [TsSt' Info]

The following shows the display items.

Item	Description
[This Station's#]	Displays the host station number.
[NetWork#]	Displays the network number of the host station.
[Group#]	Displays the group number.

2) [CtrlSt Info]

The following shows the display items.

Item	Description
[Spc Ctrl Sta]	Displays the station number set as the control station.
[Curr Ctrl Sta]	Displays the station number of the station currently operating as the control station.
[Com Info]	Displays whether the GOT communicates with the control station or sub-control station.
[SubCtrl Sta Com]	[---] is displayed.
[Rmtl/OMstSta]	Displays the station numbers of the I/O master stations for block 1 and block 2. [None] is displayed with no setting.

3) [D-Link Info]

The following shows the display items.

Item	Description
[Total of L-Sta]	Displays the total number of stations on the monitored network set for common parameters.
[Largest Nrm Sta]	Displays the maximum station number of the station communicating normally.
[Largest DL-Sta]	Displays the maximum station number of the station performing a data link.
[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]
[Cause of Ssp]	Displays the reason for the interrupted communication. [Normal Comm] is displayed with normal communications. • [Cable disconnct] • [Wrong cable] • [Checking cables] • [Disconnct/retrn] • [Offline mode] • [Offline test] • [Self-check mode]

Item	Description
[Cause of Ssp]	Displays the reason for the interrupted communication. [Normal Comm] is displayed with normal communications. • [Cable disconnct] • [Wrong cable] • [Checking cables] • [Disconnct/retrn] • [Offline mode] • [Offline test] • [Self-check mode] 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.
[Cause of Stop]	Displays the reason for the interrupted data link. [Normal] is displayed with normal data links. • [Stop disignat] • [D-Link time up] • [Testing line] • [Param not rcvd] • [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]

4) [Constant LS]

The following shows the display items.

Item	Description
[Constant LS]	Displays the set contact link scan time.

5) [LoopBK Info]

The following shows the display items.

Item	Description
[OUT Loop]	Displays the OUT-side loop line status of the host station. • [Normal] • [LoopBK Trans] • [All Sta. NG]
[IN Loop]	Displays the IN-side loop line status of the host station. • [Normal] • [LoopBK Trans] • [All Sta. NG]
[OUT Loop Back Sta.]	Displays the station number of the OUT-side loopback station. [---] is displayed with normal loopbacks.
[IN Loop Back Sta.]	Displays the station number of the IN-side loopback station. [---] is displayed with normal loopbacks.
[#of Loop Switching]	Displays the accumulated number of switching loops.

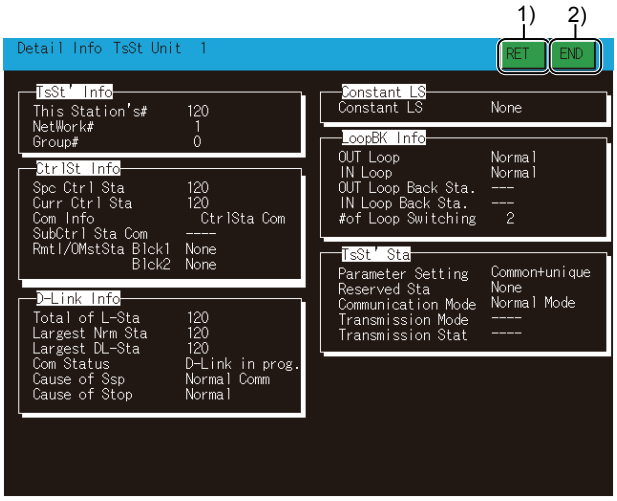
6) [TsSt' Sta]

The following shows the display items.

Item	Description
[Parameter Setting]	Displays [No parameters], [Common Param], [Unique param], or [Common+unique].
[Reserved Sta]	Displays whether a reserved station exists or not.
[Communication Mode]	Displays [Normal Mode] or [Constant LS].
[Transmission Mode]	[---] is displayed.
[Transmission Stat]	[---] is displayed.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the detailed monitor screen.



1) [RET] key

Returns to the line monitor.

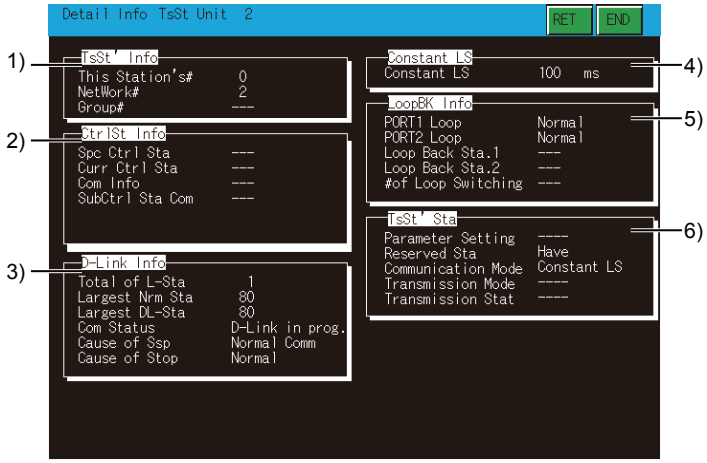
2) [END] key

Exits the detailed monitor and returns to the screen where the network monitor function was started.

■6. 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



1) [TsSt' Info]

The following shows the display items.

Item	Description
[This Station's#]	Displays the host station number.
[NetWork#]	Displays the network number of the host station.
[Group#]	[---] is displayed.

2) [CtrlSt Info]

The following shows the display items.

Item	Description
[Spc Ctrl Sta]	[---] is displayed.
[Curr Ctrl Sta]	[---] is displayed.
[Com Info]	[---] is displayed.
[SubCtrl Sta Com]	[---] is displayed.

3) [D-Link Info]

The following shows the display items.

Item	Description
[Total of L-Sta]	Displays the total number of stations on the monitored network set for common parameters.
[Largest Nrm Sta]	Displays the maximum station number of the station communicating normally.
[Largest DL-Sta]	Displays the maximum station number of the station performing a data link.
[Com Status]	Displays the current communication status of the host station. • [D-Link in prog.] • [B-Pass excut] • [B-Pass stopped] • [Offline test] • [Offline]
[Cause of Ssp]	Displays the reason for the interrupted communication. [Normal Comm] is displayed with normal communications. • [Cable disconnct] • [Disconnct/retrn] • [Offline mode] • [Offline test] When the station is in the hardware test mode, offline test mode, or self-loopback test mode, [Offline test] is displayed.
[Cause of Stop]	Displays the reason for the interrupted data link. [Normal] is displayed with normal data links. • [Stop disignat] • [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]

4) [Constant LS]

The following shows the display items.

Item	Description
[Constant LS]	Displays the set contact link scan time.

5) [LoopBK Info]

The following shows the display items.s

Item	Description
[PORT1 Loop]	Shows the status of the PORT1-side loop. • [Normal] • [LoopBK Trans] • [D-Link Impo]
[PORT2 Loop]	Shows the status of the PORT2-side loop. • [Normal] • [LoopBK Trans] • [D-Link Impo]
[Loop Back Sta.1]	Indicates the station number of a station that executes the loopback. [---] is displayed with normal loopbacks.
[Loop Back Sta.2]	Indicates the station number of a station that executes the loopback. [---] is displayed with normal loopbacks.
[#of Loop Switching]	Displays the accumulated number of switching loops.

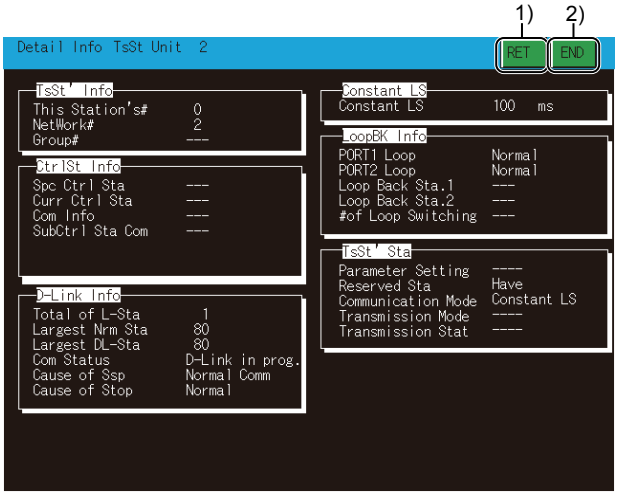
6) [TsSt' Sta]

The following shows the display items.

Item	Description
[Parameter Setting]	[---] is displayed.
[Reserved Sta]	Displays whether a reserved station exists or not.Indicates the availability of a reserved station. (Have/None)
[Communication Mode]	Displays [Normal Mode] or [Constant LS].
[Transmission Mode]	[---] is displayed.
[Transmission Stat]	[---] is displayed.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the detailed monitor screen.



1) [RET] key

Returns to the line monitor.

2) [END] key

Exits the detailed monitor and returns to the screen where the network monitor function was started.

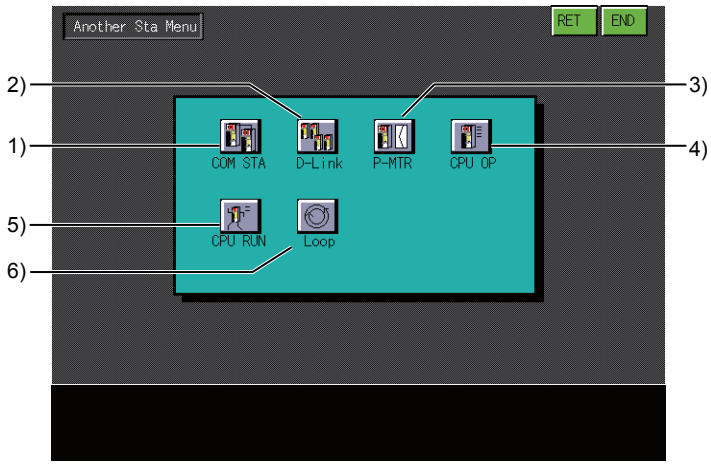
6.4.3 Other station monitor

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

■1. 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



1) [COM STA]
Switches to the communication status monitor for other stations.

➠ 6.4.4 Other station communication status monitor

This cannot be selected when a MELSECNET(II) local station is selected using the line monitor.

2) [D-Link]
Switches to the data link status monitor for other stations.

➠ 6.4.5 Other station data link status monitor

This cannot be selected when a MELSECNET(II) master station or local station is selected using the line monitor.

3) [P-MTR]
Switches to the parameter status monitor for other stations.

➠ 6.4.6 Other station parameter status monitor

This cannot be selected when a MELSECNET(II) local station is selected using the line monitor.

4) [CPU OP]
Switches to the CPU operation status monitor for other stations.

➠ 6.4.7 Other station CPU operation status monitor

This cannot be selected when a remote I/O station is selected using the line monitor.

5) [CPU RUN]
Switches to the CPU RUN status monitor for other stations.

➠ 6.4.8 Other station CPU RUN status monitor

This cannot be selected when a remote I/O station is selected using the line monitor.

6) [Loop]
Switches to the loop status monitor for other stations.

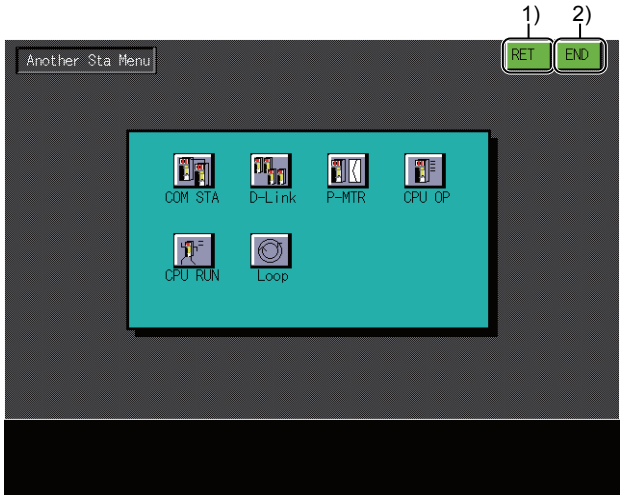
➠ 6.4.9 Other station loop status monitor

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 following shows the functions of the keys that are used for the operations on the other station monitor screen.



1) [RET] key

Returns to the line monitor.

2) [END] key

Exits the other station monitor screen and returns to the screen where the network monitor function was started.

6.4.4 Other station communication status monitor

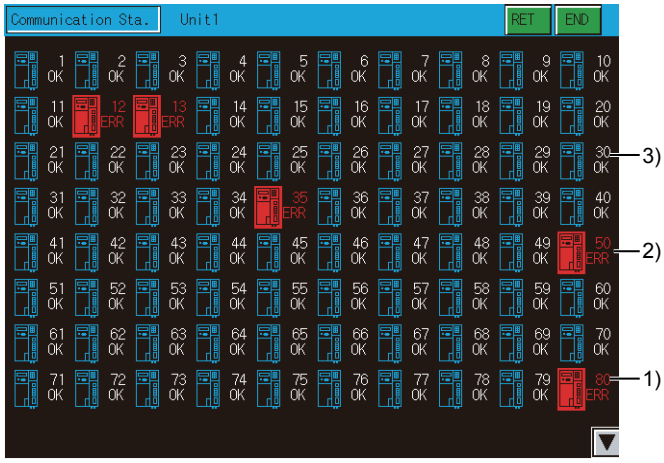
This section describes the structure of the screen and the common operations when the other station communication status monitor is executed.

■1. Display contents and key functions

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



1) Maximum number of communication stations

Displays the communication status by station number.

The following shows the display items.

- [OK]
- [ERR]

The station numbers displayed do not indicate the number of station numbers in the network, rather the maximum number of communication stations.

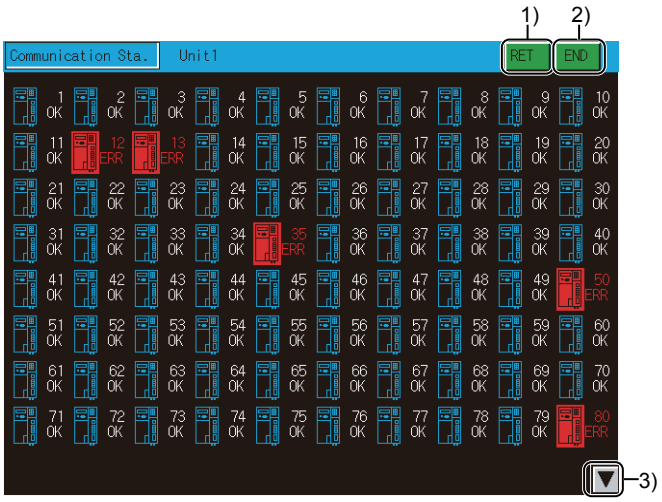
For CC-Link IE field network, station number 1 to 120 are displayed regardless of the number of station numbers in the network.

2) Communication error station
Any station in an abnormal condition is highlighted.

3) Reserved station
Reserved stations are displayed as normal stations.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the other station communication status monitor screen.



1) [RET] key
Returns to the other station monitor.

2) [END] key
Exits the other station communication statuses monitor screen and returns to the screen where the network monitor was started.

3) Display switching key
Switches the screen display of stations.
The screen display is switched between the screen for station 1 to 80 and the screen for station 81 to 120.

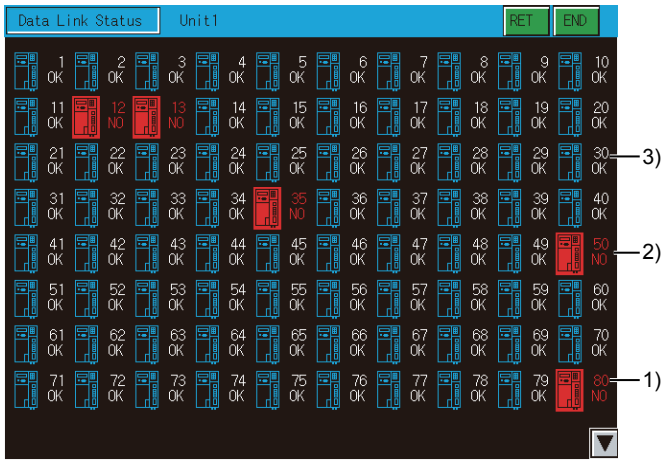
6.4.5 Other station data link status monitor

This section describes the structure of the screen and the common operations when the other station data link status monitor is executed.

■1. Display contents and key functions

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



1) Data link status display

Displays the data link status by station number.
The following items are displayed.

- [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) Station to which data link is not executed

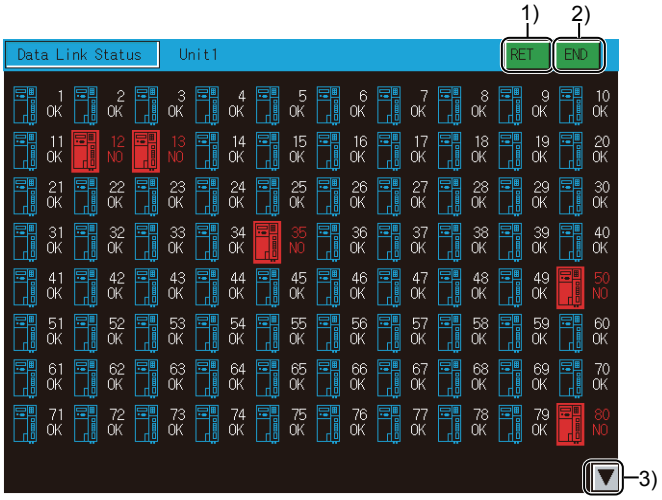
Any station to which data link is not performed is highlighted.

3) Reserved station

Reserved stations are displayed as having a data link established.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the other station data link status monitor screen.



1) [RET] key

Returns to the other station monitor.

2) [END] key

Exits the other station data link status monitor screen and returns to the screen where the network monitor was started.

3) Display switching key

Switches the screen display of stations.

The screen display is switched between the screen for station 1 to 80 and the screen for station 81 to 120.

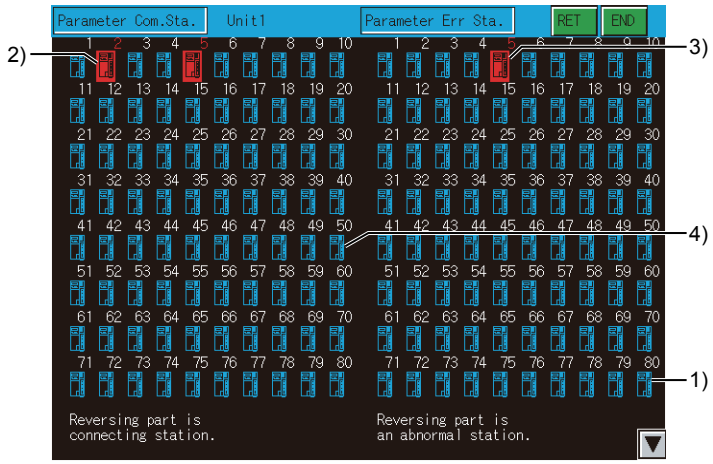
6.4.6 Other station parameter status monitor

This section describes the structure of the screen and the common operations when the other station data link status monitor is executed.

■1. Display contents and key functions

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



1) Parameter status display
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.

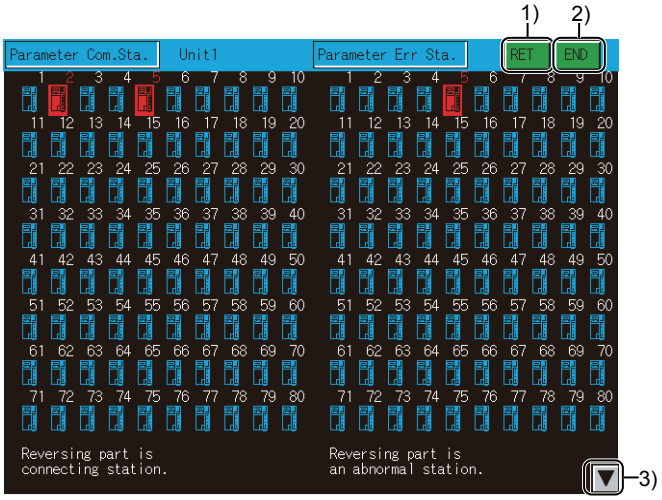
2) Parameter communication station
Any station whose parameters are monitored is highlighted.
Only [Parameter Err Sta.] is displayed when connecting to a MELSECNET(II) master station.

3) Faulty station
Any station in an abnormal condition is highlighted.

4) Reserved station
Reserved stations are displayed as normal stations.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the other station parameter status monitor screen.



1) [RET] key

Returns to the other station monitor.

2) [END] key

Exits the other station parameter status monitor screen and returns to the screen where the network monitor was started.

3) Display switching key

Switches the screen display of stations.

The screen display is switched between the screen for station 1 to 80 and the screen for station 81 to 120.

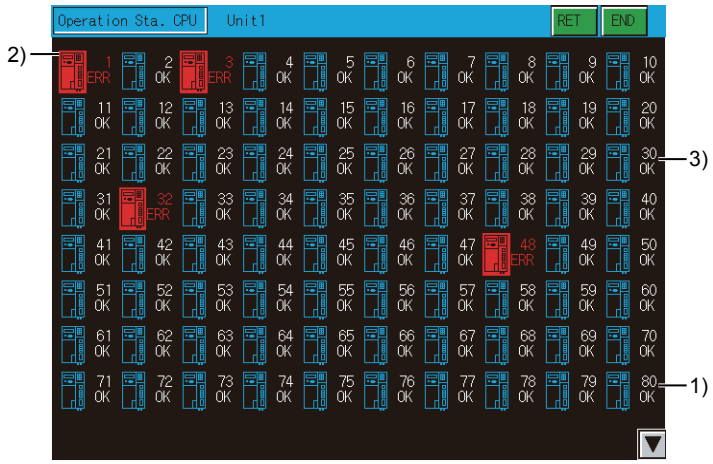
6.4.7 Other station CPU operation status monitor

This section describes the structure of the screen and the common operations when the other station CPU operation status monitor is executed.

■1. Display contents and key functions

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



1) CPU operation status display

Displays the CPU operation status by station number.
The following shows the display items.

- [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) Faulty station display, stopped station display

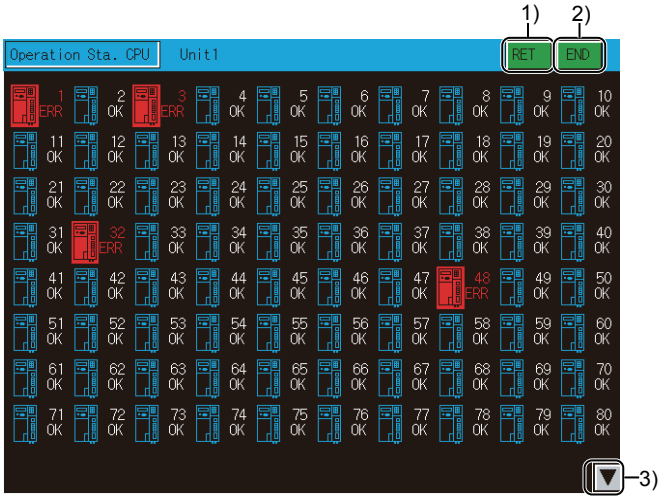
Any station that stays in an abnormal condition or out of operation is highlighted.

3) Reserved station display, unconnected station display

Reserved stations and unconnected stations are displayed as normal stations.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the other station CPU operation status monitor screen.



1) [RET] key

Returns to the other station monitor.

2) [END] key

Exits the other station CPU operation status monitor screen and returns to the screen where the network monitor was started.

3) Display switching key

Switches the screen display of stations.

The screen display is switched between the screen for station 1 to 80 and the screen for station 81 to 120.

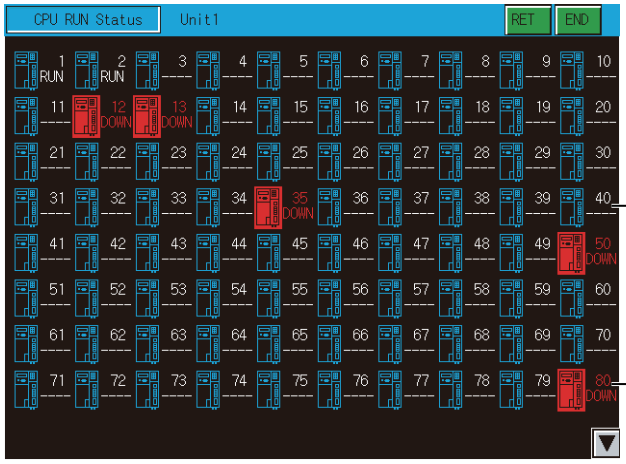
6.4.8 Other station CPU RUN status monitor

This section describes the structure of the screen and the common operations when the other station CPU RUN status monitor is executed.

■1. Display contents and key functions

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



1) CPU operation status display

Displays the CPU operation status by station number.
The following shows the display items.

- [RUN]
- [STOP]
- [DOWN]
  [DOWN] is displayed for a communication error station.

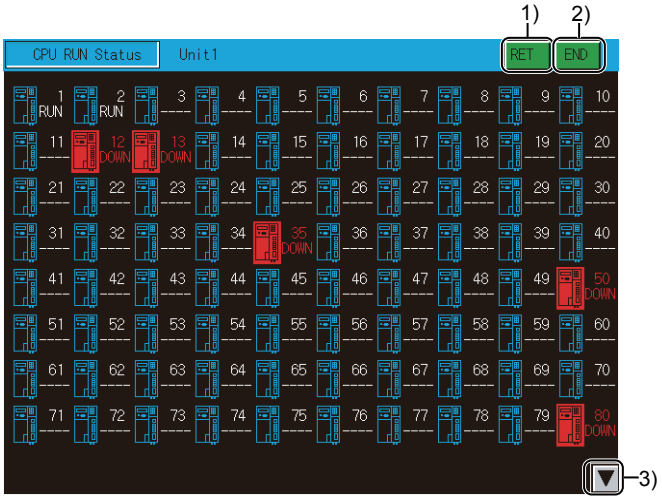
Up to 64 stations are displayed regardless of the number of stations in a network.
For CC-Link IE controller network or CC-Link IE field network, station number 1 to 120 are displayed regardless of the number of station numbers in the network.

2) Station number status

"---" 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 following shows the functions of the keys that are used for the operations on the other station CPU RUN status monitor screen.



1) [RET] key

Returns to the other station monitor.

2) [END] key

Exits the other station CPU RUN status monitor screen and returns to the screen where the network monitor was started.

3) Display switching key

Switches the screen display of stations.

The screen display is switched between the screen for station 1 to 80 and the screen for station 81 to 120.

6.4.9 Other station loop status monitor

This section describes the structure of the screen and the common operations when the other station loop status monitor is executed.

■1. Display contents and key functions

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

1) Loop status display

The F-loop (forward loop) status and the R-loop (reverse loop) status are displayed.

2) Station number display

The station numbers displayed do not indicate the number of station numbers in the network, rather the maximum number of communication stations.

3) Faulty station display

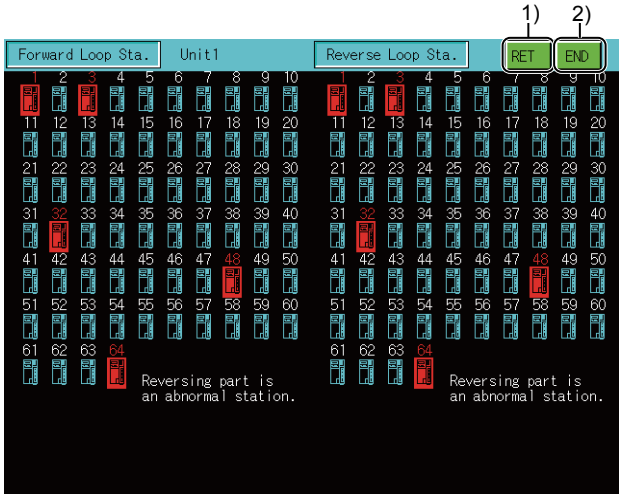
Any station that stays in an abnormal condition is highlighted.

4) Reserved station display

Reserved stations are displayed as normal stations.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the other station loop status monitor screen.



1) [RET] key

Returns to the other station monitor.

2) [END] key

Exits the other station loop status monitor screen and returns to the screen where the network monitor was started.

6.5 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.	• Check the connections between the controller and the GOT for disconnected connectors and cables. • Check if an error has occurred in the controller.
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.

7. Q MOTION MONITOR

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

7.1 Features

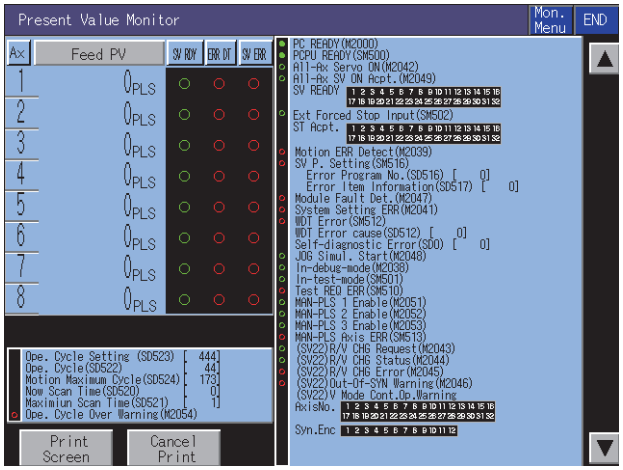
The Q motion monitor enables the servo monitoring and parameter setting of the motion controller CPU.
The following are the features of the Q motion monitor.

■1. Various servo monitoring 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.

➠ 7.4.4 Present Value Monitor screen

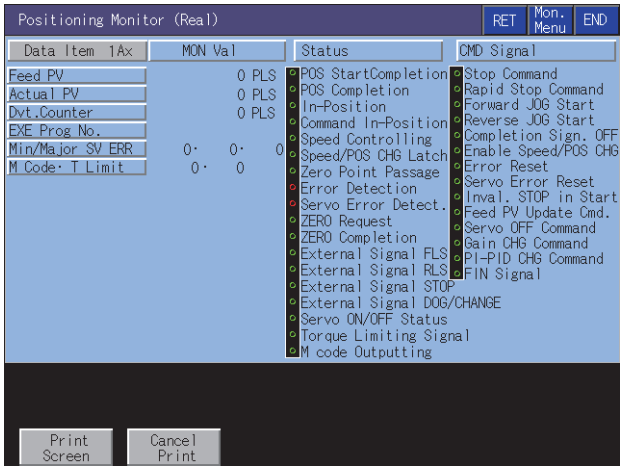


- Error List
  Displays the history of errors that occurred on and after the leading edge of PLC ready (M2000).

➠ 7.4.6 Error List screen

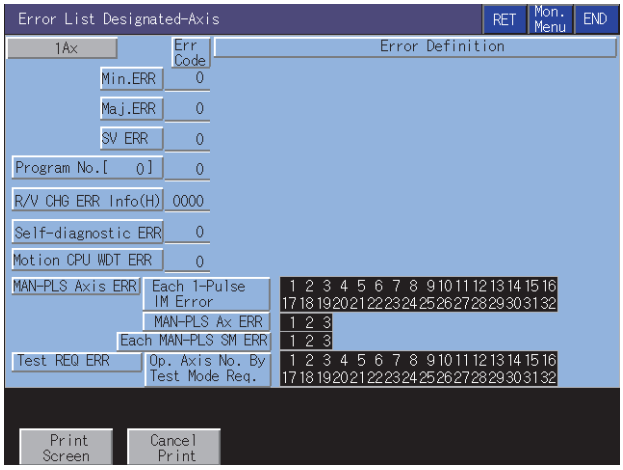
- Positioning Monitor
  Monitors the details of the positioning data set to any axis.

➠ 7.4.8 Positioning Monitor screen



- Error List Designated-Axis
  Displays the latest errors that occurred on the specified axis.

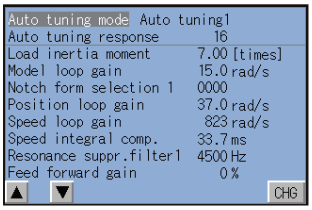
➠ 7.4.7 Error List Designated-Axis screen



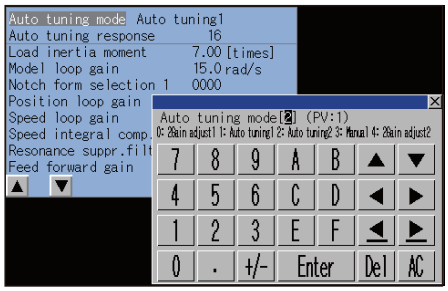
■2. Servo parameter setting by writing operation

Write example: Changing the setting of the auto tuning function

Parameter setting screen

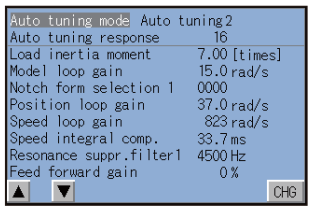


Parameter setting window appears



Change the auto tuning mode from "1" to "2".

Parameter setting screen



Parameter setting is changed.

Step 1. By performing writing from the parameter setting screen, write the servo parameter setting (basic parameters/adjustment parameters) to the motion controller CPU.

Step 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.

7.2 Specifications

7.2.1 System configuration

This section 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 Electric Products) For GT Works3 Version1

■1. Target controller

Controller
Motion controller CPU (Q series)*1*2

*1 To use Q172CPU or Q173CPU, its serial number must be as shown below.
For the bus connection and the direct CPU connection, use a Q172CPU that is serial numbered K******* or later, or a Q173CPU that is serial numbered J******* or later.
For connection types other than the bus connection and the direct CPU connection, use a Q172CPU that is serial numbered N******* or later, or a Q173CPU that is serial numbered 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)

■2. 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, ×: Unavailable

Function		Connection type between GOT and controller							
Name	Description	Bus connection	Direct CPU connection	Serial communication connection	Ethernet connection *4	MELSECNET/H connection, MELSECNET/10 connection	CC-Link IE controller connection *1	CC-Link connection	
								ID*2	G4*3
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 When the CC-Link IE Field Network Ethernet adapter module is used, the Q motion monitor cannot be used.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the Q motion monitor to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Applicable hardware

A USB mouse is usable.

■5. Required special data

Write the package data, which contains 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.
For the Q motion monitor data size and how to write the data to the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■6. 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, Q172CPUN, Q173CPUN	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, Q172DCPU-S1, Q173DCPU-S1, Q170MCPU	MR-J3-B, MR-J3-BS, MR-J3W-B, MR-J3-B-RJ006, MR-J3-B-RJ004, MR-J3-B-RJ080W
Q172DSCPU, Q173DSCPU, Q170MSCPU, Q170MSCPU-S1	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, MR-J4-B-RJ

7.2.2 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 Electric Products) For GT Works3 Version1

7.2.3 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.

7.3 Operations for Display

This section explains how to display the Q motion monitor screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the Q motion monitor screen by one of the following methods.

- Starting from the special function switch (Q motion monitor) set in the project data
  For information on how to set special function switches, refer to the following.

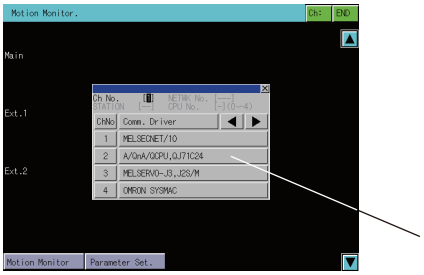
  ➠ GT Designer3 (GOT2000) Screen Design Manual

- Starting from the utility
  In the utility, touch [Monitor] → [Motion monitor] from the main menu.
  For information on to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number.
Set the channel number of the controller monitoring the Q motion.
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:] key on the Q motion monitor screen.

➠ 7.4 Operation Procedures



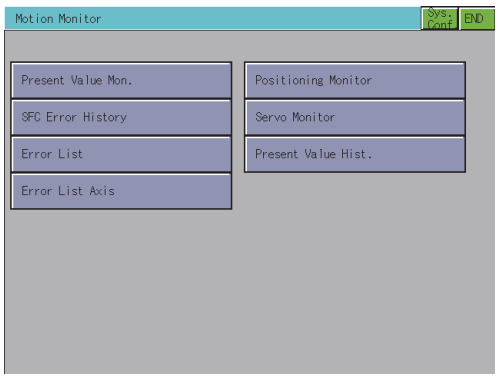
Step 4. Start the Q motion monitor.
The system configuration screen appears after the channel No. is selected.
Touch a motion controller CPU to monitor.
Touching the [Parameter Set.] key displays the parameter setting screen.
Touching the [Motion Monitor] key displays the monitor menu.

Step 5. Touch the [Parameter Set.] key to display the parameter setting screen.
When you have set a password in [Motion Parameter Display] on GT Designer3 (GOT2000), enter the password.

➠ 7.4.11 Parameter setting screen

Select the servo parameter to be set.
Change the servo parameter setting and write the new servo parameter to the motion controller CPU.

Step 6. Display the Q motion monitor screen.
Select an item on the menu to display the selected monitor function.



- [Present Value Mon.]

  ➠ 7.4.4 Present Value Monitor screen
- [SFC Error History]

  ➠ 7.4.5 SFC Error History screen
- [Error List]

  ➠ 7.4.6 Error List screen
- [Error List Axis]

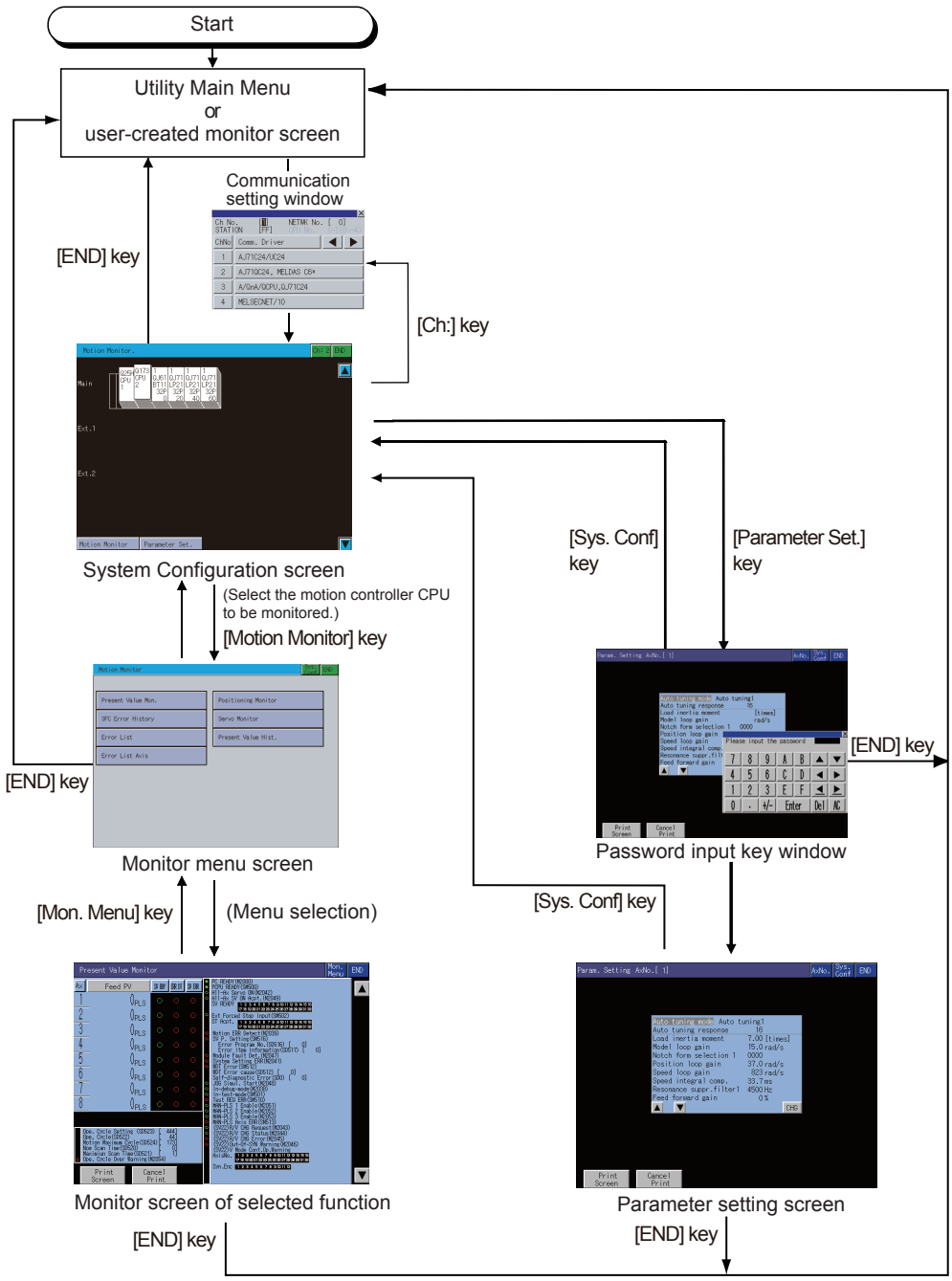
  ➠ 7.4.7 Error List Designated-Axis screen
- [Positioning Monitor]

  ➠ 7.4.8 Positioning Monitor screen
- [Servo Monitor]

  ➠ 7.4.9 Servo Monitor screen
- [Present Value Hist.]

  ➠ 7.4.10 Present Value History Monitor screen

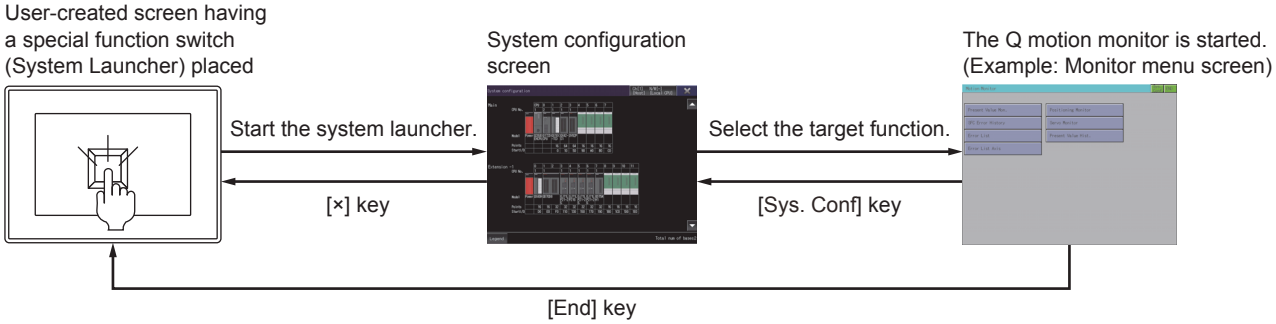
■1. Changing screens



At next startup, the last exited screen is displayed.
However, the last exited screen will not be displayed when the GOT is restarted due to an installation of the OS, turning the GOT power from off to on, or a reset.
When the function is started with a special function switch to which a connection destination different from the one at the last exit is set, the system configuration screen appears.

(1) Starting the function by using the special function switch (System launcher)

You can start the Q motion monitor from a user-created screen by selecting the connection destination with a special function switch to which [System Launcher] is set.



POINT

When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.

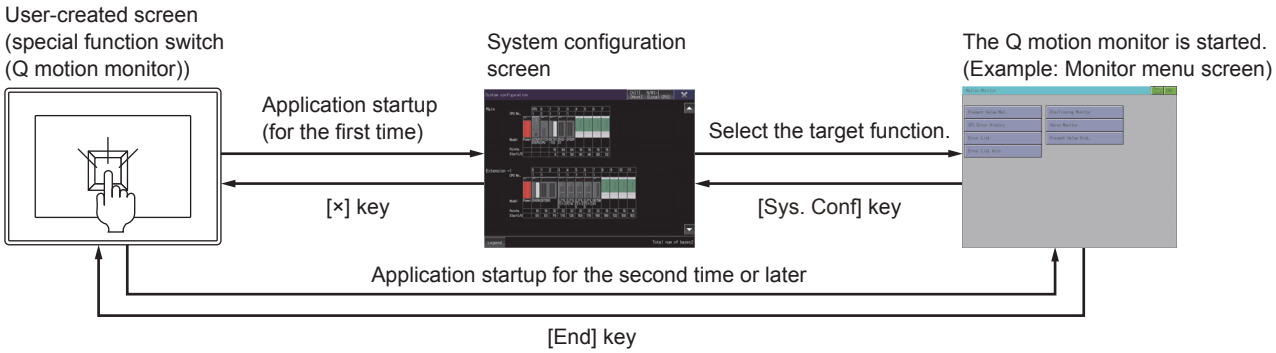
For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

(2) Starting from the special function switch of a system application (Extended function) that has a system configuration screen

When the system application set as a connection destination of the special function switch supports the system launcher function, the system launcher switching notification dialog appears at the first startup, and the system configuration screen of the system launcher function appears.

At the second or later startup, the set function screen appears when the system application is started from the user-created screen.



POINT

When the system launcher does not support the connection destination

When the set connection destination does not support the system launcher function, a dialog appears at the startup and the system configuration screen of the set connection destination appears.

For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

7.4 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 depending on the GOT used.

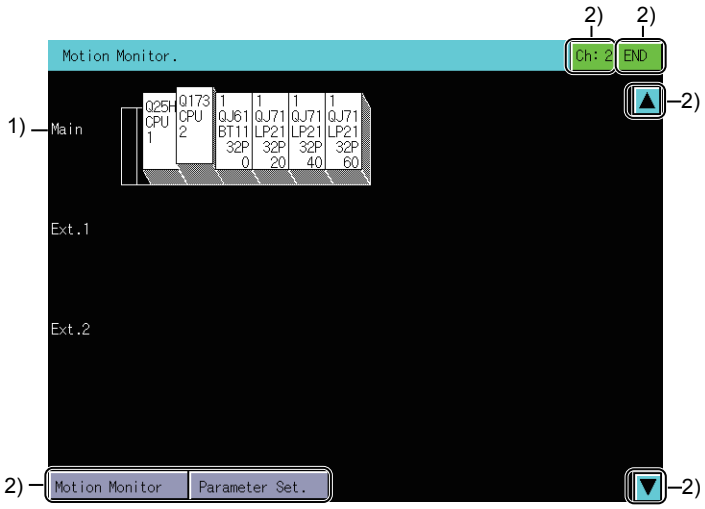
7.4.1 System configuration screen layout

This section describes the structure of the screen and the common operations when the Q motion monitor is executed.

■1. Display contents and key functions

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.

(1) Displayed contents



1) Motion controller CPU status display

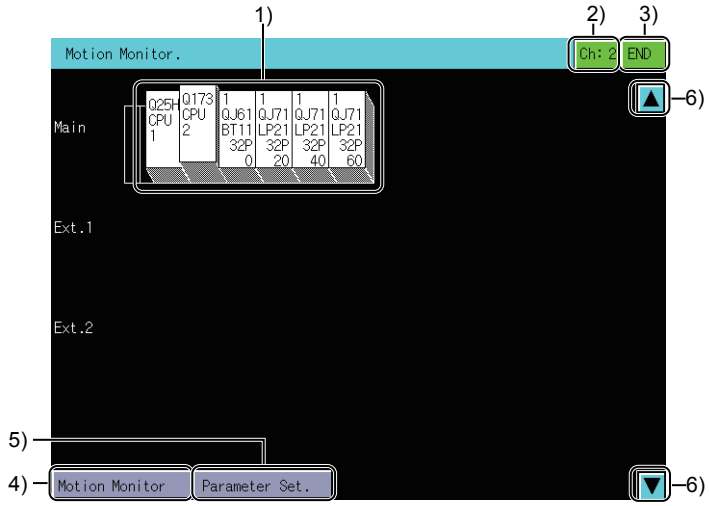
The CPU numbers are displayed for CPUs and the control CPU number for the installed module.
To choose the motion controller CPU for servo monitor/servo parameter setting, touch the respective display position.

2) Touch key

Displays the keys used with the operation on the System Configuration screen.(Touch input)

(2) Key functions

The following shows the functions of the keys that are used for the operations on the system configuration screen.



1) Motion controller CPU status display

Selects the motion controller CPU where servo monitor/servo parameter setting is performed.

2) [ch:2] key

Displays the communication setting window.

3) [END] key

Exits the monitor and returns to the screen where the Q motion monitor was started.

4) [Motion Monitor] key

Changes the System Configuration screen to the monitor menu screen.

➠ 7.4.3 Monitor Menu screen

5) [Parameter set.] key

Changes the System Configuration screen to parameter setting screen.

➠ 7.4.11 Parameter setting screen

6) Scroll key

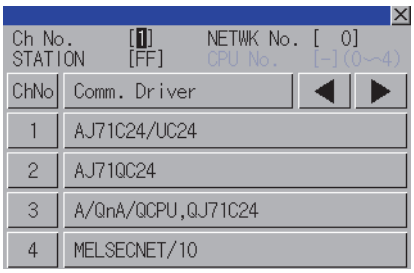
Scrolls the display one stage up or down to display the system configuration of the currently undisplayed stage immediately before/after the currently displayed stage.

7.4.2 Setting method for other station monitoring

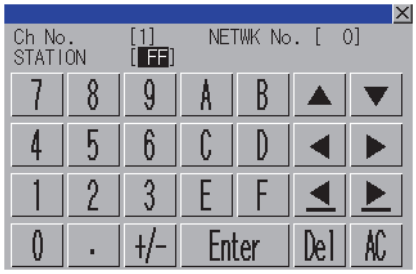
The following shows the setting methods for monitoring other stations with Q motion monitor.

Step 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



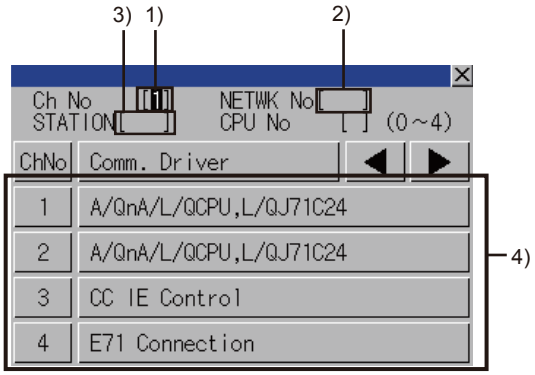
Step 2. The following window appears after the channel No. is selected.
Set the network number of the target controller and the CPU station number.



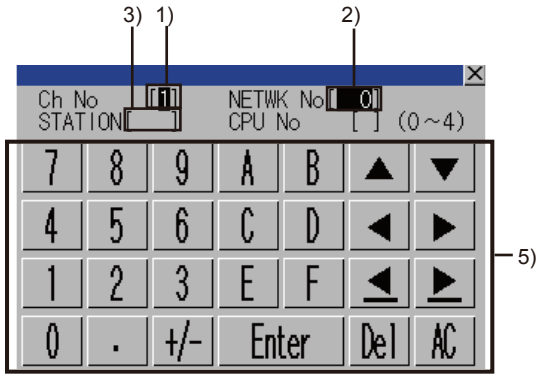
Step 3. After selecting the station number, touch the [Enter] key. The communication setting window closes and the system configuration of the set monitor destination is displayed.

■1. Communication setting window

(1) Displayed screen



When the CH No. is input



When the network No., station No., and CPU No. are input

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

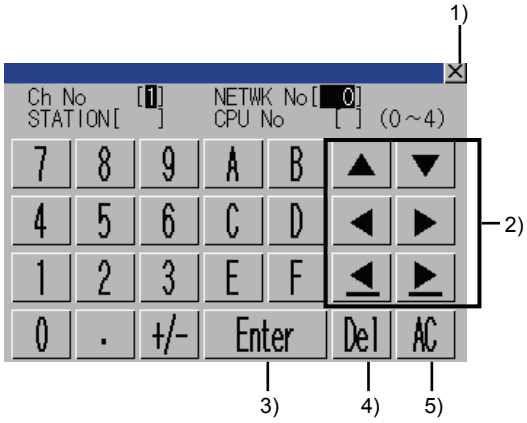
2) Network No. input area
Set the network No. for the target controller.
The following shows the setting ranges.
- Bus connection, direct CPU connection, and serial communication connection: [0]
- Ethernet connection and CC-Link IE Controller Network connection: [1] to [239]
- MELSECNET/H, MELSECNET/10: [0] (Host loop) or [1] to [255] (Specified loop)
- 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 following shows the setting ranges.
- Bus connection, direct CPU connection, and serial communication connection: [FF] (Host station)
- Ethernet connection: [1] to [64]
- MELSECNET/H connection and MELSECNET/10 connection: [0] (Control station) or [1] to [64] (Local station)
- CC-Link IE Controller Network connection: [1] to [120]
- CC-Link (ID/G4) connection: [0] (Master station) or [1] to [64] (Local station)

4) CH No. selection key
Select a CH No.

5) Keys
The keys used for the operations in the communication setting window.

(2) Key functions



1) [×] 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.

2) Input area movement key
Moves the cursor among the input areas.

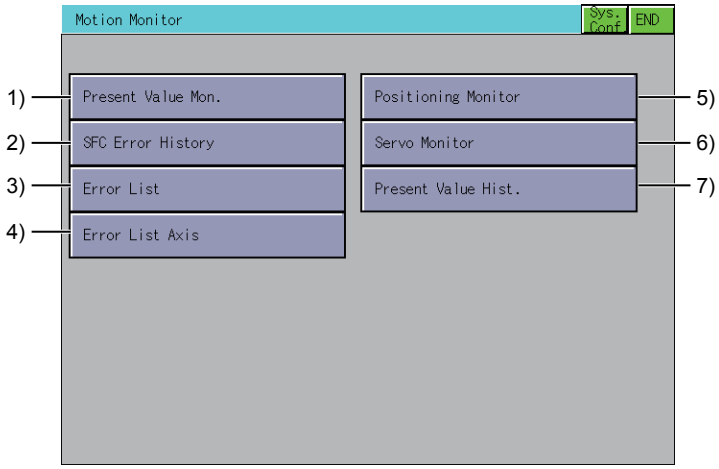
3) [Enter] key
Moves the cursor when the cursor is in the CH No. input area, network No. input area, or station No. input area.
When the cursor is in the CPU No. input area and settings for the CH No., network No., and station No. are completed, the communication setting window closes and the PLC read screen appears.

4) [Del] key
Deletes an input value or character.

5) [AC] key
Deletes all the input values and characters.

7.4.3 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.



1) [Present Value Mon.] key
Monitors and displays the feed current values and actual current values of all running axes.

➠ 7.4.4 Present Value Monitor screen

2) [SFC Error History] key
Displays the history of errors that occurred in SFC programs from when the motion CPU was powered on or reset.

➠ 7.4.5 SFC Error History screen

3) [Error List] key
Displays the history of errors that occurred on and after the leading edge of PLC ready (M2000).

➠ 7.4.6 Error List screen

4) [Error List Axis] key
Displays the latest errors that occurred on the specified axis.

➠ 7.4.7 Error List Designated-Axis screen

5) [Positioning Monitor] key
Monitors the details of the positioning data set to any axis.

➠ 7.4.8 Positioning Monitor screen

6) [Servo Monitor] key
Monitors the servo monitor/servo amplifier.

➠ 7.4.9 Servo Monitor screen

7) [Present Value Hist.] key
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.

➠ 7.4.10 Present Value History Monitor screen

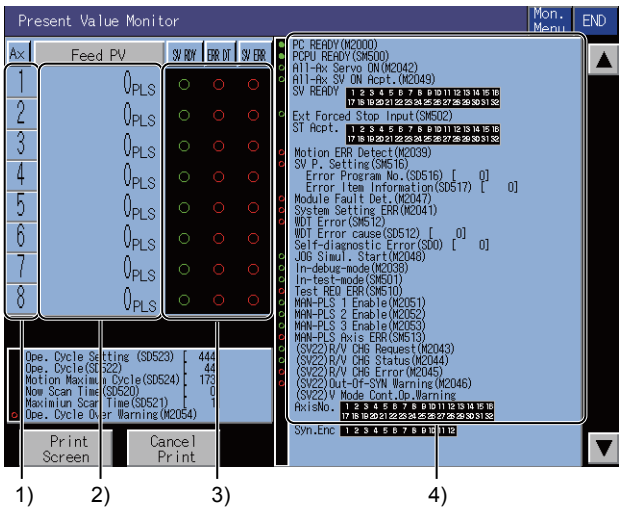
7.4.4 Present Value Monitor screen

This section describes the structure of the screen and the common operations when the present value monitor is executed.

■1. Display contents and key functions

This section describes the display data of the Present Value Monitor screen and the key functions displayed on the screen.

(1) Displayed contents



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.

➠ 7.4.8 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.

➠ 7.4.7 Error List Designated-Axis screen

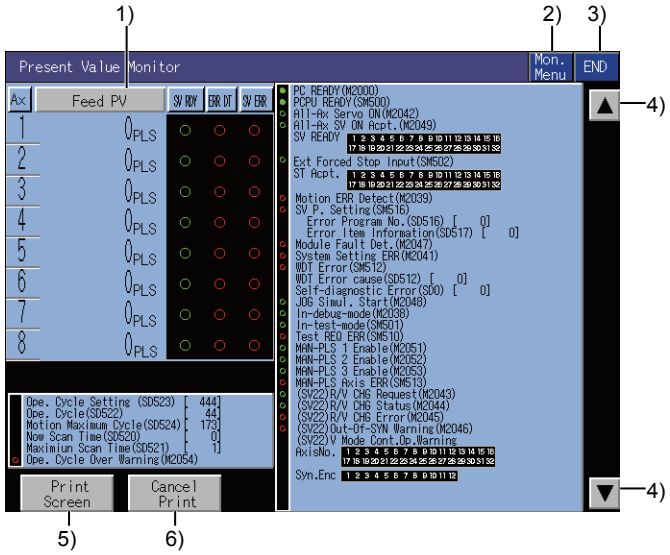
4) Bit device screen

The common bit devices are always monitored and displayed.

- Bit devices for error detection: marked with a red circle
- Bit devices for general status display: marked with a green circle

(2) Key functions

The following shows the functions of the keys that are used for the operations on the present value monitor screen.



1) [Feed PV] key, [Actual PV] key

The key is displayed in the real mode or the advanced synchronous control mode.

Each touch switches between [Feed PV] and [Actual PV].

2) [Mon. Menu] key

Returns to the monitor menu screen.

3) [END] key

Exits the present value monitor and returns to the screen where the Q motion monitor was started.

4) Keys for switching the displayed axis numbers

Switches the displayed axis number.

The keys are displayed for monitoring Q173CPU, Q173HCPU, Q173DCPU, Q170MCPU, Q172DSCPU, or Q173DSCPU.

5) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.

For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

6) [Cancel Print]

The operation of this key is invalid.

7.4.5 SFC Error History screen

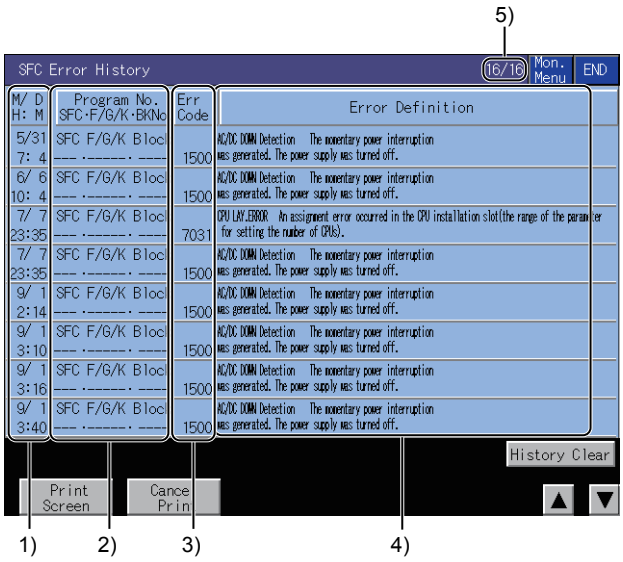
This section describes the structure of the screen and the common operations on the SFC error history screen.

■1. SFC Error History screen

The following describes the display data of the SFC error history screen and the functions of the keys displayed on the screen.

(1) Displayed contents

SFC Error History screen displays the history of error which occurs in the motion SFC programs.



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, Q170MCPU, Q172DSCPU, and Q173DSCPU.

2) [Program No.SEC·F/G/K·BNo.]

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.

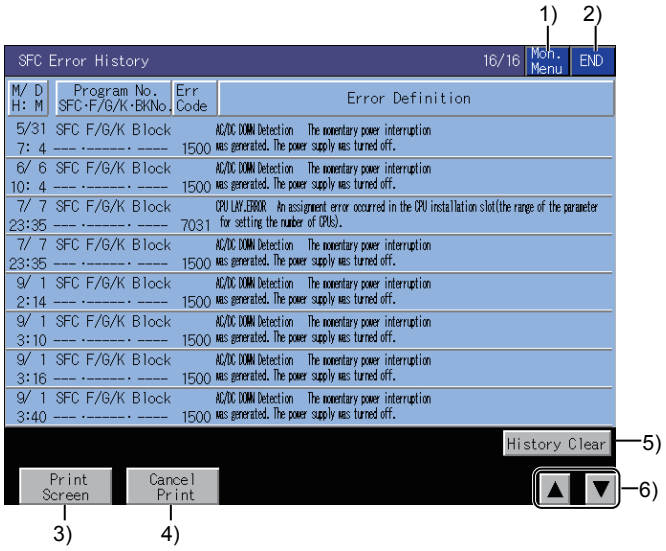
5) Page

Displays the page number and the total number of pages of the SFC error history.

This item is displayed only when Q172DCPU, Q173DCPU, Q170MCPU, Q172DSCPU, or Q173DSCPU is used.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the SFC error history screen.



1) [Mon. Menu] key

Returns to the monitor menu screen.

2) [END] key

Exits the SFC Error History screen and returns to the screen where the Q motion monitor was started.

3) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.

For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

4) [Cancel Print]

The operation of this key is invalid.

5) [History Clear]

Clears the error history.

This item is displayed only when Q172DCPU, Q173DCPU, Q170MCPU, Q172DSCPU, or Q173DSCPU is used.

6) Up/down scroll key

Scrolls the history display up and down by eight histories when the SFC error history is displayed.

This item is displayed only when Q172DCPU, Q173DCPU, Q170MCPU, Q172DSCPU, or Q173DSCPU is used.

7.4.6 Error List screen

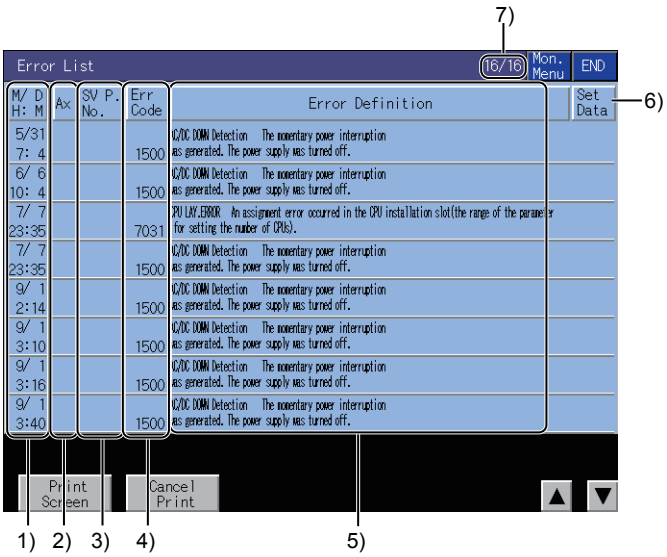
This section describes the structure of the screen and the common operations on the error list screen.

■1. Display contents and key functions

This section describes the display data of the Error List screen and the key functions displayed on the screen.

(1) 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.



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, Q170MCPU, 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.

- Minor error: Minor
- Major error: Major
- Servo error: Servo
- Servo program setting error: Servo P
- Real, virtual switching: Switch
- Test mode request error: Test
- Manual pulse generator setting error: Manual
- PCPU ERROR: P-WDT
- SSCNET ERROR: Communication error

5) [Error Definition]

The definitions of the errors that occurred are displayed.

6) [Set Data]

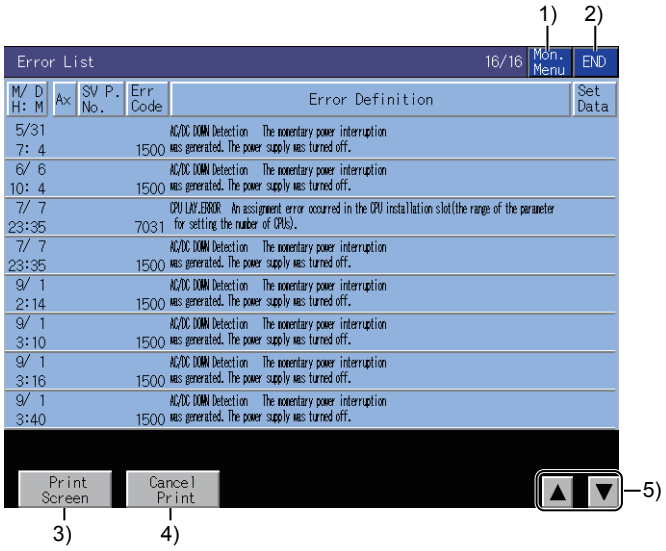
The program number in error is displayed if the set data has any errors.

7) [Page]

Displays the page number and the total number of pages of the error list.
This item is displayed only when Q172DCPU, Q173DCPU, Q170MCPU, Q172DSCPU, or Q173DSCPU is used.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the error list screen.



1) [Mon. Menu] key

Returns to the monitor menu screen.

2) [END] key

Exits the Error List screen and returns to the screen where the Q motion monitor was started.

3) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

4) [Cancel Print]

The touch operation of this key is invalid.

5) Up/down scroll key

Scrolls the history display up and down by eight histories when the error list is displayed.
This item is displayed only when Q172DCPU, Q173DCPU, Q170MCPU, Q172DSCPU, or Q173DSCPU is used.

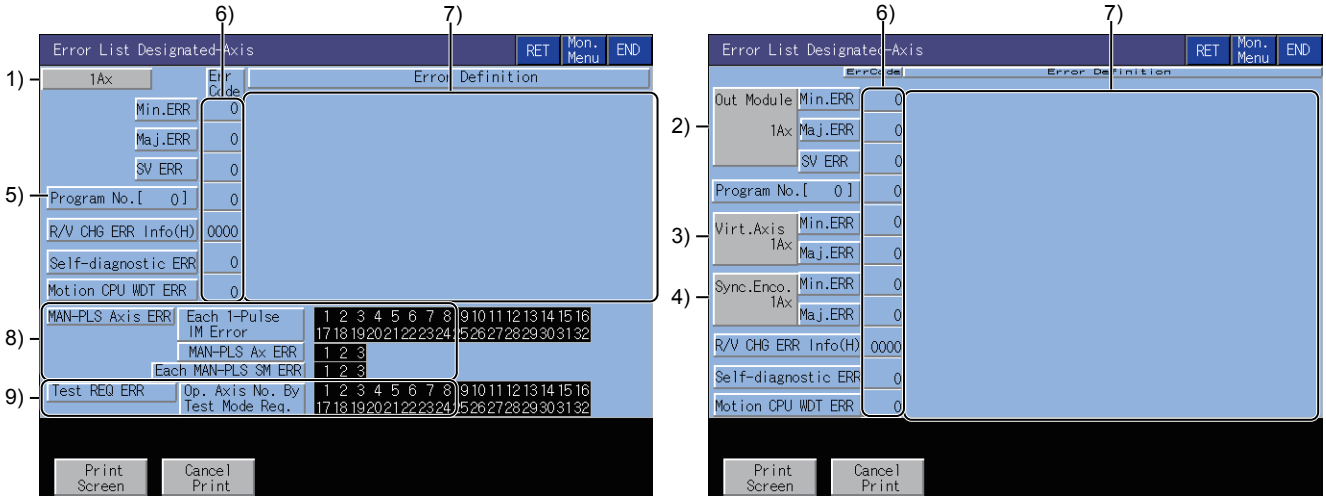
7.4.7 Error List Designated-Axis screen

This section describes the structure of the screen and the common operations when the error list designated-axis is executed.

■1. Display contents and key functions

This section describes the display data of the Error List Designated-Axis screen and the key functions displayed on the screen.

(1) Displayed contents



In the real mode or the advanced synchronous control mode

In virtual mode

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.

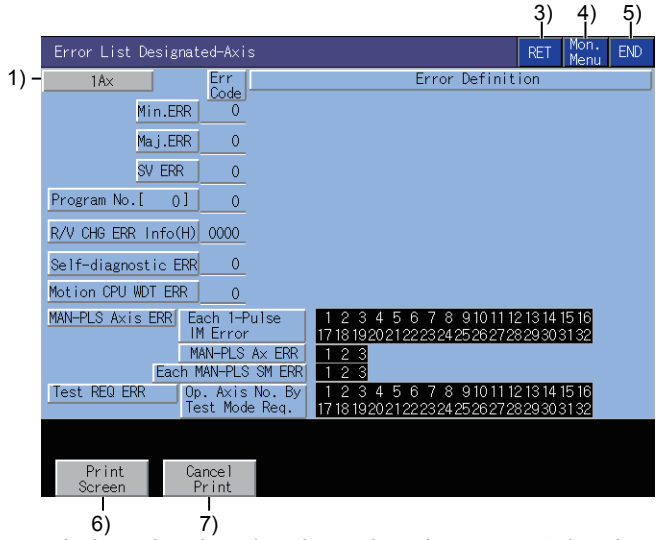
8) [MAN-PLS Axis ERR]

Item	Description
[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.

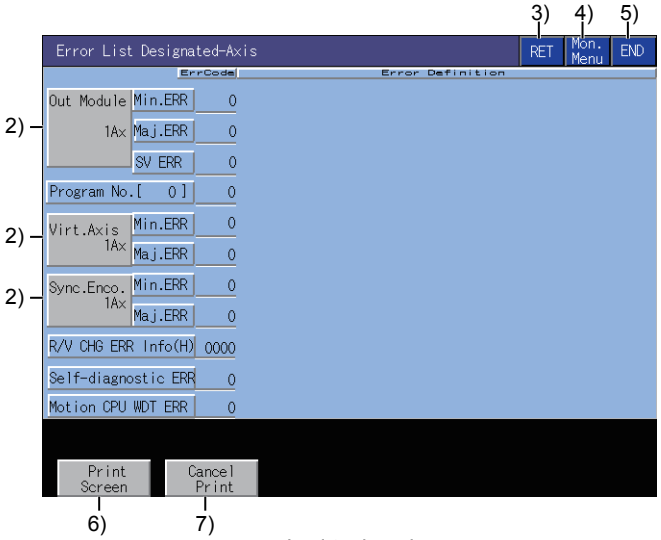
9) [Test REQ ERR]
Displays the axis numbers that are being started at a test mode request.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the error list designated-axis screen.



In the real mode or the advanced synchronous control mode



In virtual mode

1) [1Ax] key

Switches the axes to be monitored.

This item is available only in the real mode.

2) [Out Module 1Ax] key, [Virt. Axis 1Ax] key, [Sync. Enco. 1Ax] key

Switches the axes to be monitored.

These items are available only in the virtual mode.

3) [RET] key

Returns to the previous screen.

4) [Mon. Menu] key

Returns to the monitor menu screen.

5) [END] key

Exits the Error List Designated-Axis monitor screen and returns to the screen where the Q motion monitor was started.

6) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.

For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

7) [Cancel Print]

The touch operation of this key is invalid.

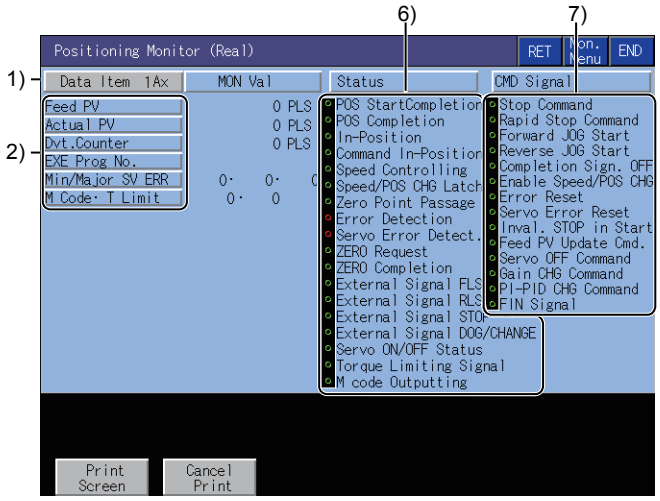
7.4.8 Positioning Monitor screen

This section describes the structure of the screen and the common operations when the positioning monitor is executed.

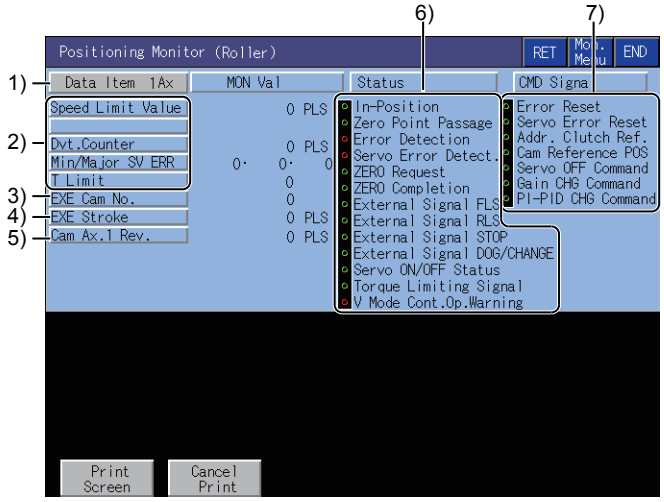
■1. Display contents and key functions

This section describes the display data of the Positioning Monitor screen and the key functions displayed on the screen.

(1) Displayed contents



In the real mode or the advanced synchronous control mode



In virtual mode

1) Data Item

Displays the axis numbers of the running axes being monitored.
For the virtual axis, the axis type is displayed.

- Roller
- Ballscrew
- Rotary table
- Cam

2) Positioning control data

Displays the data during positioning control of the PCPU.

Item	Description
[Feed PV]	Target address output to the servo amplifier (value of the roller surface speed for the roller axis)
[Actual PV]	Actually traveled present value (no value is displayed for the roller axis)
[Dvt. Counter]	Difference between feed present value and actual present value
[EXE Prog No.]	Servo program number in execution
[Min/Major SV ERR]	Error code of the latest minor/major/servo error
[M Code • T Limit]	The M code and torque limit of the servo program in execution

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.

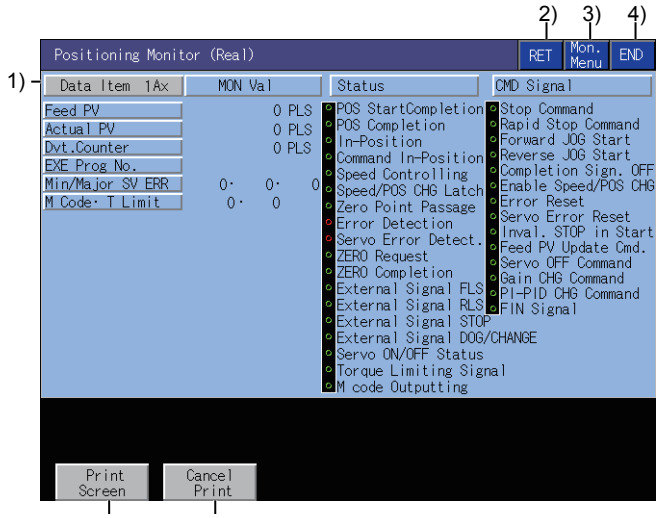
- In the ON status, the symbol is lit green.
- At error or servo error detection, the symbol is lit red.

7) [CMD Signal]

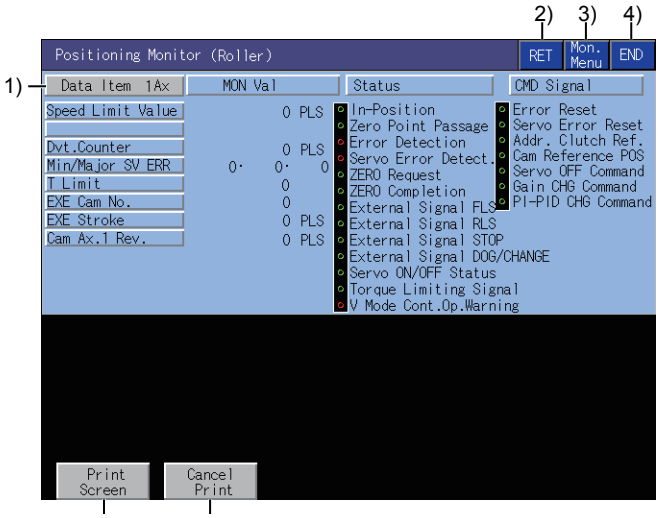
Displays ON and OFF of the positioning command signals.
In the ON status, the signal is lit green.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the positioning monitor screen.



In the real mode or the advanced synchronous control mode



In virtual mode

1) [Data Item 1Ax]
Changes the axes to be monitored.

2) [RET] key
Returns to the previous screen.

3) [Mon. Menu] key
Returns to the monitor menu screen.

4) [END] key
Exits the positioning monitor and returns to the screen where the Q motion monitor was started.

5) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

6) [Cancel Print]
The operation of this key is invalid.

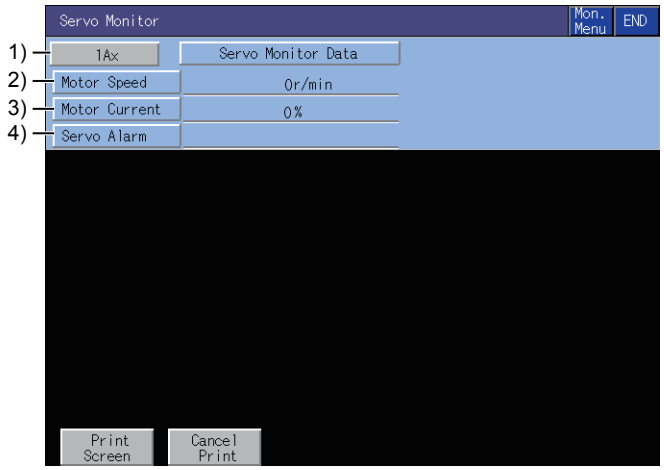
7.4.9 Servo Monitor screen

This section describes the structure of the screen and the common operations when the servo monitor is executed.

■1. Display contents and key functions

This section describes the display data of the Servo Monitor screen and the key functions displayed on the screen.

(1) Displayed contents



1) Ax
Displays the axis number currently being monitored.

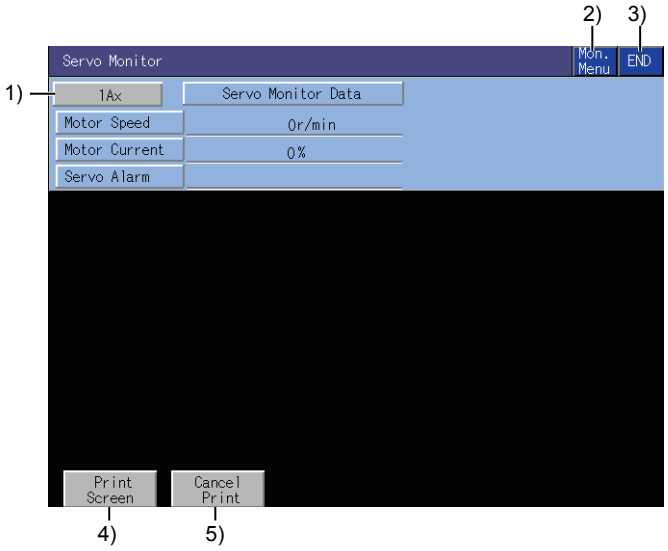
2) [Motor Speed]
Displays the actual speed of the servo motor.

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.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the servo monitor screen.



1) [1Ax] key
Changes the axes to be monitored.

2) [Mon. Menu] key
Returns to the monitor menu screen.

3) [END] key
Exits the servo monitoring and returns to the screen where the Q motion monitor was started.

4) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

5) [Cancel Print]
The operation of this key is invalid.

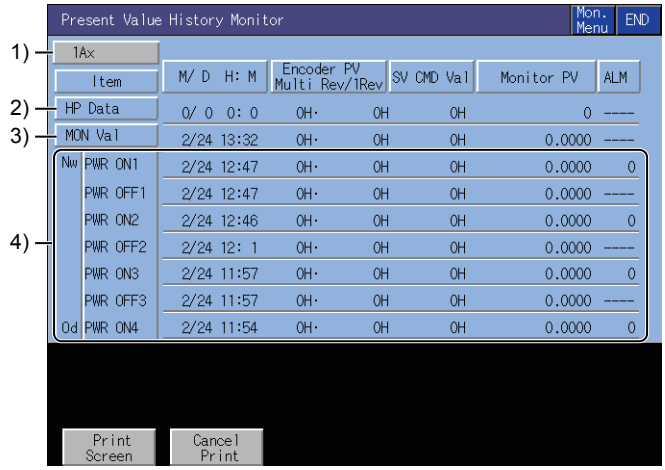
7.4.10 Present Value History Monitor screen

This section describes the structure of the screen and the common operations when the present value history monitor is executed.

■1. 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.

(1) Displayed contents



1) Ax
Displays the axis number of the axis currently being monitored.

2) [HP Data]
Displays the following values monitored at home position return.
- Home position return completion time
- Encoder present value
  Multi-revolution data of absolute position reference point data
  Within-one-revolution position of absolute position reference point data
- Servo command value
- Monitor present value

3) [MON Val]
Displays the following present monitor values.
- Present time
- Encoder present value
  Present multi-revolution data of encoder present value
  Present within-one-revolution position of encoder present value
- Present servo command value
- Present monitor present value

4) PWR ON, PWR OFF

Displays the four past present values of the ABS axis at servo amplifier power-on/off.

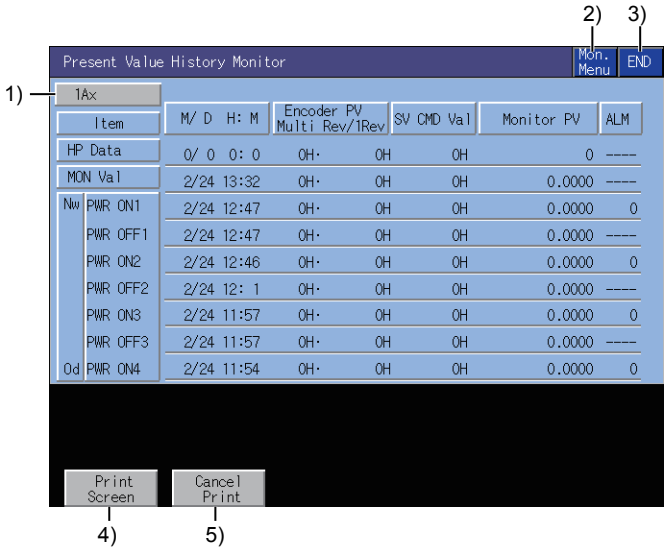
At power-on

- Power-on time
- Encoder present value
  Multi-revolution data of initial encoder
  Single-revolution data of initial encoder
- Servo command value after recovery
- Monitor present value after recovery
- Alarm occurrence information at present value recovery (error code of minor, major error)

At power-off

- Servo amplifier power-off time
- Encoder present value
  Multi-revolution data of encoder present value before servo amplifier power-off
  Single-revolution data of encoder present value before servo amplifier power-off
- Servo command at servo amplifier power-off
- Monitor present value at servo amplifier power-off

(2) Key functions



1) [1Ax] key

Changes the axes to be monitored.

2) [Mon. Menu] key

Returns to the monitor menu screen.

3) [END] key

Exits the Present Value History Monitor screen and returns to the screen where the Q motion monitor was started.

4) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.

For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

5) [Cancel Print]

The touch operation of this key is invalid.

7.4.11 Parameter setting screen

This section describes the structure of the screen and the common operations when you configure the parameter setting.

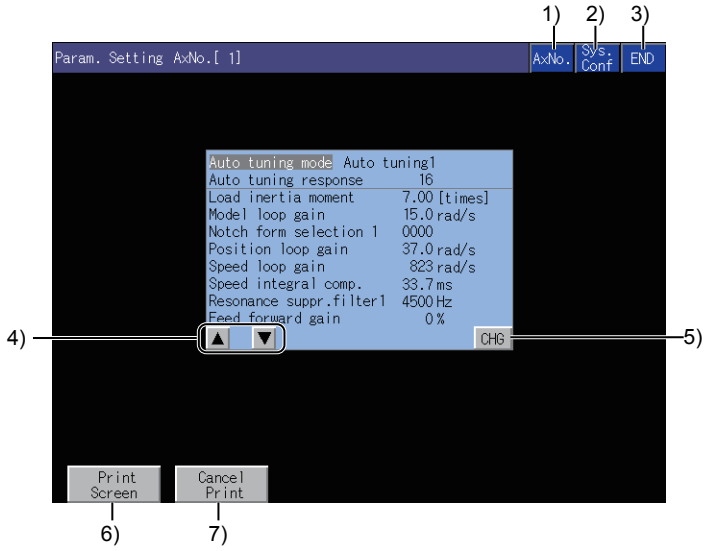
■1. Display contents and key functions

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.

(1) Displayed screen

1) Parameter setting screen
Displays the servo parameter of the selected item.

(2) Key functions



1) [AxNo.] key
Changes the axis whose parameter setting will be made.

2) [Sys. Conf] key
Returns to the System Configuration screen.

3) [END] key
Exits the parameter setting and returns to the screen where the Q motion monitor was started.

4) Item selection key
Selects the servo parameter setting item.

5) [CHG] key
Changes the servo parameter setting of the selected item.

6) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 7.4.12 Hard copy output

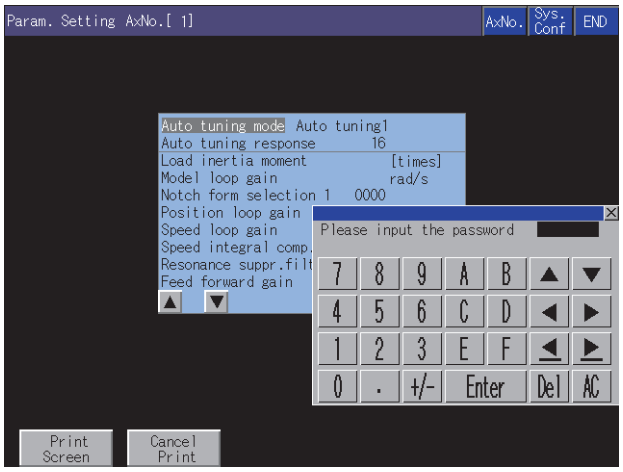
7) [Cancel Print]

The touch operation of this key is invalid.

■2. Inputting the password

If you have set a password in [Motion Parameter Display] on GT Designer3 (GOT2000), the password input key window appears when you try to access the parameter setting screen of the motion monitor.
For the details of the password setting, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual



(1) Function

- If the password matches, the parameter setting screen is displayed.
- If the password does not match, an error message is displayed.
  Touching the [Sys. Conf] key returns to the System Configuration screen.
- Up to 8 characters (A to F, 0 to 9) can be used for the password setting.

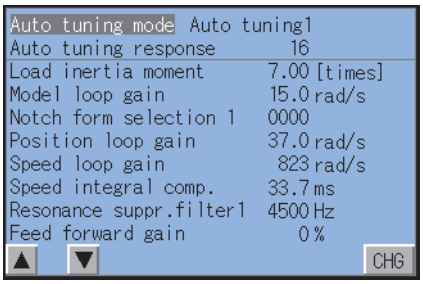
(2) Operations

Enter a password.
Touch the key window and enter a password.
After entering the password, touch the [Enter] key to set the password.
To edit the input characters, touch the [Del] key to delete the characters, and then input the new characters.
To cancel the password entry, touch the [×] key to return to the monitor screen.

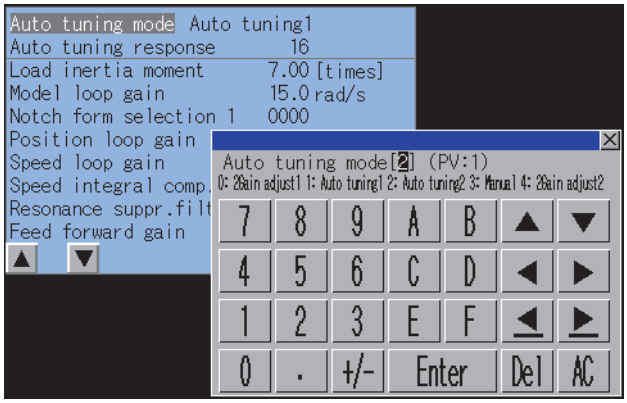
■3. Parameter setting operation

As an example of the parameter setting operation, the following describes how to change the setting of [Auto tuning].

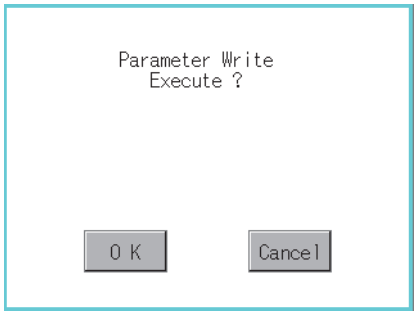
Step 1. Select the item whose parameter is to be set with the item selection keys, and touch the [CHG] key.



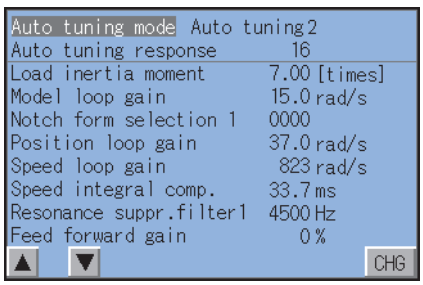
Step 2. In the parameter setting window, enter the parameter setting with the key window.
Touch the [Enter] key to confirm the setting.
To cancel the parameter setting operation, touch the [×] key at the top right of the screen to close the parameter setting window.



Step 3. As the confirmation window appears, touch the [OK] key to write the parameter setting to the motion controller CPU.
To cancel writing of the parameter setting, touch the [Cancel] key.

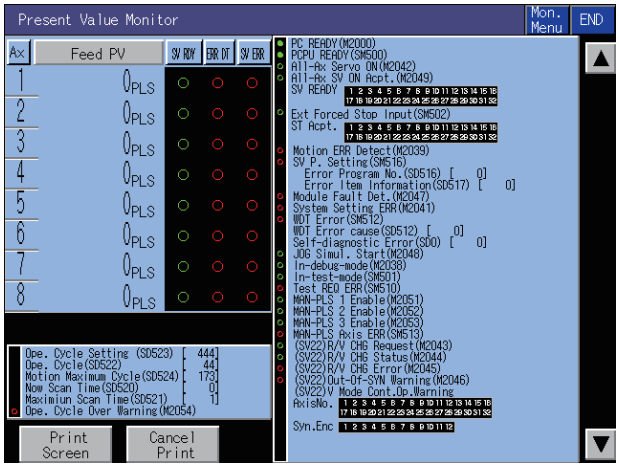


Step 4. After writing is completed, the parameter setting screen whose display has been updated to the new parameter setting is displayed.



7.4.12 Hard copy output

This section describes how to store a screen to the SD card in the BMP or JPEG format when the Q motion monitor is executed.
Hard copy output operations are performed by touching the [Print Screen] or [Cancel Print] key displayed on the screen.



The output target of hard copy can be set in [Hard Copy] of GT Designer3 (GOT2000).
For details of hard copy setting, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

7.5 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.	• Check the status of the connection between the controller and the GOT (disconnected or cut cables). • Check if an error has occurred in the controller.
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. ➡ 7.2.1 ■1. Target controller
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. ➡ 7.2.1 ■1. Target controller
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.	• Select the axis number that has been set. • Set the axis using the relevant software.
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 entered password is invalid.	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 number of the axis, which is set to a servo amplifier having no settable parameter, has been selected.	Select the number of the axis, which is set to a servo amplifier having the settable parameter.

POINT

How to clear a displayed error message

For the error that occurs during the communication with a controller (such as a communication error), the error message does not disappear even after the cause of the error has been removed.
To clear the error message, restart the GOT.

8. INTELLIGENT MODULE MONITOR

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

8.1 Features

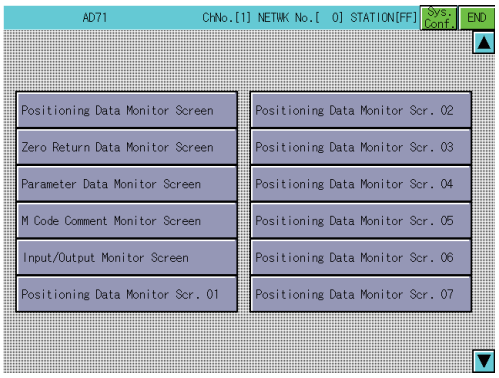
With the intelligent module monitor, you can use dedicated screens to monitor the buffer memory of the intelligent function module and make changes to the data.
In addition, you can monitor the signal statuses of the I/O modules.
The features of the intelligent module monitor are described below.

■1. 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.

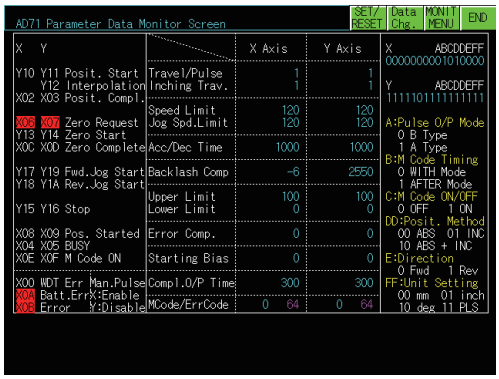
(1) For intelligent function module

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

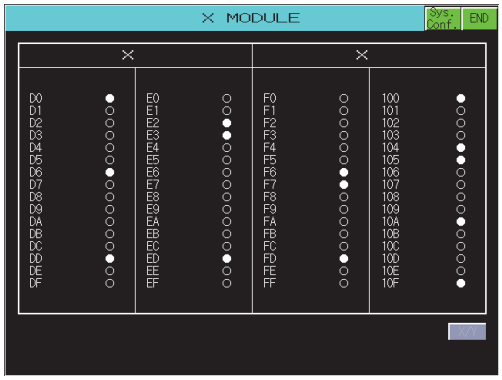
Select a menu



Monitor screen

(2) For I/O module

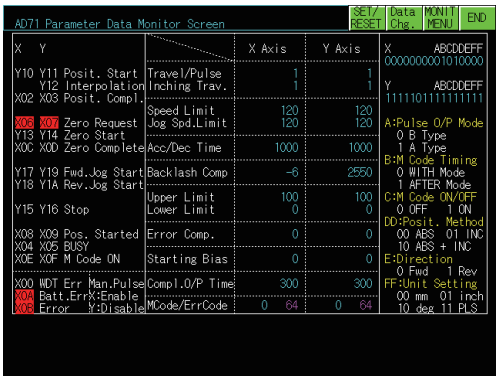
The status of I/O signals to and from an external module is monitored.



Monitor screen

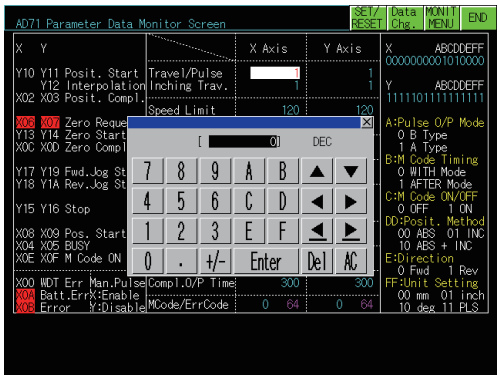
■2. Enabled data change by write operations

The values are written into the buffer memory of the intelligent function module by writing values from the monitor screen.



Monitor screen

Select writing



When changing a change-permitted channel

8.2 Specifications

8.2.1 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 Electric Products) For GT Works3 Version1

■1. Targeted equipments for the intelligent module monitor

(1) PLC CPU, motion controller CPU, C Controller module, and robot controller

Controller	Model
RCPU	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU
QCPU	Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU
	Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU, Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, Q26UDPVCPU
	Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU
Motion controller CPU (Q series)*1	Q170MCPU, Q170MCPU-S1, Q170MSCPU, Q170MSCPU-S1
C Controller module (Q Series)	Q12DCCPU-V, Q24DHCCPU-V, Q24DHCCPU-VG, Q24DHCCPU-LS, Q26DHCCPU-LS
QSCPU	QS001CPU
LCPU	L02CPU, L06CPU, L26CPU, L26CPU-BT, L02CPU-P, L06CPU-P, L26CPU-P, L26CPU-PBT, L02SCPU, L02SCPU-P
Robot controller	CR800-R(R16RTCPU)

*1 Only the PLC CPU area (CPU No.1) can be monitored.
The PERIPHERAL I/F does not support the Ethernet connection.

(2) Intelligent function module and I/O module

Controller	Intelligent function module*1	I/O module
RCPU	R60AD4, R60ADV8, R60ADI8, R60DA4, R60DAV8, R60DAI8, RD62P2, RD62P2E, RD62D2, RD75P2, RD75P4, RD75D2, RD75D4, RD77MS2, RD77MS4, RD77MS8, RD77MS16, RD77GF4, RD77GF8, RD77GF16	RX10, RX40C7, RX41C4, RX42C4, RY40NT5P, RY41NT2P, RY42NT2P, RY10R2, RH42C4NT2P
QCPU Motion controller CPU (Q series) C Controller module (Q Series) QSCPU	Q62DA, Q64AD, Q64DA, Q68ADV, Q68ADI, QD62, QD62E, QD62D, QD65PD2, QD73A1, QD75P1, QD75P2, QD75P4, QD75D1, QD75D2, QD75D4, QD75MH1, QD75MH2, QD75MH4, QD75M1, QD75M2, QD75M4, QD77GF4, QD77GF8, QD77GF16, QD77MS2, QD77MS4, QD77MS16	MELSEC-Q series input modules, MELSEC-Q series output modules, QH42P, QX48Y57, QX41Y41P
LCPU	L60AD4, L60DA4, LD62, LD62D, LD75D1, LD75D2, LD75D4, LD75P1, LD75P2, LD75P4, LD77MH4, LD77MH16, LD77MS2, LD77MS4, LD77MS16	LX40C6, LX41C4, LX42C4, LY10R2, LY41NT1P, LY42NT1P, LH42C4NT1P, LH42C4PT1P

*1 The intelligent function module mounted on the RQ extension base unit cannot be monitored.

To monitor modules other than the above ones, use the BM monitor.

■2. Connection type

(○: Available, ×: Unavailable)

Function		Connection type between GOT and PLC CPU							
Name	Description	Bus connection *2*3*10	Direct CPU connection *2*4*10	Serial communication connection*2	Ethernet connection *5	MELSECNET/H connection*3*10, MELSECNET/10 connection*3*10	CC-Link IE controller connection*3*6, CC-Link IE field connection*7	CC-Link connection	
								ID*2*8	G4*2*9*10
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 The QSCPU does not support the connection type.
*3 The LCPU does not support the connection type.
*4 When the GOT is connected to LCPU, use L6ADP-R2.
*5 Intelligent module monitor cannot be used when using CC-Link IE field network Ethernet adapter.
*6 Indicates the CC-Link IE controller network connection.
*7 Indicates CC-Link IE field network connection.
*8 Indicates CC-Link connection (Intelligent device station).
*9 Indicates CC-Link connection (via G4).
*10 The RCPU does not support the connection type.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the intelligent module monitor to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Applicable hardware

A USB mouse is usable.

■5. 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) Screen Design Manual

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.

8.2.2 Access range

■1. When using the bus connection, direct CPU connection, or serial communication connection

- The intelligent module monitor can monitor intelligent function modules on the bases of the connected station and other stations.
- In the serial communication connection, the intelligent module monitor is available only for the systems that use the following combinations.

PLC CPU used	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 Electric 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.

■2. 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 Electric 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

■3. 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 Electric 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

■4. 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.

■5. 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 Designer3 (GOT2000) 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 Electric Products) For GT Works3 Version1

Routing parameter setting for PLC CPU

➠ Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

■6. 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.

8.2.3 Precautions

■1. 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].

■2. Editing and reusing intelligent module monitor data

The project data for the intelligent module monitor cannot be edited by modifying or adding an object.

■3. 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	

8.3 Operations for Display

This section explains how to display the intelligent module monitor screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the Intelligent module monitor screen.
The display methods include the following two types.

- Starting from the special function switch (Intelligent module monitor) set in the project
  For how to set special function switches, refer to the following.

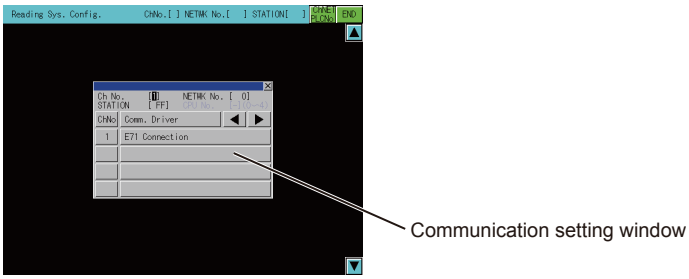
  ➠ GT Designer3 (GOT2000) Screen Design Manual

- Starting from the utility
  After the utility is displayed, touch [Monitor] → [Intelligent module monitor] from the Main Menu.
  For how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)

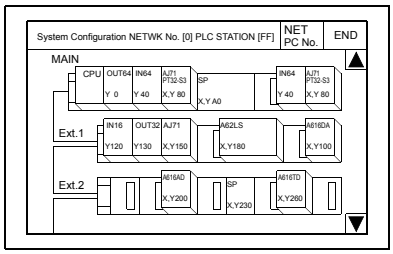
Step 3. Set the channel number, network number, station number.
Set the channel number, network numberand station number of the PLC CPU connected to the GOT.
After turning on the GOT, the communication setting window is displayed at the first startup of the intelligent module monitor only.
For displaying the communication setting window at the second or later startup, touch the [ChNETPCNo] key on the intelligent module monitor screen.

➠ 8.4 Operation of Each Intelligent Module Monitor Screen



Step 4. Starts the intelligent module monitor.
The module format and related data are not displayed at the intelligent module monitor startup.
When reading of module data from the PLC CPU is complete, the module format and related data is displayed.
When using the RCPU, QCPU (Q mode), QSCPU, or LCPU,you can check the PLC CPU status (PC information monitor screen),and the module error information and others (Unit Detail Info Screen).

➠ 8.4 Operation of Each Intelligent Module Monitor Screen



Display the System Configuration screen.

When [END] key is selected, the intelligent module monitoring ends and the display moves to the original screen where the intelligent module monitor function was begun.

Step 5. Specify the module to be monitored.

➠ 8.4.1 Composition of the system configuration screen and key functions
8.4.6 Specifying a module to monitor and selecting monitor menu

Step 6. Display the intelligent module monitor menu.

➠ 8.4.6 Specifying a module to monitor and selecting monitor menu

Step 7. Select from the menu.
The Intelligent Module Monitor Screen is displayed by selecting it from the menu.

➠ 8.4.6 Specifying a module to monitor and selecting monitor menu

Step 8. Display the monitor screen for the intelligent module.
Check the data for the module with the displayed contents.

➠ 8.4.5 Composition of the intelligent module monitor screen and key functions
8.5 Intelligent Module Monitor Screens

Step 9. Change the data.
Carry out the following operation when changing the current values of the buffer memory that is displayed on the monitor screen.

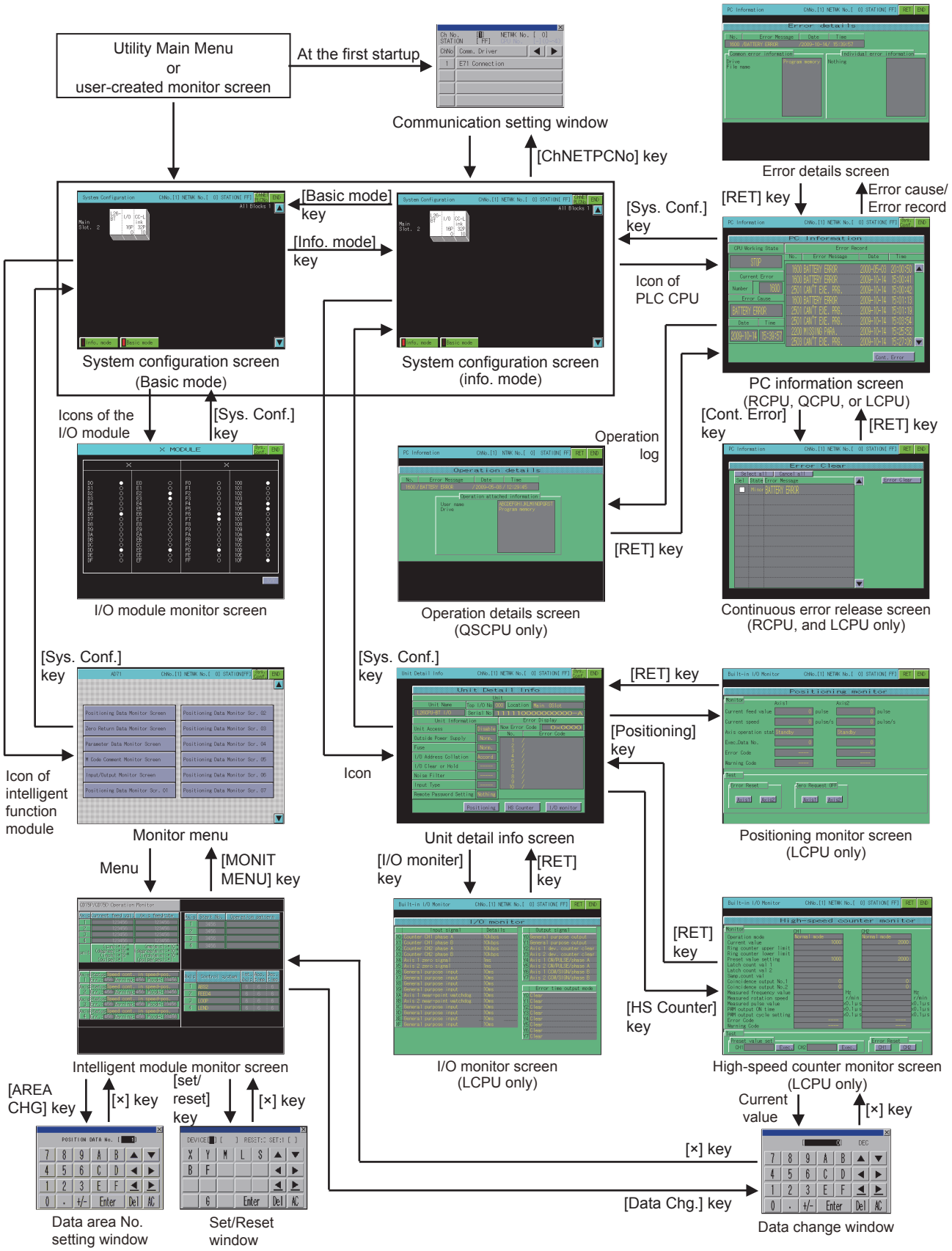
➠ 8.4.7 Testing of the intelligent function module

Change the current value of the specified area.
Return to step 8 and check the data for the module.

■1. Changing screens

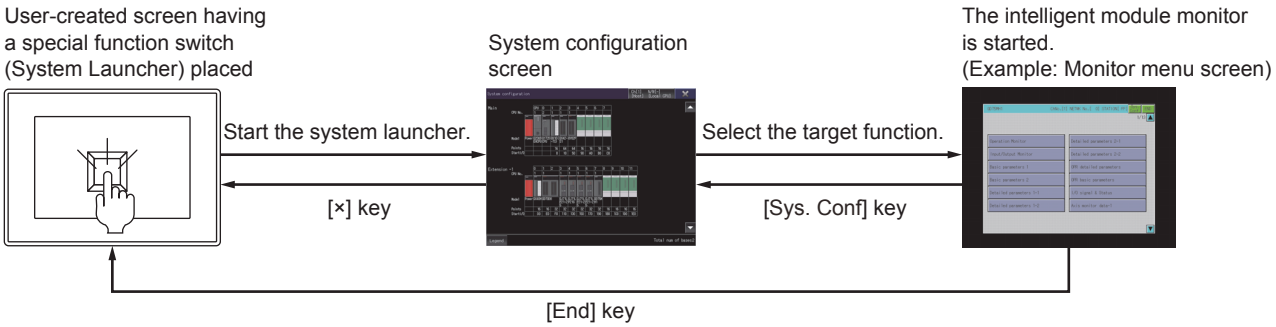
The following describes how to change the screen.

(1) When using RCPU, QCPU (Q mode), Q series motion controller CPU, QSCPU, or LCPU



(2) Starting the function by using the special function switch (System launcher)

You can start the intelligent module monitor from a user-created screen by selecting the connection destination with a special function switch to which [System Launcher] is set.



POINT

When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.

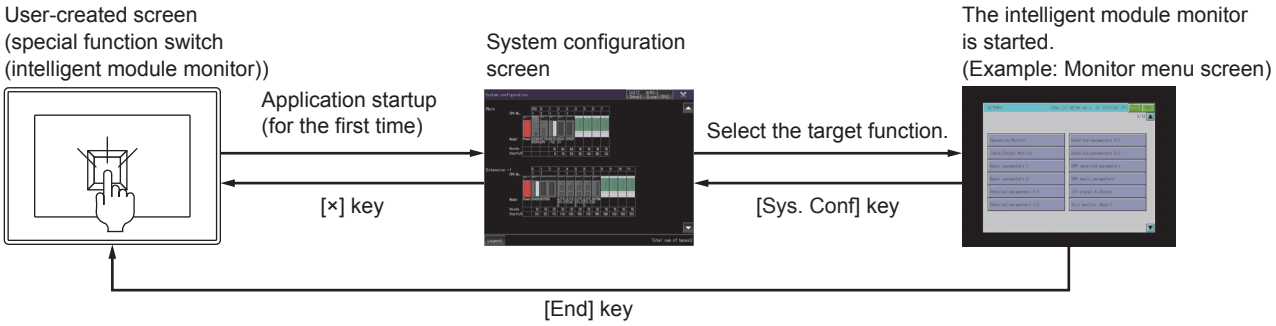
For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

(3) Starting from the special function switch of a system application (Extended function) that has a system configuration screen

When the system application set as a connection destination of the special function switch supports the system launcher function, the system launcher switching notification dialog appears at the first startup, and the system configuration screen of the system launcher function appears.

At the second or later startup, the set function screen appears when the system application is started from the user-created screen.



POINT

When the system launcher does not support the connection destination

When the set connection destination does not support the system launcher function, a dialog appears at the startup and the system configuration screen of the set connection destination appears.

For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

8.4 Operation of Each Intelligent Module Monitor Screen

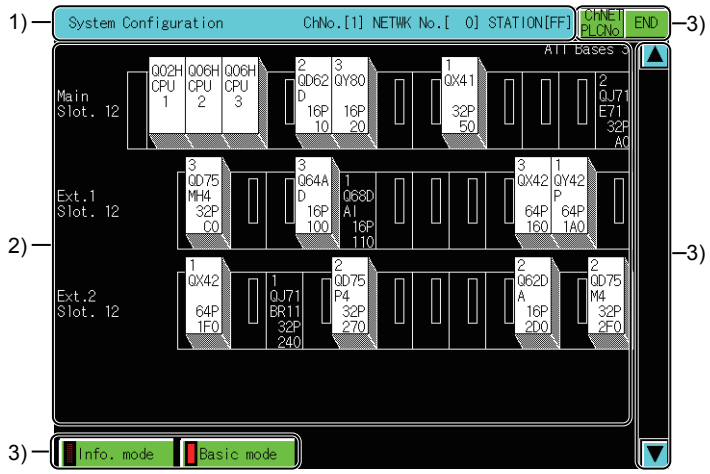
This section describes the operations of the screens when using the intelligent module monitor.

8.4.1 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.

■1. When using the RCPU, QCPU (Q mode), QSCPU, or LCPU

(1) Displayed contents



1) Monitored station display

Displays the channel number, network number and station number of the monitored station.

2) Display of modules installed in the monitored station

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.

For an intelligent function module that cannot be monitored, the model name is displayed as "SP".

The module icon becomes the key to switch to the screen where the monitoring of that module is performed.

The communication setting window is displayed for the MELSECNET/H connection or MELSECNET/10 connection.

➠ 8.4.2 Setting method for other station monitoring

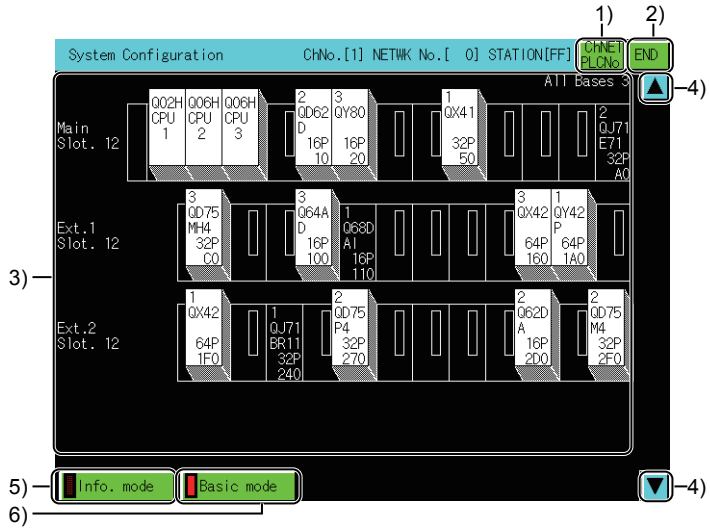
Displays the CPU Nos. for the CPUs and the control CPU number for the installed modules when there are multiple CPU systems.

3) Touch key

The keys used for the operations on the system configuration screen.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the entry monitor screen.



1) [ChNETPCNo.] key

Displays the communication setting window.

2) [END] key

Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) Icon of PLC CPU, Icon of intelligent function module

If the icon of a PLC CPU is touched, the screen switches to the PC information monitor screen.

➠ 8.4.3 Composition of PC Information monitor screen and key functions

If the icon of an intelligent function module is touched in the intelligent module monitor mode, the screen switches to the intelligent module monitor screen of the touched module.

4) Up/down scroll key

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.

5) [Info. mode] key

Switches the System Configuration screen to Info. mode.

➠ 8.4.4 Composition of the unit detail info screen and key functions

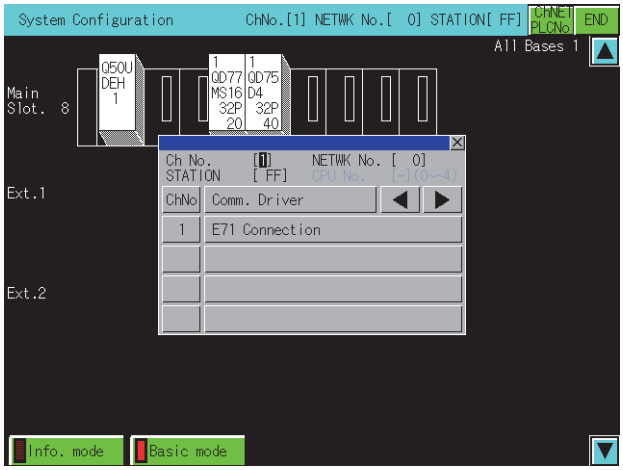
6) [Basic mode] key

Switches the System Configuration screen to Basic mode.

8.4.2 Setting method for other station monitoring

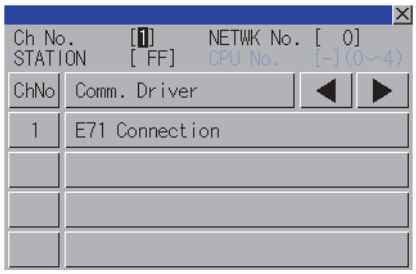
The following shows the setting methods for monitoring other stations with intelligent module monitor.

Step 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 [ChNETPLCNo.] key in the System Configuration screen to display the communication setting window.

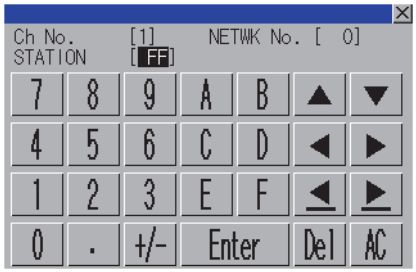


Step 2. In the communication setting window, select one from channels No.1 to 4.
For the operation on the communication setting screen, refer to the following.

➠ ■1. Communication setting window



Step 3. When the channel No. is selected, the screen below is displayed.
Set the network number of the target controller and the CPU station number.

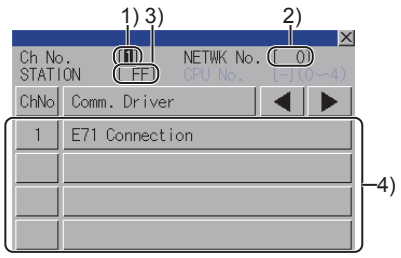


Step 4. After selecting the station number, touch the enter key. The communication setting window closes and the system configuration of the set monitor destination is displayed.
For further operations, refer to the following.

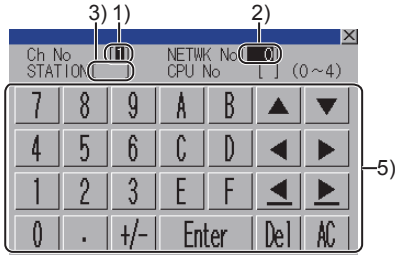
➠ 8.4.6 Specifying a module to monitor and selecting monitor menu

■1. Communication setting window

(1) Displayed screen



(When the CH No. is input)



(When the network No., station No., and CPU No. are input)

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 according to the connection type.

- Bus connection, direct CPU connection, and serial communication connection: [0]
- Ethernet connection, CC-Link IE Controller Network connection, CC-Link IE Field Network connection: [1] to [239]
- MELSECNET/H, MELSECNET/10: [0] (Host loop) or [1] to [255] (Specified loop)
- 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 according to the connection type.

- Bus connection, direct CPU connection, and serial communication connection: [FF] (Host station)
- Ethernet connection: [1] to [64]
- MELSECNET/H and MELSECNET/10: [0] (Control station) or [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) or [1] to [64] (Local station)

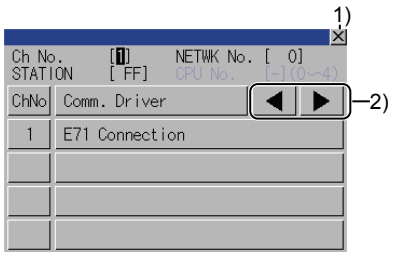
4) CH No. selection key

Set the CPU No.

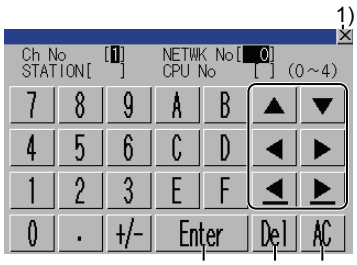
5) Touch key

The keys used for the operations in the communication setting window.

(2) Key functions



(When the CH No. is input)



(When the network No., station No., and CPU No. are input)

1) [×] 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.

2) Input area movement key

Moves the cursor among the input areas.

3) [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.

4) [Del] key
Deletes an input value or character.

5) [AC] key
Deletes all the input values and characters.

8.4.3 Composition of PC Information monitor screen and key functions

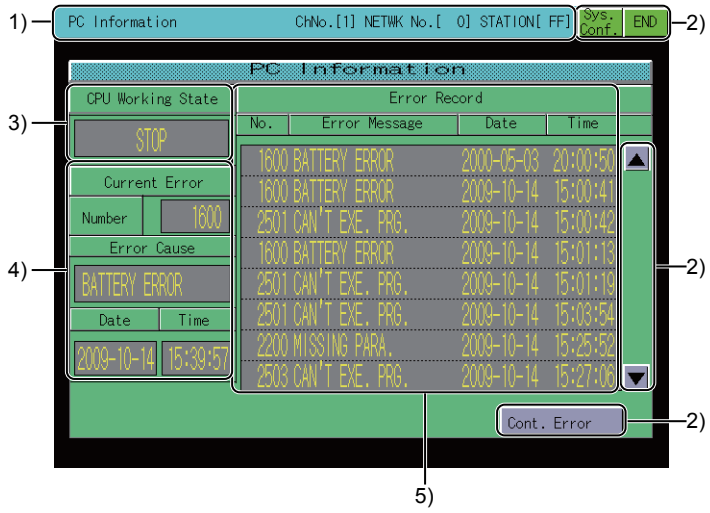
This section describes the structure of the PC Information monitor screen and the functions of the keys displayed on screen.
The PC Information monitor screen is displayed by specifying the RCPU, QCPU (Q mode), QSCPU, or LCPU on the system configuration screen.
The GOT displays the PC Information monitor screen only when using the following controllers.

- RCPU
- QCPU (Q mode)
- QSCPU
- LCPU

■1. When using the RCPU, QCPU (Q mode), or LCPU

(1) PC information monitor screen

(a) Displayed contents



1) Monitored station display
Displays the channel number, network number and station number of the monitored station.

2) Touch key
Displays the keys that are used for the operation on the PC information monitor screen.

3) [CPU Working State]
Displays the operating status of the PLC CPU.

4) Error display
Displays the currently occurring errors.
When using the LCPU, touch the error cause to display the error detail screen.

➠ (2) Error details screen

5) [Error Record]

Displays the error record.

The number of error events to be displayed varies depending on the monitored PLC CPU.

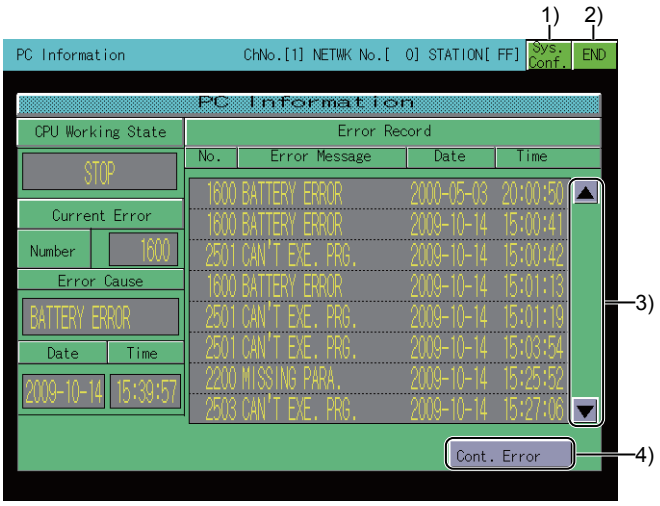
- When monitoring the RCPU
  Up to 16 error events can be displayed.
- When monitoring the QCPU (Q mode) or LCPU
  Up to 100 error events can be displayed.

When using the LCPU, touch the error record to display the error detail screen.

➠ (2) Error details screen

(b) Key functions

The following shows the functions of the keys that are used for the operations on the PC information monitor screen.



1) [Sys. Conf.] key

Switches the screen to the System Configuration screen.

➠ 8.4.1 Composition of the system configuration screen and key functions

2) [END] key

Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) Up/down scroll key

Scrolls the display one page up or down.

4) [Cont. Error] key

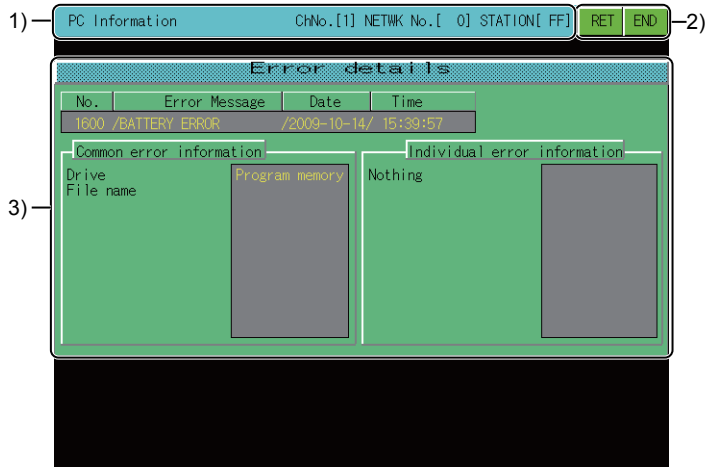
This key is displayed when the RCPU or LCPU is monitored.

Shifts to the Continuation error clear screen.

➠ (3) Continuation error clear screen

(2) Error details screen

(a) Displayed contents



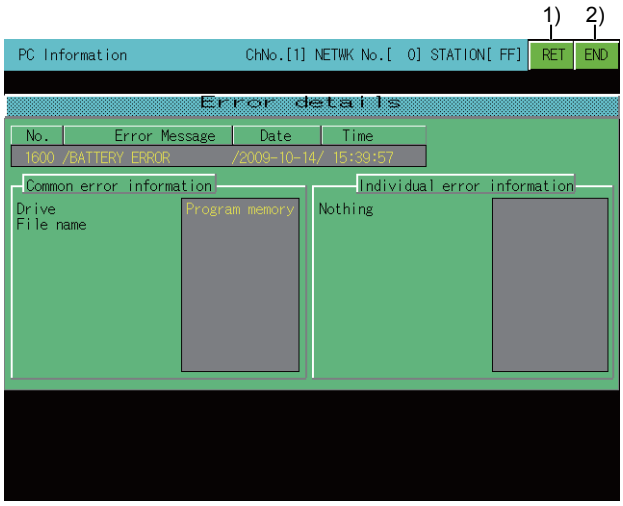
1) Monitored station display
Displays the channel number, network number and station number of the monitored station.

2) Touch key
Displays the keys that are used for the operation on the error details screen.

3) [Error details]
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.

➠ MELSEC-L CPU Module User's Manual (Function Explanation, Program Fundamentals)

(b) Key functions



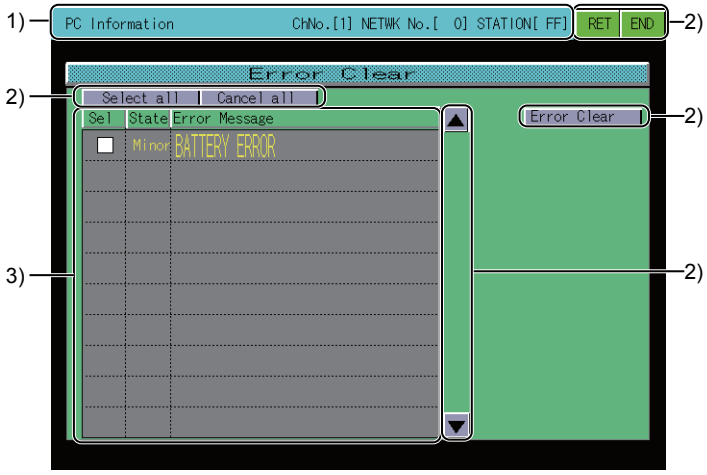
1) [RET] key
Returns the screen to the PC Information monitor screen.

➠ 8.4.3 Composition of PC Information monitor screen and key functions

2) [END] key
Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

(3) Continuation error clear screen

(a) Displayed contents



1) Monitored station display

Displays the channel number, network number and station number of the monitored station.

2) Touch key

Displays the keys that are used for the operation on the Continuation error clear screen.

3) Continuation error list

Displays the status of removable continuation errors , and error messages.

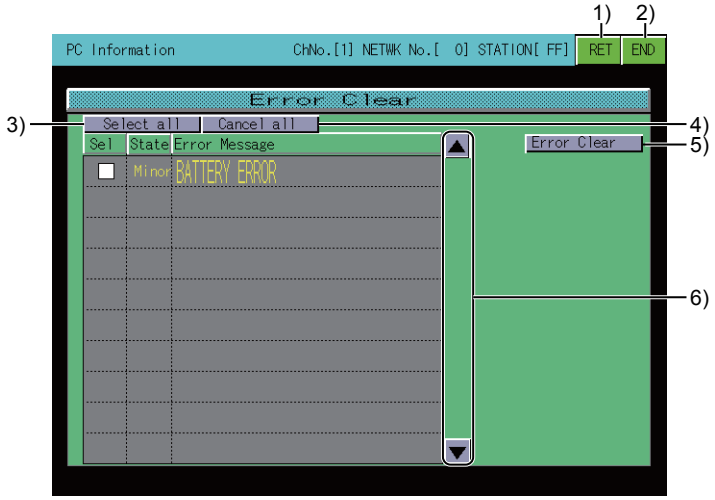
The following shows the continuous error status.

- Specification: User specification error
- Minor: Minor error

When monitoring the LCPU, touch the check box of each continuation error to switch the status between selected and unselected for removing the error.

(b) Key functions

The following shows the functions of the keys that are used for the operations on the continuation error clear screen.



1) [RET] key

Returns the screen to the PC Information monitor screen.

➠ 8.4.3 Composition of PC Information monitor screen and key functions

2) [END] key

Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) [Select all] key

Targets all continuous errors for the continuous error releasing.

4) [Cancel all] key

Unselects all continuous errors for the continuous error releasing.

5) [Error Clear] key

The operation performed by pressing this key differs depending on the monitored PLC CPU.

- When monitoring the RCPU
  All the continuation errors which have occurred are removed.
- When monitoring the LCPU
  The selected continuation errors are removed.

6) Up/down scroll key

Scrolls the display one stage up or down.

POINT

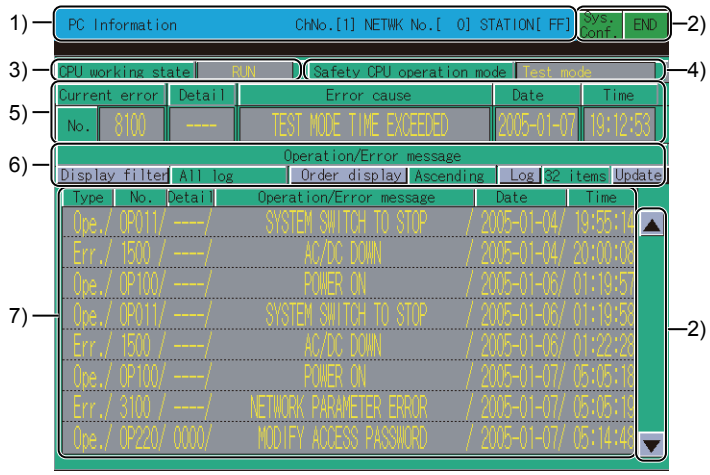
Precautions for releasing continuous errors

- If the error messages are the same, the errors are released regardless of the error code. Therefore, some error codes may be released even without the user intend to.
- The annunciator memorizes the number of annunciators detected in the CPU modules. When canceling multiple annunciators, perform the error releasing multiple times.
- Even after executing the error releasing, the detected error record is not deleted.

■2. When using the QSCPU

(1) PC Information monitor screen

(a) Displayed contents



1) Monitored station display

Displays the channel number, network number, and station number of the monitored station.

2) Touch key

The keys used for the operations on the system configuration screen.

3) [CPU working state]

Displays the QSCPU operation status.

The following items are displayed.

- [RUN]
- [STOP]

4) [Safety CPU operation mode]

Displays the safety CPU operation mode.

The following items are displayed.

- [Safety mode]
- [Test mode]

5) Error information

Displays the error being occurred.

Touching the error displays the Error details screen.

➠ 8.4.3 ■2. (3) Error details screen

Item	Description
[No.]	Displays the error code.
[Detail]	Displays the detail code of the error log. [----] is displayed when no detail code exists.
[Error cause]	Displays the error details. Touching the item displays the Error details screen.
[Date], [Time]	Displays the date and the time that the error occurs.

6) Operation key for history description display

Set the items to be displayed in the log list.

➠ (b) Key functions

7) Log list

Displays the operation status, error information, and others of the monitored PLC CPU.

Item	Description
[Type]	Displays the log types. The following items are displayed. • [Ope] Operation log • [Err] Error log
[No.]	Displays the operation codes or error codes.
[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.
[Operation/Error message]	Displays the operation details or error messages. Displays "BROKEN OPERATION/ERROR LOG" when the log data is damaged.
[Date], [Time]	Displays the dates and the time of operations or the dates and time that errors occur.

Touching an operation log displays the Operation details screen.

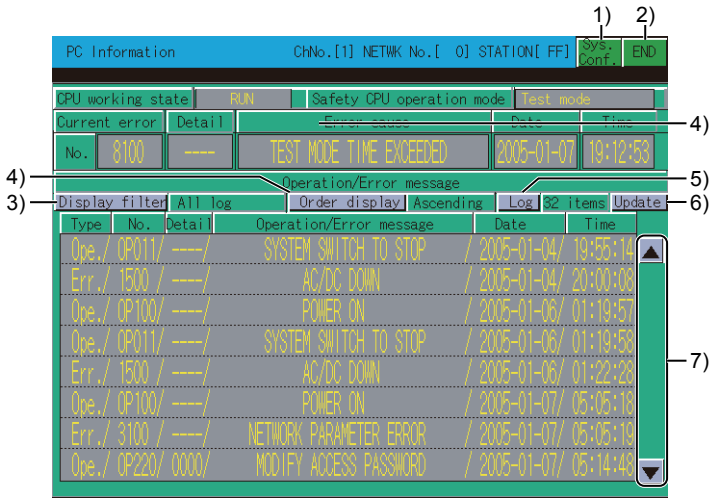
➠ 8.4.3 ■2. (2) Operation details screen

Touching an error log displays the Error details screen.

➠ 8.4.3 ■2. (3) Error details screen

(b) Key functions

The following shows the functions of the keys that are used for the operations on the system configuration screen.



1) [Sys. Conf.] key

Switches the screen to the System Configuration screen.

➠ 8.4.1 Composition of the system configuration screen and key functions

2) [END] key

Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) [Display Filter] key

Switches the log types to be displayed in the log list.

The following items are displayed.

- [All log]
  Displays all the logs (error logs, operation logs).
- [Error log]
  Displays the error logs only.
- [Operation log]
  Displays the operation logs only.

4) [Order display] key
Sorts the log list in ascending or descending order.

5) [Log] key
Switches the number of events displayed in the log list.
The number of events to be displayed is changeable by switching between the following items.
- [32 items]
  Displays the latest 32 events.
- [100 items]
  Displays the latest 100 events.

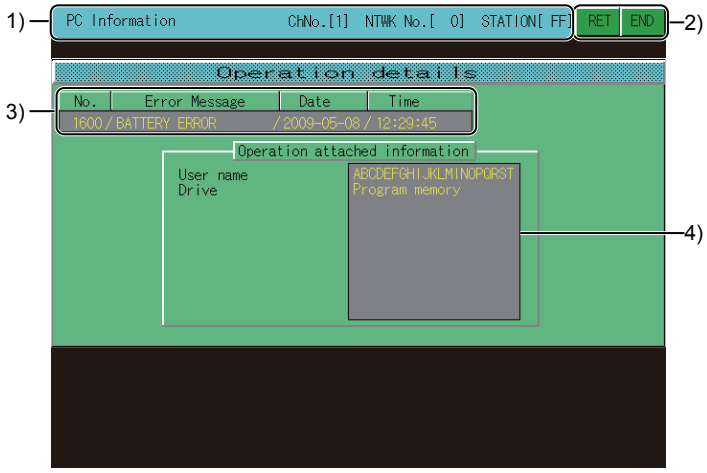
When the number of displayed events is switched from 100 to 32, 100 events are displayed before the [Update] key is touched.

6) [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.

7) Up/down scroll key
Scrolls the display one page up or down.

(2) Operation details screen

(a) Displayed contents



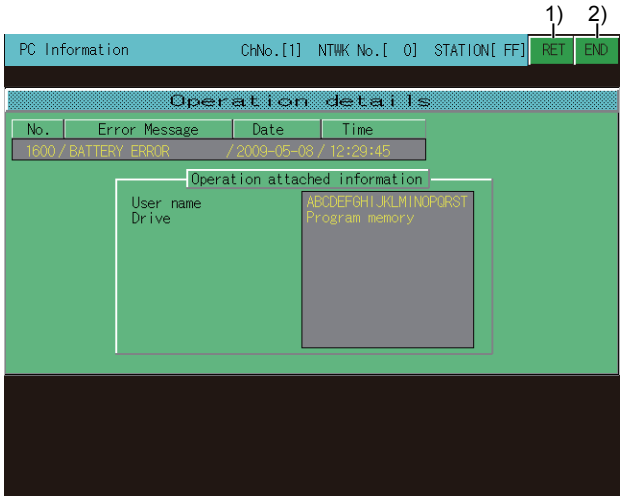
1) Monitored station display
Displays the channel number, network number, and station number of the monitored station.

2) Touch key
The keys used for the operations on the system configuration screen.

3) Error information
Displays the information of the error touched in the PC information monitor screen.

4) [Operation attached information]
Displays the detailed operating information according to the operation log information stored in the QSCPU.

(b) Key functions



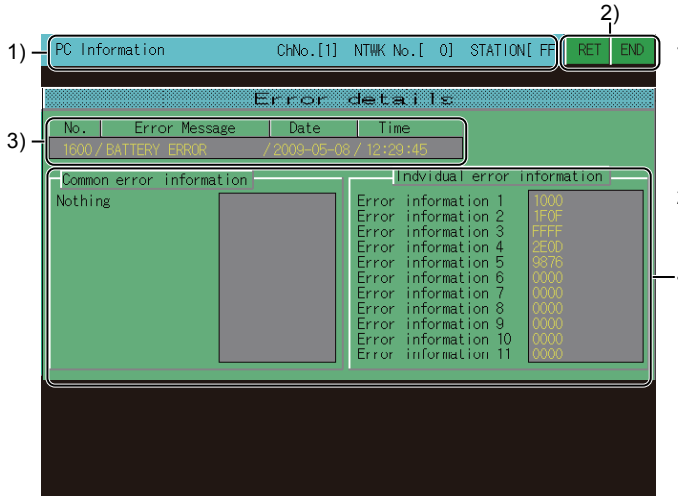
1) [RET] key
Returns the screen to the PC Information monitor screen.

➠ 8.4.3 Composition of PC Information monitor screen and key functions

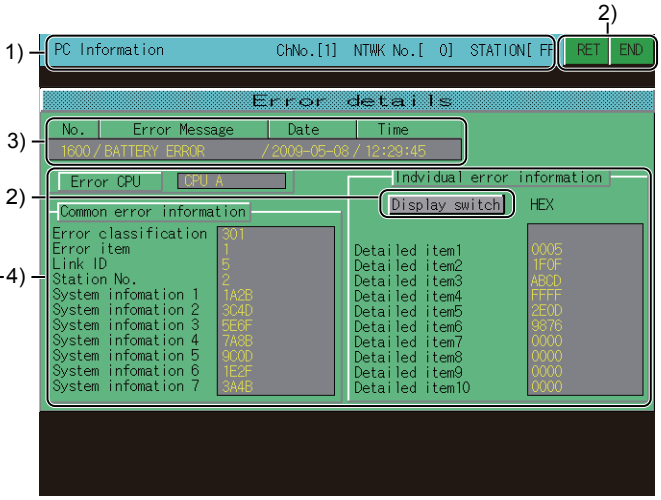
2) [END] key
Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

(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

1) Monitored station display
Displays the channel number, network number, and station number of the monitored station.

2) Touch key
The keys used for the operations on the system configuration screen.

3) Error information
Displays the information of the error touched in the PC information monitor screen.

4) [Common error information], [Indvidual error information]

Displays the common error information and the individual error information according to the information stored in SD4 and subsequent devices of the QSCPU.

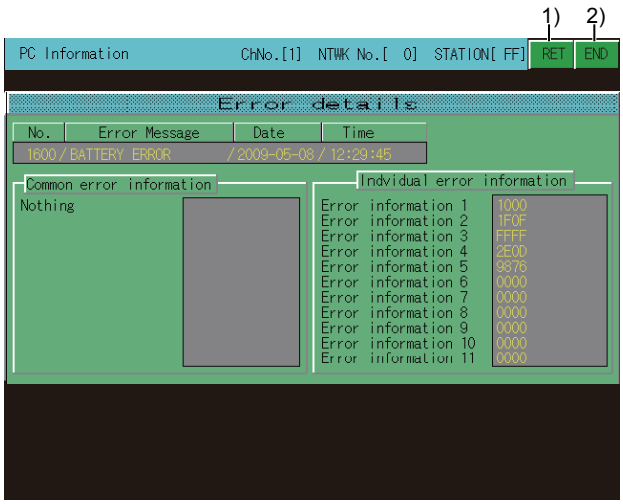
For the common error information and the individual error information, refer to the following.

➠ QSCPU User's Manual (Function Explanation, Program Fundamentals)

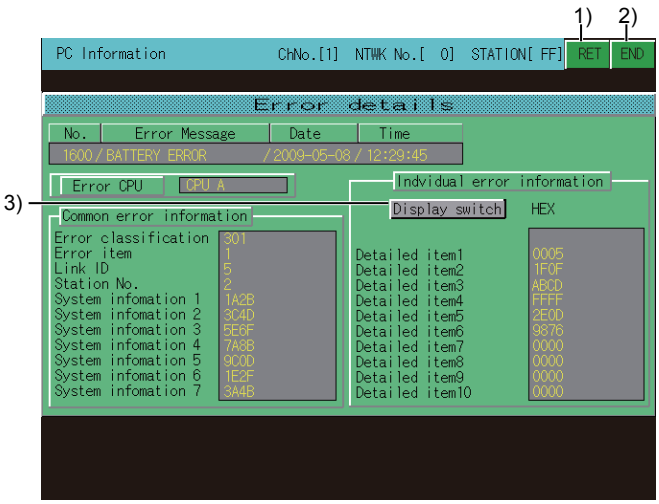
When the individual error information for the safety remote I/O station is displayed, the numerical notation of the displayed data can be switched between decimal and hexadecimal numbers.

(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.)

(b) Key functions



(Example) Error details screen for safety CPU error



(Example) Displaying individual error information for safety remote I/O station

1) [RET] key

Returns the screen to the PC Information monitor screen.

➠ 8.4.3 Composition of PC Information monitor screen and key functions

2) [END] key

Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) [Display switch] key

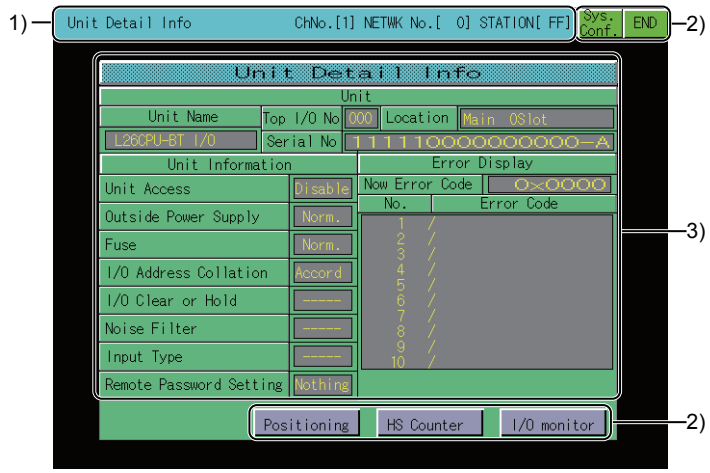
Switches the numerical notation of the displayed data between decimal and hexadecimal numbers. (Only when the individual error information for the safety remote I/O station is displayed)

8.4.4 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.

- RCPU
- QCPU (Q mode)
- QSCPU
- LCPU

■1. Displayed contents



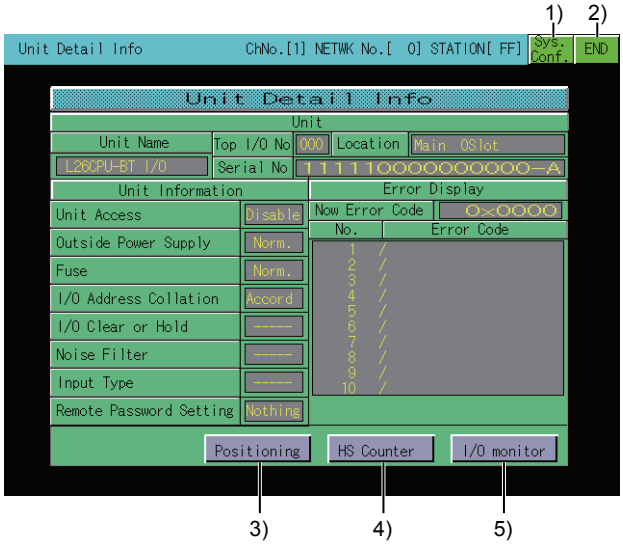
1) Monitored station display
Displays the channel number, network number and station number of the monitored station.

2) Touch key
Displays keys used for the operations on the System Configuration screen.

3) [Unit Detail Info]
Displays the information of the error touched on the PC information monitor screen.

■2. Key functions

The following shows the functions of the keys that are used for the operations on the unit detail info screen.



1) [Sys. Conf.] key
Switches the screen to the System Configuration screen.

➠ 8.4.1 Composition of the system configuration screen and key functions

2) [END] key
Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) [Positioning] key

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

4) [HS Counter] key

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

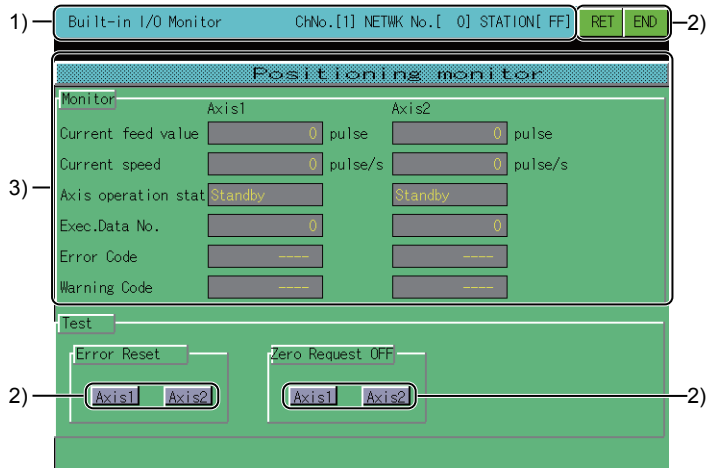
5) [I/O monitor] key

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



1) Monitored station display

Displays the channel number, network number and station number of the monitored station.

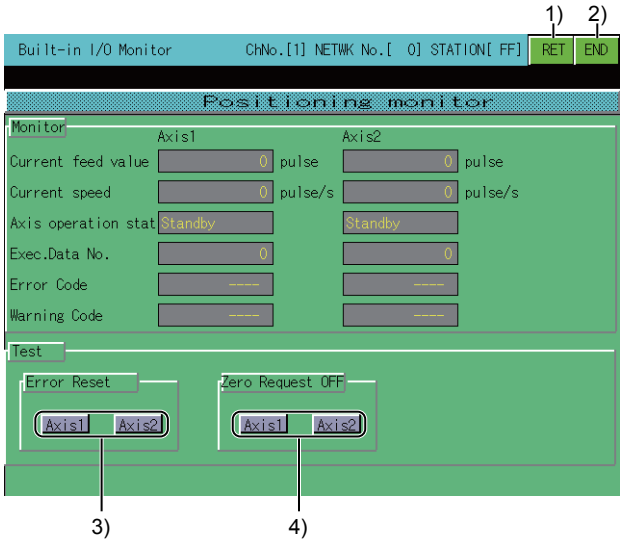
2) Touch key

Displays the keys used for the operations in the positioning monitor screen.

3) [Positioning monitor]

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



1) [RET] key
Return to the unit detail info screen.

➠ 8.4.4 Composition of the unit detail info screen and key functions

2) [END] key
Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) [Axis1] key, [Axis2] key ([Error Reset])
Resets the error of the [Axis1] or [Axis2].

4) [Axis1] key, [Axis2] key ([Zero Request OFF])
Turns off the home position return request for [Axis1] or [Axis2].

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

1) Monitored station display
Displays the channel number, network number and station number of the monitored station.

2) Touch key
Displays the keys used for the operation in the high-speed counter monitor screen.

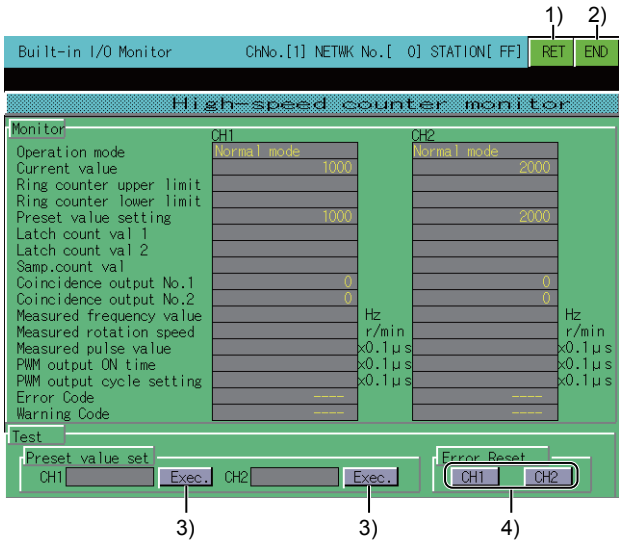
3) **[High-speed counter monitor]**
Displays the operation status of the high-speed counter function.
The operation status is displayed or hidden according to the parameter settings of built-in functions.

4) **[Preset value set]**
Displays the current value of the CH1 and CH2.
Touch the current value and the data change window is displayed.

➠ (3) Data change window

(b) Key functions

The following shows the functions of the keys that are used for the operations on the high-speed counter monitor screen.



1) **[RET] key**
Return to the unit detail info screen.

➠ 8.4.4 Composition of the unit detail info screen and key functions

2) **[END] key**
Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) **[Exec.] key**
Reflects the preset value entered in the data change window to the PLC CPU.

4) **[CH1] key, [CH2] key**
Reset the error of CH1 or CH2.

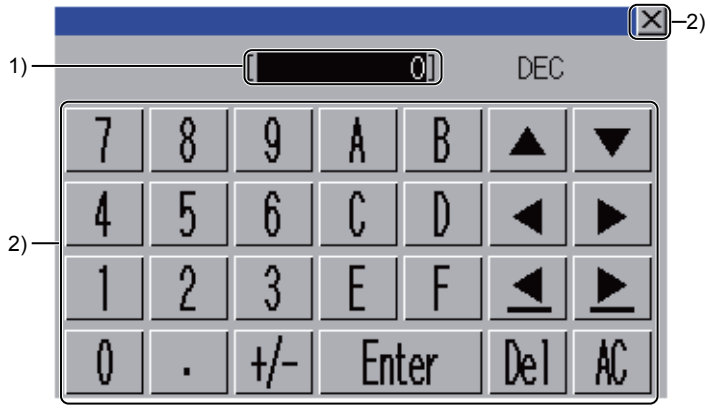
POINT

Precautions for using the high-speed counter monitor screen.

- 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.
- 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.
- 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

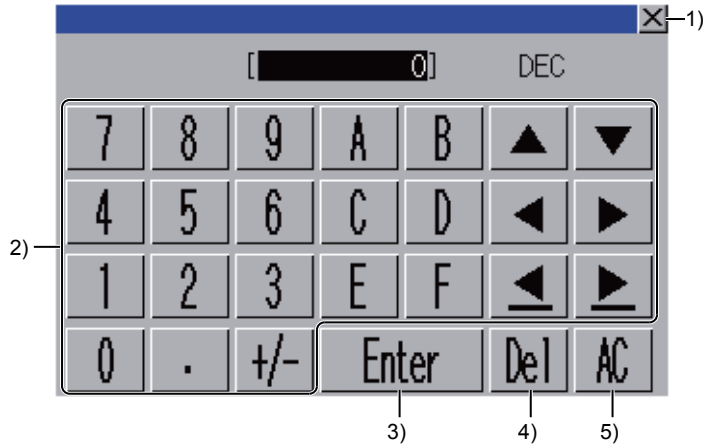


1) Entered value display area
Displays the entered value.

2) Touch key
Displays the keys used in the operation of the data change window.

(b) Key functions

The following shows the functions of the keys that are used for the operations on the data change window.



1) [×] key
Closes the data change window.

2) Data input key
Changes the data change target.

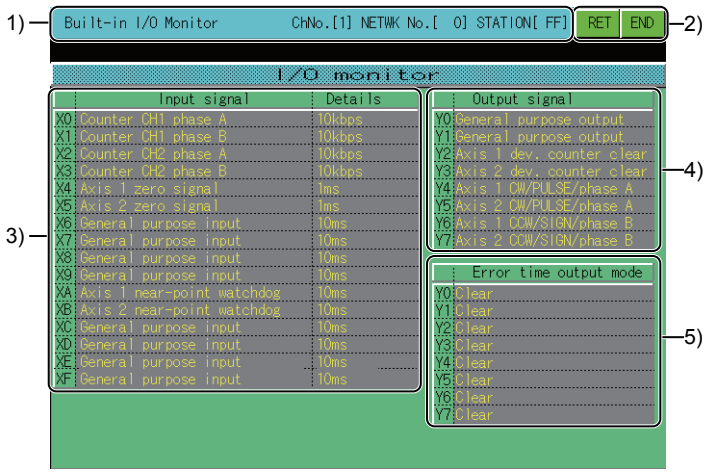
3) [Enter] key
Sets the entered value to the preset value.

4) [Del] key
Deletes one character of the entered value.

5) [AC] key
Deletes all entered values.

(4) I/O monitor screen.

(a) Displayed contents



1) Monitored station display
Displays the channel number, network number and station number of the monitored station.

2) Touch key
Displays the keys used for the operations in the I/O monitor screen.

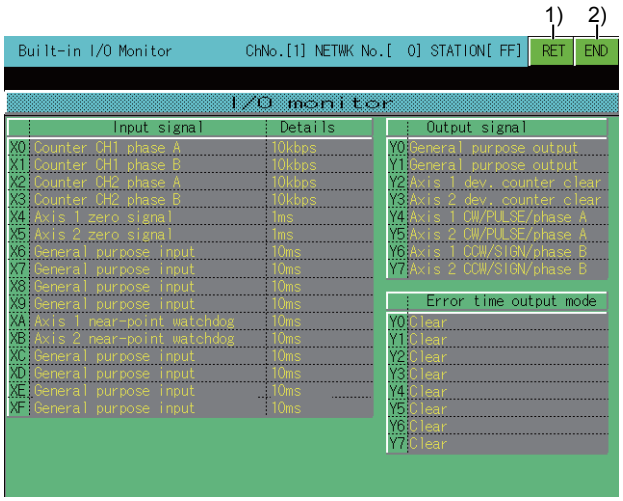
3) [Input signal], [Details]
Displays the status and values of functions assigned to the input signal.

4) [Output signal]
Displays the status of functions assigned to the output signal.

5) [Error time output mode]
Displays the setting status of the output mode during error, for the output signal.

(b) Key functions

The following shows the functions of the keys that are used for the operations on the I/O monitor screen.



1) [RET] key
Return to the unit detail info screen.

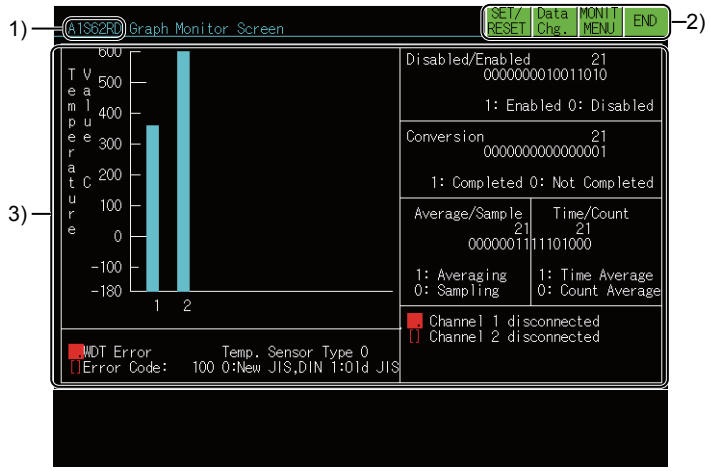
➠ 8.4.4 Composition of the unit detail info screen and key functions

2) [END] key
Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

8.4.5 Composition of the intelligent module monitor screen and key functions

This section describes the structure of the monitor screen and the functions of the keys displayed on the screen. The monitor screen is displayed by specifying a module on the system configuration screen in basic mode when the RCPU, QCPU (Q mode), QSCPU, or LCPU is used.

■1. Displayed contents



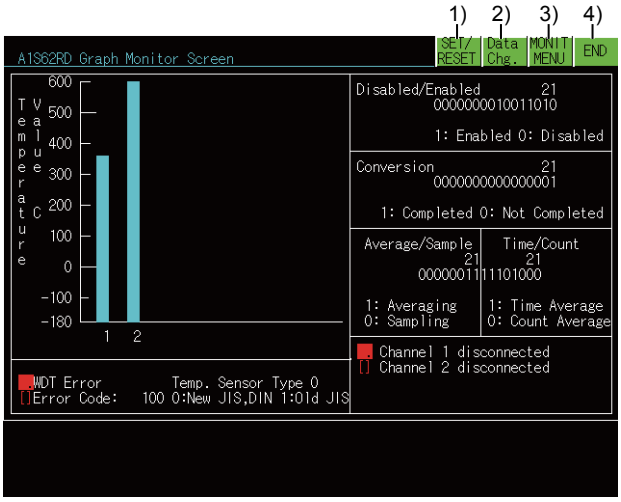
1) Module model
Displays the model name of the module being monitored.

2) Touch key
Displays keys used for the operations on the monitor screen.

3) Data display area
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.

■2. Key functions

The following shows the functions of the keys that are used for the operations on the monitor screen.



1) [SET/RESET] key

Starts testing (SET/RST) of the I/O signal between the PLC CPU and the intelligent function module.

2) [Data Chg.] key

Starts changing (writing) the current values of the buffer memory of the intelligent function module displayed on the screen.

3) [MONIT MENU] key

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.

4) [END] key

Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

8.4.6 Specifying a module to monitor and selecting monitor menu

This section uses the positioning module as an example to describe the operations when starting the intelligent module monitor to monitor a desired module.

Step 1. Display System Configuration screen.

➠ 8.4.1 Composition of the system configuration screen and key functions

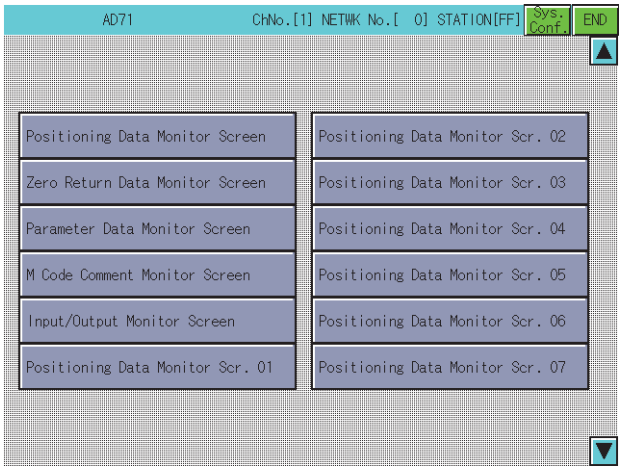
Step 2. Touch the display position of a module to be monitored to specify the module.
From among the modules installed in the corresponding base unit, specify the intelligent function module whose format is displayed.
To monitor any module whose model name is not displayed, use the device monitor.

➠ 3. DEVICE MONITOR

For specifying an input module or output module, refer to the following.

➠ 8.6 Operating I/O Module Monitor Screen

Step 3. Display screen that shows monitor menu.
Specify the menu corresponding to the type of data to be monitored.



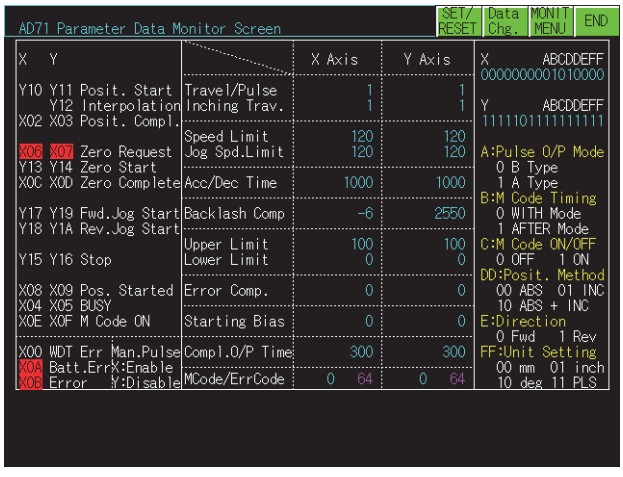
Step 4. Display monitor screen of specified menu.
For information on how to check the display contents and the rest of the procedure, refer to the following.

➠ 8.5 Intelligent Module Monitor Screens

For the test of the displayed data, refer to the following.

➠ 8.4.7 Testing of the intelligent function module

- Change current value of buffer memory
- Turn output signal from PLC CPU on and off



8.4.7 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.

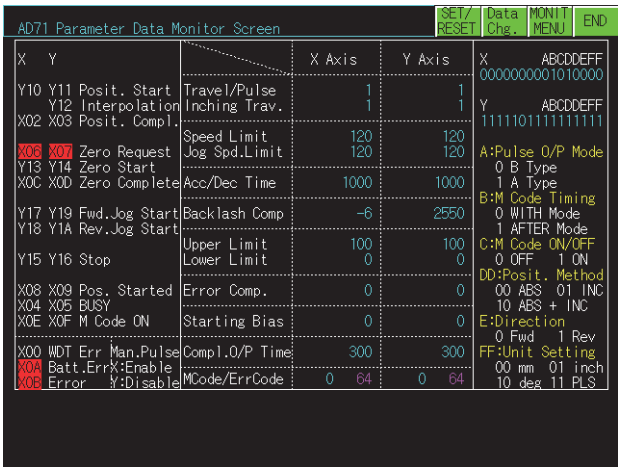
Testing can be performed for all buffer memory data displayed on the current monitor screen.
This section describes the operations for changing the current value of the buffer memory and turning on and off the output signal from the PLC CPU to the intelligent function module.

POINT

(1) PLC signals used for the test
Perform testing for the buffer memory that can be written from the PLC CPU and output signals that are output from the PLC CPU.

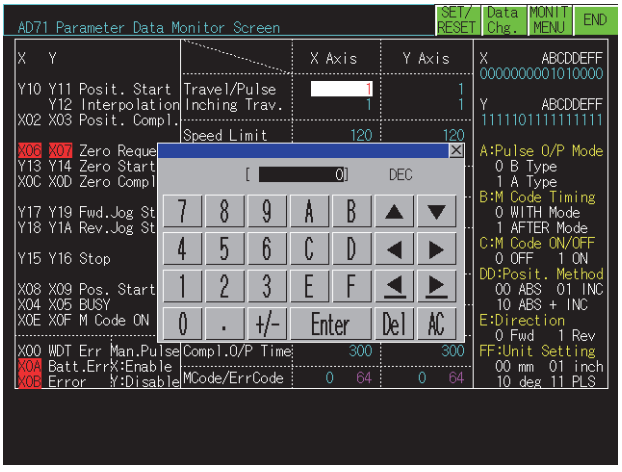
(2) Status of the PLC CPU for the test
It is recommended that testing be performed with the PLC CPU in STOP status.
If the PLC CPU is tested during RUN status, the test monitor display returns to display values output from the sequence program and output statuses.

Step 1. Display monitor screen.



Step 2. Touch the [Data Chg.] or [SET/RESET] key.

Step 3. Display key window on monitor screen.



- 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 [×] key at the upper left of the key window, the key window closes and the display returns to the monitor screen.

Move the cursor to the position where the data to be tested is displayed.
Use the numeric keys to specify the value to be changed.
The [DEL] key can be used to clear individual characters among those input.

- When [SET/RESET] key 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 [×] key at the upper left of the key window, the key window closes and the display returns to the monitor screen.
  Specify a device name to be tested by touching alphabet keys.
  After the specification, touch a cursor key.
  Specify a device number by touching numeric character keys.
  After the specification, touch a cursor key.
  Use the numeric keys to specify "Set" or "Reset".
  When the [0] key is touched, the signal turns off. When the [1] key is touched, the signal turns on.

Step 4. Touch the [Enter] key to confirm the entry.

Step 5. To continue the test, return to step 3.
To end the test, touch the [×] key and return to step 1.

POINT

(1) Precautions for executing the test

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.

- Testing of read-only buffer memory from the PLC CPU.
- Testing of input signals from the intelligent function module to the PLC CPU.

(2) Precautions for executing the test for buffer memory data

- For data where 16, 32 bits are displayed with one number, specify a new value in decimal format.
- 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".
- 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.

8.5 Intelligent Module Monitor Screens

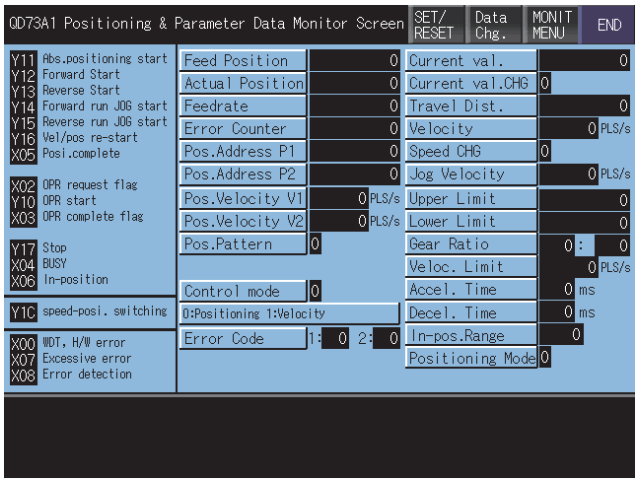
To display the intelligent module monitor screen on the GOT, write special data (intelligent module monitor data) to be monitored.
For the capacity of the special data to be written to the GOT and the writing procedure, refer to the following.

➠ 8.2.1 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



8.6 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.

➠ 8.6.1 Specifying the module to be monitored
8.6.2 Monitor screen configuration and key functions

8.6.1 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.

Step 1. Display the System Configuration screen.

➠ 8.4.1 Composition of the system configuration screen and key functions

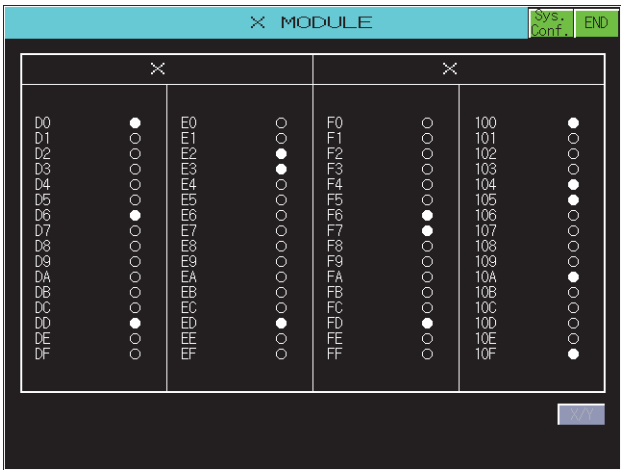
Step 2. Touch the display position of a module to be monitored.
From among the modules installed in the corresponding base unit, specify the module whose Input or Output is displayed.
For specifying an intelligent function module, refer to the following.

➠ 8.4.1 Composition of the system configuration screen and key functions

Step 3. Display the monitor screen for the specified module.
For information on how to check the display contents and the rest of the procedure, refer to the following.

➠ 8.6.2 Monitor screen configuration and key functions

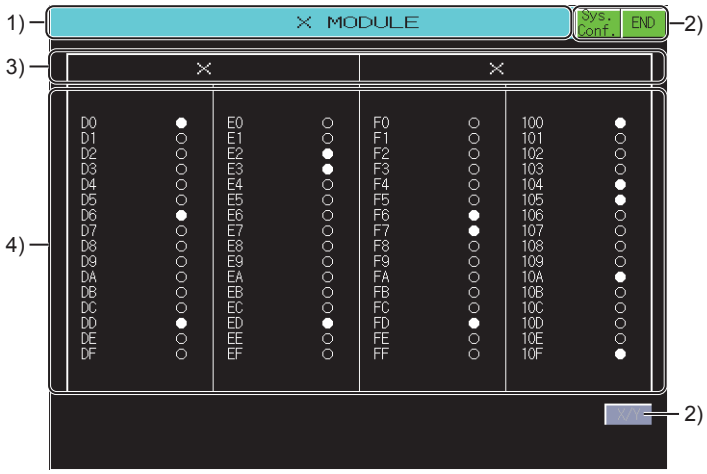
Tests cannot be conducted on input or output modules.



8.6.2 Monitor screen configuration and key functions

This section describes the structure of the monitor screen and the functions of the keys displayed on the screen.
The monitor screen is displayed by specifying an input module or output module on the system configuration screen.
This section uses an input module for explanation.

■1. Displayed contents



1) Module name
Displays the type of object module (input or output module).

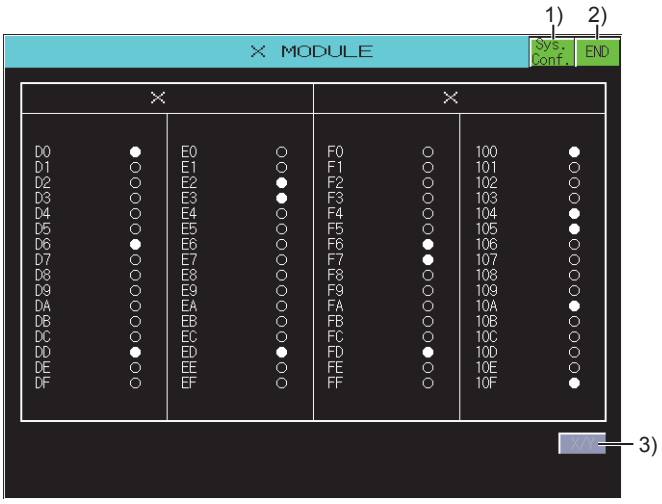
2) Touch key
Displays keys used for the operations on the monitor screen.

3) Signal name
Displays the name of the signal being monitored (X or Y).

4) Status display
Displays the number and status of the I/O signal.
The status of input and output signals is displayed after they are read out from the corresponding module.
Displays up to 64 points.(Black circle: ON, white circle: OFF)

■2. Key functions

The following shows the functions of the keys that are used for the operations on the monitor screen.



1) [Sys. Conf.] key
Closes the current monitor and returns to the System Configuration screen.

2) [END] key
Closes the monitoring and returns the screen to the one for starting the intelligent module monitor.

3) [X/Y] key
Switches between the display contents (for an input module and for an output module) when an I/O combined module is used.

8.7 Error Messages and Corrective Action

This section describes the error messages displayed when the intelligent module monitor is executed, and corrective action.

Error message	Description	Corrective action
Communication channel setup error	There is no channel for communication.	The intelligent module monitor does not support the selected PLC CPU.
Communications error	Communication could not be established with the PLC CPU.	Check the connection status between the PLC CPU and the GOT (disconnected or cut cables). Check if an error has occurred in the PLC CPU.
Monitor Data Can Not Find	The special data (intelligent module monitor data) has not been downloaded to the GOT.	Write the special data (intelligent module monitor data) to the GOT.
This PLC type is not supported	The intelligent module monitor selected an unsupported PLC CPU.	Use the PLC CPU supported by the intelligent module monitor. ➡ 8.2.1 System configuration

9. SERVO AMPLIFIER MONITOR

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

9.1 Features

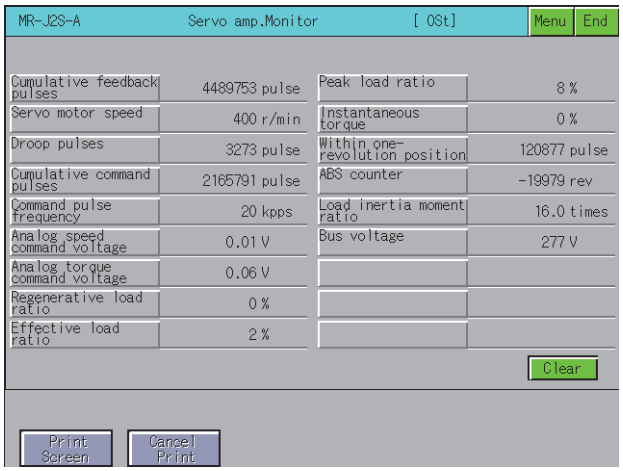
Various monitor functions, changes to the parameter settings and test operations can be performed on the servo amplifier connected to the GOT.
The features of the servo amplifier monitor are described below.

■1. Real-time display of the servo amplifier status

➠ 9.4.3 Monitor functions
9.4.4 Alarm function

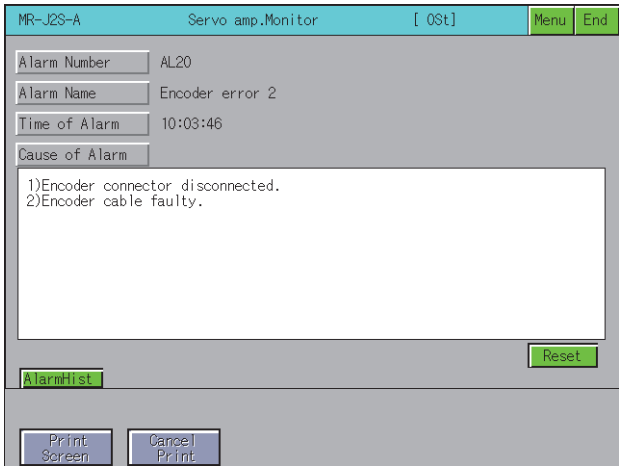
A list of the status of the servo amplifier connected to the GOT and the alarm details can be displayed in real-time.

- Display example of monitored data



Displays monitor data of the servo amplifier in a list.

- Display example of alarm information



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.

■2. Various diagnostics of the servo amplifier can be performed

➠ 9.4.5 Diagnostics function

There are multiple diagnostics functions to enable various diagnostics of the servo amplifier to be performed.

- Display example of DI/DO signal status

Displays a list of the ON/OFF status of the external I/O signals of the servo amplifier.

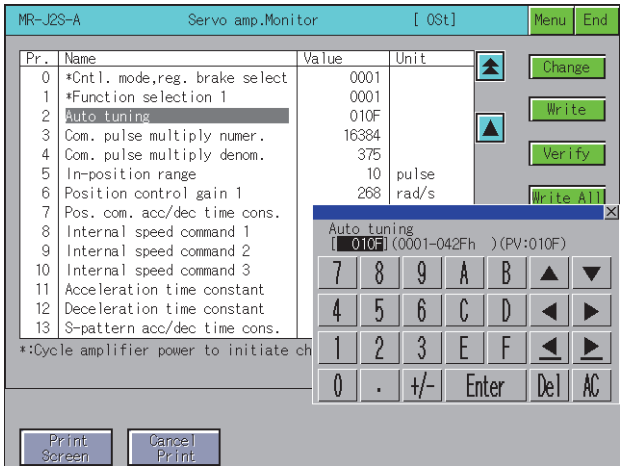
- Display example of servo amplifier information

Displays the servo amplifier software number and servo motor information (model name, ID and encoder resolution).

■3. Writing of the servo parameters is enabled

➠ 9.4.6 Parameter setting

The servo amplifier parameters can be read, changed and written to the servo amplifier.



■4. Various test operations can be performed

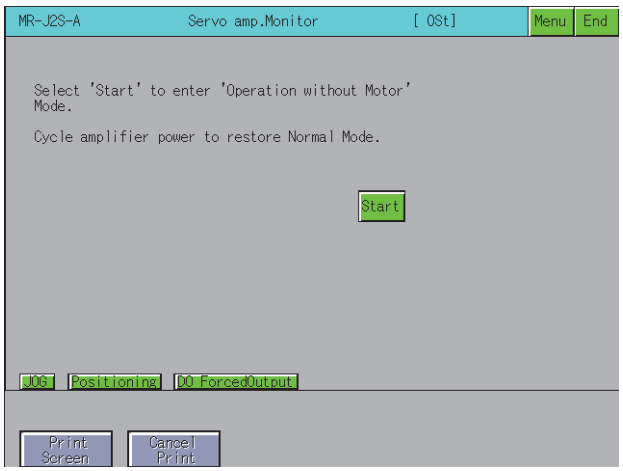
➠ 9.4.7 Test operations

Various test operations can be performed on the connected servo amplifier.

- JOG operation

The servo amplifier rotates while the Forward or Reverse key is touched.

- Motor less operation



Simulates motion of the servo motor within the servo amplifier even when the servo motor is not connected.

9.2 Specifications

9.2.1 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 Electric Products) For GT Works3 Version1

■1. Target controller

Servo amplifier	Model
MELSERVO-J2-Super series	MR-J2S-□A, MR-J2S-□CP
MELSERVO-J2M series	MR-J2M-P8A
MELSERVO-J3 series	MR-J3-□A
MELSERVO-J4 series	MR-J4-□A, MR-J4-□A-RJ

■2. Connection type

(○: 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	○

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the servo amplifier monitor to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. 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 ×: Monitoring is not possible with the servo amplifier monitor - : Function unavailable)

Function		Servo amplifier			
		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	×	-	-	×

Function		Servo amplifier			
		MELSERVO-J2-Super series		MELSERVO-J2M series	
		MR-J2S-□A	MR-J2S-□CP	MR-J2M-P8A	MR-J2M-□DU
Monitor	Display all	○	○	-	-
	High speed monitor	×	×	×	×
	Multi-axis listing	-	-	×	×
	Trend graph	×	×	-	×
	I/O Input/Output display	-	-	-	-
Alarm	Display	○	○	○	○
	History	○	○	○	○
	Amplifier data	×	×	×	×
Diagnostic	I/O display	○	○	○	-
	Function device display	-	○	○	○
	No motor rotation	×	×	-	-
	Total power-on time	×	×	×	×
	Software number display	○	○	○	○
	Motor data display	○	○	-	○
	Tuning data	×	×	-	×
	Amplifier information	○	○	○	○
	Absolute encoder data	○	○	-	○
	Automatic voltage control	×	-	-	-
	Axis name setting	×	×	-	×
	Unit composition listing	-	-	○	○
Parameters	Parameter list	○	○	-	-
	Tuning	×	×	-	×
	Change list	×	×	×	×
	IFU parameter	-	-	○	○
	DRU parameter	-	-	○	○
	Parameter copy	-	-	-	-
	Device setting	-	×	×	×
	Basic setting	-	-	-	-
	Gain/Filter	-	-	-	-
	Extension setting	-	-	-	-
	I/O setting	-	-	-	-
Test	Jog	○	○	-	○
	Positioning	○	○	-	○
	Operation w/o motor	○	○	-	○
	Forced output	○	○	○	-
	Program test	×	-	-	×
	Single-step feed	-	×	-	-
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) Screen Design Manual

(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		Servo amplifier	
		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*1	○	○
	Trend graph	×	×
Diagnostic	Display	○	○
	History	○	○
	Alarm Onset Data	×	×
	Drive Recorder	-	×
	No motor rotation	×	×
	System Configuration*2	○	○
	Life Diagnosis	×	×
	Machine Diagnosis	-	×
	Amplifier information*2	○	○
	Absolute encoder data	○	○
	DI/DO Display*1	○	○
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".

■5. 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) Screen Design Manual

■6. Applicable hardware

A USB mouse is usable.

9.2.2 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 Electric Products) For GT Works3 Version1

9.2.3 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.

➠ 9.4.7 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) Screen Design Manual

■4. Setting details

Use the same settings for the servo amplifier monitor on the GOT (Setup screen) and the servo amplifier.

➠ 9.4.2 Setup

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

While parameters are being input or output, do not monitor the devices of the servo amplifier parameters with any function executing in the background. (Example: Device data transfer, logging, and recipe)
Data may not be written or read normally or a communication error may occur.

9.3 Operations of Display

This section explains how to display the servo amplifier monitor screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the servo amplifier monitor screen by one of the following methods.

- Starting from the special function switch (Servo Amplifier Monitor) set in the project data
  For information on how to set special function switches, refer to the following.

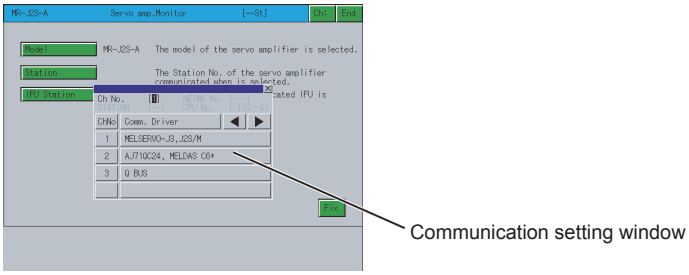
  ➠ GT Designer3 (GOT2000) Screen Design Manual

- Starting from the utility
  In the utility, touch [Monitor] → [Servo amplifier monitor] from the main menu.
  For information on how to display the utility, refer to the following.

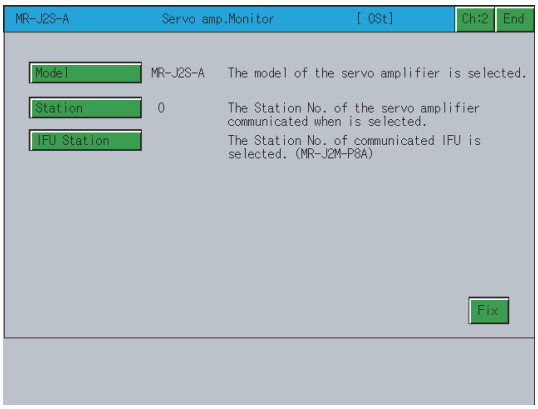
  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number.
Set the channel number of the servo amplifier connected to the GOT.
After the GOT is turned on, the communication setting window is displayed automatically only at the first startup of the servo amplifier monitor.
To display the communication setting window after the first startup, touch the [Ch:] key on the servo amplifier monitor screen.

➠ 9.4 Operations of Servo Amplifier Monitor Screens



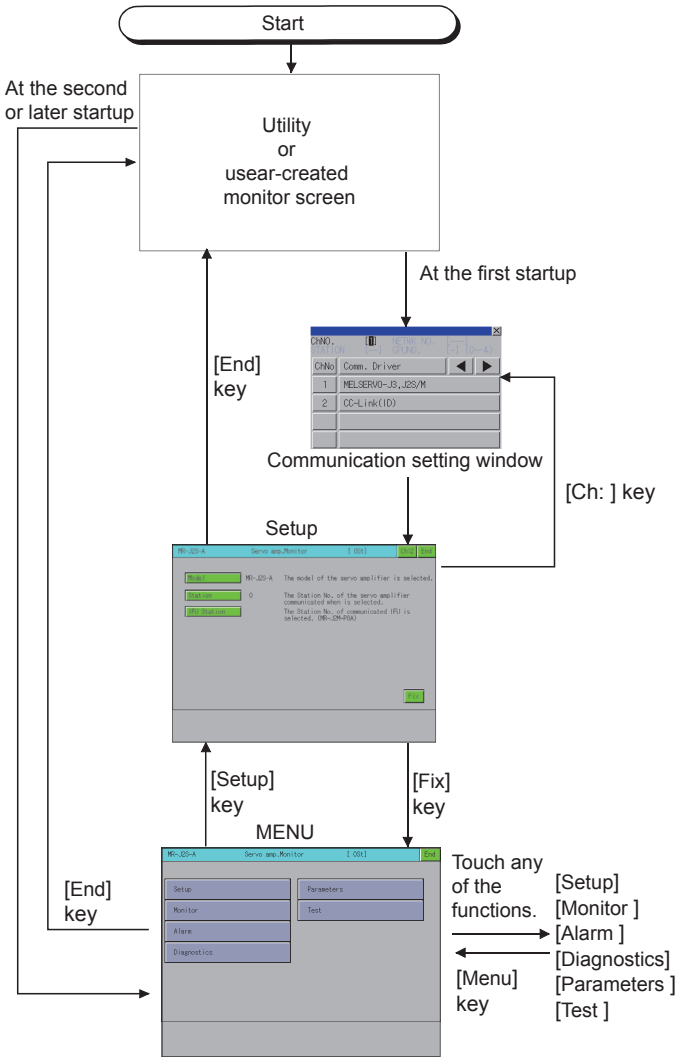
Step 4. Set the model of the servo amplifier to be monitored and other items.



Step 5. Select a function of the servo amplifier monitor.

■1. Changing screens

The following describes how to change the screen.



For the details of each function, refer to the following.

➠ 9.4.2 Setup
9.4.3 Monitor functions
9.4.4 Alarm function
9.4.5 Diagnostics function
9.4.6 Parameter setting
9.4.7 Test operations

POINT

To exit by touching the [End] key

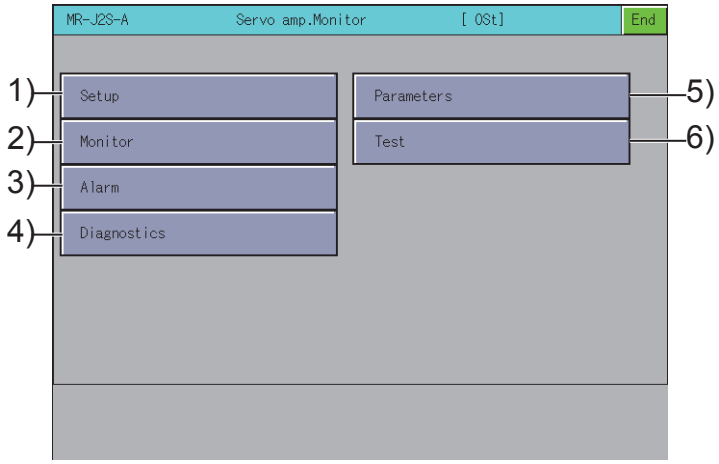
At next startup of the servo amplifier monitor, the last exited screen is displayed.
If using the same screen frequently, exiting with the [End] key is convenient.
However, the last exited screen is not displayed if the servo amplifier monitor screen data was deleted due to an installation of package data, turning the GOT power from off to on, or a reset.

9.4 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 depending on the GOT used.

9.4.1 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] key
Selects the servo amplifier type to monitor, the station number setting (station number selection), and the IFU station number.

➠ 9.4.2 Setup

2) [Monitor] key
Displays all monitor data of the servo amplifier in real-time.

➠ 9.4.3 Monitor functions

3) [Alarm] key
Displays the occurring alarm information or the alarm history.
You can reset an alarm, and clear the alarm history.

➠ 9.4.4 Alarm function

4) [Diagnostics] key
Performs the following various diagnostics on the connected servo amplifier.

- 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.

➠ 9.4.5 Diagnostics function

5) [Parameters] key
Displays the parameter data and changes the parameter settings.

➠ 9.4.6 Parameter setting

6) [Test]
Performs various test operations (JOG operation, positioning operation, motor-less operation and DO forced output).

➠ 9.4.7 Test operations

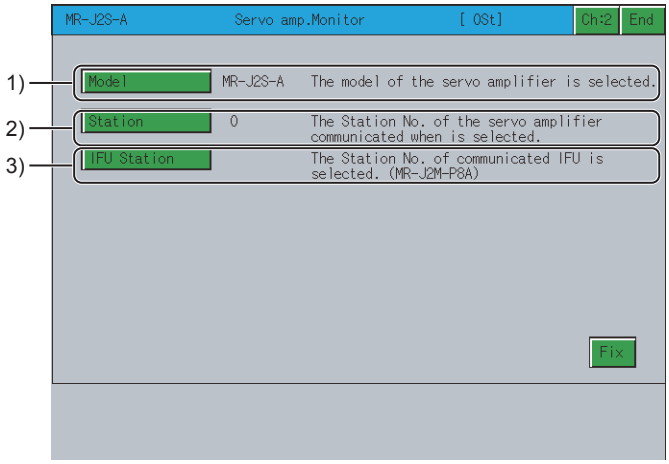
9.4.2 Setup

This is used to set the communication with the servo amplifier.
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.
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.

■1. 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.

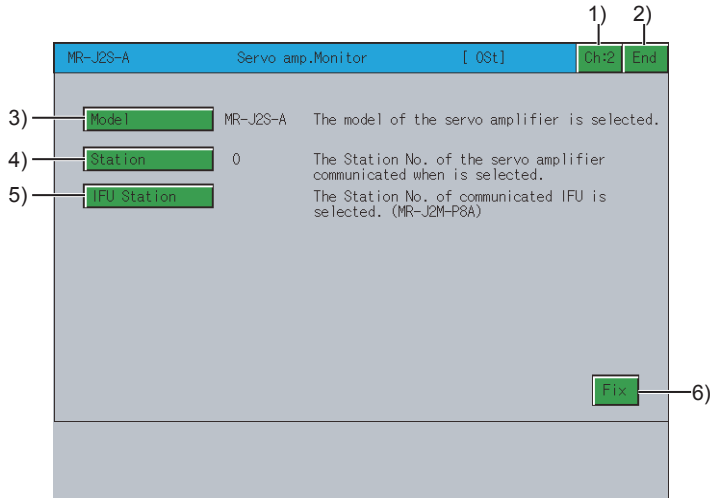
1) [Model]
Displays the model of the servo amplifier to be connected.

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.



1) [Ch:2] key
Displays the communication setting window.

2) [End] key
Exits the servo amplifier monitor.

3) [Model] key
Sets the model of the servo amplifier to be connected.

4) [Station] key
Sets the station number (00 to 31) of the servo amplifier to communicate with.

5) [IFU Station] key
Sets the serial communication station number of the IFU (interface unit).
This is valid only when MR-J2M-P8A is connected.

6) [Fix] key
Sets the setup details and returns to the function selection menu screen.

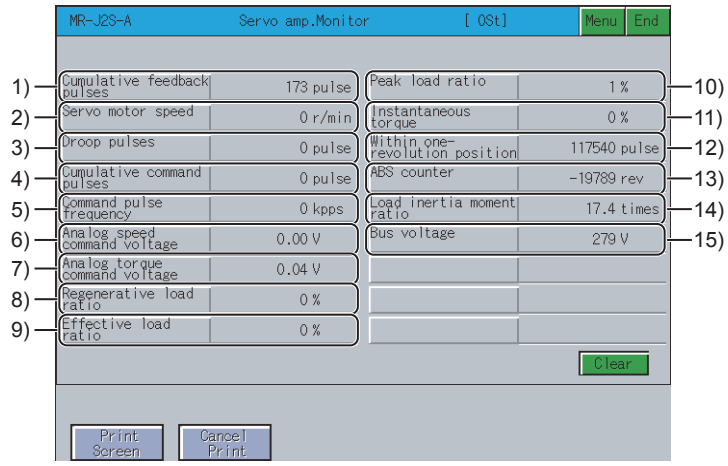
9.4.3 Monitor functions

Displays all monitor data of the servo amplifier in real-time.

■1. Monitor screen

The following describes the display data of the monitor screen and the key functions displayed on the screen.

(1) Displayed contents



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], [Analog speed limit voltage]
This is displayed only when the MR-J2S-□A is connected.
[Analog speed command voltage] is displayed in the speed control mode.
Displays the input voltage of the analog speed command (VC).
[Analog speed limit voltage] is displayed in the torque control mode.
Displays the input voltage of the analog speed limit (VLA).

7) [Analog torque command voltage], [Analog torque limit voltage]
This is displayed only when the MR-J2S-□A is connected.
[Analog torque command voltage] is displayed in the position/speed control mode.
Displays the voltage of the analog torque limit (TLA).
[Analog torque limit voltage] is displayed in the torque control mode.
Displays the voltage of the analog torque limit (TC).

8) **[Regenerative load ratio]**
Displays the ratio of the regenerative power to the permissible regenerative power in %.
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.

9) **[Effective load ratio]**
Displays the continuous effective load torque.
The effective value is displayed on the assumption that the rated torque is 100%.

10) **[Peak load ratio]**
Displays the maximum torque generated.
The maximum value for the past 15 seconds is displayed on the assumption that the rated torque is 100%.

11) **[Instantaneous torque]**
Displays the instantaneous torque.
The value of the generated torque is displayed in real time on the assumption that the rated torque is 100%.

12) **[Within one-revolution position]**
Displays the within one-revolution position in the servo motor in pulse units of the encoder.
When the value exceeds the maximum pulse count, it returns to 0.

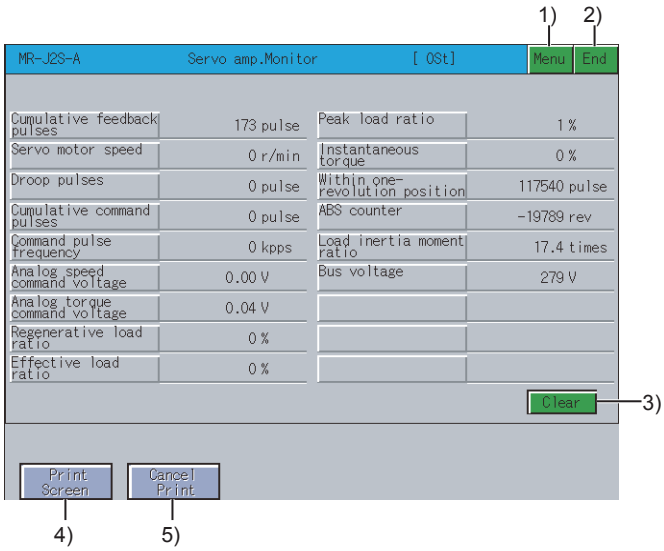
13) **[ABS counter]**
Displays the distance from the home position (0) in the absolute position detection system as the multi-revolution counter value of the absolute position encoder.

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.

■2. Key functions

The table below shows the functions of the keys that are used for the operations on the monitor screen.



1) **[Menu] key**
Returns to the function selection menu screen.

2) **[End] key**
Exits the servo amplifier monitor.

3) **[Clear] key**
Clears the values of [Cumulative feedback pulses] and [Cumulative command pulses] to 0.

4) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

5) [Cancel Print] key

The touch operation of this key is invalid.

9.4.4 Alarm function

The following alarms are displayed.

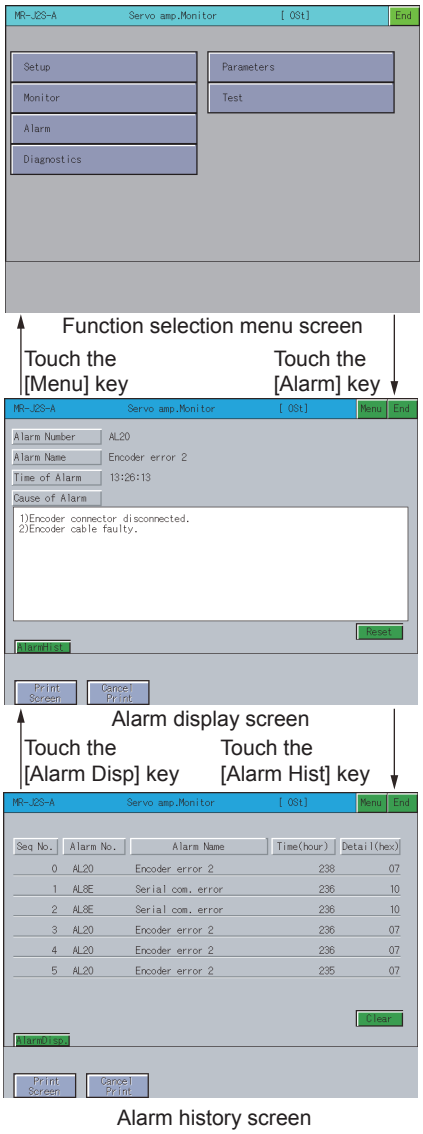
- Alarm display: Displays the alarm that is currently occurring.

➠ ■1. Alarm display screen

- Alarm history: Displays the history of alarms that occurred.

➠ ■2. Alarm history screen

The screen changes as follows after [Alarm] is selected on the function selection menu screen.
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.

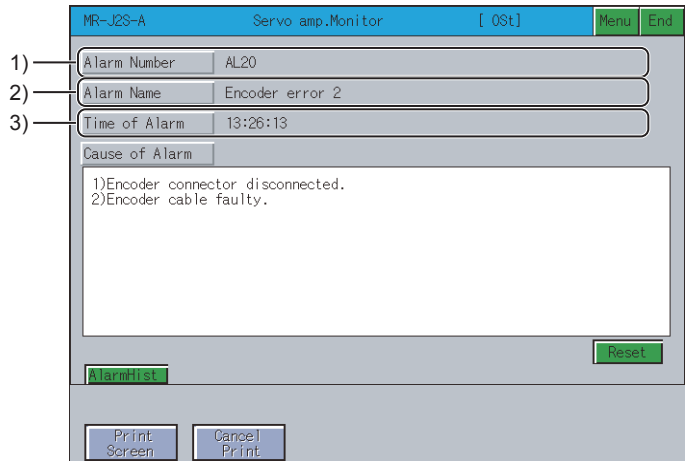


Alarm history screen

■1. 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



1) [Alarm Number]
Displays the number of the alarm that occurred.

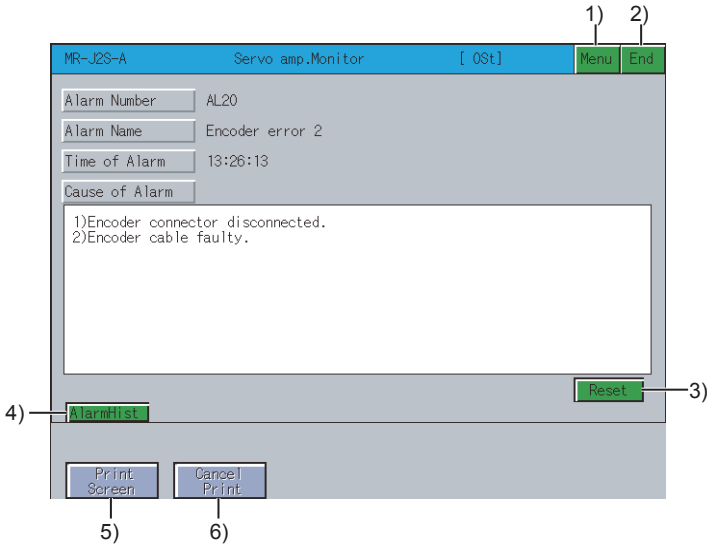
2) [Alarm Name]
Displays the name of the alarm that occurred.

3) [Time of Alarm]
Displays the date and time when the alarm occurred.

- The alarm occurrence time is displayed on the basis of the clock data of the GOT.
- 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.

(2) Key functions

The table below shows the functions of the keys that are used for operations of the alarm display screen.



1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) [Reset] key
Resets the alarm.
The reset alarm is stored as the latest alarm.

4) [AlarmHist] key
Changes to the alarm history screen.

➠ ■2. Alarm history screen

5) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

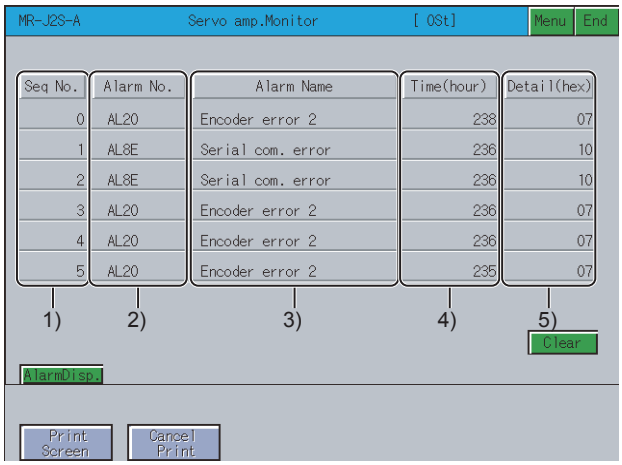
➠ 9.4.8 Hard copy output

6) [Cancel Print] key
The touch operation of this key is invalid.

■2. 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



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.

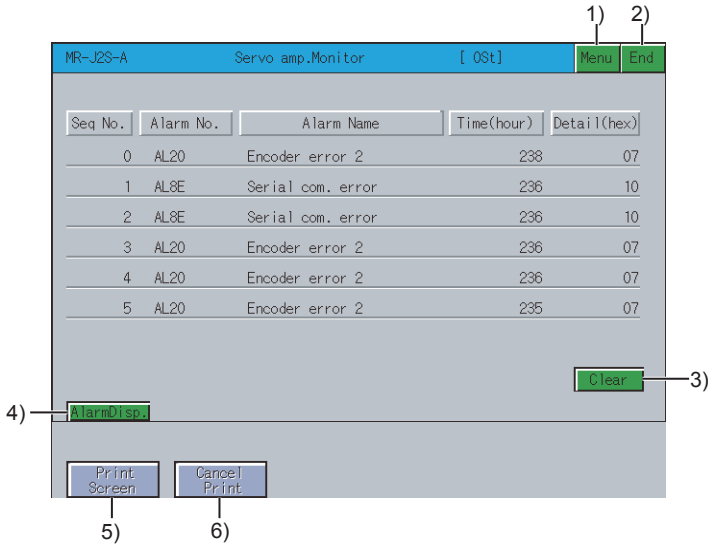
3) [Alarm Name]
Displays the name of the alarm that occurred.

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.



1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) [Clear] key
Clears the alarm history stored in the servo amplifier.

4) [AlarmDisp] key
Changes to the Alarm Display screen

➠ ■1. Alarm display screen

5) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

6) [Cancel Print] key
The touch operation of this key is invalid.

9.4.5 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.

  ➠ ■2. DI/DO display screen
- Function device display
  Displays the ON/OFF status of the I/O function devices.

  ➠ ■3. Function device display screen
- Amplifier information display
  Displays the model name, ID and encoder resolution of the servo motorconnected to the servo amplifier.

  ➠ ■4. Amplifier information display screen
- ABS data display
  Displays the absolute position data of the absolute position detection system.

  ➠ ■5. ABS data display screen
- Unit composition list display
  Displays a list of servo amplifier unit compositions.

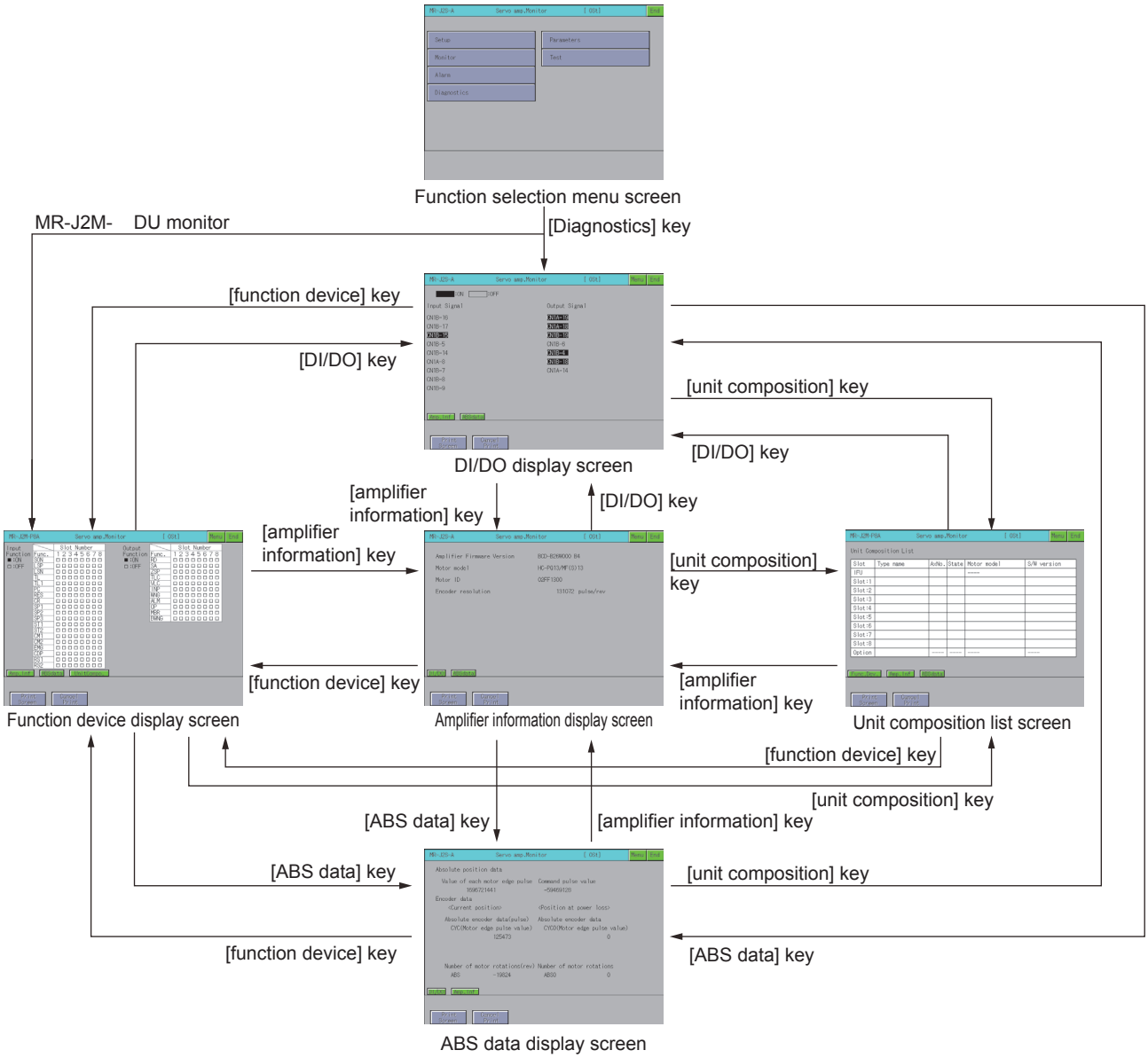
  ➠ ■6. Unit composition list display screen

■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.

➠ 9.2.1 ■4. List of servo amplifier types that can be monitored and functions

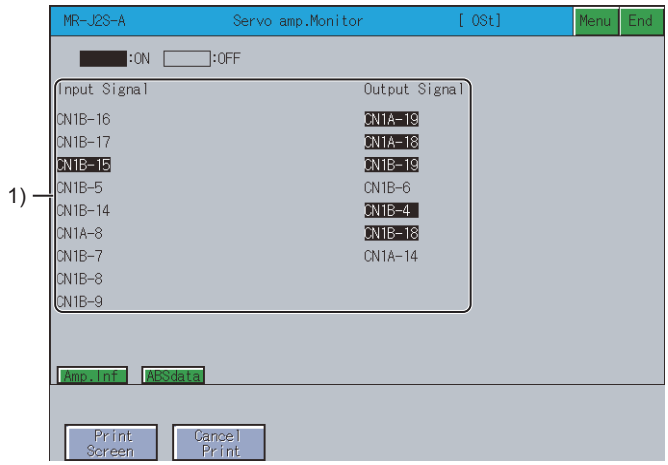
If the DI/DO display screen data or function device display screen data (only when monitoring the MR-J2M-□DU) has not been downloaded to the GOT, “Monitor data not found” is displayed and the subsequent screens are not displayed.



■2. 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

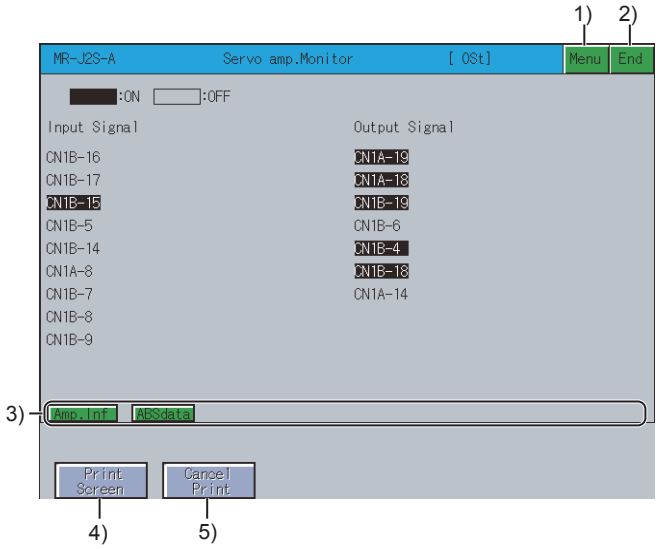


1) [Input Signal], [Output Signal]

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.



1) [Menu] key

Returns to the function selection menu screen.

2) [End] key

Exits the servo amplifier monitor.

3) Key to call a screen

Item	Description
[DO1] key	Displays the DI/DO signal of the extension IO unit. This is valid only when MR-J2M-P8A is connected.
[Func.Dev.] key	Changes to the function device screen. ➠ ■3. Function device display screen
[Amp.Inf] key	Changes to the amplifier information screen. ➠ ■4. Amplifier information display screen
[ABSdata] key	Changes to the ABS data screen. ➠ ■5. ABS data display screen
[UnitCompo.] key	Changes to the unit composition list screen. ➠ ■6. Unit composition list display screen

4) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

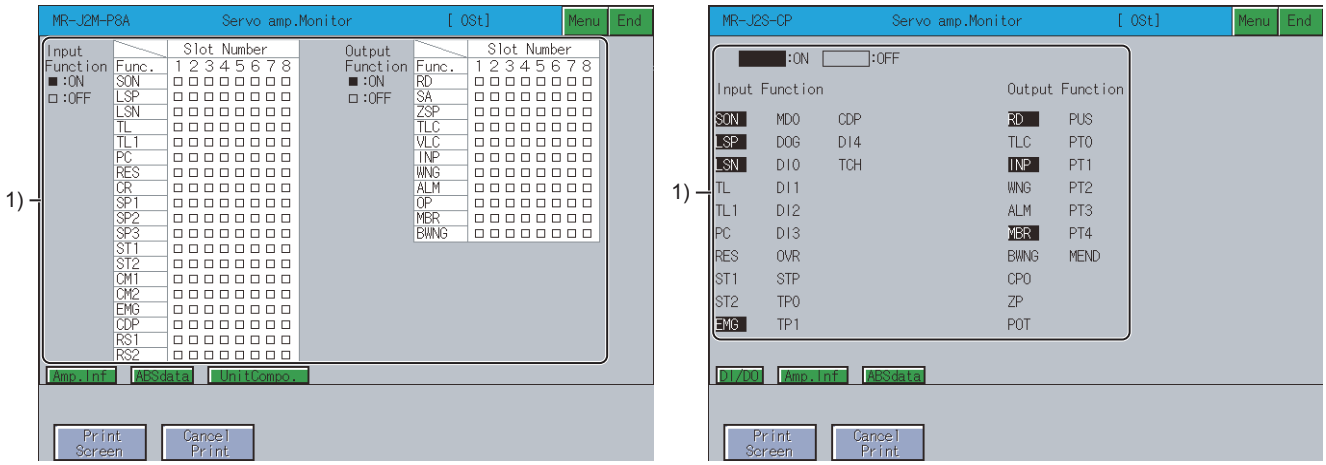
➠ 9.4.8 Hard copy output

5) [Cancel Print] key
The touch operation of this key is invalid.

■3. 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

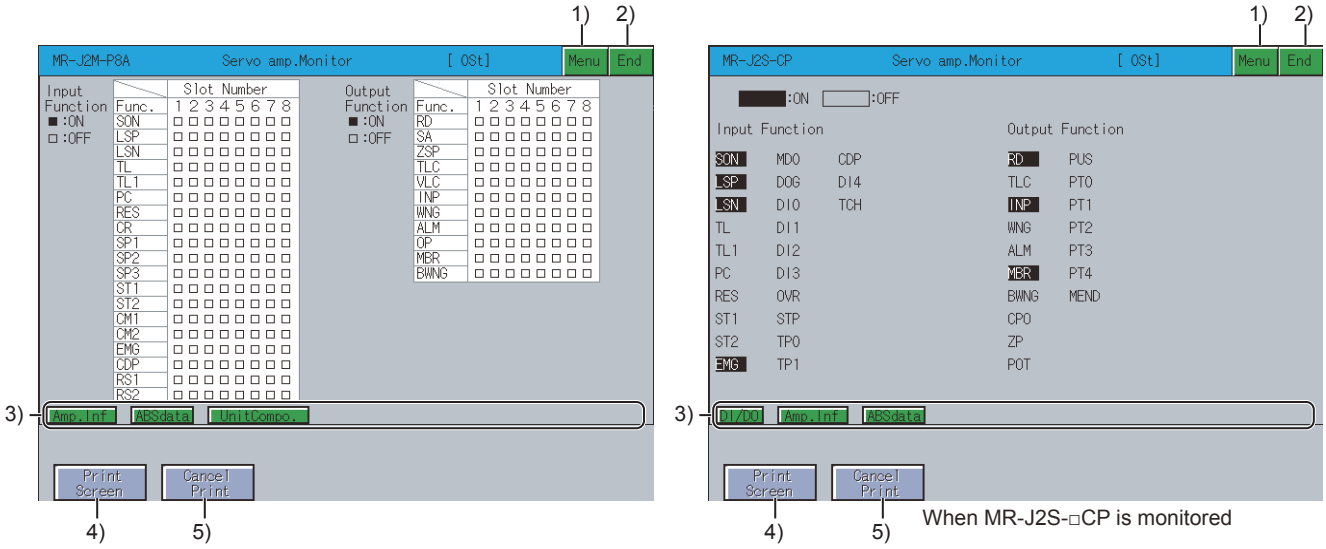


When MR-J2S-□CP is monitored

1) [Input Function], [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.



When MR-J2S-□CP is monitored

1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) Key to call a screen

Item	Description
[DI/DO] key	Changes to the DI/DO display screen. ➠ ■2. DI/DO display screen
[Amp.Inf] key	Changes to the amplifier information screen. ➠ ■4. Amplifier information display screen
[ABSdata] key	Changes to the ABS data screen. ➠ ■5. ABS data display screen
[UnitCompo.] key	Changes to the unit composition list screen. ➠ ■6. Unit composition list display screen

4) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

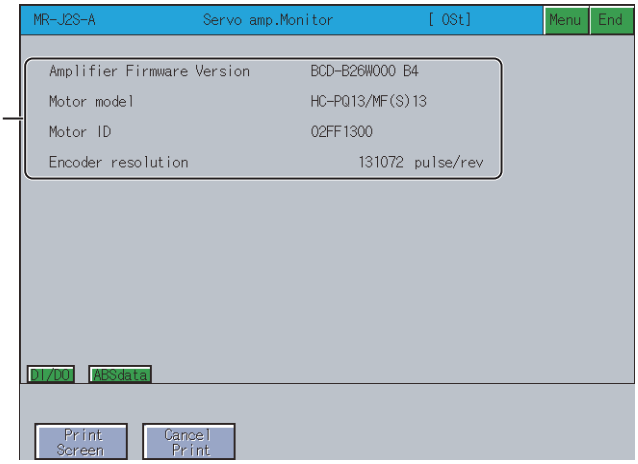
5) [Cancel Print] key

The touch operation of this key is invalid.

■4. 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



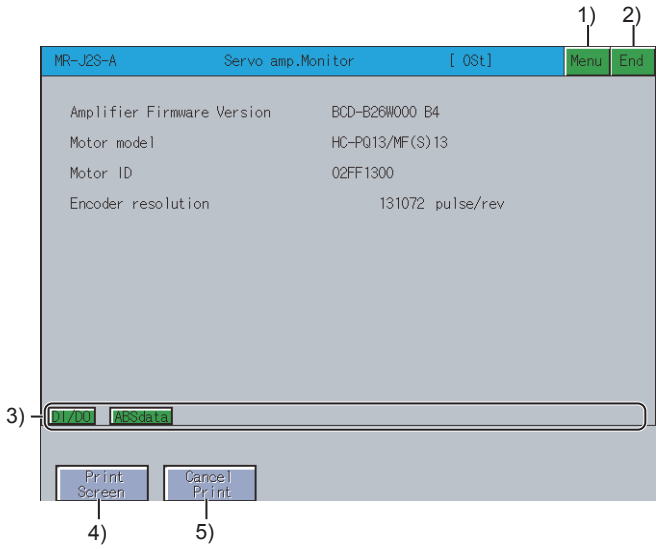
1) Display area

Displays the amplifier information.

Item	Description
[Servo amplifier model.]	Displays the model name of the servo amplifier. This is displayed only for MR-J3-□A or MR-J4-□A.
[Amplifier Firmware Version]	Displays the software number of the servo amplifier connected to the GOT.
[Accumulated power-on time]	Displays the cumulative time of the control power-on after the product was shipped from the factory. This is displayed only for MR-J3-□A or MR-J4-□A.
[Num. of inrush cur. sw. time]	Displays the number of times the rush relay has been turned on/off after the product was shipped from the factory. This is displayed only for MR-J3-□A or MR-J4-□A.
[Optional card model]	Displays the model name of the option card installed in the servo amplifier. If no option card is installed, then "No connection" is displayed. This is displayed only for MR-J3-□A or MR-J4-□A.
[Motor model]	Displays the model name of the servo motor connected to the servo amplifier. This is not displayed when monitoring the MR-J2M-P8A.
[Motor ID]	Displays the ID of the servo motor connected to the servo amplifier. This is not displayed when monitoring the MR-J2M-P8A.

Item	Description
[Encoder resolution]	Displays the encoder resolution of the servo motor connected to the servo amplifier. This is not displayed when monitoring the MR-J2M-P8A.

(2) Key functions



1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) Key to call a screen

Item	Description
[DI/DO] key	Changes to the DI/DO display screen. ➠ ■2. DI/DO display screen
[Amp.Inf] key	Changes to the amplifier information screen. ➠ ■4. Amplifier information display screen
[ABSdata] key	Changes to the ABS data screen. ➠ ■5. ABS data display screen
[UnitCompo.] key	Changes to the unit composition list screen. ➠ ■6. Unit composition list display screen

4) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

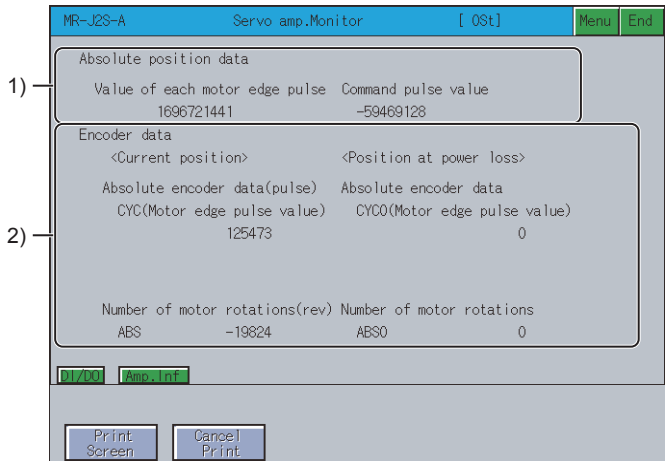
➠ 9.4.8 Hard copy output

5) [Cancel Print] key
The touch operation of this key is invalid.

■5. 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



1) [Absolute position data]

Displays the absolute position data in the absolute position detection system with the following items.

- Motor edge pulse value
- Command pulse value

2) [Encoder data]

Displays the encoder data with the following items.

Current position

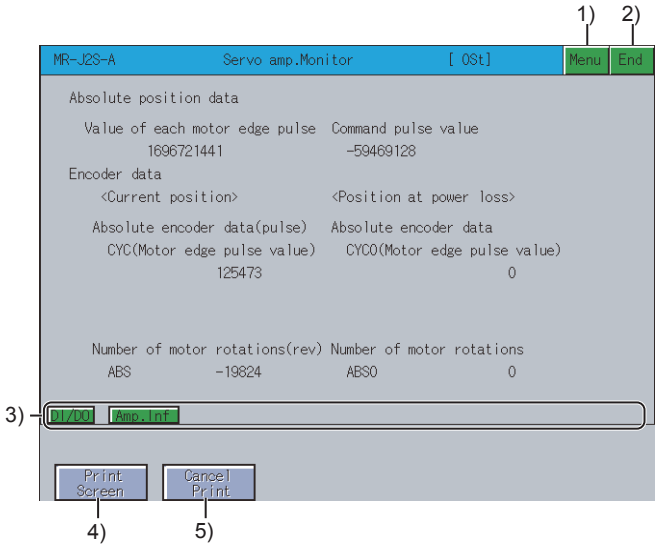
- Absolute encoder data
- CYC (Motor edge pulse value)
- CYC (Command pulse value)
- Number of motor rotations ABS

Position at power loss

- Absolute encoder data
- CYC0 (Motor edge pulse value)
- CYC0 (Command pulse value)
- Number of motor rotations ABS0

(2) Key functions

The table below shows the functions of the keys that are used for the operations of the ABS data display screen.



1) [Menu] key

Returns to the function selection menu screen.

2) [End] key

Exits the servo amplifier monitor.

3) Key to call a screen

Item	Description
[DI/DO] key	Changes to the DI/DO display screen. ➠ ■2. DI/DO display screen
[Amp.Inf] key	Changes to the amplifier information screen. ➠ ■4. Amplifier information display screen
[ABSdata] key	Changes to the ABS data screen. ➠ ■5. ABS data display screen
[UnitCompo.] key	Changes to the unit composition list screen. ➠ ■6. Unit composition list display screen

4) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

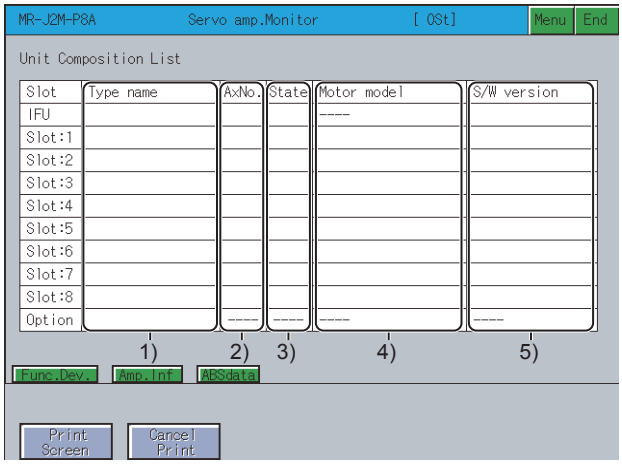
5) [Cancel Print] key

The touch operation of this key is invalid.

■6. 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



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]

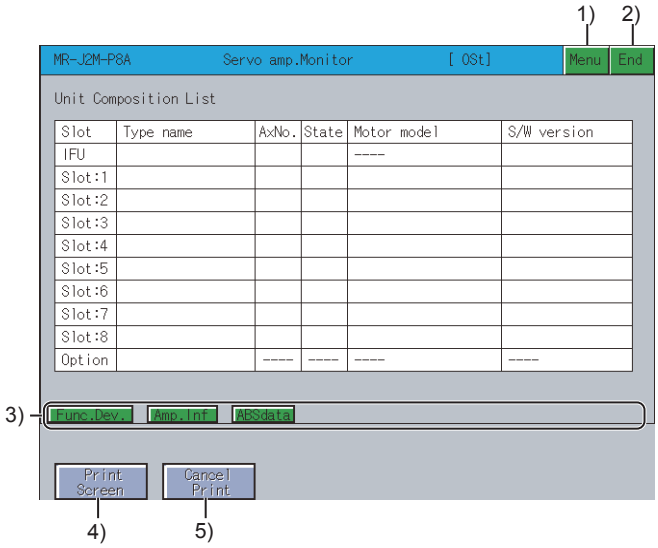
Displays the model name of the motor connected to the drive unit (DRU).

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.



1) [Menu] key

Returns to the function selection menu screen.

2) [End] key

Exits the servo amplifier monitor.

3) Key to call a screen

Item	Description
[DI/DO] key	Changes to the DI/DO display screen. ➠ ■2. DI/DO display screen
[Func.Dev.] key	Changes to the function device screen. ➠ ■3. Function device display screen
[Amp.Inf] key	Changes to the amplifier information screen. ➠ ■4. Amplifier information display screen
[ABSdata] key	Changes to the ABS data screen. ➠ ■5. ABS data display screen

4) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

5) [Cancel Print] key

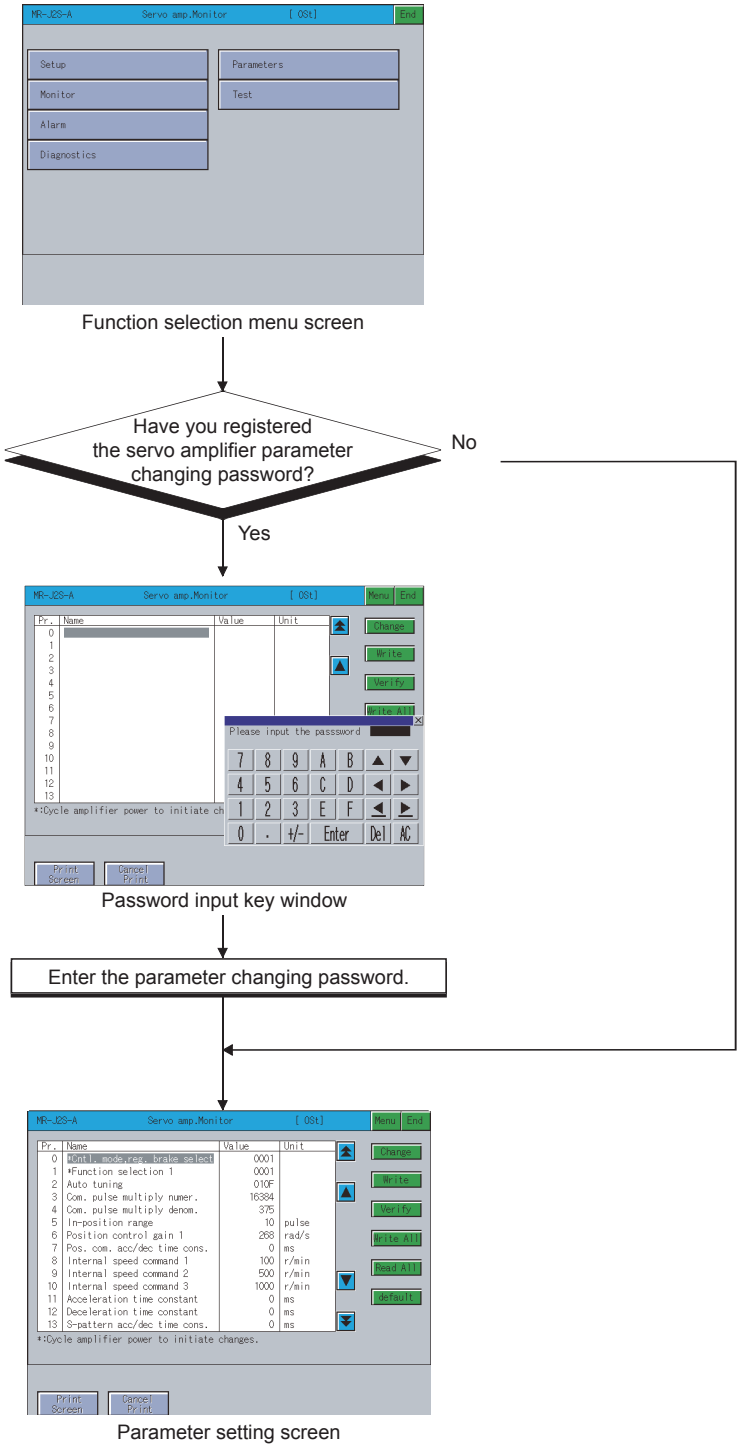
The touch operation of this key is invalid.

9.4.6 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.
If you have set a password in [Servo Parameter Display] on GT Designer3 (GOT2000), the password input key window appears when you try to access the parameter setting screen of the servo amplifier monitor.
For the details of the password setting, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

The screen changes as follows after [Parameters] is selected on the function selection menu screen.



For the details of the function selection menu screen, refer to the following.

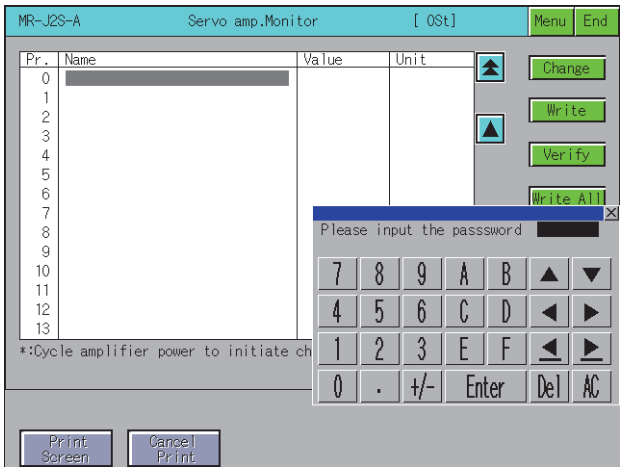
➠ 9.4.2 Setup

For the operating procedure of the password input, refer to the following.

➠ ■1. Password input operation procedure

■1. 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 the [×] key 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 [0] key to [9] key and [A] key to [F] key to input the password.
After inputting the password, touch [Enter] key to set the password.
To edit the input characters, touch [Del] key to delete the characters, and then input the new characters.

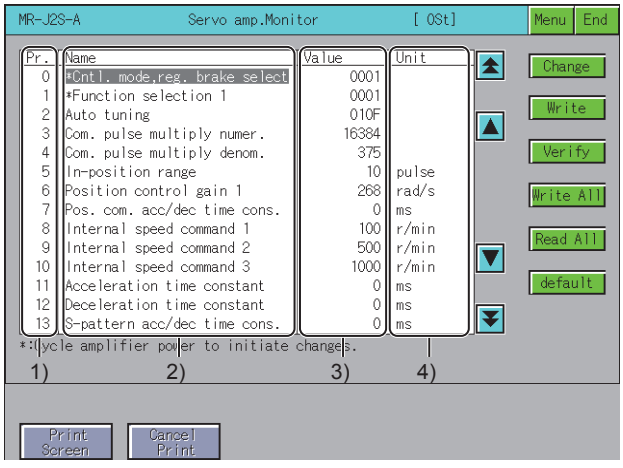
(b) Canceling password input

Touch the [×] key to return to the monitor screen.

■2. Parameter setting screen

The following describes the display data of the parameter setting screen and the key functions displayed on the screen.
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



1) [Pr.]
Displays the parameter number.

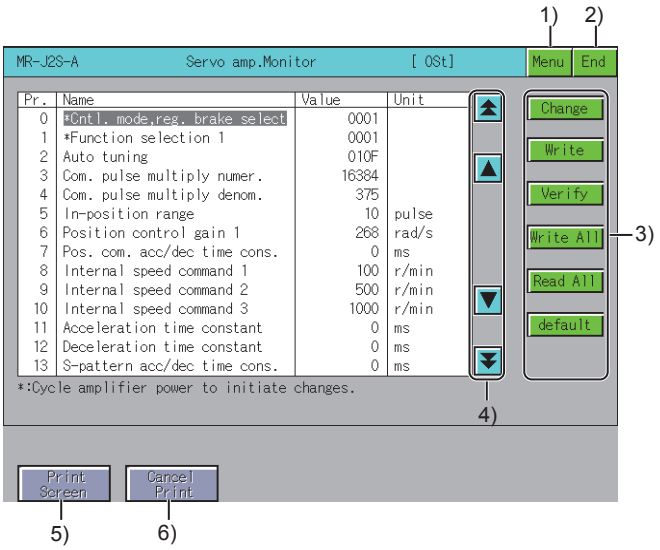
2) [Name]
Displays the parameter name.

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.



1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) Setting key

Item	Description
[Change] key	Changes the servo parameter settings read to the GOT internal memory.
[Write] key	Writes the servo parameter settings of the selected items to the servo amplifier.
[Verify] key	Matches all parameter values presently displayed on the GOT with the servo amplifier parameter values.
[Write All] key	Writes all parameter values presently displayed on the GOT to the parameters of the servo amplifier.
[Read All] key	Reads all parameter values from the servo amplifier to the GOT and displays those values.
[default] key	Returns all parameter values to their initial values.
[Param. DRU] key, [Param. IFU] key	Switches between the parameter display for the drive unit (DRU) and interface unit (IFU) each time this is touched. This is displayed only when MR-J2M-P8A is connected.
[Slot:1] key	Selects the slot number of the drive unit (DRU). This is displayed only when MR-J2M-P8A is connected.
[Gain/Filter] key	Changes the gain filter parameter. This is displayed only when MR-J3-□A or MR-J4-□A is connected.
[Extension] key	Changes the extension setting parameter. This is displayed only when MR-J3-□A or MR-J4-□A is connected.
[Extension-2] key	Changes the extension setting 2 parameter. This is displayed only when MR-J4-□A is connected.
[Extension-3] key	Changes the extension setting 3 parameter. This is displayed only when MR-J4-□A is connected.
[I/O setting] key	Changes the I/O setting parameter. This is displayed only when MR-J3-□A or MR-J4-□A is connected.

4) Cursor keys
Select a servo parameter setting item, or scroll the parameter item display area by one page.

5) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

6) [Cancel Print] key

The touch operation of this key is invalid.

POINT

Operations of when [default] is executed for the MR-J3-□A parameters

The operation when [default] 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.

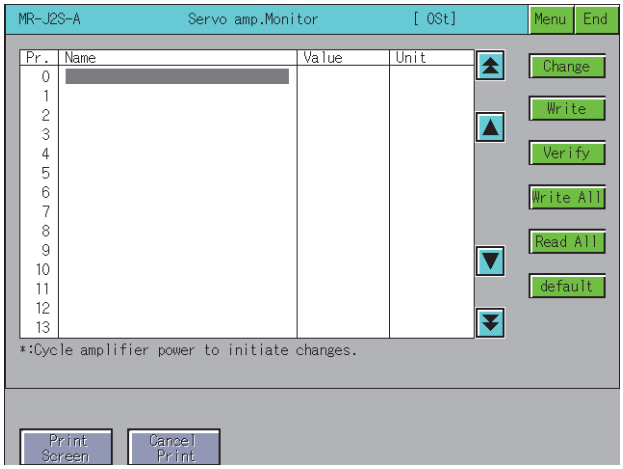
(2) I/O setting parameter screen

The 000CH processing (reference/writing is possible for all parameters) is performed.

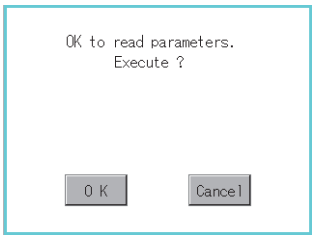
■3. Parameter setting operation

The following describes the procedure of changing the setting of the "Auto tuning" item as an example of the parameter setting operation.

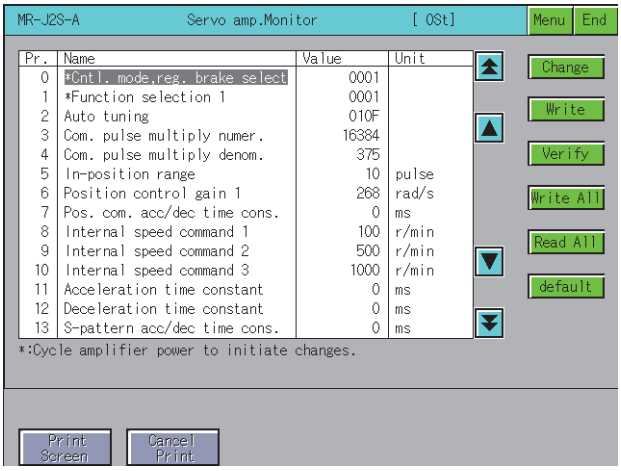
Step 1. Touch the [Read All] key.
The parameter values within the servo amplifier are displayed on the screen.



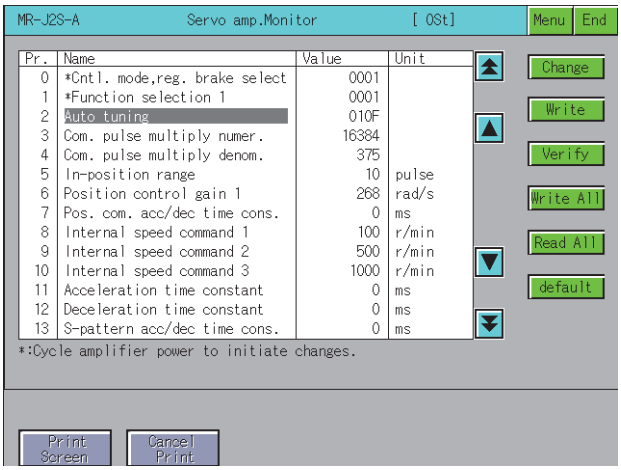
Step 2. The parameter read confirmation window is displayed.
Touch the [OK] key to read the parameter values within the servo amplifier to the GOT.



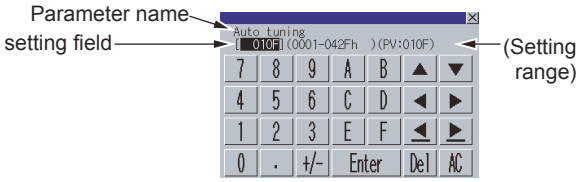
Step 3. The read parameter values within the servo amplifier are displayed on the screen.
Parameters that cannot be written or read are not displayed on the parameter setting screen.



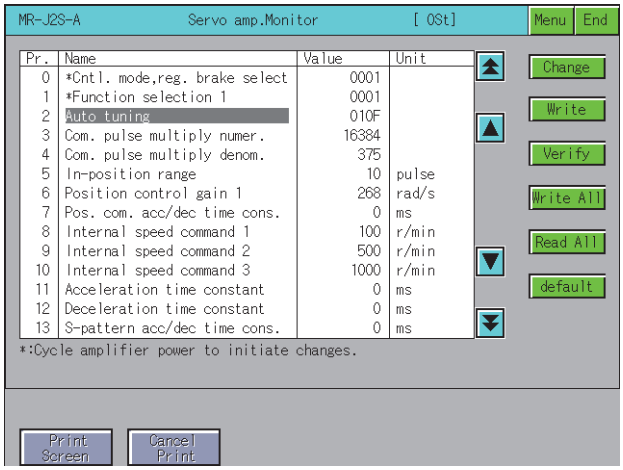
Step 4. Select a parameter setting item to be set by using the cursor keys, and touch the [Change] key.



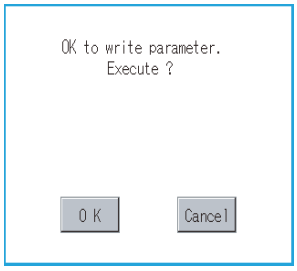
Step 5. As the parameter setting window appears, enter the parameter setting with alphanumeric keys, and touch the [Enter] key to confirm the setting.
To cancel the parameter setting operation, touch [×] key to close the parameter setting window.



Step 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.



Step 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) Storage destination of new parameter settings
New parameter settings 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) Precautions for changing the parameter setting
If the following parameter settings are changed on the servo amplifier, also change the settings on the GOT setup screen in the same way.

➠ 9.4.2 Setup

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

9.4.7 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.

  ➠ ■4. 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.

  ➠ ■5. 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.

  ➠ ■6. 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.

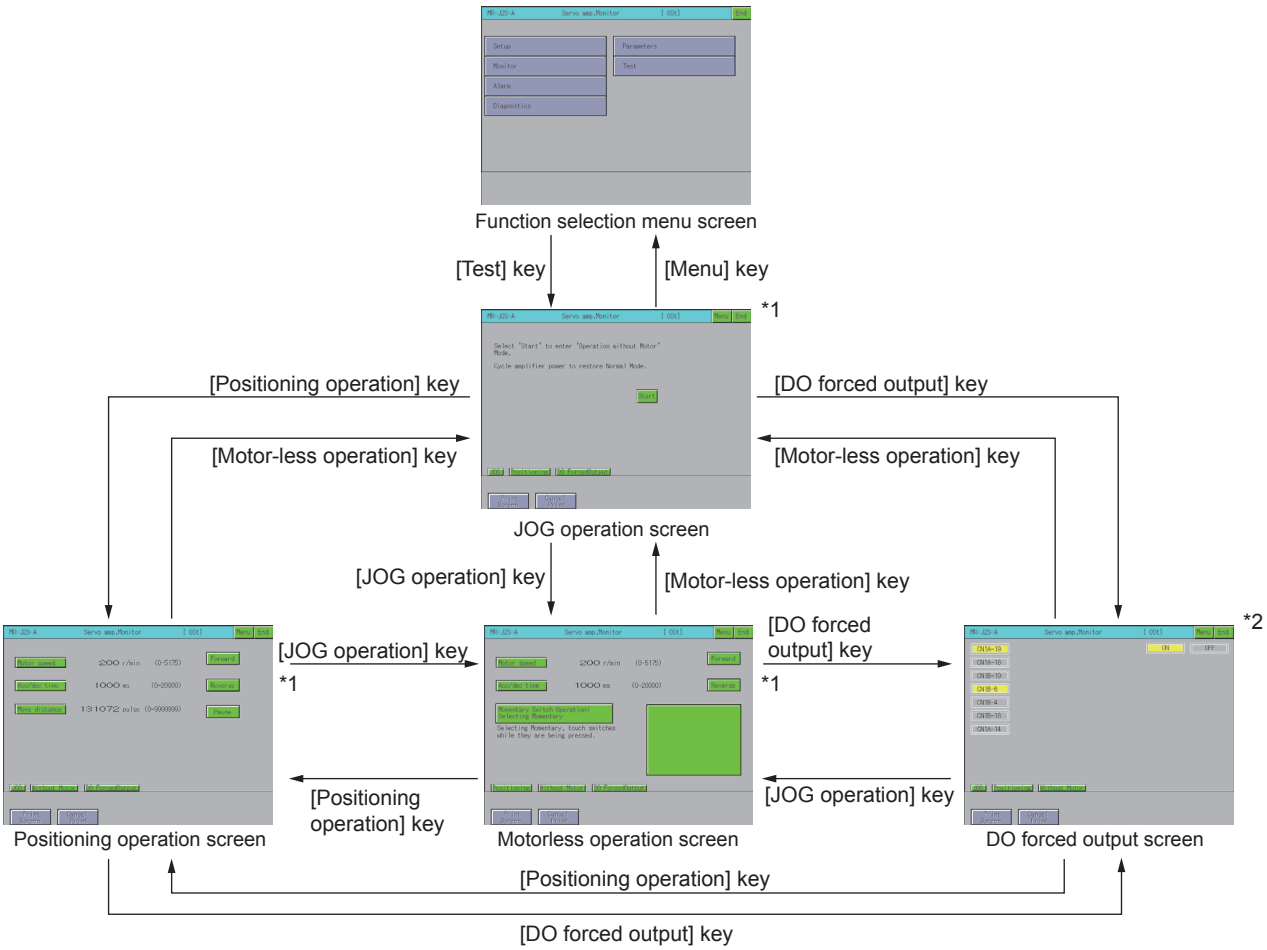
  ➠ ■7. DO forced output screen

■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.

➠ 9.2.1 ■4. List of servo amplifier types that can be monitored and functions

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.



*1 This is not displayed when monitoring the MR-J2M-P8A.

*2 This is not displayed when MR-J2M-□DU is monitored.

■2. 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] key or [Reverse] key on the JOG operation screen or positioning operation screen of the servo amplifier monitor.

(2) Stop

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] key 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.

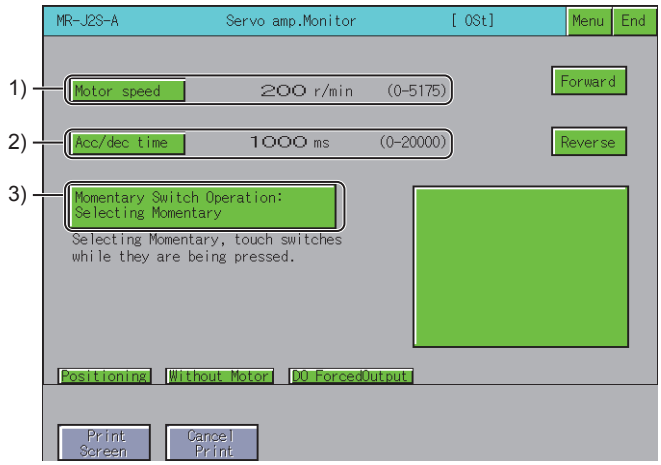
■3. Preparations for test operations

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.

■4. 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



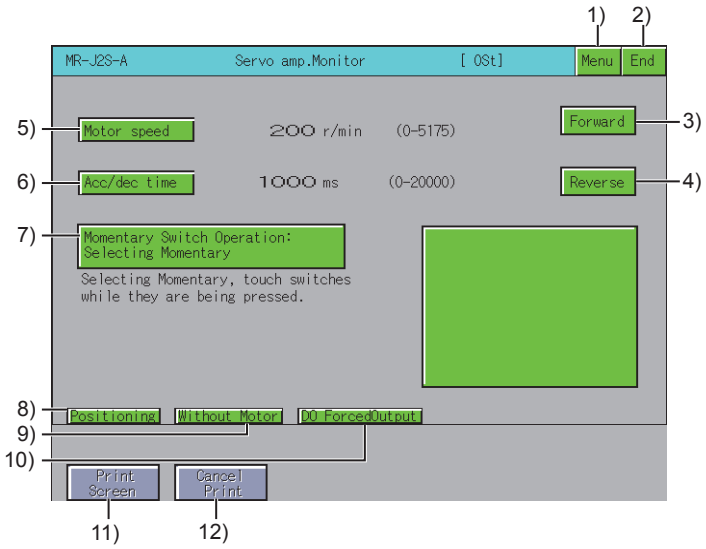
1) [Motor speed]
Displays the set speed of the servo motor.

2) [Acc/dec time]
Displays the set acceleration/deceleration time constant.

3) Momentary Switch Operation
Displays how to operate the JOG operation.

(2) Key functions

The table below shows the functions of the keys that are used for the operations of the JOG operation screen.



1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) [Forward] key
Runs the servo motor in the forward rotation (CCW) direction.

4) [Reverse] key
Runs the servo motor in the reverse rotation (CW) direction.

5) [Motor speed] key
Changes the speed of the servo motor.

6) [Acc/dec time] key
Changes the acceleration/deceleration time constant.

7) [Momentary Switch Operation: Selecting Momentary] key, [Momentary Switch Operation: Not Selecting Momentary] key
Touching this changes the operation mode (momentary operation/no momentary operation).
- [Momentary Switch Operation: Selecting Momentary]
  The servo motor rotates while the [Forward] key or [Reverse] key is touched.
  Releasing your finger from these keys stops the operation.
- [Momentary Switch Operation: Not Selecting Momentary]
  The servo motor rotates while the [Forward] key or [Reverse] key is touched, stops when the [Pause] key is touched.

8) [Positioning] key
Changes to the positioning operation screen.

➠ ■5. Positioning operation screen

9) [Without Motor] key
Changes to the motor-less operation screen.

➠ ■6. Motor-less operation screen

10) [DO ForcedOutput] key
Changes to the DO forced output screen.

➠ ■7. DO forced output screen

11) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

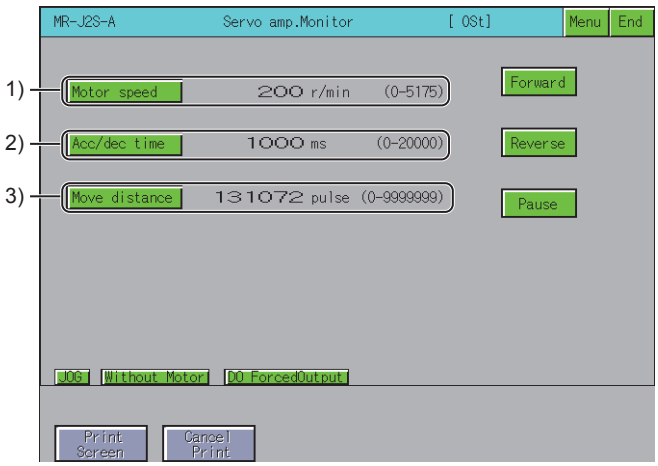
➠ 9.4.8 Hard copy output

12) [Cancel Print] key
The touch operation of this key is invalid.

■5. 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



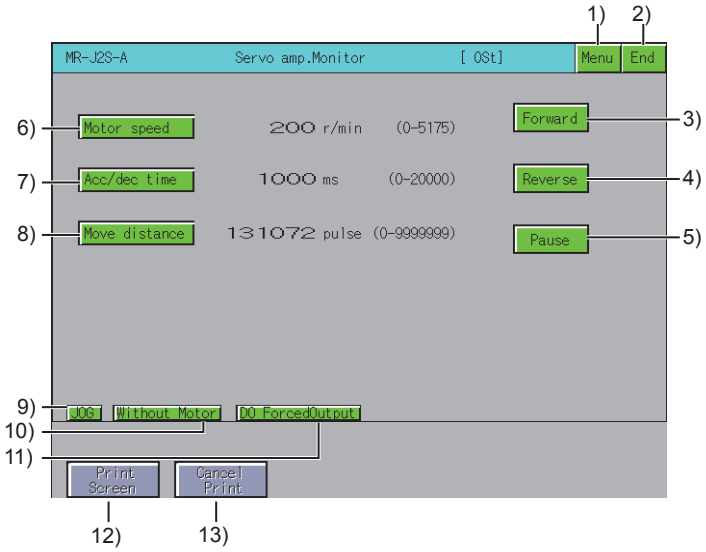
1) [Motor speed]
Displays the set speed of the servo motor.

2) [Acc/dec time]
Displays the set acceleration/deceleration time constant.

3) Move distance
Displays the set distance.

(2) Key functions

The table below shows the functions of the keys that are used for the operations of the positioning operation screen.



1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) [Forward] key
Runs the servo motor in the forward rotation (CCW) direction.

4) [Reverse] key
Runs the servo motor in the reverse rotation (CW) direction.

5) Operation key
The displayed key varies depending on the connected servo amplifier.

Item	Description
[Pause] key	Stops the rotation of the servo motor temporarily. This is displayed only when MELSERVO-J2-Super series or MELSERVO-J2M series is connected.
[Restart] key	Resumes the rotation of the paused servo motor. This is displayed only when MR-J3-□A series or MR-J4-□A is connected.
[Clear] key	Deletes the remaining distance of the paused servo motor. This is displayed only when MR-J3-□A series or MR-J4-□A is connected.

6) [Motor speed] key
Changes the rotation speed of the servo motor.

7) [Acc/dec time] key
Changes the acceleration/deceleration time constant.

8) [Move distance] key
Changes the distance.

9) [JOG] key
Changes to the JOG operation screen.

➠ ■4. JOG operation screen

10) [Without Motor] key
Changes to the motor-less operation screen.

➠ ■6. Motor-less operation screen

11) [DO ForcedOutput] key
Changes to the DO forced output screen.

➠ ■7. DO forced output screen

12) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

13) [Cancel Print] key

The touch operation of this key is invalid.

(3) 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.

■6. 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

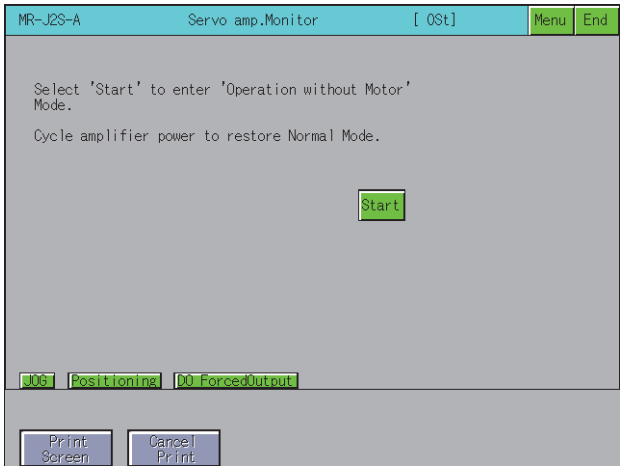
Start and end of the motor-less operation with MR-J4-□A.

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.

➠ 9.4.6 ■2. Parameter setting screen

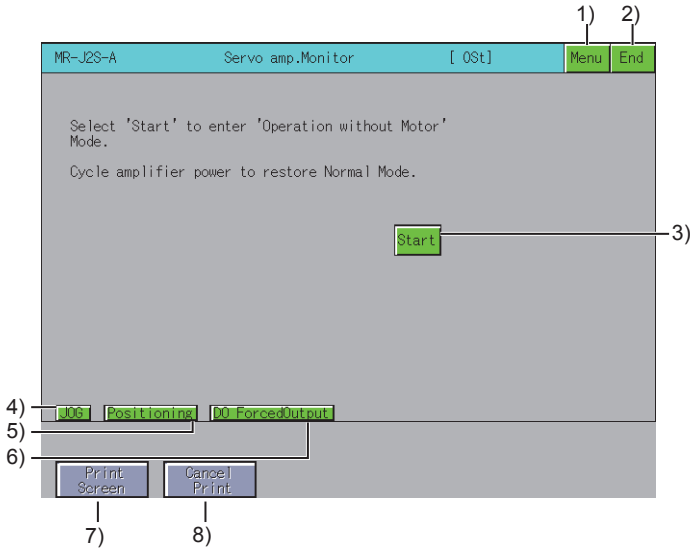
- Start:
  After setting PC60 (*COPD) to 1, turn on the servo amplifier again.
- End:
  After setting PC60 (*COPD) to 0, turn on the servo amplifier again.

(1) Displayed contents



(2) Key functions

The table below shows the functions of the keys that are used for the operations of the motor-less operation screen.



1) [Menu] key
Returns to the function selection menu screen.

2) [End] key
Exits the servo amplifier monitor.

3) [Start] key
Starts motor-less operation.

4) [JOG] key
Changes to the JOG operation screen.

➠ ■4. JOG operation screen

5) [Positioning] key
Changes to the positioning operation screen.

➠ ■5. Positioning operation screen

6) [DO ForcedOutput] key
Changes to the DO forced output screen.

➠ ■7. DO forced output screen

7) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

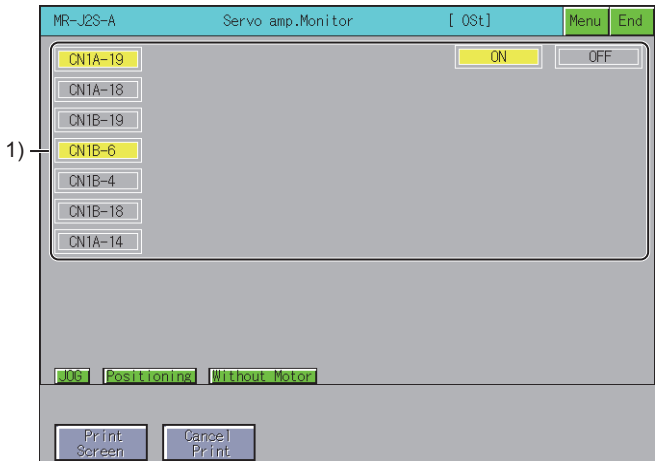
➠ 9.4.8 Hard copy output

8) [Cancel Print] key
The touch operation of this key is invalid.

■7. 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

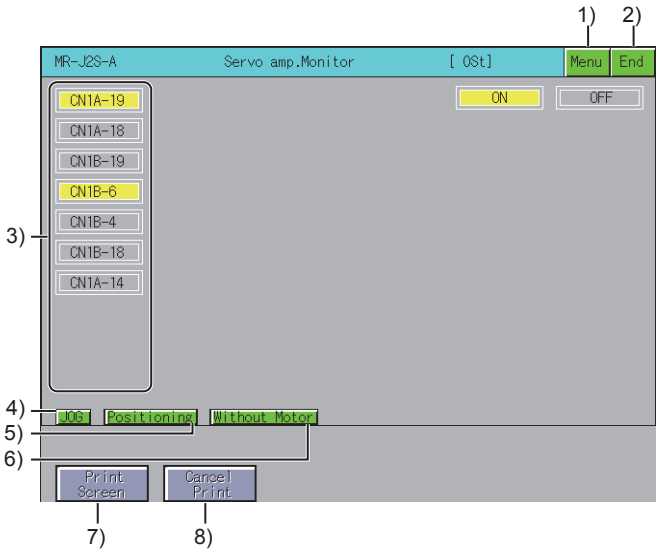


1) ON/OFF status of output signals

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) Key functions

The table below shows the functions of the keys used for the operations of the DO forced output screen.



1) [Menu] key

Returns to the function selection menu screen.

2) [End] key

Exits the servo amplifier monitor.

3) Output signal key

Item	Description
Output signal name key	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 the present output signal is OFF, the signal is turned on (SET).
[DO1]	Displays the external output signals of the extension I/O unit. This is displayed only when the MR-J2M-P8A is connected.

4) [JOG] key

Changes to the JOG operation screen.

➠ ■4. JOG operation screen

5) [Positioning] key
Changes to the positioning operation screen.

➠ ■5. Positioning operation screen

6) [Without Motor] key
Changes to the motor-less operation screen.

➠ ■6. Motor-less operation screen

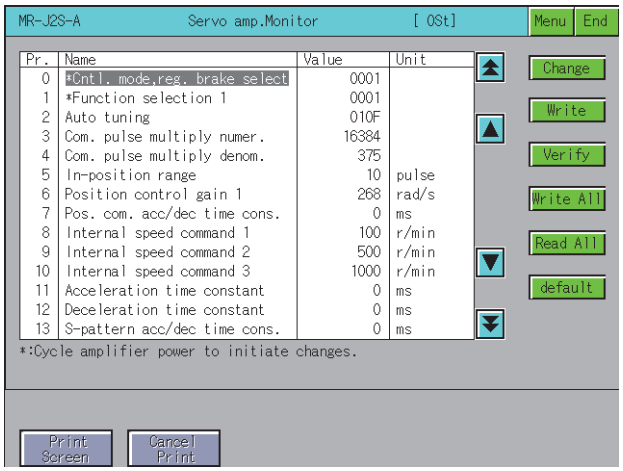
7) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For further information about hard copies, refer to the following:

➠ 9.4.8 Hard copy output

8) [Cancel Print] key
The touch operation of this key is invalid.

9.4.8 Hard copy output

This section describes how to store the screen to the SD card in the BMP or JPEG file format when the servo amplifier monitor is executed.
Hard copy output operations are performed by touching the [Print Screen] or [Cancel Print] key.



The output target of hard copy can be set in [Hard Copy] of GT Designer3 (GOT2000).
For details of hard copy setting, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

9.5 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.	• Check the connection state between the servo amplifier and the GOT (connector disconnection, cable wire break). • Check if an error has occurred in the servo amplifier. • Set the same values to the setup screen on the servo amplifier monitor and the parameter setting on the servo amplifier.
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 entered password is invalid.	Input the correct password.
Can't write to servo amp. Normally.	Failed to write the parameter.	Check the write data. Check the setup information.
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.	• MR-J2M-P8A, MR-J3-□A, or MR-J4-□A was selected with the station No. selection setting set to [No]. • A channel with no station number was selected for the MR-J2M-P8A.	• Set the station No. selection setting to [Yes]. • Select a channel with a station number.

10. BACKUP/RESTORATION

GT27 GT25 GT23 GT21 Soft GOT2000

For using the backup/restoration function on GT21, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

10.1 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/restoration function.

POINT

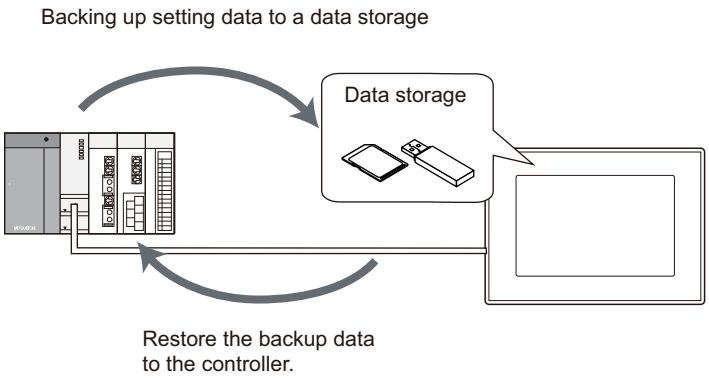
GOT backup

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)

■1. 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.

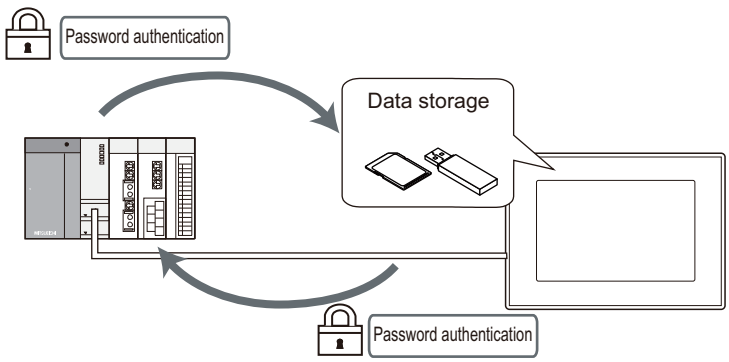


■2. Enabling creating the same system without personal computer

With restoring the backed up setting data to controllers in other systems, the same system can be created without a personal computer.

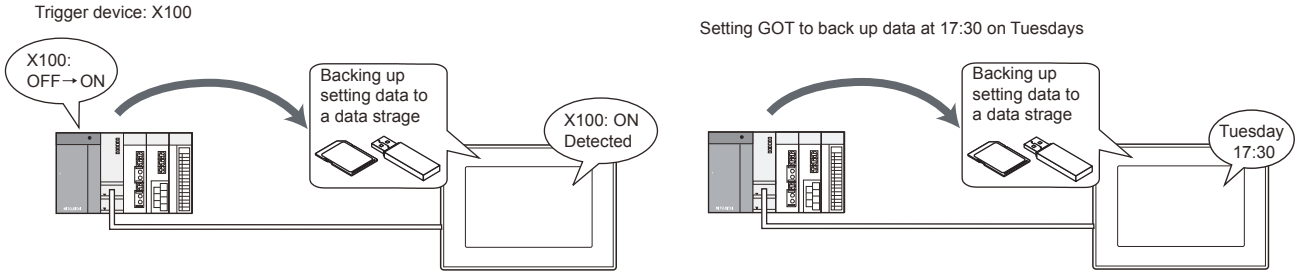
■3. Improving security

When the backup/restoration function is used, browsing and changing setting data is limited with a password and the security is improved.



■4. Automatically backing up data with trigger

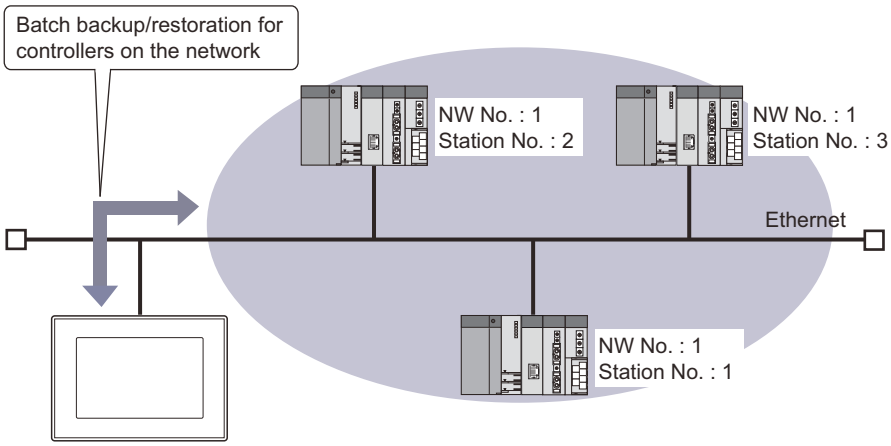
By setting the trigger device or the days and time, the GOT can automatically back up setting data for controllers.
By controlling the backup with the set trigger device, the GOT can automatically back up setting data for controllers after the data are changed.
By setting the days and time, the GOT can back up setting data for controllers periodically.



■5. 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.

➠ 10.3.4 Network batch backup/restoration



■6. File register information at restoration

When restoration is executed, the PLC retains the data in the file register.
For the QCPU, the memory card ROM (Flash) cannot be set to save the file register.

10.2 Specifications

10.2.1 System configuration

This section describes the system configuration for the backup/restoration function.
For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

Controller *1		Model
RCPU		R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R08PCPU, R16PCPU, R32PCPU, R120PCPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU
Motion controller CPU (MELSEC iQ-R Series)		R16MTCPU, R32MTCPU, R64MTCPU
MELSEC iQ-F		FX5U, FX5UC
QCPU (Q mode)	Basic model *2	Q00JCPU, Q00CPU, Q01CPU
	High Performance model *2	Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU
	Universal model	Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU, Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU
Motion controller CPU (Q series) *3*4		Q172CPU, Q173CPU, Q172HCPU, Q173HCPU, Q172DCPU, Q172DCPU-S1, Q173DCPU, Q173DCPU-S1, Q172DSCPU, Q173DSCPU, Q170MCPU, Q170MCPU-S1, Q170MSCPU, Q170MSCPU-S1
LCPU		L02CPU, L06CPU, L26CPU, L26CPU-BT, L26CPU-PBT, L02CPU-P, L02SCPU
FXCPU *5		FX0, FX0S, FX0N, FX1, FX2, FX2C, FX1S, FX1N, FX1NC, FX2N, FX2NC, FX3U, FX3UC, FX3G, FX3GC, FX3S
CNC C80		R16NCCPU
CNC C70		Q173NCCPU
MELSERVO-J4 series		MR-J4-GF
FR-A series		FR-A800 series *6*7, FR-A800 Plus series *6*8
FR-F series		FR-F800 series
Robot controller *9		CRnQ-700 (Q172DRCPU), CR750-Q (Q172DRCPU), CR751-Q (Q172DRCPU), CRnD-700, CR750-D, CR751-D, CR800-R (R16RTCPU), CR800-D, CR800-Q (Q172DSRCPU)

*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 Electric Products) For GT Works3 Version1

*2 Use a PLC CPU with the function version of B or later.

*3 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

*4 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)

*5 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

*6 This controller is supported only when it is equipped with an FR-A8NCE.

*7 FR-A800-GF does not require an FR-A8NCE because the FR-A800-GF has a built-in communication board for the CC-Link IE Field Network.

*8 FR-A800-R2R is not supported.

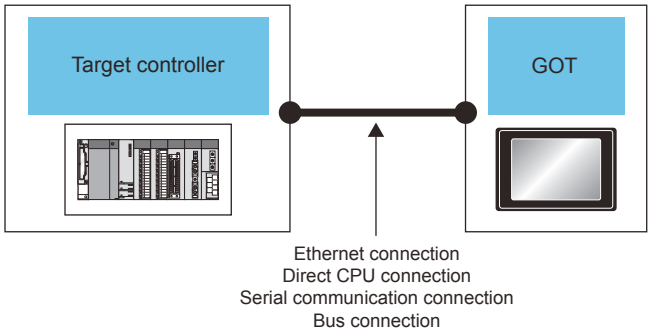
*9 For using CRnQ-700 or CRnD-700, use robot controllers with the following versions or later.

Robot controller	Version
CRnQ-700	N8 or later
CRnD-700	P8 or later

■2. Connection type

This function can be used in the following connection types.

(1) PLC CPU, motion controller CPU, CNC, and robot controller



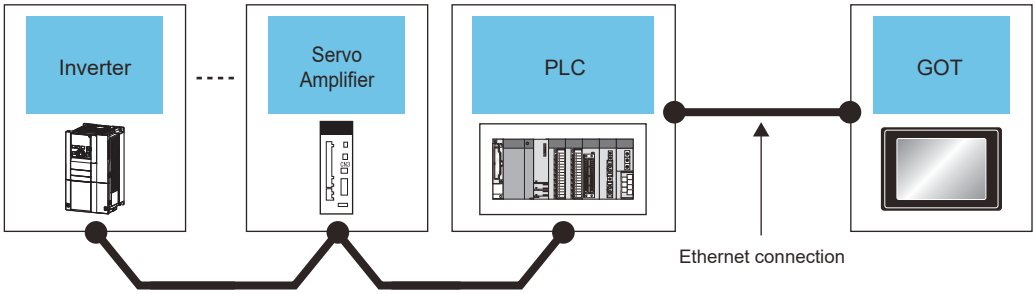
(○: Applicable, ×: Inapplicable)

Target controller	Connection type between the GOT and controller			
	Ethernet connection *1	Direct CPU connection	Serial communication connection	Bus connection
RCPU	○	×	○	×
MELSEC iQ-F	○	○	×	×
Motion controller CPU(MELSEC iQ-R Series)	○	×	○	×
QCPU(Q mode)	○	○	○ *2	○ *3
Motion controller CPU(Q Series)	○	○	○	○
LCPU	○	○ *4	○	×
FXCPU	○	○	×	×
CNC C80	○	×	○	×
CNC C70	○	○	○	○
Robot controller	○	○	○	○

*1 Backup/restoration cannot be used when using CC-Link IE field network Ethernet adapter.
*2 The restoration cannot be performed to a QCPU with the factory-settings or whose memory is formatted.
*3 When the multiple CPU system is used, the restoration cannot be performed to a QCPU with the factory-settings or whose memory is formatted.
*4 When the GOT is connected to LCPU, use L6ADP-R2.

(2) Inverter and servo amplifier

The backup/restoration is usable for an inverter or servo amplifier that is connected to the GOT through a PLC CPU (master station). The inverter or servo amplifier must be connected to the PLC CPU on the CC-Link IE Field Network. Connect the GOT and the PLC CPU by Ethernet.



Target controller	Intelligent function module	PLC	GOT
FR-A series *9*12 FR-F series *9*12	RJ71GF11-T2 *1, RJ71EN71 *1	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU R08PCPU, R16PCPU, R32PCPU, R120PCPU	GT27, GT25
	RD77GF4 *2, RD77GF8 *2, RD77GF16 *2, RD77GF32		
	- (Ethernet port built in the PLC CPU)	R04ENCPU *3, R08ENCPU *3, R16ENCPU *3, R32ENCPU *3, R120ENCPU *3	
	QJ71GF11-T2 *10, QD77GF4, QD77GF8, QD77GF16 *8	Q00UJCPU *4, Q00UCPU *4, Q01UCPU *4, Q02UCPU *4, Q03UDCPU *4, Q04UDHCPU *4, Q06UDHCPU *4, Q10UDHCPU *4, Q13UDHCPU *4, Q20UDHCPU *4, Q26UDHCPU *4, Q03UDECPU *4, Q04UDEHCPU *4, Q06UDEHCPU *4, Q10UDEHCPU *4, Q13UDEHCPU *4, Q20UDEHCPU *4, Q26UDEHCPU *4, Q50UDEHCPU *4, Q100UDEHCPU *4, Q03UDVCPU *4, Q04UDVCPU *4, Q06UDVCPU *4, Q13UDVCPU *4, Q26UDVCPU *4, Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, Q26UDPVCPU, Q06CCPU-V *5, Q06CCPU-V-B *5, Q12DCCPU-V *6, Q24DHCCPU-V, Q24DHCCPU-LS, Q26DHCCPU-LS	
	LJ71GF11-T2 *11	L02SCPU *7, L02SCPU-P *7, L02CPU *7, L02CPU-P *7, L06CPU *7, L06CPU-P *7, L26CPU *7, L26CPU-P *7, L26CPU-BT *7, L26CPU-PBT *7	

Target controller	Intelligent function module	PLC	GOT
MELSERVO-J4 series *13	RJ71GF11-T2 *1, RJ71EN71 *1	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU R08PCPU, R16PCPU, R32PCPU, R120PCPU	GT27, GT25
	RD77GF4 *2, RD77GF8 *2, RD77GF16 *2, RD77GF32		
	- (Ethernet port built in the PLC CPU)	R04ENCPU*3, R08ENCPU*3, R16ENCPU*3, R32ENCPU*3, R120ENCPU*3	
	QJ71GF11-T2 *10, QD77GF4, QD77GF8, QD77GF16 *8	Q00UJCPU *4, Q00UCPU *4, Q01UCPU *4, Q02UCPU *4, Q03UDCPU *4, Q04UDHCPU *4, Q06UDHCPU *4, Q10UDHCPU *4, Q13UDHCPU *4, Q20UDHCPU *4, Q26UDHCPU *4, Q03UDECPU *4, Q04UDEHCPU *4, Q06UDEHCPU *4, Q10UDEHCPU *4, Q13UDEHCPU *4, Q20UDEHCPU *4, Q26UDEHCPU *4, Q50UDEHCPU *4, Q100UDEHCPU *4, Q03UDVCPU *4, Q04UDVCPU *4, Q06UDVCPU *4, Q13UDVCPU *4, Q26UDVCPU *4, Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, Q26UDPVCPU, Q06CCPU-V *5, Q06CCPU-V-B *5, Q12DCCPU-V *6, Q24DHCCPU-V, Q24DHCCPU-LS, Q26DHCCPU-LS	
	LJ71GF11-T2 *11	L02SCPU *7, L02SCPU-P *7, L02CPU *7, L02CPU-P *7, L06CPU *7, L06CPU-P *7, L26CPU *7, L26CPU-P *7, L26CPU-BT *7, L26CPU-PBT *7	

*1 Use a module with version 09 or later.
*2 Use a module with version 02 or later.
*3 Use a module having version 09 or later of the network part.
*4 The serial number must start with 12012 or later.
*5 The serial number must start with 12082 or later.
*6 For a basic mode, the serial number must start with 12042 or later.
*7 The serial number must start with 13012 or later.
*8 The serial number must start with 17102 or later.
*9 For connection to a MELSEC-Q or MELSEC-L series, the inverter must be version *83****** or later.
*10 The serial number must start with 17062 or later.
*11 The serial number must start with 16072 or later.
*12 For connection to a MELSEC iQ-R series, the inverter must be version *62****** or later.
*13 For MR-J4-GF, its OS version must be A1 or later.

■3. Required hardware

A data storage is required to use the backup/restoration.

■4. Applicable hardware

A USB mouse is usable.

■5. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the backup/restoration to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■6. Required software to be installed

To restore the C language module backed up from the CNC C70, Remote Monitor Tool is required.

(1) How to obtain the software

Contact your local distributor.

(2) Operating environment

For the operating environment of the software, refer to the following.

➠ MITSUBISHI CNC C70 / C64 Series Remote monitor tool Operating Manual

■7. 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 RCPU

Item	Description	File name
Parameter	CPU parameter	CPU.PRM
	System parameter	SYSTEM.PRM
	Unit parameter	UNIT.PRM
	Unit expansion parameter	UEXmmmnn.PRM *1
Sequence program	Sequence program	*.PRG
	FB file]	*.PFB
Device comment	Device comment to be stored in a programmable controller	*.DCM
Device initial value	Setting the device initial value	*.DID
Device memory *2	File register	*.QDR
General-purpose file	Files created by users	Optional
Device data file	File for storing device data	DEVSTORE.QST
Global label setting file	File for storing the data related to global labels	GLBLINF.IFG
Label initial value	File for storing the label initial value	*.LID
Restoration information	File for storing the restoration information	*.CAB
Logging setting file	Logging individual setting file	LOG01.LIS to LOG10.LIS
Remote password	Remote password settings	00000001.SYP

*1 Numbers are assigned for the "mmmnn" part automatically.
*2 Whether to retain the file register of a PLC at restoration is selectable.

➠ 10.3.1 Setting storage location for backup data

(2) Basic model QCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter *2	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 *1*3	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.
Whether the file register in the SRAM card or standard RAM is restored or not can be selected in a dialog displayed at restoration.
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 target is only parameters of the intelligent function modules controlled by the CPU module.
The parameters stored in the intelligent function module are not included.
*3 Whether to retain the file register of a PLC at restoration is selectable.

➠ 10.3.1 Setting storage location for backup data

(3) High Performance model QCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter *3	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 *1*4	Data stored in file registers	***.QDR
Sampling trace file *2	Sampling trace data that the specified device data is continuously collected with the specified timing	***.QTD
Failure history data *2	Failure history data that are recorded self-diagnostic results	***.QFD
Programmable controller user data	Any user-created data stored in a memory card	***.*** (Optional)
Operation history file *5	Operation history data that are collected by the operation history function	OPERATE.QOL

*1 The file register in the Flash card installed in the CPU is always restored without confirming saving.
Whether the file register in the SRAM card or standard RAM is restored or not can be selected in a dialog displayed at restoration.
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 The target is only parameters of the intelligent function modules controlled by the CPU module.
The parameters stored in the intelligent function module are not included.

*4 Whether to retain the file register of a PLC at restoration is selectable.

➠ 10.3.1 Setting storage location for backup data

*5 Only available to QnUD(P)VCPU.

(4) Universal model QCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter *3	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 *1*4	Data stored in file registers	***.QDR
Sampling trace file *2	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.
Whether to restore the file register stored in the SRAM card or standard RAM is selectable in a dialog appearing at restoration.
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 The target is only parameters of the intelligent function modules controlled by the CPU module.

The parameters stored in the intelligent function module are not included.

*4 Whether to retain the file register of a PLC at restoration is selectable.

➠ 10.3.1 Setting storage location for backup data

(5) LCPU

Item	Description	File name
Parameter	Parameter for operating a programmable controller	PARAM.QPA
Intelligent function module parameter *3	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 *1*4	Data stored in file registers	***.QDR
Sampling trace file *2	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.
Whether the file register in the SRAM card or standard RAM is restored or not can be selected in a dialog displayed at restoration.
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 The target is only parameters of the intelligent function modules controlled by the CPU module.
The parameters stored in the intelligent function module are not included.

*4 Whether to retain the file register of a PLC at restoration is selectable.

➠ 10.3.1 Setting storage location for backup data

(6) MELSERVO-J4 series

Item	Description	File name
Parameter	Parameter for operating a servo amplifier	***.CP1
Point table	Point table data	***.PTB2
Cam data *1*2*3*4	Cam data	***.cam

*1 When the simple cam function is disabled, cam data can only be restored.

*2 Cam data cannot be restored to a servo amplifier having software version A2 or earlier that does not support the simple cam function.

*3 Restore cam data after the network communication between a servo amplifier and the controller is established.
Set the servo parameter [Pr. PN03 Station-specific mode setting] to □□□1 to select the I/O mode.

*4 Power off and on the servo amplifier before restoring cam data again.
Otherwise, [AL.F5.2 Cam data - Area miswriting warning] occurs.

(7) Motion controller CPU (MELSEC iQ-R Series)

Item	Description	File name
Common parameter	CPU parameter	CPU.PRM
	System parameter	SYSTEM.PRM
	Unit parameter	UNIT.PRM
Motion CPU common parameter	Basic setting	mot_sys.csv
	Servo network setting	motnet01.csv to motnet02.csv
	High-speed input request signal setting	fsinput.csv
	Mark detection setting	markdt.csv
	Limit output data setting	limitout.csv
	Manual pulse generator connection setting	mpulser.csv
	Vision system parameter	vs_sys.csv vs_prg.csv
	Head module setting	rioref.csv
	Multiple CPU refresh (main cycle, operation cycle) setting	fastref.csv
Motion control parameter	Axis setting parameter	axpara01.csv to axpara64.csv
	Servo parameter (servo amplifier axis)	svpara01.csv to svpara64.csv
	Servo parameter (sensing module (RIO axis))	svpara91.csv to svpara98.csv
	Parameter block	para_blk.csv
	Machine common parameter file	mcn_com.csv
	Machine parameter file	mcn01.csv to mcn08.csv
	Cam data	cam0001.csv to cam1024.csv
	Servo input axis parameter	in_servo.csv
	Synchronous encoder axis parameter	in_enc.csv
	Command generation axis parameter	in_cmgen.csv
	Synchronous parameter	out01.csv to out64.csv
	Machine CPU advanced synchronous control setting file	cpu_sync.csv
Program	Online change file (arithmetic control program)	df_f0000.prg to df_f4095.prg
	Online change file (transition program)	df_g0000.prg to df_g4095.prg
	Online change file (servo program)	df_k0000.prg to df_k8191.prg *2
	Online change file (motion SFC diagram)	df_sf000.prg to df_sf511.prg *3
	Servo program	servo2.prg *4
	Motion SFC parameter	motsfcpr2.bin *5
	Motion SFC program	motsfc2.prg *6

Item	Description	File name
Other data	Digital oscilloscope sampling data	***.csv *1
	Digital oscilloscope setting	osc01.csv
	Boot log	bootlog.txt bootlog.bak (previous boot log)
	Event history	EVENT.LOG
	Device comment file	DEVCMNT.DC2 *7
	Label and structure file	GL_LABEL.IF2 *8

*1 Numbers are assigned for the "****" part automatically.
*2 For version 09 or earlier of the operating system software, files df_k0000.prg to df_k4095.prg are applied.
*3 For version 09 or earlier of the operating system software, files df_sf000.prg to df_sf255.prg are applied.
*4 For version 09 or earlier of the operating system software, servo.prg is applied.
*5 For version 09 or earlier of the operating system software, motsfcpr.bin is applied.
*6 For version 09 or earlier of the operating system software, motsfc.prg is applied.
*7 For version 02 or earlier of the operating system software, DEVCMNT.IFG is applied.
*8 For version 02 or earlier of the operating system software, GL_LABEL.DCM is applied.

(8) MELSEC iQ-F

Item	Description	File name
Parameter	CPU parameter	CPU.PRM
	System parameter	SYSTEM.PRM
	Unit parameter	UNIT.PRM
	Unit expansion parameter	UEXmmmnn.PRM
Sequence program	Sequence program	*.PRG
	FB file]	*.PFB
Device comment	Device comment to be stored in a programmable controller	*.DCM
Device initial value	Setting the device initial value	*.DID
Global label setting file	File for storing the data related to global labels	GLBLINF.IFG
Restoration information	File for storing the restoration information	*.CAB
Logging setting file *1	Logging individual setting file	LOG**.LIS
Memory dump setting file *1	Memory dump function setting file	MEMDUMP.DPS
Remote password *1	Remote password settings	00000001.SYP
Module extension parameter (for protocol setting)	File for storing the parameters of the predefined protocol support setting	.PPR
Firmware update prohibited file	File for prohibiting the firmware update of the PLC	FWUPDP.SYU

*1 If the file is password-protected, the file cannot be backed up.

(9) 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 *1
		sfcprm.bin *2
K code file	Internal code files of servo program	svprog.bin
System setting data file	System setting data information files	svsystemD.bin *1
		svsystemH.bin *3
		svsystem.bin *4
High speed read setting file	High speed read setting information files	svlatchD.bin *1
		svlatch.bin *2
Optional data monitor setting file	Optional data monitor information files	svsysmonD.bin *1
		svsysmon.bin *2
Servo data file	Axis data parameter block information files	svdataD.bin *1
		svdataH.bin *3
	Servo parameter information files	svparaH.bin *6
	Servo parameter information files	svdata.bin *4
		svdata2.bin *4
	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 *5
Cam data conversion file	Cam data files of cam No.1 to 64	svcamprm.bin *5
	Cam data files of cam No.101 to 164	svcampr2.bin *5
	Cam data files of cam No.201 to 264	svcampr3.bin *5
	Cam data files of cam No.301 to 364	svcampr4.bin *5
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 *1

*1 The data can be backed up or restored only with the Q172DCPU, Q173DCPU, Q170MCPU, 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, Q170MCPU, or Q170MSCPU.

(10) FR-A800 series, FR-A800 Plus series, and FR-F800 series

Item	Description	File name
Parameter	Parameter for operating an inverter	***.CP1
Parameter file	PLC function parameter	***.QPA
Program file	Sequence program	***.QPG
Function block source information	Function block source information	***.C32
Global text comment information	Global text comment information	***.QCD

(11) 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 *1	Positioning setting/Initial value parameter	
File register	Data stored in file registers	
Extension file register *2	Data stored in extension file registers	
Built-in CC-Link/LT setting *3	CC-Link/LT parameter	
Special parameter *4	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.
*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.
*4 The data can be backed up or restored with the FX3U(C) series, FX3G(C) series, and FX3S series.

(12) CNC C70

Item	Description	File name
Machining program	Program for running the CNC	ALL.PRG
Parameter	Parameter for operating the CNC	ALL.PRM
Tool offset	Offset of the tool length compensation and tool radius compensation	TOOL.OFS
Workpiece offset	Offset of the workpiece coordinate system from the machine coordinate system	WORK.OFS
Common variable	Common macro variables that can be used in different machining programs	COMMON.VAR
User PLC	Ladder program created by users	USERPLC.LAD
C language module *1	C language module created by users	APLC.O

*1 The data can be backed up or restored only when the version C4 or later of the CNC C70 is used.
To restore the data, use the version C0 or later of Remote Monitor Tool.

(13) CNC C80

Item	Description	File name
System file	File used for the system	SYSPRM.BIN
Parameter	Parameter for operating the CNC	ALL.PRM
Machining program	Program for running the CNC	ALL.PRG
	Program for running the CNC (extended area)	ALL2.PRG *3
Machine manufacturer macro	Machine manufacturer macro program file	MACROALL.BIN
MDI program	MDI program file	MDIALL.PRG
Tool offset *1	Offset of the tool length compensation and tool radius compensation	TOOL.OFS
All tool data	All tool data including tool life and tool length compensation data	TOOLALL.DAT
Workpiece offset	Offset of the workpiece coordinate system from the machine coordinate system	WORK.OFS
Common variable	Common macro variables that can be used in different machining programs	COMMON.VAR
Safety parameter *2	Safety parameter file	SAFEPARA.BIN
Safety ladder *2	Safety PLC program file (for the host station)	SAFEPLC1.LAD
	Safety PLC program file (for other stations)	SAFEPLC2.LAD
APLC load module	APLC load module	APLC.BIN
SRAM data *1	SRAM data files	SRAM.BIN

*1 The item can be backed up only.

*2 This data cannot be restored when the safety observation function of the CNC is enabled and a safety password is set for the CNC.
Even though you cancel the safety password of the CNC, a write error occurs when the safety passwords of the CNC and the restoration target file are mismatched.

*3 The CNC C80 with version B0 or later supports this file.
Any backup data containing unsupported data by the CNC C80 cannot be restored.
Restore the backup data after updating the CNC C80 to the version that supports the data.

(14) Robot controller

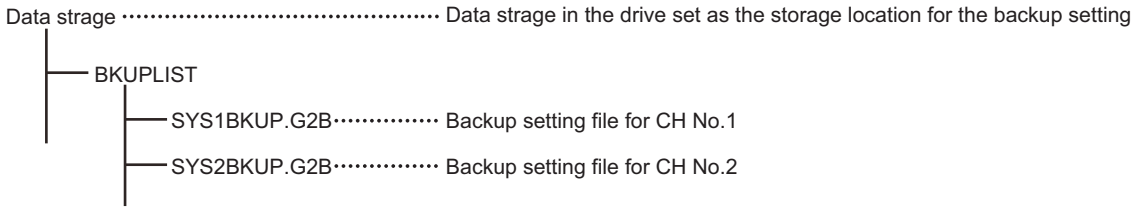
Item	Description	File name
Error log	Error log (all levels)	AError.LOG
	Error log (low level)	LError.LOG
	Error log (caution level)	CError.LOG
	Error log (high level)	HError.LOG
Error count	Total errors	TTLERROR.DAT
Common parameter	Common parameters	COMMON.PRM
Mechanical parameter	Parameter for robots	(Machine name) # (Machine No. 1 to 3).PRM
Backup information	Setting information on backup	BKUP.SYS
Mechanical information	Information on the robot	MECHA.SYS
System program	System based program files	sysalgn.MB6/MB5/MB4
		sysimac.MB6/MB5/MB4
		Sysorg.MB6/MB5/MB4
		Syssafe.MB6/MB5/MB4
		Systembase.MB6/MB5/MB4
User program	User-created robot programs	***.MB5/MB4
Robot serial	Serial No. for robots	RobotSerial.ser
Maintenance forecast information	Information on maintenance forecast	MFInfo.mfb

(15) 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

■8. 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.

➠ 10.3.1 Setting storage location for backup data
GT Designer3 (GOT2000) Screen Design Manual

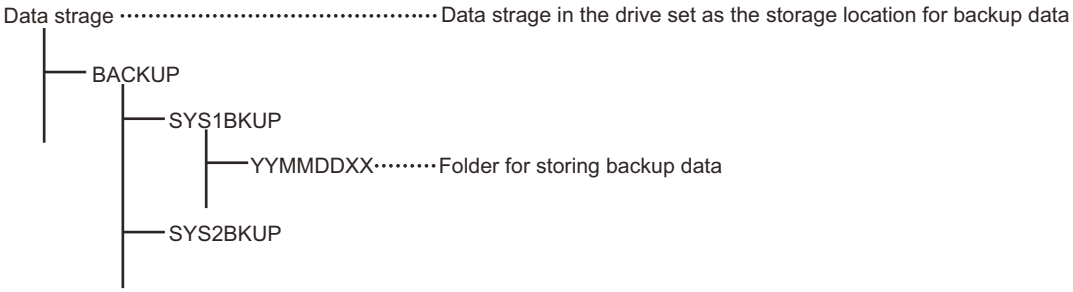
■9. Backup data

(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.

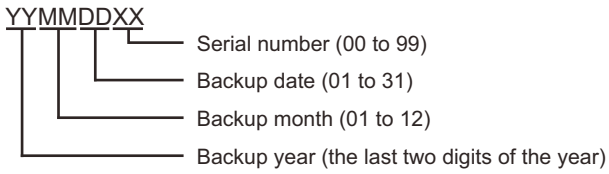


For how to set the storage location for backup data, refer to the following.

➠ 10.3.1 Setting storage location for backup data
GT Designer3 (GOT2000) Screen Design Manual

(3) Folders for backup data

Backup data are stored by the folder, and a folder name (YYMMDDXX) 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.

■10. Log files for backing up or restoring

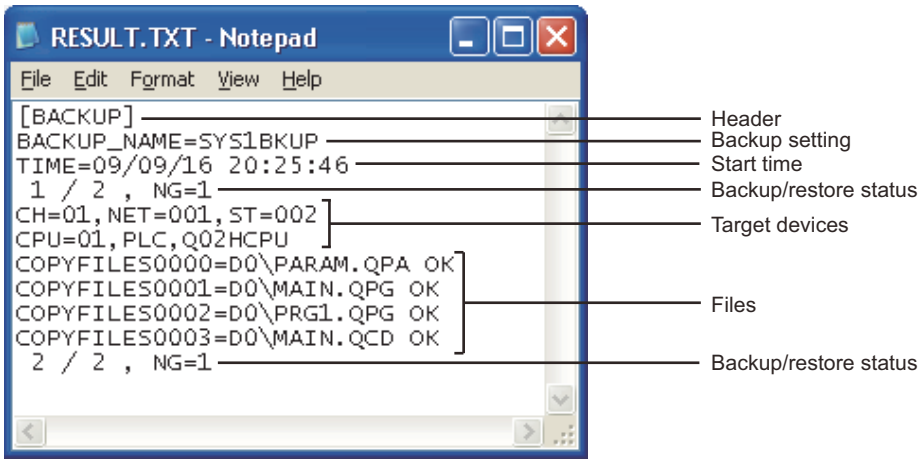
When backing up or restoring, the controllers and files to be baked up or restored are recorded in log files (When backing up or restoring, they are overwritten.)
Log files are created in the folder where each backup data is stored.

➠ 10.2.1 ■9. Backup data

(1) File format

Item	Setting
File name, extension	result.txt
File format	SJIS format

(2) 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. • PLC: PLC CPU • MC : Motion controller • SV : Servo Amplifier • INV : Inverter • RC : Robot controller
Files	Displays the backed up or restored flies.*1
Backup/restoration status	Recorded only when network batch backing up or restoring. Displays the number of controllers which the backup/restoration is completed, the number of all target controllers, the number of controllers which backup/restoration is completed, and the number of errors, by station.

*1 For RCPU, the long file names specified on GX Works3 are displayed in an abbreviated form

10.2.2 Access range

■1. Access range with connection types

The following shows a target controller of the backup/restoration with each connection type.

(1) PLC CPU, motion controller CPU, CNC, and robot controller

Connection type	Target controller
Bus connection, direct CPU connection, serial communication connection	Host station
Ethernet connection	Host station, Other station

(2) Inverter and servo amplifier

The backup/restoration is usable for an inverter or servo amplifier that is connected to the GOT through a PLC CPU (master station). The inverter or servo amplifier must be connected to the PLC CPU on the CC-Link IE Field Network. Connect the GOT and the PLC CPU by Ethernet.
If the inverter or servo amplifier is connected to the RCPU on any other network, the backup/restoration is not usable.

■2. With multi-channel function

With the multi-channel function, the backup/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/restoration is executed with specifying CPU No. 1 to 4, multiple CPUs (CPU No. 1 to 4) can be specified.

10.2.3 Precautions

■1. 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) Screen Design Manual

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/restoration 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)

■2. 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.

■3. Common precautions for backup and restore

(1) Password for backup/restoration

When a password for a controller is changed after setting the password for the backup/restoration, set a new password for the backup/restoration.
For setting the password for the backup/restoration, refer to the following.

➠ 10.3.2 Security and password

(2) Precautions for GT Designer3 (GOT2000)

Do not execute the following operations with GT Designer3 (GOT2000) during the backup/restoration.

- 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/restoration is stopped.

(3) Precautions for GX Developer

(a) Do not access the target controller of the backup/restoration with GX Developer during the backup/restoration.

Doing so stops the backup/restoration.

(b) Do not execute the backup/restoration on the GOT while the target controller of the backup/restoration is accessed by GX Developer.

Doing so causes a communication error on GX Developer. (The backup/restoration is executed.)

(4) Precautions for using multiple GOTs

Do not access the target controller of the backup/restoration with multiple GOTs at the same time.
Doing so stops the backup/restoration.

(5) CPU with a security key

(a) When RCPU or the motion controller CPU (MELSEC iQ-R series) is used

The backup/restoration can be executed even for a CPU module to which a security key is set.

(b) When QnUDVCPU, QnUDPVCPU, Q17nDSCPU, or Q170MSCPU is used

The backup/restoration cannot be executed on the CPU on which the security key is set.
(The RCPU and the motion controller CPU (MELSEC iQ-R series) are excluded.)
To execute the backup/restoration, check the setting of the CPU.
When the target controllers of the backup/restoration include both the CPU with the security key and the CPU without the security key, the backup/restoration is executed only for the CPU without the security key.

(6) Precautions for using the Flash card

In the Flash card, all pieces of backup data created by the backup/restoration function are saved in one file (FlashCard.dat).

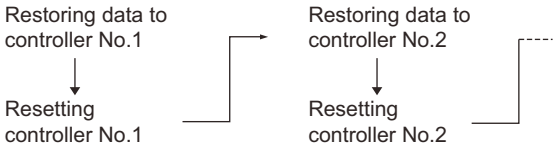
■4. Precautions for QCPU

(1) Restoring data to 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.



(2) QnUD(P)VCPU for which [Disable clearing operation history] is selected

Data cannot be restored to the QnUD(P)VCPU for which [Disable clearing operation history] is selected.
To restore data, deselect [Disable clearing operation history].
Even if [Disable clearing operation history] is selected, data will be restored to the QnUD(P)VCPU when an SD card is specified as the storage destination of the operation history file.
You can back up the data of the QnUD(P)VCPU for which [Disable clearing operation history] is selected.

■5. Precautions for MELSERVO-J4 series

(1) Restoration procedure

Use the rotary switch of a servo amplifier to set the network number and station number that are specified in the controller list file.
For the setting method, refer to the manual of the servo amplifier used.
After the setting, turn off and then on the servo amplifier.
Perform restoration on the GOT.

(2) Engineering tool

The GOT backup/restoration function backs up the data of a servo amplifier to the data storage installed in the GOT. You can read the data from the data storage by using the engineering tool (MR Configurator2 Ver1.52E or later). However, the GOT backup/restoration function cannot restore the data edited with the engineering tool.

(3) Backup

The GOT collectively backs up the data of all the MELSERVO-J4 series servo amplifiers that are specified by their network numbers and station numbers in the controller list file.

(4) Restoration

To restore data to MELSERVO-J4 series servo amplifiers, select target servo amplifiers based on the network numbers and station numbers. All the data for the selected servo amplifiers are restored.
In the absolute position detection system, if you replace a servo amplifier and then restore data to the new one, set the home position again.
After restoration is performed, turn off and then on the servo amplifier.

(5) Backup/restoration availability

The backup/restoration is available in the cases shown below.
(○: Available, ×: Not available)

Operation	While the servo amplifier is in servo-off state	While the servo motor is at a standstill	Other cases
Backup	○	○	×
Restoration	○	×	×

■6. Precautions for MELSEC iQ-F

If you enter an incorrect password 20 times consecutively, the controller will be locked.
To unlock the controller, restart it.
For the trigger backup, if you enter an incorrect password 20 times consecutively, a message saying that the controller has been locked will not appear.

■7. 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/restoration 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.

(5) Compatibility of the backup data from the motion controller CPU (MELSEC iQ-R series)

Restore the following backup data with the operating system software version that operates the motion controller CPU properly after the restoration.

Backup data		Operating system software version that operates the motion controller CPU properly after the restoration *1
Name	File name	
Online change file (servo program)	df_k0000.prg to df_k4095.prg	All versions
	df_k4096.prg to df_k8191.prg	03 or later
Online change file (motion SFC diagram)	df_sf000.prg to df_sf255.prg	All versions
	df_sf256.prg to df_sf511.prg	03 or later
Servo program	servo.prg	All versions
	servo2.prg	03 or later
Motion SFC parameter	motsfcpr.bin	All versions
	motsfcpr2.bin	03 or later
Motion SFC program	motsfc.prg	All versions
	motsfc2.prg	03 or later
Device comment file	DEVCMNT.IFG	All versions
	DEVCMNT.DC2	
Label and structure file	GL_LABEL.DCM	All versions
	GL_LABEL.IF2	

*1 The motion controller CPU may not operate properly when its operating system software version differs between the backup execution and restoration execution.
Use the same version operating system software for the motion controller CPU to execute the backup and restoration.

■8. Precautions for FR-A800 series, FR-A800 Plus series, and FR-F800 series

(1) Restoration procedure

Use the parameter unit (PU) to set the network number and station number that are specified in the controller list file.
For the setting method, refer to the manual of the inverter used.
After the setting, turn off and then on the inverter.
Perform restoration on the GOT.

(2) Engineering tool

The GOT backup/restoration function backs up the data of an inverter to the data storage installed in the GOT.
You can read the data from the data storage by using the engineering tool (FR Configurator2 Ver1.10L or later).
After editing the backup data with the engineering tool, you can restore the data to the servo amplifier by using the GOT backup/restoration function.
Do not change the file name and the extension, or you cannot restore the data.

(3) Backup

The GOT collectively backs up the data of all the FR-A800 series, FR-A800 Plus series, and FR-F800 series inverters that are specified by their network numbers and station numbers in the controller list file.

(4) Restoration

To restore data to the FR-A800 series, FR-A800 Plus series, and FR-F800 series inverters, select target inverters based on the network numbers and station numbers. All the data for the selected inverters are restored.

(5) Backup/restoration availability

The backup/restoration is available in the cases shown below.

(○: Available, ×: Not available)

Operation	While the inverter is being reset	While a password is being registered	While a parameter is being copied	While the start command signal (STF/STR) is on	When writing parameters is disabled	While the PLC function is being executed	Other cases
Backup	×	×	×	○	○	○	○
Restoration	×	×	×	×	×	×	○

(6) Target parameters for the backup/restoration

For the target parameters for the backup/restoration, refer to the following.

➠ FR-A800 INSTRUCTION MANUAL (DETAILED)
FR-F800 INSTRUCTION MANUAL (DETAILED)

■9. 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/restoration 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.

■10. Precautions for using the CNC C70

(1) Handling backup data

Although some backup data can be checked with a text editor, do not change the contents.
If the contents are changed, the data cannot be restored.

(2) Individual restoration of the C language module

The C language module cannot be restored on the individual restoration screen of the GOT.
To restore the C language module individually, use Remote Monitor Tool whose version is C0 or later.
For Remote Monitor Tool, refer to the following.

➠ MITSUBISHI CNC C70 / C64 Series Remote monitor tool Operating Manual

■11. Precautions for using the CNC C80

(1) Handling backup data

Although some backup data can be checked with a text editor, do not change the contents.
If the contents are changed, the data cannot be restored.

■12. Precautions for robot controller

(1) Restoration during program execution

The restoration cannot be performed during program execution.

(2) Confirmation before restoring

- Confirm the error cause in advance, since the error record is deleted by restoring.
- Confirm that the error C7500 "No battery voltage" does not occur when restoring.

(3) Restoration when replacing a robot

If models of robots are different, the restoration cannot be performed.
If a robot, motor, reducer, or belt is replaced, configure the origin setting.
If a robot controller is compatible with the maintenance forecast, reset the maintenance forecast when replacing the robot or belt.

(4) Operations during backing up or restoration on the GOT

Do not execute [Program read], [Program save], [Backup/Restore] or others for robot controllers to be backed up or restored from RT ToolBox2 or R56TB, while backing up or restoring on the GOT.
Doing so causes lack of consistency of data in a robot controller or acquired from RT ToolBox2.

(5) Version of the robot controller

The backed up data of the robot controller version R1d/S1d or later cannot be restored in the robot controller version R1c/S1c or earlier.

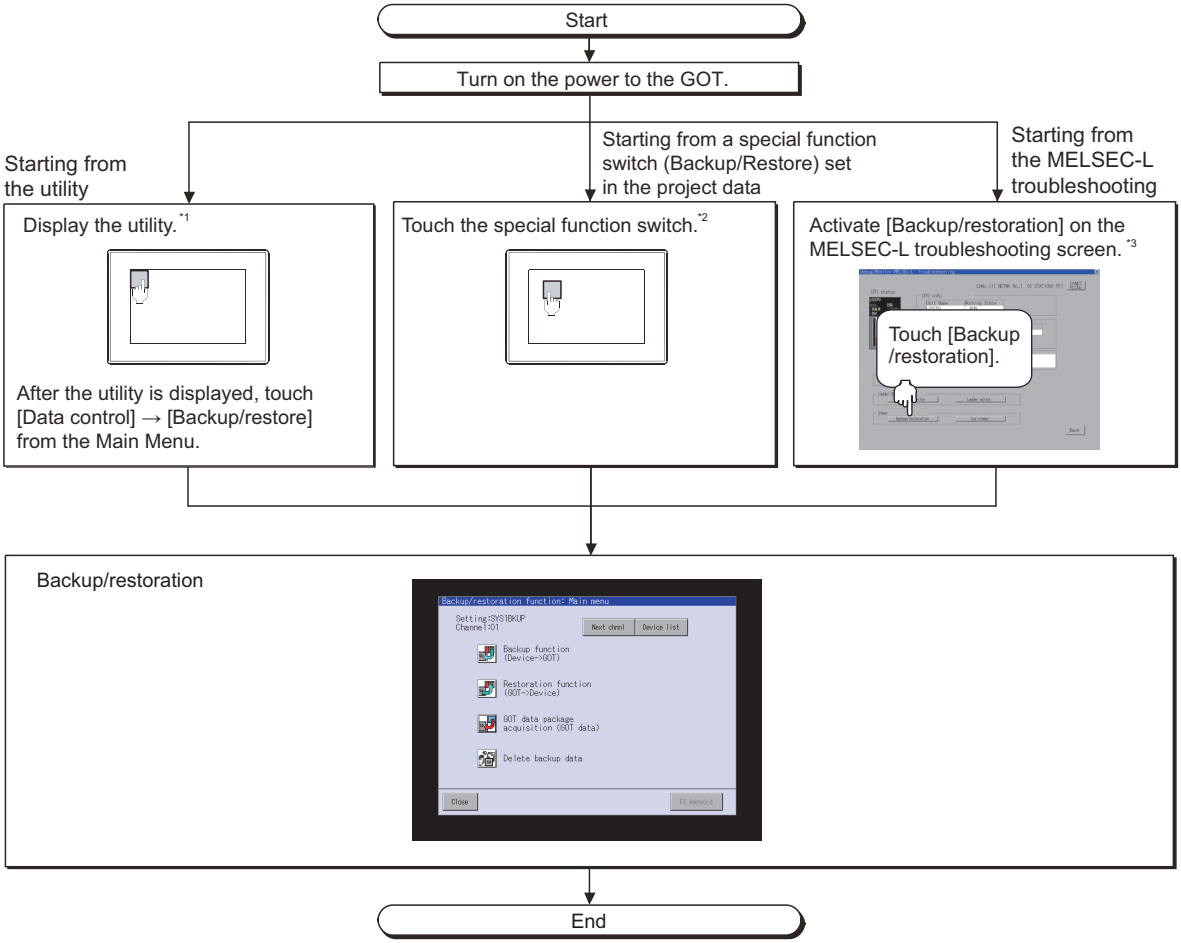
(6) Edit and restoration of backup data

The data backed up on the GOT can be edited and restored with RT ToolBox3 or RT ToolBox2.
To edit and restore data with RT ToolBox3 or RT ToolBox2, copy the data backed up on the GOT to the Backup folder in the project folder in RT ToolBox3 or RT ToolBox2.
However, the following data cannot be restored on the GOT.

- Data edited with RT ToolBox3 or RT ToolBox2 after the backup on the GOT
- Data backed up with RT ToolBox3, RT ToolBox2, or R56TB

10.3 Operations for Display

This section explains how to display the backup/restoration screen after the GOT is turned on.



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

➠ GOT2000 Series User's Manual (Utility)

*2 For how to set special function switches, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

*3 For the details, refer to the following.

➠ 11. MELSEC-L TROUBLESHOOTING

POINT

(1) How to display the utility

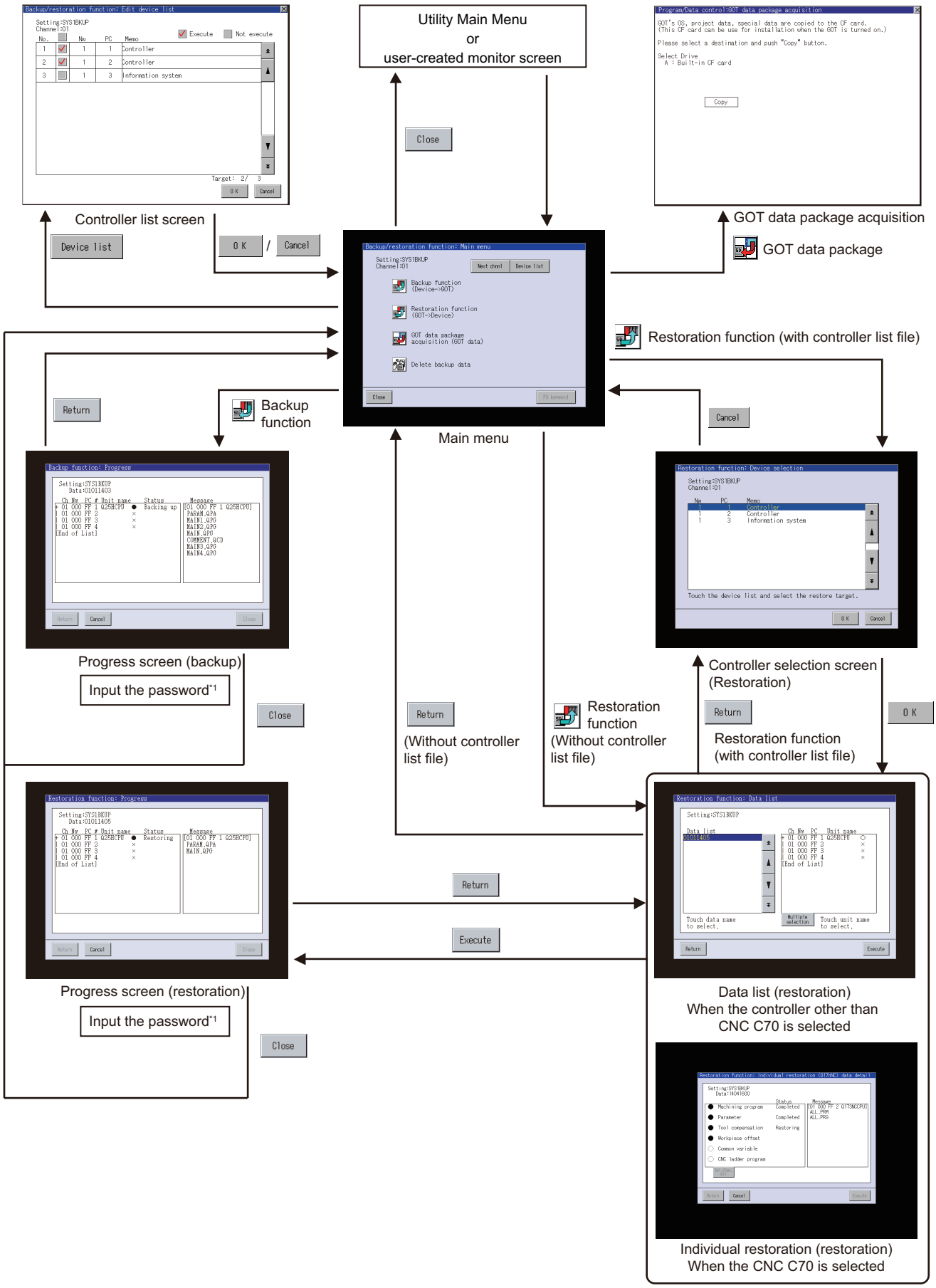
For how to display the utility, refer to the following.

➠ 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.

■1. Changing screens

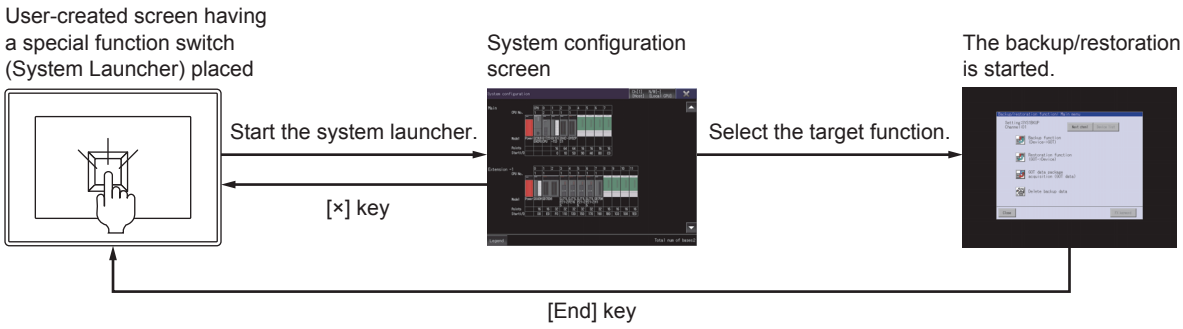


*1 For the details, refer to the following.

➠ 10.3.2 Security and password

(1) Starting from the special function switch of the system launcher functio

You can start the backup/restoration from a user-created screen by selecting the connection destination with a special function switch to which [System Launcher] is set.



POINT

When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.

For the details of the system launcher function, refer to the following.

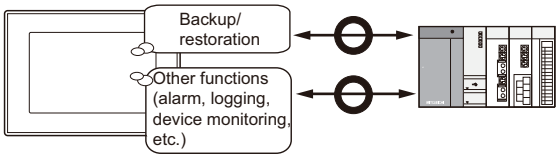
➠ 2. SYSTEM LAUNCHER

■2. 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.

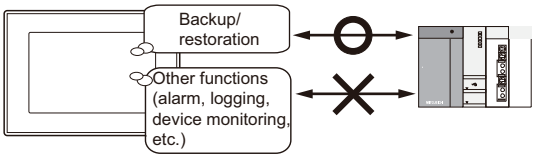
• When background processing is performed

Backup/restoration and other functions alternately perform communication.



• When background processing is stopped

Other functions stops 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.

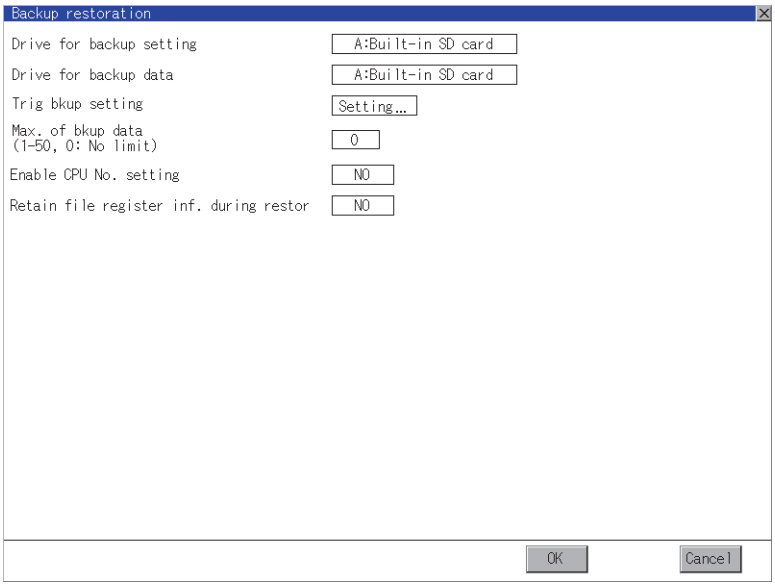
10.3.1 Setting storage location for backup data

Set the storage location that backup data are stored.
Set the storage location for backup data in the backup/restoration setting of the utility.

■1. Display procedure

Select [Utility] → [Ext. func. set] → [Backup restoration].

■2. Settings



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.)
Retain file register inf during restor	Set whether to retain the file register at restoration.

POINT

(1) Retain file register inf during restor

Executing restoration in the following cases may cause the PLC to operate incorrectly.
Delete all data in the PLC before the restoration.

- The file register backed up in the GOT data storage is changed.
- The size of the file register backed up in the GOT data storage differs from that stored in the PLC.
- The file space of the PLC is insufficient at restoration.

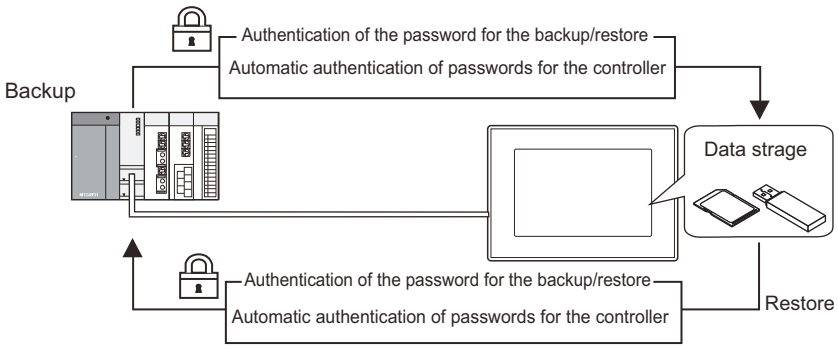
(2) Setting on GT Designer3 (GOT2000)

The backup/restoration setting can also be set in the GOT setup on GT Designer3 (GOT2000).
For the GOT setup of GT Designer3 (GOT2000), refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

10.3.2 Security and password

By setting the passwords, the password authentication is available when the backup/restoration is executed.
The password authentication uses the password for the backup/restoration and passwords for controllers.



The following shows the passwords used for the backup/restoration.

Password	Description
Password for backup/restoration	Password for the backup/restoration 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/restoration 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/restoration), 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/restoration is executed by using the password for the backup/restoration only. (No need to input passwords for the controllers)

POINT

Before setting password for backup/restoration

When the user forgets the password for the backup/restoration, the backup/restoration cannot be executed.
In that case, execute the backup again by using a formatted or new data strage.

For how to set the password for the backup/restoration, refer to the following.

➠ ■1. Setting password for backup/restoration

How to use the password for the backup/restoration, refer to the following.

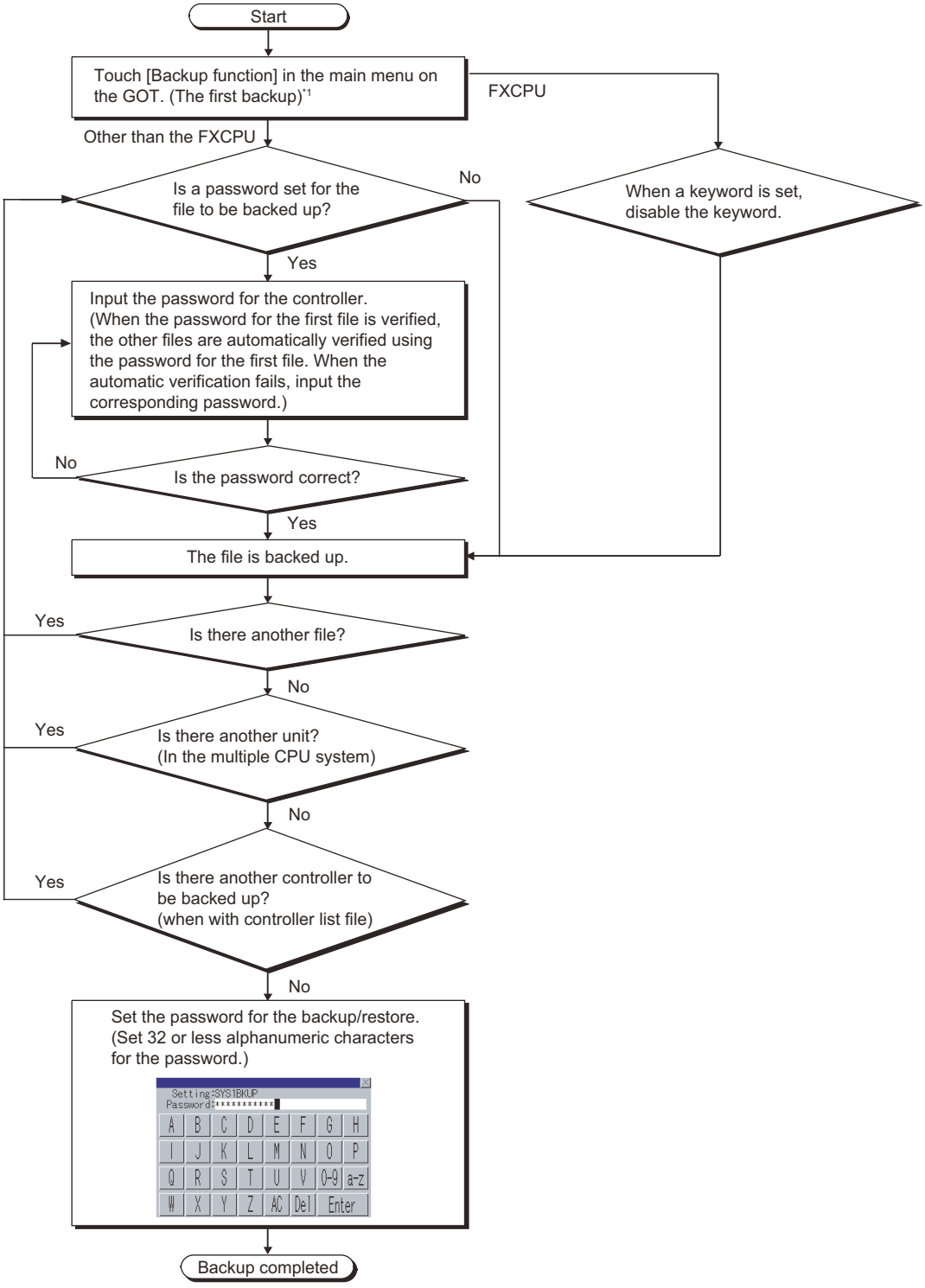
➠ ■2. How to use password for backup/restoration

■1. Setting password for backup/restoration

The password for the backup/restoration 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.



*1 For the details, refer to the following.

10.4 Operation Procedures

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) Inputting a password for the motion controller CPU

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.

(3) Setting a password for the motion controller CPU

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.

(4) FXCPU keyword

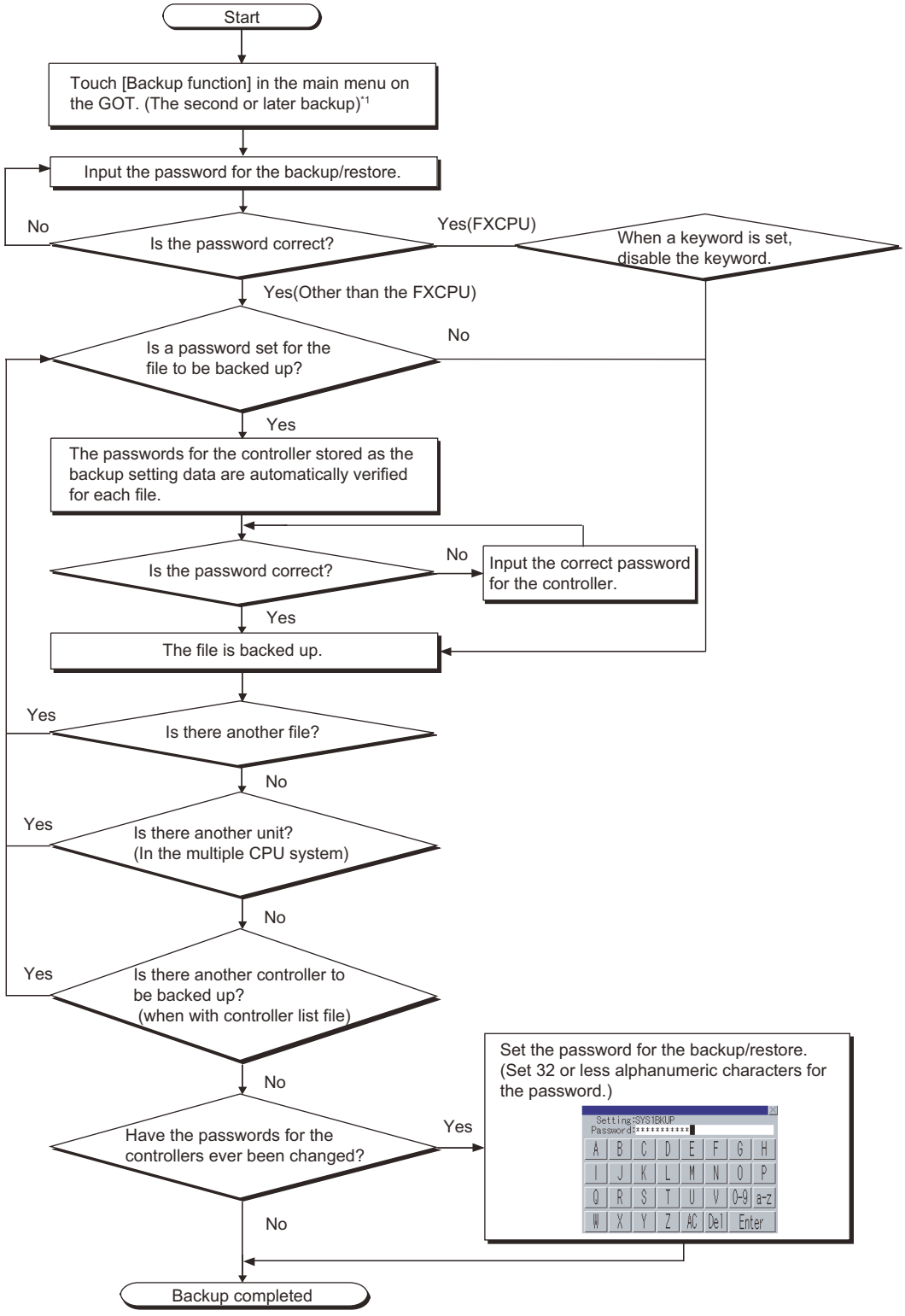
To back up or restore data in the FXCPU, disable a keyword in advance.

➠ 10.4.1 ■2. Key functions

■2. How to use password for backup/restoration

(1) Backup

The following shows the operating procedure for the backup after setting the password for the backup/restoration.



*1 For the details, refer to the following.

➠ 10.4 Operation Procedures

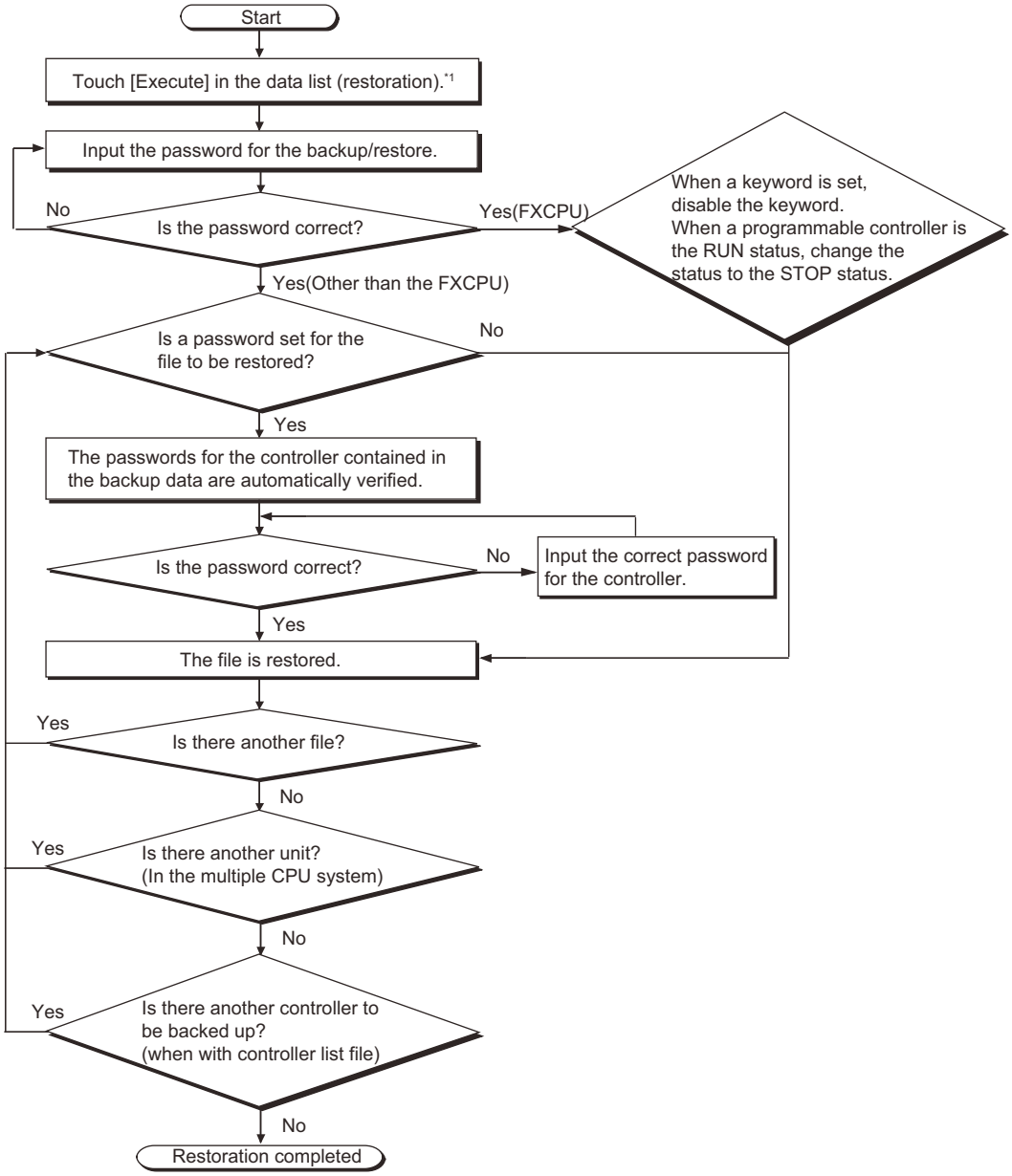
POINT

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/restoration.



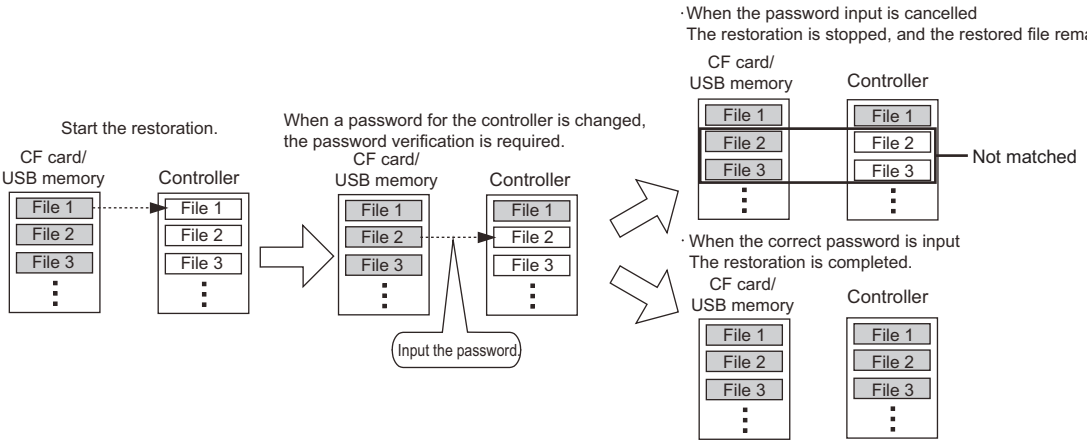
*1 For the details, refer to the following.

➠ 10.4 Operation Procedures

POINT

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 entire system.



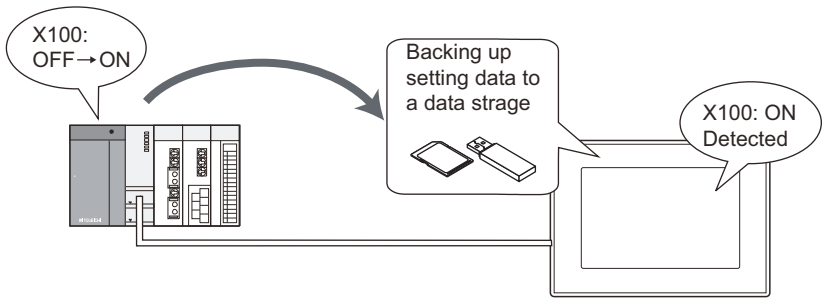
10.3.3 Trigger backup

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.

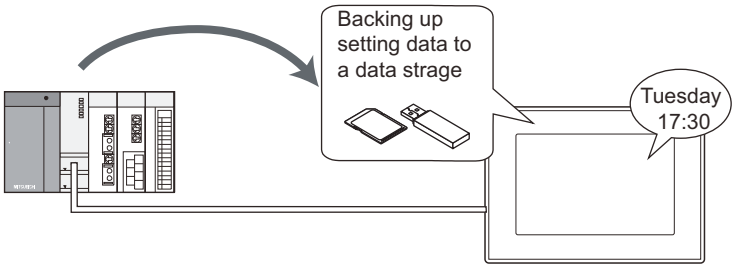
Trigger device: X100



■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.

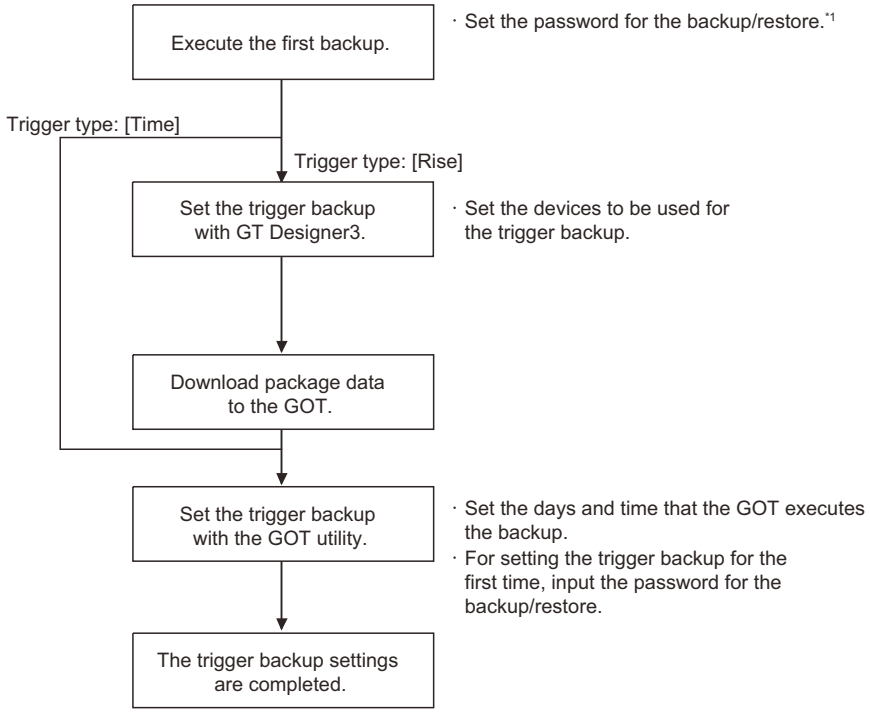
■4. Checking backup data changes

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.

■5. How to set trigger backup

(1) Flow of settings

The following shows the flow of settings for using the trigger backup.



*1 For the details, refer to the following.

➠ 10.3.2 Security and password

POINT

Inputting password for backup/restoration

The GOT automatically executes the backup when the trigger condition is met.
The password authentication with the password for the backup/restoration is not executed.
By executing the password authentication with the password for the backup/restoration when setting the trigger backup with the GOT utility, unauthorized users cannot execute the backup.
Without inputting the password for the backup/restoration 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/restoration 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 (GOT2000) and the GOT utility.
For the setting items for GT Designer3 (GOT2000), refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

For the setting items for the GOT utility, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

■6. 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)

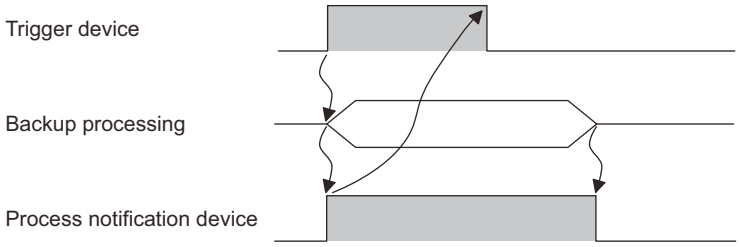
For the devices and how to set the devices, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(1) When normal backup is executed

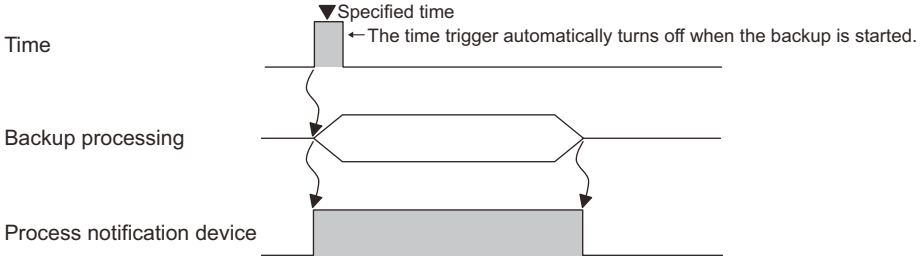
(a) When trigger type is set to [Rise]

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.

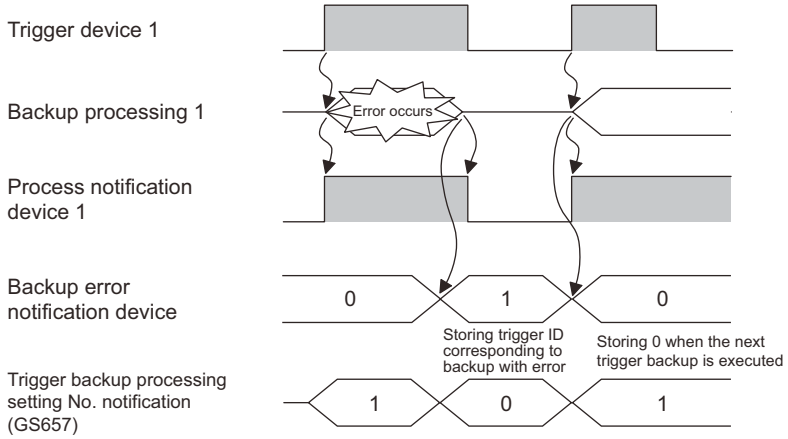


(2) Error handling

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) Screen Design Manual

The backup error notification device stores 0 when the next trigger backup is executed.



(3) Setting send delay time

The backup/restoration 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 to100	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).

■7. 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/restoration 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 ecipe function, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(6) Backup on a motion controller CPU, robot controller 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 and robot controller are 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) Backup on a robot controller

The robot controller is not compatible with checking changes. Therefore, if the backup is executed in the following way, the communication speed and program execution speed may slow.

- The trigger backup is frequently executed.
- Multiple robot controllers are connected.

Backup data is large, due to the large number of programs.

(8) 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.

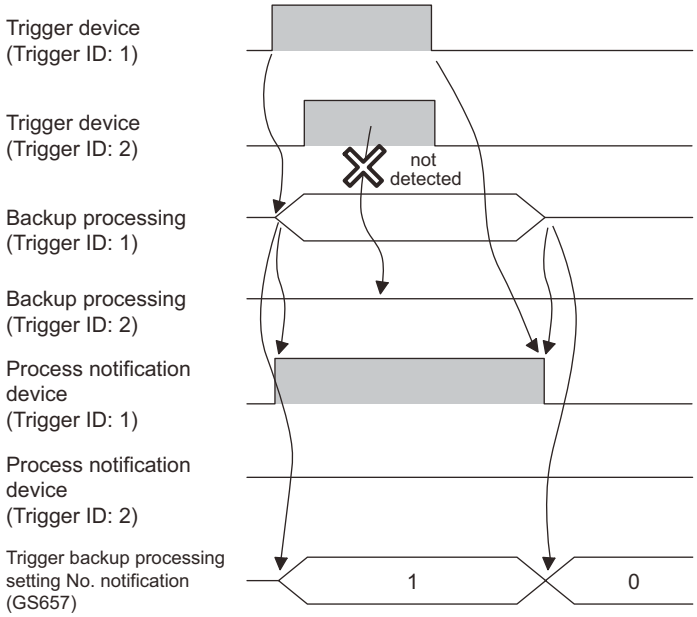
(b) When a monitor screen is switched to a screen other than monitor screens during the trigger backup, the GOT stops the backup and the GOT deletes the data in process.
When the screen is switched to a monitor screen, the GOT executes the backup again.

(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.

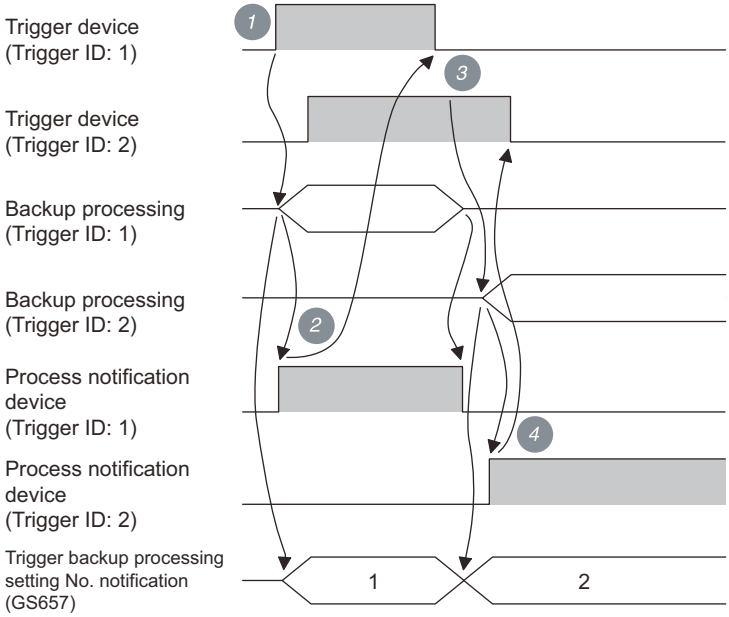
- Restarting the GOT
- Changing the trigger backup setting with the GOT utility

(9) 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.



Step 1. The trigger device (Trigger ID: 1) turns on, and then the GOT starts the backup (Trigger ID: 1).

Step 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.

Step 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).

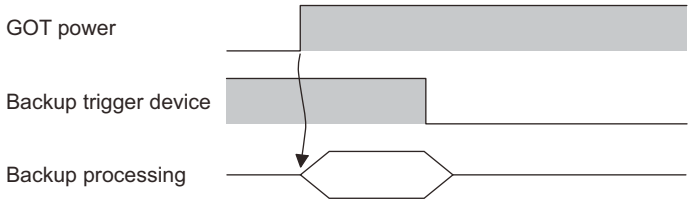
Step 4. When the backup is started, the process notification device (Trigger ID: 2) turns on, and the trigger backup processing setting No. notification (GS657) stores the trigger ID.
When the process notification device turns on, the trigger device (Trigger ID: 2) turns off.

(10) When multiple trigger conditions are simultaneously met

The GOT executes the backup with the smallest trigger ID first.

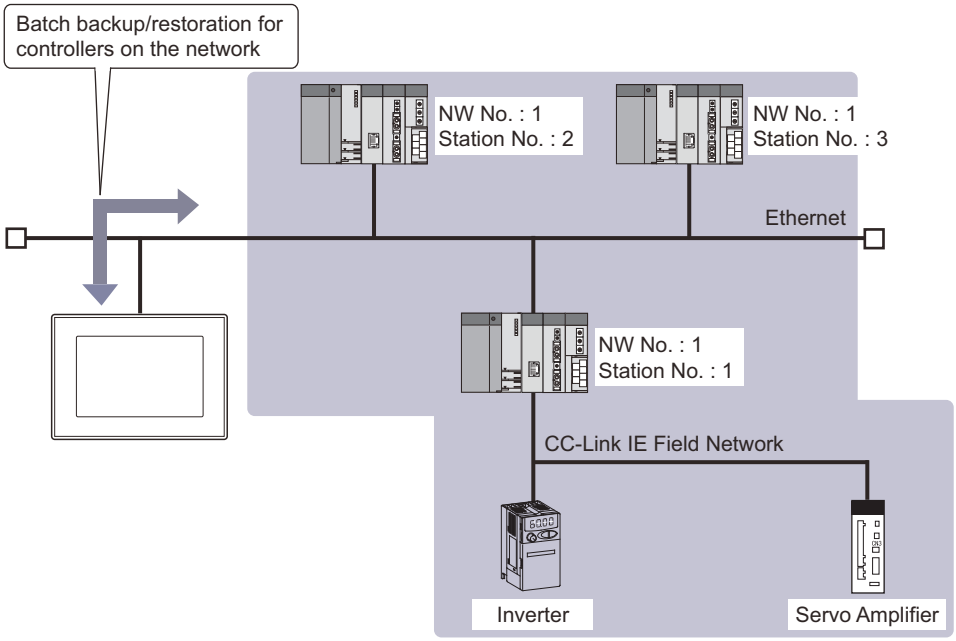
(11) When trigger device is on at GOT startup

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.



10.3.4 Network batch backup/restoration

The backup/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/restoration cannot be performed. For how to connect controllers with the GOT, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Flow to perform the network batch backup/restoration

Create a controller list file with a personal computer.	➠ ■2. Creating a controller list file
↓	
Store the controller list file in the BKUPLIST folder.	➠ ■2. Creating a controller list file
↓	
Install a SD card or USB memory, in which the controller list file is stored, on the GOT.	➠ GOT2000 Series User's Manual (Utility)
↓	
Display the Main Menu of backup/restoration	➠ 10.3 Operations for Display
↓	
Select a channel to be backed up or restored.	➠ 10.4.1 Main menu
↓	
Execute the backup/restoration.	➠ 10.4.1 Main menu

For the operation after executing the network batch backup/restoration, refer to the following.

➠ ■3. Operation after executing the network batch backup or restoration

■2. Creating a controller list file

For the controller list file, set the network No. and the station number of the controller to be backed up or restored.
The controller list file can be set to each backup setting file.

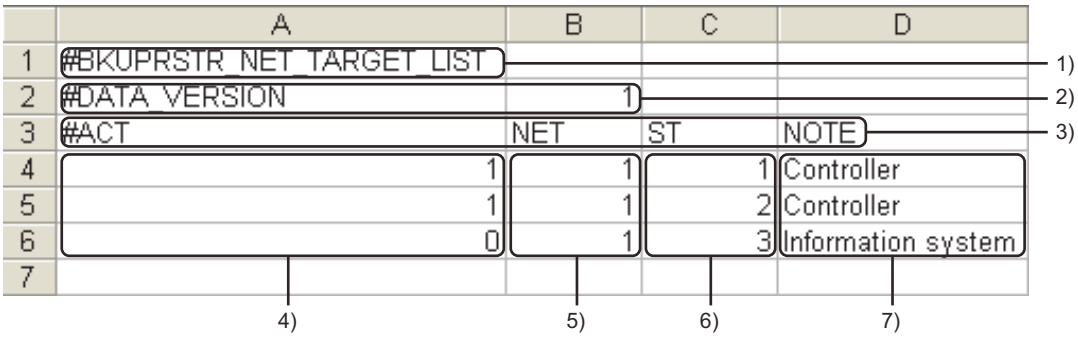
(1) Controller list file specification

(a) Specification

Item	Setting
File name, extension	SYSnNET.INI (Assign the CH No. to be backed up or restored to "n" in the file name.)
File format	Unicode text format
Encode format	Little endian with UTF-16 BOM

(b) Format

Up to 64 controllers to be backed up or restored can be set. (The 65th or later are invalid.)
When performing the backup/restoration, the controller list file settings are executed from the top.



No.	Item	Setting
1)	Header	Indicates that it is the controller list file.
2)	Data version	Displays the data version of the controller list file. Set the version to 1.
3)	Controller list	Indicates the title of the controller list.
4)	Execution/non-execution	Set whether to execute or not the backup/restoration. For controllers other than servo amplifiers and inverters 0: Not executed, 1: Executed For servo amplifiers and inverters (connected through an RCPU on the master station) 2: Not executed, 3: Executed For servo amplifiers and inverters (connected through a QCPU or LCPU on the master station) 4: Not executed, 5: Executed
5)	Network No.	Set the network No. of controllers to be backed up or restored. (0 to 239)
6)	Station No.	Set the station No. of controllers to be backed up or restored. (0 to 120) If the network No. is 0, 255 (host) can also be set.
7)	Memo	Both 2-byte and 1-byte characters can be set. Up to 30 characters are displayed in the controller list screen.

POINT

Precautions for creating a controller list file

(1) When " is entered

- Even if " is entered in the memo, it is not treated as a quotation mark for the character string, the text to the line feed is considered a character string.
- If numerical values are put in "s, a format error occurs.

(2) When creating with a text editor

When the controller list file is created with a text editor, delimit data with tabs.
If unnecessary tabs are entered, a format error occurs.

(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

Step 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

Step 2. Select [File] → [Save As...] to display the [Save As...] dialog box.

Step 3. Select [Unicode Text (*.txt)] in [Save as type].

Step 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.

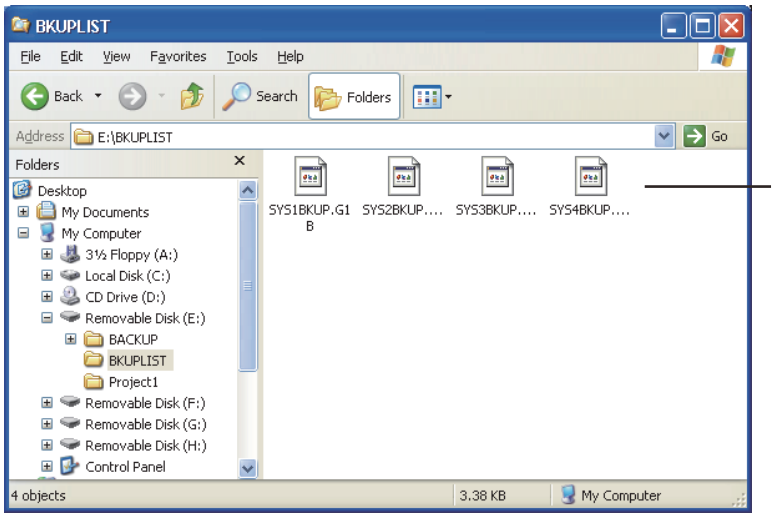
➠ 10.3.4 ■2. (1) Controller list file specification

(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.

➠ 10.2.1 System configuration

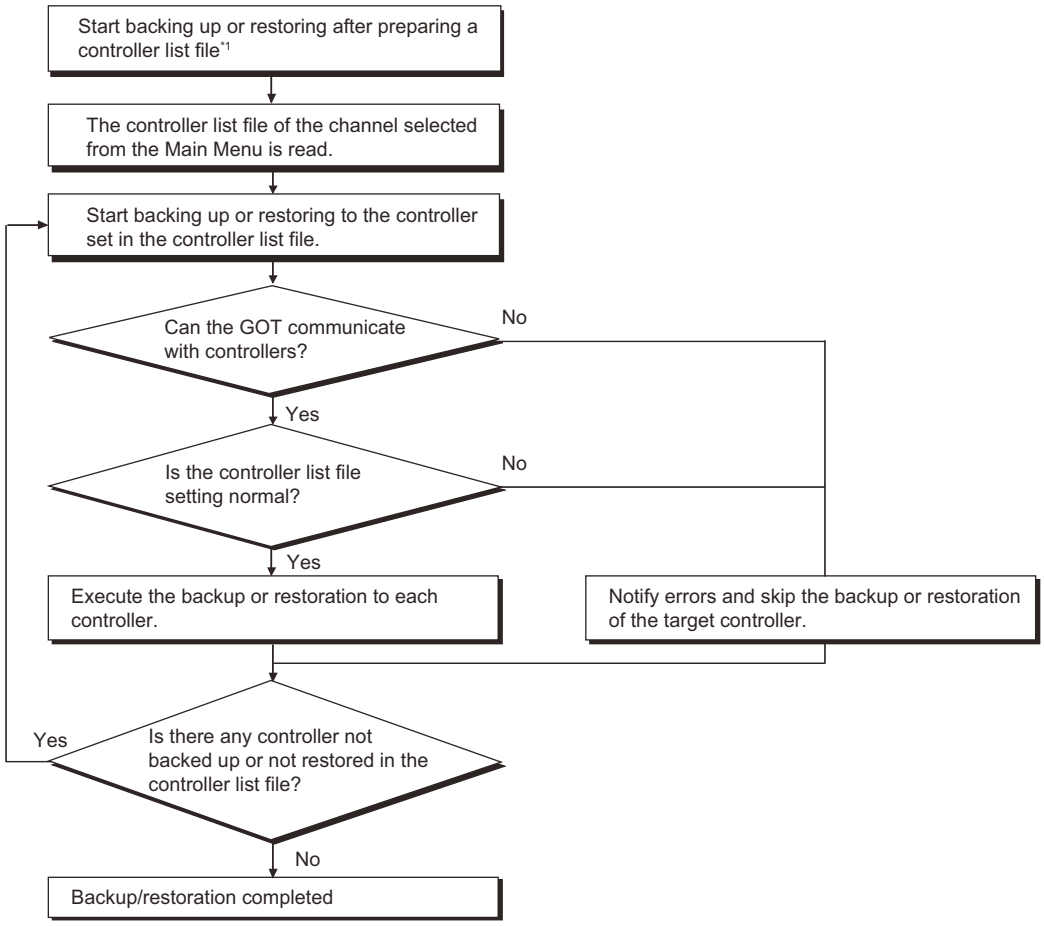
Step 1. Check whether a storage folder for the backup (BKUPLIST) exists in the SD card or not.
(If the backup is executed, the folder is automatically created)
If no storage folder exists, create it.



Step 2. Store the created controller list file in the storage folder for the backup.

■3. Operation after executing the network batch backup or restoration

When the network batch backup/restoration is executed, the following operations are performed.



*1 For the details, refer to the following.

➠ 10.3 Operations for Display

(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.

➠ 10.3.2 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.

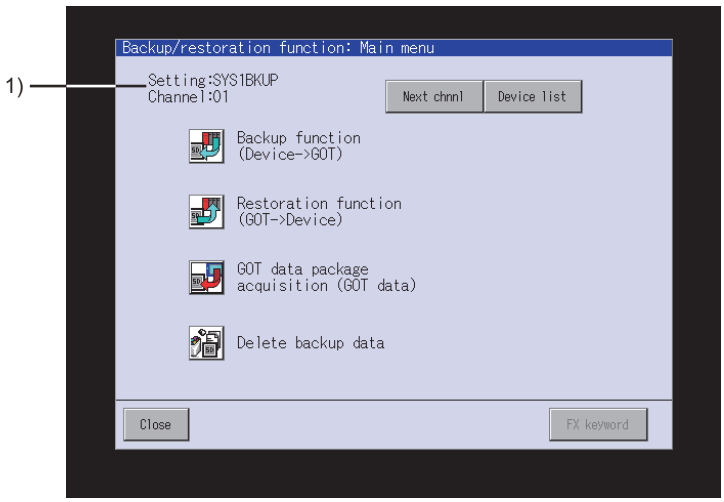
10.4 Operation Procedures

This section describes the backup/restoration display details and the functions of the keys displayed on the screen.

10.4.1 Main menu

The following describes the display and the key functions on the Bakcup/restoration function : Main menu screen.

■1. Display details



No.	Display details
1)	Displays the target channel No. of the backup and the setting name for the backup/restoration (Fixed).

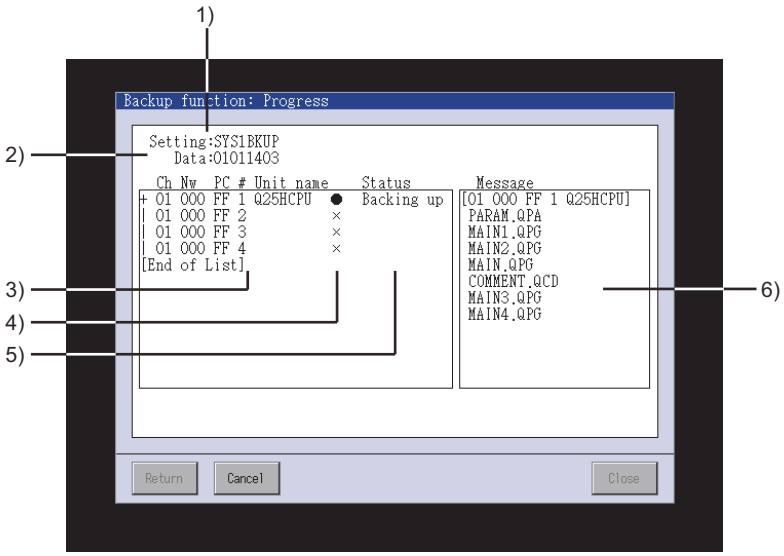
■2. Key functions

Key	Function
[Next chnnl]	Switches the target channels of the backup/restoration.
[Device list]	Available when the controller list file is stored in the same folder as the backup setting. ➠ 10.3.4 Network batch backup/restoration 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.
[Close]	Ends the backup/restoration, and then the screen is switched to the backup/restoration startup screen.
[FX keyword]	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)

10.4.2 Progress screen (backup)

This following describes the display details and the key functions on the Backup function: Progress screen.

■1. Display details



No.	Display details
1)	Displays the setting name for the backup/restoration (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.

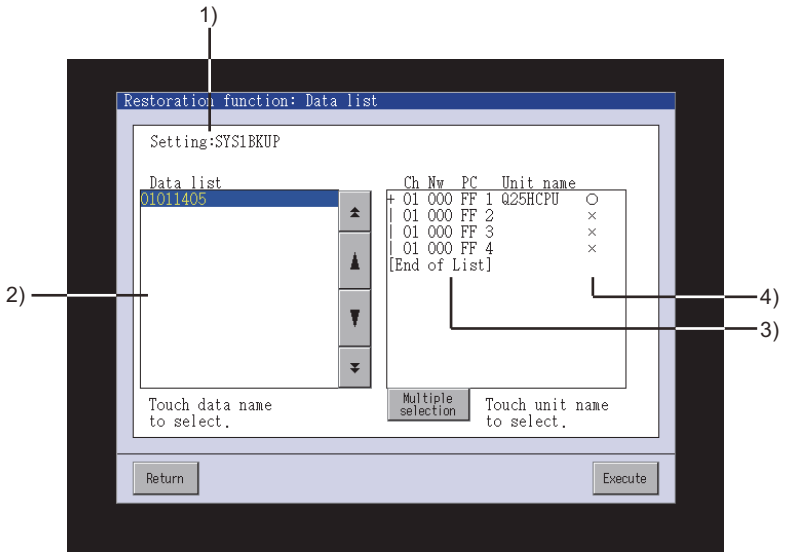
■2. Key functions

Key	Function
[Return]	Switches the screen to the Backup/restoration function: Main menu screen.
[Cancel]	Cancels the backup.
[Close]	Ends the backup/restoration, and then the screen is switched to the backup/restoration startup screen.

10.4.3 Data list (restoration)

The following describes the display details and the key functions on the Restoration function: Data list screen.

■1. Display detail



No.	Display details
1)	Displays the setting name for the backup/restoration (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. • ●: Restoration target • ○: Not restoration target • ×: Access disabled

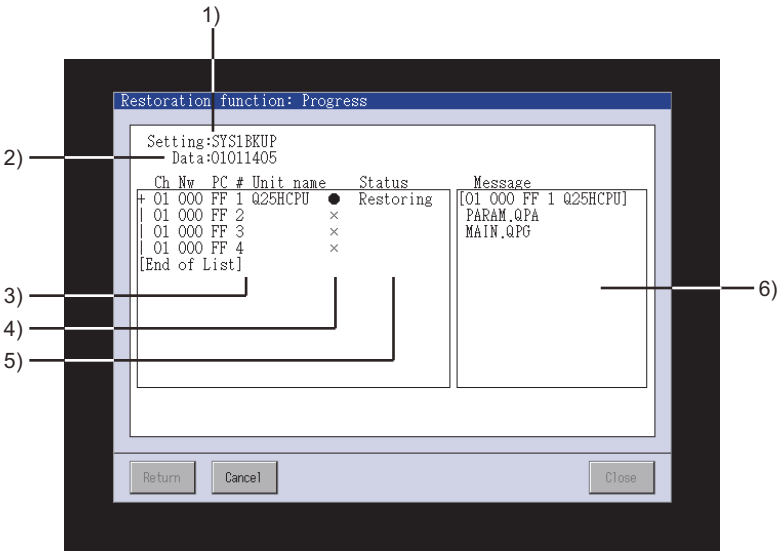
■2. Key functions

Key	Function
▲ ▼	Scrolls the data list up and down by one line.
⏫ ⏬	Scrolls the data list up and down by one page.
[Multiple selection] / [Single selection]	Switches the number of target controllers of the restoration. • Single selection: Select [Single selection] when selecting only one target controller of the restoration. • Multiple selection: Select [Multiple selection] when selecting multiple target controllers of the restoration.
[Return]	Return to the previous screen, before shifting to the Data list screen.
[Execute]	Starts the restoration.

10.4.4 Progress screen (restoration)

This following describes the display details and the key functions on the Restoration function: Progress screen.

■1. Display details



No.	Display details
1)	Displays the setting name for the backup/restoration (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 • ×: 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.

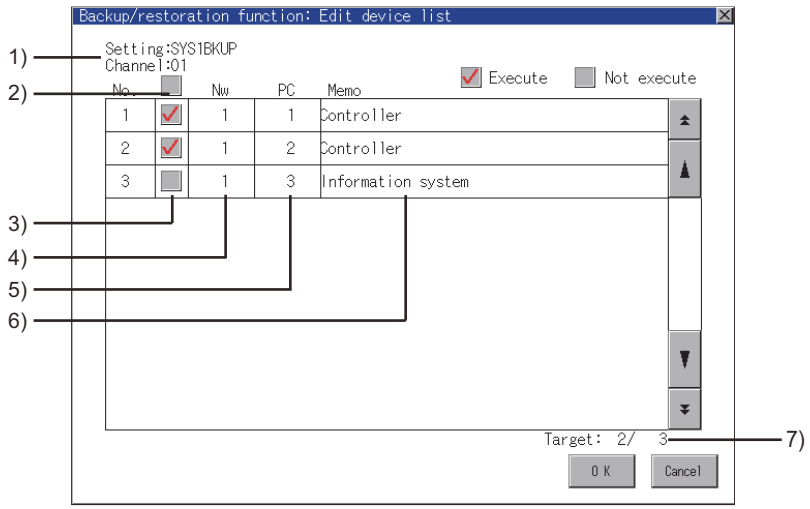
■2. Key functions

Key	Function
[Return]	Switches the screen to the Backup/restoration function: Main menu screen.
[Cancel]	Cancels the restoration. For servo amplifiers and inverters, this key is ineffective.
[Close]	Ends the backup/restoration, and then the screen is switched to the backup/restoration startup screen.

10.4.5 Controller list screen

The following describes the display details and the key functions on the Controller list screen.

■1. Display details



No.	Display details
1)	Displays the target channel No. of the backup/restoration and the setting name for the backup/restoration (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/restoration. (Executed/all settings)

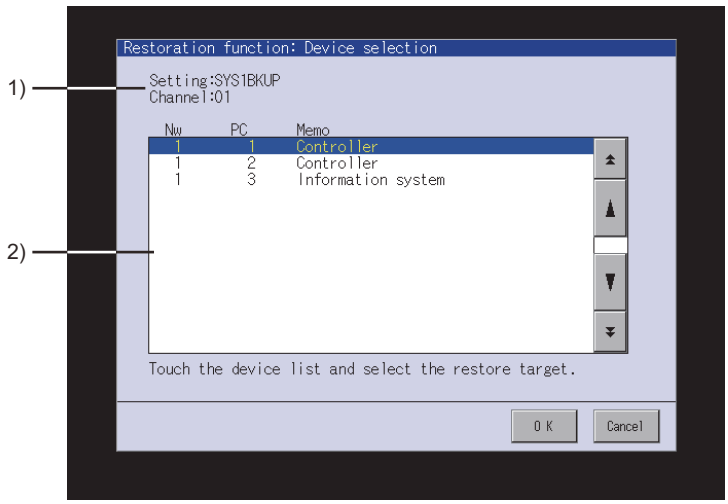
■2. Key functions

Key	Function
▲ ▼	Scrolls the data list up and down by one line.
⏫ ⏬	Scrolls the data list up and down by one page.
[OK]	Saves the edited information in the controller list file and switches the screen to the Backup/restoration function: Main menu screen.
[Cancel]	The edited information is deleted and switches the screen to the Backup/restoration function: Main menu screen.

10.4.6 Controller selection screen (Restoration)

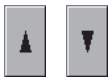
The following describes the display and the key functions on the Restoration function: Controller selection screen.

■1. Display details



No.	Display details
1)	Displays the target channel No. of the backup/restoration and the setting name for the backup/restoration (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.

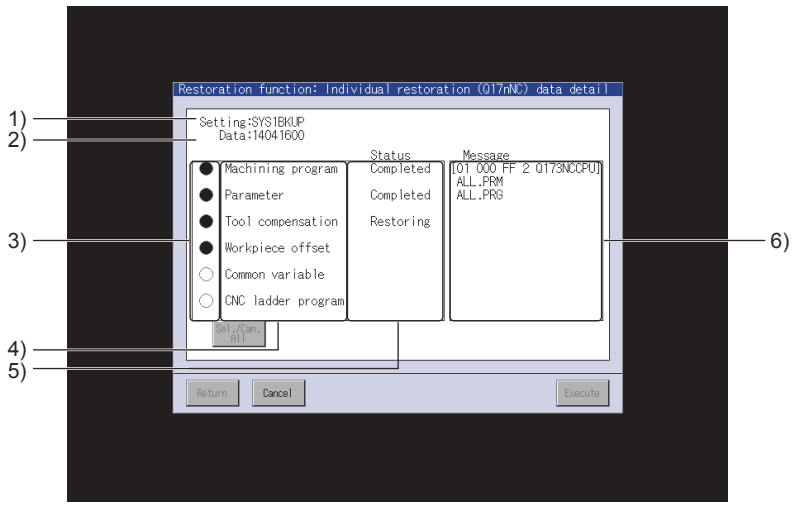
■2. Key functions

Key	Function
	Scrolls the data list up and down by one line.
	Scrolls the data list up and down by one page.
[OK]	Switches the screen to the Restoration function: Data list screen.
[Cancel]	Switches the screen to the Backup/restoration function: Main menu screen.

10.4.7 Individual restoration screen (Restoration)

This section describes the display data of the individual restoration screen (Restoration) and the key functions displayed on the screen.

■1. Display details



No.	Display details
1)	Displays the setting name for the backup/restoration (Fixed).
2)	Displays the backup data name.
3)	Select files to be restored. When the target backup file does not exist, the circle of the file is displayed in gray.
4)	Displays the type of the data to be restored.
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.
6)	Displays the names of the files to which the restoration processing is completed.

■2. Key functions

Key	Function
[Return]	Returns to the screen displayed before the screen was shifted to the individual restoration screen.
[Cancel]	Cancels the restoration.
[Sec./Can. All]	Selects all files or deselects the selected files.
[Execute]	Starts the restoration.

10.5 Backup Data Conversion Tool

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The backup/restoration function backs up the data of a controller to a data storage in the GOT. With Backup Data Conversion Tool, you can convert the backup data to and from the file format editable with GX Works2 or GX Developer. For performing edits on GX Works2, use ver.1.73B or later of GX Works2.

POINT

Data to be converted

Only backup data created by the backup/restoration function can be converted with Backup Data Conversion Tool.

The following data cannot be converted with Backup Data Conversion Tool.

- Data created with GX Works2 or GX Developer
- Backup data to which a new file is added with GX Works2 or GX Developer
- Backup data for the Q00JCPU, Q00CPU, Q01CPU, and FXCPU

10.5.1 Operating environment

Use Backup Data Conversion Tool in the following operating environment.

Item	Description
Personal computer	Personal computer that Windows runs on.
OS (English)	• Microsoft Windows 10 Enterprise (32 bit, 64 bit)*1*2*3 • Microsoft Windows 10 Pro (32 bit, 64 bit)*1*2*3 • Microsoft Windows 10 Home (32 bit, 64 bit)*1*2 • Microsoft Windows 8.1 Enterprise (32 bit, 64 bit)*1*2*3*4 • Microsoft Windows 8.1 Pro (32 bit, 64 bit)*1*2*3*4 • Microsoft Windows 8.1 (32 bit, 64 bit)*1*2*4 • Microsoft Windows 8 Enterprise (32 bit, 64 bit)*1*2*3*4 • Microsoft Windows 8 Pro (32 bit, 64 bit)*1*2*3*4 • Microsoft Windows 8 (32 bit, 64 bit)*1*2*4 • Microsoft Windows 7 Ultimate (32 bit, 64 bit)*1*2*5 • Microsoft Windows 7 Enterprise (32 bit, 64 bit)*1*2*5 • Microsoft Windows 7 Professional (32 bit, 64 bit)*1*2*5 • Microsoft Windows 7 Home Premium (32 bit, 64 bit)*1*2 • Microsoft Windows 7 Starter (32 bit)*1 • Microsoft Windows Vista Ultimate (32 bit) Service Pack1 or later*1 • Microsoft Windows Vista Enterprise (32 bit) Service Pack1 or later*1 • Microsoft Windows Vista Business (32 bit) Service Pack1 or later*1 • Microsoft Windows Vista Home Premium (32 bit) Service Pack1 or later*1 • Microsoft Windows Vista Home Basic (32 bit) Service Pack1 or later*1 • Microsoft Windows XP Professional (32 bit) Service Pack2 or later*1 • Microsoft Windows XP Home Edition (32 bit) Service Pack2 or later*1 • Microsoft Windows 2000 Professional Service Pack4 or later
CPU	Use the CPU which the above OSs run on.
Memory	Use the memory which the above OSs run on.
Display	Resolution 640 × 480 dots or higher
Hard disk space	500KB or more
Display color	High Color (16 bits) or higher
Others	Mouse, keyboard, data storage (SD card, USB memory, and etc)

*1 The following functions are not supported.
- Application start in Windows compatibility mode
- Fast user switching
- Change your desktop themes (fonts)
- Remote desktop
- DPI setting other than the normal size (For Windows Vista and Windows XP)
- Setting the size of text and illustrations on the screen to any size other than [Small-100%] (For Windows 10, Windows 8.1, Windows 8, and Windows 7)

*2 The touch feature is not supported.
*3 Hyper-V is not supported.
*4 Modern UI Style is not supported.
*5 Windows XP Mode is not supported.

10.5.2 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.

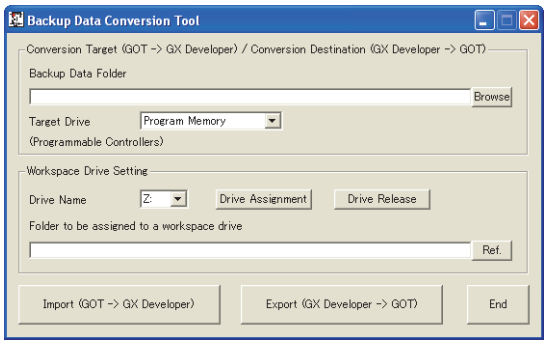
Step 1. Copy BkupRstrDataConv.exe to the hard disk and others on the personal computer.
Get the above file from one of the followings.
- GTD3 folder on the personal computer
- Contact your local distributor.

Step 2. Double-click the copied BkupRstrDataConv.exe, and then the tool starts. Refer to the following, and set the tool.

10.5.3 How to use Backup Data Conversion Tool

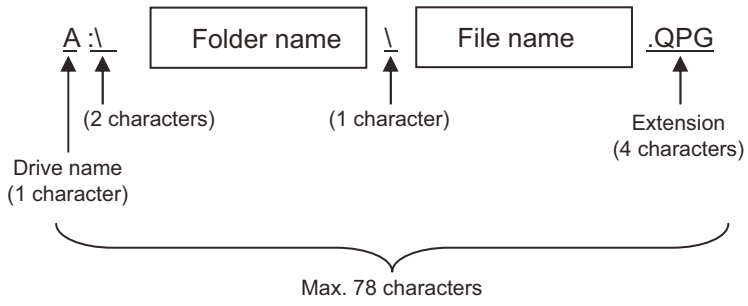
■1. Setting items

The following shows the setting items of Backup Data Conversion Tool.



Item		Description
Conversion Target		Specify data to be converted.
	Backup Data Folder*1	Specify the storage location of the backup data (setting data: UNITINFO.G2B) created with the backup/restoration function by clicking the [Browse] button.
	Target Drive	Select the PLC drive that has setting data to be converted.
Workspace Drive Setting		Configure the settings for performing edits on GX Works2 or GX Developer.
	Drive Name	Specify the IC memory card drive to be set for the IC memory card reading/writing on GX Works2 or GX Developer.
	Folder to be assigned to a workspace drive*1	Specify the target folder of [Drive Name] by clicking the [Ref.] button.
	[Drive Assignment]	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 [Drive Release] button and a drive is assigned again.)
	[Drive Release]	Click the item, and then the drive assignment setting is canceled.
[Import (GOT → GX Developer)]		Converts the backup data into the file format editable with GX Works2 or GX Developer.
[Export (GX Developer → GOT)]		Converts the backup data edited with GX Works2 or GX Developer into the file format applicable to the backup/restoration function.
[End]		Ends Backup Data Conversion Tool.

*1 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



■2. Operation flow

The following shows the operation flow for Backup Data Conversion Tool.

(1) Editing the backup data with GX Works2 or GX Developer

GOT	Back up setting data with the backup/restoration function on the GOT.
	↓
	Copy the backup data to the personal computer.
	↓
Backup Data Conversion Tool	Specify [Backup Data Folder].
	↓
	Specify [Target Drive].
	↓
	Specify [Drive Name] in [Workspace Drive Setting].
	↓
	Specify [Folder to be assigned to a workspace drive].
	↓
	Click the [Import (GOT → GX Developer)] button.
	↓
GX Works2 or GX Developer	Perform the IC memory card reading on GX Works2 or GX Developer.

(2) Restoring the backup data edited with GX Works2 or GX Developer to the controller

GX Works2 or GX Developer	Perform the IC memory card writing on GX Works2 or GX Developer.
	↓
Backup Data Conversion Tool	Specify [Backup Data Folder].
	↓
	Specify [Target Drive].
	↓
	Specify [Drive Name] in [Workspace Drive Setting].
	↓
	Click the [Export (GX Developer → GOT)] button.
	↓
	Store the backup data in a memory card or others, and then insert the card into the GOT.
	↓
GOT	Restore the backup data with the backup/restoration function on the GOT.

10.5.4 Precautions

■1. 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.

10.6 Errors and Corrective Actions

■1. Common to backup and restoration

Error	Cause	Corrective action
The backup/restoration function cannot be used.	The system application (Extended function) of the backup/restoration is not installed on the GOT.	Install the system application (Extended function) on the GOT.
The backup setting is not found.	The backup setting is not stored in the data strage in the GOT. No data strage is installed to the drive specified for storing the backup setting.	• Install data strage with the backup setting stored. • Check the storage location for the backup setting with the utility.
The backup data are not found.	The backup data are not stored in the data strage in the GOT. No data strage is installed to the drive specified for storing the backup data.	• Install data strage with the backup data stored. • Check the storage location for the backup data with the utility.
The backup/restoration cannot be executed because the user does not know the password for the backup/restoration.	The user does not remember the password. The password is incorrect.	• Check with the administrator of the system regarding the password for the backup/restoration. • Execute the backup again by using a formatted or new data strage.
The backup/restoration cannot be completed because a communication error occurs between the GOT and a controller during the backup/restoration.	The communication settings and communication driver for the GOT are incorrectly set.	Check if the communication settings and communication driver for the GOT are correctly set.
	Because parameters for the controller are incorrectly set, the controller dose not recognize the GOT.	Check if the parameters for the controller is correctly set with tools, including GX Developer, for the controller.
	The controller is turned off.	Turn on the controller.
	The cable is not correctly connected.	Check the cable.
The controller list file is abnormal.	The description in the header part of the controller list file is abnormal.	Check the format of the controller list file and describe following the format. ➠ 10.3.4 Network batch backup/restoration
The controller list file is invalid.	• The description in the controller list file is invalid. • The network number and station number are outside the range. • The network number and station number are overlapped.	• Check the format of the controller list file and describe following format. ➠ 10.3.4 Network batch backup/restoration • Describe the network number and the station number so that they are not overlapped in the available setting range.

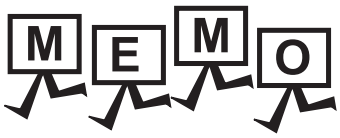
■2. Backup

Error	Cause	Corrective action
The backup data cannot be written into data strage.	No data strage is installed to the GOT.	Install a data strage to the drive specified for storing the backup setting or backup data.
	The data strage does not have free space.	Install a data strage with enough free space. Delete unnecessary files in the data strage.
	The data strage is set to write-protect.	Set the data strage to writable. The attributes of backup data files stored in the data strage cannot be changed with the GOT. Set the files to writable with a personal computer.
	The drive does not exist.	Check if the drive specified for storing the backup setting or backup data exists. (Check if the data strage is connected on the GOT.)

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 • Check if the cable is correctly connected to the GOT. • Check if the correct communication driver is installed on the GOT. • Check if the communication settings are correctly set. Controller • Check if the parameters are set. • Check if the cable is correctly connected to the controller. • Check if the controller is turned on.
The backup cannot be executed because passwords for files of the controller are set.	• The user does not remember the password. The password is incorrect. (The first backup) • Passwords for files of the controller are changed.	Check with the administrator of the system regarding the passwords for files of the controller.

■3. 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 • Check if the cable is correctly connected to the GOT. • Check if the correct communication driver is installed on the GOT. • Check if the communication settings are correctly set. Controller • Check if the parameters are set. • Check if the cable is correctly connected to the controller. • Check if the controller is turned on.
	The target controller of the restoration is a different kind of controller from the target controller of the backup.	• Check if the system configuration for the restoration is the same as that for the backup. • Check if the target controller of the restoration is the same as that of the backup or the same kind of controller.
The restoration cannot be executed because passwords for files of the controller are set.	• The passwords for files written in the controller are changed.	Check with the administrator of the system regarding the passwords for files of the controller.
The restoration to the robot controller cannot be executed because the Initialization of the robot program is failed.	A program name that does not exist in the robot controller may be set to the slot.	Check the parameter [SLTn] or [Online] → [Parameter] → [Slot list] in the workspace of RT ToolBox2 and to check if a program name that does not exist in the robot controller is set or not to the slot. If it is set, set a blank space for the program name and restore again after restarting.

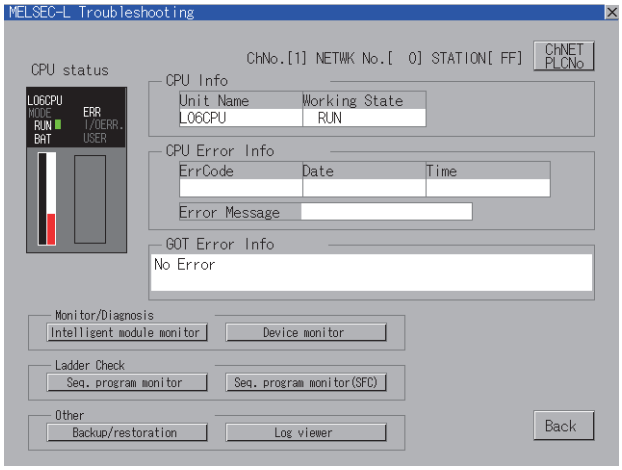

MEMO

11. MELSEC-L TROUBLESHOOTING

GT27 GT25 GT23 GT21 Soft GOT2000

11.1 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.



11.2 Specifications

11.2.1 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 Electric Products) For GT Works3 Version1

■1. Target controller

Controller
LCPU

■2. 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	Serial communication connection	Ethernet connection*4	CC-Link connection	
					ID*1	G4*2
MELSEC-L troubleshooting	Displays the status and errors of the LCPU and starts various monitor functions.	○*3	○	○	○	○

*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.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the MELSEC-L troubleshooting to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Applicable hardware

A USB mouse is usable.

11.2.2 Access range

■1. When using the direct CPU connection or serial communication connection

The LCPU of the host station can be monitored.

■2. When using Ethernet connection

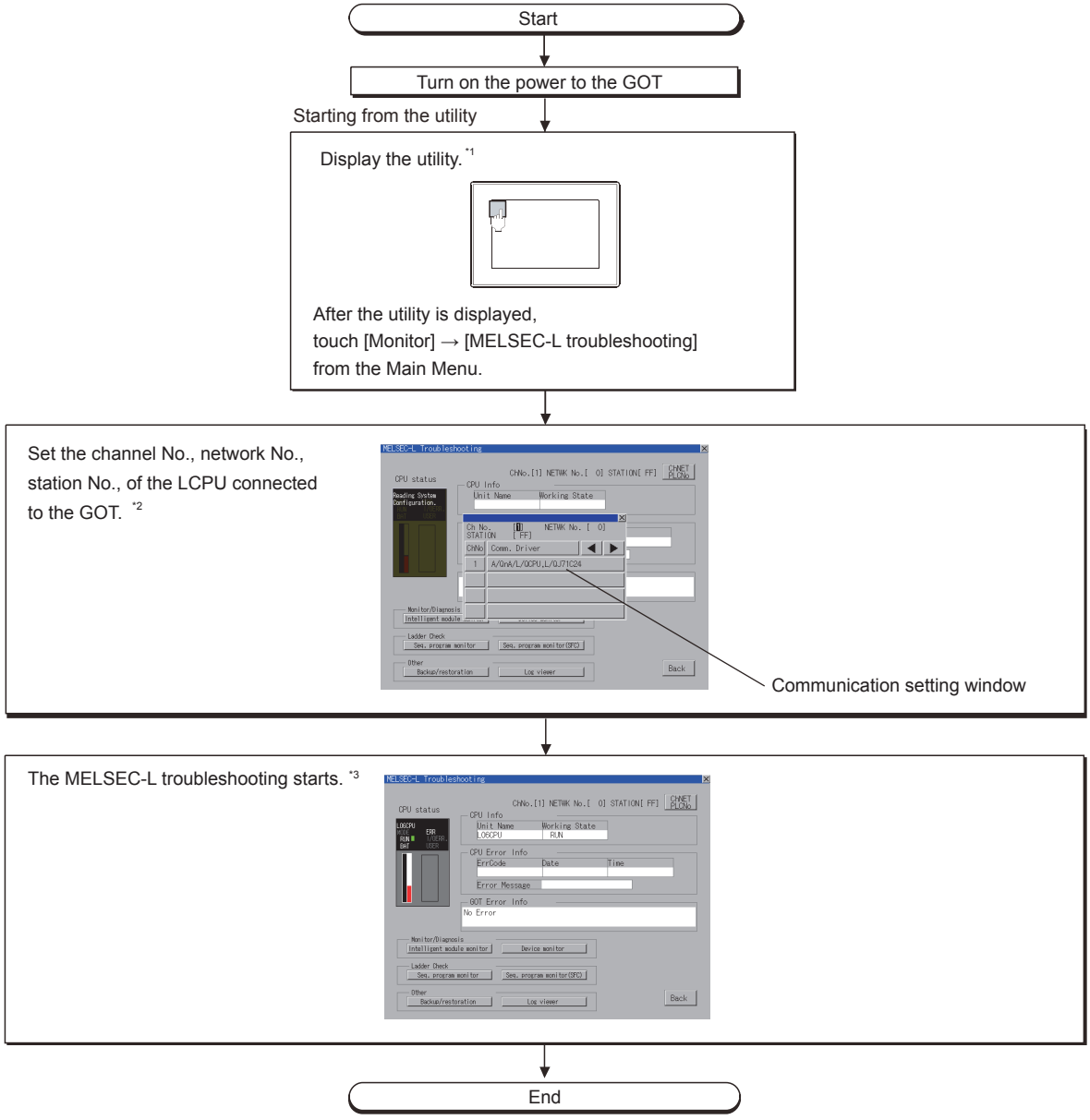
The LCPU of the host and other stations can be monitored.

■3. When using CC-Link connection (Intelligent device station/via G4)

The LCPU of the master and local stations can be monitored.

11.3 Operation for Display

This section explains how to display the MELSEC-L troubleshooting screen after the GOT is turned on.



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

➠ GOT2000 Series User's Manual (Utility)

*2 For the details, refer to the following.

➠ 11.2.2 ■2. (1) Communication setting window

*3 For the details, refer to the following.

➠ 11.4 Operation Procedures

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-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.

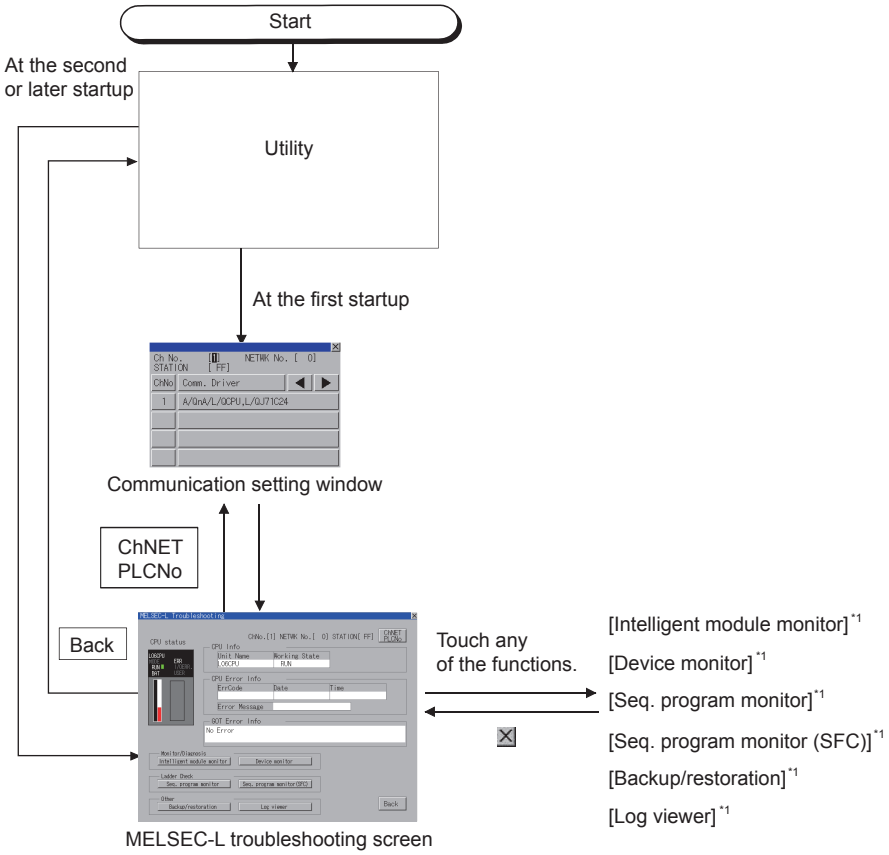
➠ 11.4 Operation Procedures

(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.

■1. Changing screens

This section describes how to change the screen.



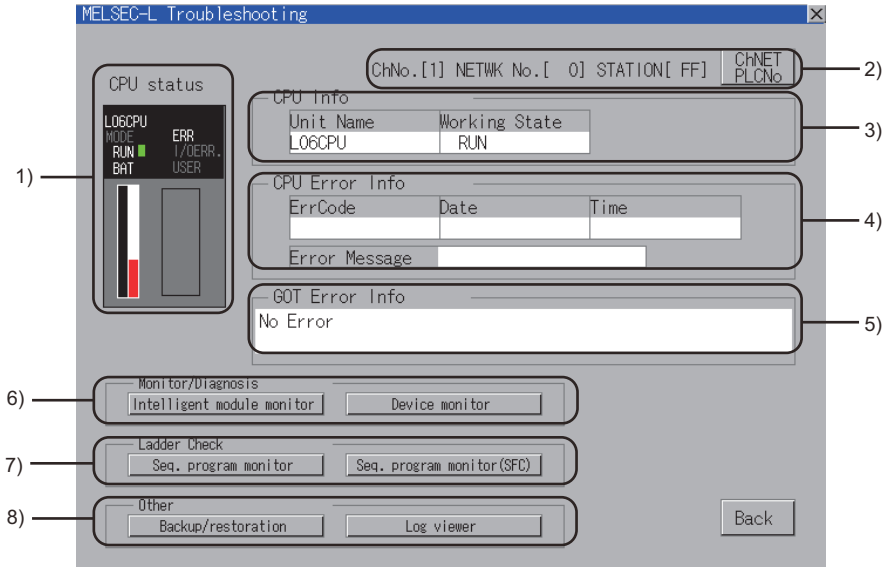
*1 For the details, refer to the following.

8. INTELLIGENT MODULE MONITOR
3. DEVICE MONITOR
4. SEQUENCE PROGRAM MONITOR (LADDER, iQ-R LADDER)
5. SEQUENCE PROGRAM MONITOR (SFC)
10. BACKUP/RESTORATION
12. LOG VIEWER

11.4 Operation Procedures

This section describes the display details for the MELSEC-L troubleshooting and the functions of the keys displayed on the screen.

■1. 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) Screen Design Manual
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.

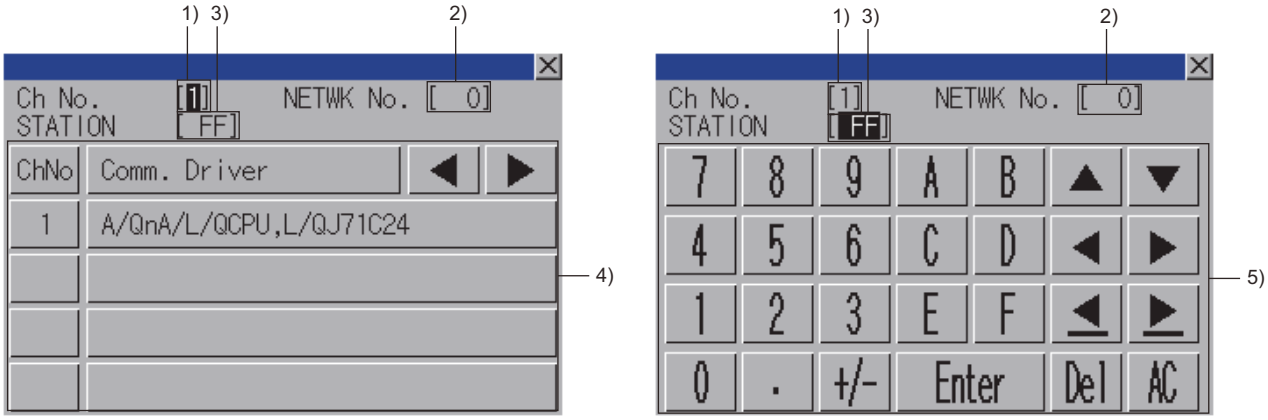
■2. Key functions

Key	Function
[ChNET PLCNo]	Displays the communication setting window. ➠ (1) Communication setting window
[Intelligent module monitor]	Starts the intelligent module monitor. ➠ 8. INTELLIGENT MODULE MONITOR
[Device monitor]	Starts the device monitor. ➠ 3. DEVICE MONITOR
[Seq. program monitor]	Starts the sequence program monitor (ladder). ➠ 4. SEQUENCE PROGRAM MONITOR (LADDER, iQ-R LADDER)
[Seq. program monitor (SFC)]	Starts the sequence program monitor (SFC). ➠ 5. SEQUENCE PROGRAM MONITOR (SFC)
[Backup/restoration]	Starts the backup/restore. ➠ 10. BACKUP/RESTORATION
[Log viewer]	Starts the log viewer. ➠ 12. LOG VIEWER

Key	Function
[Back]	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.
Input area move	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.

11.5 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.	Check the connection status between the PLC CPU and the GOT. (Check if the connector is disconnected or the cable is broken.) Check if an error has occurred in the PLC CPU.

12. LOG VIEWER

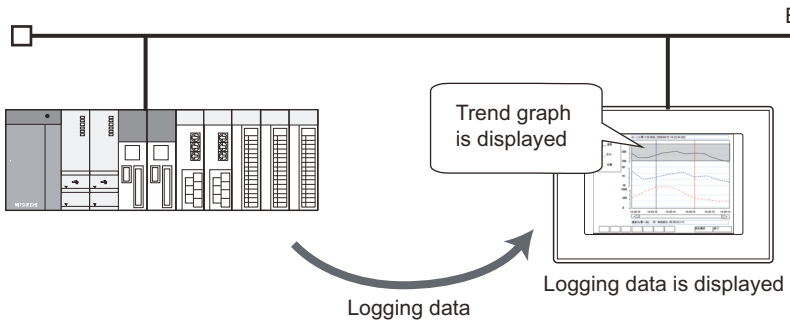
GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

12.1 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.

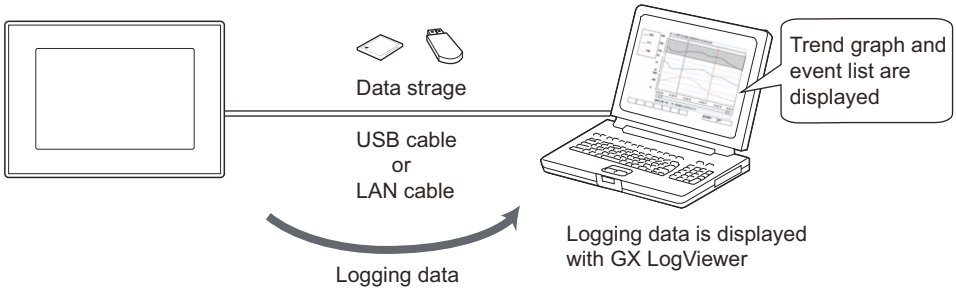
■1. Displaying logging data without a personal computer

- 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.



■2. 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.



12.2 Specifications

12.2.1 System configuration

This section describes the system configuration of the log viewer.

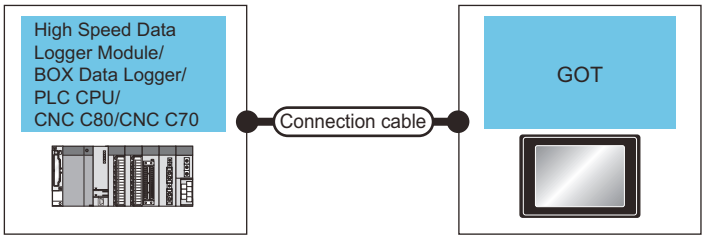
■1. Target controller

Type		Model
High speed data logger module (MELSEC iQ-R series)		RD81DL96
High speed data logger module (Q series)		QD81DL96
BOX Data Logger		NZ2DL
PLC CPU	RCPU	R01CPU *1, R02CPU *1, R04CPU *1, R08CPU *1, R16CPU *1, R32CPU *1, R120CPU *1, R04ENCPU *2, R08ENCPU *2, R16ENCPU *2, R32ENCPU *2, R120ENCPU *2
	FX5CPU *3	FX5U-32MR/ES, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-32MR/DS, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-64MR/ES, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-64MR/DS, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-80MR/ES, FX5U-80MT/ES, FX5U-80MT/ESS, FX5U-80MR/DS, FX5U-80MT/DS, FX5U-80MT/DSS, FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS
	QCPU *1	Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU, Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, Q26UDPVCPU
	LCPU *1	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT
CNC C80		R16NCCPU
CNC C70		Q173NCCPU-S01

*1 The PLC CPU must be connected by using the built-in Ethernet port.
*2 The PLC CPU must be connected by using port CPU P1.
*3 When all the following conditions are satisfied, the data logging function is available.
- The firmware version is 1.040 or later.
- The serial number of the CPU module is 16Y**** or later.

■2. Connection type

(1) When using the standard Ethernet interface or the extended Ethernet interface



Controller		Connection cable *1*2	Maximum segment length *3	GOT		Number of connectable equipment
Model	Connection type			Option device	Model	
RD81DL96 *4 QD81DL96 *4 NZ2DL *5 RCPU *6 FX5CPU *6 QnUDVCPU *6 LCPU *6 R16NCCPU *7 Q173NCCPU-S01 *8	Ethernet connection	• 100BASE-TX Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP) of category 5 or higher • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP) of category 3 or higher	100m	- (Built into GOT) GT25-J71E71-100	GT27 GT25	16 GOTs

*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.
When the GOT is directly connected to a controller via an Ethernet cable, a cross cable is applicable.
However, the GOT does not support the direct connection for the controller. Set the IP address on the controller side.

*3 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
- 10BASE-T: Max. 4 nodes for a cascade connection (500m)
- 100BASE-TX: Max. 2 nodes for a cascade connection (205m)

When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.

*4 For the system configuration of high speed data logger module, refer to the following manual.

➠ MELSEC iQ-R High Speed Data Logger Module User's Manual (Startup)
High Speed Data Logger Module User's Manual

*5 For the system configuration of the BOX data logger, refer to the following manual.

➠ BOX data logger User's Manual

*6 For the system configuration of the PLC CPU with the built-in Ethernet interface, refer to the following manual.

➠ MELSEC iQ-R Module Configuration Manual
MELSEC iQ-F FX5U User's Manual (Hardware)
QnUCPU User's Manual (Communication via Built-in Ethernet Port)
MELSEC-L CPU Module User's Manual (Built-In Ethernet Function)

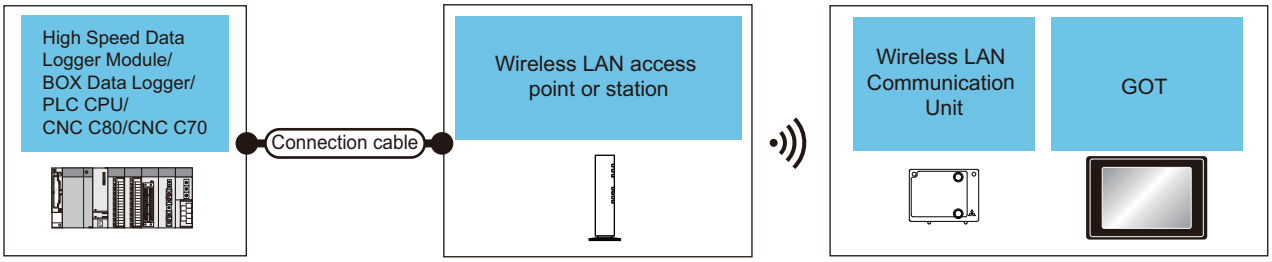
*7 Applicable only with the Display I/F connection
For the system configuration for the CNC C80 side, refer to the following manual.

➠ C80 Series Connection and Setup Manual

*8 Applicable only with the Display I/F connection
For the system configuration for the CNC C70 side, refer to the following manual.

➠ C70 Setup Manual

(2) When using the wireless LAN extension interface



Controller		Connection cable *3*4	Maximum segment length *5	Wireless LAN access point or station	GOT		Number of connectable equipment
Model	Connection type			Model name	Option device	Model	
RD81DL96 *6 QD81DL96 *6 NZ2DL *7 RCPU *8 FX5CPU *8 QnUDVCPU *8 LCPU *8 R16NCCPU *9 Q173NCCPU-S01 *10	Ethernet connection	• 100BASE-TX Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP) of category 5 or higher • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP) of category 3 or higher	100m	Wireless access point For the connectable access point and system devices, refer to the following Technical News ➠ List of Valid Devices Applicable for GOT2000 Series (GOT-A-0064)	GT25-WLAN	GT27 *1 GT25 *1	16 GOTs
				Use a wireless LAN station that conforms to the specifications of the wireless LAN communication unit. For the specifications of the wireless LAN communication unit, refer to the following. ➠ GOT2000 Series User's Manual (Hardware)	GT25-WLAN	GT27 *2 GT25 *2	

*1 Set [Operation Mode] to [Station] in [Wireless LAN Setting] in the [GOT Setup] window.

➠ GT Designer3 (GOT2000) Screen Design Manual

*2 Set [Operation Mode] to [Access Point] in [Wireless LAN Setting] in the [GOT Setup] window.

➠ GT Designer3 (GOT2000) Screen Design Manual

*3 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.

*4 A straight cable is available.
When the GOT is directly connected to a controller via an Ethernet cable, a cross cable is applicable.
However, the GOT does not support the direct connection for the controller. Set the IP address on the controller side.

*5 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
- 10BASE-T: Max. 4 nodes for a cascade connection (500m)
- 100BASE-TX: Max. 2 nodes for a cascade connection (205m)

When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.

*6 For the system configuration of high speed data logger module, refer to the following manual.

➠ MELSEC iQ-R High Speed Data Logger Module User's Manual (Startup)
High Speed Data Logger Module User's Manual

*7 For the system configuration of the BOX data logger, refer to the following manual.

➠ BOX data logger User's Manual

*8 For the system configuration of the PLC CPU with the built-in Ethernet interface, refer to the following manual.

➠ MELSEC iQ-R Module Configuration Manual
MELSEC iQ-F FX5U User's Manual (Hardware)
QnUCPU User's Manual (Communication via Built-in Ethernet Port)
MELSEC-L CPU Module User's Manual (Built-In Ethernet Function)

*9 Applicable only with the Display I/F connection
For the system configuration for the CNC C80 side, refer to the following manual.

➠ C80 Series Connection and Setup Manual

*10 Applicable only with the Display I/F connection
For the system configuration for the CNC C70 side, refer to the following manual.

➠ C70 Setup Manual

■3. Required hardware

A data strage is necessary in the following cases.
- Displaying or managing logging data stored in a data strage
- Reading out and displaying logging data of 4MB or more from the controller

■4. Applicable hardware

A USB mouse is usable.

12.2.2 GOT side settings

■1. Setting communication interface

To use the log viewer function, assign an IP address to the GOT by one of the following methods.
After completing the setting on GT Designer3 (GOT2000), write the package data to the GOT.

(1) When using the standard Ethernet interface

Setting method	Reference
Set [Destination I/F] of [Ethernet Download] in the [PC (Data Transfer)] dialog.	GT Designer3 (GOT2000) Screen Design Manual
Set an Ethernet driver in [Driver] in the [Controller Setting] dialog.	GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1
Select [Communication Setting] of [Gateway] in the [Controller Setting] dialog, and select [Use the function of Gateway].	GT Designer3 (GOT2000) Screen Design Manual

(2) When using the extended Ethernet interface

Set [GOT Extended IP Address] in the [GOT Standard Ethernet Setting] dialog.
For the details of the [GOT Standard Ethernet Setting] dialog, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(3) When using the wireless LAN extension interface

For the setting to use the wireless LAN extension interface, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■2. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the log viewer to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

12.2.3 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.

➠ MELSEC iQ-R High Speed Data Logger Module User's Manual (Startup)
High Speed Data Logger Module User's Manual

For details of the PLC CPU module, refer to the following.

➠ MELSEC iQ-R Module Configuration Manual
MELSEC-L CPU Module User's Manual (Built-In Ethernet Function)
QnUCPU User's Manual (Communication via Built-in Ethernet Port)

For the details of the BOX data logger, refer to the following.

➠ BOX data logger User’s Manual

12.2.4 Precautions

■1. Handling data strage during the access

Do not remove the data strage and do not open the SD card slot during the access.
Doing so may damage files in the GOT or in the data strage.

■2. Connection to the PLC CPU

To use the log viewer function using the PLC CPU, the FTP setting is required on the PLC CPU.
The FTP setting methods for GX Works3 and GX Works2 are described below.

- In case of GX Works3
  Display the module parameter window of the CPU used, and select [FTP Server Setting] from the [Application Setting] tree.
  Select [Use] in [FTP Server Use or Not].
- In case of GX Works2
  Display the parameter setting window of the CPU used, and select the [Built-in Ethernet Port setting] tab.
  Click the [FTP Setting] button and select [Use] in [FTP].

For the details of GX Works3 and GX Works2, refer to the following.

➠ GX Works3 Operating Manual
GX Works2 Version1 Operating Manual (Common)
MELSEC iQ-R Ethernet User's Manual (Application)
MELSEC-L CPU Module User's Manual (Built-In Ethernet Function)
QnUCPU User's Manual (Communication via Built-in Ethernet Port)

■3. Connection to the MELSEC iQ-R high speed data logger module

The GOT cannot connect to the MELSEC iQ-R high speed data logger module on which no SD card is installed or the installed SD card is inaccessible.
Make sure that an accessible SD card is installed on the high speed data logger module.

■4. 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.

(1) 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.

➠ MELSEC iQ-R High Speed Data Logger Module User's Manual (Startup)
High Speed Data Logger Module User's Manual

(2) 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].

➠ MELSEC iQ-R Ethernet User's Manual (Application)
QnUDVCPU/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
00000003.CSV
} Referring and copying are enabled.
/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.)

■5. Creation date and time of the log data in FX5CPU

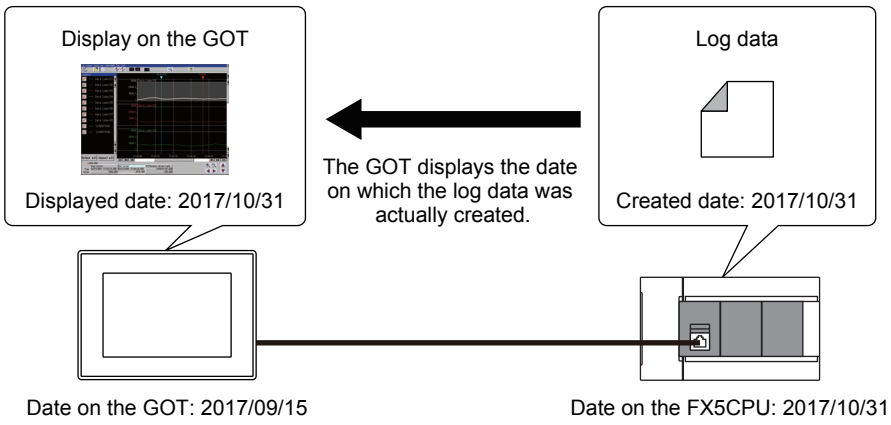
(1) Date and time format

Use the format [hh:mm<sp>] for the creation date and time of the log data in FX5CPU.
If [YYYY<sp><sp>] is used, 0:00 is displayed because the hour and minute information is not provided.

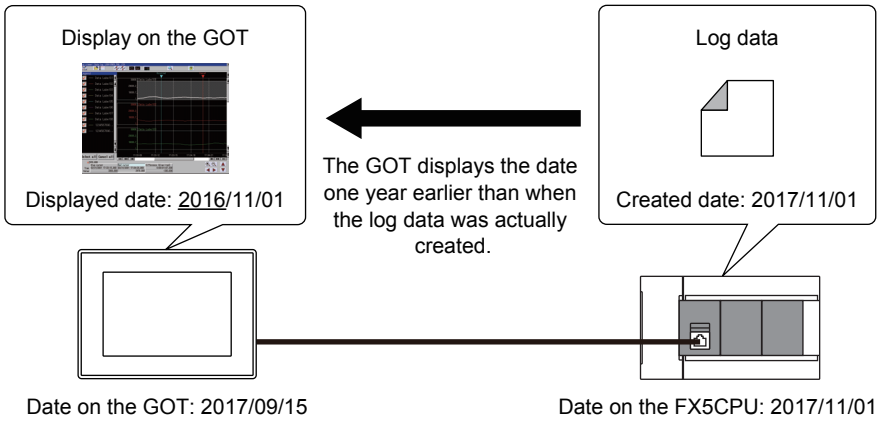
(2) Date and time of the GOT and the creation date and time of the log data

To display the log data of FX5CPU on the GOT, set the same date and time for the GOT and FX5CPU.
Otherwise, the date and time is displayed as shown below.

- When the date and time difference between the GOT and FX5CPU is one month or less
  The GOT displays the date and time on which the log data was actually created.

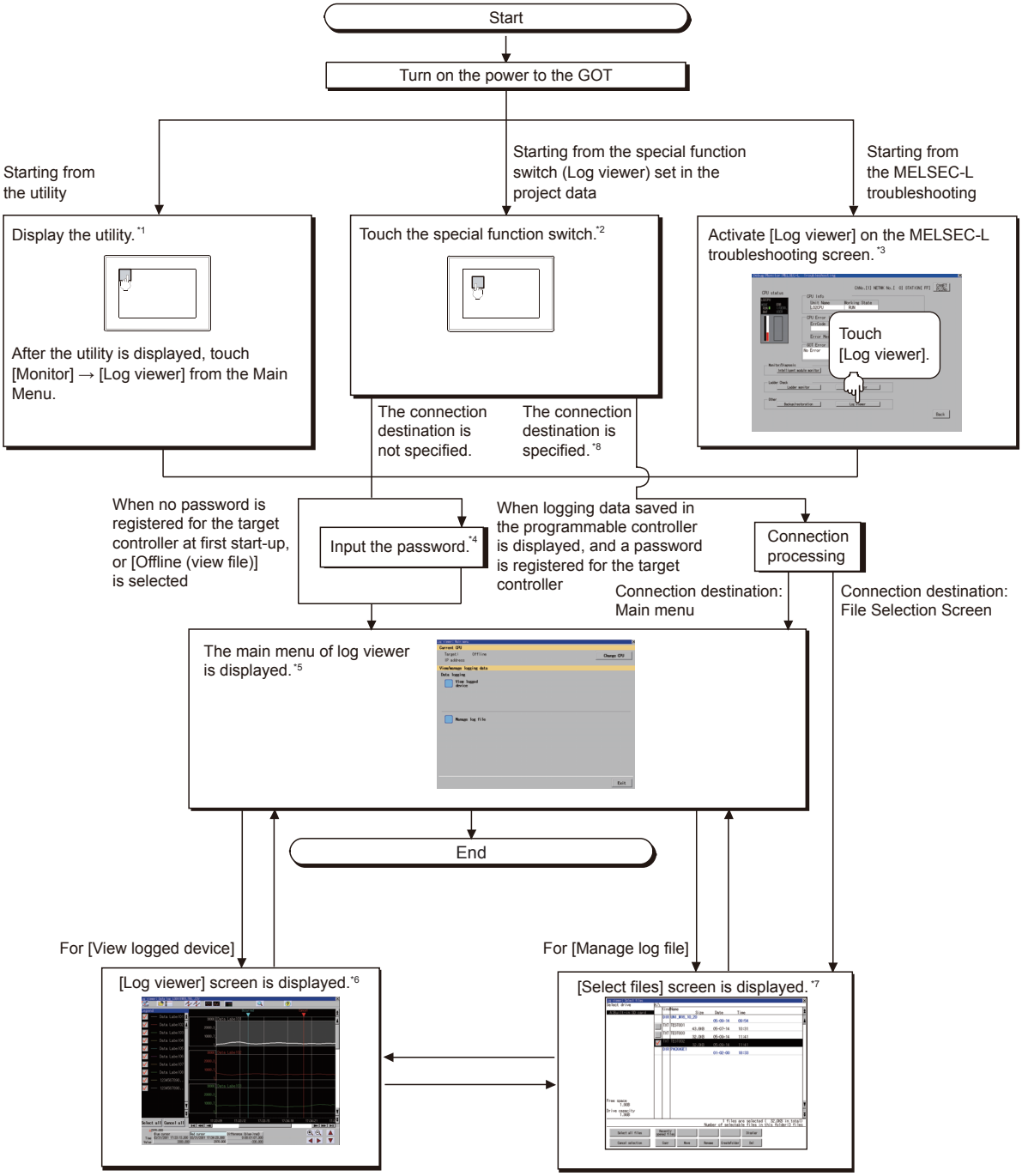


- When the date and time difference between the GOT and FX5CPU is more than one month
  The GOT displays the date and time one year earlier than when the log data was actually created.



12.3 Operations for Display

This section describes how to display the log viewer screen after the GOT is turned on.



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

➠ GOT2000 Series User's Manual (Utility)

*2 For how to set special function switches, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

*3 For the details, refer to the following.

➠ 11.4 Operation Procedures

*4 For the details, refer to the following.

➠ 12.4.2 How to operate target selection screen

*5 For the details, refer to the following.

➠ 12.4.3 How to operate Main Menu screen

*6 For the details, refer to the following.

➠ 12.5.1 Data log viewer screen

*7 For the details, refer to the following.

➠ 12.4.4 How to operate file selection screen

*8 FX5CPU cannot be specified as the connection destination in the special function switch setting.

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.

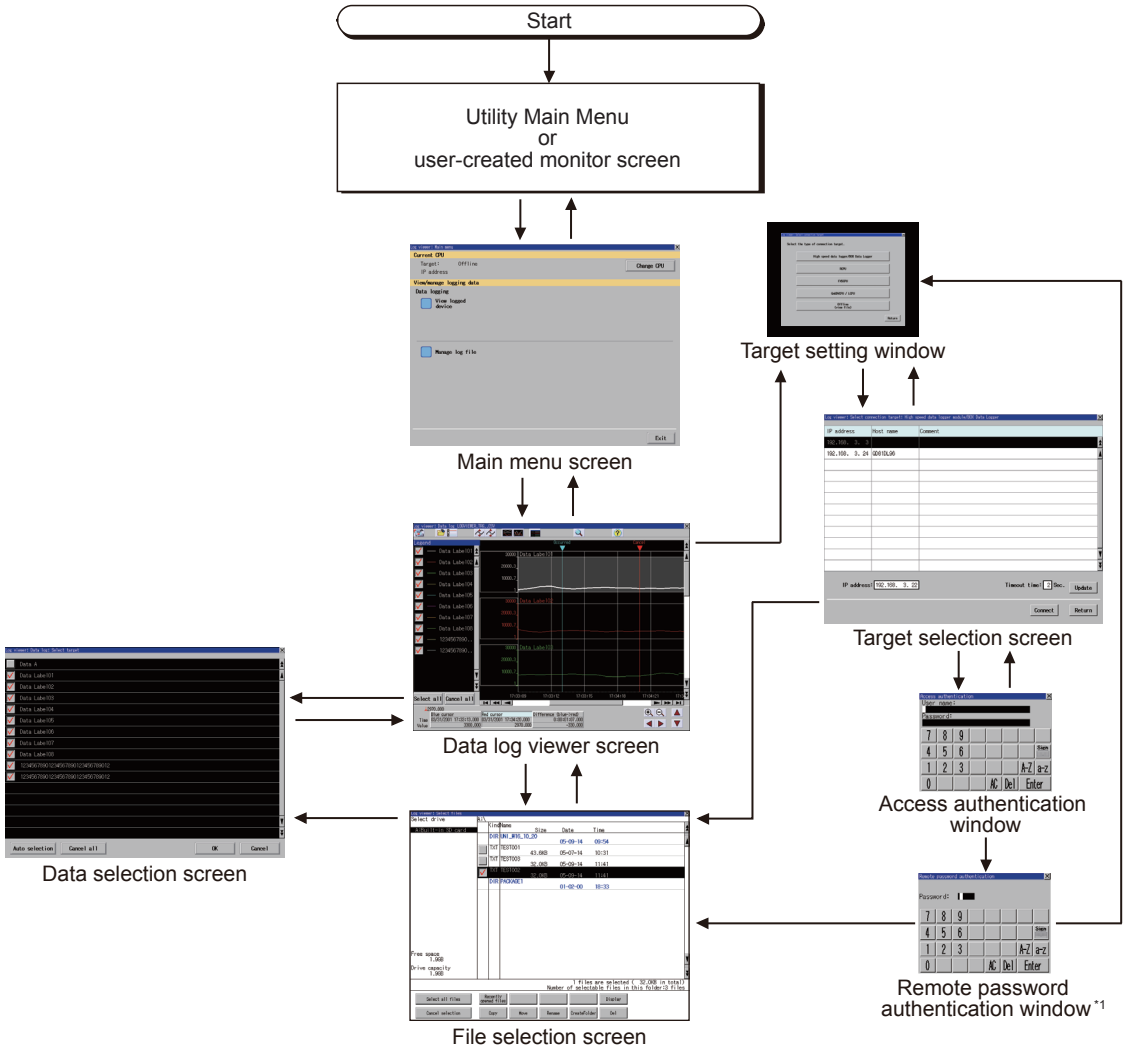
To display the target selection screen, touch the [High speed data logger module / BOX data logger], [RCPU], or [QnUDVCPU/LCPU] button.

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.

12.3.1 Screen transition when [View logged device] is selected



*1 Displayed only when LCPU is selected and the remote password is set.

■1. Performing the access authentication and the remote password authentication automatically

When the Store Previous Password signal (GS1797.b0) is turned on, the access authentication and the remote password authentication set for the connected controller are performed automatically if the controller IP address is identical to the one connected in the last session.

(1) Cases in which the access authentication and the remote password authentication must be performed manually

In the following cases, the access authentication and the remote password authentication must be performed manually even when the Store Previous Password signal (GS1797.b0) is on.

- The log viewer is started for the first time.
- The controller IP address differs from the one connected in the last session.
- When the authentication has failed

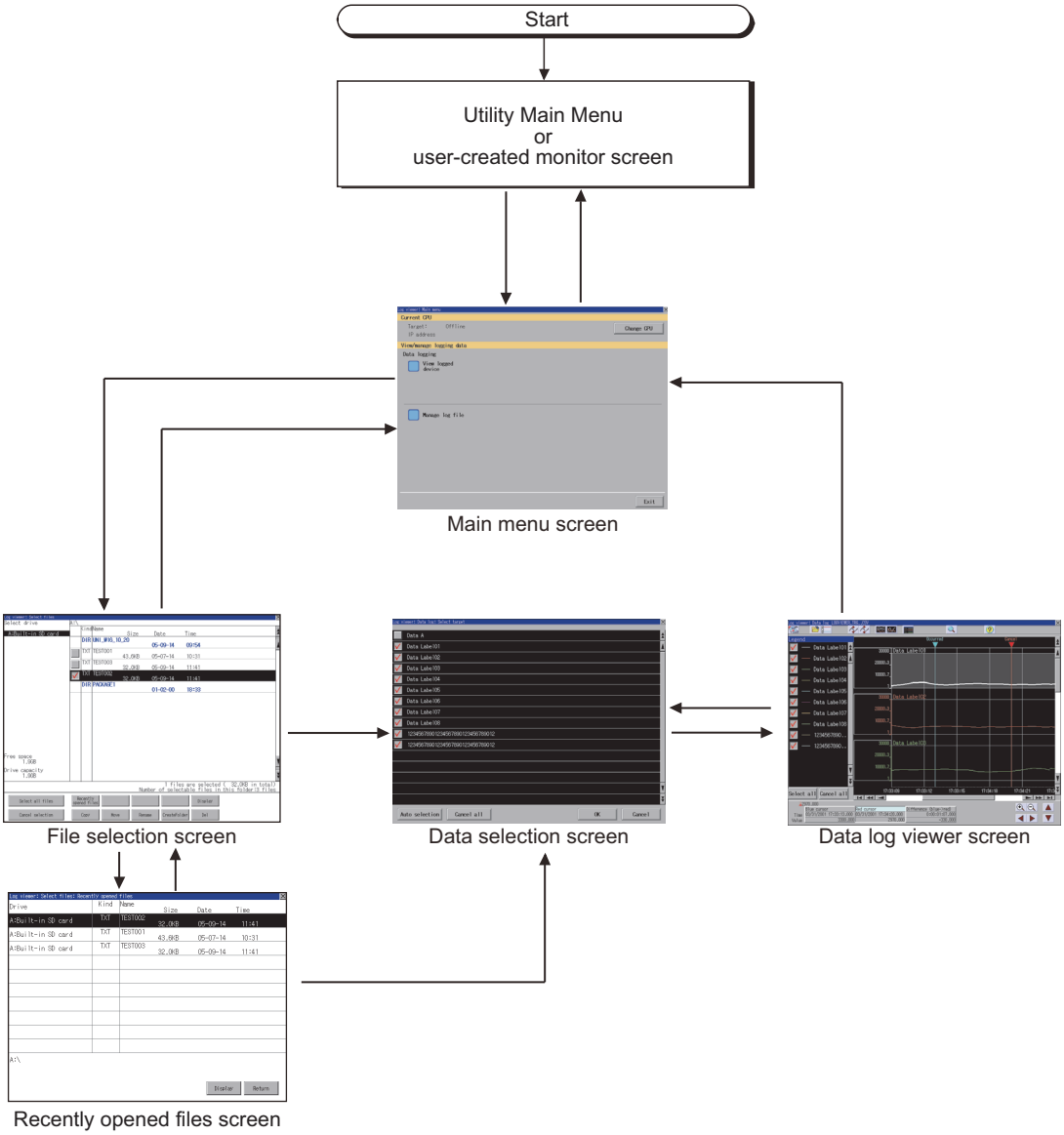
(2) Startup with the special function switch (Log viewer)

When you start the log viewer with the special function switch, the access authentication setting or remote password authentication setting of the switch is used for authentication even though the Store Previous Password signal (GS1797.b0) is on.

(3) Saving the password

When you start the log viewer after the Store Previous Password signal (GS1797.b0) is on, the saved password remains even if you turn off GS1797.b0.
When you turn on GS1797.b0 again, the automatic authentication is performed with the saved password.

12.3.2 Screen transition when [Manage log file] is selected

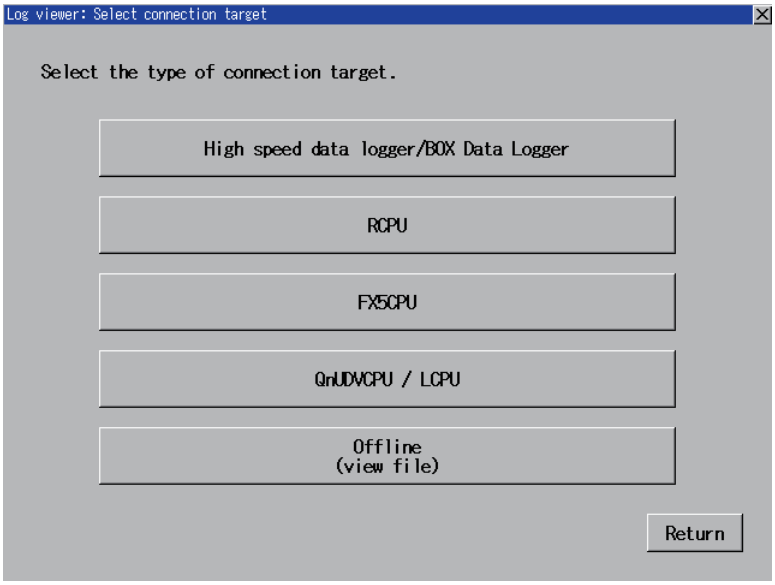


12.4 How to Operate Various Selection Screens

This section describes each screen contents displayed in log viewer and the functions of the keys displayed on the screen.

12.4.1 How to operate target setting window

Touch the [Change CPU] button in [Main Menu] to display the following screen.



Key	Function
[×] / [Return]	Closes the target setting window and returns to the Main Menu screen.
[High speed data logger / BOX Data Logger]	Displays the target selection screen. ➠ 12.4.2 How to operate target selection screen To connect the GOT with Q173NCCPU-S01, touch [QnUDVCPU/LCPU].
[RCPU]	
[FX5CPU]	
[QnUDVCPU / LCPU]	
[Offline (view file)]	Displays the Main Menu screen. ➠ 12.4.3 How to operate Main Menu screen

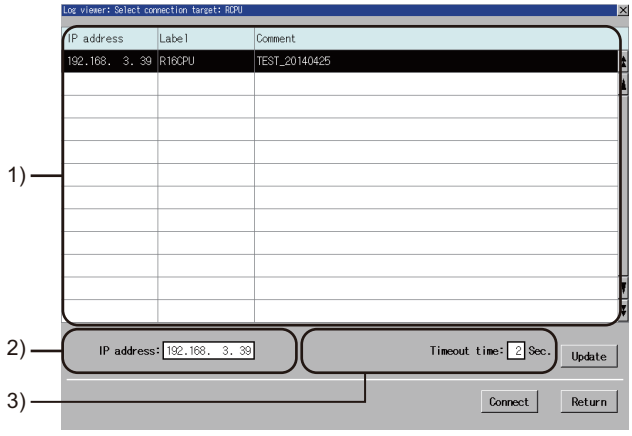
12.4.2 How to operate target selection screen

When [High speed data logger/BOX data logger], [RCPU], or [QnUDVCPU / LCPU] is selected in the target setting window, the following screen appears.

■1. Target selection screen

(1) Displayed contents

When [High speed data logger module / BOX data logger] is selected



When [RCPU], [FX5CPU] or [QnUDVCPU/LCPU] is selected

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. This area does not list the high speed data logger modules and PLC CPUs that are connected through a wireless LAN. Touch the IP address display area to display the IP address input window, and enter the IP address of an applicable high speed data logger module or PLC CPU.
2)	IP address display area	Displays the selected IP address. ➠ ■2. IP Address input window
3)	Timeout time display area	Displays the timeout time. ➠ ■3. Timeout time input window

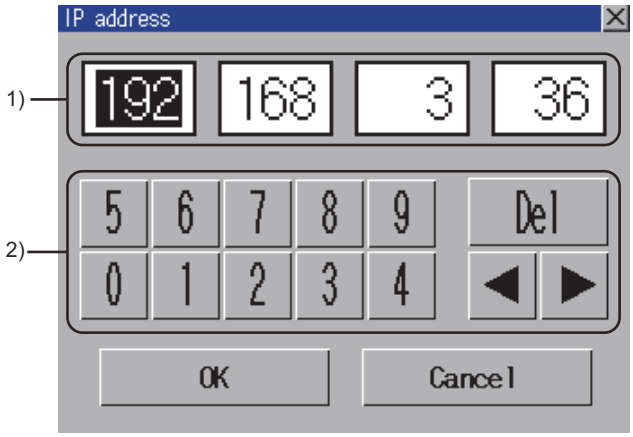
(2) Key functions

Key	Function
[×] / [Return]	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.
[Update]	Updates the displayed content of the connection target list.
[Connect]	Connects to the high speed data logger module or the PLC CPU selected from the connection target list or the IP address. When the password is set on the connected high speed data logger module or the PLC CPU, the access authentication window appears. ➠ 12.4.2 ■4. Access authentication window When no password is set on the connected high speed data logger module or the PLC CPU, the Main Menu screen appears. ➠ 12.4.3 How to operate Main Menu screen

■2. 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.

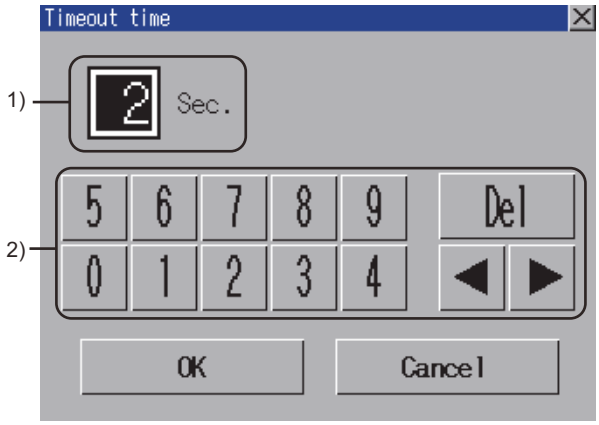
(2) Key functions

Key	Function
[×] / [Cancel]	Closes the IP address input window and cancels the IP address input operation.
[OK]	The IP address of the input numerical value is reflected.
[Del]	Deletes one character of the entered numerical value.
◀ ▶	Moves the cursor among the input areas.

■3. 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.

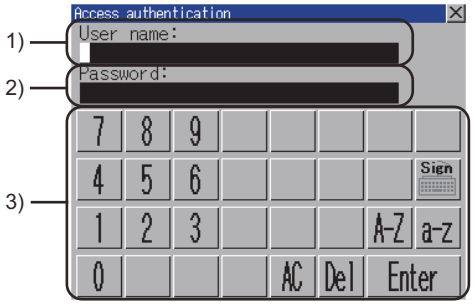
(2) Key functions

Key	Function
[×] / [Cancel]	Closes the Timeout time window and cancels the Timeout time input operation.
[OK]	The Timeout time of the input numerical value is reflected.
[Del]	Deletes one character of the entered numerical value.
◀ ▶	Moves the cursor among the input areas.

■4. 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.
[Sign]	Switches the key type to the symbol.
[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).
[SP]	A space is input at the cursor position.
[AC]	Deletes all the input values and characters.
[Del]	Deletes an input value or character.
[Enter]	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.*1 ➠ 12.4.2 ■5. Remote password authentication window When no remote password is set on the connected PLC CPU, the Main Menu screen appears. ➠ 12.4.3 How to operate Main Menu screen

*1 For the FX5CPU, the remote password authentication is not performed.

■5. 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.

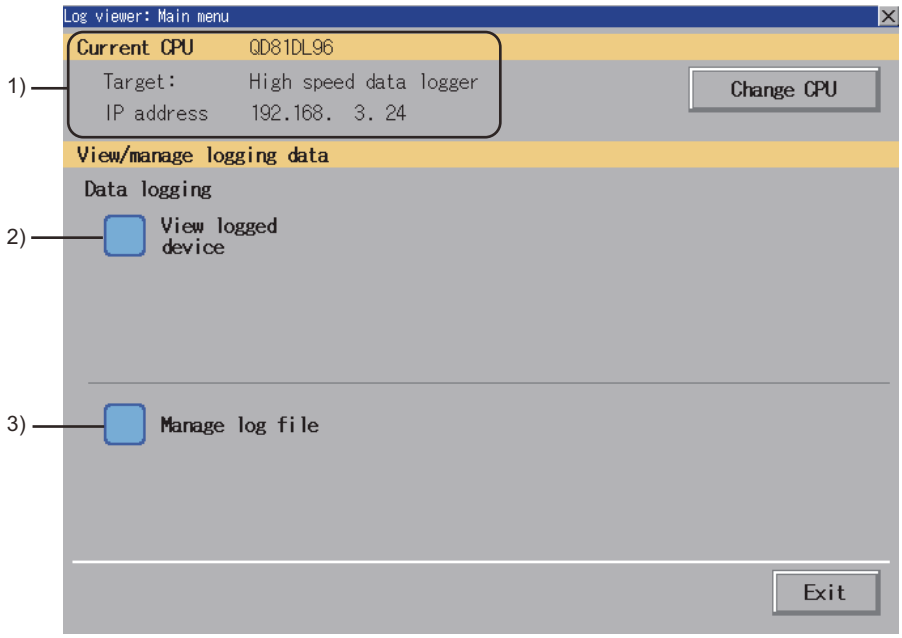
➠ 12.4.2 ■4. (2) Key functions

12.4.3 How to operate Main Menu screen

After the target is selected, the following screen appears.

■1. Displayed contents

The following screen appears when [High speed data logger module / BOX data logger] is selected.
A similar screen also appears when [RCPU] or [QnUDVCPU/LCPU] is selected.



No.	Item	Display contents
1)	Target controller display area	Displays the target device name and IP address. When Q173NCCPU-S01 is connected, [Q03UDVCPU] is displayed.
2)	View logged device	Displays the logging data stored in the target device as a graph. ➠ 12.5 How to Operate Data Log Viewer
3)	Manage log file	Controls the logging data stored in the target device. ➠ 12.4.4 How to operate file selection screen

■2. Key functions

Key	Function
[×] / [Exit]	Closes the Main Menu and returns to the target setting screen. ➠ 12.4.2 How to operate target selection screen
[Change CPU]	Displays the target setting window. ➠ 12.3 Operations for Display

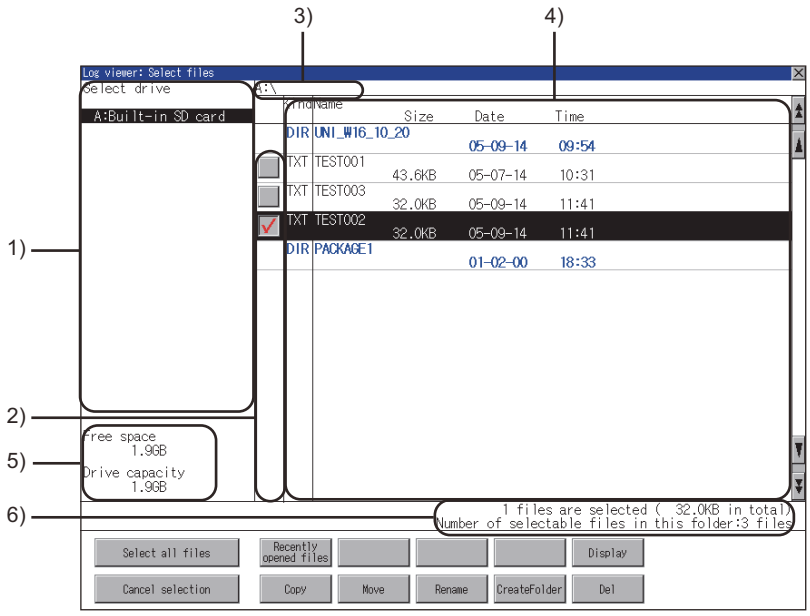
12.4.4 How to operate file selection screen

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.

■1. 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. The files in the CSV *1, BIN *2, XLS *3, or TXT *4 format 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 [Z:Target device] is selected.
6)	Number of folders and files	Displays the total number of displayed folders and files.

*1 Logging data acquired from the high speed data logger, LCPU, QnUDVCPU, or the BOX data logger can be displayed as a graph in the data log viewer.

*2 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.

*4 Only logging data acquired from the RCPU can be displayed as a graph in the data log viewer.

POINT

Restrictions when [Z: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.
[Select all files] / [Cancel selection]	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.
[Recently opened files]	Displays a list of recently opened files. ➠ 12.4.4 ■2. Recently opened files screen
[Display]	Displays the selected file in log viewer. ➠ 12.5 How to Operate Data Log Viewer
[Copy]	Copies the selected file. *1
[Move]	Moves the selected file. *1*2
[Rename]	Renames the selected file. *1*2
[Create Folder]	Creates a folder. *1*2
[Del]	Deletes the selected file. *1*2

*1 For how to operate, refer to the following.

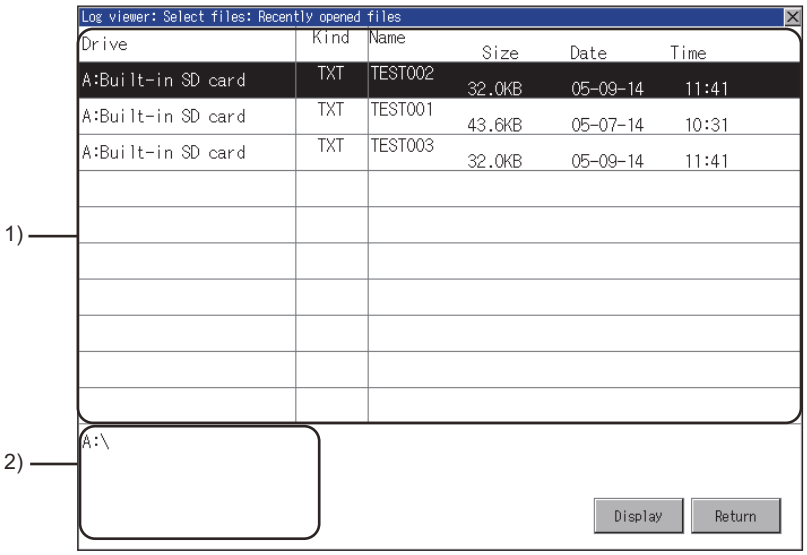
➠ GOT2000 Series User's Manual (Utility)

*2 If [Z:Target device] is selected in select drive, the key functions are disabled.

■2. Recently opened files screen

Touch the [Recently opened files] button in the file selection screen to display the following screen.

(1) Displayed contents



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 [Z: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.
[Display]	Displays the selected file in log viewer. ➠ 12.5 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 [Z: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.

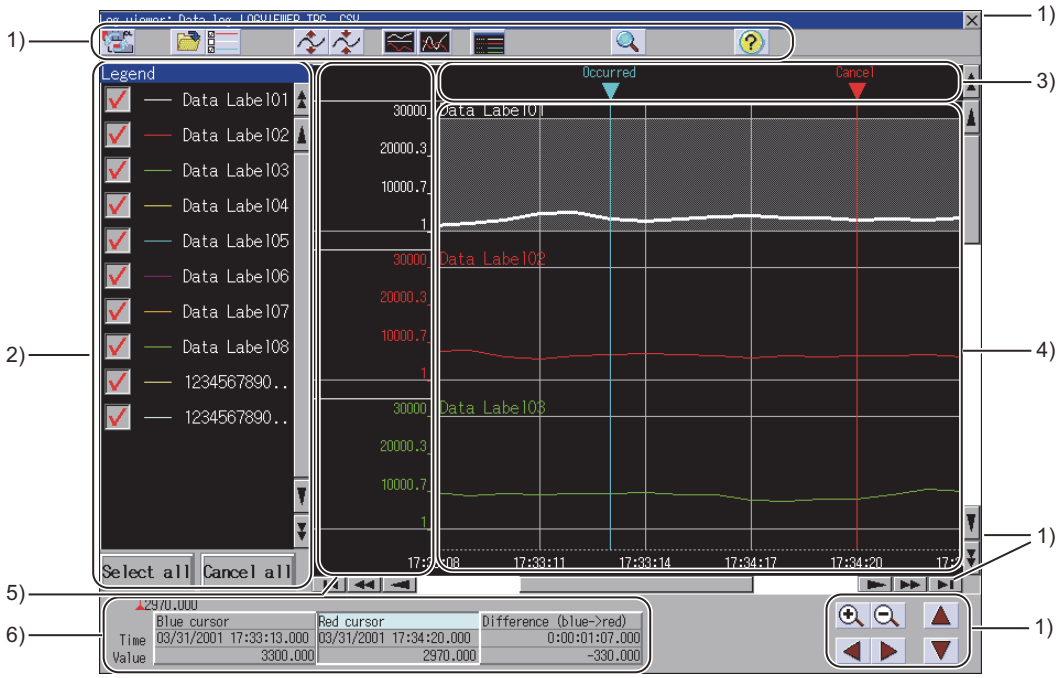
12.5 How to Operate Data Log Viewer

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.

12.5.1 Data log viewer screen

■1. 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. ➠ 12.5.2 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. ➠ 12.5.3 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. ➠ 12.5.4 Cursor position information

*1 For the details, refer to the following.

Resolution (dots)	With legend display	Without legend display
WXGA (1280 × 800) XGA (1024 × 768)	705	897
SVGA (800 × 600)	481	673
WVGA (800 × 480) VGA (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).

■2. Key functions

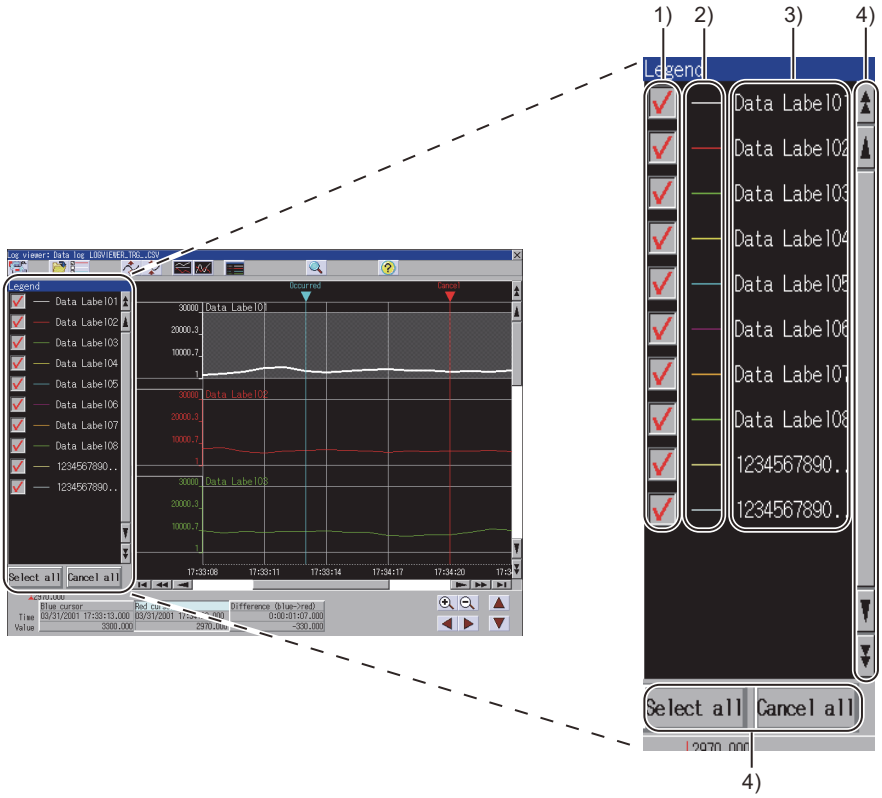
Key	Function
[×]	Closes the data log viewer screen, and returns to the previous screen.
	Displays the target setting screen. ➠ 12.4.2 How to operate target selection screen
	Opens the file selection screen and displays the list of the files stored in the high speed data logger module/PLC CPU or SD card/USB memory. ➠ 12.4.4 How to operate file selection screen
	Select the data to view. ➠ 12.5.5 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. ➠ 12.5.2 Legend display
	Searches the time/index data specified by the graph which is selected in the graph display area. ➠ 12.5.6 Searching data
	Displays the help screen for icon. ➠ 12.5.7 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.

Key	Function
	Scrolls the display area right and left by one page.
	Scrolls the display area to the beginning or end of the selected graph.
	Enlarges/reduces the display area horizontally.
	Moves the selected cursor right and left.
	Switches the selected graph up or down.

12.5.2 Legend display

The following explains the legend display.

■1. Displayed contents



No.	Item	Display contents
1)	Check box	Select the checkbox to display the corresponding graph.
2)	Line type display area	Displays the line type of the target graph.
3)	Data name display area	Displays the data name of the target graph. When the data name exceeds 12 characters, the first 10 characters are displayed. The rest of the characters are displayed with [..].
4)	Keys	Keys for operations in the legend display window.

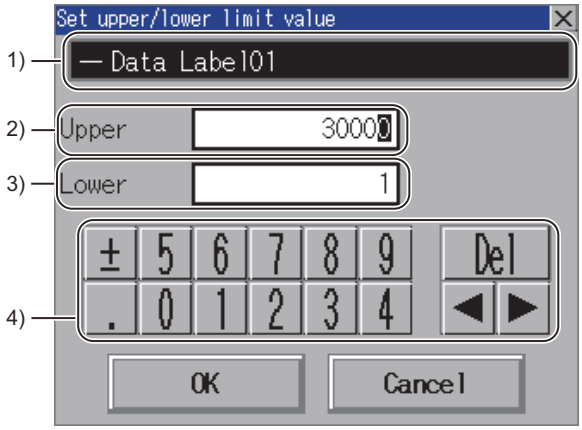
■2. Key functions

Key	Function
	Scrolls the display area up and down by one line.
	Scrolls the display area up and down by one page.
[Select all] / [Cancel all]	Displays or hides all graphs.

12.5.3 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.

■1. 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.

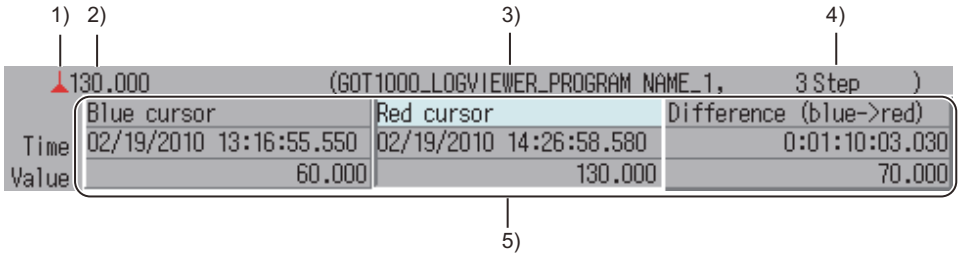
■2. Key functions

Key	Function
[×] / [Cancel]	Closes the upper and lower limit values setting window and cancels the upper and lower limit values input operation.
[OK]	The values which are input as upper and lower limits are displayed on the scales.
[Del]	Deletes an input value or character.
◀ ▶	Moves the cursor among the input areas.

12.5.4 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.

■1. Displayed contents

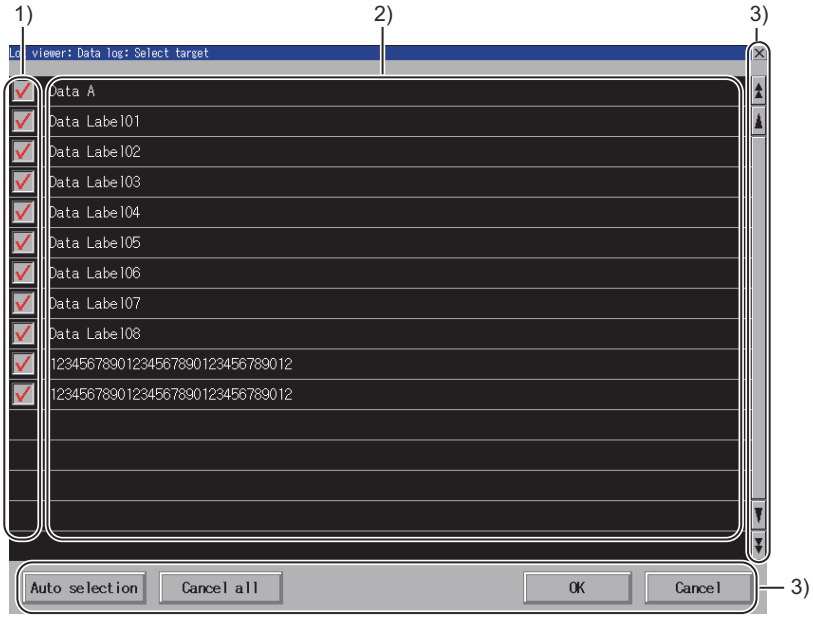


No.	Item	Display contents
1)	Selecting cursor color	Displays the color of the selected cursor. The above chart shows the status that [Red cursor] button is touched.
2)	Cursor read value	Displays the value of the intersection of graph and cursor selected in the graph display area. The above chart shows 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]. ➠ 12.5.1 Data log viewer screen

12.5.5 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.

■1. 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.

■2. Key functions

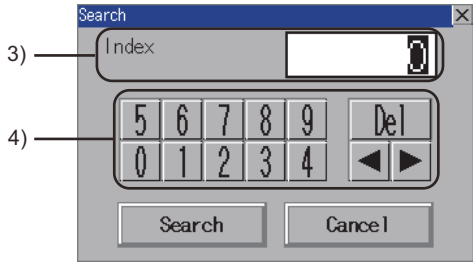
Key	Function
[×] / [Cancel]	Closes the data selection screen, and returns to the log viewer screen.
[OK]	The logging data selected in the data selection screen is displayed on the data log viewer.
▲ ▼	Scrolls the display area up and down by one line.
▲▲ ▼▼	Scrolls the display area up and down by one page.
[Auto selection]	Selects up to 16 logging data displayed in the data name list display area, from the top.
[Cancel all]	Cancels all the selected data.

12.5.6 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.

■1. Displayed contents

When the logging data includes time information



When the logging data does not include time information

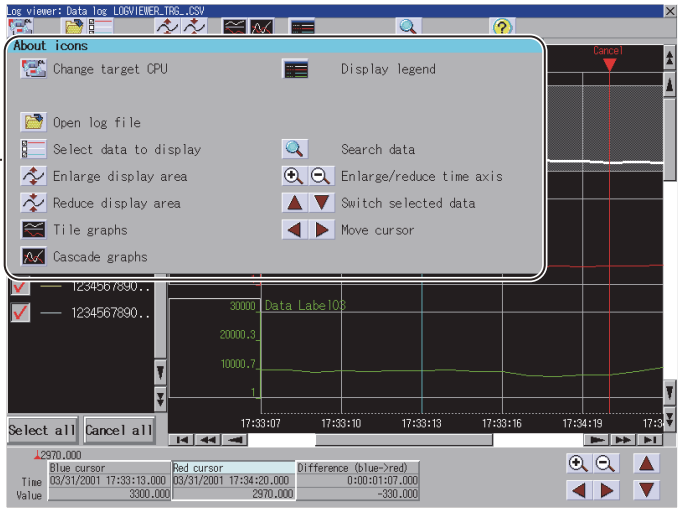
No.	Item	Display contents
1)	Date input area	Input the date to be searched. When this screen is displayed, the date on the right of the graph at screen opening is displayed.
2)	Time input area	Input the time to be searched. When this screen is displayed, the time on the right of the graph at screen opening 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.

■2. Key functions

Key	Function
[×] / [Cancel]	Closes the data search screen.
[Search]	Searches the graph displayed in the data log viewer screen with the values input in the data search screen.

12.5.7 Help

The following explains the help window.
Help window displays the contents of icons.



No.	Item	Display contents
1)	Help window display area	Displays functions of the icons in the window. Help window closes by touching any place in the help window display area. While the help window is displayed, touching other than the help window display area is invalid.

12.6 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

13. FX LADDER MONITOR

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

13.1 Features

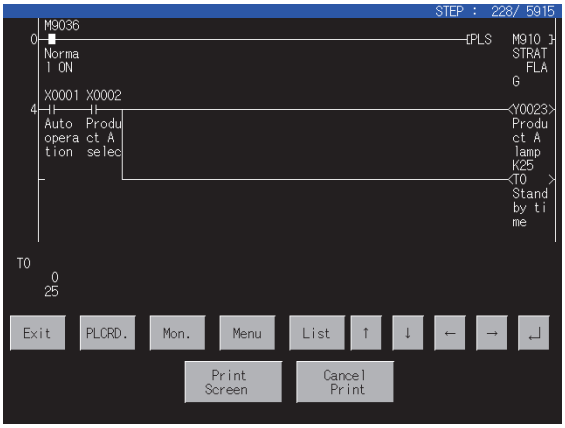
The FX ladder monitor enables you to monitor the sequence program within the target controller and change device values. It is intended to troubleshoot and maintain the PLC system efficiently.
The features of the FX ladder monitor are shown below.

■1. 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.

➠ 13.4 Common Operation

(Display example)



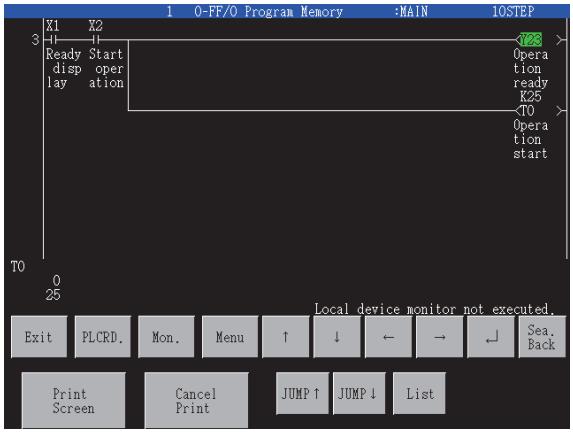
■2. The display format, device comment display and language can be switched

The following can be switched.

➠ 13.5 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.

➠ 13.5.2 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.

➠ 13.5.3 Switching comment/no-comment display

13.2 Specifications

13.2.1 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 Electric Products) For GT Works3 Version1

■1. Target controller

Controller
FXCPU*1

*1 FX3U and FX3UC are connectable.

■2. 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.	○	○	13.6
Display switching	Displaying word devices in DEC or HEX	○	○	13.5
	Displaying device comments, etc.	○	○	
Test operation	Changing device values, etc.	△ *1*2	△ *1*2	13.7
Hard copy	Storing FX ladder monitor screen in BMP/JPEG format	○	○	13.4.2

*1 The present value of V and Z cannot be changed.
*2 The set values of T and C cannot be changed.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the FX ladder monitor to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. 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.

■5. Applicable hardware

A USB mouse is usable.

13.2.2 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	○	○	○

13.2.3 Access range

For the FX ladder monitor can monitor only the host station.

13.2.4 Precautions

■1. Ladder display

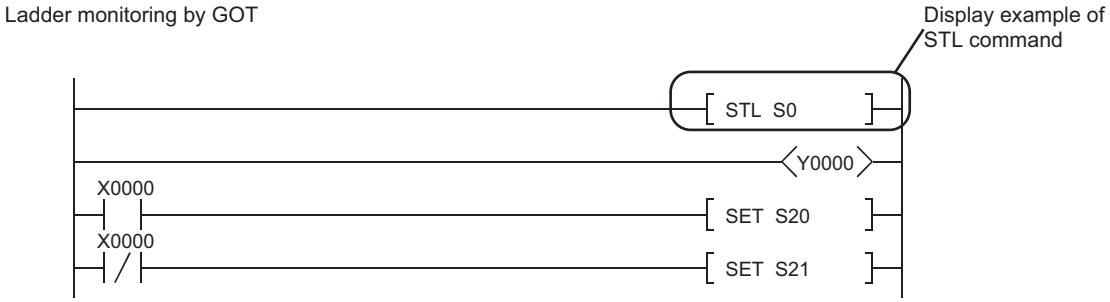
Up to 24 lines can be displayed per ladder block.
If a sequence program is written in which 24 or more lines are used in a ladder block, the ladder cannot be correctly displayed. It is advisable to divide such programs.

■2. During PLC reading

During PLC reading, only the host station is read.

■3. Notes on reading the contents

- An STL (step ladder) command, a dedicated command for the FXCPU, is displayed as shown below.



- How an INV command is displayed

- When searching an STL command, use "S (state)" in a device search.
- The 32-bit counters are displayed in 32-bit fixed display in the device monitor.
- 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.
- 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.

■4. 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).

POINT

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.

(1) 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.)

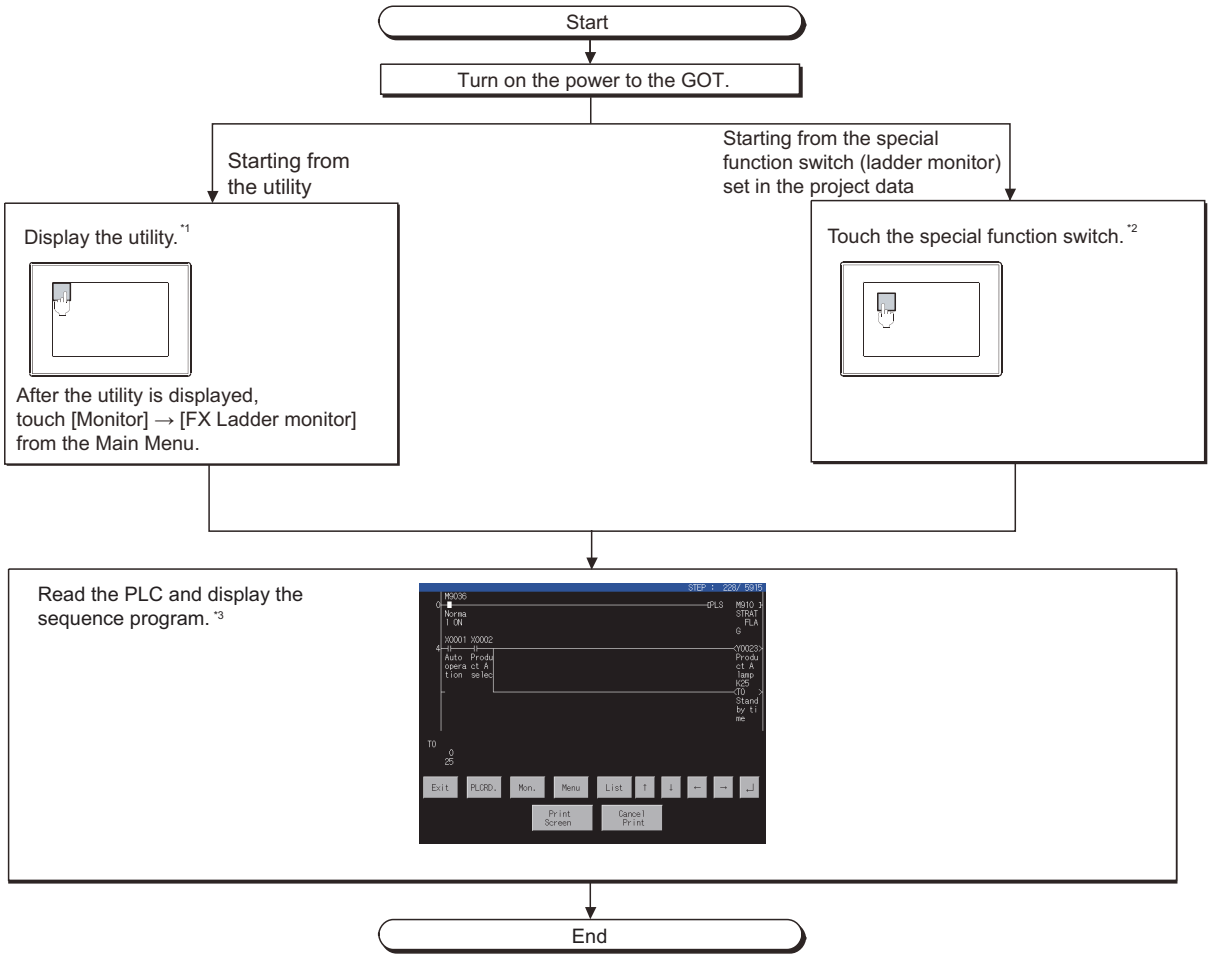
13.3 Operation for Display

This section describes the operation procedure from turning on the power to the GOT to ladder monitor function display.

■1. 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.



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

➠ GOT2000 Series User's Manual (Utility)

*2 For how to set special function switches, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

*3 For the details, refer to the following.

➠ 13.3 Operation for Display

POINT

(1) How to display the utility

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

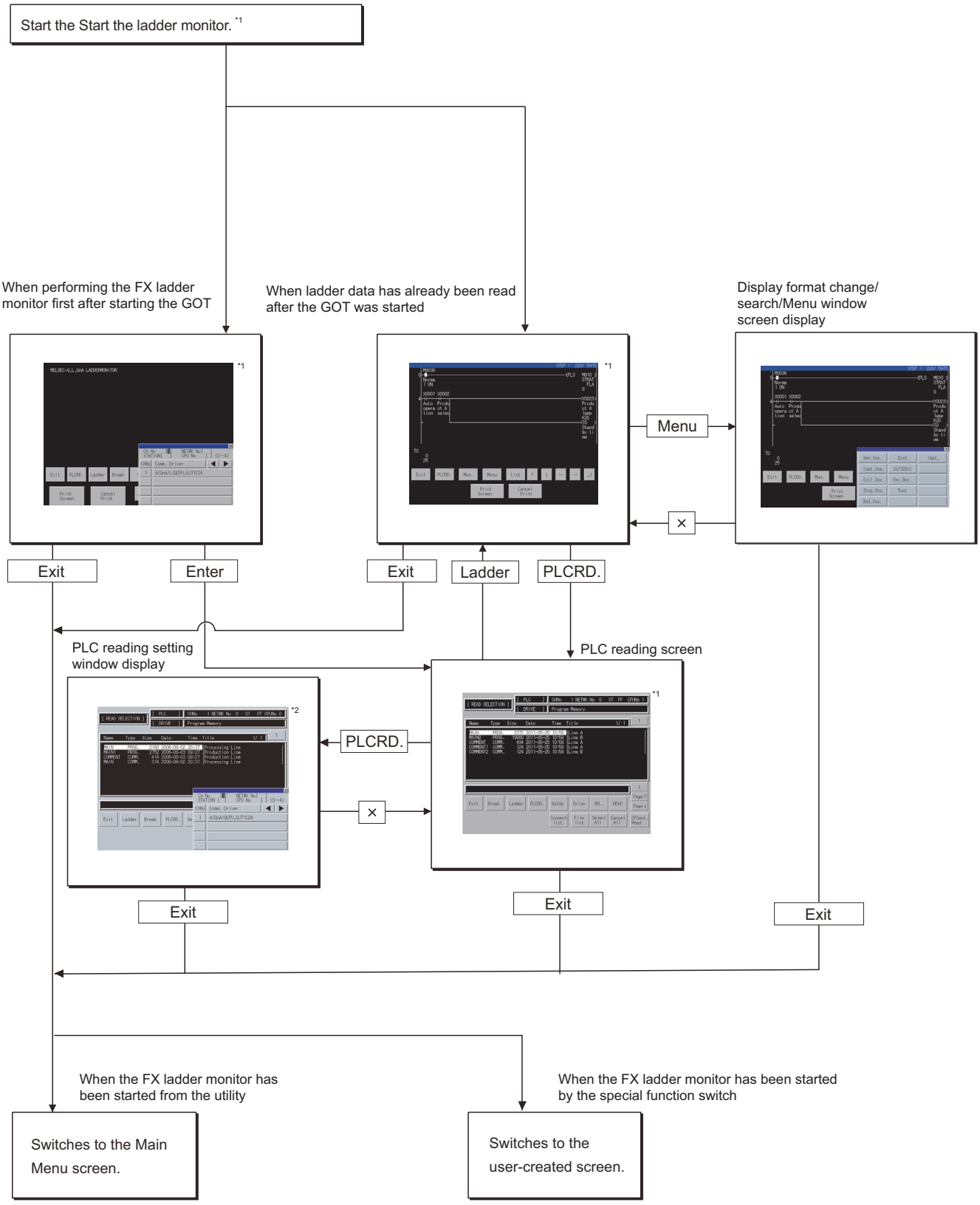
➠ GOT2000 Series User's Manual (Utility)

(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.

■2. Screen transition

The following shows the screen transition for normal operation.



*1 For the details, refer to the following.

➡ 13.3 Operation for Display

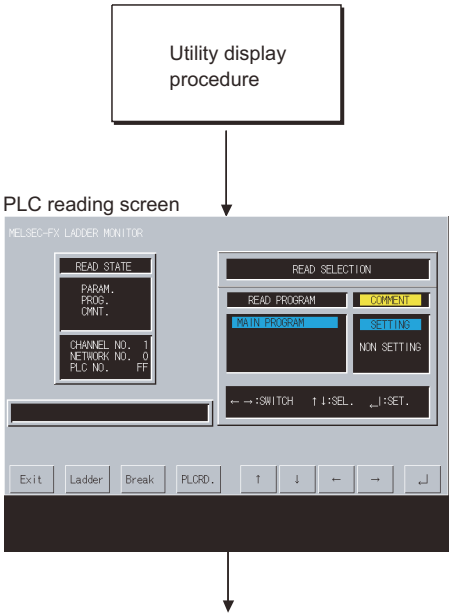
*2 For the details, refer to the following.

➡ 13.3.1 Display

13.3.1 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.

Step 1. Touch the [→], [←], [↑], and [↓] keys to specify the following items listed under "READ SECTION."
SETTING/NON SETTING for comment reading



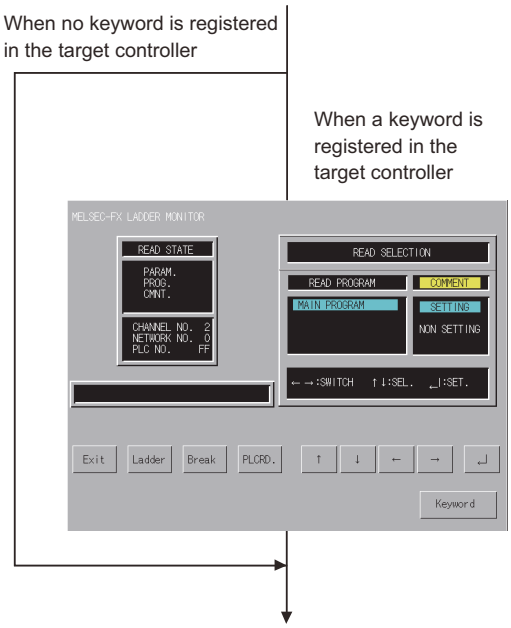
POINT

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.

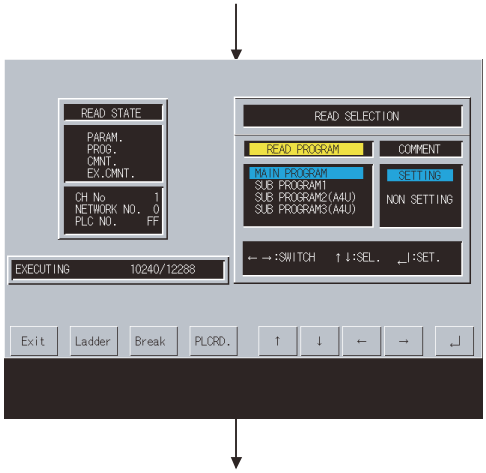
Step 2. Touch the [Keyword] key to enter the keyword registered in the target PLC CPU.
For the FX CPU keyword, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

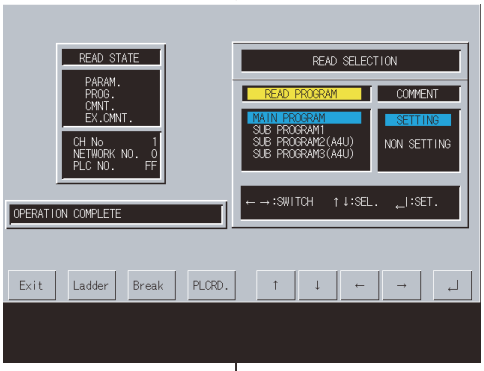


Step 3. The sequence program is read.

- 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.



Step 4. The reading of the sequence program is completed.
The message "OPERATION COMPLETE" is displayed.



EXIT
Touch

When the ladder monitor is activated from the utility

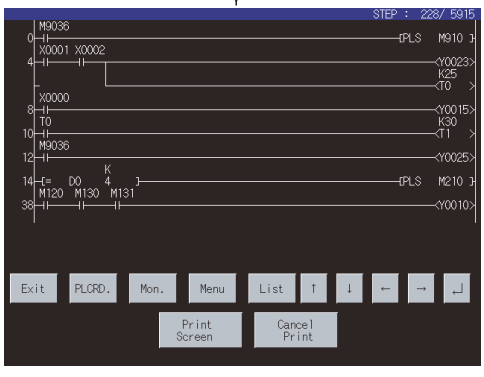
The screen switches to the main menu.

When the ladder monitor is activated by the special function switch

The screen switches to the user-created screen.

Ladder
Touch

Ladder monitor screen



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.

■1. Deleting specific ladder data

You can delete specific ladder data from the ladder monitor screen.
For the details, refer to the following.

➠ 13.3 Operation for Display

POINT

Deleting ladder data

Ladder monitor data is deleted every time the GOT is restarted.
Ladder data cannot be saved.

13.3.2 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.

■1. 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) Screen Design Manual

(○: Applicable ×: Inapplicable)

Object	Function			
	Automatic PLC read	Specify Search File	Coil	Factor
Special Function Switch	×	×	○	×
Alarm Display	×	×	○	×
Simple Alarm Display	×	×	○	×

■2. Searching operation

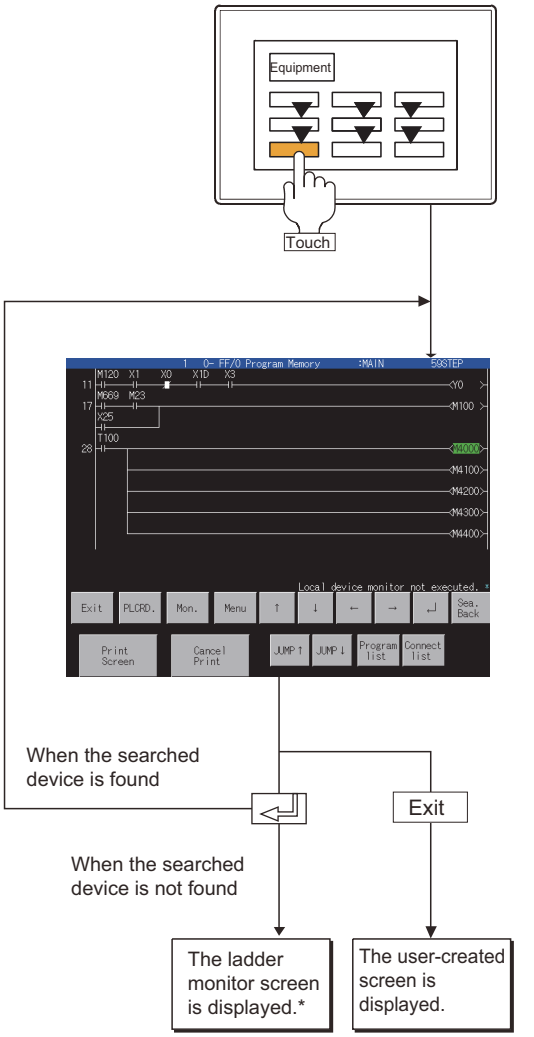
The following explains the procedure from touching the Key Code Switch for advanced alarm display or Special Function Switch and performing coil-search or defect search to display of a ladder block.

Step 1. Touch a key in monitor screen.

Step 2. After the read program is searched, the result is displayed.

Step 3. Touching the [↵] button searches consecutively.
Touching the [Exit] button completes searching halfway.

Step 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.

13.4 Common Operation

This section describes the information and key functions displayed on the FX ladder monitor screen.

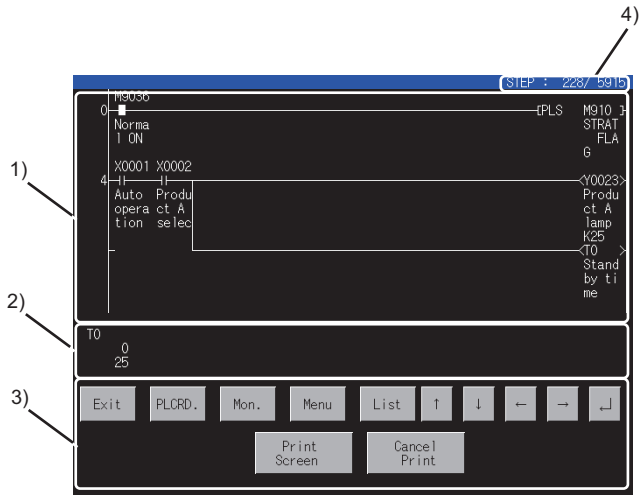
13.4.1 Information and key functions displayed on the screen

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

(1) 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.

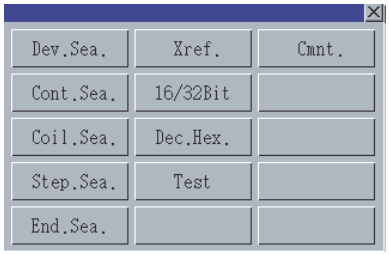
No.	Description
1)	Sequence program is displayed. A maximum of 11 contact points is displayed in one line of a ladder; for 12 contact points or more, move to the next line. When a comment display is specified, a comment is also displayed; expanded comments are given priority. For the method of displaying comments, see the following: ➠ 13.5.3 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: ➠ 13.5.2 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.

(2) Key functions

Key	Function
[Exit]	Returns the screen to the one displayed when the FX ladder monitor was activated.
[PLCRD.]	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: ➠ 13.3.1 Display
[Mon.]	Starts monitoring the displayed sequence program.
[Menu]	Displays the Menu window for FX ladder monitor. ➠ ■2. Menu window for the FX ladder monitor
[List]	Starts the list editor for FX. For details on the FX list editor, refer to the following. ➠ 15. 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.
[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, see the following: ➠ 13.4.2 Hard copy output
[Cancel Print]	The operation of this key is invalid.

■2. Menu window for the FX ladder monitor

(1) Display screen

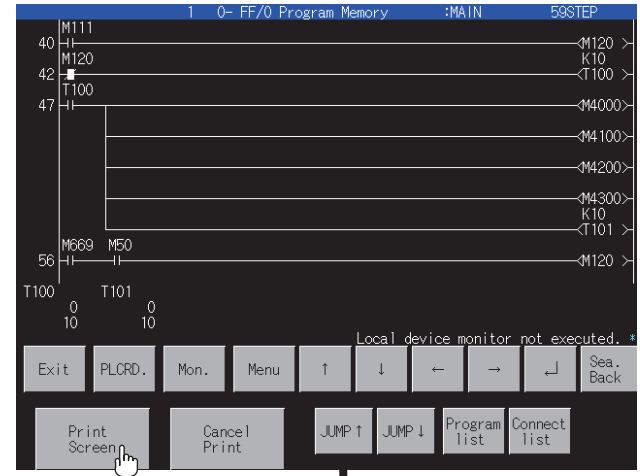


(2) Key functions

Key		Function
Search operation	[Dev.Sea.]	Displays the ladder block containing the specified device. ➠ 13.6.1 Device search
	[Cont.Sea.]	Displays the ladder block containing the specified device. ➠ 13.6.2 Contact point search
	[Coil.Sea.]	Displays the ladder block containing the specified coil. ➠ 13.6.3 Coil search
	[Step.Sea.]	Displays the ladder block containing the specified step number. ➠ 13.6.4 Step search
	[End.Sea.]	Displays the last ladder block of the sequence program. ➠ 13.6.5 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. ➠ 13.6.6 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. ➠ 13.5.1 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. ➠ 13.5.2 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. ➠ 13.5.3 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: ➠ 13.7 Test Operation

13.4.2 Hard copy output

This section describes how to store an FX ladder monitor screen to the data strage 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 (GOT2000). For details of hard copy setting, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual

- 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) Screen Design Manual

13.5 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.

13.5.1 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.

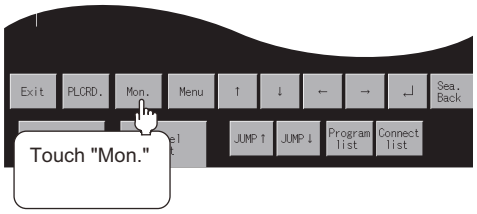
POINT

Displaying timers and counters

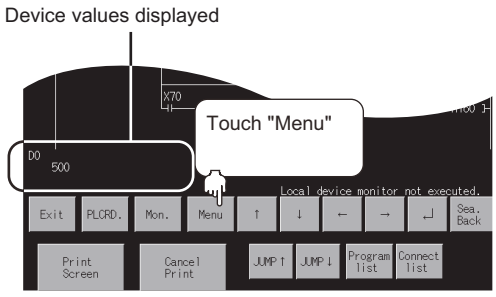
You cannot switch the 16-bit (one-word) or 32-bit (two-word) module with regard to the present and set values of timers and counters. The GOT automatically selects to display them in the 16-bit (one-word) or 32-bit (two-word) module.

(Operation example: Switch 16-bit (one-word) module display to 32-bit (two-word) module display.)

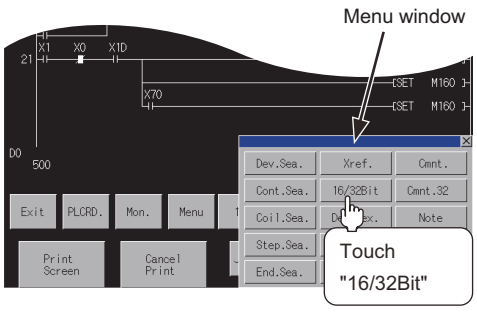
Step 1. Touch [Mon.].



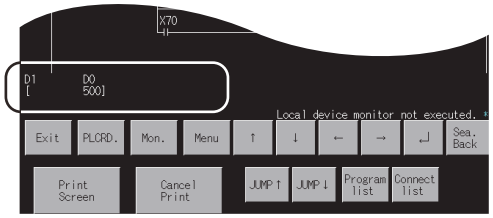
Step 2. Touch [Menu].



Step 3. Touch [16/32Bit].



Step 4. The word devices are displayed in the 32-bit (two-word) module.

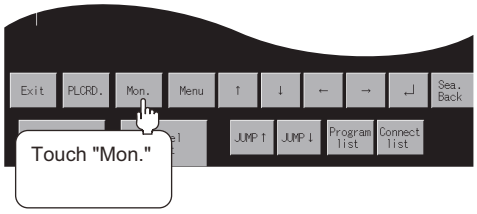


13.5.2 Display switching of decimal numbers/hexadecimal numbers

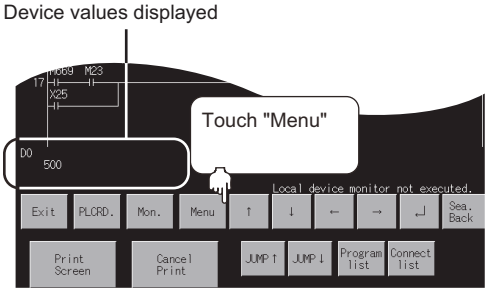
During monitoring, the present values of word devices and the present values (upper values) and set values (lower values) of timers/counters are displayed in decimal or hexadecimal numbers. The display formats switch alternately each time you press the [Dec.Hex.] key.

(Example of operation: Switching the decimal display to the hexadecimal display.)

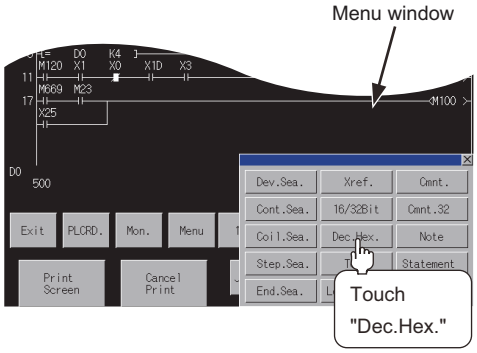
Step 1. Touch [Mon.].



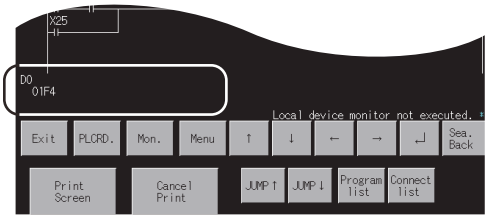
Step 2. Touch [Menu].



Step 3. Touch [Dec.Hex.].



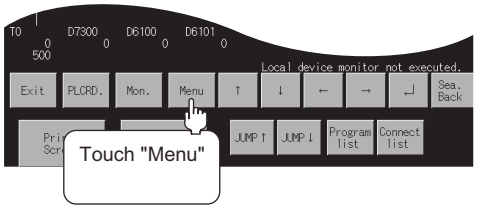
Step 4. The values are displayed in hexadecimal numbers.



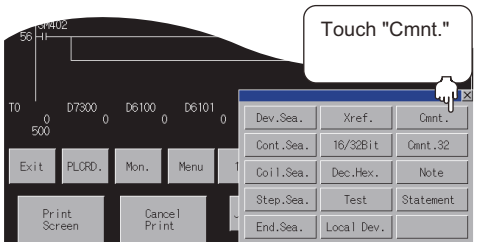
13.5.3 Switching comment/no-comment display

Comments written in the target controller are displayed. Comment display and no-comment display switch alternately each time you press the [Cmnt.] key.

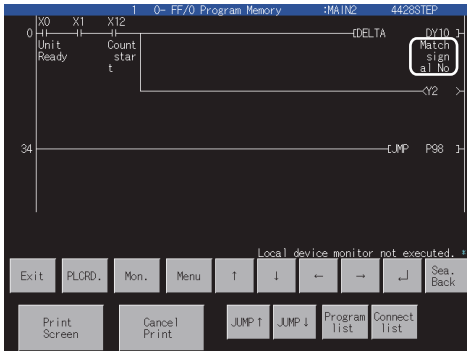
Step 1. Touch [Menu].



Step 2. Touch [Cmnt.].



Step 3. Comments are displayed.
Each comment is displayed in five characters on three lines.



13.6 Search Operation

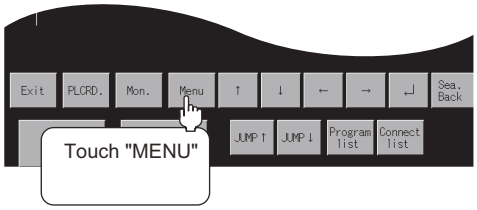
This section describes device search, contact point search, coil search, step search, ladder end search, defect search, and touch search.

13.6.1 Device search

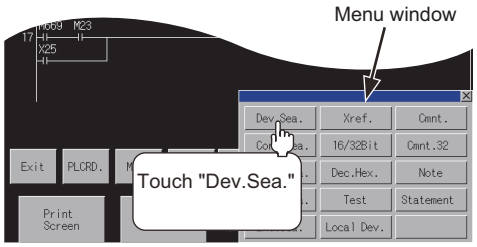
Device search displays the ladder block that contains a specified device.

<Operation procedure>

Step 1. Touch [Menu].

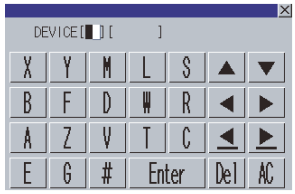


Step 2. Touch [Dev.Sea.].

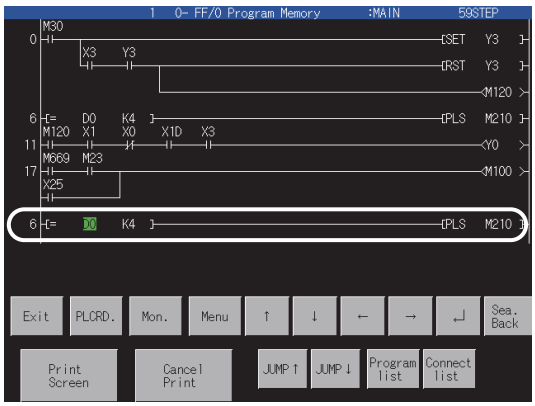


Step 3. Using the ◀ and ▶ keys, switch the input area, and enter a device name and its number. *1
Example: Specify D0.
After the device name and its number are entered, touch the [Enter] key. Input is completed, and the keyboard closes.

*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.



Step 4. The ladder block containing the specified device is displayed.
The device is highlighted as shown in the display example below.



POINT

(1) Continuous read based on the same device

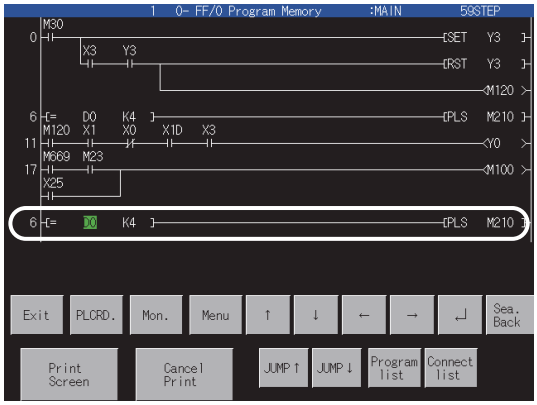
After a search, a continuous search can be performed based on the same device by touching [↵] on the screen.

If you touch [↵] another key, the continuous read function will be canceled.

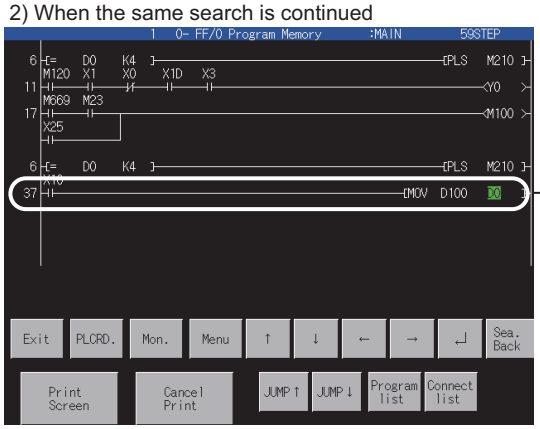
(2) FX ladder monitor display after a search

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



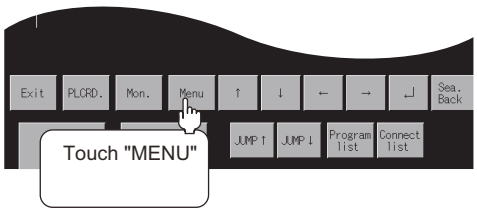
The ladder is displayed on the following line.

13.6.2 Contact point search

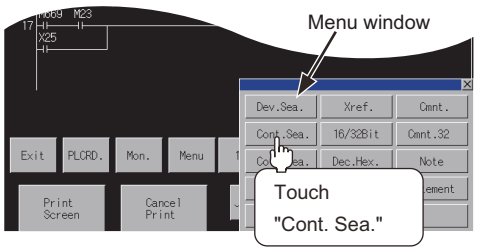
Contact search displays the ladder block that contains a specified contact point.

<Operation procedure>

Step 1. Touch [Menu].

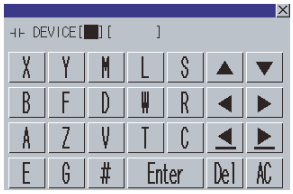


Step 2. Touch [Cont.Sea.].

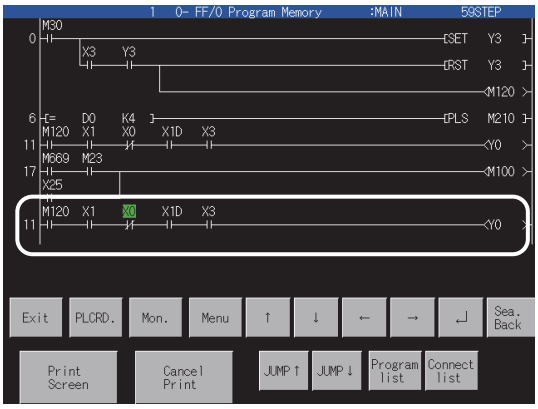


Step 3. Using the ◀ and ▶ keys, switch the input area, and enter a device name and its number. *1
Example: Specify X1.
After the device name and its number are entered, touch the [Enter] key. Input is completed, and the keyboard closes.

*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.



Step 4. The ladder block containing the specified contact point is displayed.
The contact point is highlighted as shown in the display example below.



POINT

(1) Continuous read based on the same contact point

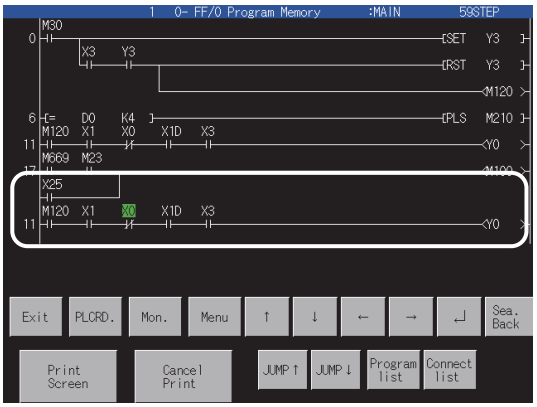
After a search, a continuous search can be performed based on the same contact point by touching [↵] on the screen.

If you touch another [↵] key, the continuous read function will be canceled.

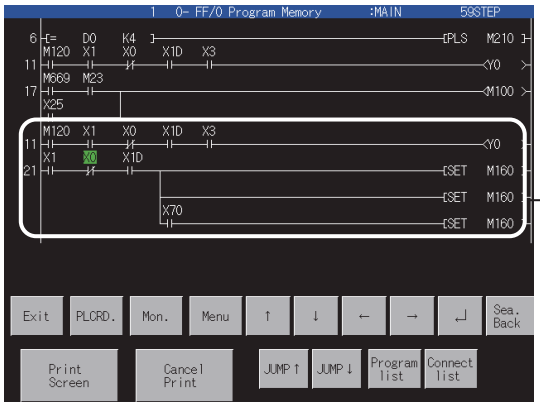
(2) FX ladder monitor display after a search

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



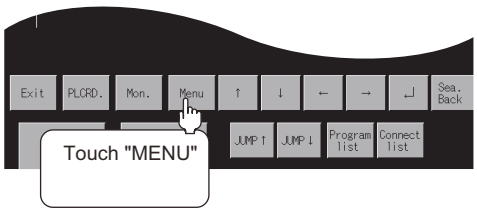
The ladder is displayed on the following line.

13.6.3 Coil search

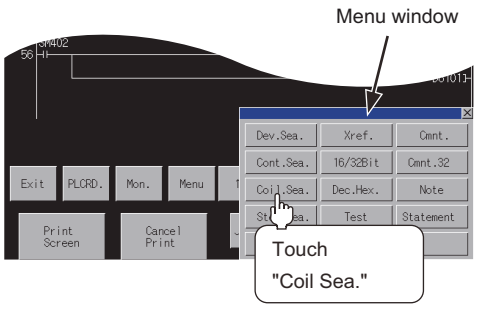
Coil search displays the ladder block that contains a specified coil.

<Operation procedure>

Step 1. Touch [Menu].

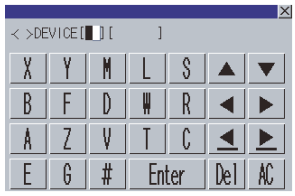


Step 2. Touch [Coil.Sea.].

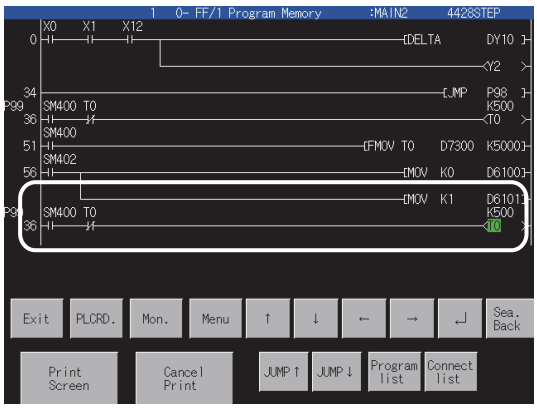


Step 3. Using the ◀ and ▶ keys, switch the input area, and Enter a device name and its number.*1
Example: Specify T0.
After the device name and its number are entered, touch the [Enter] key. Input is completed, and the keyboard closes.

*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.



Step 4. The ladder block containing the specified coil is displayed.
The coil name is highlighted as shown in the display example below.



POINT

(1) Continuous read based on the same coil

After a search, a continuous search can be performed based on the same coil by touching

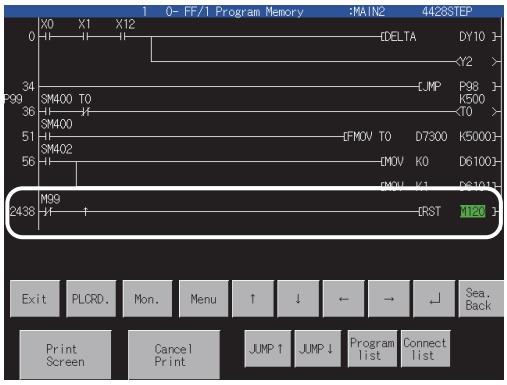
 on the screen.

 If you touch another key, the continuous read function will be canceled.

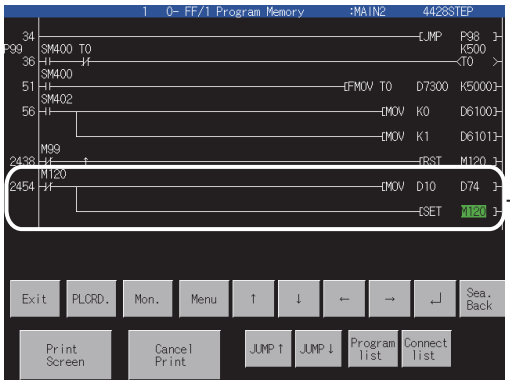
(2) FX ladder monitor display after a search

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



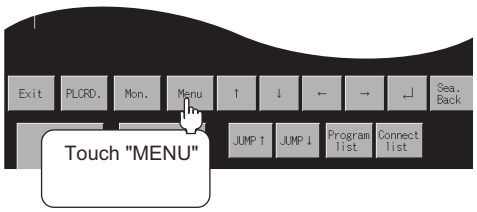
The ladder is displayed on the following line.

13.6.4 Step search

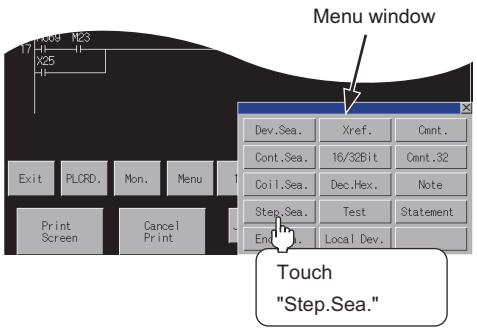
Step search displays the ladder block that contains a specified step number.

<Operation procedure>

Step 1. Touch [Menu].

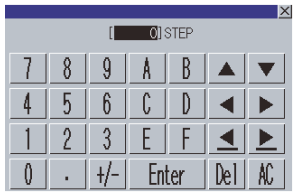


Step 2. Touch [Step.Sea.].

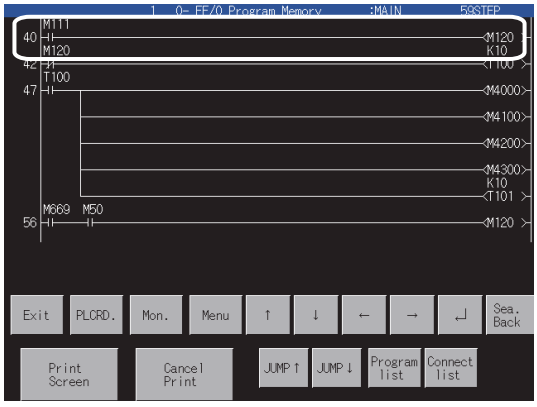


Step 3. Enter a step number.*1
Example: Specify step No. 40.
After the step number is entered, touch the [Enter] key. Input is completed, and the keyboard closes.

*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.



Step 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.

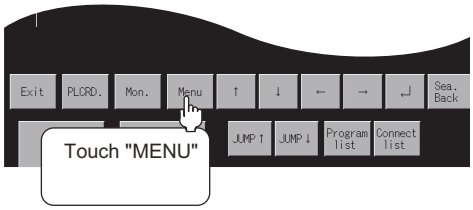


13.6.5 Ladder end search

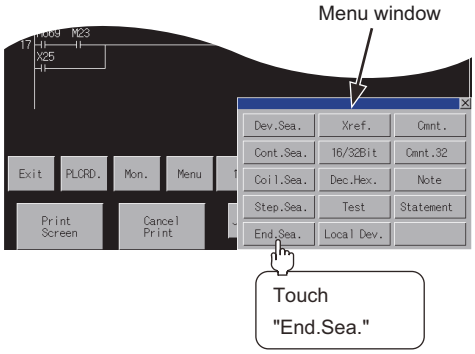
Ladder end search displays the last ladder block of the sequence program.

<Operation procedure>

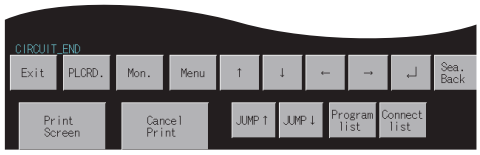
Step 1. Touch [Menu].



Step 2. Touch [End.Sea.].



Step 3. The last ladder block is displayed (the end command is not displayed).
The message "CIRCUIT_END" will be displayed.

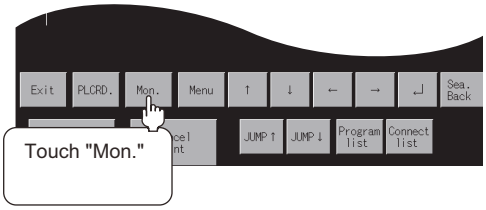


13.6.6 Defect search

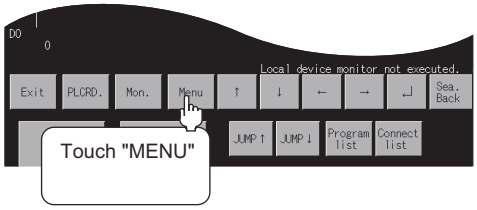
Defect search searches the ladder block for the status of conductive/non-conductive of the contact point that turned on or off the coil on the sequence program.

■1. <Operation procedure>

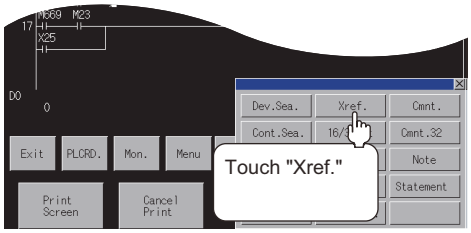
Step 1. Touch [Mon.].



Step 2. Touch [Menu].

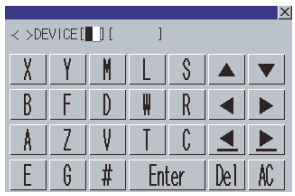


Step 3. Touch [Xref.].

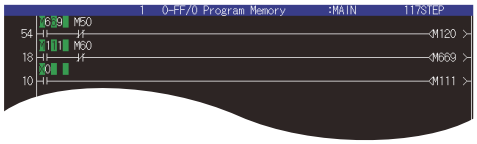


Step 4. Select a coil, if necessary.
Using the ◀ and ▶ keys, switch the input area, and enter the device name and its number of the selected coil.*1
Example: Specify M120.
After the device name and its number are entered, touch the [Enter] key. Input is completed, and the keyboard closes.

*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.



Step 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.



POINT

Operation before a defect search

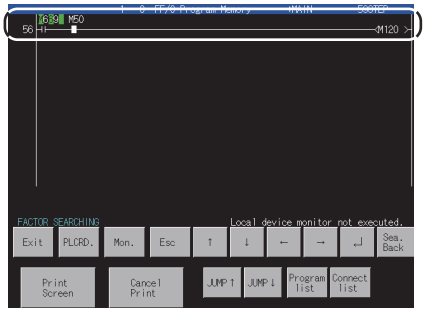
In the case of the FX ladder monitor, touch [Mon.] before starting a defect search.
If you touch [Xref.] without touching [Mon.], the message "NO MONITORING" will be displayed.

■2. 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."

(1) 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.

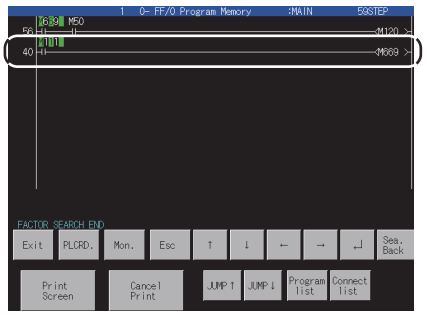


After searching for Coil M120 that is in the OFF state,
"M669" is displayed as a device that is not conductive.

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

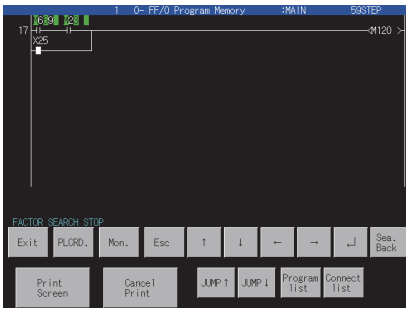
When there is no more defect, the "FACTOR SEARCH STOP" will be displayed, and the defect search will end.

The next defect is automatically searched.

(2) 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

- During automatic search execution
  Displays ON/OFF in the entire ladder displayed on the screen.
- 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 serch 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

- If the display data exceeds one screen during the defect search
  The screen is scrolled automatically.
- 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.

13.7 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.

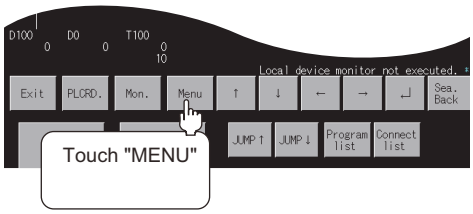
➠ 3.3.8 Test operation for the monitor device ([Test])

13.7.1 Displaying the test menu screen

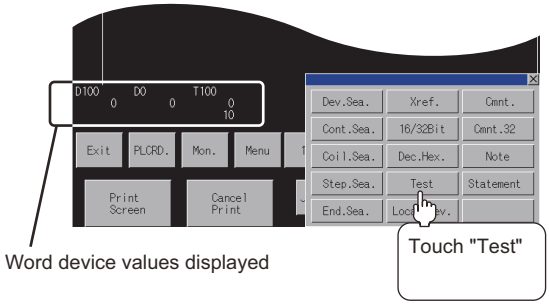
■1. Displaying the test menu screen

The procedure for displaying the test menu screen during FX ladder monitoring is described below.

Step 1. Touch [Menu].

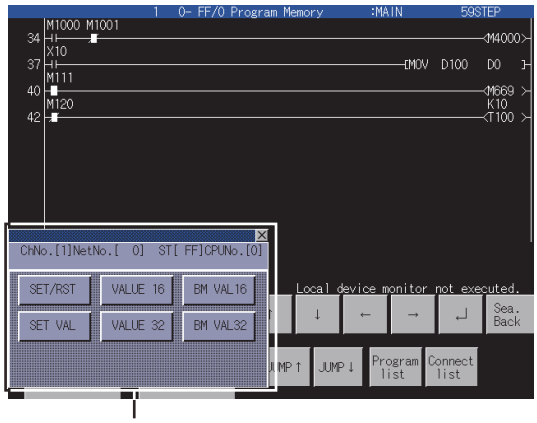


Step 2. Touch [TEST].



Step 3. The test menu screen is displayed.
Change device values by operating the window.
For further information about the operation procedure, see the following:

➠ 3.3.8 Test operation for the monitor device ([Test])



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.

13.8 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	• An attempt was made to switch to the FX ladder monitor screen when a sequence program had not been read. • 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	Cannot communicate with PLC CPU of the specified network No. or station No. The specified drive does not exist.	Check and correct the following: • Does the specified PLC CPU exist? • Is it online? (Data communication status?) • Has an error occurred? • 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.

14. MOTION SFC MONITOR

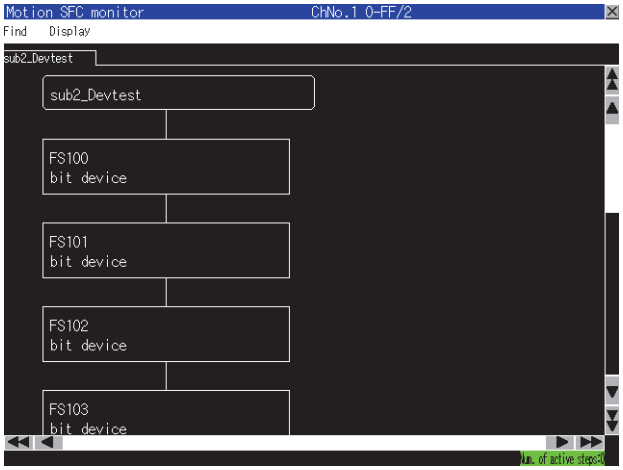
GT27 GT25 GT23 GT21 Soft GOT2000

14.1 Features

With Motion SFC Monitor, the GOT can monitor motion SFC programs in the motion controller CPU (Q series) connected to GOT and device values.
The following describes the features of the motion SFC monitor.

■1. SFC diagram display

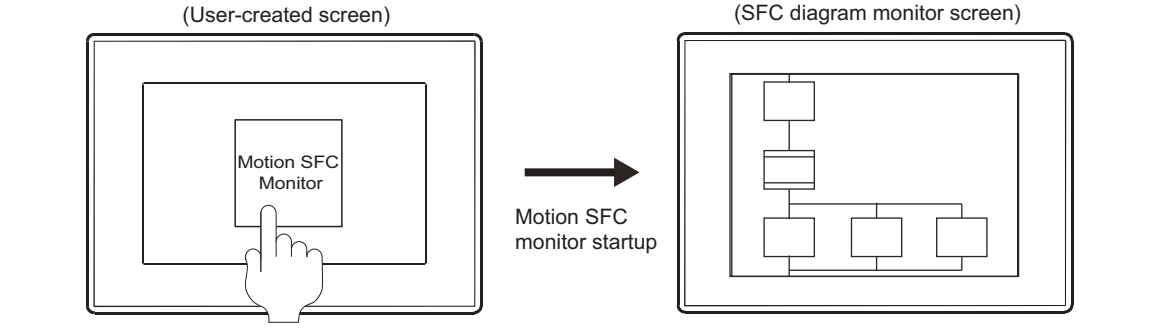
SFC diagrams of motion SFC programs can be displayed.



■2. Starting from the special function switch

The motion SFC program automatic PLC reading at motion SFC monitor startup and the SFC diagram display of the set motion SFC program can be executed by touching the special function switch placed on the user-created screen.
For the required settings for the special function switches, refer to the following.

➠ (2) Start operation using the special function switch



Touch the special function switch with the following settings.

Special function switch setting
· Display Screen: SFC Diagram
· File Name: MainProgram

Motion SFC programs are read automatically from the motion controller CPU, and the motion SFC programs with the set file name are displayed.

14.2 Specifications

14.2.1 System configuration

This section describes the system configuration of the motion SFC monitor.
For connection type settings and precautions regarding the communication unit/cable and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

Controller
Motion controller CPU(Q Series)*1*2

*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 connections other than bus connection and direct CPU connection
  Q172CPU: Production number N******* or later
  Q173CPU: Production number M******* or later

*2 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)

■2. Connection type

This function can be used in the following connection types.
(○: Applicable, ×: Inapplicable)

Function		Connection type between GOT and controller							
Name	Description	Bus connection	Direct connection	Serial communication connection	Ethernet connection *4	MELSECNET/H connection, MELSECNET/10 connection	CC-Link IE controller *1	CC-Link connection	
								ID*2	G4*3
Motion SFC monitor	Motion SFC program monitoring	○	○	○	○	○	○	○	○

*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 Motion SFC monitor cannot be used when using CC-Link IE field network Ethernet adapter.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the motion SFC monitor to the GOT.
When testing the operation, write the package data, where the system application (extended function) for the device monitor has been installed, to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Required hardware

The following hardware is required.

Hardware
Data storage (Such as an SD card and USB memory)

■5. Applicable hardware

A USB mouse is usable.

14.2.2 Devices and range that can be monitored

The following table lists the devices and the ranges that can be monitored with the motion SFC monitor.
(○: Possible, ×: Inapplicable)

Device	Device range	Program display	Current value monitor
Input relay (X/PX)	X0 to 1FFF	○	○
Output relay (Y/PY)	Y0 to 1FFF	○	○
Internal relay (M)	M0 to 12287	○	○
Special relay (M)	M9000 to 9255	○	○
Latch relay (L)	L0 to 8191	○	○
Link relay (B)	B0 to 1FFF	○	○
Annunciator (F)	F0 to 2047	○	○
Special relay (SM)	SM0 to 2255	○	○
Data register (D)	D0 to 8191	○	○
Special register (D)	D9000 to 9255	○	○
Link register (W)	W0 to 1FFF	○	○
Special register (SD)	SD0 to 2255	○	○
Motion register (#)*1	#0 to 8191	○	○
Coasting timer (FT)	FT	○	×
Multiple CPU area device (U3E□\G)	U3E□\G10000 to 24335	○	○

*1 To monitor the motion register, the following should be set in the [Controller Setting] dialog box of GT Designer3 (GOT2000).
• Select a type compatible to the motion controller to be used in the [Controller Type] of the CH to connect the motion controller.
For the setting methods of the [Controller Setting] dialog box and the types compatible to motion controller CPUs, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

14.2.3 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 Electric Products) For GT Works3 Version1

14.2.4 Readable motion SFC programs

Motion SFC monitor can read the following programs.
- Control codes (SFC diagram. F/FS and G)
- Text (F/FS and G)

14.2.5 Displayable character codes

The displayable character code of comments and program names on the motion SFC monitor differs according to the language selected in the utility.

Displayable character code	Language of utility
SJIS	Japanese
ASCII	English, Chinese (Traditional)
GB	Chinese (Simplified)
KS	Korean

For switching the language of the utility, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

14.2.6 Precautions

■1. Operations when using motion SFC monitoring

Do not execute the following operations to GOT while using motion SFC monitor.
Doing so may delete stored data and cause the motion SFC monitor to operate incorrectly.

- Opening and closing the SD card cover

■2. Settings that make the motion SFC monitor unavailable

The motion SFC monitor function is not available when [Locus] is set for line graphs.

■3. Motion SFC programs with soft security key

When Q17nDSCPU or Q170MSCPU is protected with a security key, the GOT cannot read the motion SFC program.
For the security key, refer to the following.

➠ MT Developer2 Help

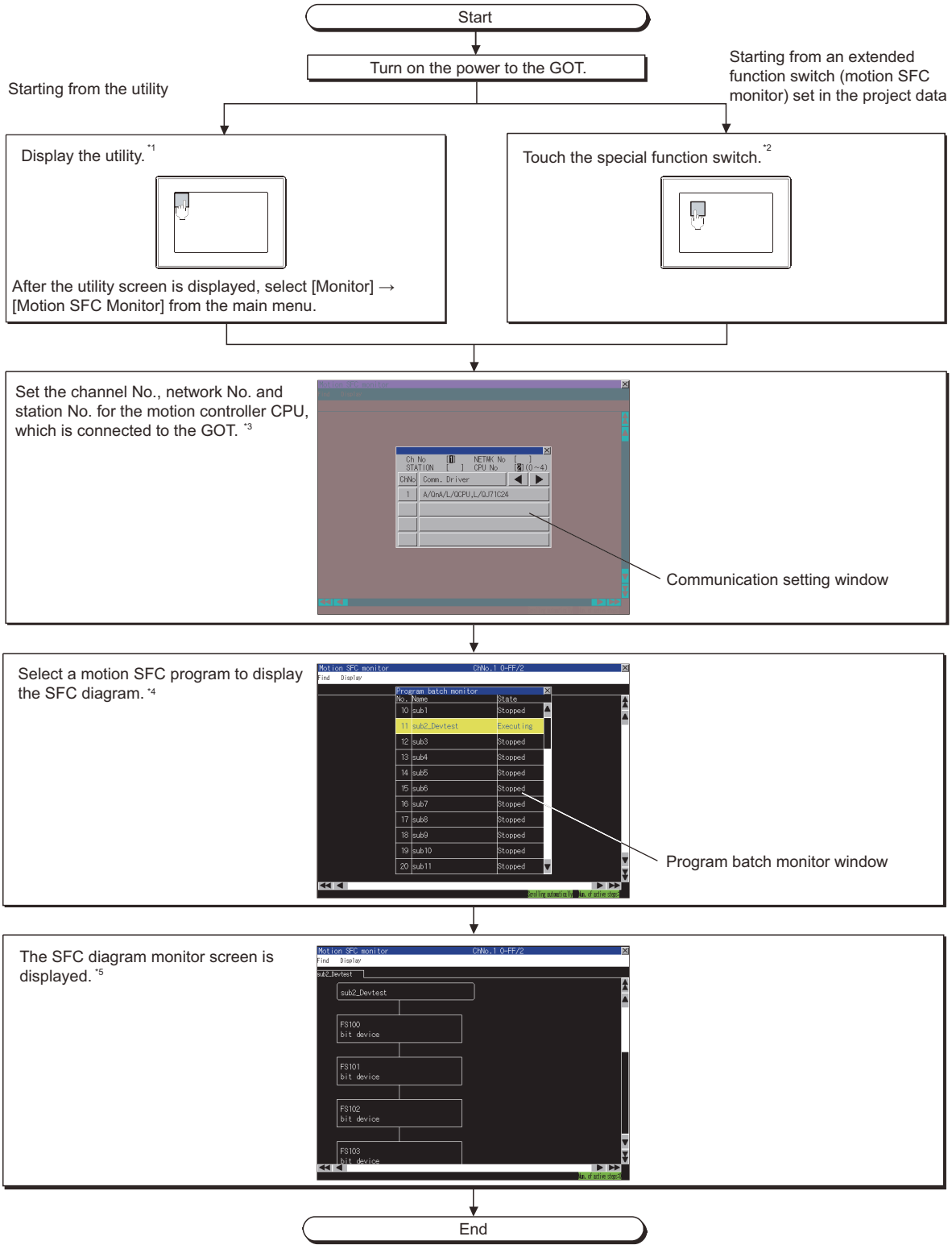
14.3 Operations for Display

This section describes the operating procedure from when the GOT is powered on until the motion SFC monitor screen appears.

■1. Start operation for the Motion SFC Monitor

(1) Normal operation

The following explains how to display the Motion SFC monitor screen after the GOT is turned on. The GOT must have the required system application (extended function) installed on it.



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

➠ GOT2000 Series User's Manual (Utility)

*2 For how to set special function switches, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

*3 For the details, refer to the following.

➠ 14.4.6 Communication setting window

*4 For the details, refer to the following.

➠ 14.4.5 Program batch monitor window

*5 For the details, refer to the following.

➠ 14.4.1 SFC diagram monitor screen

POINT

(1) How to display the utility

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

➠ GOT2000 Series User's Manual (Utility)

(2) Reading data from PLC when reclosing GOT

Save the motion SFC program in the SD card for the motion SFC monitor.
Reading the motion SFC program is not required when restoring the power supply of the GOT.

➠ 14.3.1 Setting motion SFC program storage location

(3) When GOT has not project data

The motion SFC monitor can be started with the utility even though the GOT has no project data.

(2) Start operation using the special function switch

If a special function switch with the following settings is touched, the motion SFC monitor can be launched.

- Select [Motion SFC Monitor] in [Action] and select [Program Batch Monitor Window] or [SFC Diagram] for [Display Screen].

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) Screen Design Manual

Setting	Operation for touching the special function switch
Select [Program Batch Monitor Window] in [Display Screen]. (Set [CH No.] and [Network] as well.)	➠ (a)
Select [SFC Diagram] in [Display Screen]. (Set [CH No.], [Network] and [File Name] as well.))	➠ (b)

(a) Operations for selecting [Program Batch Monitor Window]

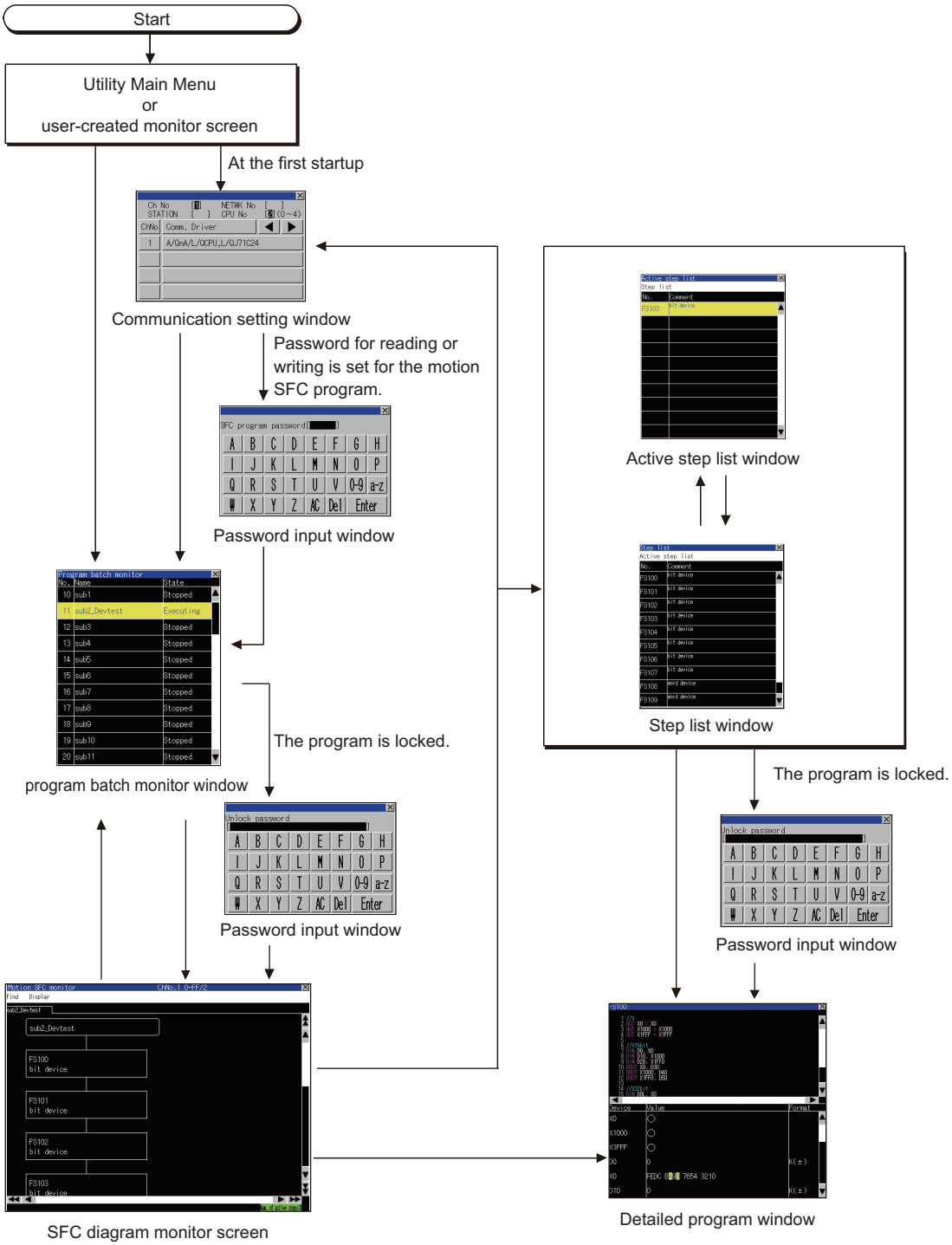
Motion SFC monitor startup → Automatic read of the motion SFC program → Program batch monitor window

(b) Operations for selecting [SFC Diagram]

Motion SFC monitor startup → Automatic read of the motion SFC program → SFC diagram monitor screen (File name set for the motion SFC program)

■2. Changing screens

The following describes how to change the screen.



POINT

Screen transition when using the special function switch

For the screen transition when using the special function switch for the automatic read of the motion SFC program and the display of the SFC diagram monitor screen, refer to the following.

➠ 14.2.6 ■2. Settings that make the motion SFC monitor unavailable

14.3.1 Setting motion SFC program storage location

The motion SFC program read from a motion controller CPU and the ladder data for the sequence program monitor (Ladder) are stored in the same destination.
Only drive A (standard SD card) or drive B (USB drive) is usable for storing motion SFC programs.
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(GOT2000)

  ➠ GT Designer3 (GOT2000) Screen Design Manual

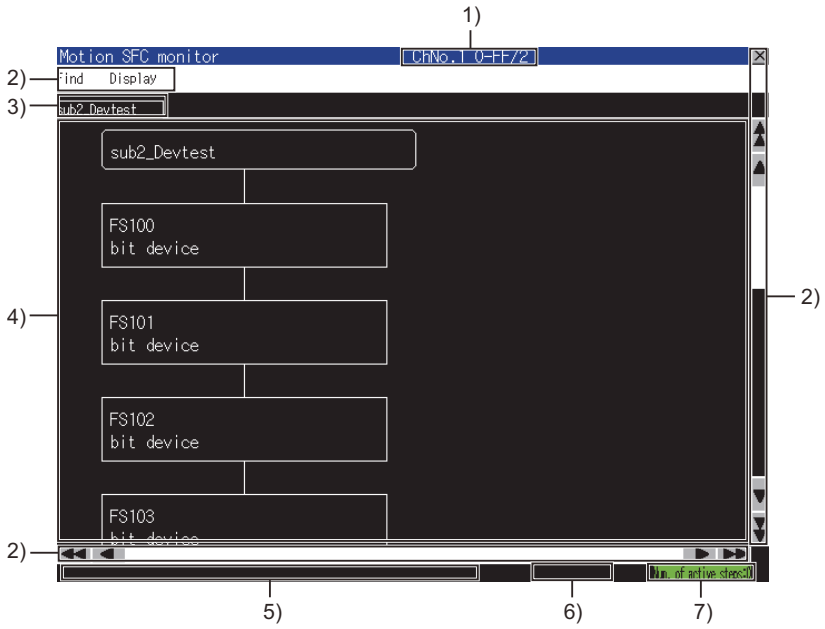
14.4 Operation Procedures

This section describes the display contents of the SFC diagram monitor screen and the functions of the keys displayed on the screen.

14.4.1 SFC diagram monitor screen

■1. When the SFC diagram monitor is executed

(1) Display screen



No.	Item	Display contents
1)	Target controller display area	Displays CH No., network No., station No., and CPU No. of the motion controller CPU set as the target. • CH No. network No.-station No./CPU No.
2)	Keys	Keys for operations on the SFC diagram monitor screen.
3)	Program switching tab	Displays the program name of the program displayed in the SFC diagram display area. Touching a tab displays the corresponding program in the SFC diagram display area. Tabs displayed to the right of the touched tab are removed. If the detailed program window is open, the tabs will be closed.
4)	SFC diagram display area	Displays the SFC diagram of the motion SFC program. Active steps are displayed in yellow, and waiting steps are displayed in red. The locked step or transition is shown as below. • Inactive : Gray • Active : Pongee • Waiting : Dark red For displayed motion SFC diagram symbols, refer to the following. ➠ (2) Motion SFC diagram symbol The followings can be selected in the SFC diagram display area. • Valid/invalid of comment display • Valid/invalid of automatic scroll ➠ (2) Menus(b) Display menu
5)	Message display area	Displays error messages and others.
6)	Automatic scroll status display area	Displays [Scrolling automatically] when the automatic scroll mode is valid. Nothing is displayed when the automatic scroll mode is invalid. When the automatic scroll is valid, the automatic scroll turns invalid by touching the automatic scroll status display area.

No.	Item	Display contents
7)	Number of active steps display area	Displays the number of active steps. Active step list window is displayed by touching this area. ➠ 14.4.4 Active step list window

(2) Motion SFC diagram symbol

The following describes the motion SFC diagram symbols displayed in the SFC diagram display area.

Classification	Name	Symbol	Function
Program start/end	START	Program name	Indicates the program entrance by the program name.
	END	END	Indicates the program end (exit).
Step*1	Motion control step	Kn	-
	Once execution type operation control step	Fn	Detailed program window is displayed by touching this area. ➠ 14.4.2 Detailed program window
	Scan execution type operation control step	FSn	
	Subroutine call/start step	Program name	Touch this to add a tab with the name of the program which is set for the subroutine call/start step, to the right of the program switching tab. The program corresponding to the added program switching tab is displayed in the SFC display area. If the detailed program window is open, the tab will be closed.
	Clear step	CLR Program name	
Transition*1	Shift	Gn	Touch this to display the detailed program window. ➠ 14.4.2 Detailed program window The device name of the set bit device is displayed on WAITON and WAITOFF. Even if the label is set to the bit device, the device name is displayed.
	Shift Y/N		
	WAIT	Gn	
	WAIT Y/N		
	WAITON	ON bit device	
	WAITOFF	OFF bit device	
Jump	Normal	Pn	Touch this to search the jump/pointer of the same number. Found jump/pointers are displayed in the SFC diagram display area.
	Coupling	Pn	
Pointer	Normal	Pn	
	Coupling	Pn	

*1 Touching the locked step or transition displays the password input window.

➠ 14.4.7 Password input window

POINT

Precautions for changing the motion controller CPU to the debug mode

When MT Developer/MT Works2 changes the motion controller CPU to the debug mode, Shift Y/N and WAIT Y/N in active status may not be highlighted in yellow.
Check the active status of Shift Y/N and WAIT Y/N with MT Developer/MT Works2.

■2. Motion SFC diagram monitor screen

(1) Key functions

The following describes key functions for operations on the SFC diagram monitor screen.

Key	Function
Find	Displays the Find menu. ➠ (2) Menus
Display	Displays the Display menu. ➠ (2) Menus
☒	Closes the motion SFC monitor and returns to the screen for starting the motion SFC monitor.
▲ ▼	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.

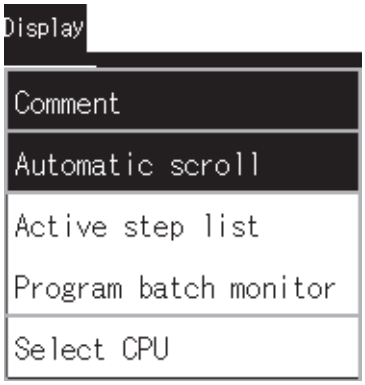
(2) Menus

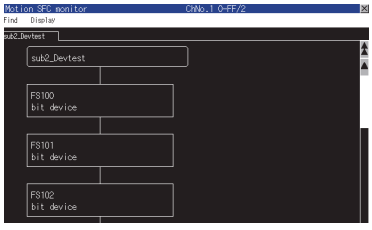
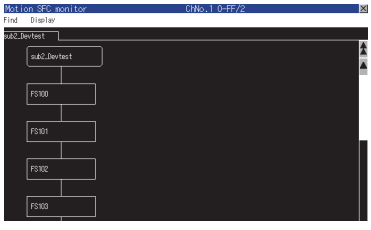
The following shows the operations for menus displayed on the SFC diagram monitor screen.

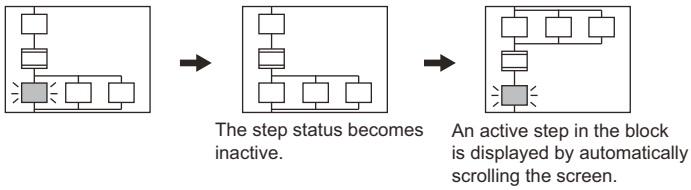
(a) Search menu

Key	Function
Step list	Displays the step list window. ➠ 14.4.3 Step list window

(b) Display menu



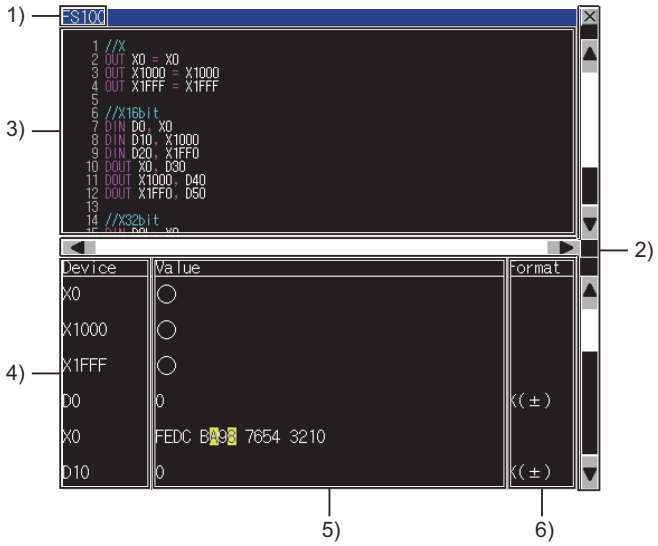
Key	Function
Comment	Sets valid/invalid of the comment display.  Comment display valid  Comment display invalid

Key	Function
Automatic scroll	Switches the automatic scroll to valid/invalid. When the automatic scroll is valid and all the following conditions are satisfied, the active steps are displayed on the SFC diagram monitor screen by automatically scrolling the screen. • No active step is displayed on the SFC diagram monitor screen. • The displayed motion SFC program has an active step.  Displays [Scrolling automatically] in the automatic scroll status display area of the SFC diagram monitor screen when the automatic scroll is valid. ➠ 14.4.1 SFC diagram monitor screen
Active step list	Displays the active step list window ➠ 14.4.4 Active step list window
Program batch monitor	Displays the program batch monitor window. ➠ 14.4.5 Program batch monitor window
Select CPU	Displays the communication setting window. ➠ 14.4.6 Communication setting window

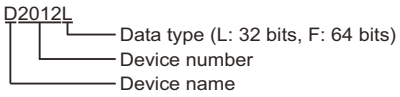
14.4.2 Detailed program window

■1. Displayed contents

The following describes the contents of the detailed program window and the key functions displayed on the screen.



No.	Item	Display contents
1)	Number display area	Displays the step/transition number.
2)	Keys	Displays the keys for operations on the detailed program window.

No.	Item	Display contents
3)	Program display area	Displays the arithmetic control program/transition program. When the automatic scroll is valid and the active step is changed, the arithmetic control program/transition program of the active step is displayed. When the locked step becomes active, the displayed contents do not change in the detailed program window. ➠ 14.4.1 ■2. (2) (b) Display menu The arithmetic control program/transition program of the touched step/transition is displayed by touching the step/transition on the step list window or active step list window. ➠ 14.4.3 Step list window 14.4.4 Active step list window
4)	Device display area	Displays the devices (device name/device No./data type) which is used in the arithmetic control program/transition program displayed in the program display area. Data type is only displayed when the device is the word device (32-bit integer type/64-bit floating point number type).  The number of displayable devices differs according to the device type. Up to 288 points can be displayed when the devices are counted in the following way. • Bit device (1 bit): 1 point • Bit device (16 bits): 2 points • Bit device (32 bits): 4 points • Word device (16-bit integer type): 2 points • Word device (32-bit integer type): 4 points • Word device (64-bit floating point number type): 8 points When the label is set to the motion SFC program, the displayed name varies depending on the connected motion controller CPU. • Q172DSCPU and Q173DSCPU: The label name is displayed. However, the current value is not displayed. • Other than the above: The device name is displayed.
5)	Current value display area	Displays the current value of the device which is used in the arithmetic control program/transition program displayed in the program display area. If the current value cannot be acquired from the motion controller CPU, the value will not be displayed. The following shows the displayed contents of each device. • Bit device (1 bit): Yellow ○ is displayed at ON, and ● is displayed at OFF. • Bit device (16 bits/32 bits): The lowest digits of 16-bit/32-bit portion of the initial device are displayed side-by-side. The contents are displayed only when the device No. of the specified initial device is a multiple of 16. When the device is ON, the background of the device No. is displayed in yellow. Example) The current value display of Bit device X18 (16 bits)  • Word device: Displays in the display format set in the display format display area.

No.	Item	Display contents
6)	Display format display area	Displays the display format of the word device which is used in the arithmetic control program/ transition program displayed in the program display area. (Not displayed when using bit device.) The following shows the display format types. • K (±): Signed decimal • K (+): Unsigned decimal • H: Hexadecimal (H is displayed on the head of the value in the current value display area.) • BIN: Binary • FLOAT: Floating-point number (The current value is displayed in the exponential representation.) Display format can be changed by touching the display format display area. By touching the area, display format changes in the following order. • 16/32Bit : K(±) → K(+) → H → BIN • 64Bit : FLOAT → H

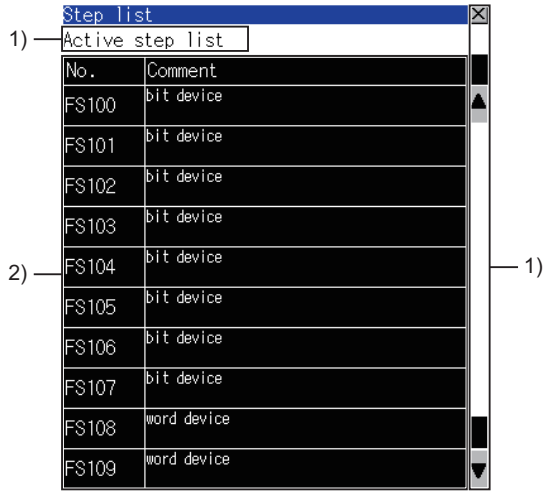
■2. Key functions

Item	Display contents
	Close the detailed program window.
	Scrolls the display area up and down by one line.
	Scrolls the display area right and left by one column.

14.4.3 Step list window

Step list window displays the steps and transitions.

■1. Displayed contents



No.	Item	Display contents
1)	Keys	Keys for operations on the step list window.
2)	Step display area	Displays the step/transition numbers and comments set in the step/transition. Active steps are displayed in yellow, and waiting steps are displayed in red. The locked step or transition is shown as below. • Inactive : Gray • Active : Pongee • Waiting : Dark red Touching the step or transition displays the step or transition on the SFC diagram monitor screen. In addition, the program is displayed on the detailed program window. (When the step or transition is locked, the authentication is needed on the password input window.) The following shows the types of steps and transitions. • Kn: Motion control step • Fn: Once execution type operation control step • FSn: Scan execution type operation control step • GSUB: Subroutine call/start step • Gn: Shift, Shift Y/N, WAIT and WAIT Y/N • WAITON: WAITON • WAITOFF: WAITOFF Depending on the step/transition, the displayed contents of comments may be as follows. • GSUB (Subroutine call/start step): Call destination/startup destination program name • WAITOFF and WAITOFF: Bit device name

POINT

Precautions for changing the motion controller CPU to the debug mode

When MT Developer/MT Works2 changes the motion controller CPU to the debug mode, Shift Y/N and WAIT Y/N in active status may not be highlighted in yellow.
Check the active status of Shift Y/N and WAIT Y/N with MT Developer/MT Works2.

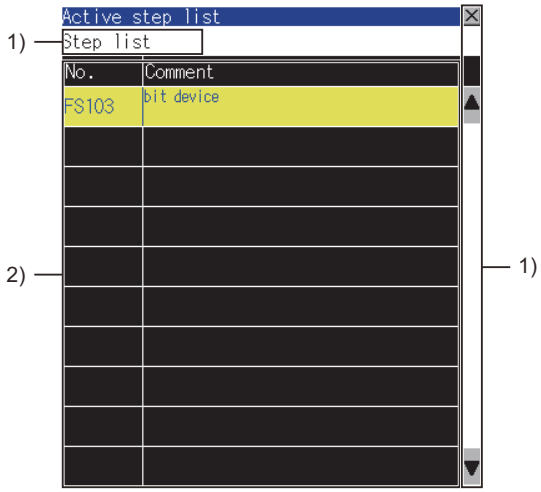
■2. Key functions

Key	Function
Active step list	Closes the step list window and displays the active step list window. ➠ 14.4.4 Active step list window
☒	Closes the step list window
▲ ▼	Scrolls the display area up and down by one line.

14.4.4 Active step list window

The active step list window displays active steps.

■1. Displayed contents



No.	Item	Display contents
1)	Keys	Keys for operations on the active step list window.
2)	Active step display area	Displays the active step numbers and comments set in the active step. The step or transition is displayed as below. • Not locked: Yellow • Locked: Pongee Touching the step or transition displays the step or transition on the SFC diagram monitor screen. In addition, the program is displayed on the detailed program window. (When the step or transition is locked, the authentication is needed on the password input window.) The following shows the types of steps and transitions. • Kn: Motion control step • Fn: Once execution type operation control step • FSn: Scan execution type operation control step • GSUB: Subroutine call/start step • Gn: Shift, Shift Y/N, WAIT and WAIT Y/N • WAITON: WAITON • WAITOFF: WAITOFF Depending on the step/transition, the displayed contents of comments may be as follows. • GSUB (Subroutine call/start step): Call destination/startup destination program name • WAITOFF and WAITOFF: Bit device name

POINT

Precautions for changing the motion controller CPU to the debug mode

When MT Developer/MT Works2 changes the motion controller CPU to the debug mode, Shift Y/N and WAIT Y/N in active status may not be displayed in the active step display area.
Check the active status of Shift Y/N and WAIT Y/N with MT Developer/MT Works2.

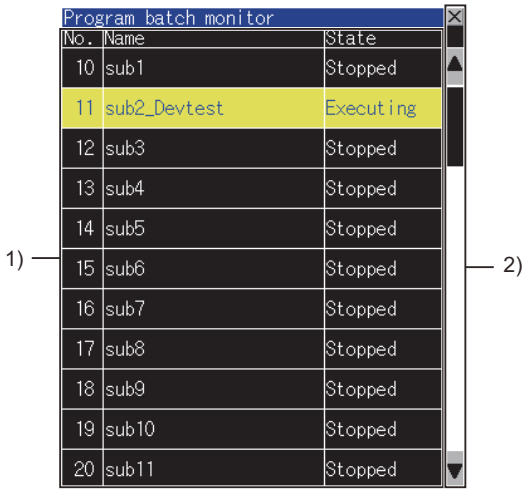
■2. Key functions

Key	Function
Step list	Closes the step list window and displays the active step list window. ➡ 14.4.3 Step list window
☒	Closes the active step list window.
▲ ▼	Scrolls the display area up and down by one line.

14.4.5 Program batch monitor window

The following shows the operation for selecting the motion SFC program to display on the SFC diagram monitor screen.

■1. Displayed contents



No.	Item	Display contents
1)	Program status display area	Displays the program No., program name and program status of the motion SFC program read from the motion controller CPU. The program is displayed as below. • Unlocked and running program: Yellow • Locked program: Gray • Locked and running program: Pongee Touching a program name closes the program batch monitor window and displays the corresponding program on the SFC diagram monitor screenIf the detailed program window is open, the tabs will be closed.) ➠ 14.4.1 SFC diagram monitor screen Touching the locked program displays the password input window. ➠ 14.4.7 Password input window
2)	Keys	Keys for operations on the program batch monitor window.

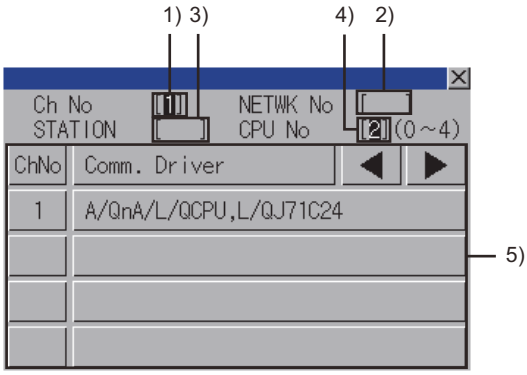
■2. Key functions

Key	Function
	Closes the program batch monitor window.
	Scrolls the display area up and down by one line.

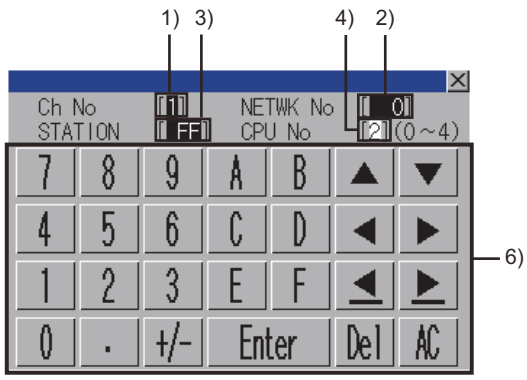
14.4.6 Communication setting window

Set the motion controller CPU to be monitored.

■1. Displayed contents



(When the CH No. is input)



(When the network No., station No., and CPU No. are input)

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)	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)

■2. 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.
Enter	The operation differs depending on the status at touch. When the cursor is in the CH No. input area, network No. input area, or station No. input area: Moves the cursor. 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. Displays the password input window when the read motion SFC program requires a password. ➠ 14.4.7 Password input window When the program does not require any password, the program batch monitor window appears. ➠ 14.4.5 Program batch monitor window
Del	Deletes an input value or character.
AC	Deletes all the input values and characters.

14.4.7 Password input window

Execute the password authentication of the motion SFC program.
After the password authentication has succeeded, the password is authenticated automatically with the same password for the following time. (The password input window is not displayed.)

■1. Displayed contents

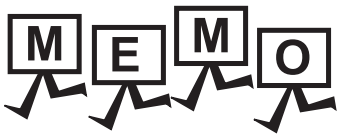
(For alphabet input)

(For numerical input)

No.	Item	Display contents
1)	Keys	Keys for operations in the password input window.
2)	Password type	Displays the type of the password to be input. • SFC program password: The password for writing or reading • Unlock password: The password for unlocking the program
3)	Password input area	Set the password.

■2. Key functions

Key	Function
✕	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	Authenticates the password set in the password input area.


MEMO

15. FX LIST EDITOR

GT27 GT25 GT23 GT21 Soft GOT2000

Not available to GT25-W.
To use the FX list editor on GT21, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

15.1 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.

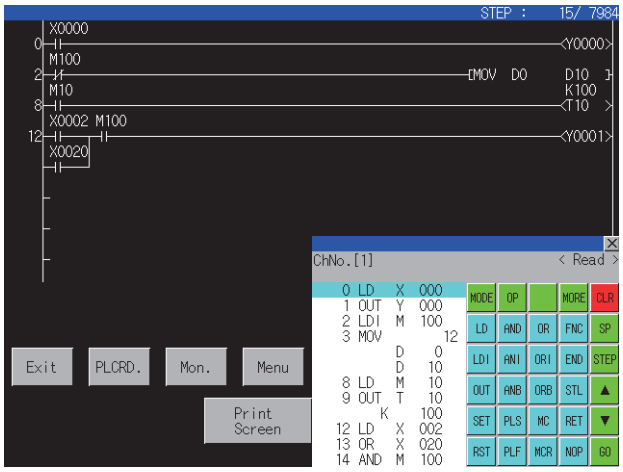
■1. Parameters and sequence programs are easy to maintain.

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)

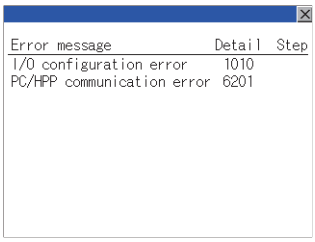
■2. Combination with the FX ladder monitor

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.



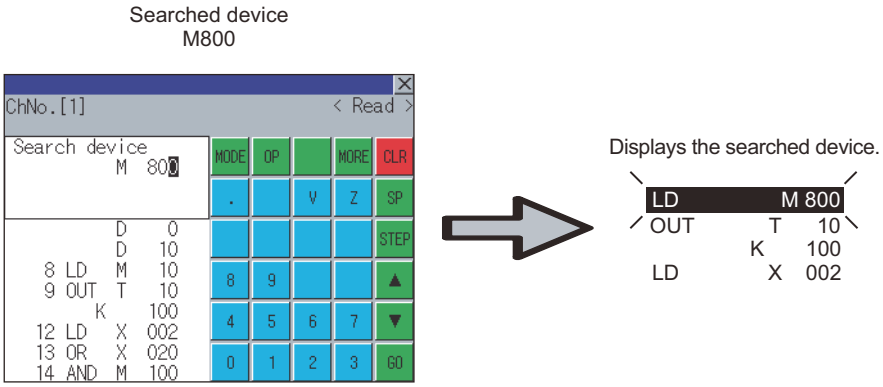
■3. Errors that occur during list editing can be checked easily.

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.



■4. 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.



15.2 Specifications

15.2.1 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 Electric Products) For GT Works3 Version1

■1. Target controller

Controller
FXCPU

■2. Connection type

This function can be used in the following connection types.
(○: Available, ×: Unavailable)

Function		Connection type between GOT and PLC	
Name	Description	Direct CPU connection	Ethernet connection*1
MELSEC-FX list editor	Sequence program writing, parameter setting, PLC diagnostics and keyword registration, etc.	○	○*2

*1 MELSEC-FX list editor cannot be used when using CC-Link IE field network Ethernet adapter.
*2 The Ethernet connection is available when FX3U, FX3UC, FX3G, FX3GC, or FX3S is used.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the FX list editor to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Applicable hardware

A USB mouse is usable.

■5. 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	○	○	△ *1	×	For Stop only	Section 5.4.5
	Changing operands/ set values						Section 5.4.6
Inserting commands							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

15.2.2 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 Electric Products) For GT Works3 Version1

15.2.3 Precautions

■1. 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.

■2. 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.

■3. 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.).

■4. When used together with the FX ladder monitor

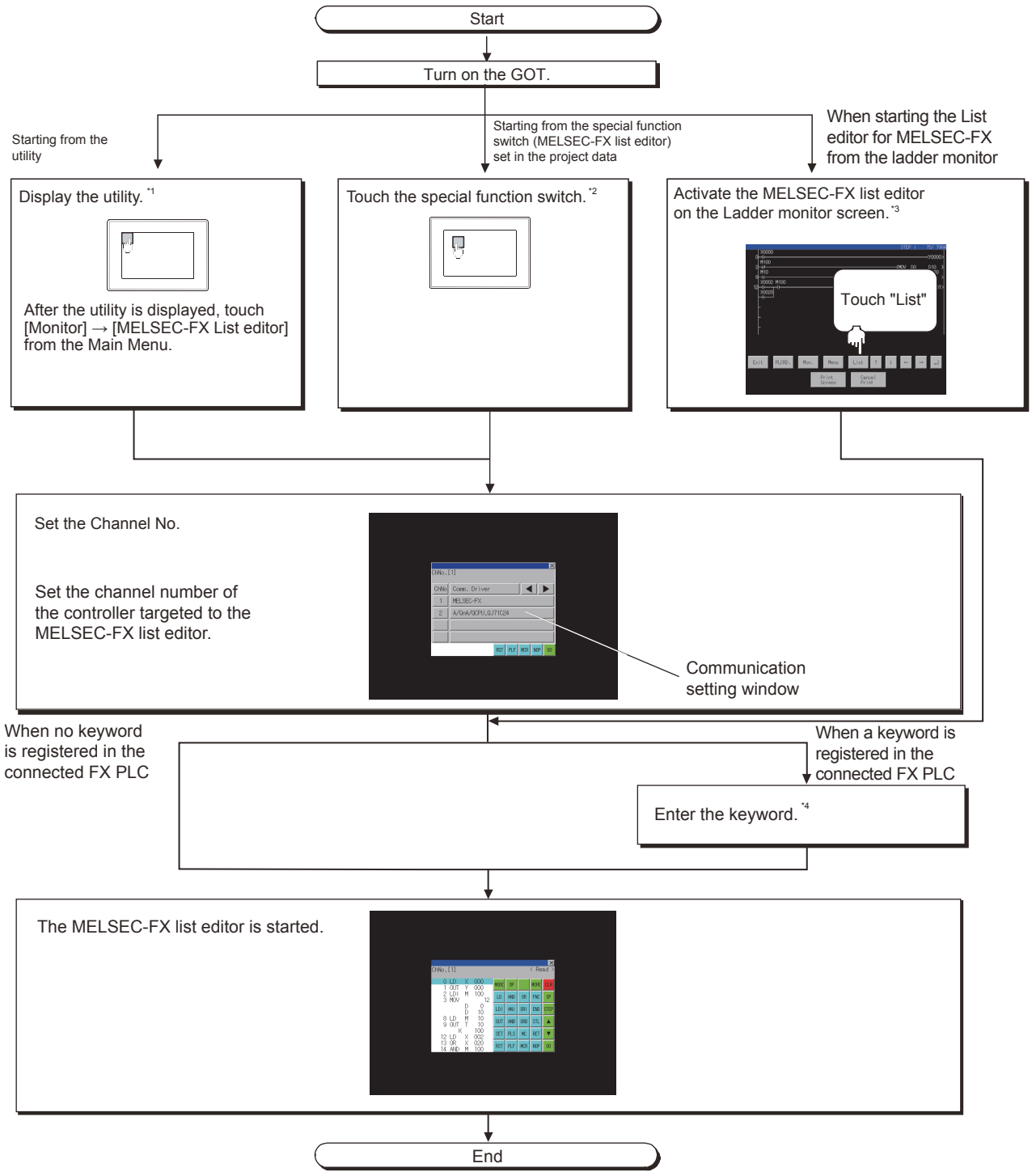
Even if you execute the MELSEC-FX list editor with the FX ladder monitor activated, edited information will not be reflected on the FX ladder monitor screen.
To reflect such edited information, perform the PLC reading of the FX ladder monitor again.

■5. 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.

15.3 Operations for Display

This section describes how to display the FX list editor screen after the GOT is turned on.



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

➠ GOT2000 Series User's Manual (Utility)

*2 For how to set special function switches, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

*3 Refer to the following for the FX ladder monitor.

➠ 13. FX LADDER MONITOR

*4 For the details, refer to the following.

➠ 15.4.11 Keywords

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.

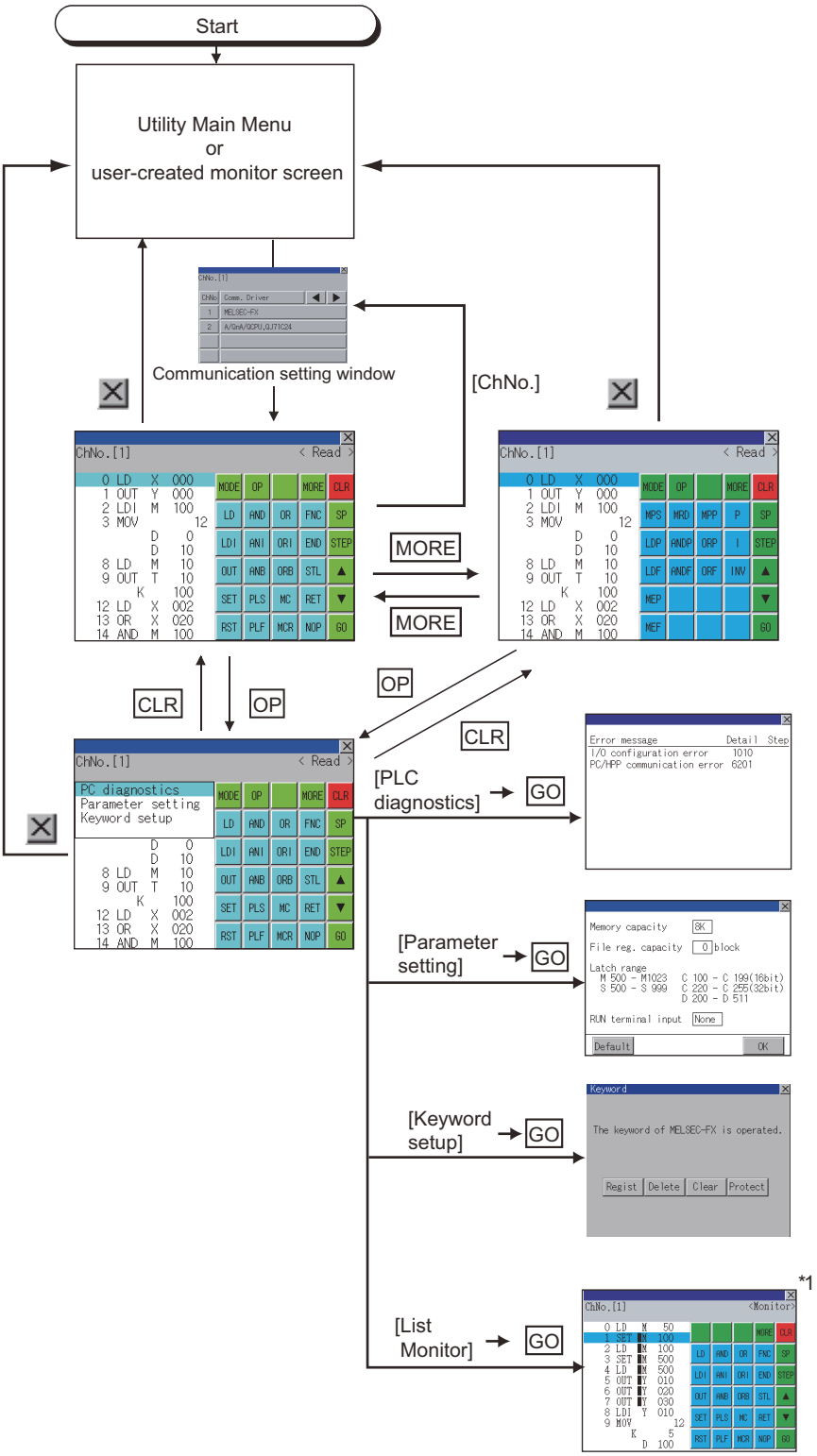
➠ 15.4 Operation Procedures)

(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.

■1. 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) Screen Design Manual

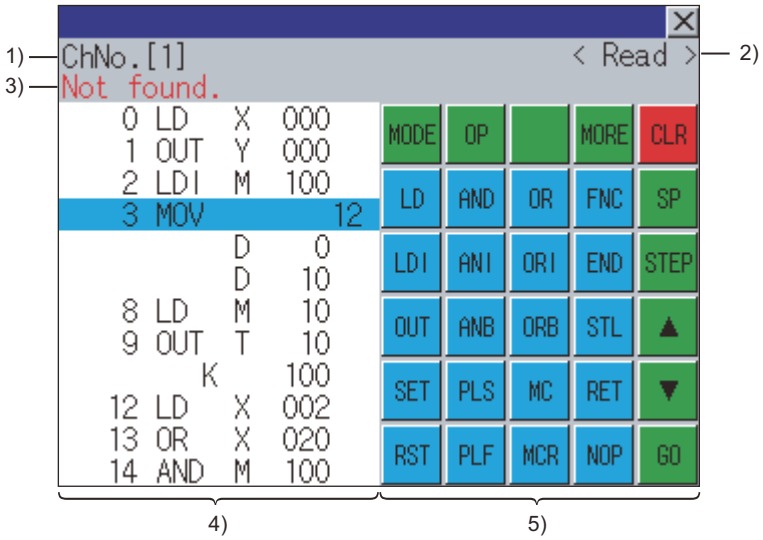
15.4 Operation Procedures

This section describes the contents of the MELSEC-FX list editor and the key functions displayed on the screen.

15.4.1 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.

■1. 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. ➠ 15.4.2 Selection and operation of modes [Monitor] is displayed when the list monitor is executed. ➠ 15.4.12 List monitor
3)	Error message	Displays the contents of errors that occur with the MELSEC-FX list editor. ➠ 15.5 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.

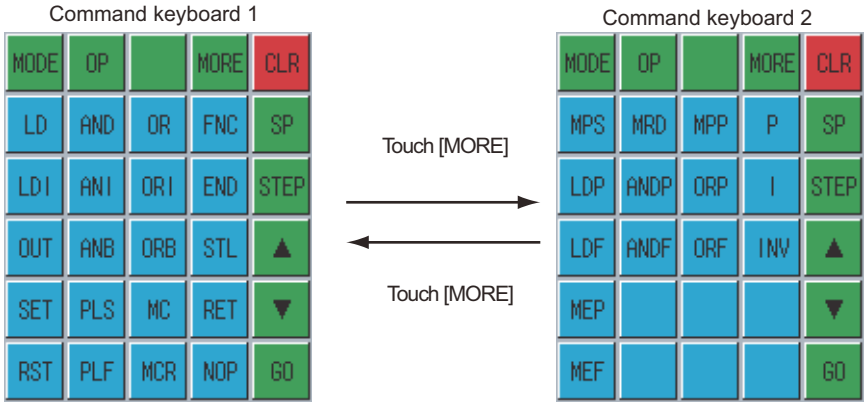
■2. Key functions

The table below shows the functions of the keys that are used for the operation on the MELSEC-FX list editor screen.

Key	Function
[ChNo.[1]]	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.
[MODE]	Selects a mode for MELSEC-FX list editor. ➠ 15.4.2 Selection and operation of modes
[OP]	Displays the PLC diagnostics, parameter setting, and keyword selection menu.
[MORE]	Switches between command keyboard 1 and command keyboard 2. ➠ ■3. Keyboard switching
[CLR]	When inputting commands: Cancels the key input when only part of the command has been input. ➠ 15.4.14 Action for an incorrect key input When option menu is displayed: Closes the option menu. Commands cannot be deleted with this key. ➠ 15.4.7 Deleting commands
[SP]	Space key. This key is used when setting timers and counters, writing applied commands, etc.
[STEP]	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.
[GO]	Determines the key operation.
[LD] to [INV], [0] to [9], etc.	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.

■3. Keyboard switching

Touching the [MORE] 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.

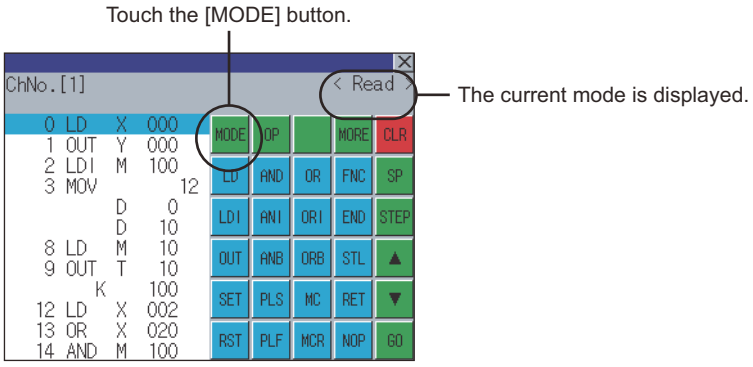


15.4.2 Selection and operation of modes

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.

■1. How to change modes

Touch the [MODE] button.
Each time you touch this button, the mode changes.



■2. 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.

15.4.3 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.

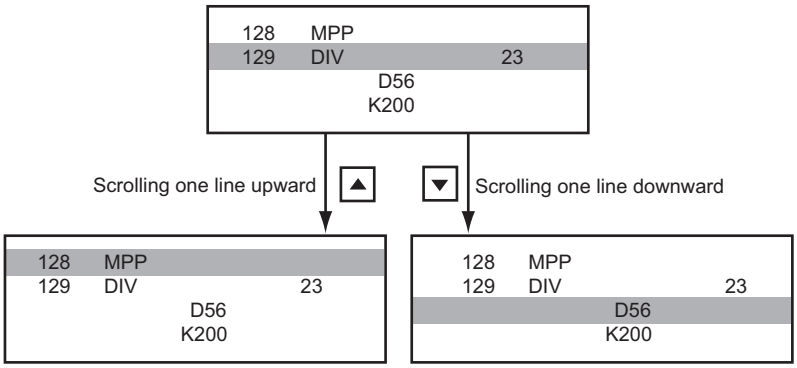
■1. Display using cursor keys

(1) Operation

Scroll with ▲ or ▼.

(2) Example

Scroll one line upward or downward.



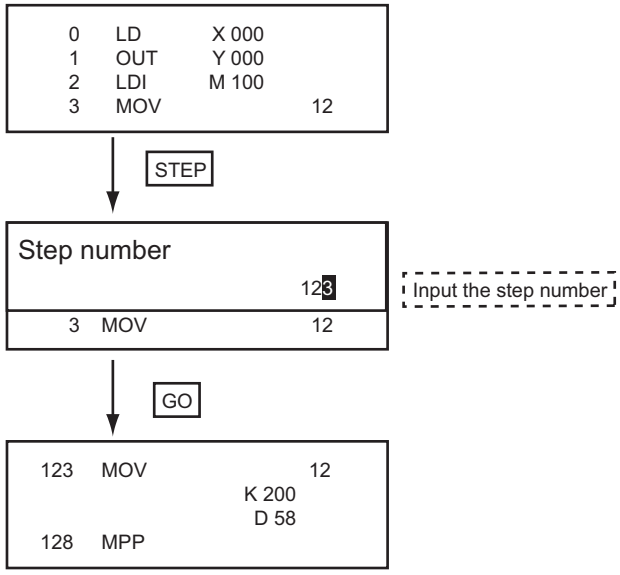
■2. Display specifying the step number

(1) Operation

STEP → Input the step number. → GO

(2) Example

Displaying step number 123.



POINT

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.

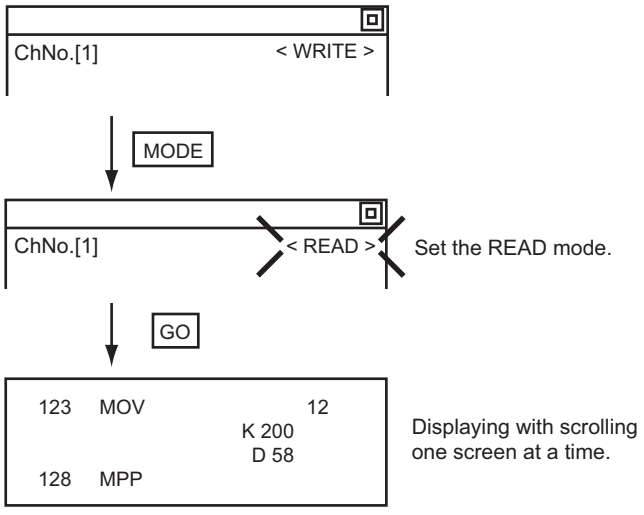
■3. Display scrolling one screen at a time

(1) Operation

MODE → GO
(Read mode)

(2) Example

Displaying with scrolling one screen at a time.

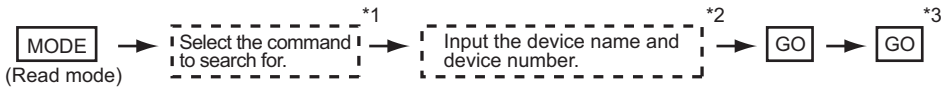


15.4.4 Searching commands and devices

Displays a command or device by searching it in sequence program from Step 0.

■1. 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.

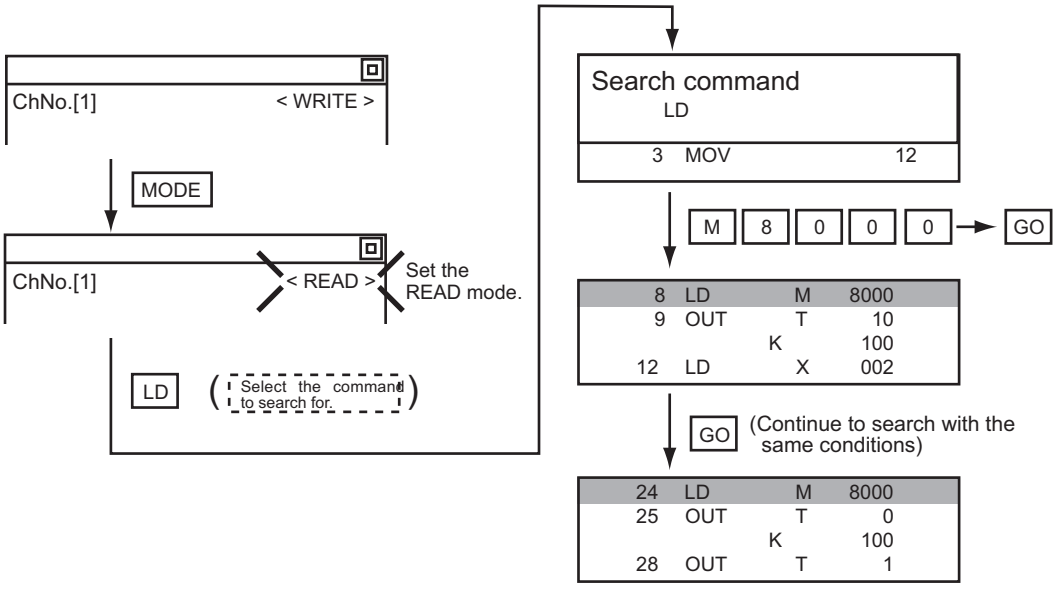
➠ 15.4.5 ■2. Writing applied instructions

*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



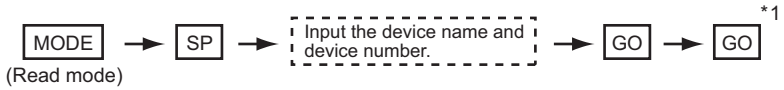
POINT

Pointer (P, I) searches

For pointer searches, only labels are searched.
Pointers specified as operands in applied instructions are not searched.

■2. Device search

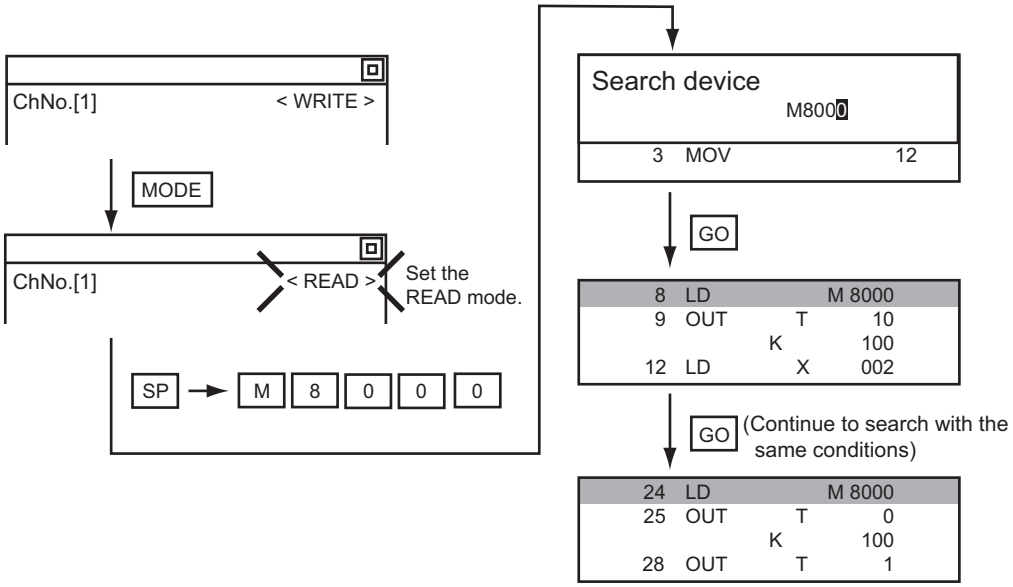
(1) Operation



*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.

➠ ■1. Command search

15.4.5 Writing commands

Writes a sequence program to the FX PLC. (Overwrite/Insert)

■1. Writing basic commands

(1) Operations

(a) Inputting command only (Ex.: ANB, ORB command etc.)

Stop the FX PLC → MODE → Input the command → GO

For overwriting: (WRITE mode)
For insertion: (INSERT mode)

(b) Inputting command and device (LD, AND commands etc.)

Stop the FX PLC → MODE → Input the command

For overwriting: (WRITE mode)
For insertion: (INSERT mode)

→ Input the device name and device number → GO

(c) Inputting command, No. 1 device, No. 2 device (MC, OUT (T, C) commands, etc.)

Stop the FX PLC → MODE → Input the command → Input the device name and device number

For overwriting: (WRITE mode)
For insertion: (INSERT mode)

→ SP → Input the device name and device number → GO

POINT

Moving the cursor to the position to write the command

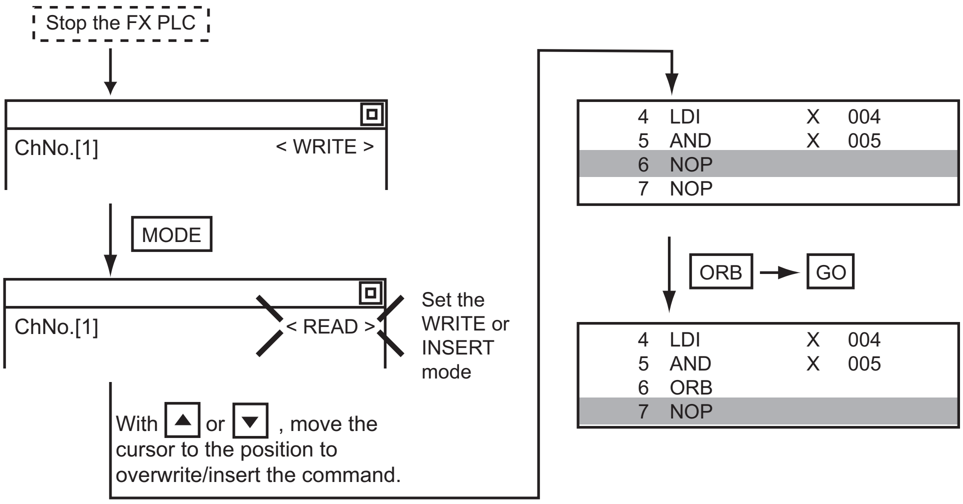
When starting to write a command, place the cursor on the command line (the line on which the step number is displayed).
You cannot write a command with the cursor on an operand or set value line.

2	LDI	M	100
3	MOV		12
		D	0
		D	10

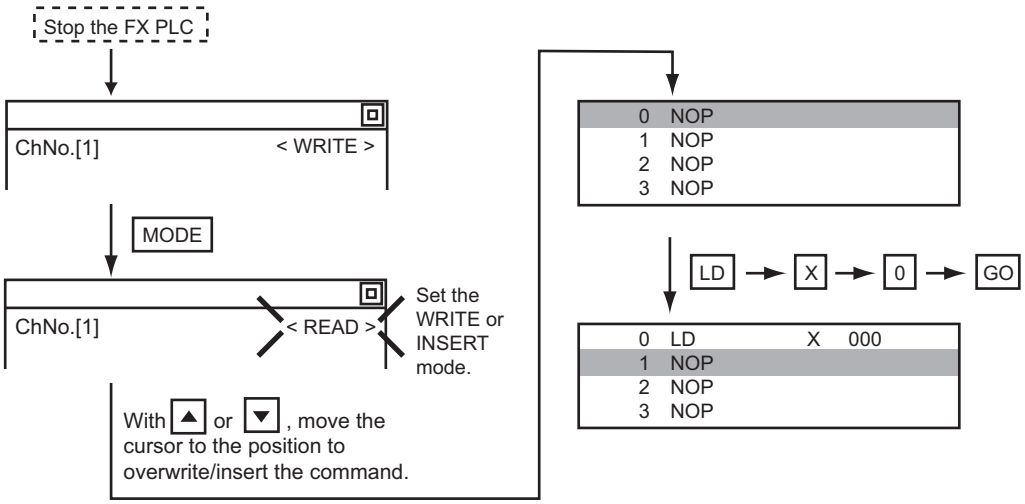
Command line (Place the cursor on this line.)
Operand, set value line (Cannot operate on this line.)

(2) Example

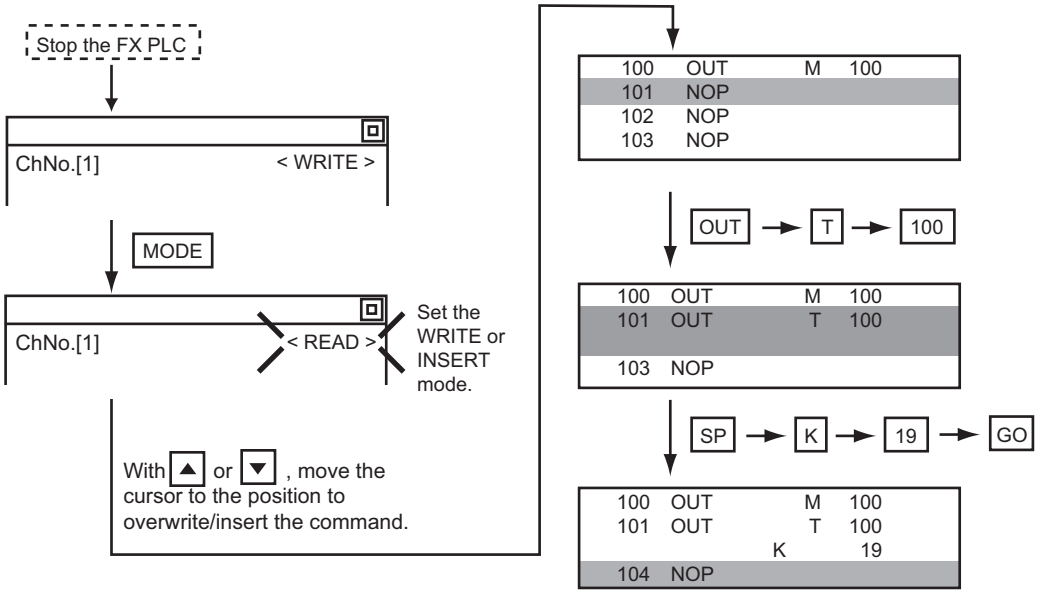
(a) Writing ORB command



(b) Inputting LD X000

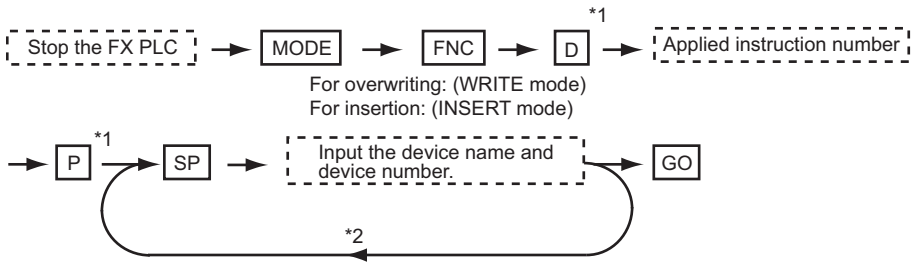


(c) Inputting OUT T100 K19



■2. 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.

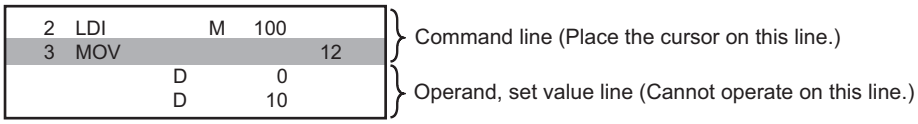
*2 When a command specifies multiple devices for operations, input the [SP] key followed by the device name and device number.

POINT

(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.



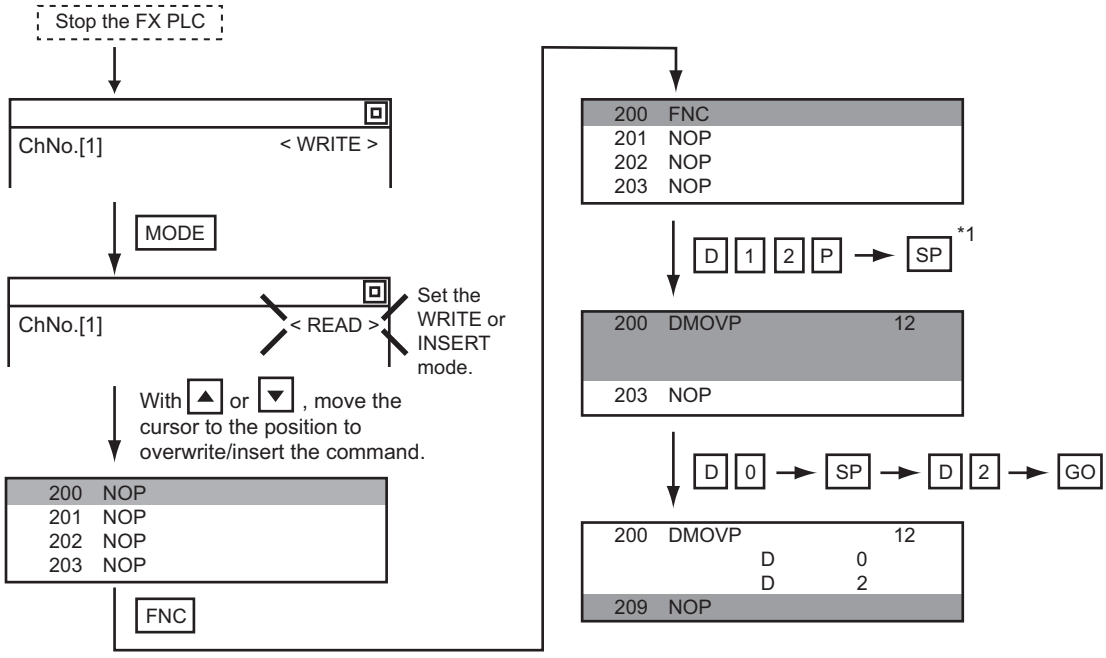
(2) Commands using a text string constant for a command operand (such as ASC command)

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".

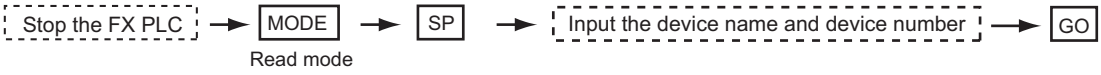


*1 The MOV command is FNC12.

15.4.6 Changing operands, set values

Changes the operand section of an applied instruction and OUT (T, C) command set value.

■1. Operation

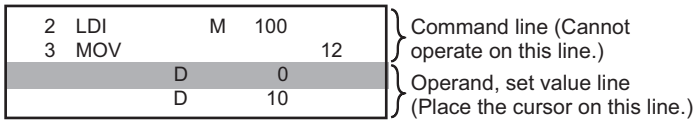


*1 For decimal numbers, input K, then the number.
For hexadecimal numbers, input H, then the number.

POINT

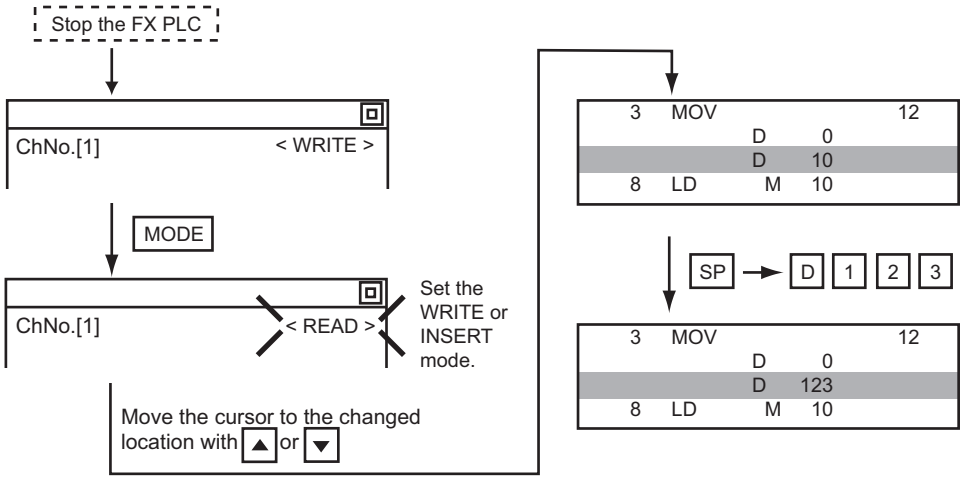
Moving the cursor to the line on which the operand or set value is to be changed

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. Example

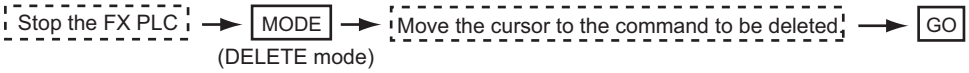
Changing "MOV D0 D10" to "MOV D0 D123"



15.4.7 Deleting commands

Deletes one command at a time from a sequence program.

■1. Operation

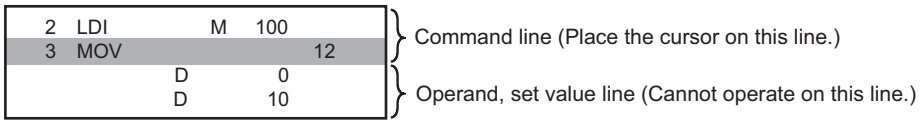


POINT

When moving the cursor to the position where the command is to be deleted.

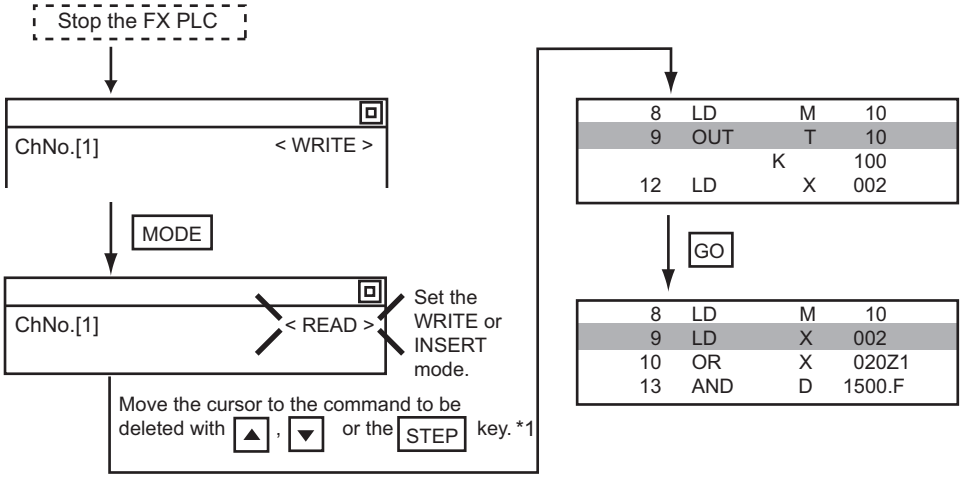
Place the cursor on the command line (the line on which the step number is displayed).

You cannot delete the command if the cursor is placed on the line of an operand or set value.



■2. Example

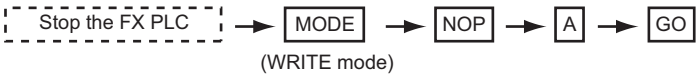
Deleting "OUT T10 K100"



15.4.8 Sequence program all clear

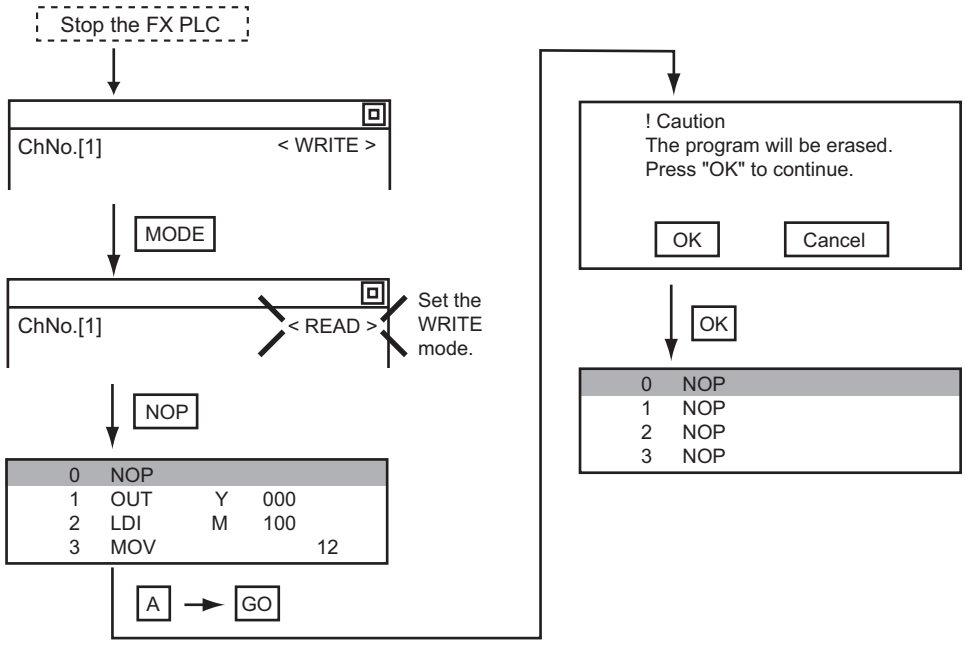
Clears all the sequence programs.

■1. Operation



■2. 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.

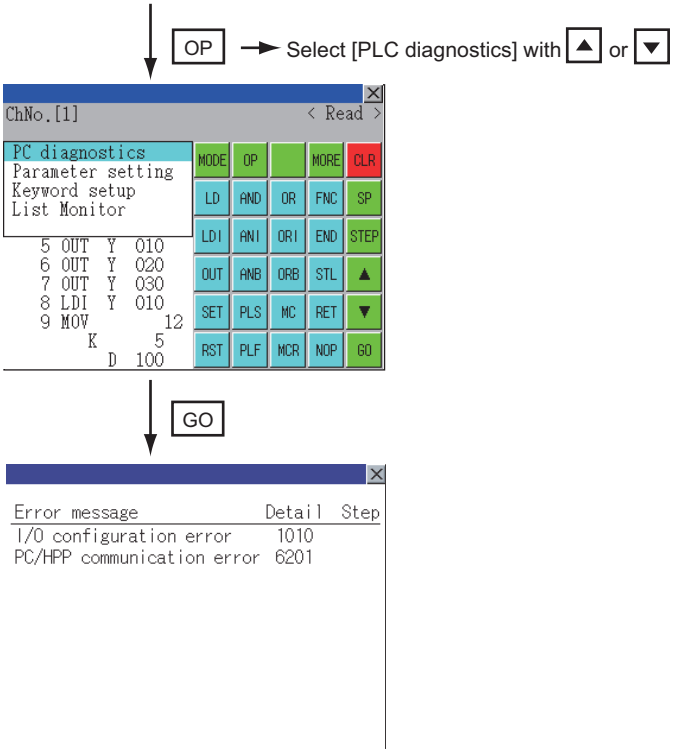
After All Clear, set the above parameters etc. again.

15.4.9 PLC diagnostics

Displays the FX PLC error message, error code, and step at which the error occurred.

■1. Operation

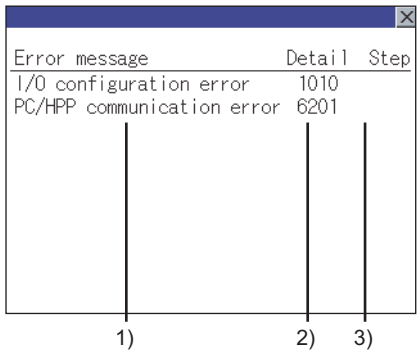
OP → [PLC diagnostics] → GO



■2. 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.)

POINT

Error details

For details on an FX PLC error, refer to the following.

➠ Programming manual for the FX CPU used

(2) Key functions

The table below shows the functions of the keys that are used for the operation on the PLC diagnostics screen.

Key	Function
[×]	Exits the PLC diagnostics.

15.4.10 Parameter setting

Sets FX PLC parameters.

■1. 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	○*1	×	○	○	○	○	○	○	○
Latch range setting	×*2	○	○	×*2	×*2	○	×	×	○
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.

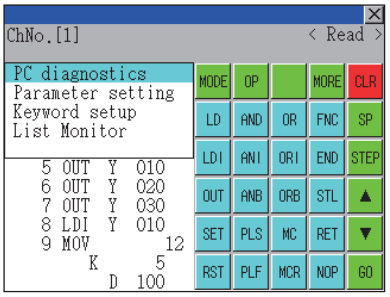
■2. Operation

Stop the FX PLC *1 → OP → [Parameter setting] → GO

Stop the FX PLC *1

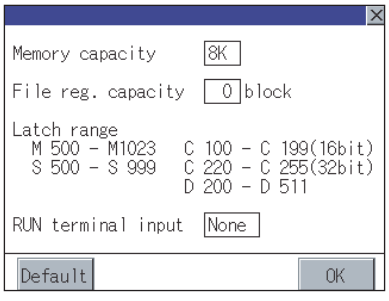
↓

OP → Select [Parameter setting] with ▲ or ▼ .



↓

GO

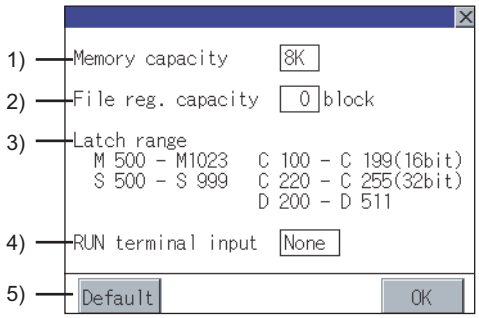


*1 When checking parameters (not changing), it is not necessary to stop the PLC.

■3. Parameter setting screen

The following describes the contents displayed on the PLC diagnostics screen and the function of on-screen keys.

(1) Displayed contents



No.	Item	Display contents
1)	Memory capacity	Sets the memory space (number of steps). If you touch the [*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 □ 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 □ 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 Nm < Nf × 500 + Nk × 500 + 500

$$\text{Kana comment space (steps) after setting change} = \frac{\text{Nm - Nf x 500 - 500}}{500}$$

Nm : Memory space after change (steps)
Nf : File register space after change (blocks)
Nk : Comment space before change (blocks)

POINT

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
[Default]	Initializes the parameters
[OK]	Completes the changed setting contents.
[×]	Ends parameter setting.

15.4.11 Keywords

Registers, deletes, releases protection for, and sets protection for the FX PLC keywords.

■1. Function usability of the MELSEC-FX list editor for keyword protection levels

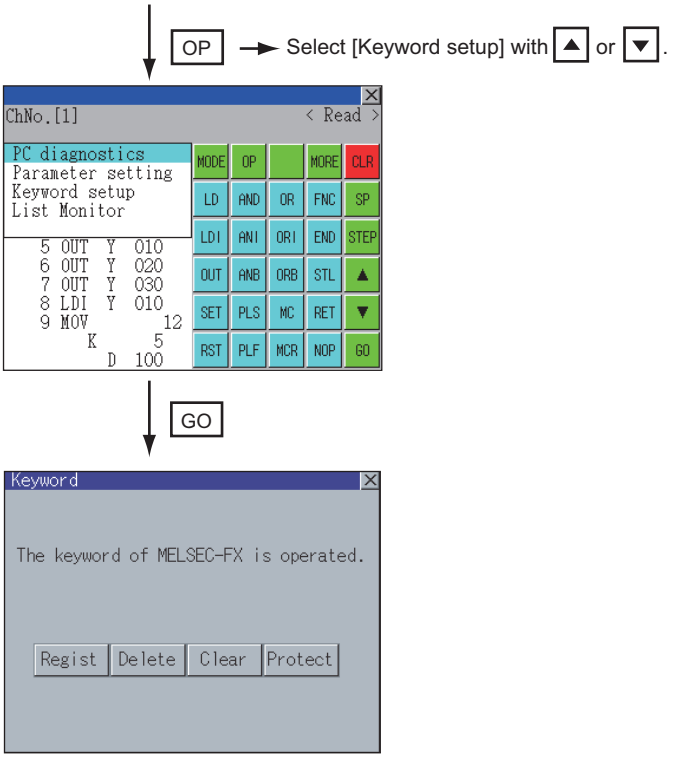
The functions that can be used with the MELSEC-FX list editor depend on the keyword protection level.
(○: Available, ×: Unavailable)

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.

■2. Operation

OP → [Keyword setup] → GO



■3. 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)

POINT

Keywords

For details of the keyword, refer to the following.

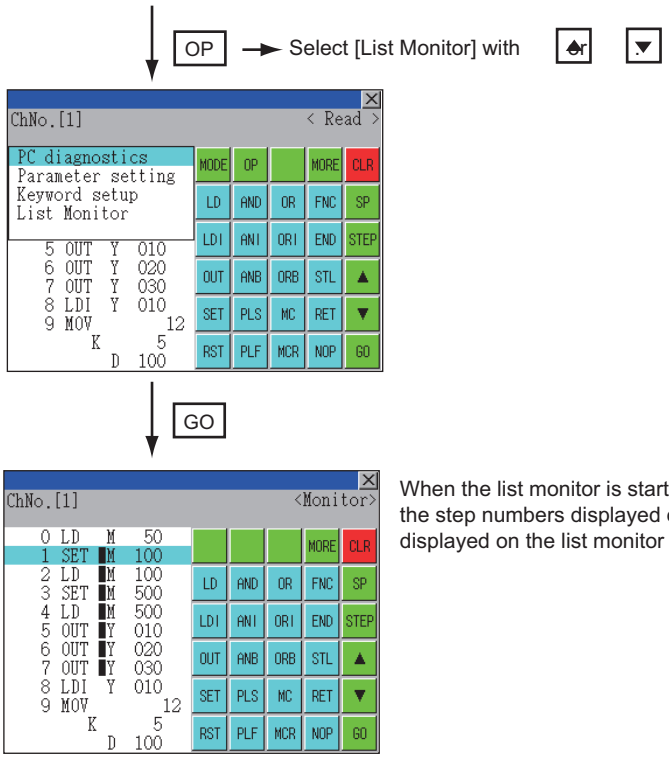
➠ Programming manual for the FX PLC used

15.4.12 List monitor

The status of contacts and coils in a sequence program is displayed.

■1. Operation

OP → [List Monitor] → GO



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

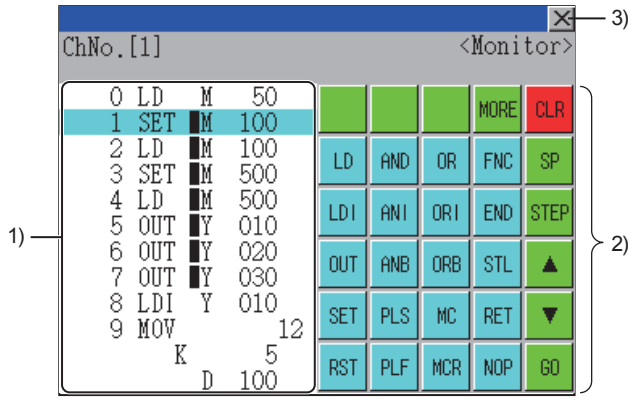
Starting list monitor with special function switches (FX list monitor)

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) Screen Design Manual

■2. 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. ➠ 15.4.3 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(ontact 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	

15.4.13 Hard copy output

Screens of the MELSEC-FX list editor can be stored to a data strage in BMP/JPEG file format.
Refer to the following for the hard copy.

- Starting the MELSEC-FX list editor from the FX ladder monitor

  ➠ 13.4.2 Hard copy output
- Setting the hard copy with GT Designer3 (GOT2000)

  ➠ GT Designer3 (GOT2000) Screen Design Manual

15.4.14 Action for an incorrect key input

If an incorrect key is input, cancel the input contents.

■1. Operation

(1) Before touching the [GO] key (before reading/writing the input contents)

Before touching the [GO] key, touch the [CLR] key.

(2) After touching the [GO] key (after reading/writing the input contents)

Write the command again.

➠ 15.4.5 Writing commands

Commands finalized by writing and inserting operations are revised (overwritten) with the program writing.

15.5 Error Messages and Corrective Actions

This section describes the error messages displayed when the MELSEC-FX list editor is executed, and corrective action.

Error Messeage	Description	Corrective action
Can not display while protected.	The all-operation protect, anti-plagiarism, or incorrect write protect keyword is set.	• Check the protected operation. • Clear the keyword protection or delete the keyword. ➠ 15.4.11 Keywords
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.	• Check the FX PLC, cable, and GOT for abnormality. • Check whether the communication settings are correct or not.
PLC is running.	A writing operation etc. has been made while the FX PLC is running.	Stop the FX PLC.
Can not write.	• The memory to write to is EPROM. • The protect switch of the EEPROM is on.	• Set other than EPROM for the memory to write to. • Switch off the protect switch of the EEPROM.
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. ➠ 15.4.7 Deleting commands
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.

16. R MOTION MONITOR

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

16.1 Features

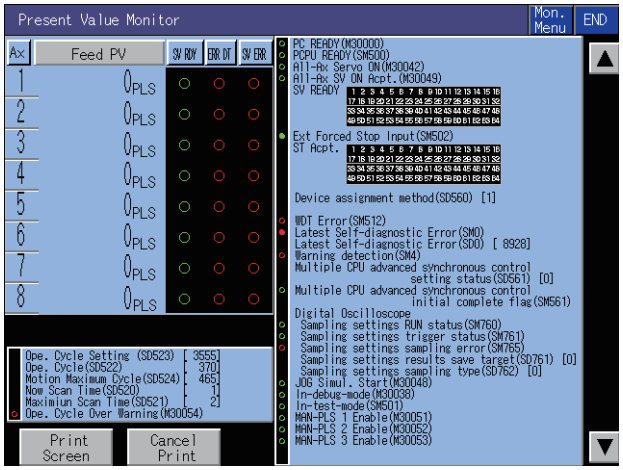
The R motion monitor enables the servo monitoring and parameter setting of the motion controller CPU (MELSEC iQ-R series).
The following are the features of the R motion monitor.

■1. Various servo monitoring on multiple monitor screens

The R motion monitor function has multiple monitor screens, on which you can monitor servo data in a variety of patterns.
(Display examples)

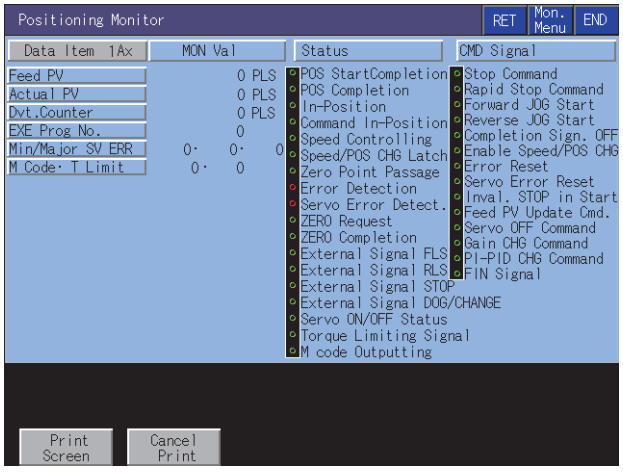
- Present Value Monitor
  Monitors and displays the feed current values and actual current values of all running axes.

➠ 16.4.4 Present value monitor screen



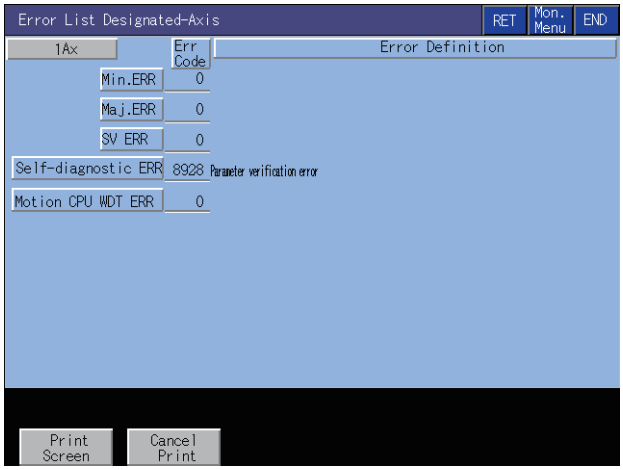
- Positioning Monitor
  Monitors the details of the positioning data set to any axis.

➠ 16.4.7 Positioning monitor screen



- Error List Designated-Axis
  Displays the latest errors that occurred on the specified axis.

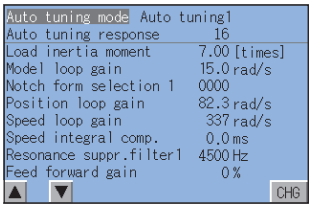
  ➠ 16.4.6 Error list designated-axis screen



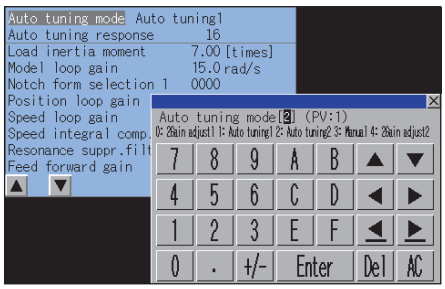
■2. Servo parameter setting by writing operation

Write example: Changing the setting of the auto tuning function

Parameter setting screen

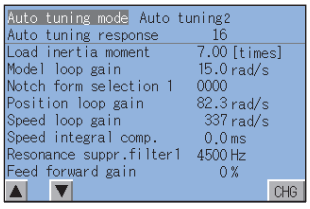


Parameter setting window appears



Change the auto tuning mode from "1" to "2".

Parameter setting screen



Parameter setting is changed

Step 1. By performing writing from the parameter setting screen, write the servo parameter setting (Basic parameters and adjustment parameters) to the motion controller CPU (MELSEC iQ-R series).

Step 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 (MELSEC iQ-R series).

16.2 Specifications

16.2.1 System configuration

This section describes the system configuration of the R 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 Electric Products) For GT Works3 Version1

■1. Target motion controller CPU of the R motion monitor

For the compatible operating system software versions of the motion controller CPU, refer to the following.

Operating system software version of the motion controller CPU	Controller	Device assignment method
Version 05 or earlier	R32MTCPU, R16MTCPU	Q series motion-compatible device assignment
Version 06 or later	R64MTCPU, R32MTCPU, R16MTCPU	Q series motion-compatible device assignment MELSEC iQ-R motion device assignment

■2. Connection type

This function can be used in the following connection types.

(1) When the GOT is connected to the motion controller CPU (MELSEC iQ-R series)

○: Available, ×: Unavailable

Function		Connection type between GOT and controller								
Name	Description	Bus connection	Direct CPU connection	Serial communication connection	Ethernet connection *3	MELSECNET/H connection, MELSECNET/10 connection	CC-Link IE Controller Network connection	CC-Link IE Field Network connection	CC-Link connection	
									ID*1	G4*2
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 CC-Link connection (Intelligent device station).
*2 Indicates CC-Link connection (via G4).
*3 When the CC-Link IE Field Network Ethernet adapter module is used, the R motion monitor cannot be used.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the R motion monitor to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Required special data

Write the package data, which contains the R motion monitor data, to the GOT.
The required space of the user area for writing depends on the R motion monitor data to be used.
For the R motion monitor data size and how to write the data to the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■5. Servo amplifiers whose parameter can be set

The R motion monitor allows you to set the parameter of servo amplifiers shown below.

Motion controller CPU (MELSEC iQ-R series)	Servo amplifier
RM64TCPU, R32MTCPU, R16MTCPU	MR-J4-B, MR-J4W-B, MR-J4-B-RJ, MR-J3-B, MR-J3-B-RJ006, MR-J3-B-RJ004, MR-J3-B-RJ080, MR-J3W-B, MR-J3-BS

■6. Applicable hardware

A USB mouse is usable.

16.2.2 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 Electric Products) For GT Works3 Version1

16.2.3 Precautions

■1. Operating system software package for the motion controller CPU (MELSEC iQ-R series)

The usable OS software package is SW10DNC-RMTFW only.

16.3 Operations for Display

This section explains how to display the R motion monitor screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the R motion monitor screen.
Use either of the following display methods.

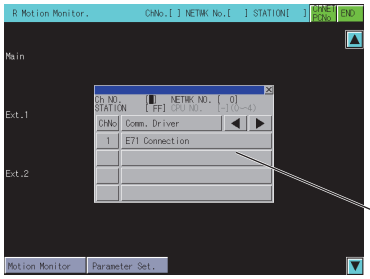
- Starting from the special function switch (R motion monitor) set in the project
  For how to set special function switches, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  After the utility is displayed, touch [Monitor] → [R Motion monitor] from the Main Menu.
  For how to display the utility, refer to the following.

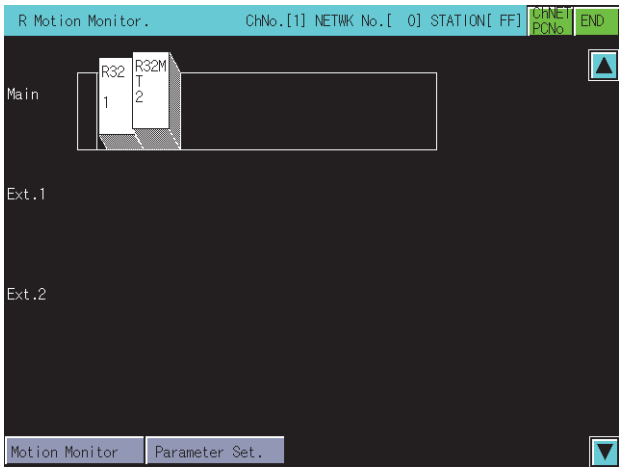
  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number.
Set the channel number of the controller for which the R motion monitor is performed.
After the GOT is powered on, the communication setting window is displayed automatically only at the first startup of the R motion monitor.
To display the communication setting window after the first startup, touch the [ChNET PCNo] key on the R motion monitor screen.

➠ 16.4 Operation Procedures

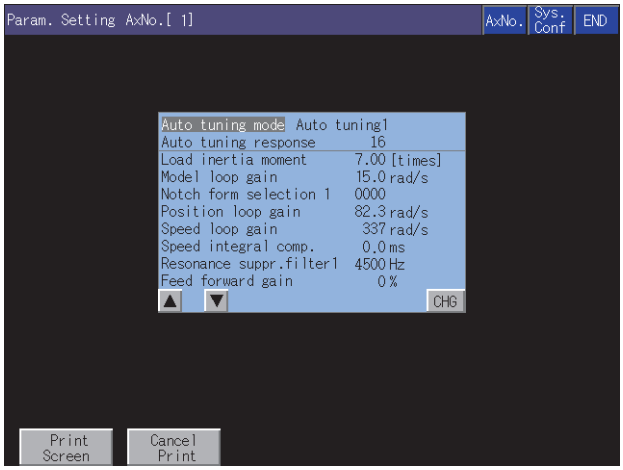


Step 4. Start the R motion monitor.
The System Configuration screen is displayed after the channel number is selected.
Touch a motion controller CPU (MELSEC iQ-R series) to monitor.
Touching the [Parameter Set.] key displays the parameter setting screen.
Touching the [Motion Monitor] key displays the monitor menu.



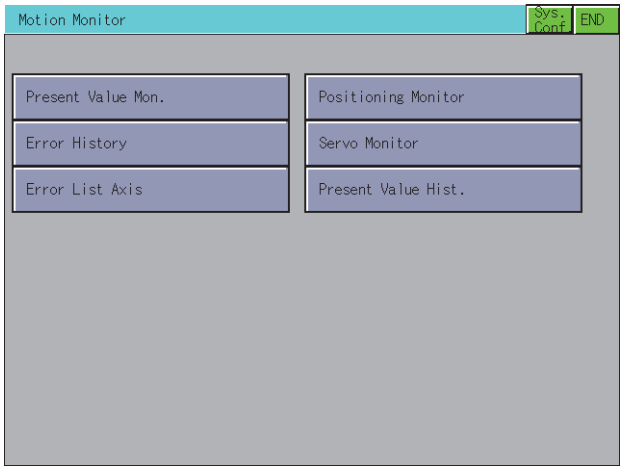
Step 5. Touch the [Parameter Set.] key to display the parameter setting screen.
When you have set a password in [Motion Parameter Display] on GT Designer3 (GOT2000), enter the password.

➠ 16.4.10 Parameter setting screen



Select the servo parameter to be set.
Change the servo parameter setting and write the new servo parameter setting to the motion.

Step 6. Display the R motion monitor screen.
Select an item on the menu to display the selected monitor function.



- [Present Value Mon.]

  ➠ 16.4.4 Present value monitor screen
- [Error History]

  ➠ 16.4.5 Motion error history monitor screen
- [Error List Axis]

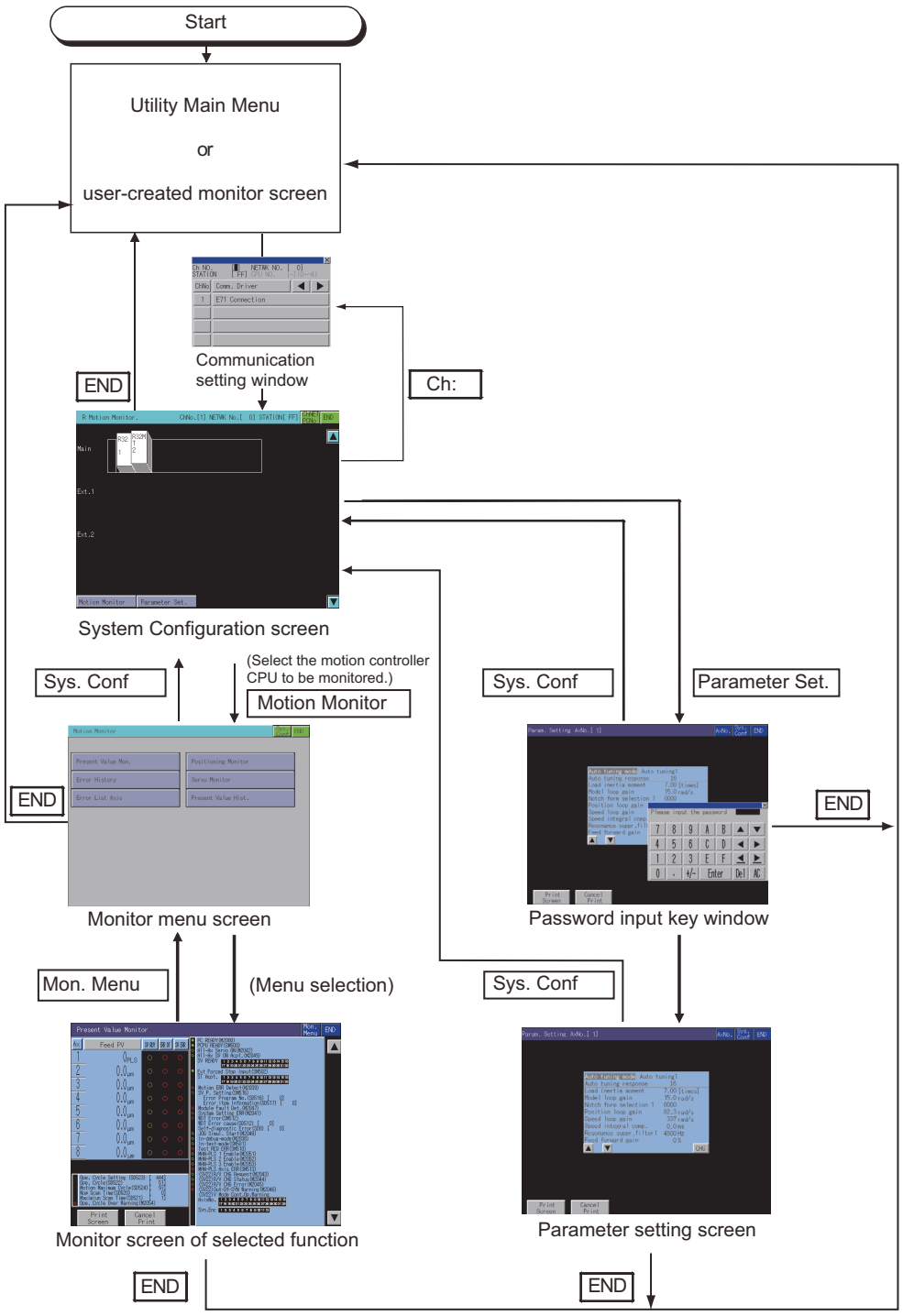
  ➠ 16.4.6 Error list designated-axis screen
- [Positioning Monitor]

  ➠ 16.4.7 Positioning monitor screen
- [Servo Monitor]

  ➠ 16.4.8 Servo monitor screen
- [Present Value Hist.]

  ➠ 16.4.9 Present value history monitor screen

■1. Changing screens



At next startup, the last exited screen is displayed.
However, the last exited screen will not be displayed when the GOT is restarted after package data is written or the GOT is powered on, off, or reset.
When the function is started with a special function switch to which a connection destination different from the one at the last exit is set, the system configuration screen appears.

16.4 Operation Procedures

This section describes the operations of the screens when using the R motion monitor.
The display screen of the R motion monitor varies depending on the GOT used.

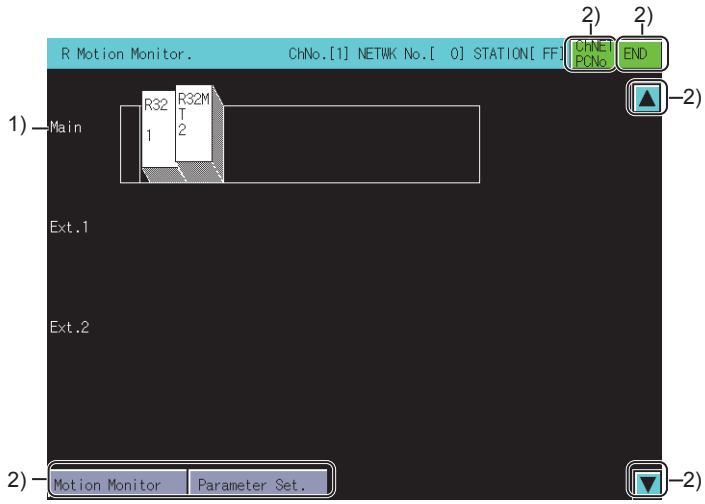
16.4.1 System configuration screen

This section describes the structure of the screen and the common operations when the R motion monitor is executed.

■1. Display contents and key functions of the R motion monitor

The following describes the structure of the system configuration screen and the functions of the keys displayed on the screen after the R motion monitor is started.

(1) Displayed contents



1) Motion controller CPU status display

The CPU numbers are displayed for the CPUs, and the control CPU numbers are displayed for the installed modules.

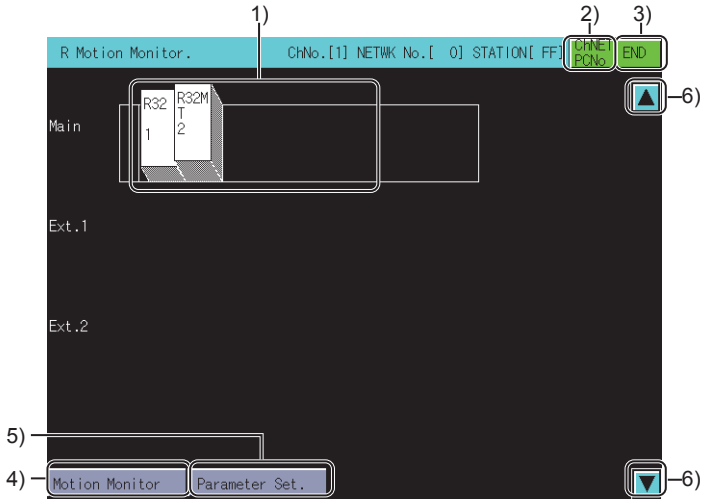
To choose the motion controller CPU (MELSEC iQ-R series) for servo monitor/servo parameter setting, touch the respective display position.

2) Touch key

The keys used for the operations on the system configuration screen.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the system configuration screen.



1) Motion controller CPU status display

Select the motion controller CPU (MELSEC iQ-R series) where servo monitor/servo parameter setting is performed.

2) [ChNET PCNo] key

Displays the communication setting window.

3) [END] key

Exits the monitor and returns to the screen where the R motion monitor was started.

4) [Motion Monitor] key

Changes the System Configuration screen to the monitor menu screen.

➠ 16.4.3 Monitor menu screen

5) [Parameter Set.] key

Changes the System Configuration screen to the parameter setting screen.

➠ 16.4.10 Parameter setting screen

6) Scroll key

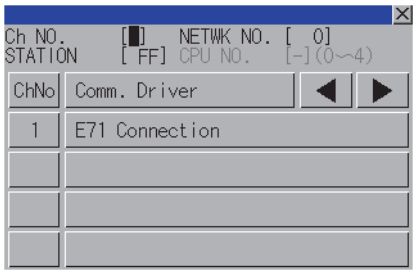
Scrolls the display one stage up or down to display the system configuration of the currently undisplayed stage immediately before/after the currently displayed stage.

16.4.2 Setting procedure for monitoring other stations

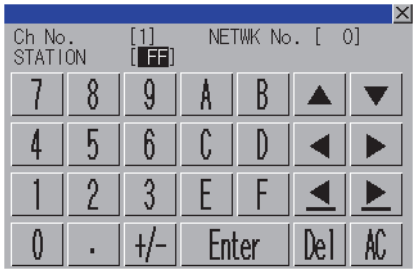
The following shows the setting procedure for monitoring other stations with R motion monitor.

Step 1. In the communication setting window, select one from channel No.1 to 4.
For the operations of the communication setting screen, refer to the following.

➠ ■1. Communication setting window



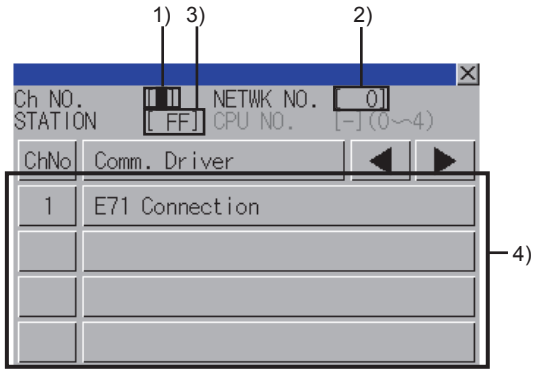
Step 2. When the channel No. is selected, the screen below is displayed.
Set the network number and the station number of the target controller.



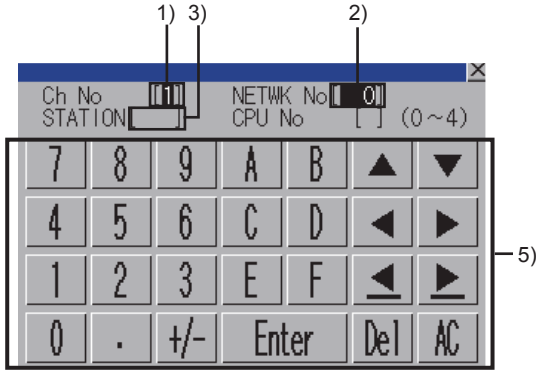
Step 3. After selecting the station number, touch the [Enter] key. The communication setting window closes and the system configuration of the set monitor destination is displayed.

■1. Communication setting window

(1) Displayed screen



When the CH No. is input



When the network No., station No., and CPU No. are input

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 following shows the setting range for each connection type.
- Serial communication connection: [0]
- Ethernet connection, CC-Link IE Controller Network connection, CC-Link IE Field Network connection: [1] to [239]
- CC-Link (ID) connection: [0]

3) Station No. input area
Set the station No. of the target controller.

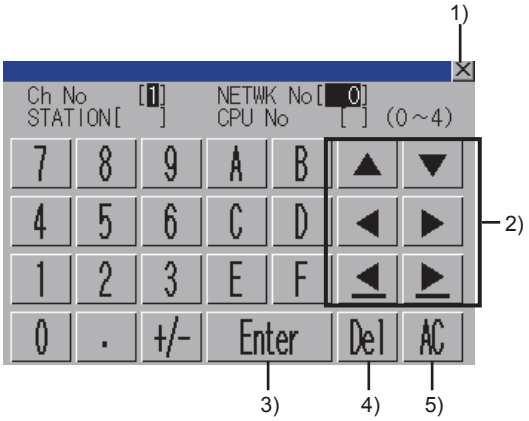
When the station No. is set to the host station (FF), set the network No. to 0.
The following shows the setting range for each connection type.

- Serial communication connection: [FF] (Host station)
- Ethernet connection: [1] to [64]
- CC-Link IE Controller Network connection, CC-Link IE Field Network connection: [1] to [120]
- CC-Link (ID) connection: [0] (master station), [1] to [64] (local station)

4) CH No. selection key
Select a CH No.

5) Keys
Keys used for operations in the communication setting window

(2) Key functions



1) [×] 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.

2) Input area move key
Moves the cursor among the input areas.

3) [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.

4) [Del] key
Deletes an input value or character.

5) [AC] key
Deletes all the input values and characters.

16.4.3 Monitor menu screen

The R 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.

1) [Present Value Mon.] key
Monitors and displays the feed current values and actual current values of all running axes.

➠ 16.4.4 Present value monitor screen

2) [Error History] key
Displays the history of errors that occurred in the motion controller CPU (MELSEC iQ-R series).

➠ 16.4.5 Motion error history monitor screen

3) [Error List Axis] key
Displays the latest errors that occurred on the specified axis.

➠ 16.4.6 Error list designated-axis screen

4) [Positioning Monitor] key
Monitors the details of the positioning data set to any axis.

➠ 16.4.7 Positioning monitor screen

5) [Servo Monitor] key
Monitors the servo monitor/servo amplifier.

➠ 16.4.8 Servo monitor screen

6) [Present Value Hist.] key
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.

➠ 16.4.9 Present value history monitor screen

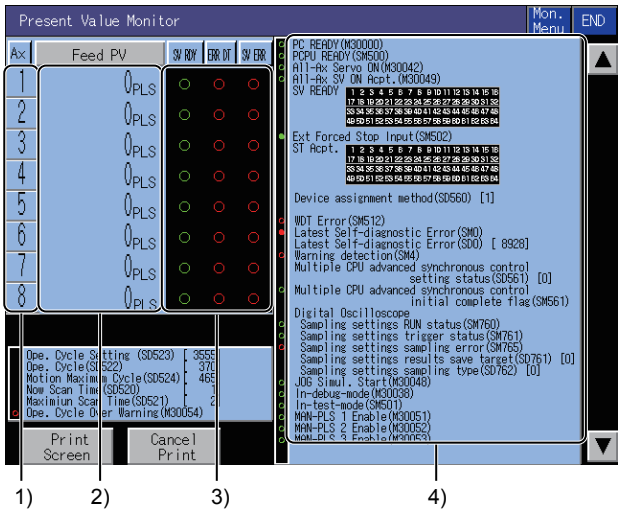
16.4.4 Present value monitor screen

This section describes the structure of the screen and the common operations when the present value monitor is executed.

■1. Display contents and key functions

The following describes the display data of the present value monitor screen and the functions of the keys displayed on the screen.

(1) Displayed contents



1) [Ax]

Displays the axis numbers of the operating axes being monitored.

2) [Feed PV] and [Actual PV]

Displays the feed present values or actual present values of the operating axes.

Touching the display part of the monitored value switches to the positioning monitor screen of the touched axis number.

➠ 16.4.7 Positioning monitor screen

3) [SV RDY], [ERR DT], and [SV ERR]

Displays the ON (lit)/OFF (not lit) status of the servo ready signal, major/minor error and servo error detection signal.

Touching the error indication part [○] switches to the Error List Designated-Axis screen of the touched axis number.

➠ 16.4.6 Error list designated-axis screen

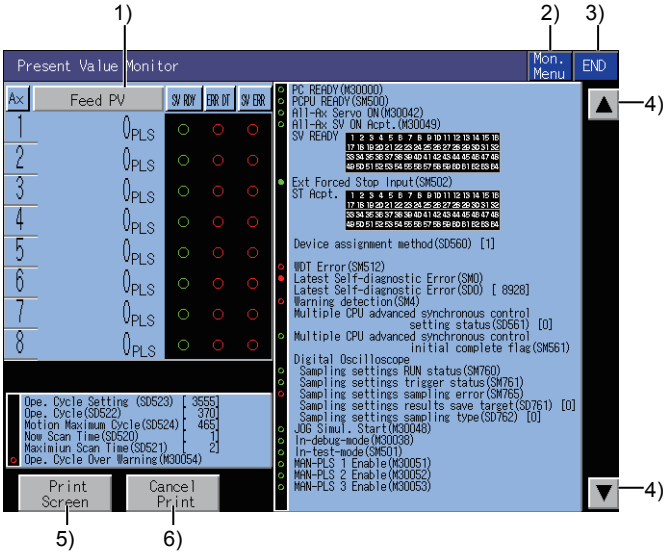
4) Bit device screen

The common bit devices are always monitored and displayed.

- Bit devices for error detection: marked with a red circle
- Bit devices for general status display: marked with a green circle

(2) Key functions

The following describes the functions of the keys that are used for the operations on the present value monitor screen.



1) [Feed PV] key, [Actual PV] key

Touching the key alternates the monitor item between the "feed present value" and "actual present value".

2) [Mon. Menu] key

Returns to the monitor menu screen.

3) [END] key

Exits the present value monitor and returns to the screen where the R motion monitor was started.

4) Keys for switching displayed axis numbers

Switches the displayed axis number.

5) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.

For the details of the hard copy, refer to the following.

➠ 16.4.11 Hard copy output

6) [Cancel Print] key

The touch operation of the key is disabled.

16.4.5 Motion error history monitor screen

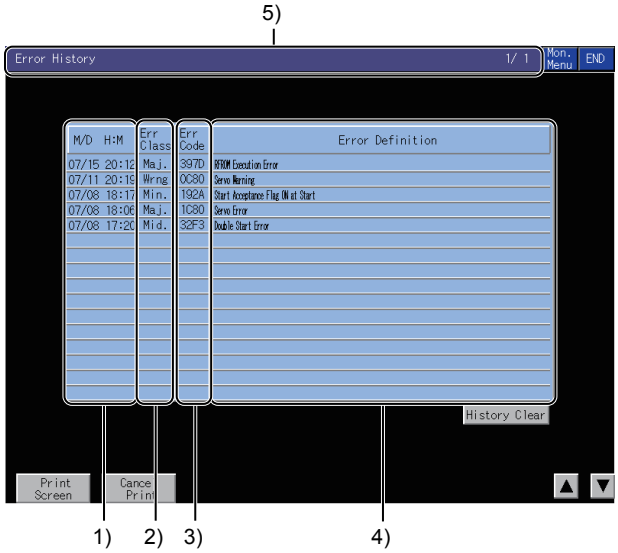
This section describes the structure of the screen and the common operations when the motion error history monitor is executed.

■1. Motion error history monitor screen

The following describes the display data of the motion error history monitor screen and the functions of the keys displayed on the screen.

(1) Displayed contents

The motion error history monitor screen displays the history of error which occurs in the motion controller CPU (MELSEC iQ-R series).
Up to 128 errors are displayed from the latest one in the order of [M/D H:M].



1) [M/D H:M]
Displays the date and time when the error occurred in the motion controller CPU.

2) [Err Class]
Displays the classifications of the errors that occurred.
The following shows the error classifications to be displayed.

- [Wrng]
- [Min.]
- [Mid.]
- [Maj.]

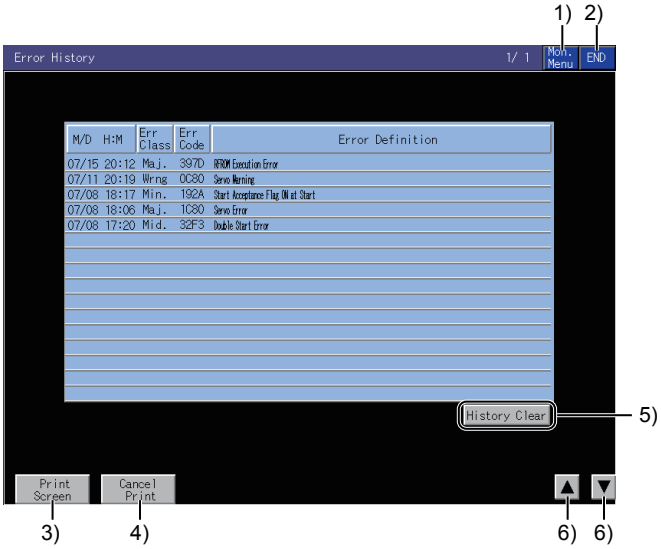
3) [Err Code]
Displays the error code of the error occurred.

4) [Error Definition]
Displays the definition of the error that occurred in the motion controller CPU.

5) Title display area
Displays the screen name.
Displays the page number of the currently displayed page and total number of pages.
Up to eight pages can be displayed.
If no error history exists, "1/1" is displayed.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the motion error history monitor screen.



1) [Mon. Menu] key

Returns to the monitor menu screen.

2) [END] key

Exits the motion error history monitor and returns to the screen where the R motion monitor was started.

3) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For the details of the hard copy, refer to the following.

➠ 16.4.11 Hard copy output

4) [Cancel Print] key

The touch operation of the key is disabled.

5) [History Clear] button

Clears the error history.

6) Scroll buttons

Scrolls the motion error history up or down by 16 error events.
If no further error event exists, the history is not scrolled.

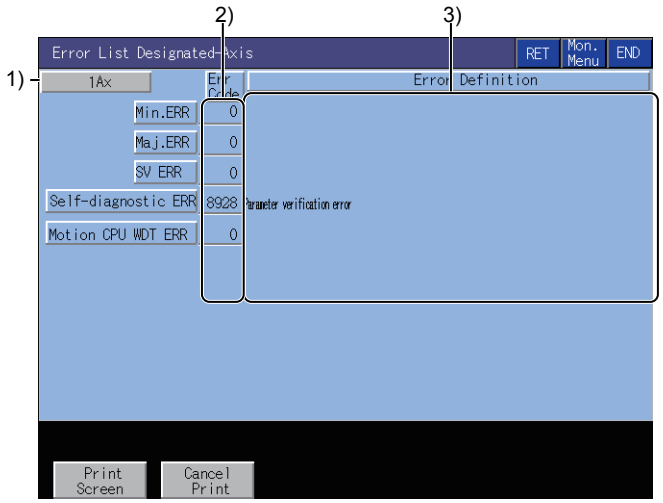
16.4.6 Error list designated-axis screen

This section describes the structure of the screen and the common operations used when executing the error list designated-axis.

■1. Display contents and keys functions

This section describes the display data of the error list designated-axis screen and the key functions displayed on the screen.

(1) Displayed contents



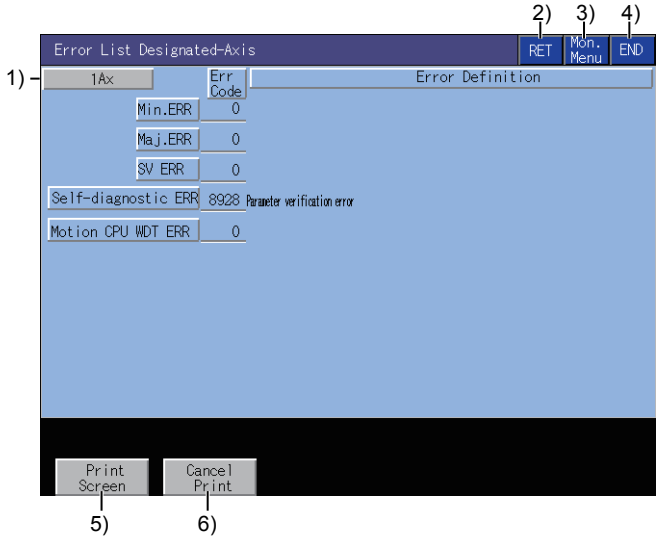
1) Axis No.
Displays the axis number currently being monitored.

2) [Err Code]
Displays the error codes of the errors that occurred.

3) [Error Definition]
Displays the error definitions that occurred.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the error list designated-axis screen.



1) [Ax] key

Opens the axis No. selection screen.

➠ (3) Axis No. selection screen

2) [RET] key

Returns to the previous screen.

3) [Mon. Menu] key

Returns to the monitor menu screen.

4) [END] key

Exits the error list designated-axis monitor and returns to the screen where the R motion monitor was started.

5) [Print Screen] key

Stores the displayed screen to the SD card in the BMP or JPEG format.
For the details of the hard copy, refer to the following.

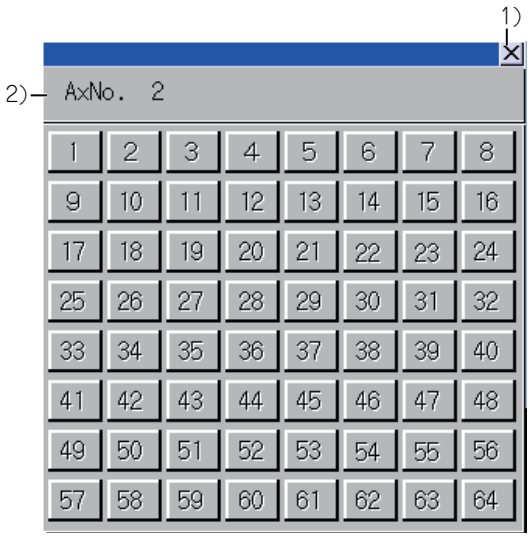
➠ 16.4.11 Hard copy output

6) [Cancel Print] key

The touch operation of the key is disabled.

(3) Axis No. selection screen

The following shows the operation keys on the axis No. selection screen.



1) [×] key

Closes the axis No. selection screen.

2) Axis No. key

Select an axis number.

The selectable numbers range from [1] to [64].

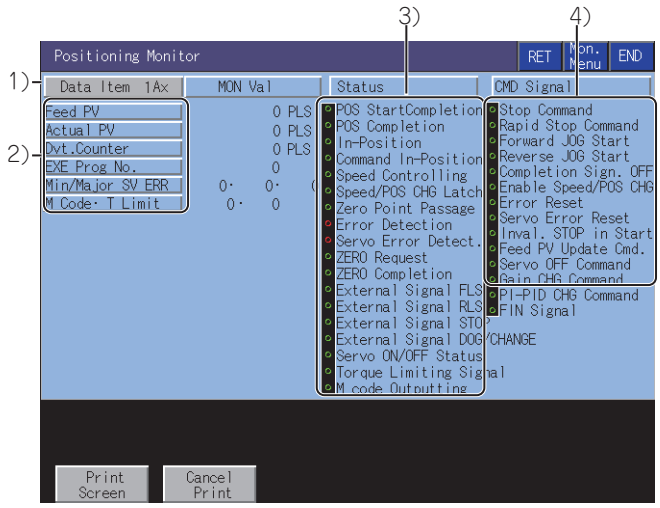
16.4.7 Positioning monitor screen

This section describes the structure of the screen and the common operations when the positioning monitor is executed.

■1. Display contents and key functions

The following describes the display data of the positioning monitor screen and the functions of the keys displayed on the screen.

(1) Displayed contents



1) Data Item

Displays the number of the operating axis being monitored.

2) Positioning control data

Displays the data during positioning control of the PCPU.

Item	Description
[Feed PV]	Target address output to the servo amplifier
[Actual PV]	Actually traveled present value
[Dvt.Counter]	Difference between feed present value and actual present value
[EXE Prog No.]	The number of the servo program being executed
[Min/Major SV ERR]	The error code of the latest minor/major servo error
[M Code · T Limit]	The M code and torque limit of the servo program in execution

3) [Status]

Displays ON and OFF of the symbols that represent the control status by axis.

- In the ON status, the symbol is lit green.
- Upon detection of an error or servo error, the symbol is lit red.

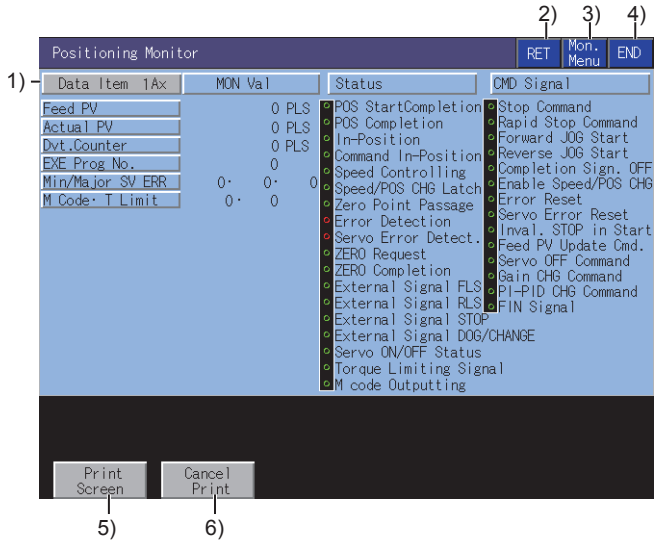
4) [CMD Signal]

Displays ON and OFF of the positioning command signal.

In the ON status, the symbol is lit green.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the positioning monitor screen.



1) [Data Item Ax]
Switches the axes to be monitored.

2) [RET] key
Returns to the previous screen.

3) [Mon. Menu] key
Returns to the monitor menu screen.

4) [END] key
Exits the positioning monitor and returns to the screen where the R motion monitor was started.

5) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For the details of the hard copy, refer to the following.

➠ 16.4.11 Hard copy output

6) [Cancel Print] key
The touch operation of the key is disabled.

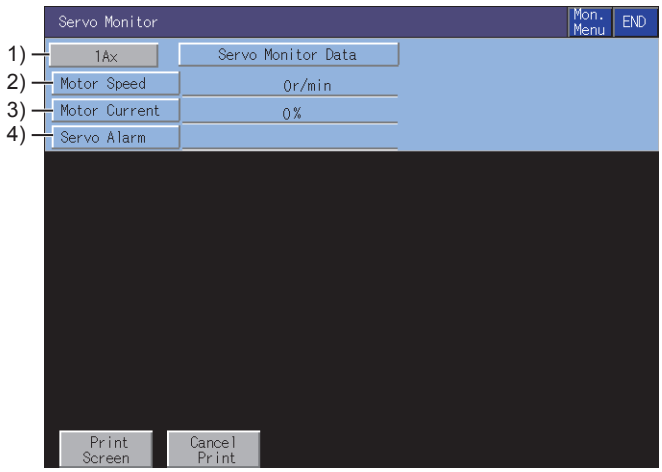
16.4.8 Servo monitor screen

This section describes the structure of the screen and the common operations when the servo monitor is executed.

■1. Display contents and key functions

The following describes the display data of the servo monitor screen and the functions of the keys displayed on the screen.

(1) Displayed contents



1) Axis
Displays the number of the axis being monitored.

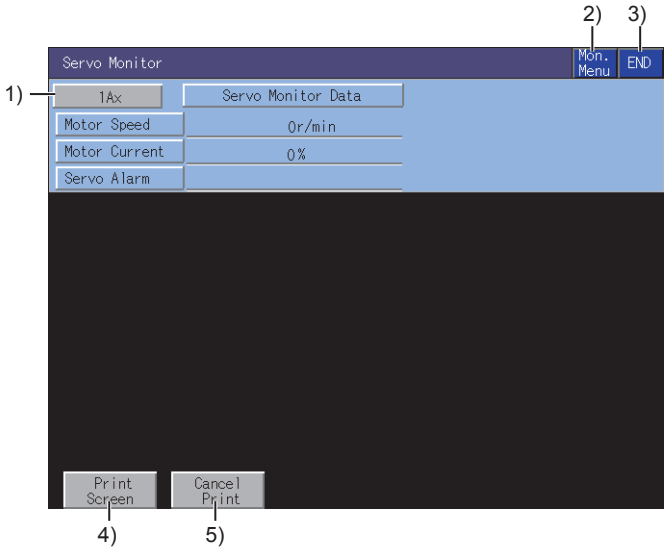
2) [Motor Speed]
Displays the actual speed of the servo motor.

3) [Motor Current]
Displays the motor current value by using the rated current as 100%.

4) [Servo Alarm]
Displays the alarm detected by the servo amplifier.

(2) Key functions

The following shows the functions of the keys that are used for the operations on the servo monitor screen.



1) [Ax] key
Switches the axes to be monitored.

2) [Mon. Menu] key
Returns to the monitor menu screen.

3) [END] key
Exits the servo monitoring and returns to the screen where the R motion monitor was started.

4) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For the details of the hard copy, refer to the following.

➠ 16.4.11 Hard copy output

5) [Cancel Print] key
The touch operation of the key is disabled.

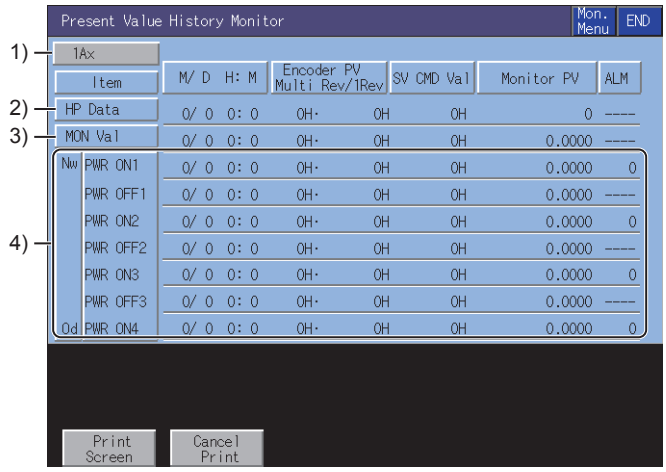
16.4.9 Present value history monitor screen

This section describes the structure of the screen and the common operations when the present value history monitor is executed.

■1. Present value history monitor screen

The following describes the display data of the present value history monitor screen and the functions of the keys displayed on the screen.

(1) Displayed contents



1) Axis

Displays the number of the axis being monitored.

2) [HP Data]

Displays the following values monitored at home position return.

- Home position return completion time
- Encoder present value
  Multi-revolution data of absolute position reference point data
  Within one-revolution position of absolute position reference point data
- Servo command value
- Monitor present value

3) [MON Val]

Displays the following present monitor values.

- Present time
- Encoder present value
  Present multi-revolution data of encoder present value
  Present within one-revolution position of encoder present value
- Present servo command value
- Present monitor present value

4) PWR ON/PWR OFF

Displays the four past present values of the ABS axis at servo amplifier power-on/off.

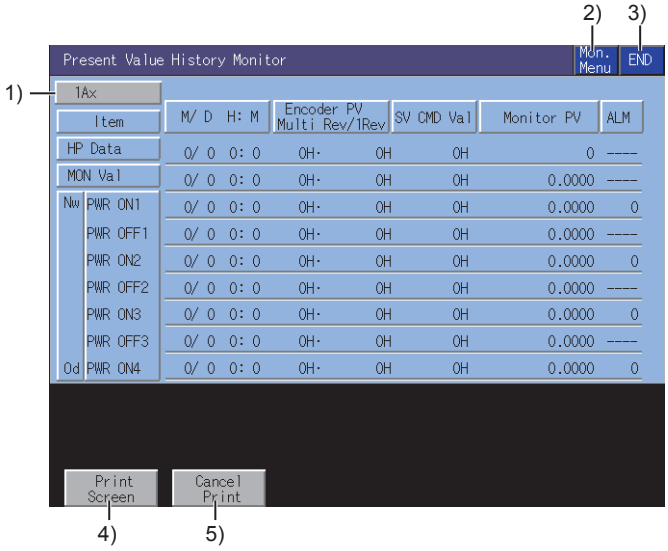
At power-on

- Power-on time
- Encoder present value
  Multi-revolution data of initial encoder
  One-revolution data of initial encoder
- Servo command value after recovery
- Monitor present value after recovery
- Alarm occurrence information at present value recovery (error code of a minor/major error)

At power-off

- Time immediately before servo amplifier power-off
- Encoder present value
  Multi-revolution data of encoder present value before servo amplifier power-off
  One-revolution data of encoder present value before servo amplifier power-off
- Servo command immediately before servo amplifier power-off
- Monitor present value immediately before servo amplifier power-off

(2) Key functions



1) [Ax] key
Switches the axes to be monitored.

2) [Mon. Menu] key
Returns to the monitor menu screen.

3) [END] key
Exits the present value history monitor and returns to the screen where the R motion monitor was started.

4) [Print Screen] key
Stores the displayed screen to the SD card in the BMP or JPEG format.
For the details of the hard copy, refer to the following.

➠ 16.4.11 Hard copy output

5) [Cancel Print] key
The touch operation of the key is disabled.

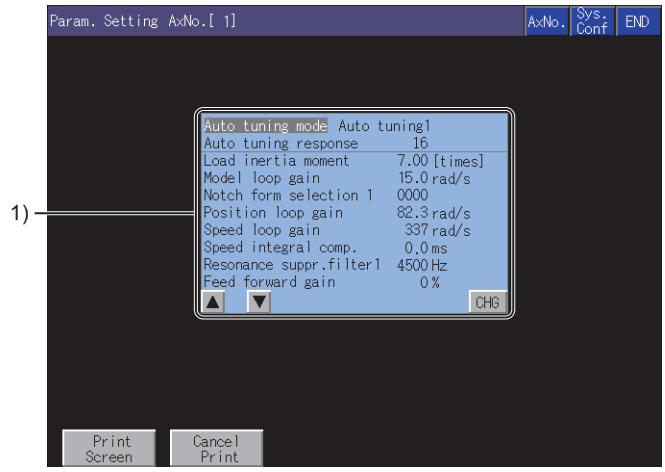
16.4.10 Parameter setting screen

This section describes the structure of the screen and the common operations used when executing the parameter setting.

■1. Display contents and keys functions

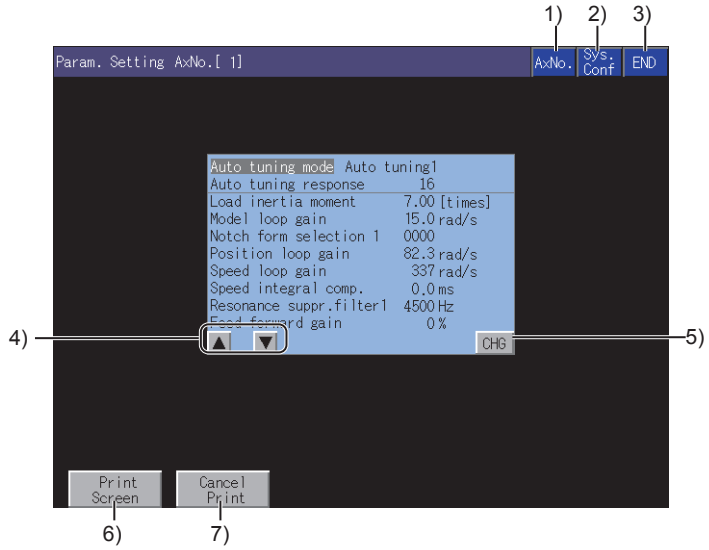
You can set the servo parameters (basic parameters/adjustment parameters) of the connected motion controller CPU (MELSEC iQ-R series).
This section describes the display data of the parameter setting screen and the key functions displayed on the screen.

(1) Displayed contents



1) Parameter setting screen
Displays the servo parameter of the selected item.

(2) Key functions



1) [AxNo.] key
Changes the axis whose parameter setting will be made.

2) [Sys. Conf] key
Returns to the System Configuration screen.

3) [END] key
Exits the parameter setting and returns to the screen where the R motion monitor was started.

4) Item selection key
Selects the servo parameter setting item.

5) [CHG] key
Changes the servo parameter setting of the selected item.

6) **[Print Screen] key**
Stores the displayed screen to the memory card in BMP/JPEG file format.
For further information about hard copies, refer to the following:

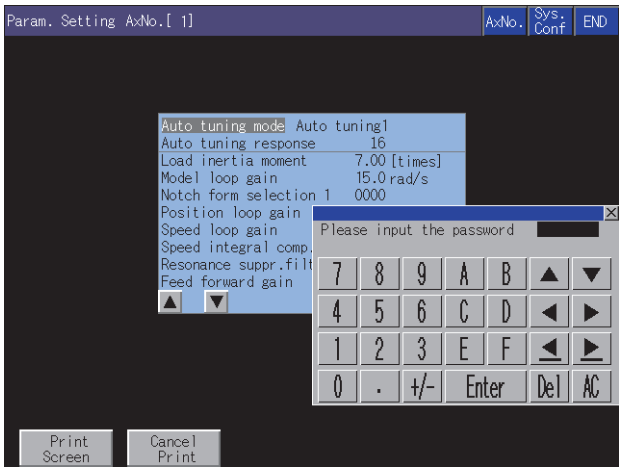
➠ 16.4.11 Hard copy output

7) **[Cancel Print] key**
The operation of this key is invalid.

■2. Inputting the password

If you have set a password in [Motion Parameter Display] on GT Designer3 (GOT2000), the password input key window appears when you try to access the parameter setting screen of the motion monitor.
For the details of the password setting, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual



(1) Function

- If the password matches, the parameter setting screen is displayed.
- If the password does not match, an error message is displayed.
  Touching the [Sys. Conf] key returns to the System Configuration screen.
- Only numbers and letters A to F can be used for the password setting. (Up to 8 characters)

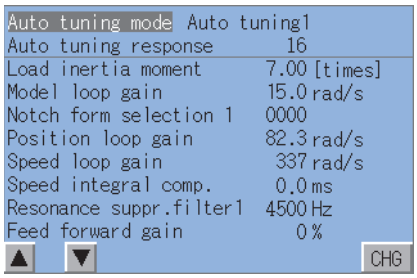
(2) Operations

Enter a password.
Touch the key window and enter a password.
After entering the password, touch the [Enter] key to set the password.
To edit the input characters, touch the [Del] key to delete the characters, and then input the new characters.
To cancel the password input, touch the [×] key to return to the monitor screen.

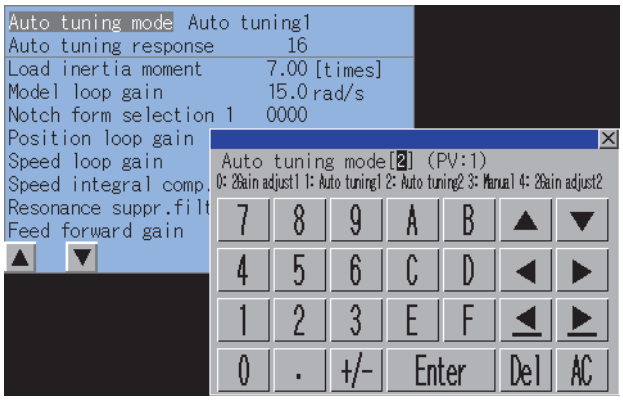
■3. Parameter setting operation

The following describes the procedure of changing the setting of the [Auto tuning] item as an example of the parameter setting operation.

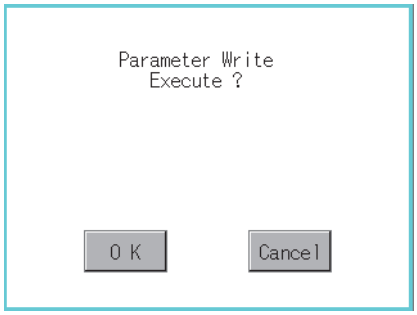
Step 1. Select the item whose parameter is to be set with the item selection keys, and touch the [CHG] key.



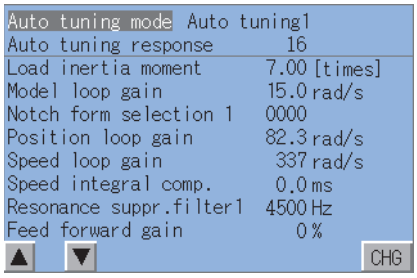
Step 2. As the parameter setting window appears, enter the parameter setting with the key window.
Touch the [Enter] key to confirm the setting.
To cancel the parameter setting operation, touch [×] at the top right of the screen to close the parameter setting window.



Step 3. As the confirmation window appears, touch the [OK] key to write the parameter setting to the motion controller CPU (MELSEC iQ-R series).
To cancel writing of the parameter setting, touch the [Cancel] key.

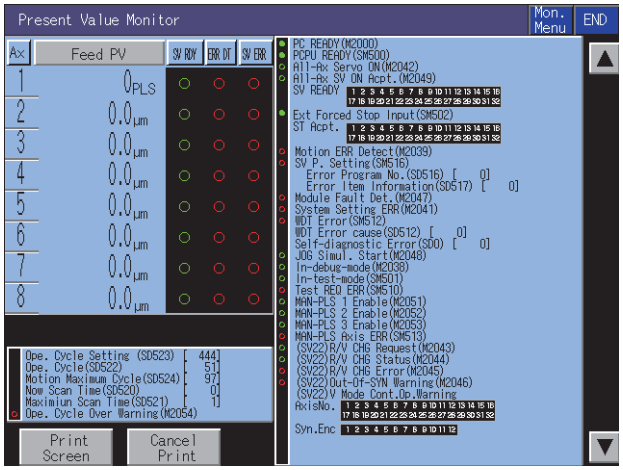


Step 4. After writing is completed, the parameter setting screen whose display has been updated to the new parameter setting is displayed.



16.4.11 Hard copy output

This section describes how to store a screen to the SD card in the BMP/JPEG file format when executing the R motion monitor.
Hard copy output operations are performed by touching the [Print Screen] key or [Cancel Print] key displayed on the screen.



The output target (data storage) of hard copy can be set in [Hard Copy] of GT Designer3 (GOT2000).
For details of hard copy setting, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

16.5 Error Messages and Corrective Action

This section describes the error messages that may be displayed during R motion monitor operation and their corrective action.

Error message	Description	Corrective action
Communication error	Communication cannot be established with the PLC CPU of the monitor target.	• Check the communication setting. • Check the status of the connection between the controller and the GOT (disconnected or cut cables). • Check if an error has occurred in the controller. • Check if the R motion monitor supports the PLC CPU.
This PLC type is not supported	A motion controller CPU (MELSEC iQ-R series) that cannot be monitored was selected on the System Configuration screen.	Select a motion controller CPU (MELSEC iQ-R series) that can be monitored on the System Configuration screen. ➠ 16.2.1 ■1. Target motion controller CPU of the R motion monitor
Controller's OS type is different	An operating system other than SW10DNC-RMTFW is installed on the monitored motion controller CPU (R64MTCPU, R32MTCPU, or R16MTCPU).	Install the SW10DNC-RMTFW operating system on the motion controller CPU (R64MTCPU, R32MTCPU, or R16MTCPU).
It is not a version for GOT	The version of the motion controller OS, which is installed on the motion controller CPU (MELSEC iQ-R series) of the monitor target, does not support the R motion monitor.	Install a motion controller OS supporting the R motion monitor to the motion controller CPU (MELSEC iQ-R series).
Monitor data not found	The monitor data is not installed, or was deleted.	Download the motion monitor data.
Unused axis selected	The axis number selected has not been set.	• Select the axis number that has been set. • Set the axis using the relevant software.
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 entered password is invalid.	Input the correct password.
Communication Channel Setup Error.	A communication driver supporting the R motion monitor is not installed.	Install a communication driver that supports the R motion monitor.
Unsupport amp. selected	The number of the axis, which is set to a servo amplifier having no settable parameter, has been selected.	Select the number of the axis, which is set to a servo amplifier having the settable parameter.

POINT

How to clear a displayed error message

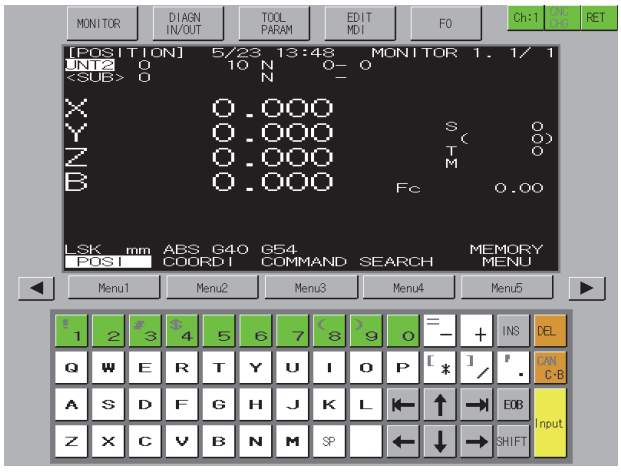
For the error that occurs during the communication with a controller (such as a communication error), the error message does not disappear even after the cause of the error has been removed.
To clear the error message, restart the GOT.

17. CNC MONITOR

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

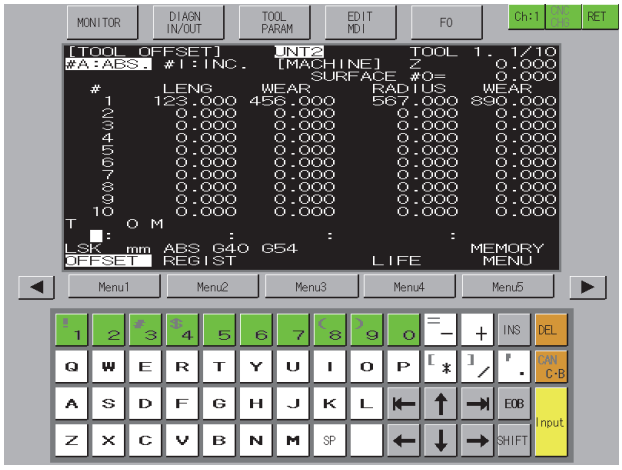
17.1 Features

For the MELDAS and other CNCs connected to the GOT, the CNC monitor enables the functions equivalent to the MELDAS dedicated display as follows: the position display monitor, alarm diagnosis monitor, tool compensation parameter monitor, program monitor, and the APLC release screen display.



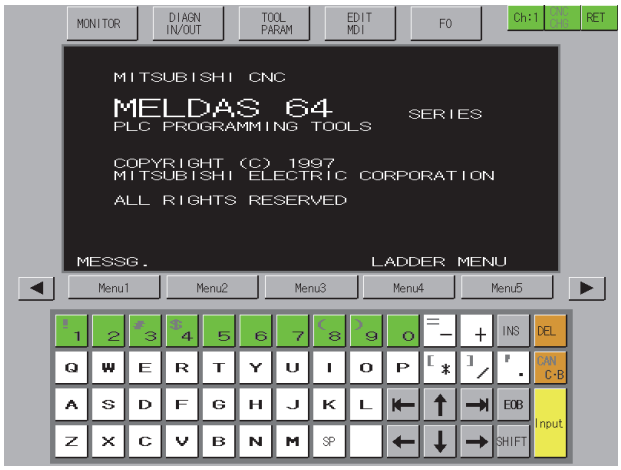
Position Display Monitor

Alarm Diagnosis Monitor



Tool Compensation Parameter Monitor

Program Monitor



APLC Release Screen

17.2 Specifications

17.2.1 System configuration

This section describes the GOTs that support the CNC monitor, the target CNCs, and the connection types between the GOT and the CNC.
For connection type settings, precautions regarding the communication unit/cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. GOT

The CNC monitor is available on GT27-X, GT27-S, and GT25-S.

■2. Target controller

Controller
CNC C70, MELDAS C6/C64

■3. Connection type

This function can be used in the following connection types.
○: Available, ×: Unavailable

Function		Connection type between GOT and CNC		
Name	Description	Bus connection	Ethernet connection*3	MELSECNET/10 connection
CNC monitor	Monitors CNC C70 or MELDAS C6/C64, and changes its parameter.	○*1	○*4	○*2

*1 Available only for CNC C70.
*2 Available only for MELDAS C6/C64.
*3 When the CC-Link IE Field Network Ethernet adapter module is used, the CNC monitor cannot be used.
*4 Applicable only with the Display I/F connection.

■4. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the CNC monitor to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) Space for the system application (Extended function)

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■5. Applicable hardware

A USB mouse is usable.

■6. CNC function that can be monitored

The following functions can be monitored with the CNC monitor.
For the details of each function, refer to the manual of each CNC.

Item	Description	CNC C70	MELDAS C6/C64
Position display	Position	○	○
	Coordinate	○	○
	Command	○	○
	Program search	○	○
	PLC switch	×	○
	Common variable	○	○
	Local variable	○	○
Alarm diagnosis	Alarm message	○	○
	Servo monitor	○	○
	Spindle monitor	○	○
	PLC interface diagnosis	○	○
	Absolute position monitor	○	○
	Adjustment	×	○
	NC data sampling	○	×
	Operation history	○	○
	Configuration	○	○
	Data input	×	○
	Data output	×	○
	Program erase	○	○
	Program file	○	○
	Program copy	○	○
	Flash ATA card I/F	×	○
	Auxiliary axis parameter	×	○
	Auxiliary axis monitor	×	○
Tool compensation parameter	Wear data (L system)	○	○
	Tool length data (L system)	○	○
	Tool nose data (L system)	○	○
	Tool life management (L system)	○	○
	Tool compensation (L system/M system)	○	○
	Tool registration (L system)	○	○
	Workpiece coordinate	○	○
	Machining parameter	○	○
	I/O parameter	×	○
	Other parameters	○	○
Program	MDI	○	○
	Edit	○	○
APLC release screen	APLC release screen	○	○

17.2.2 Access range

■1. For bus connection

With a single GOT, up to 2 CNCs can be switched for monitoring.
Up to 5 GOTs can simultaneously monitor a single CNC.

■2. For Ethernet connection

With a single GOT, up to 64 CNCs can be switched for monitoring.
Up to 8 GOTs can simultaneously monitor a single CNC.

■3. For MELSECNET/10 connection

GOT can monitor only the control station.

17.2.3 Precautions

■1. Before using the CNC monitor

Read the manual of the connected CNC carefully and make sure you understand the contents before using the CNC monitor.

■2. Available controllers

The CNC monitor can be used with CNC C70 and MELDAS C6/C64.

(1) CNC C70

Use a CNC C70 with the system software version BND-1006W000-A0 or later.

(2) MELDAS C6/64

Use a MELDAS C6/C64 with the system software version BND-377W010-D0 or later.

17.3 Operations for Display

This section explains how to display the CNC monitor screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the CNC monitor screen.
Use either of the following display methods.

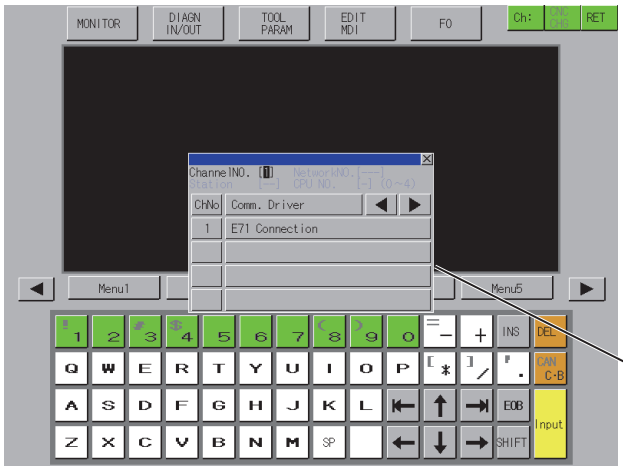
- Starting from the special function switch (CNC monitor) set in the project
  For how to set special function switches, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  After the utility is displayed, touch [Monitor] → [CNC monitor] from the Main Menu.
  For how to display the utility, refer to the following.

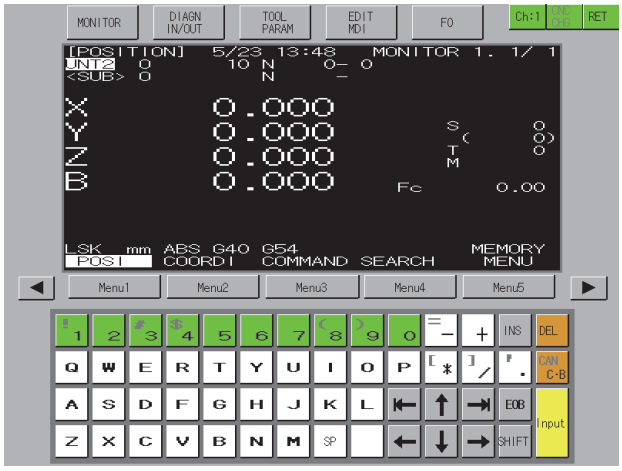
  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number.
Set the channel number of the controller to be monitored with the CNC monitor.
After the GOT is powered on, the communication setting window is displayed only at the first startup of the CNC monitor.
For displaying the communication setting window at the second or later startup, touch the [ch:] key on the CNC monitor screen.

➠ 17.4 Operation Procedures



Step 4. Start the CNC monitor.
The CNC monitor screen is displayed after the channel number is selected.



■1. Start operation using the special function switch

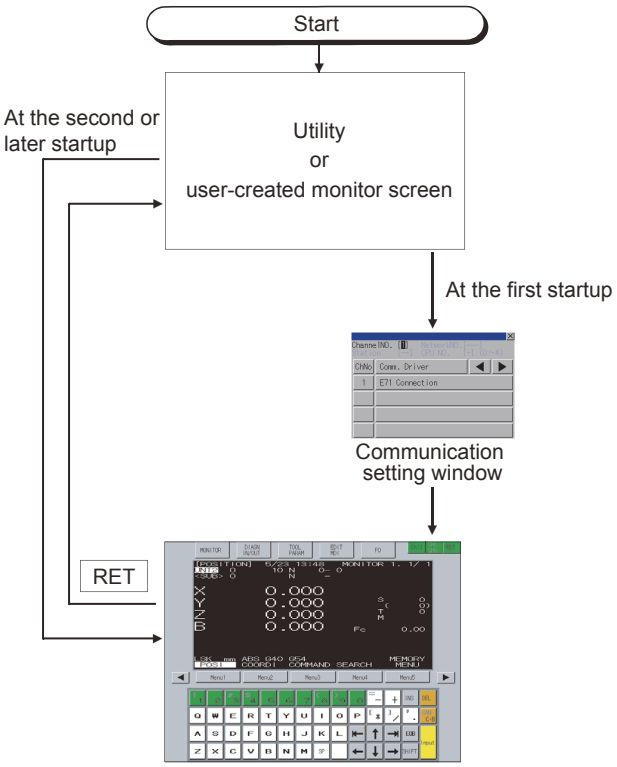
The CNC monitor can be launched using special function switches.
If a special function switch with the following settings is touched, the CNC monitor screen of the set controller can be displayed.

- Select [CNC Monitor] in [Switch Action] and select [Specify the destination to connect the screen of CNC Monitor].

For Q buss connection, input 2 or larger for [CPU No.] in [Network].
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) Screen Design Manual

■2. Changing screens

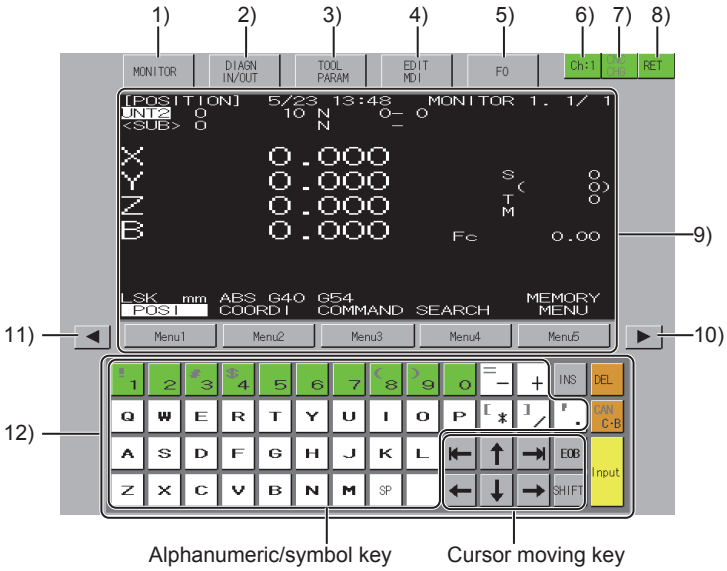


When exiting the CNC monitor function by touching RET, the last exited screen will be displayed when the CNC monitor function is started next time.

At next startup, the last exited screen is displayed.
However, the last exited screen will not be displayed when the GOT is restarted after package data is written or the GOT is powered on, off, or reset.

17.4 Operation Procedures

This section describes the display data of the CNC monitor screen and the functions of the keys displayed on the screen.



1) [MONITOR] key
Switches the monitor screen to the position display monitor screen.

2) [DIAGN IN/OUT] key
Switches the monitor screen to the alarm diagnosis monitor screen.

3) [TOOL PARAM] key
Switches the monitor screen to the tool compensation parameter monitor screen.

4) [EDIT MDI] key
Switches the monitor screen to the program monitor screen.

5) [F0] key
Switches the monitor screen to the APLC release screen.
When the monitoring target CNC does not have the APLC release function, the screen becomes blank (Nothing is displayed in the black screen.).
(When the screen is blank, switch the screen to the one for other functions with the keys of the function switching section.)

6) [Ch:] key
Displays the communication setting window.

7) [CNC CHG] key
- For bus connection
  The key does not function. (Specify the monitoring target in the communication setting window.)
- For Ethernet connection
  This key switches CNCs for monitoring when multiple CNCs are connected.
  The target CNCs are switched in the order set in the Ethernet setting of GT Designer3.
- For MELSECNET/10 connection
  The key does not function because the monitoring target is the control station only (switching not required).

8) [RET] key
Exits the CNC monitor and returns to the monitor screen or the utility of the GOT.

9) Monitor screen

The position display, alarm diagnosis, tool compensation parameter, and program functions, which are equivalent to the MELDAS dedicated display, are available.
The graphic trace function and ladder edit function are not available.
The [Menu1] to [Menu5] keys switch the monitor screens that correspond to each item in the menu.
When the above screen is displayed, touching each key displays the following contents.
When the CNC-dedicated HMI is enabled, the message [Other display operating] and [Key operation right] menu appear.
To operate the keys with the GOT, select the [Key operation right] menu.

Item	Description
[Menu1] key	Position
[Menu2] key	Coordinate
[Menu3] key	Command
[Menu4] key	Program search
[Menu5] key	Menu switching

10) Next page key

Displays the next page when multiple pages exist on the display screen.

11) Previous page key

Displays the previous page when multiple pages exist on the display screen.

12) Software key board

Used to configure the data setting on the monitor screen.

Item	Description
Alphanumeric and symbol keys	Input alphabets (capital letters only), numbers, spaces, and symbols. To input a symbol displayed in gray, touch the [Shift] key and then the symbol key.
Cursor movement keys	Move the cursor (The repeat function is enabled.).
[INS] key	Switches the insert mode.
[DEL] key	Deletes one character at the cursor position.
[CAN C-B] key	Deletes one block while editing the machining program. To delete all the blocks displayed on the screen, touch the [Shift] key and then the [CAN C-B] key.
[EOB] key	Inputs EOB (;) to the machining program.
[Input] key	Confirms the input.
[SHIFT] key	Switches the key functions.

17.5 Error Messages and Corrective Action

This section describes the error messages displayed when the CNC monitor is executed, and corrective action.
When multiple errors described below occur, a higher-priority error is displayed.

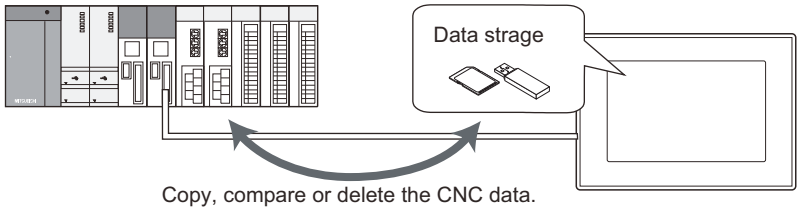
Priority	Error message	Description	Corrective action
Higher ↕ Lower	Support communication driver is not installed. (CNC MONITOR)	The compatible communication driver is not installed in the GOT.	Install the compatible communication driver in the GOT. • For bus connection Bus(Q) • For Ethernet connection Ethernet (MELSEC), Q17nNC, CRnD-700, Gateway • For MELSECNET/10 connection MELSECNET/H (used in the MNET/10 mode)
	The IP address of CNC to monitor is not setup. (CNC MONITOR)	The IP address of the CNC has not been set.	After setting the IP address of the CNC to be monitored in the Ethernet setting of GT Designer3, write the project data to the GOT.
	Communication channel setup error	There is no channel for communication.	Check that the channel No. is correctly set in the communication settings.

18. CNC DATA I/O

GT27 GT25 GT23 GT21 Soft GOT2000

18.1 Features

With the CNC data I/O function, the GOT can copy, compare, and delete machining programs, parameters, and others in the CNC connected to the GOT.



18.2 Specifications

18.2.1 System configuration

This section describes the GOTs that support the CNC data I/O, the target CNC, and the connection types between the GOT and the CNC.
For connection type settings and precautions regarding the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. GOT

The CNC data I/O is available on GT27-X, GT27-S, and GT25-S.

■2. Target controller

Controller
CNC C70

■3. Connection type

This function can be used in the following connection types.
(○: Available, ×: Unavailable)

Function		Connection type between GOT and CNC	
Name	Description	Bus connection	Ethernet connection*2
CNC data I/O	Data I/O between the CNC and GOT	○	○*1

*1 Applicable only with the Display I/F connection.
*2 When the CC-Link IE Field Network Ethernet adapter module is used, the CNC data I/O cannot be used.

■4. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the CNC data I/O to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■5. Required hardware

Data storage is required for the CNC data I/O.

■6. Applicable hardware

A USB mouse is usable.

■7. CNC data which can be handled

The following data can be input, output, or compared with the CNC data I/O.
For details of each function, refer to the manual of the CNC to be used.

Target data	Description	File name	File unit		
			Input	Output	Compare
Machining program	Machining program	ALL.PRG, O_.PRG	○	○	○*2
Parameter	Parameter	ALL.PRM	○	○	○*3
Tool offset data	Tool offset data	TOOL.OFS	○	○	○
Workpiece offset data	Workpiece offset data	WORK.OFS	○	○	○
Common variable	Common variable	COMMON.VAR	○	○	○
Maintenance data	CNC ladder	USERPLC.LAD	○	○	×
	R resister data	RREG.REG	×	○	×
	C resister data	CREG.REG	×	○	×
	T resister data	TREG.REG	×	○	×
	Operation history data	TRACE.TRC	×	○	×
	CNC sampling data	NCSAMP.CSV	×	○	×
	SRAM data files	SRAM.BIN	×	○	×
Cycle monitor data	Sampling related package file	ALL.SMP	○	○	×
	Sampling setting file	SAMPLING.PRM	○	○	×
	PLC data collection setting file	FLCSAMP.CTF	○	○	×
	PLC draw setting file	PLCSAMP.MMG	○	○	×
	PLC collection data file	PLCSAMPH.CSV	○*1	○	×
	CNC collection data file	NCSAMPH.CSV	○*1	○	×

*1 PLC collection data file (PLCSAMPH.CSV) and CNC collection data file (NCSAMPH.CSV) can be input when the sampling related package file (ALL.SMP) is selected.
*2 When the software version of the CNC is earlier than D2, machining programs cannot be compared.
*3 When the software version of the CNC is earlier than D2, the parameter files in type II cannot be compared.

18.2.2 Access range

■1. For bus connection

One GOT can execute the CNC data I/O on up to two CNCs by switching the CNCs.

■2. For Ethernet connection

One GOT can execute the CNC data I/O on up to 64 CNCs by switching the CNCs.

18.2.3 Precautions

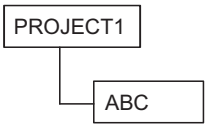
■1. Before using the CNC data I/O

Read the manual of the connected CNC carefully and make sure you understand the contents before using the CNC data I/O.

■2. File name and folder name

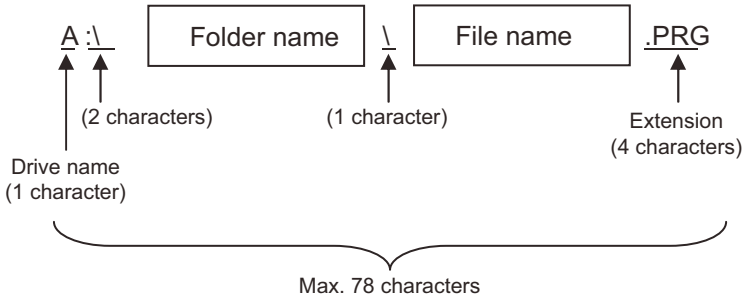
(1) Setting a hierarchy to a folder

When setting [Folder Name], enter \ between folder names.
\ is counted as one character.
Up to 20 hierarchy levels can be created.
Example)
[Folder Name]: PROJECT1\ABC



(2) 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.)



(3) Characters which can be used in folder names and file names

(a) Character strings which can be used in folder names and file names

The following character strings can be used.

- Capital of one-byte alphanumeric characters
- Symbols (#$%&'()+-.=@[]^_{}.)
  A one-byte space cannot be used.

(b) Character strings which cannot be used in folder names and file names

The following character strings cannot be used regardless of capital or small letters.

- COM1 to COM9
- LPT1 to LPT9
- AUX
- CON
- NUL
- PRN
- CLOCK$

(c) Folder names and file names which cannot be used

The following folder names and file names cannot be used.

- Folder name starting with G2
- Folder and file names starting with . (period) or \
- Folder and file names ending with . (period) or \
- Folder and file named as only . (one period) or .. (two periods)

The following folder and file names are not displayed correctly.

- Multi-byte code
- Kanji, hiragana, katakana, one-byte katakana

■3. Machining program edit protection

When the data protection key 1, 2, and 3, and the edit lock B and C are enabled, the data I/O is restricted.
Comparison can be performed even though the data protection key 1, 2, and 3, and the edit lock B and C are enabled. However, when the software version of the CNC is earlier than D2, cancel the data protection key 1, 2, and 3 and edit lock B and C before performing the comparison.
For the data protection key 1 to 3 and edit lock B and C, refer to the following.

➠ C70 Series Instruction Manual

■4. Changing CNC file names

When outputting a file in the CNC and changing the file name, do not change the extension of a maintenance data file. If the extension is changed, the maintenance data file is not recognized.

➠ ■1. Displayed contents

■5. Highlight display in the comparison error detail window

The comparison of parameter files is performed not only for the parameter values but also the values of the format. Therefore, the part which is not a parameter value may be highlighted when the values are different between the data storage side and CNC side.

➠ ■3. Compare

■1. Start operation of the CNC data I/O

The following explains how to display the CNC data I/O screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the CNC data I/O screen.
Use either of the following display methods.

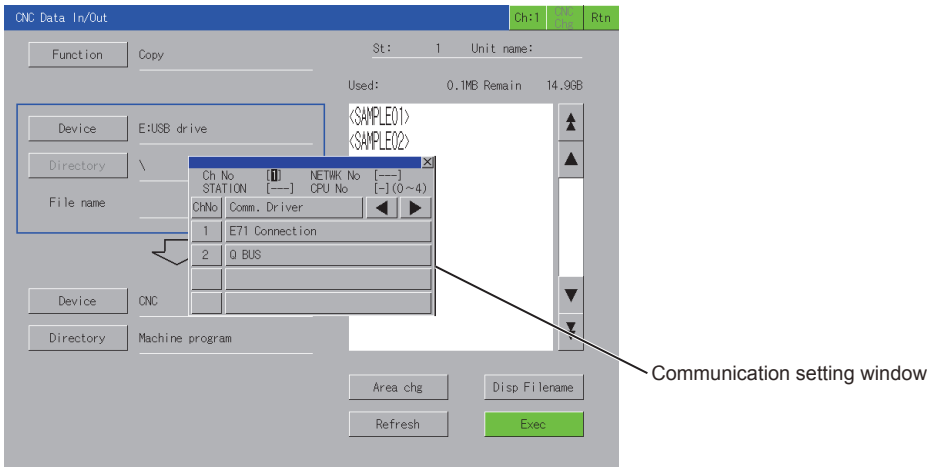
- Starting from the special function switch (CNC data I/O) set in the project
  For how to set special function switches, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual

- Starting from the utility
  After the utility is displayed, touch [Monitor] → [CNC data I/O] from the Main Menu.
  For how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)

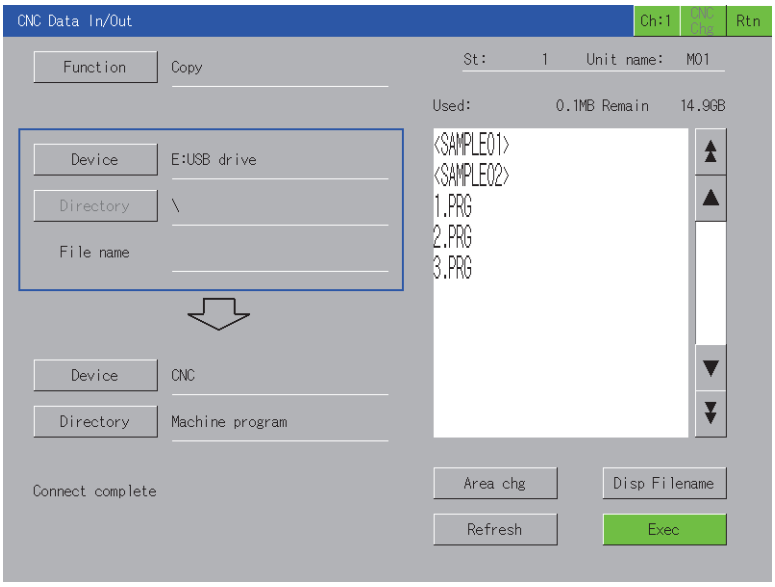
Step 3. Set the channel number.
Set the channel number of the CNC connected to the GOT.
If [×] is touched to close the communication setting window without setting a channel number, the channel number is set to [1].



After the GOT is powered on, the communication setting window is displayed only at the first startup of the CNC data I/O.
For displaying the communication setting window at the second or later startup, touch the [Ch:] key on the CNC data I/O screen.

➠ 18.4 Operation Procedures

Step 4. The CNC data I/O starts after the channel number is selected.



■2. Start operation using the special function switch

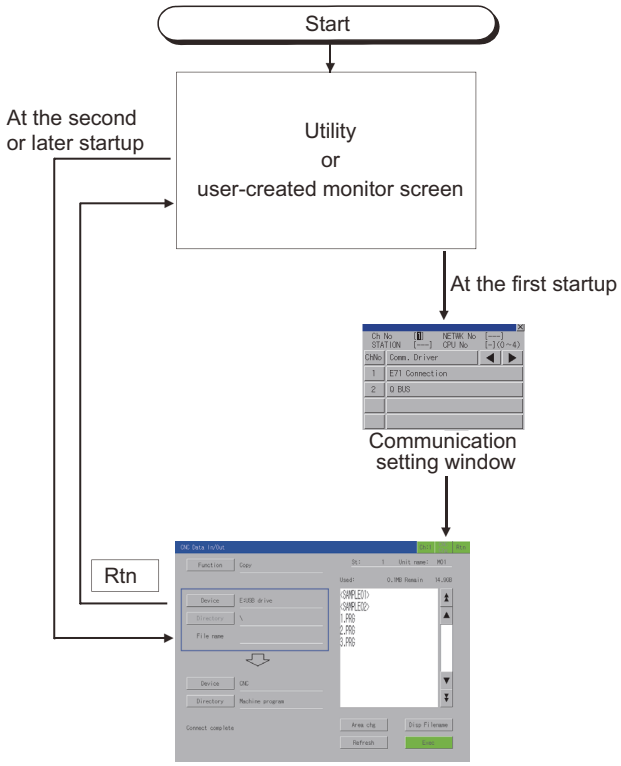
The CNC data I/O can be started using special function switches.
If a special function switch with the following settings is touched, the CNC data I/O screen of the set controller can be displayed.

- Selecting [CNC Data I/O] in [Switch Action], and checking [Specify the destination to connect the screen of CNC Data I/O]

For Q buss connection, input 2 or larger for [CPU No.] in [Network].
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) Screen Design Manual

■3. Changing screens

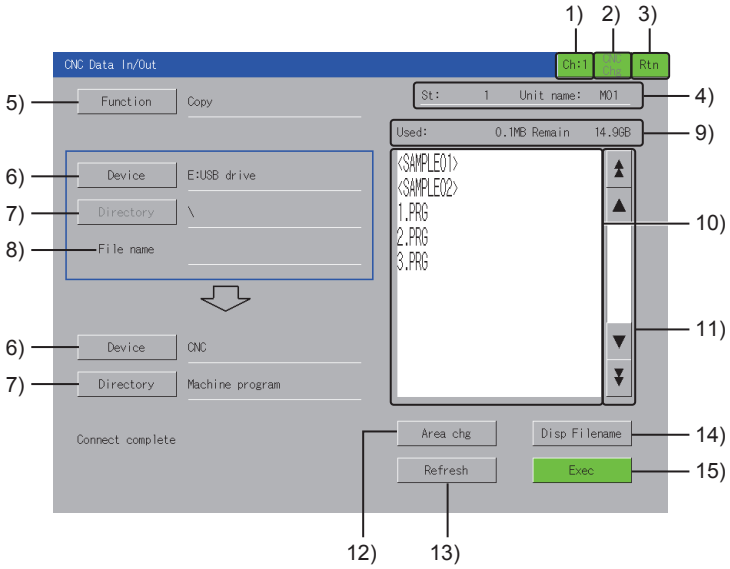


For exiting the CNC data I/O by touching Rtn, the last exited screen is displayed when the CNC data I/O starts next time.

18.4 Operation Procedures

■1. Displayed contents

This section describes the display data of the CNC data I/O list screen and the key functions displayed on the screen.



1) Channel key

Displays the communication setting window.

2) [CNC Chg] key

This key switches CNCs for monitoring when multiple CNCs are connected.
The switching order differs depending on the connection type used.

- For bus connection
  The monitoring target is switched in order of the module number.
- For Ethernet connection
  The monitoring target is switched in the order set in the Ethernet setting of GT Designer3.

3) [Rtn] key

Exits the CNC data I/O and returns to the monitor screen or the utility of the GOT.

4) CNC device name

Each connection type displays different contents.

- For bus connection
  Displays the CPU number and module name.
- For Ethernet connection
  Displays the station number and module name.

5) [Function] key

Displays the function selection window. Select a function to be executed.
The following shows the items to be selected.

- [Copy]
  Copies a file between the CNC and data storage.

  ➠ ■2. Copy
- [Compare]
  Compares files between the CNC and data storage.

  ➠ ■3. Compare
- [Delete]
  Deletes a file in the CNC or data storage.

  ➠ ■4. Delete
- [Create a directory]
  Creates a directory in the data storage.

  ➠ ■5. Creating a directory
- [USB Driver Stop]
  Stops the USB drive selected in the [Device] key.

6) [Device] key

Displays the device selection window. Select the target to which the function selected with the [Function] key is executed.

The following shows the items to be selected.

- [CNC]
- [A:Standard SD card]
- [B:USB drive]
- [E:USB drive]
- [F:USB drive]
- [G:USB drive]

7) [Directory] key

The operations and display contents differ depending on the item selected with the [Device] key.

- When [CNC] is selected
  The CNC data selection window is displayed. Select the target to which the function selected with the [Function] key is executed.
- When an item other than [CNC] is selected
  The [Directory] key cannot be touched.
  The directory of the file selected in the list is displayed on the right side of the [Directory] key.
  Up to 28 characters can be displayed.

8) [File name]

Displays the file name selected in the list.

9) Status display

Displays the information of the item selected with the [Device] key.

The display contents depend on the item selected with the [Device] key.

- When [CNC] is selected
  [Entry], [Remain]:
  Displays the number of the programs registered as the user's machining programs and the remaining number of the programs that can be registered.
  [Character], [Remain]:
  Displays the number of the characters registered in the user's machining programs and the remaining number of the characters that can be registered.
  The remaining number is displayed in increments of 250 characters.
- When an item other than [CNC] is selected
  [Used], [Remain]:
  Displays the used space and the available space of the data storage.

10) List

Displays files of the item selected with the [Device] key.

When an item other than [CNC] is selected with the [Device] key, the directory is displayed with < >.

Touching < > displays the files in the touched directory.

Touching <...> displays the files in the upper directory.

11) Scroll key

Scrolls up or down the contents in the list in increments of 10 or 50 items.

12) [Area chg] key

Switches the setting targets (frame on the left side of the screen) up and down.

The files in the directory in the frame are displayed in the list.

When [Delete] is selected with the [Function] key, the setting targets cannot be switched.

13) [Refresh] key

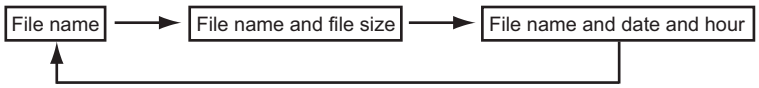
Updates the list.

14) [Disp Filename] key

Changes the display contents in the list each time the key is touched.
The display contents depend on the item selected with the [Device] key.

- When [CNC] is selected
  The contents can be switched only when [Machine program] is selected with the [Directory] key.
  The following shows the contents to be switched.

- When an item other than [CNC] is selected
  The following shows the contents to be switched.

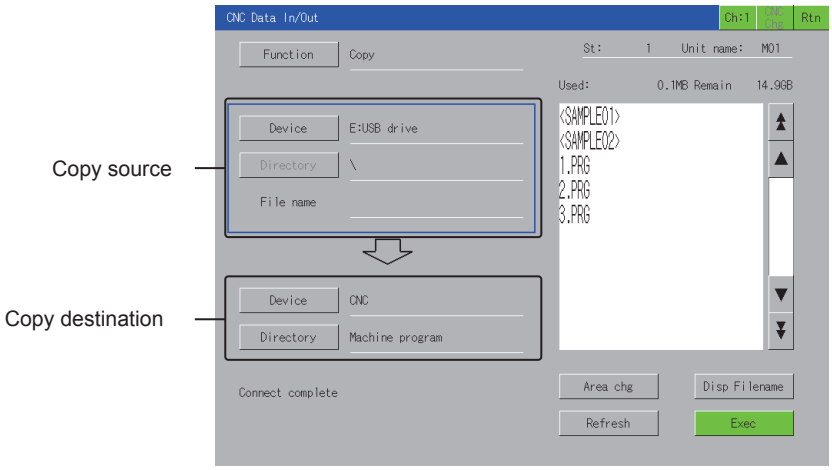


15) [Exec] key

Executes the settings.

■2. Copy

Files can be copied between [CNC] of the monitoring target and data storage.
Select a copy source and copy destination as follows.

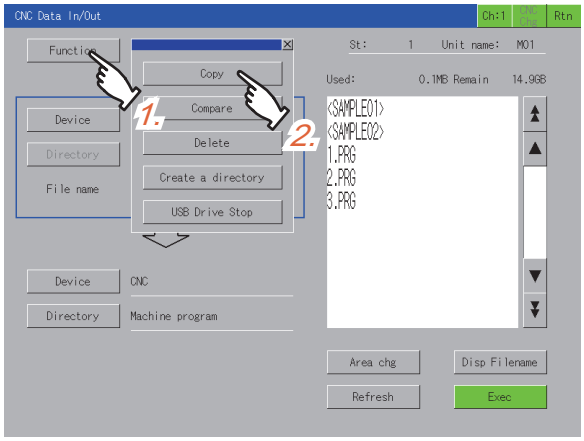


When [CNC] is selected for the copy source, only the data storage can be selected for the copy destination.
Also, when a data storage is selected for the copy source, only [CNC] can be selected for the copy destination.

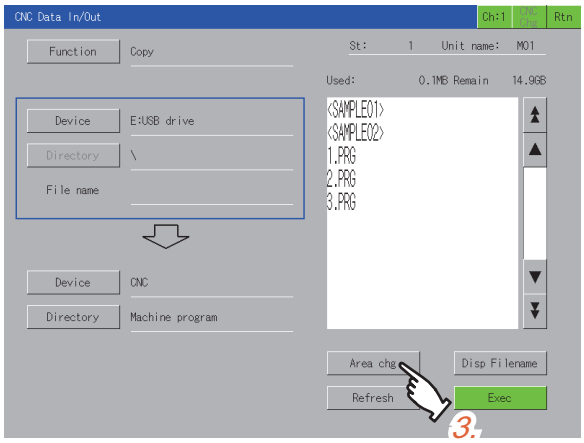
The following describes the copy procedure.
Example)
When copying the machining program [1.PRG] of [CNC] into [A:Standard SD card]

Step 1. Touch the [Function] key to display the function selection window.

Step 2. Touch the [Copy] key on the function selection window.

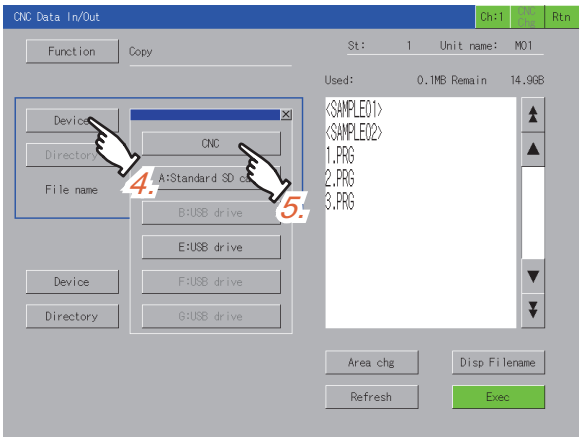


Step 3. Touch the [Area chg] key to switch the frame to the copy source target.



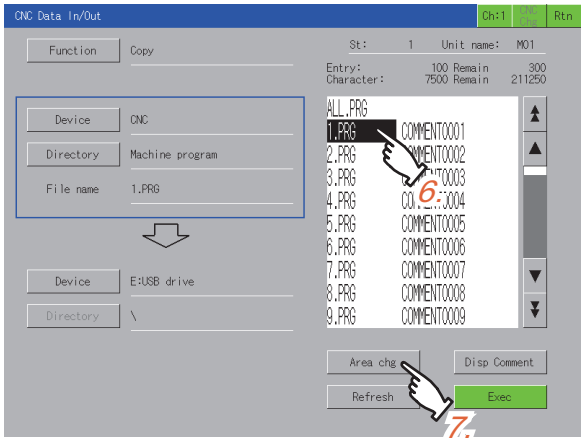
Step 4. Touch the [Device] key of the copy source target to display the device selection window.

Step 5. Select [CNC] in the device selection window.



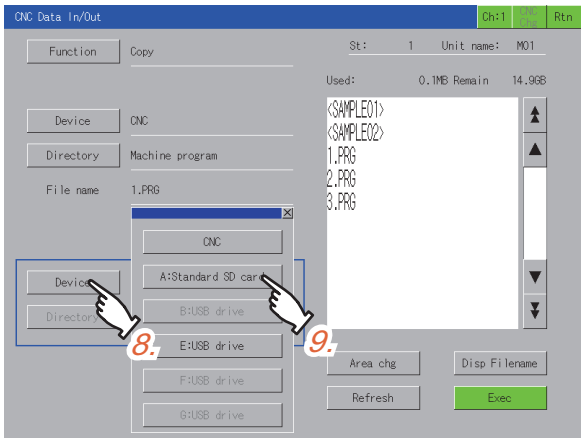
Step 6. Select the copy source file [1.PRG] in the list.

Step 7. Touch the [Area chg] key to switch the frame to the copy destination target.



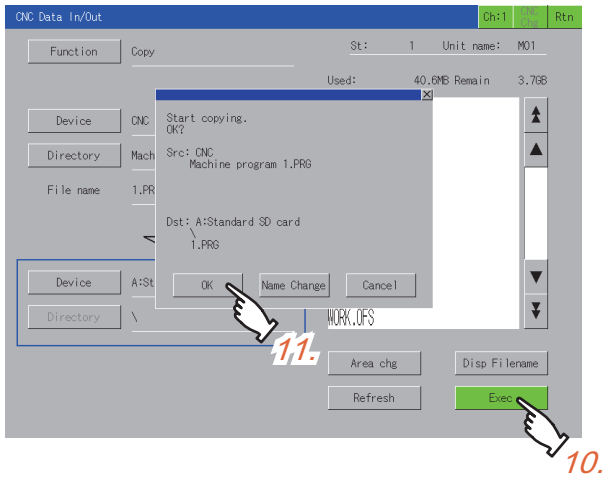
Step 8. Touch the [Device] key to display the device selection window.

Step 9. Select [A:Standard SD card] in the device selection window.



Step 10. Touch the [Exec] key to display the copy confirmation window.

Step 11. Touching the [OK] key copies [1.PRG] to [A:Standard SD card].
When the copy is completed, a completion message is displayed.

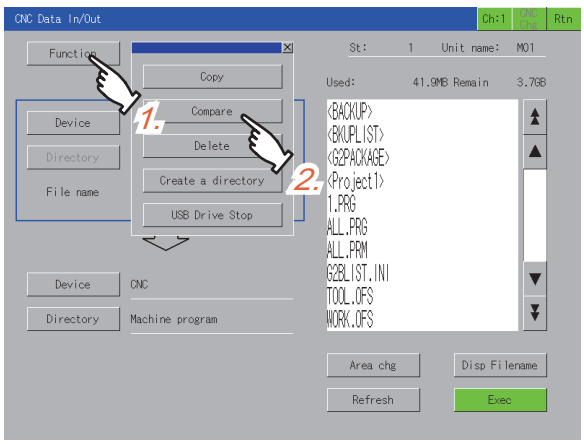


■3. Compare

Files in the data storage can be compared with the files in the CNC of the monitoring target.
The following describes the comparison procedure.
Example)
When comparing the file [ALL.PRG] in the data storage with a file in the CNC

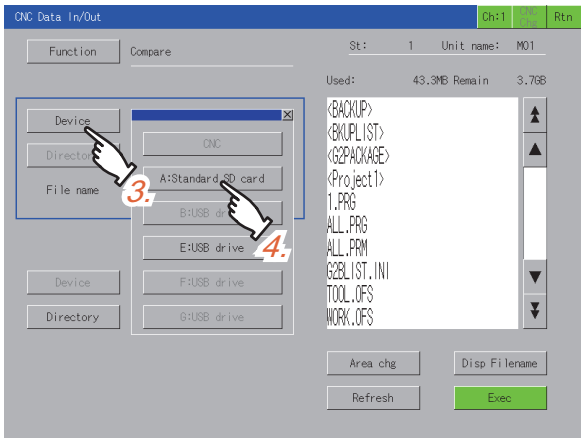
Step 1. Touch the [Function] key to display the function selection window.

Step 2. Touch the [Compare] key on the function selection window.



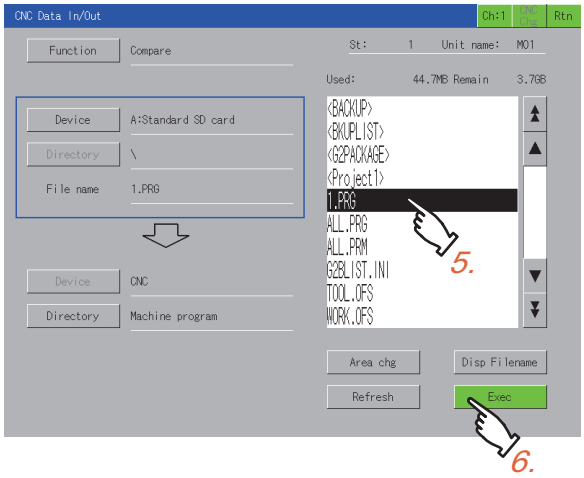
Step 3. Touch the [Device] key to display the device selection window.

Step 4. Touch [A:Standard SD card] on the device selection window.



Step 5. Select the file to be compared from the list.

Step 6. Touch the [Exec] key to start the comparison.



- When the files match
  A completion message is displayed.
- When the files do not match
  The comparison error detail window is displayed.

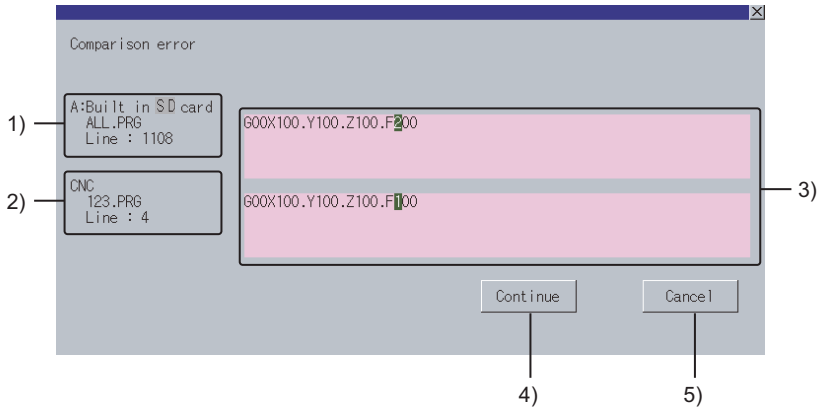
  ➠ (1) Comparison error detail window

  When the software version of the CNC is earlier than D2, the comparison error detail window does not appear.

(1) Comparison error detail window

The line number of the mismatched data is displayed.
The method for displaying line numbers differs between the GOT side and CNC side.

- GOT side
  A head line (0 number) is displayed as the first line.
- CNC side
  A head line (0 number) is displayed as the zeroth line since the head line (0 number) is treated as a file name.



1) Compared file information (GOT side)
Displays the device name on the GOT side, compared file name, and line number of the mismatched data.

2) Compared file information (CNC side)
Displays the device name on the CNC side, compared file name, and line number of the mismatched data.
The line number is displayed only when the machining programs are compared.

3) Details display
Displays the contents of the line which is found to be inconsistent in comparison.
The first inconsistent character is highlighted.
Up to 250 characters can be displayed in a single line.
However, characters are not highlighted in the following cases.

- The first inconsistent character is the 251st character or later.
- The corresponding line does not exist in the comparison source file or comparison target file.

4) [Continue] key
Closes the window and continues the comparison.

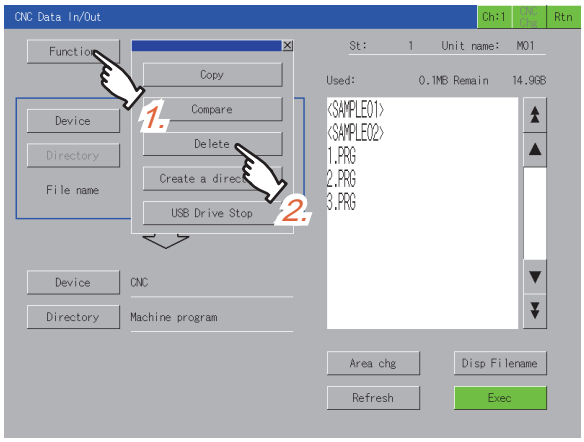
5) [Cancel] key
Closes the window and stops the comparison.

■4. Delete

Files stored in [CNC] of the monitoring target or the data storage can be deleted.
The following describes the deletion procedure.
Example)
Deleting the machining program files [1.PRG], [2.PRG], and [3.PRG] of [CNC]

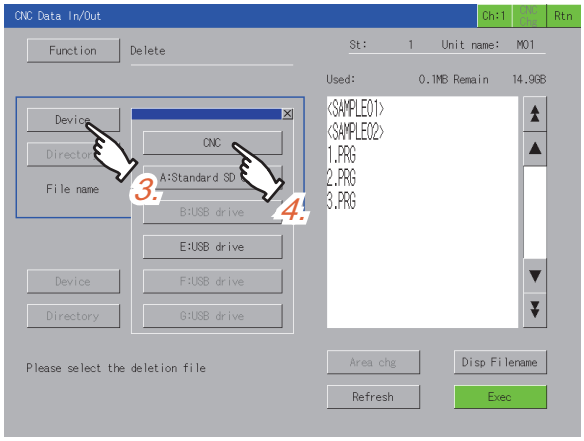
Step 1. Touch the [Function] key to display the function selection window.

Step 2. Touch the [Delete] key on the function selection window.

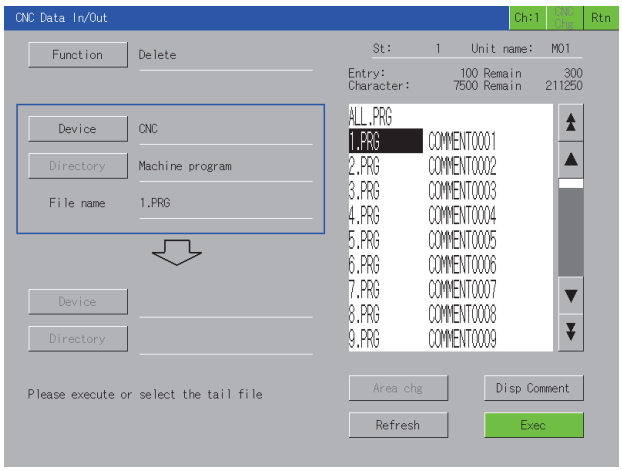


Step 3. Touch the [Device] key to display the device selection window.

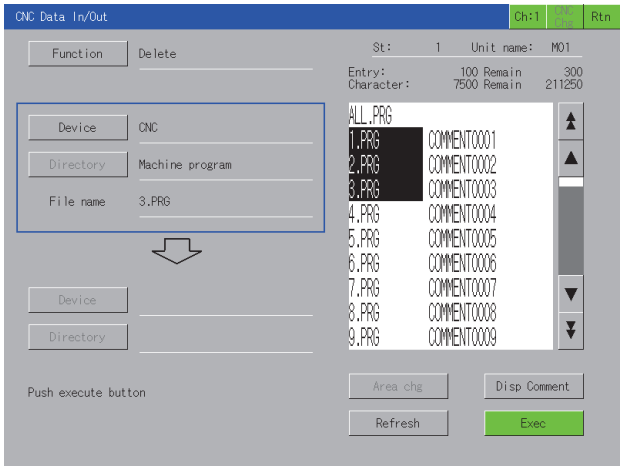
Step 4. Touch the [CNC] key on the device selection window.



Step 5. Select the file [1.PRG] at the head of the list to delete.
To delete one file only, follow the procedure in Step 7.

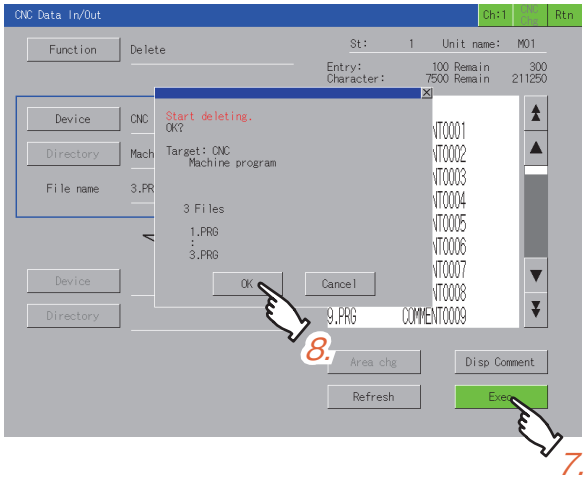


Step 6. Select the file [3.PRG] in the list to delete.
Then, the files [1.PRG], [2.PRG], and [3.PRG] are all selected.
In addition, when [ALL.PRG] is selected, only [ALL.PRG] is selected.



Step 7. Touch the [Exec] key to display the deletion confirmation window.

Step 8. Touch the [OK] key to delete the selected files.
When the deletion is completed, a completion message is displayed.



POINT

Precaution for deleting files

When [ALL.PRG] displayed in the list is deleted, files to be deleted differ depending on the selected [Device].

- For [CNC]
  When [ALL.PRG] is deleted, all files displayed in the list are deleted.
- For data storage
  When [ALL.PRG] is deleted, only [ALL.PRG] is deleted.

■5. Creating a directory

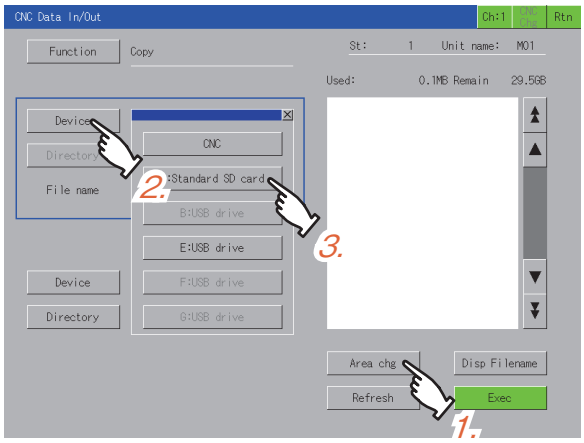
Creates a directory in the data storage.
The following describes the procedure for creating a directory.
Example)
Creating the directory "SAMPLE01" in [A:Standard SD card]

Step 1. Touch the [Area chg] key to switch the frame to the copy source target.
For the copy source target, refer to the following.

➠ ■2. Copy

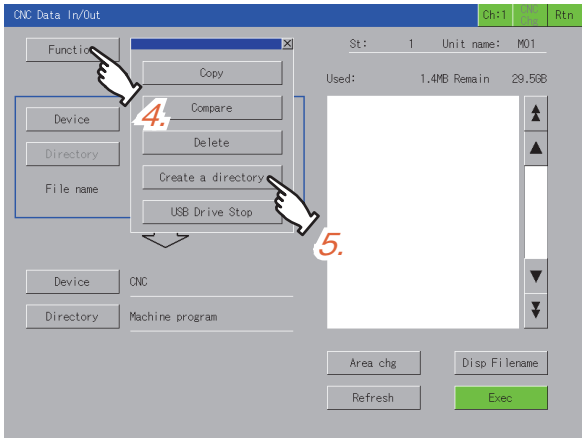
Step 2. Touch the [Device] key to display the device selection window.

Step 3. Touch [A:Standard SD card] on the device selection window.



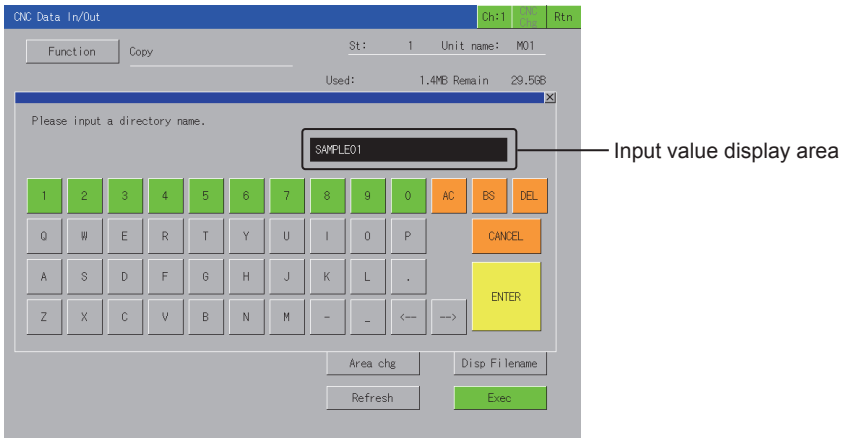
Step 4. Touch the [Function] key to display the function selection window.

Step 5. Touch the [Create a directory] key on the function selection window to display the key window.



Step 6. Input SAMPLE01 on the key window.

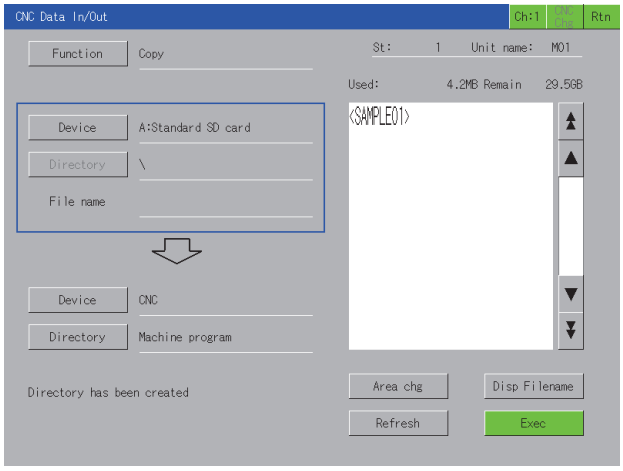
Step 7. Touch the [ENTER] key to determine the directory name and close the key window.



Key operation using a USB keyboard is also available.

➠ (1) Inputting characters using a USB keyboard

Step 8. The list is updated, and the SAMPLE01 directory is created.
When the directory creation is completed, a completion message is displayed.



(1) Inputting characters using a USB keyboard

When the key window is displayed, a USB keyboard can be used for key input.
For the corresponding keys, refer to the following.

Key	Description
Characters, numbers, symbols	Press the key on the USB keyboard corresponding to the key displayed in the key window to input it into the input value display area.
Shift + Delete	Deletes all characters in the input value display area.
Backspace	Deletes one character to the left of the cursor in the input value display area.
Delete	Deletes one character to the right of the cursor in the input value display area.
Esc	Closes the key window without reflecting the values in the input value display area.
Enter	Closes the key window after reflecting the values in the input value display area.

For how to set the USB keyboard, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

■6. Changing a file name when outputting the file

When a file is copied to the data storage, the file name in the copy destination can be changed.
The following describes the procedure for changing the file name at the file output.
Example)
Changing the machining program name [ALL.PRG] of [CNC] to [SAMPLE.PRG] and outputting the program to [A:Standard SD card]

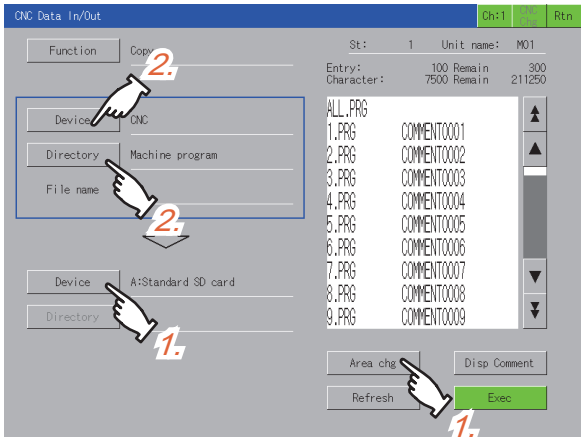
Step 1. Touch the [Area chg] key to switch the frame to the copy destination target.
For the copy destination target, refer to the following.

➠ ■2. Copy

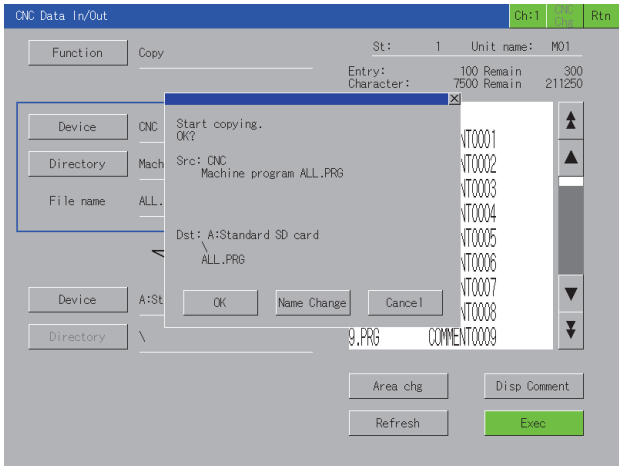
Set [A:Standard SD card] for the copy destination device.

Step 2. Touch the [Device] key to display the device selection window.
Select the following items using the [Device] key and [Directory] key of the copy source.

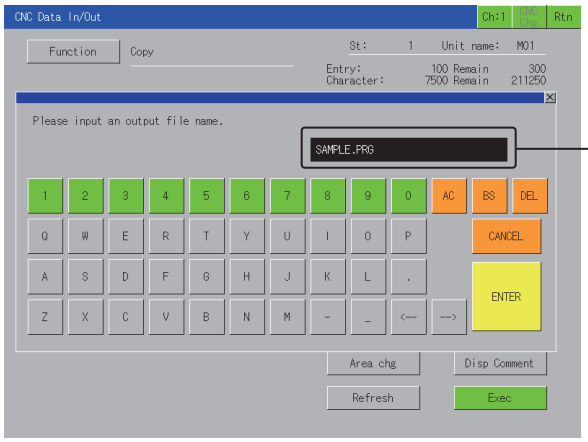
- [Device] key: [CNC]
- [Directory] key: [Machine program]



Step 3. Touch [ALL.PRG] in the list and the [Exec] key to display the copy confirmation window.



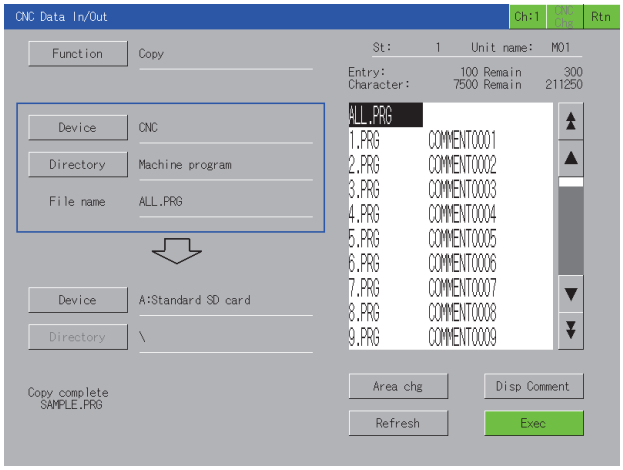
Step 4. Touch the [Name Change] key on the copy confirmation window to display the key window.
Touch the [AC] key to delete the existing file name from the input value display area.



Key operation using a USB keyboard is also available.

➠ (1) Inputting characters using a USB keyboard

Step 5. Input "SAMPLE.PRG".
Touch the [ENTER] key. The key window closes and the copy confirmation window appears.
Touching the [OK] key starts copying the file with the new file name.
When the copy is completed, a completion message is displayed.



■7. Contents displayed in the list

The following describes the file names displayed in the list of the CNC data I/O screen.

Target data	Description	File name displayed in the list
Machining program*1*2	Machining program	ALL.PRG, O_.PRG
Parameter*3	Parameter	ALL.PRM
Tool offset data	Tool offset data	TOOL.OFS
Workpiece offset data	Workpiece offset data	WORK.OFS
Common variable	Common variable	COMMON.VAR
Maintenance data	CNC ladder	USERPLC.LAD
	R resister data	RREG.REG
	C resister data	CREG.REG
	T resister data	TREG.REG
	Operation history data	TRACE.TRC
	CNC sampling data	NCSAMP.CSV
	SRAM data files	SRAM.BIN
Cycle monitor data	Sampling related package file	ALL.SMP
	Sampling setting file	SAMPLING.PRM
	PLC data collection setting file	FLCSAMP.CTF
	PLC draw setting file	PLCSAMP.MMG
	PLC collection data file	PLCSAMPH.CSV
	CNC collection data file	NCSAMPH.CSV

*1 When the base specifications parameter of #1166 fixpro is set to 1, the fixed cycle program is the target data.
When the CNC has machining programs, ALL.PRG is displayed at the top of the list.
*2 When the software version of the CNC is earlier than D1, machining programs cannot be compared.
*3 When the software version of the CNC is earlier than D1, the parameter files in type II cannot be compared.

18.5 Error Messages and Corrective Actions

This section describes the error messages displayed when the CNC data I/O is executed, and the corrective actions.

Error message	Description	Corrective action
Communication error	• The CNC is powered OFF, the cable is disconnected, or the connected controller is not a CNC. • The communication failed when a communication driver is selected in the communication setting window, or when the [CNC Chg] button is touched.	• Correct the connection and settings. • Turn on the CNC again.
Unable to exec : PLC built in CNC running	The PLC CPU built in the CNC is in operation.	Stop the operation of the PLC CPU built in the CNC, and execute the CNC data I/O again.
CNC is busy	The CNC is busy because it is executing the other input/output.	Please wait a moment and execute it again.
Failed to stop USB drive	The GOT fails to stop the USB drive.	Check the USB memory.
Unable to exec : Program running	The GOT cannot execute the CNC data I/O because the CNC is in operation.	Stop the CNC operation, and execute the CNC data I/O again.
Out of memory	The size of the data to be written exceeds the CNC memory capacity.	Reserve enough space of the memory by operations such as deleting unnecessary machining programs, and then execute the CNC data I/O again.
The same name exists	The directory name cannot be created because the same name already exists.	Enter another name.
In sampling	The CNC data I/O cannot be executed because sampling is in execution.	Stop sampling and execute the CNC data I/O again.
File not found	The copy source file does not exist.	Correct the settings, and then execute the CNC data I/O again.
The file cannot be compared	The file cannot be used for comparison because of any of the following reasons: • The file is not the target of the comparison function. • The software of the CNC does not support the comparison function.	• Check the file type and select a file again. ➠ 18.2.1 ■7. CNC data which can be handled • Update the software version of the CNC.
Timeout	The GOT fails to communicate with the CNC.	Check the connection.
Communication Channel Setup Error.	The specified channel does not exist.	Correct the communication settings.
Can't create a directory	The directory cannot be created.	• Directories cannot be created when the device is set to the CNC. • The data storage is not ready to write. • The number 99 exists in the serial number when a sampling related package file (ALL.SMP) is output. Example) A directory named SMP14041999 exists on April 19th, 2014.
Directory illegal	The directory cannot be displayed because it is invalid.	Correct the directory settings, and then execute the CNC data I/O again.
Data protect	The data is protected.	Check that the data protection key and the edit lock are set to be invalid, and execute the CNC data I/O again.
No. of registration over	The maximum number of registration allowed for programs is exceeded.	Delete unnecessary machining programs, and execute the CNC data I/O again.
Path is too long	The directory name cannot be created because the path is too long.	Reconsider the directory/file name.
Too many files	Files cannot be displayed because the number of files and directories in the data storage is too large.	Reduce the number of files/directories to 1024 or less.
File is not specified	The [Exec] key is pressed even though a file is not specified.	Specify a file, and execute the CNC data I/O again.
Some error found in file system	An error occurred in the file system.	A file system error occurred. Format the NC memory.
Can not write file	The file cannot be written to the copy destination device.	• Check if the copy destination device is ready for data writing. • TRACE.TRC and NCSAMP.CSV cannot be copied to the CNC.
Can not write file Format Error	The file cannot be written because of invalid parameter formats.	Check the parameter formats.

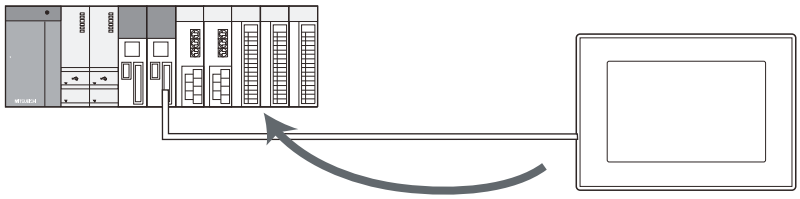
Error message	Description	Corrective action
Can not write file Range Over	The file cannot be written because of invalid parameter values.	Check the parameter values.
Can not write file In sampling	The file cannot be written to the CNC because sampling is in execution.	Write the file to the CNC after sampling is completed.
Can not write file Can't set superposition waveform	The superposition waveform cannot be set because the parameters of the wave type 1 and the wave type 2 are not matched when the wave type 2 is input. For example, [Superposition] is set to [OFF] in the parameters of the cycle monitor.	Correct the parameter settings and input data.
Can not read out file	The copy source file cannot be read.	Check if the copy source device is ready for data reading.
Filename illegal	The file name is invalid.	Check the file name, and execute the CNC data I/O again.
Memory Card not exist	No data storage is inserted into the GOT.	Check that the data storage is inserted into the GOT.
The Ethernet settings of the monitoring target CNC are not correct.	The CNC cannot be connected because the combination of N/W No. and station No., which are specified in the project data created with GT Designer3, does not exist in the Ethernet settings.	Correct the settings of the special function switch and Ethernet.
Error	Other errors	Turn off the GOT and CNC. Check data in the data storage and the connection status. Then, execute the CNC data I/O again.

19. CNC MACHINING PROGRAM EDIT

GT27 GT25 GT23 GT21 Soft GOT2000

19.1 Features

The machining program and MDI program of the CNC connected with the GOT can be edited.



19.2 Specifications

19.2.1 System configuration

This section describes the GOT for which the CNC machining program edit is available, the target CNC, and the connection type between the GOT and CNC.
For connection type settings and precautions regarding the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. GOT

The CNC machining program edit is available on GT27-X, GT27-S, and GT25-S.

■2. Target controller

Controller
CNC C70

■3. Connection type

This function can be used in the following connection types.
(○: Available, ×: Unavailable)

Function		Connection type between GOT and CNC	
Name	Description	Bus connection	Ethernet connection*2
CNC machining program edit	Editing CNC matching programs	○	○*1

*1 Applicable only with the Display I/F connection.
*2 When the CC-Link IE Field Network Ethernet adapter module is used, the CNC machining program edit cannot be used.

■4. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the CNC machining program edit to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) Space for the system application (Extended function)

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■5. Applicable hardware

A USB mouse is usable.

19.2.2 Access range

■1. For bus connection

With a single GOT, up to 2 CNCs can be switched for editing processing programs.

■2. For Ethernet connection

With a single GOT, up to 64 CNCs can be switched for editing processing programs.

19.2.3 Precautions

■1. Before using the CNC machining program edit

Carefully read the manual of the connected CNC and fully understand the operating procedures before using the CNC machining program edit.

■2. Machining program edit protection

When the data protection key 3, edit lock B and C are enabled, the machining program edit is restricted.
Even when the data protection key 3, edit lock B and C are enabled, the machining program can be opened.
For the data protection key 3, edit lock B and C, refer to the following.

➠ C70 Series Instruction Manual

■3. Software version of the CNC used

(○: Available, ×: Unavailable)

Software version of CNC	Function	
	Display of the machining program list	Machining program edit
BND-1006W000-D6 or earlier	○	×
BND-1006W000-D6 or later	○	○

19.3 Operations for Display

■1. Start operation of the CNC machining program edit

The following explains how to display the CNC machining program edit screen after the GOT is turned on.

Step 1. Turn on the power to the GOT.

Step 2. Display the CNC machining program edit screen.
Use either of the following display methods.

- Starting from the special function switch (CNC machining program edit) set in the project
  For how to set special function switches, refer to the following.

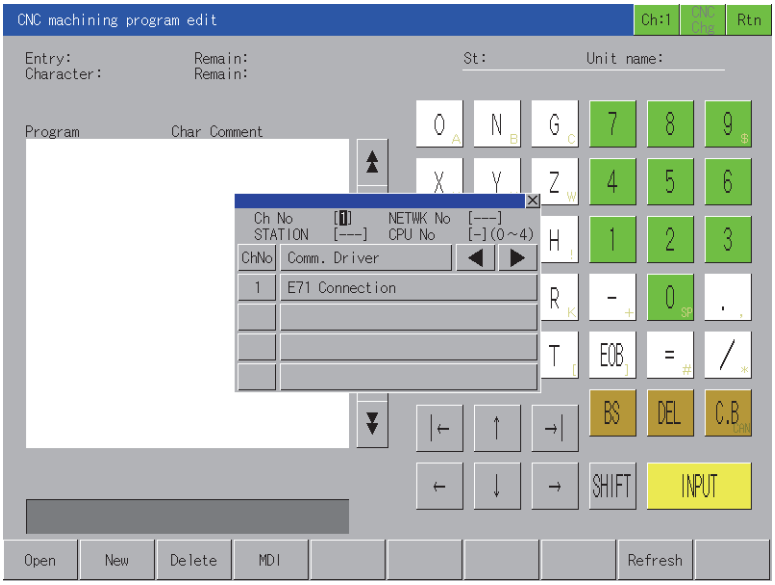
  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  After the utility is displayed, touch [Monitor] → [CNC machining program edit] from the Main Menu.
  For how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number.

Set the channel number of the CNC connected to the GOT.

If [×] is touched to close the communication setting window without setting a channel number, the channel number is set to [1].

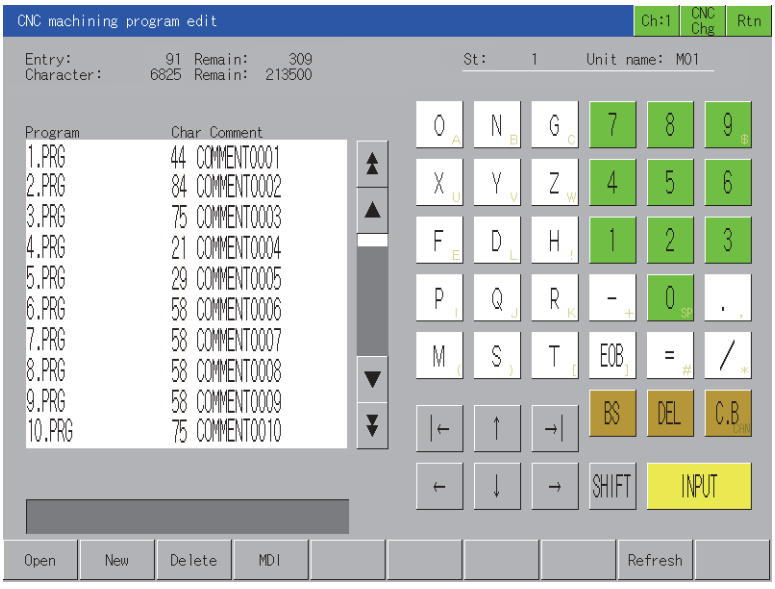


After the GOT is powered on, the communication setting window is displayed only at the first startup of the CNC machining program edit.

For displaying the communication setting window at the second or later startup, touch the [Ch:] key on the CNC machining program edit screen.

➠ 19.4 Operation Procedures

Step 4. The CNC machining program edit starts after the channel number is selected.



■2. Start operation using the special function switch

The CNC machining program edit can be started using special function switches.

If a special function switch with the following settings is touched, the CNC machining program edit screen of the set controller can be displayed.

- Selecting [CNC Manufacturing Program Editor] in [Switch Action], and checking [Specify the destination to connect the screen of CNC Manufacturing Program Editor]

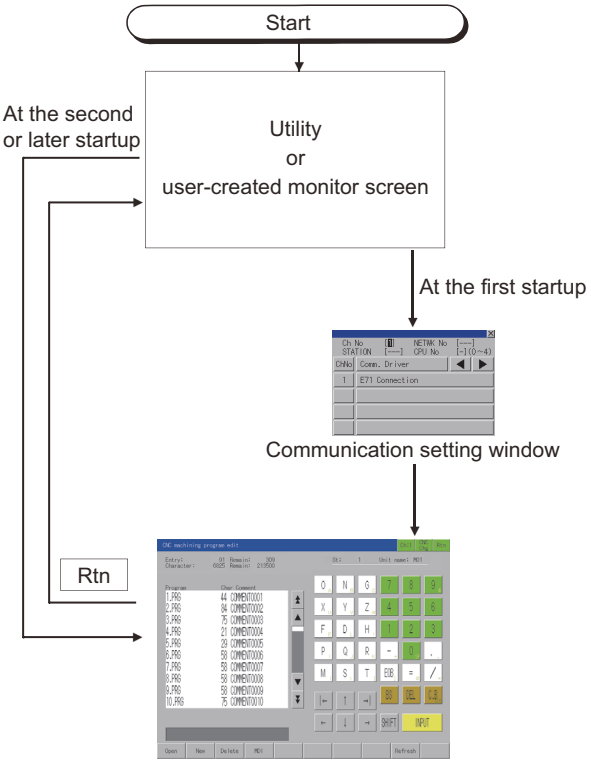
For Q buss connection, input 2 or larger for [CPU No.] in [Network].

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) Screen Design Manual

■3. Changing screens



When exiting CNC machining program edit by touching Rtn, the last exited screen will be displayed at the next startup of CNC machining program edit.

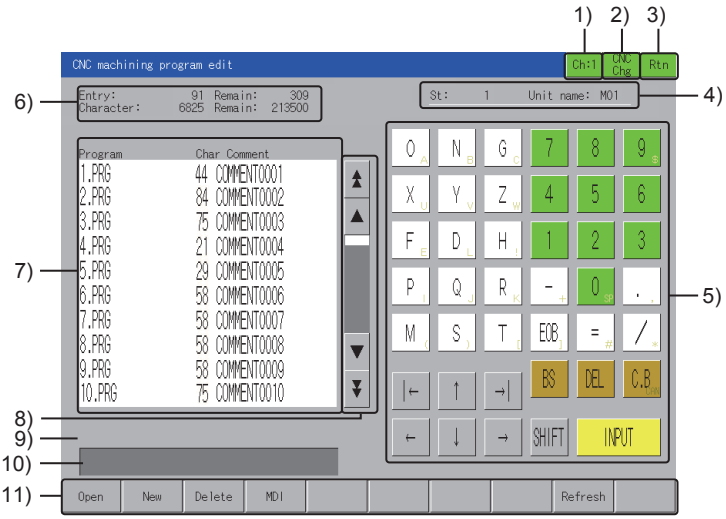
19.4 Operation Procedures

This section describes the screen and software keyboard used in the CNC machining program edit.
For how to edit machining programs and MDI programs, refer to the following.

➠ C70 Series Instruction Manual

■1. List screen

The following describes the display data of the CNC machining program edit list screen and the functions of the keys displayed on the screen.



1) Channel key
Displays the communication setting window.

2) [CNC Chg] key

Switches the CNCs for monitoring when multiple CNCs are connected.
The switching order differs depending on the connection type used.

- For bus connection
  The monitoring target is switched in order of the module number.
- For Ethernet connection
  The monitoring target is switched in the order set in the Ethernet setting of GT Designer3.

3) [Rtn] key

Exits the CNC machining program edit and returns to the monitor screen or the utility of the GOT.

4) CNC device name

The display contents differ according to the connection type.

- For bus connection
  Displays the CPU number and module name.
- For Ethernet connection
  Displays the station number and module name.

5) Software key board

Used to input the machining program name.
Inputting [.PRG] in the CNC machining program name is not required.
For details of the software key board, refer to the following.

➠ ■3. Software key board

6) Capacity

Item	Description
[Entry], [Remain]	Displays the number of the programs registered as the user's machining programs and the remaining number of the programs that can be registered.
[Character], [Remain]	Displays the number of characters registered in the user's machining programs and the remaining number of characters that can be registered.

7) Machining program list

Displays the CNC machining program list.
The machining programs are displayed in ascending order of the program numbers.
Machining programs are not displayed correctly if the program comment contains multibyte codes (such as shift JIS codes).

8) Scroll key

Scrolls up or down the contents of the machining program list in increments of 10 or 50 items.

9) Message

Displays the guide or error messages.
For the details of error messages, refer to the following.

➠ 19.5 Error Messages and Corrective actions

10) Input section

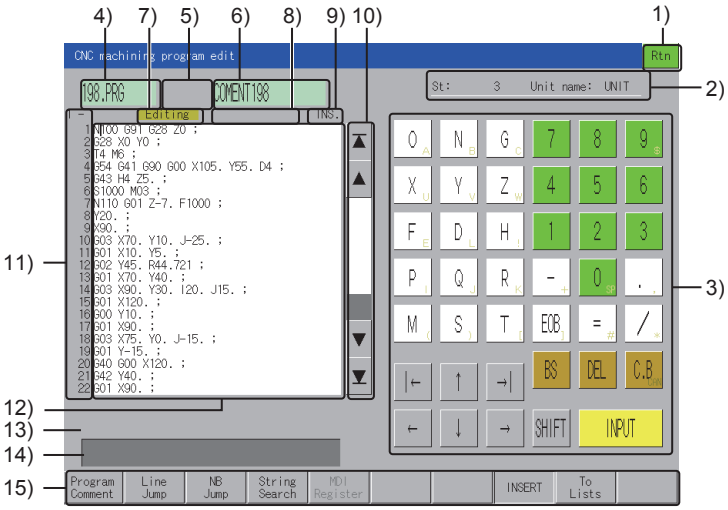
Input a machining program name.

11) Menu

Item	Description
[Open] key	Opens an existing machining program. When a machining program is selected or a machining program name is input in the input section and the [INPUT] key is touched, the machining program is opened. Jumping to the block number of a sequence number is enabled at the same time as the machining program is opened. Input characters in the "Machining program name/Sequence number/Block number" format into the input section, and touch the [INPUT] key. Example) When jumping into the position of the sequence number 110 and block number 0 of 123.PRG Input 123/110/0 or 123/110 in the input section and touch the [INPUT] key.
[New] key	Creates a new machining program. When a machining program name is input into the input section and the [INPUT] key is touched, the new machining program opens.

Item	Description
[Delete] key	Deletes an existing machining program. When a machining program is selected or a machining program name is input in the input section and the [INPUT] key is touched, the confirmation dialog box is displayed. Touch the [OK] key to delete an existing machining program.
[MDI] key	Opens an MDI program. The screen is switched to the edit screen to start the MDI program edit.
[Refresh] key	Updates and displays the program list.

■2. Edit screen



1) [Rtn] key

Exits the CNC machining program edit and returns to the monitor screen or the utility of the GOT.

2) CNC device name

The display contents differ according to the connection type.

- For bus connection
  Displays the CPU number and module name.
- For Ethernet connection
  Displays the station number and module name.

3) Software key board

Used to edit the program.

For details of the software key board, refer to the following.

➠ 19.2.3 ■3. Software key board

A key code can be sent with the USB keyboard.

For information on how to input a key code with the USB keyboard, refer to the following.

➠ 19.2.3 ■4. Inputting characters using a USB keyboard

4) Program name

Displays the name of the edited program.

The program name is displayed as MDI.PRG when an MDI program is edited.

5) System name display

Displays a system name when the MDI program is displayed and the MDI setting system can be switched.

6) Program comment

Displays the comment of the edited program.

No program comment is displayed for MDI programs.

The following program comments are not displayed correctly.

- A comment containing multibyte codes
- A comment containing Kanji, hiragana, katakana, or one-byte katakana

7) Editing mode

Indicates that the program is being edited.

This item appears only when the program is being edited.

8) MDI status

Displays the status of the MDI when the MDI program is opened.

- No MDI setting
  Indicates that the MDI program cannot be operated.
  To complete the setting, move the cursor to any position of the program, and then touch the [INPUT] key.
- MDI setting completed
  Indicates that the MDI program can be operated.
  The background color of the set line number becomes light blue.
  When you start editing, the background color disappears.
- MDI in operation
  Indicates that the MDI program is being operated.

9) Insert or overwrite

Indicates that the insert mode or overwrite mode is being selected.

10) Scroll key

Scrolls the contents in the editing area up or down by 10 or 50 items.

11) Line number

Displays the line numbers.

- Start line: Displays the display start line in the editing eara.
- Line number: Displays the last four digits of the line numbers.

12) Editing area

Used to display and edit a program.
The display size is 22 lines × 40 characters.
When the editing area is touched, the cursor moves to the touched position.
When a position with no character is touched, the cursor moves to the nearest position where characters can be input.
When any key on the menu is on, touching the editing area turns off the key.
However, the cursor moves to the beginning of the inverted characters during the string search.

13) Message

Displays the guide or error messages.
For the details of error messages, refer to the following.

➠ 19.5 Error Messages and Corrective actions

14) Input section

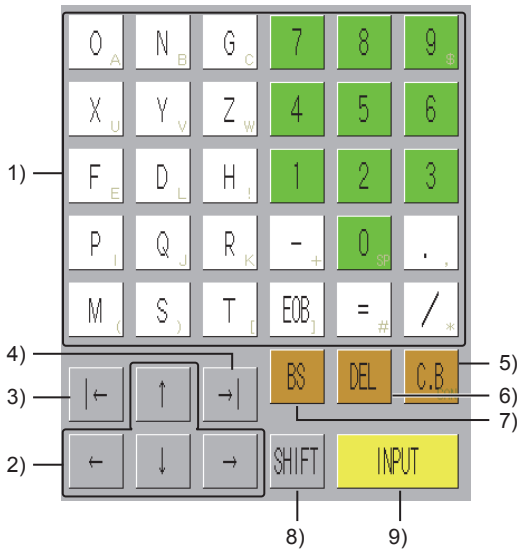
Whether inputting characters is available depends on the mode of each menu.

15) Menu

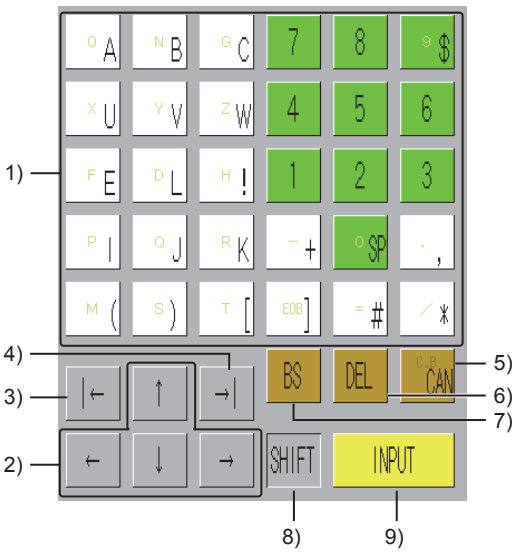
Item	Description
[Program Comment] key	Used to input the comment of the machining program. When a comment is input into the input section and the [INPUT] key is touched, the input value is reflected. Up to 18 characters can be input as a program comment. A comment cannot be input into the MDI program.
[Line Jump] key	Used to move to a specified line. When you enter a line number in the input area and touch the [INPUT] key, the specified line is displayed at the start of the editing area. When you enter a line number that does not exist in the program, E, or EOR in the input area, you jump to the last line.
[NB Jump] key	Used to move to the block number of a sequence number. When you enter characters in the form of "Sequence number/Block number" in the input area and touch the [INPUT] key, the specified block is displayed at the start of the editing area. When a block number is not input, 0 is applied as the block number. Example) When jumping into the position of the sequence number 110 and block number 0 Enter "110/0" or "110", and then touch the [INPUT] key.
[String Search] key	Searches for the text and moves to it. When you enter the text in the input area and touch the [INPUT] key, the text is searched for from the position where the cursor is placed. If the search reaches the end of the program without locating the target text, the search continues from the start of the program. Up to 11 characters can be searched for.
[System Change] key	Switches the system to configure the MDI setting.

Item	Description
[MDI Register] key	Registers the MDI program as the CNC machining program. To perform the MDI registration, enter a machining program number in the input area, and then touch the [INPUT] key. An MDI program can be registered only when the program is opened.
[INSERT] key	Switches between the insert mode (ON) and the overwrite mode (OFF). • ON: Insert mode • OFF: Overwrite mode
[To Lists] key	Switches the screen to the list screen.

■3. Software key board



[SHIFT] OFF



[SHIFT] ON

1) Alphanumeric and symbol keys

Used to input alphabets, numbers, spaces, and symbols.
Symbols shown in gray can be input when the [SHIFT] key is turned on.

Item	Description
[EOB] key	Inputs EOB (;).

2) Cursor movement keys

Moves the cursor.

3) Left tab key

The key operation differs according to the cursor position.

- When the cursor is displayed in the editing area
  The cursor moves to the beginning of a word.
  When the cursor is placed at the beginning of a word, the cursor moves to the beginning of the previous word.
- When the cursor is displayed in the input area
  The cursor moves to the first character.

4) Right tab key

The key operation differs according to the cursor position.

- When the cursor is displayed in the editing area
  The cursor moves to the beginning of the next word.
- When the cursor is displayed in the input area
  The cursor moves to the last character.

5) [C.B] key, [CAN] key

The [CAN] key is enabled when the [SHIFT] key is turned on.
The key operation differs according to the cursor position.

Item	Description
[C.B] key	• When the cursor is displayed in the editing area Deletes all characters of the block at the cursor position. • When the cursor is displayed in the input area Deletes all characters in the input area.

Item	Description
[CAN] key	• When the cursor is displayed in the editing area Deletes all characters on the displayed page. • When the cursor is displayed in the input area Deletes all characters in the input area.

6) [DEL] key
Deletes the character to the right of the cursor.

7) [BS] key
Deletes the character to the left of the cursor.

8) [SHIFT] key
Switches between different character sets in the display.

9) [INPUT] key
The key operation differs according to the cursor position.
- When the cursor is displayed in the editing area
  Saves the contents being edited during the machining program edit.
  Saves the contents being edited and completes the setting during the MDI program edit.
- When the cursor is displayed in the input area
  Confirms the entry and executes it.

■4. Inputting characters using a USB keyboard

A USB keyboard and software keyboard may have different key operations.

Key	USB keyboard operation
	Shift+Tab
	Tab
	Shift+Delete, Home
	Shift+Home
	Enter
	Shift+Page Up
	Shift+Page Down
	Page Up, Page Down
Menu	• List screen F1: Open, F2: New, F3: Delete, F4: MDI, F9: Refresh • Edit screen F1: Program comment, F2: Line No. jump, F3: NB jump, F4: String search, F5: MDI registration, F7: System switching, F8: INSERT, F9: Move to the list
	No corresponding key

For how to set the USB keyboard, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

19.5 Error Messages and Corrective actions

This section describes the error messages displayed when the CNC machining program edit is executed, and the corrective actions.

Error message	Description	Corrective action
CNC version not compatible	The CNC version does not support the CNC machining program edit.	Update the CNC version.
Cannot execute except in MDI mode	The parameter value set for the MDI setting lock (#1144 mdlkof) is 0 (MDI setting disabled). The MDI setting cannot be configured unless in the MDI mode.	Change the operation mode to the MDI mode, or correct the parameter setting.
Unable to execute: Program running	The CNC machining program edit cannot be executed for the machining program being run.	Stop running the machining program, and execute the CNC machining program edit again.
NB not found	A block number that does not exist is specified for the NB jump.	Input the correct block number.
Program not designated	The INPUT key is touched before the machining program is specified.	Specify the machining program, and touch the [INPUT] key.
Program does not exist	The machining program that does not exist is specified.	Input the correct machining program number.
Program No. duplicate	The specified machining program number cannot be registered since the same number already exists.	Input the correct machining program number.
Program No. illegal	The specified machining program number is invalid.	Input the correct machining program number.
Memory over	The memory capacity is exceeded.	Reserve enough space of the memory by operations such as deleting unnecessary machining programs, and then execute the CNC machining program edit again.
Data protected	Since even one of the data protection key 1, 2, and 3, and the edit lock B and C is valid, the CNC machining program edit cannot be executed.	Check that the data protection key 1, 2, and 3, and the edit lock B and C are set to be invalid, and execute the CNC machining program edit again.
No. of registrations over	The maximum number of registration allowed for programs is exceeded.	Delete the unnecessary machining programs, and execute the CNC machining program edit again.
Input error	The data is input in the incorrect format.	Input the data in the correct format.
An error found in file system	An error occurred in the file system.	Format the CNC memory.
Cannot write file	A machining program cannot be written.	Format the CNC memory.
Cannot read file	A machining program cannot be read.	Format the CNC memory.
Program display locked	The machining program cannot be displayed due to the program display lock C (#1122pglk_c).	Check the parameter values.
Unable to execute: Editing	While the machining program is edited, the change of the program comment, NB jump, string search, MDI registration, and the scrolling outside the editing area cannot be executed.	Cancel the editing mode, and execute those operations again.
Unable to execute: Another device is connecting	The editing screen is displayed on the monitored CNC side.	Switch the editing screen to another screen on the monitored CNC side.
	The same program is displayed on the other GOT.	Close the program on the other GOT.
	While the machining program is edited by the other device, the GOT is turned on and immediately the same program is attempted to be opened.	After 60 seconds have passed since the GOT was turned on, open the program again.
	The number of machining programs opened by the target CNC has reached the maximum number allowed (10 programs).	Close the program on the other GOT.
	The other GOT is executing the file access, including the input/output and verification of the target file.	After the process is completed on the other GOT, execute CNC machining program edit again.
No. of characters over	The maximum number of characters allowed for the input area is exceeded.	Reduce the input characters, and then execute the CNC machining program edit again.
Time-out	The GOT fails to communicate with the CNC.	Check the connection.
Communication error	The GOT fails to establish the initial communication with the CNC.	• Check that the CNC is powered on, the cable is connected, and the connection target is the CNC. • Configure the proper connection and settings.
Error	Other errors	Turn off the GOT and the CNC, and check the connection. Check the format of the CNC memory, and execute the CNC machining program edit again.

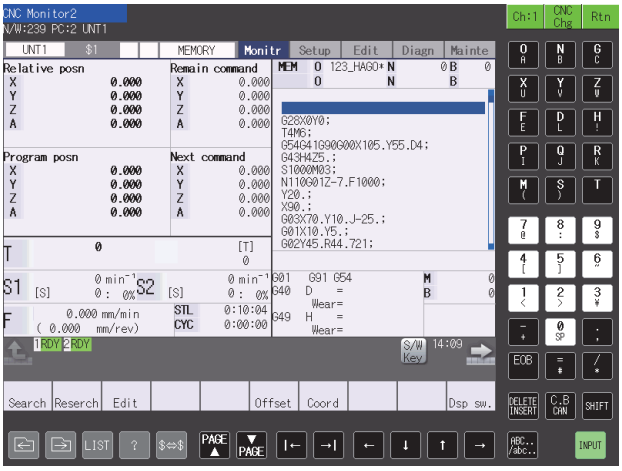
20. CNC MONITOR 2

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

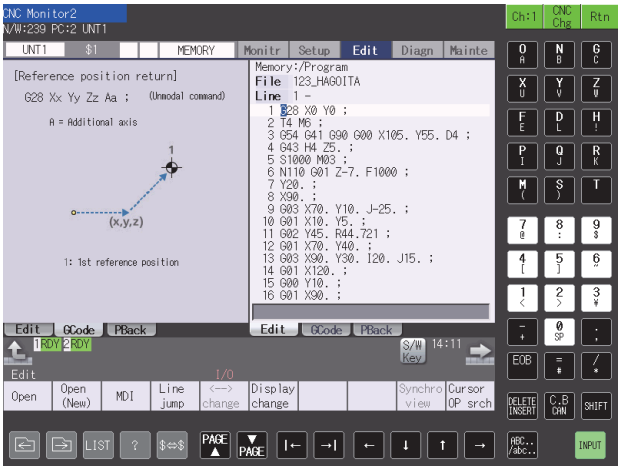
20.1 Features

The CNC monitor 2 function enables you to monitor the information required for the operation, setup, diagnosis, and maintenance of the CNC C80 connected to the GOT. You can also use this function to set and input or output the data of the CNC C80.
The following screenshots are from GT27-S or GT25-S.

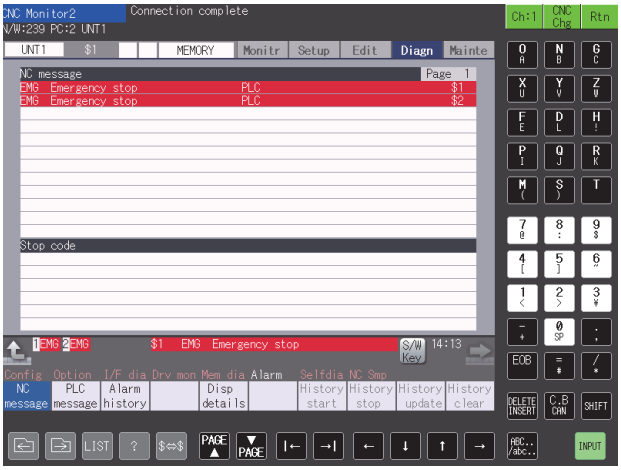
➠ 20.4.2 ■2. Using a USB keyboard



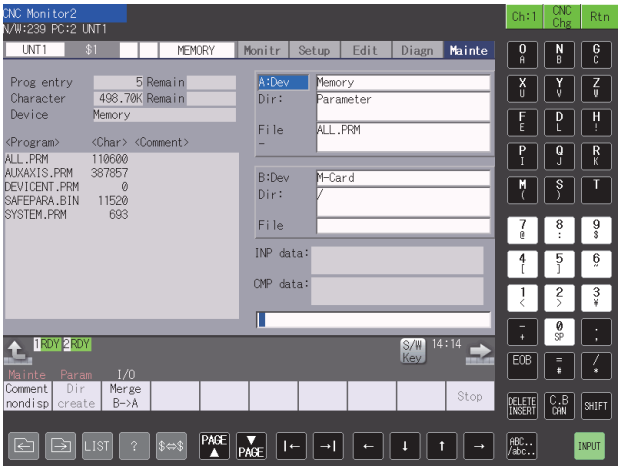
Monitor screen



Edit screen



Alarm screen



Input/Output screen

Menu list screen

20.2 Specifications

20.2.1 System configuration

This section describes the GOTs that support the CNC monitor 2, the target controllers, and the connection types between the GOT and the controller.
For connection type settings, precautions regarding the communication unit/cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. GOT

The following shows the GOT models that support the CNC monitor 2.

- GT27
- GT25 (except GT25-W)

■2. Target controller

Controller
CNC C80 (R16NCCPU)

■3. Connection type

This function can be used in the following connection types.

○: Available, ×: Unavailable

Function		Connection type between the GOT and CNC C80
Name	Description	Ethernet connection *1
CNC monitor 2	Operates and monitors CNC C80, inputs and outputs data, and edits machining programs.	○

*1 Available only when the Display I/F connection is used.

■4. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the CNC monitor 2 to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) Space for the system application (Extended function)

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■5. Applicable hardware

A USB keyboard and USB mouse are usable.
A software keyboard does not appear on GT27-V and GT25-V.
For these models, use a USB keyboard instead of the software keyboard.

➠ 20.4.2 ■2. Using a USB keyboard

■6. CNC C80 screens that can be monitored

With the CNC monitor 2, you can view screens and perform operations as shown below.
For the details of the following screens, refer to the manual of the CNC C80.

Type	Screen No.	Screen name	Description
Monitor screen	100	Monitor screen	Display operation information such as the axis counter, speed display, and M, S, T, B commands.
	101	Operation search	Call a program for automatic operation.
	102	Restart search	Restart machining from a selected block.
	103	Edit (Operation search)	Edit the searched machining program.
	106	Counter displays	Display the counter for all axes. The type of the counter is selectable from the menu.
	107	Tool offset	Set and display tool compensation data.
	108	Work offset	Set and display the workpiece coordinate offset.
	109	Counter set	Set the relative position counter to an arbitrary value.
	110	Manual numerical value command	Set and display each command for the spindle function, miscellaneous function, tool function, and 2nd miscellaneous function.
	111	Modal display	Display the execution modal value of the machining program.
	112	Program tree	Display the program, MDI interrupt, and user macro call in the nesting structure.
	113	Integrated time	Set and display the integrated time (such as date, time, power-on time).
	114	Common variable	Set and display the details of common variables.
	115	Local variable	Specify a nesting level of the subprogram control, and display local variables.
	116	Buffer correction	Apply a block stop and correct or change the next command during the automatic operation or MDI operation.
	118	Origin set	Set or cancel the origin.
	119	Verify stop	Register a verification stop position where a single block stop is applied.
	120	Load meter	Display the spindle load and Z axis load in meter.
	121	Spindle standby	Display the spindle tool number and the standby tool number.
	123	All spindles' rotation speed	Display the commanded rotation speed and actual rotation speed of all spindles.
Setup screen	201	Setup screen (Tool offset)	Configure the tool and workpiece related settings. The tool compensation amount screen is selected. Set and display tool compensation data.
	202	Tool measurement	Measure the length and radius of a tool manually, and set the data as the tool offset amount.
	203	Tool registration	Register a tool number according to the magazine pot, spindle, and standby position.
	204	Tool life management	Set and display tool life management data including the tool usage conditions.
	205	Work coordinate system offset	Set and display the workpiece coordinate offset.
	206	Workpiece measurement	Measure the face, hole center, and width center of a workpiece manually, and set the data as the coordinate system offset amount.
	207	User parameters	Set and display user parameters.
	208	MDI program editing	Display and edit the MDI programs in the NC memory.
	209	Counter set	Set the relative position counter to an arbitrary value.
	210	Manual numerical value command	Set and display each command for the spindle function, miscellaneous function, tool function, and 2nd miscellaneous function.
	213	Tool management	Set and display the tool data used for preventing machine collisions.
	217	Machining condition selection I	Define multiple sets of high-accuracy parameters according to machining applications and processes.
	218	Barrier data	Set and display the chuck barrier and tailstock barrier. (Only for the L system)
Edit screen	301	Edit screen	Edit (add, delete, or change) programs, and create new ones.
	305	Input/Output (Edit screen)	Perform data input or output between the NC memory and an external I/O device.

Type	Screen No.	Screen name	Description
Diagnosis screen	401	Diagnosis screen (System Configuration)	Set and display NC diagnosis data. The configuration screen is selected. Display the configurations of hardware and software (software No. and version).
	402	Option display	Display the details of the options registered to the CNC.
	403	I/F diagnosis	Set and display the input and output signals of a ladder program.
	404	Drive monitor	Display drive diagnosis information (about the servo axis, spindle, and power supply unit).
	405	NC memory diagnosis	Set and display NC internal data.
	406	Alarm	List the current active alarms and their messages.
	411	Self diagnosis	Display the hardware status and operation stop status.
	412	Data sampling	Set the sampling parameters, and sample the NC internal data.
Maintenance screen	501	Maintenance screen	Format the NC memory, and set the absolute position parameters.
	502	Parameter	Set and display the user parameters and machine parameters.
	503	Input/Output (Maintenance screen)	Perform data input or output between the NC memory and an external I/O device.
	554	Absolute position setting	Set the absolute position of servo axes (NC axes and PLC axes).
	556	Servo diagnosis	Display information about a servo/spindle drive unit, including the number of alarms, DA output information, PLG diagnosis (spindle), and alarm cause counter.
	557	Diagnosis data collection setting	Configure the history data collection settings, and start or stop collecting the history data (about NC keys, alarms, and others).
Others	-	Menu list	List the menu configurations of all screens.
	-	Specify the screen No.	Set a screen number.

20.2.2 Access range

One GOT can monitor up to 64 CNC C80 modules by switching between them.
Up to eight GOTs can simultaneously monitor one CNC C80 module.

20.2.3 Precautions

■1. Before using the CNC monitor 2

Carefully read the manual of the connected CNC C80 and fully understand the operating procedures before using the CNC monitor 2.

■2. CNC C80 parameters that affect the CNC monitor 2

Some CNC C80 parameters affect the display and operation of the CNC monitor 2.
Example)

No.	Name	Description
#1043	lang	Select language displayed
#1135	unt_nm	Unit name
#1251 (bit3)	set23	Selects whether to display a message after successful connection.

For the details of CNC C80 parameters, refer to the manual of the CNC C80.

20.3 Operations for Display

The following explains how to display the CNC monitor 2 screen after the GOT is turned on.

Step 1. Turn on the GOT.

Step 2. Display the CNC monitor 2 screen.
The display methods include the following two types.

- Using the special function switch (CNC monitor 2) set in the project
  For how to set the special function switch, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual

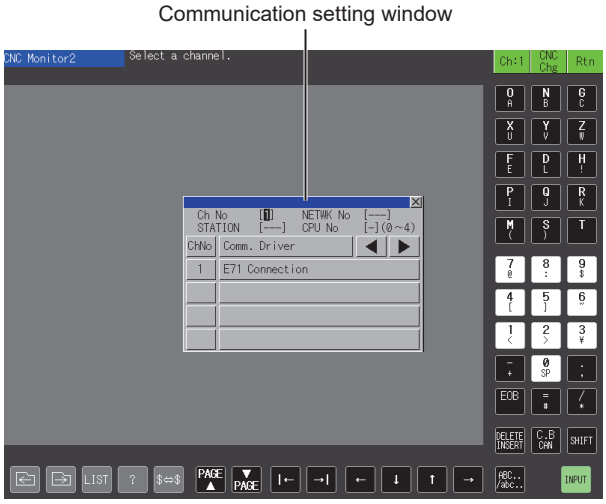
- Starting from the utility
  In the utility, touch [Monitor] → [CNC monitor2] from the main menu.
  For how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number of the controller for which the CNC monitor 2 is performed.
After the GOT is turned on, the communication setting window is displayed automatically only at the first startup of the CNC monitor 2.
To display the communication setting window after the first startup, touch the [Ch:] key on the CNC monitor 2 screen.
For the details of the CNC monitor 2 screen operations, refer to the following.

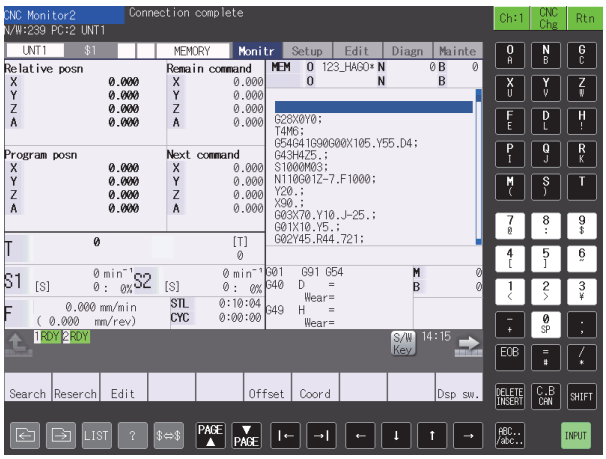
➠ 20.4 Operating Procedure

Communication setting window



GT27-S and GT25-S

Step 4. Start the CNC monitor 2.
The CNC monitor 2 screen appears after the channel number is selected.



GT27-S and GT25-S

■1. Start operation using the special function switch

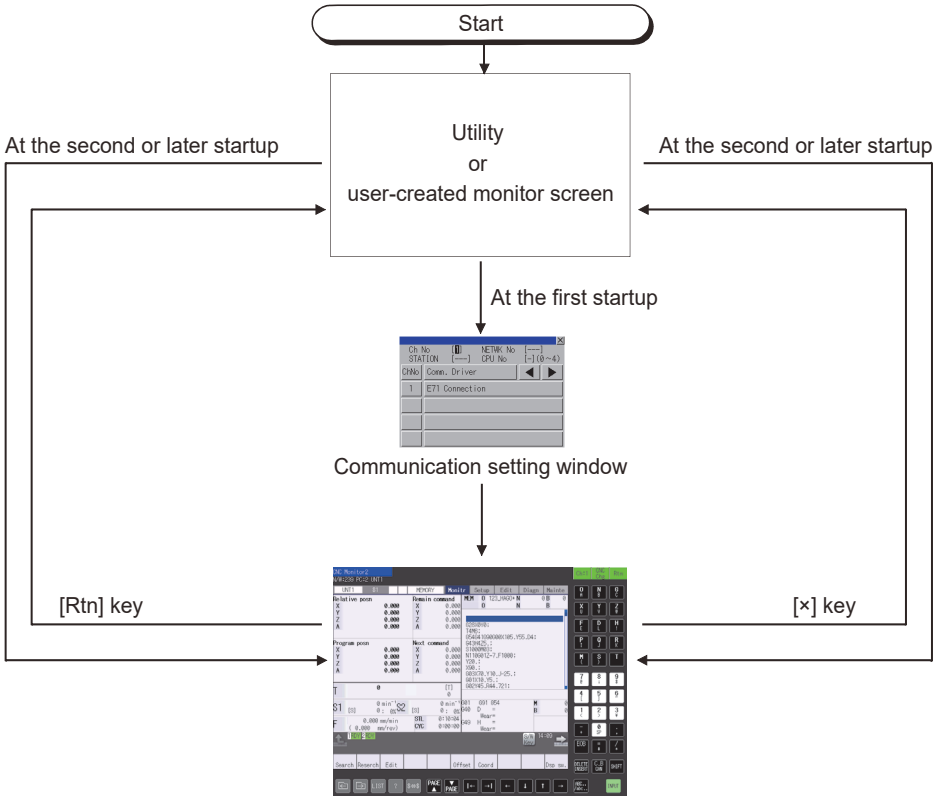
The CNC monitor 2 can be started by using a special function switch.
To display the CNC monitor 2 screen for the set controller by touching the special function switch, configure the following settings for the switch.

- Specifying a keyboard
- Specifying the connection destination
- Specifying the initial screen
- Specifying a system number

The operation at startup differs according to the special function switch settings.
For the setting items for the special function switch, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■2. Changing screens



The initial screen specified with the special function switch appears at the next startup.
If the initial screen is not specified, the last displayed screen appears at the next startup.
For the details of the special function switch setting, refer to the following.

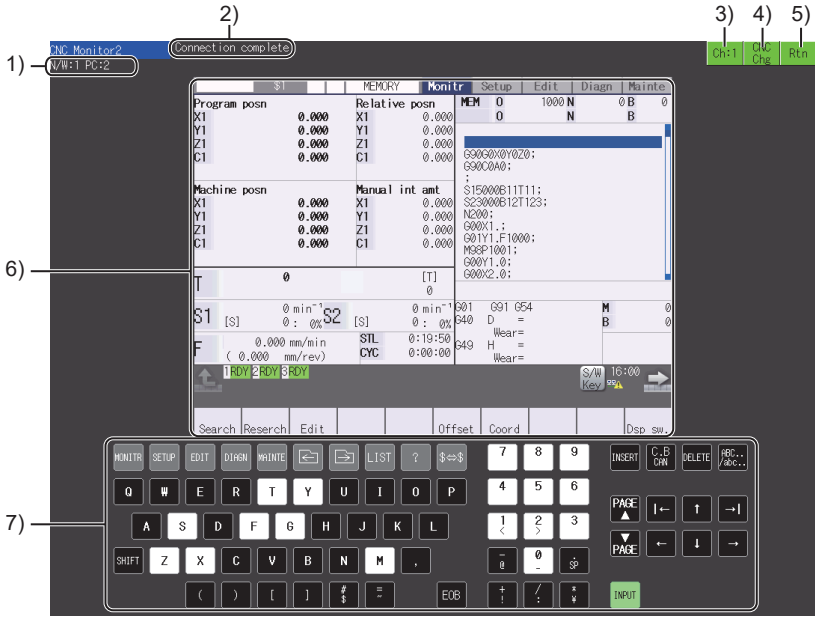
➠ GT Designer3 (GOT2000) Screen Design Manual

20.4 Operating Procedure

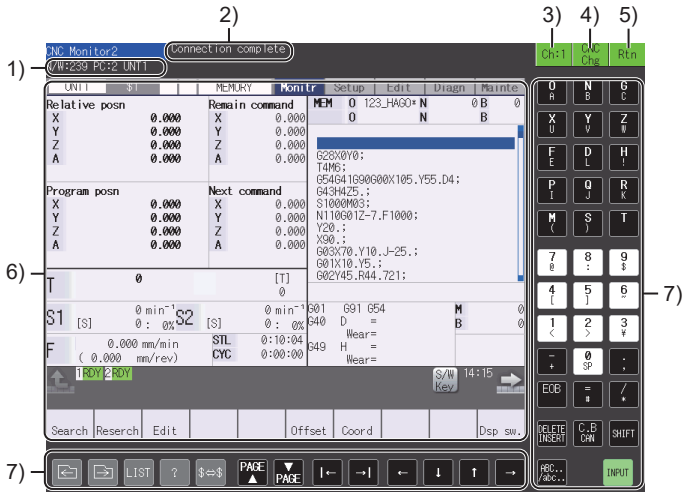
This section describes the CNC monitor 2 screen layout, data input, authorization acquisition, and CNC C80 parameters.

20.4.1 CNC monitor 2 screen layout

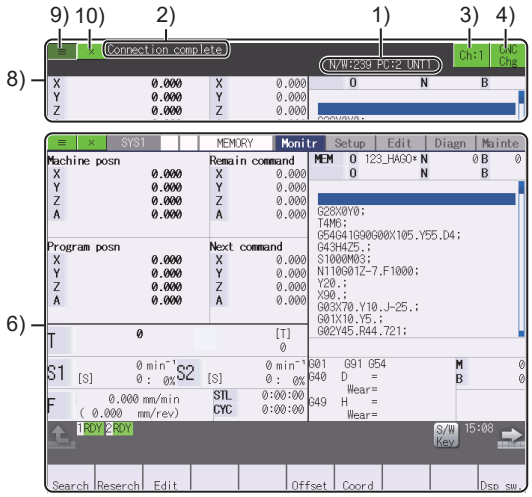
The following describes the display data of the CNC monitor 2 screen and the functions of the keys displayed on the screen.



GT27-X



GT27-S and GT25-S



GT27-V, GT25-V, and GT25HS-V

1) Connected CNC C80
Displays the network No., PLC No., and module name of the connected CNC C80.
The module name depends on the parameter setting of the CNC C80.
For the details of CNC C80 parameters, refer to the manual of the CNC C80.

2) Message display area
Displays messages.
For the details of messages, refer to the following.

➠ 20.5 Error Messages and Corrective Actions

3) Select channel key
Displays the selected channel number.
Touch this key to display the communication setting window.
When a CNC C80 is connected, touching this key disconnects the CNC C80.

4) [CNC Chg] key
Switches between the CNC C80 modules in the order set in [Ethernet Setting].

5) [Rtn] key (for GT27-X, GT27-S, and GT25-S)
Returns to the utility or user-created screen.

6) Monitor screen
Displays the operation, setup, edit, diagnosis, or maintenance screen of the CNC C80.
Touch this screen to switch the screen.
The display language depends on the parameter setting of CNC C80.
For the details of CNC C80 parameters, refer to the manual of the CNC C80.

7) Software keyboard (for GT27-X, GT27-S, and GT25-S)
Touch a key to send a key code to the CNC C80.
For the details of the software keyboard, refer to the following.

➠ 20.4.2 ■1. Using a software keyboard

A key code can be sent with the USB keyboard.
For information on how to input a key code with the USB keyboard, refer to the following.

➠ 20.4.2 ■2. Using a USB keyboard

8) Function window (for GT27-V, GT25-V, and GT25HS-V)
Displays a message and connected CNC and allows you to select a channel and switch the CNC.

9) Display function window key (for GT27-V, GT25-V, and GT25HS-V)
Displays the function window.

10) [×] key (for GT27-V, GT25-V, and GT25HS-V)
Returns to the utility or user-created screen.

POINT

Function window

- If the displayed message wraps to the next line, the information about the connected CNC C80 is not displayed.
- The function window appears for some errors, such as a communication error.
- If you touch an area outside the function window or input data with a keyboard or mouse, the function window closes.

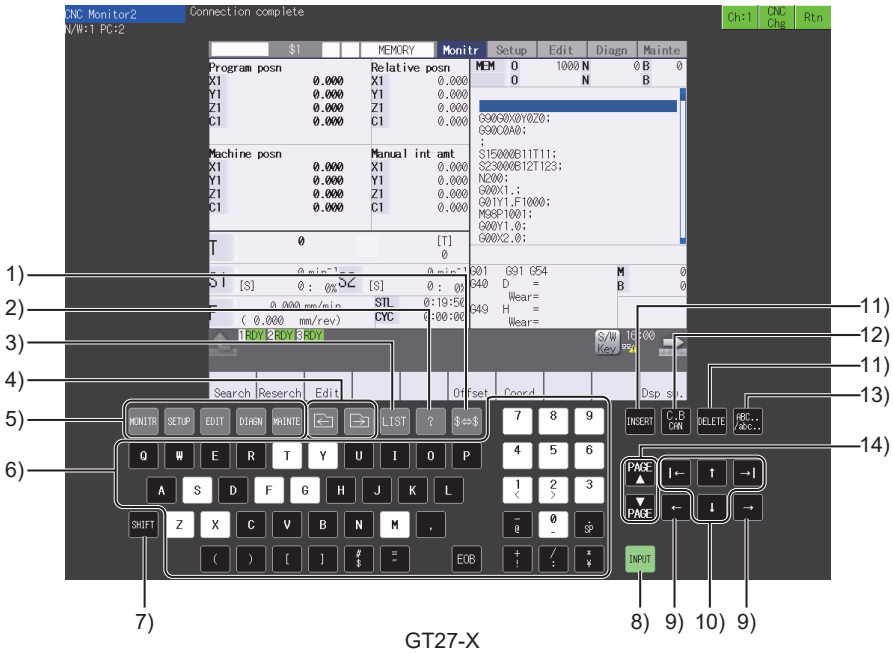
20.4.2 Key input

■1. Using a software keyboard

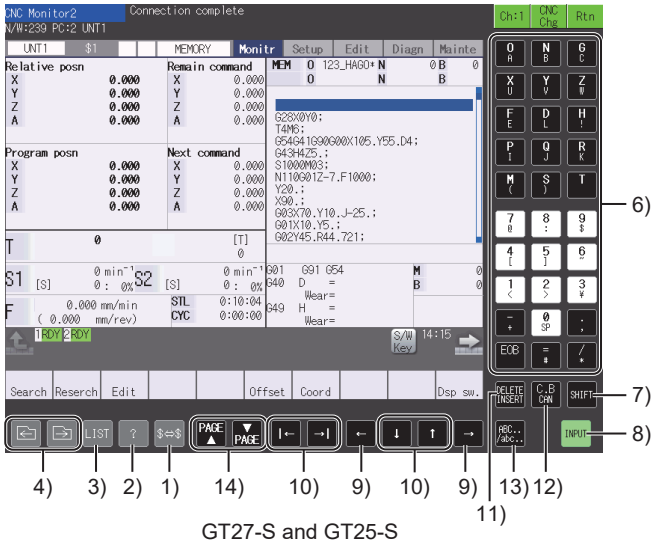
The CNC monitor 2 screen displays a software keyboard on GT27-X, GT27-S, and GT25-S.
For the models other than the above, use a USB keyboard instead of the software keyboard.

➠ ■2. Using a USB keyboard

The following describes the software keyboard displayed on the CNC monitor 2 screen.



GT27-X



GT27-S and GT25-S

1) System switching key
When multiple systems are used, touching this key displays the data of the subsequent system.
If a common system screen is displayed or only one system is used, touching this key does not change the display.

2) Help key
Displays the parameter guidance and alarm guidance.

3) [LIST] key
Lists the menu configurations of all screens.

4) Tab switching keys
Switch the tabs.

5) Screen switching keys (for GT27-X)
Switch the screens.

The following shows the keys and the corresponding screens.

- [MONITR] key: Monitor screen
- [SETUP] key: Setup screen
- [EDIT] key: Edit screen
- [DIAGN] key: Diagnosis screen
- [MAINTE] key: Maintenance screen

6) Data setting keys

Input alphabets, numbers, spaces, and symbols.

Touching each key inputs the character on the upper half of the key. To input a character on the lower half of a key, touch the [SHIFT] key.

7) [SHIFT] key

Selects the character or function on the lower half of each key.

8) [INPUT] key

Confirms the setting and writes the data to the CNC C80.

9) Move cursor keys (within a displayed item)

Move the cursor left or right one character within a displayed item on the screen.

10) Move cursor keys

Move the cursor up, down, right, or left one item.

11) [DELETE], [INSERT], or [DELETE INSERT] key

Deletes a character, or switches to the insert mode.

- GT27-X
  [DELETE] key: Deletes the character to the left of the cursor.
  [INSERT] key: Switches to the insert mode.
  To insert a character to the left of the cursor, touch a data setting key in the insert mode.
- GT27-S and GT25-S
  [DELETE INSERT] key: Deletes the character to the left of the cursor.
  To switch to the insert mode, touch the [SHIFT] key and then the [DELETE INSERT] key.

12) [C.B CAN] key

Deletes the row under the cursor on the edit screen.

Clears the value under the cursor on a screen other than the edit screen.

To delete all of the contents on the edit screen, touch the [SHIFT] key and then the [C.B CAN] key.

13) Lowercase character input key

Shifts back and forth between uppercase and lowercase characters.

A case shift is available only on the software keyboard.

14) Page switching key

Displays the previous or next page.

■2. Using a USB keyboard

You can input data using a USB keyboard.
For how to set the USB keyboard, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

The following table lists the function of each key on a USB keyboard.

Key	Description
Characters, numbers, symbols	Input characters, numbers, and symbols.
Shift + Letter	Inputs a lowercase letter.
Shift + F1	Switches the screen to the monitor screen.
Shift + F2	Switches the screen to the setup screen.
Shift + F3	Switches the screen to the edit screen.
Shift + F4	Switches the screen to the diagnosis screen.
Shift + F5	Switches the screen to the maintenance screen.
Ctrl + F1	Switches between the systems.
Ctrl + F2	Displays or hides the guidance.
Ctrl + F8	Displays or hides the menu list.
Ctrl + F9	Moves the tab left.
Ctrl + F10	Moves the tab right.
PageUp	Switches the page to the previous page.
PageDown	Switches the page to the next page.
F1	Selects the leftmost menu key.
F2	Selects the second menu key from the left.
F3	Selects the third menu key from the left.
F4	Selects the fourth menu key from the left.
F5	Selects the fifth menu key from the left.
F6	Selects the sixth menu key from the left.
F7	Selects the seventh menu key from the left.
F8	Selects the eighth menu key from the left.
F9	Selects the ninth menu key from the left.
F10	Selects the tenth menu key from the left.
F11	Returns to the previous menu.
F12	Goes to the next menu.
Delete	Deletes one character.
Insert	Switches to the insert mode.
Shift + Home	Clears a target value within a display item on the screen.
Esc	Deletes all of the contents on the edit screen.
Enter	Confirms the setting and writes the data to the CNC C80.
↑	Moves the cursor up one display item on the screen.
↓	Moves the cursor down one display item on the screen.
←	Moves the cursor left within a display item on the screen.
→	Moves the cursor right within a display item on the screen.
Shift + Tab	Moves the cursor left one display item on the screen.
Tab	Moves the cursor right one display item on the screen.

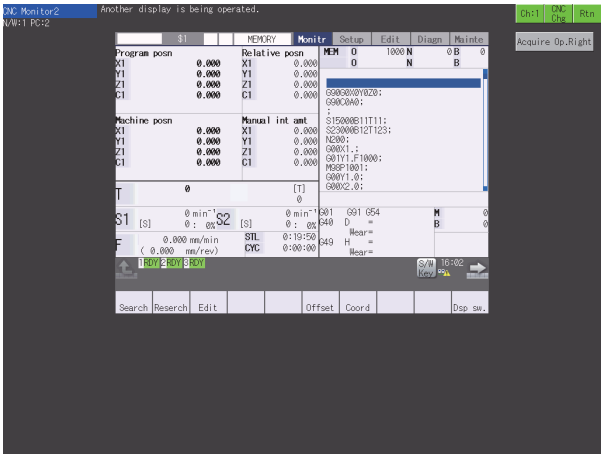
20.4.3 Authorization

To operate the CNC monitor 2 screen, the authorization of CNC C80 is required.
When a CNC C80 module is connected to multiple GOTs, the CNC monitor 2 screen is operable on the authorized GOT only.
On an unauthorized GOT, the CNC monitor 2 screen is viewable.

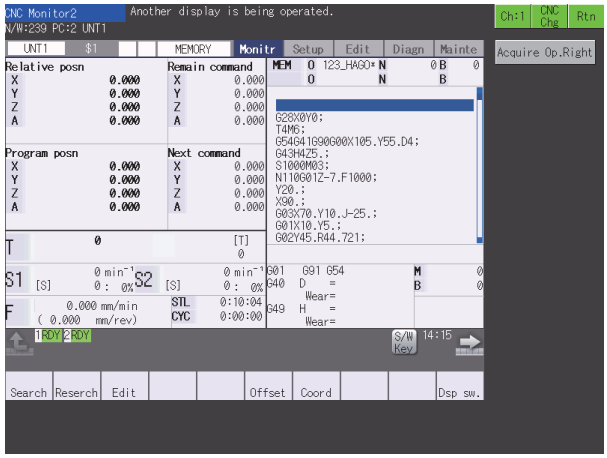
■1. Obtaining the authorization

(1) GT27-X, GT27-S, and GT25-S

On an unauthorized GOT, the [Acquire Op.Right] key is displayed instead of the keyboard.
To operate the CNC monitor 2 screen, touch the [Acquire Op.Right] key on the GOT to obtain the authorization of CNC C80.

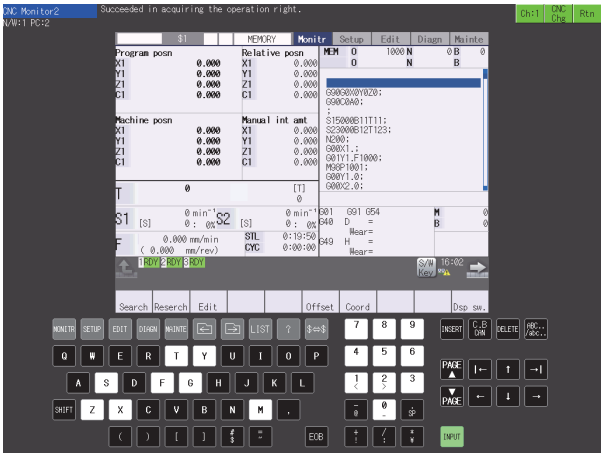


GT27-X

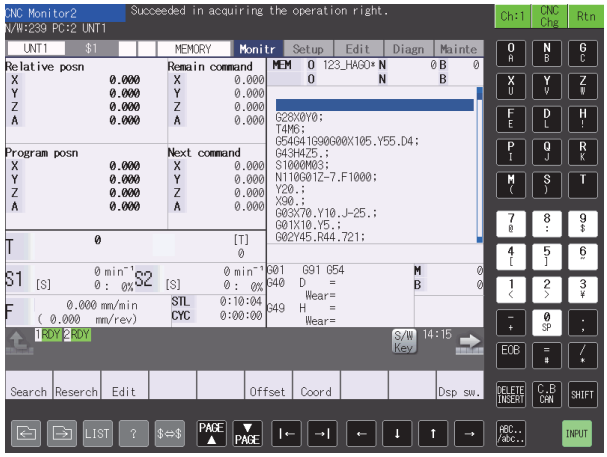


GT27-S and GT25-S

Unauthorized state



GT27-X

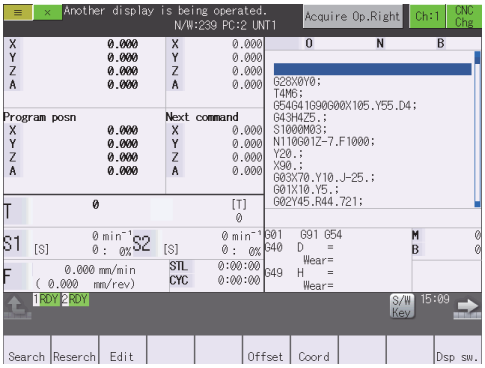


GT27-S and GT25-S

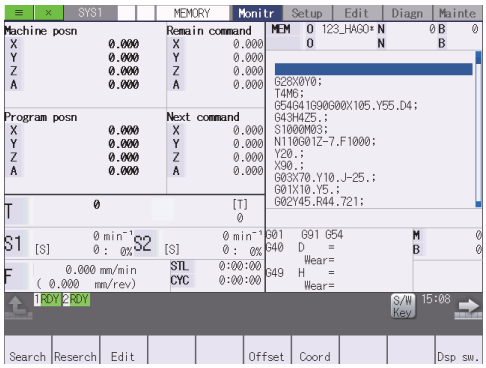
Authorized state

(2) GT27-V, GT25-V, and GT25HS-V

On an unauthorized GOT, the display function window key appears in yellow, and the [Acquire Op.Right] key appears in the function window.



Unauthorized state



Authorized state

■2. Automatic transfer of the authorization

When you perform the following operations on the authorized GOT, the authorization is transferred to another GOT automatically.

- Closing the CNC monitor 2 screen
- Powering off the authorized GOT

The authorization is transferred to a GOT according to the connection order.

20.5 Error Messages and Corrective Actions

This section describes the error messages displayed when the CNC monitor 2 is executed, and the corrective actions.

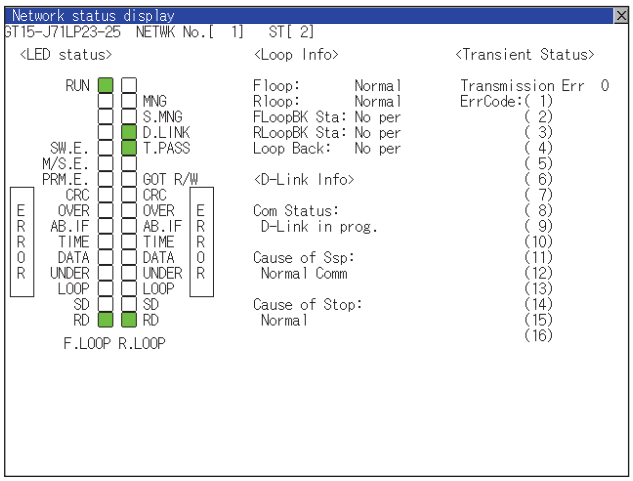
Message	Description
Unable to move to the designated screen.	The screen was not switched to the specified screen. The CNC C80 does not have the specified screen, or the specified screen No. may be incorrect. Correct the settings of the special function switch. For information on how to set a special function switch, refer to the following. ➠ GT Designer3 (GOT2000) Screen Design Manual
Unable to move to the designated system.	The system was not switched to the specified system. The CNC C80 may not have the specified system. Correct the settings of the special function switch. When this error and the screen switching error occur at the same time, the error message of this error is not displayed. For information on how to set a special function switch, refer to the following. ➠ GT Designer3 (GOT2000) Screen Design Manual
The Ethernet settings of the monitoring target CNC are not correct.	The specified connection destination setting does not exist. Correct the Ethernet setting of the GOT.
Unable to do drawing. Use the latest OS.	The monitor screen cannot be displayed because the OS version of the CNC C80 is not compatible with the version of the CNC monitor 2. Install the latest OS on the CNC C80.
Communication error	The GOT is under one of the following conditions. • The GOT cannot be connected with the CNC C80. • The GOT is connected with the CNC C80, but the communication between them becomes disabled. Check the connection setting of the GOT, and check that the connection cable is connected correctly. When the communication with the CNC C80 is recovered, a message saying [Connection complete] appears on the screen.

21. NETWORK STATUS DISPLAY

GT27 GT25 GT23 GT21 Soft GOT2000

21.1 Features

The network status display function monitors the network status using a communication unit mounted on the GOT.
You can check the LED status, error status, and others of the network module.



21.2 Specifications

■1. Target communication units

The network status display function monitors the network status using the following communication units.

- 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)
- MELSECNET/H communication unit (GT15-J71LP23-25, GT15-J71BR13)

■2. Applicable hardware

A USB mouse is usable.

21.3 Operations for Display

■1. Starting the network status display

The following describes how to display the network status display screen after the GOT is turned on.

Step 1. Turn on the GOT.

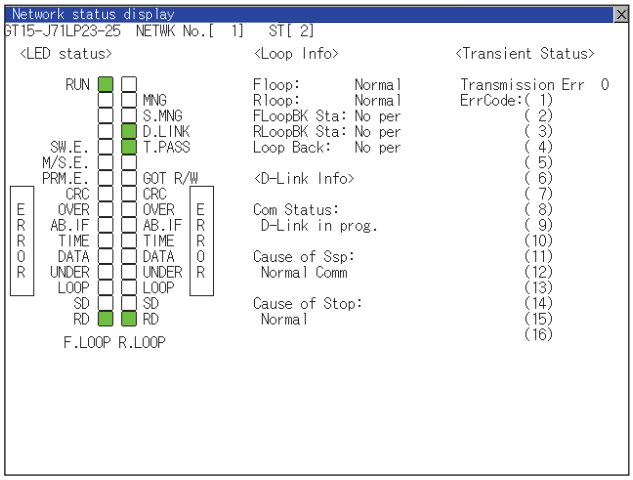
Step 2. Display the network status display screen by one of the following methods.

- Starting from the special function switch (Network status display) set in the project
  For how to set special function switches, refer to the following.

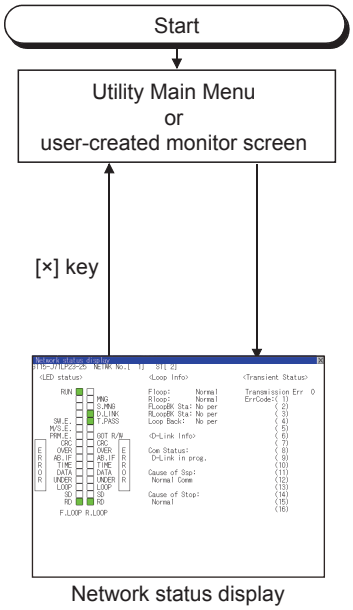
  ➠ GT Designer3 (GOT2000) Screen Design Manual

- Starting from the utility
  In the utility, touch [Monitor] → [Network status display] from the Main Menu.
  For how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)



■2. Changing screens



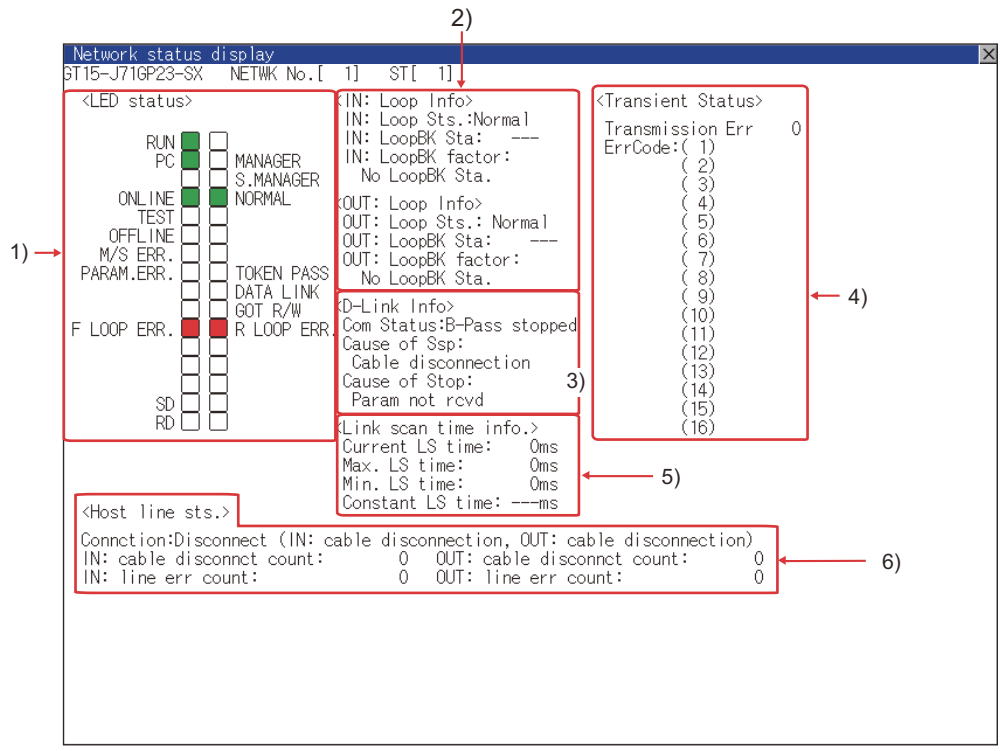
21.4 Display Contents

The following describes the display data of the network status display screen.

■1. CC-Link IE Controller Network communication unit

For the corrective actions for errors, refer to the following.

➠ CC-Link IE Controller Network Reference Manual



1) LED status

Displays the operation status of the CC-Link IE Controller Network communication unit.

➠ (1) LED status

2) Loop information

Displays the loop status of the CC-Link IE Controller Network communication unit.

➠ (2) Loop information

3) Data link information

Displays the data link information of the CC-Link IE Controller Network communication unit, including the communication status, cause of a communication suspension, and cause of a communication stop.

➠ (3) Data link information

4) Transient status

Displays the number of transient transmission errors and the error codes.

➠ (4) Transient status

5) Link scan time information

Displays the link scan time information.

➠ (5) Link scan time information

6) Host station line status

Displays the connection status of the CC-Link IE Controller Network communication unit.

➠ (6) Host station line status

(1) LED status

Item	LED color[*1]	Lit	Not lit	Blink
[RUN]	Green	Operating normally	Hardware failure or WDT error	-
[PC]		CC-Link IE Controller Network established	CC-Link IE Controller Network not established	Communication error in a station, or station numbers duplicated
[ONLINE]		Online mode	Other than online mode	-
[TEST]		Test mode	Other than test mode	
[OFFLINE]		Offline mode	Other than offline mode	
[M/S.ERR]	Red	Duplicate control station or station No. detected	Not detected	
[MANAGER]	Green	Control station in operation	Other than control station	
[S.MANAGER]		Sub-control station in operation	Other than sub-control station	
[NORMAL]		Normal station in operation	Other than normal station	
[PARAM.ERR]	Red	Parameter error detected	Not detected	-
[F LOOP ERR]		IN-side error detected		
[SD]	Green	Data being sent	Data not sent	
[RD]		Data being received	Data not received?	
[TOKEN PASS]		Baton pass being executed	Baton pass not executed	
[DATA LINK]		Data link being executed (Cyclic transmission in progress)	Data link not executed	Data link being executed (Cyclic transmission stopped)
[GOT R/W]		• Hardware test in progress • Offline • Self-loopback test in progress • Internal self-loopback test in progress • Station-to-station test in progress	• Online • Line test in progress	-
[R LOOP ERR]	Red	OUT-side error detected	Not detected	

*1 The monochrome display shows the LED statuses as follows:
- Lit: ■
- Not lit: □

(2) Loop information

Item	Description
[IN: Loop Sts.]	Displays the connection status of the host station on the IN side. • [Normal] • [Rev connect]
[IN: LoopBK Sta]	Displays the station number of the IN-side loopback station. • No loopback executing station: [---] • Station No.: [1] to [120]
[IN: LoopBK factor]	Displays the cause of the loopback. • [No LoopBK Sta.] • [OUT: cable disconnection] • [OUT: connecting a line] • [OUT: wrong cable connection]
[OUT: Loop Sts.]	Displays the connection status of the host station on the OUT side. • [Normal] • [Rev connect]
[OUT: LoopBK Sta]	Displays the number of the station that is executing a loopback on the OUT side. • No loopback executing station: [---] • Station No.: [1] to [120]

Item	Description
[OUT: LoopBK factor]	Displays the loopback factor on the OUT side. • [No LoopBK Sta.] • [IN: cable disconnection] • [IN: connecting a line] • [IN: wrong cable connection]

(3) Data link information

Item	Description
[Com Status]	Displays the communication (Data link) status of the host station. • [D-Link in prog.] • [D-Link stopped] • [B-Pass exec] • [B-Pass stopped] • [Testing Offline] • [Offline]
[Cause of Ssp]	Displays the cause for which the communication (Transient transmission) of the host station is disabled. • [Normal Comm] • [Cable disconnection] • [Wrong cable connection] • [Checking cable IN/OUT] • [Disconnecting/returning to system] • [Offline] • [Offline test] • [Self-check mode]
[Cause of Stop]	Displays the cause for which the data link (Cyclic transmission) of the host station is disabled. • [Normal Comm] • [StopOrder] • [D-Link observation timer time up] • [Testing Line] • [Param not rcvd] • [Host out of range] • [Host reservation] • [Dup Host No.] • [Dup CtrlSta] • [Sta.No. not set] • [Invalid Network No.] • [Param Err] • [Params in comm.] • [CPU stop error] • [CPU pwr stp err]

(4) Transient status

Item	Description
[Transmission Err]	Displays the number of transient transmission errors.
[ErrCode]	A history of 16 errors is displayed in 16 rows, starting from the latest one.

(5) Link scan time information

Item	Description
[Current LS time]	Displays the current link scan time.
[Max. LS time]	Displays the maximum link scan time.
[Min. LS time]	Displays the minimum link scan time.
[Constant LS time]	Displays the link scan time set in the parameter.

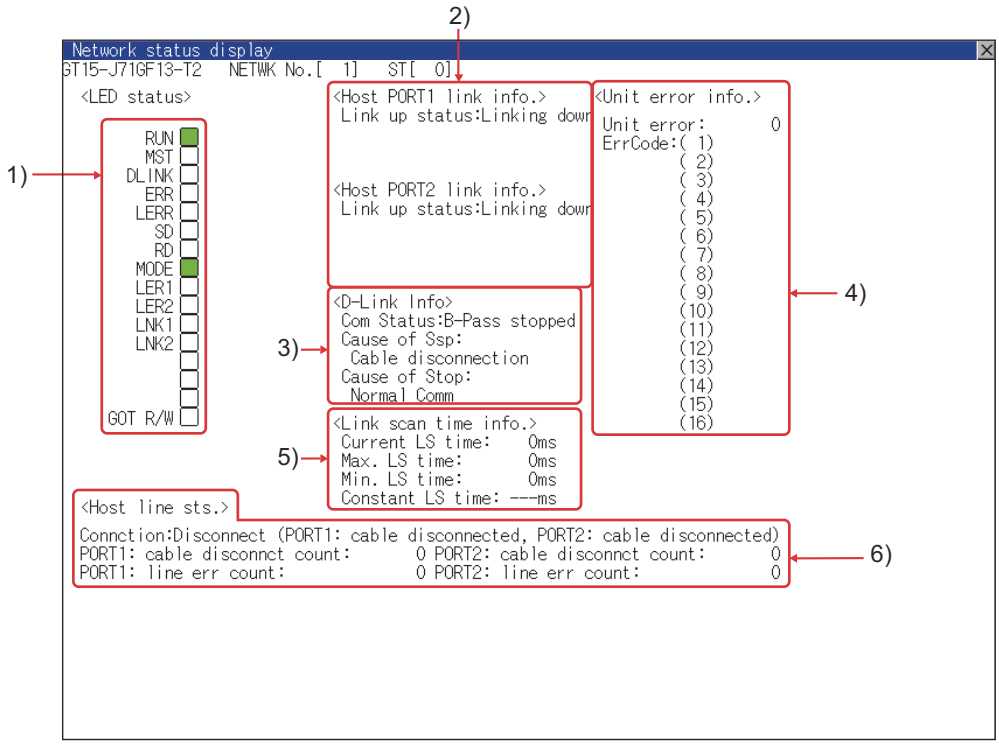
(6) Host station line status

Item	Description
[Connction]	Displays the connection status of the host station. • [Normal] • [IN: Loop Back (OUT: cable disconnection)] • [IN: Loop Back (OUT: connecting a line)] • [IN: Loop Back (OUT: wrong cable connection)] • [OUT: Loop Back (IN: cable disconnection)] • [OUT: Loop Back (IN: connecting a line)] • [OUT: Loop Back (IN: wrong cable connection)] • [Disconnect (IN: cable disconnection, OUT: cable disconnection)] • [Disconnect (IN: cable disconnection, OUT: connecting a line)] • [Disconnect (IN: cable disconnection, OUT: wrong cable connection)] • [Disconnect (IN: connecting a line, OUT: cable disconnection)] • [Disconnect (IN: connecting a line, OUT: connecting a line)] • [Disconnect (IN: connecting a line, OUT: wrong cable connection)] • [Disconnect (IN: wrong cable connection, OUT: cable disconnection)] • [Disconnect (IN: wrong cable connection, OUT: connecting a line)] • [Disconnect (IN: wrong cable connction, OUT: wrong cable connction)]
[IN: cable disconnct count]	• [0]: No error • [1] or larger: Number of accumulated errors
[IN: line err count]	
[OUT: cable disconnct count]	
[OUT: line err count]	

■2. CC-Link IE Field Network communication unit

For the corrective actions for errors, refer to the following.

➠ User's manual of the CC-Link IE Field Network master/local module used



1) LED status

Displays the operation status of the CC-Link IE Field Network communication unit.

➠ (1) LED status

2) Link information

Displays the link status of the CC-Link IE Field Network communication unit.

➠ (2) Link information

3) Data link information

Displays the data link information of the CC-Link IE Field Network communication unit, including the communication status, cause of a communication suspension, and cause of a communication stop.

➠ (3) Data link information

4) Unit error information

Displays the number of unit errors and the error codes.

➠ (4) Unit error information

5) Link scan time information

Displays the link scan time information.

➠ (5) Link scan time information

6) Host station line status

Displays the connection status of the CC-Link IE Field Network communication unit.

➠ (6) Host station line status

(1) LED status

Item	LED color*1	Lit	Not lit	Blink
[RUN]	Green	Operating normally	• Hardware failure • WDT error occurred • Communication unit being reset	-
[MST]		Operating as master station	Operating as a station other than master station	
[DLINK]		• For online mode: Data link in progress • For test mode: Test completed	• For online mode: Data link stopped • For test mode: Test being executed	Data link being executed
[ERR]	Red	Communication error occurred	• Normal • Unit being reset	Data link faulty station detected
[LERR]		Receive data error	Receive data normal	-
[SD]	Green	Data being sent	Data not sent	
[RD]		Data being received	Data not received	
[MODE]		Online mode	Offline mode	Test mode
[LER1]	Red	PORT1 side receive frame error	PORT1 side receive frame normal	-
[LER2]		PORT2 side receive frame error	PORT2 side receive frame normal	
[LINK1]	Green	PORT1 side linking up	PORT1 side linking down	
[LINK2]		PORT2 side linking up	PORT2 side linking down	
[GOT R/W]		Access from GOT	No access from GOT	

*1 The monochrome display shows the LED statuses as follows:
- Lit: ■
- Not lit: □

(2) Link information

Item	Description
[Host PORT1 link info.]	Displays the link up status of the host station PORT1 side. • [Linking up] • [Linking down]
[Host PORT2 link info.]	Displays the link up status of the host station PORT2 side. • [Linking up] • [Linking down]

(3) Data link information

Item	Description
[Com Status]	Displays the communication (Data link) status of the host station. • [D-Link in prog.] • [D-Link stopped] • [B-Pass exec] • [B-Pass stopped] • [Testing Offline] • [Offline]
[Cause of Ssp]	Displays the cause for which the communication (Transient transmission) of the host station is disabled. • [Normal Comm] • [Cable disconnection] • [Disconnecting/returning to system] • [Offline] • [Offline test - H/W test] • [Offline test - self-loopback test] • [Offline test - shipping test]
[Cause of Stop]	Displays the cause for which the data link (Cyclic transmission) of the host station is disabled. • [Normal Comm] • [StopOrder] • [D-Link observation timer time up] • [Slave stations do not exist] • [Param not rcvd] • [Host out of range] • [Dup Host No.] • [Dup Master Sta.: Master detected] • [Sta.No. not set] • [Param Err(Other)] • [Params in comm.] • [CPU stop error] • [Invalid ring configuration]

(4) Unit error information

Item	Description
[Unit error]	Displays the number of unit errors.
[ErrCode]	A history of 16 errors is displayed in 16 rows, starting from the latest one.

(5) Link scan time information

Item	Description
[Current LS time]	Displays the current link scan time.
[Max. LS time]	Displays the maximum link scan time.
[Min. LS time]	Displays the minimum link scan time.
[Constant LS time]	Displays the link scan time set in the parameter.

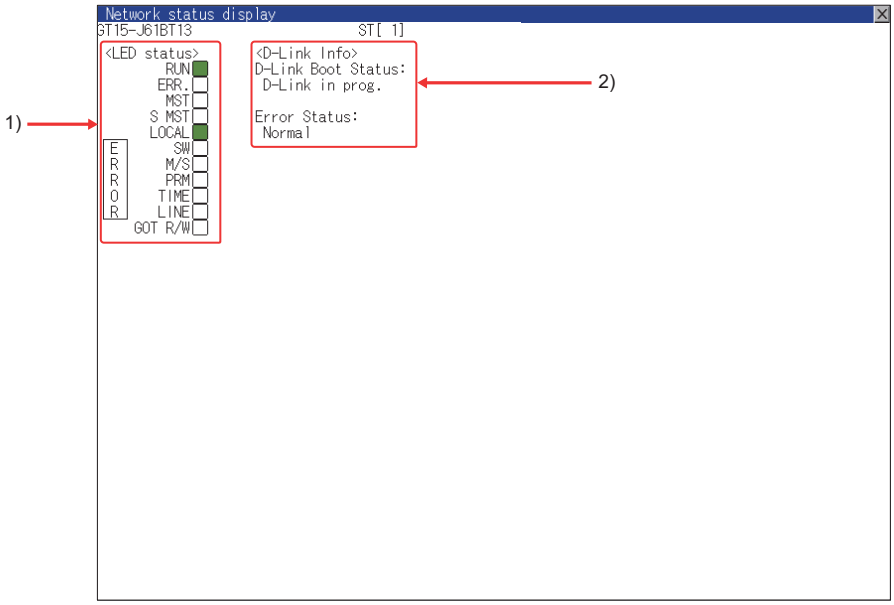
(6) Host station line status

Item	Description
[Connction]	Displays the connection status of the host station. • [Normal (PORT1: communicating, PORT2: communicating)] • [Normal (PORT1: communicating, PORT2: cable disconnected)] • [Normal (PORT1: in loopBK communication, PORT2 cable disconnected)] • [Normal (PORT1: cable disconnected, PORT2: communicating)] • [Normal (PORT1: cable disconnected, PORT2: in loopBK communication)] • [Disconnect (PORT1: cable disconnected, PORT2: cable disconnected)] • [Disconnect (PORT1: cable disconnected, PORT2: connecting a line)] • [Disconnect (PORT1: connecting a line, PORT2: cable disconnected)] • [Disconnect (PORT1: connecting a line, PORT2: connecting a line)]
[PORT1: cable disconnct count]	• [0]: No error • [1] or larger: Number of accumulated errors
[PORT1: line err count]	
[PORT2: cable disconnct count]	
[PORT2: line err count]	

■3. CC-Link communication unit

For the corrective actions for errors, refer to the following.

➠ Displays the cause for which the data link (Cyclic transmission) of the host station is disabled.



1) LED status

Displays the operation status of the CC-Link communication unit (GT15-J61BT13).

➠ (1) LED status

2) Data link information

Displays the data link startup status and errors of the CC-Link communication unit (GT15-J61BT13).

➠ (2) Data link information

(1) LED status

Item	LED color*1	Lit	Not lit	Blink
[RUN]	Green	Operating normally	• WDT error • Unit being reset	-
[ERR.]	Red	All station communication error	• No communication error • Unit being reset	Communication error in a station, or station numbers duplicated
[TIME]		• Cable disconnection • No responses from all stations due to transmission path affected by noise	Responses from all stations	-
[MST]	Green	Operating as master station	Operating as a station other than master station	
[SW]	Red	Switch setting error	No switch setting error	
[LINE]		Cable disconnection error	No cable disconnection error	
[S MST]	Green	Operating as standby master station	Operating as a station other than standby master station	
[M/S]	Red	Master station duplication error	No master station duplication error	
[LOCAL]	Green	Operating as local station	Operating as a station other than local station	
[PRM]	Red	Parameter error	No parameter error	
[GOT R/W]	Green	Access from GOT	No access from GOT	

*1 The monochrome display shows the LED statuses as follows:

- Lit: ■
- Not lit: □

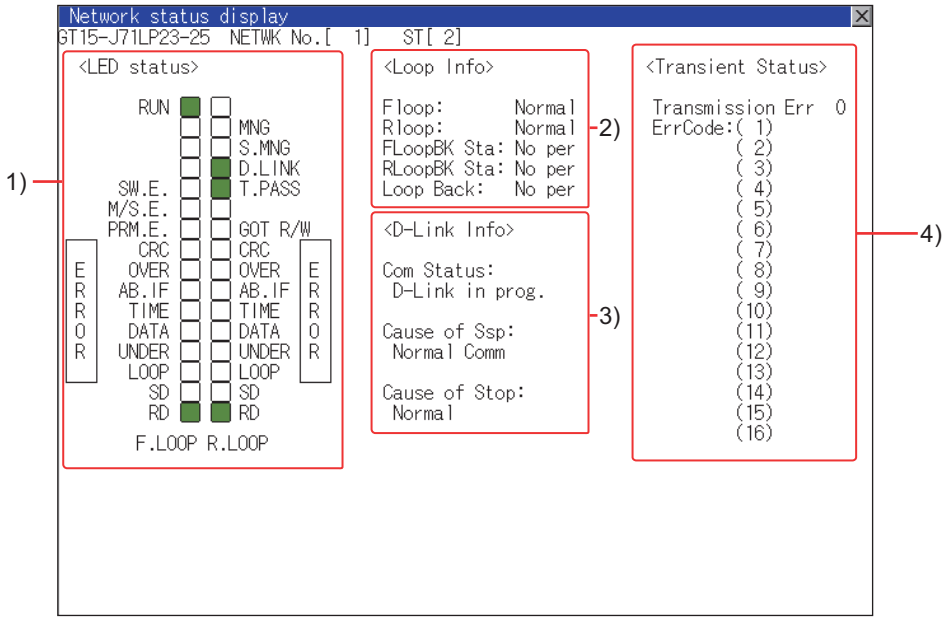
(2) Data link information

Item	Description
[D-Link Boot Status]	Displays the data link startup status. • [D-Link in prog.]: Data link being executed • [D-Link Offline]: Data link stopped • [Initialize]: Set to the initial status • [Parameter wait]: Parameter not received • [Disconnect (No Polling)]: In cut-off status with no inquiry from master station • [Disconnect (Line Err)]: In cut-off status due to line error • [Disconnect (Other)]: In cut-off status due to other causes • [Testing Line]: Line test being executed • [Testing Pram Setup]: Parameter setting test being executed from master station • [Auto Reconnecting]: Return processing being executed automatically • [Reset. in prgr.]: CC-Link communication unit being reset (GOT reset status)
[Error Status]	Displays the status of the current error. • [Normal]: Normal status • [Invalid TransPath]: Transmission path error detected • [Invalid Parameter]: Parameter error detected • [CRC Error]: Receive data error detected • [Time Out Error]: Timeout error detected in data reception • [Abort Error]: Error detected in data communication • [Invalid Setup]: Invalid station number, station type, transmission speed, or mode setting detected • [Other Abnormality]: Error due to some other cause detected

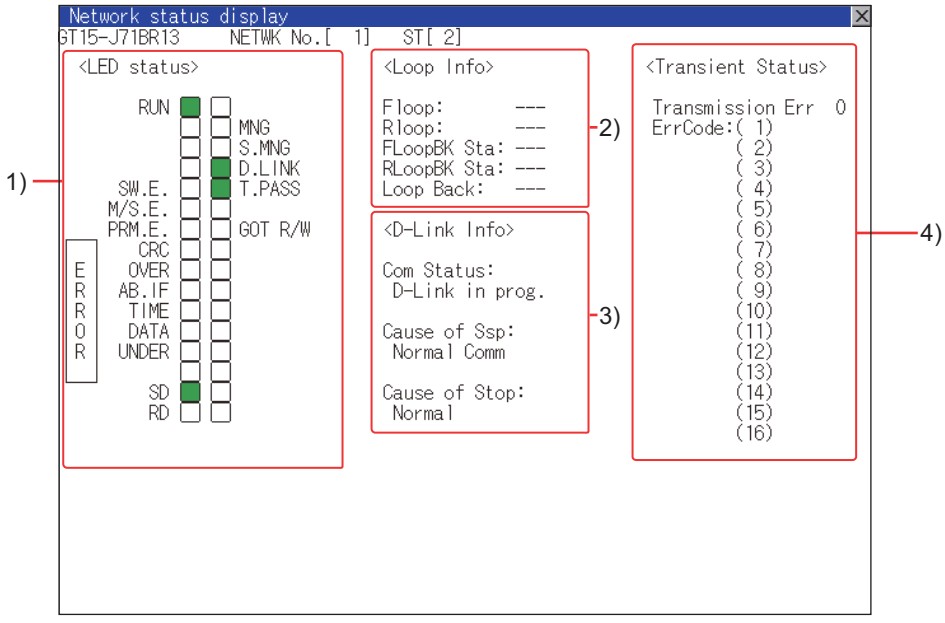
■4. MELSECNET/H communication unit

For the corrective actions for errors, refer to the following.

➠ Reference manual of the MELSECNET/H network system (PLC to PLC network) used



GT15-J71LP23-25



GT15-J71BR13

1) LED status

Displays the operation status of the MELSECNET/H communication unit.

➠ (1) LED status

2) Loop information

Displays the loop status of the MELSECNET/H communication unit.

➠ (2) Loop information

3) Data link information

Displays the data link information of the MELSECNET/H communication unit, including the communication status, cause of a communication suspension, and cause of a communication stop.

➠ (3) Data link information

4) Transient status

Displays the number of transient transmission errors and the error codes.

➠ (4) Transient status

(1) LED status

Item	LED color*1	Lit	Not lit
[RUN]	Green	Data link normal	Data link error
[MNG]		Operating as control station	Operating as a station other than control station
[S.MNG]		Operating as sub-control station	Operating as a station other than sub-control station
[D.LINK]		Data link being executed	Data link stopped
[T.PASS]		Baton pass being executed	Baton pass not executed
[SW.E.]		Switch setting error	Normal
[M/S.E.]		Station No. or control station duplication error	
[PRM.E.]		Parameter error	
[GOT R/W]		Access from GOT	No access from GOT
[CRC]	Red	Code check error	Normal
[OVER]		Data entry delay error	
[AB.IF]		All receive data: 1	
[TIME]		Time limit exceeded	
[DATA]		Receive data error	
[UNDER]		Send data error	
[LOOP]		Forward/reverse loop receive error	
[SD]	Green	Data being sent	-
[RD]		Data being received	-

*1 The monochrome display shows the LED statuses as follows:
- Lit: ■
- Not lit: □

(2) Loop information

Item	Description
[F loop]*1	Displays the status of the F loop. • [Normal] • [NG]
[R loop]*1	Displays the status of the R loop. • [Normal] • [NG]
[FLoopBK Sta]*1	Displays the F loopback execution status. • [No per] • Number of the loopback executing station
[RLoopBK Sta]*1	Displays the R loopback execution status. • [No per] • Number of the loopback executing station
[Loop Back]*1	Displays the loopback status. • [No per]: Loop normal, forward loop error, reverse loop error, data link not possible • [Perf]: During loopback

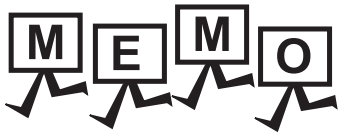
*1 For the GT15-J71BR13, [---] is displayed.

(3) Data link information

Item	Description
[Com Status]	Displays the communication (Data link) status of the host station. • [D-Link in prog.]: Data link in progress • [D-Link Stop(A)ss]: Cyclic transmission stopped from other station • [D-Link Stop (H)]: Cyclic transmission stopped by host station • [B-Pass exec (No Area)]: Host B/W send no allocation • [B-Pass exec (Param Err)]: Error in host parameters • [B-Pass exec (Param unreceived)]: Common parameters not received • [Disconnect (No B-Pass)]: Station numbers duplicated, cable not connected • [Disconnect (Line Err)]: Cable not connected • [Testing]: Testing online/offline • [Reset. in prgr.]: Hardware failure
[Cause of Ssp]	Displays the cause for which the communication (Transient transmission) of the host station is disabled. • [Normal Comm]: Communicating normally • [Offline]: Offline • [Offline test]: Testing offline • [Initialize]: Error (error code: F101, F102, F105) • [Change Ctrl Sta]: Error (error code: F104, F106) • [Testing Online]: Error (error code: F103, F109, F10A) • [Baton Missing]: Error (error code: F107) • [Baton Duplicated]: Error (error code: F108) • [Dup Sta No]: Error (error code: F10B) • [Dup Ctrl Sta]: Error (error code: F10C) • [Rcv Retry Err]: Error (error code: F10E) • [Send Retry Err]: Error (error code: F10F) • [Time Out Err]: Error (error code: F110) • [Abnormal Line]: Error (error code: F112) • [Disconnection]: Error (error code: F11B) • [No Own Sta Baton]: Error (error code: F11F) • [Other (error code)]: Error (error code: displayed)
[Cause of Stop]	Displays the cause for which the data link (Cyclic transmission) of the host station is disabled. • [Normal]: Communicating normally • [StopOrder]: Cyclic transmission of all stations stopped from host station or other stations • [No Shared Param]: Parameters not received • [Bad Shared Param]: Set parameter error • [Bad Self Sta CPU]: A medium/critical error occurred in the host CPU • [Com Aborted]: Host data link error occurred

(4) Transient status

Item	Description
[Transmission Err]	Displays the number of transient transmission errors.
[ErrCode]	A history of 16 errors is displayed in 16 rows, starting from the latest one.

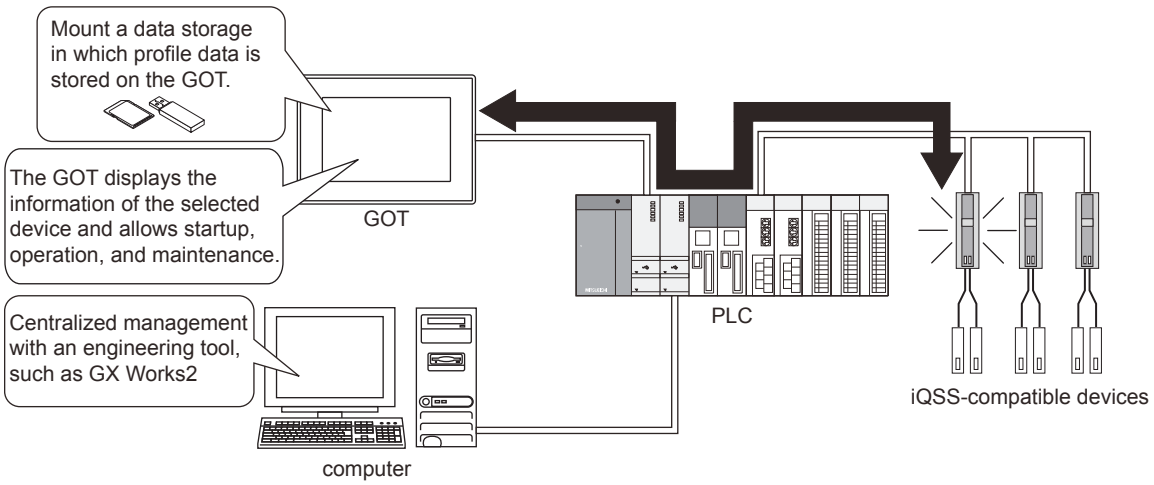

MEMO

22. iQSS UTILITY

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

22.1 Features

With the iQSS utility function, the GOT can display information of the selected iQSS-compatible device by mounting a data storage having profile data of iQSS-compatible devices on the GOT.
You can also start, operate, and maintain the selected iQSS-compatible devices.



22.2 Specifications

22.2.1 System configuration

This section explains the GOTs that support the iQSS utility, the target PLCs, and the connection types between the GOT and PLC.
For connection type settings and precautions regarding the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

For the connection between iQSS-compatible devices and a PLC, refer to the following.

➠ MELSEC-Q/L AnyWireASLINK Master Module User's Manual

■1. Target controller

Controller	
RCPU	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R08PCPU, R16PCPU, R32PCPU, R120PCPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU
QCPU (Q mode)	Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU, Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU, Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, Q26UDPVCPU
LCPU	L02CPU, L06CPU, L26CPU, L26CPU-BT, L02CPU-P, L06CPU-P, L26CPU-P, L26CPU-PBT, L02SCPU, L02SCPU-P

■2. Connection type

This function can be used in the following connection types.
○: Available, ×: Unavailable

Function		Connection type between the GOT and controller							
Name	Description	Bus connection *1	Direct CPU connection *2	Serial communication connection	Ethernet connection *3	MELSECNET/H connection*1, MELSECNET/10 connection*1*4	CC-Link IE Controller connection*1*5, CC-Link IE Field connection*6*7	CC-Link connection	
								ID*8	G4*9
iQSS utility	Displaying the status of iQSS-compatible devices	○	○	○	○	○	○	○	○
	Changing parameters								

*1 The RCPU and LCPU do not support the connection type.
*2 When connecting the GOT with the LCPU, use L6ADP-R2.
*3 L02SCPU or L02SCPU-P cannot be used.
*4 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.
*5 This connection type indicates the CC-Link IE Controller Network connection.
*6 This connection type indicates the CC-Link IE Field Network connection.
*7 This connection type cannot be used to connect a Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU or Q25HCPU.
*8 This connection type indicates the CC-Link connection (Intelligent device station).
*9 This connection type indicates the CC-Link connection (via G4).

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the iQSS utility to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Required hardware

A data storage is required to use the iQSS utility.

■5. Applicable hardware

A USB mouse is usable.

■6. Applicable non-Mitsubishi Electric equipment

The iQSS utility supports the following devices.
For the details of each device, refer to the manual of the device used.

(1) AnyWireASLINK

The AnyWireASLINK equipment manufactured by Anywire Corporation is applicable to the iQSS untility.
The following lists the supported devices and functions.
○: Available, ×: Unavailable

Type		Model	Function		
			Acquiring the device list	Monitoring the device	Reading/writing parameters from/to the device
ASLINKER (Input)		B280SB-02U-C1220, B280SB-02US-C1220, B281SB-02U-CC20, B281SB-02US-CC20, B298SB-02U-M12, B298SB-02US-M12, BL287SB-02F-CC20, BL287SB-02FS-CC20	○	○	○
ASLINKER (Output)		B280PB-02U-C1220, B280PB-02US-C1220, B281PB-02U-CC20, B281PB-02US-CC20, B298PB-02U-M12, B298PB-02US-M12, BL287PB-02F-CC20, BL287PB-02FS-CC20	○	○	○
ASLINKER (I/O combined)		B280XB-02U-C1220, B280XB-02US-C1220, B281XB-02U-CC20, B281XB-02US-CC20, B298XB-02U-M12, B298XB-02US-M12, BL287XB-02F-CC20, BL287XB-02FS-CC20	○	○	○
ASLINKAMP (Input)	Fiber	B289SB-01AF-CAM20, B289SB-01AF-CAS	○	○	○
	Proximity	B289SB-01AK-CAM20, B289SB-01AK-CAS	○	○	○
	Photo electronic	B289SB-01AP-CAM20, B289SB-01AP-CAS	○	○	○
ASLINKSENSOR (Input)		B283SB-01-1KC, B283SB-01-1KR, B283SB-01-1K	○	○	○
ASLINKSENSOR (Output)		B283SB-01-1KP	○	○	○
ASLINKTERMINAL (Input)		BL296SB-08F-20, BL296SB-08FS-20	○	○	○
ASLINKTERMINAL (Output)		BL296PB-08F-20, BL296PB-08FS-20	○	○	○
ASLINKTERMINAL (I/O combined)		BL296XB-08F-20, BL296XB-08FS-20	○	○	○

■7. Multiple-language display

For profile data that contains information in multiple languages, multiple-language display is supported.
Some parts of profile data support multiple languages and some parts do not.
To the parts that do not support multiple languages, the system language of the GOT is applied.
When the data storage has no profile data supporting multiple languages, the language is not switched.
For the details of system language switching, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

22.2.2 Access range

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

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

22.2.3 Precautions

■1. Precautions for the device list information screen and parameter information screen

While the following operations are in progress, do not perform operations that use the control signal (Y signal).

- Updating information by using the [Update list] key on the device list information screen
- Reading or writing parameters by using the [Read parameters] key or [Write parameters] key on the parameter information screen

22.3 Preparing profile data

To display iQSS-compatible devices with the iQSS utility, store profile data in a data storage with GT Designer3 and mount the storage on the GOT.
For information on how to store profile data, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

22.4 Operations for Display

This section explains the procedure to display the operation screen of the iQSS utility.

Step 1. Mount a data storage in which profile data is stored on the GOT.

Step 2. Turn on the GOT.

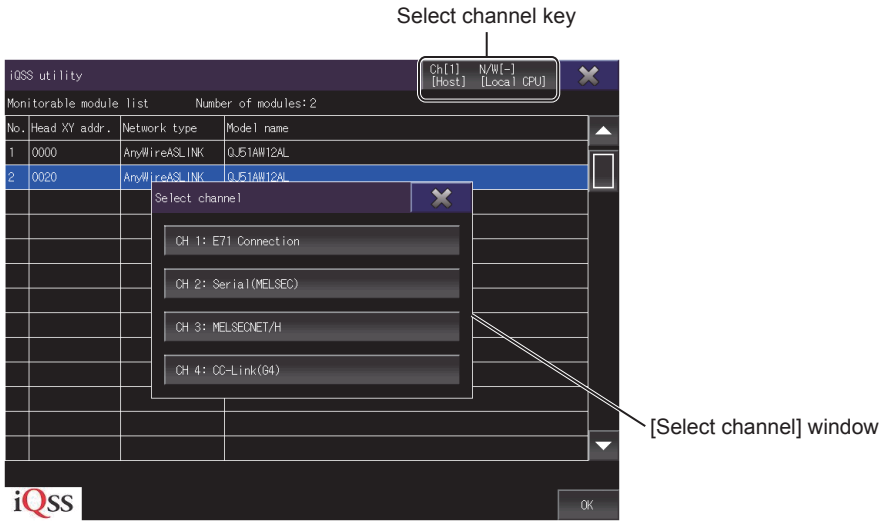
Step 3. Display the iQSS utility screen by one of the following methods.

- Starting from the special function switch (iQSS utility) set in the project
  For information on how to set special function switches, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  In the utility, touch [Monitor] → [iQSS utility] from the main menu.
  For information on how to display the utility, refer to the following.

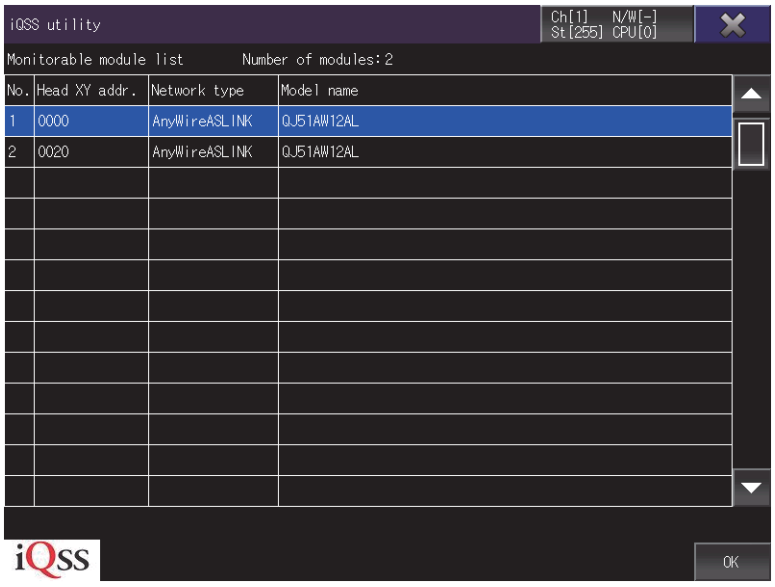
  ➠ GOT2000 Series User's Manual (Utility)

Step 4. The [Select channel] window appears only at the first startup of the iQSS utility.
Set the channel number of the PLC connected to the GOT.
When the channel number is not set, touching the [×] key closes the [Select channel] window and sets the channel number to [1].

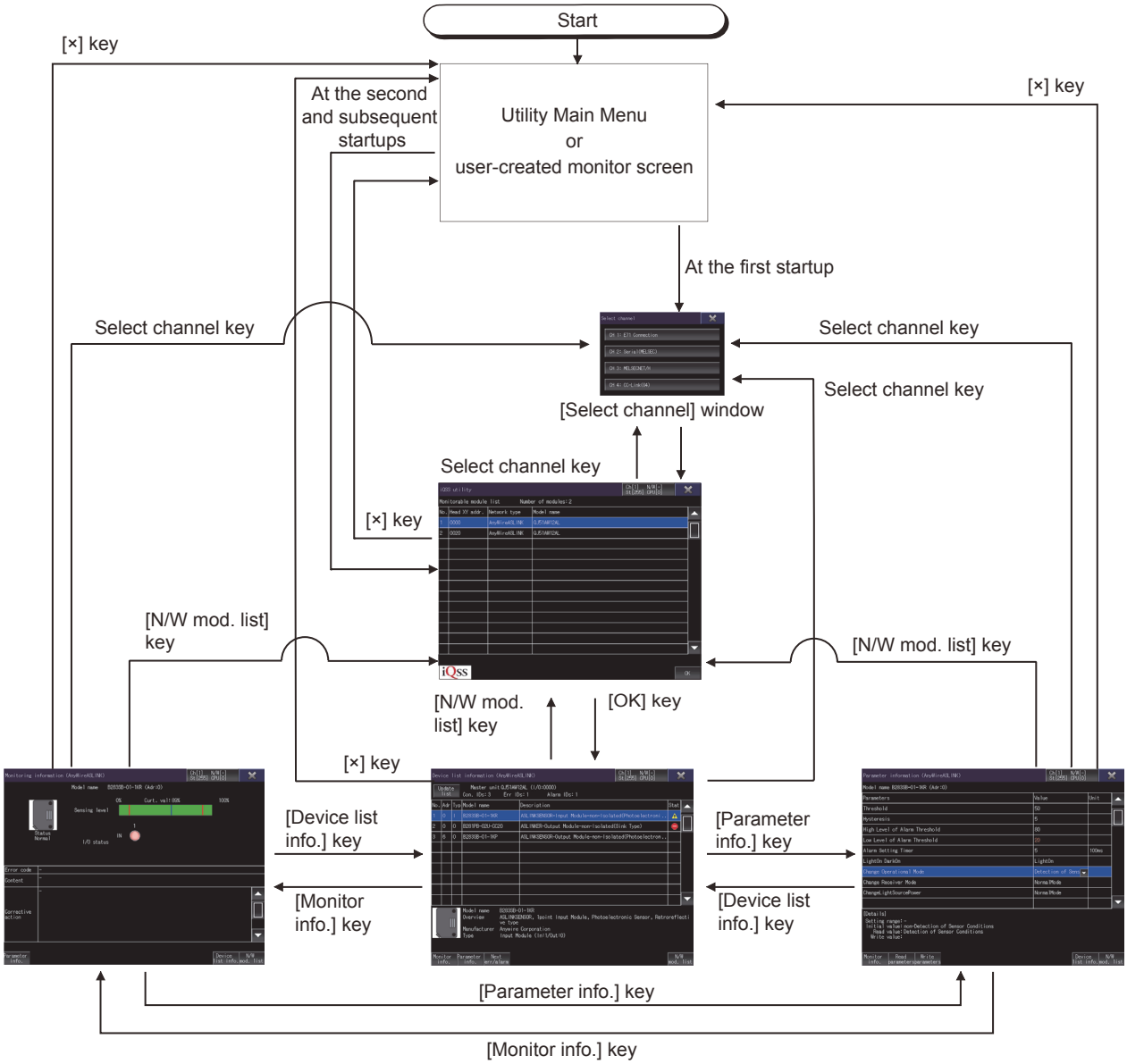


Step 5. The iQSS utility screen appears.
To change the connection destination, touch the select channel key on the iQSS utility screen.

➠ 22.5 Operating Procedure



22.4.1 Screen transition



22.5 Operating Procedure

This section explains screen operations for the iQSS utility.
The display screen of the iQSS utility differs depending on the GOT used.

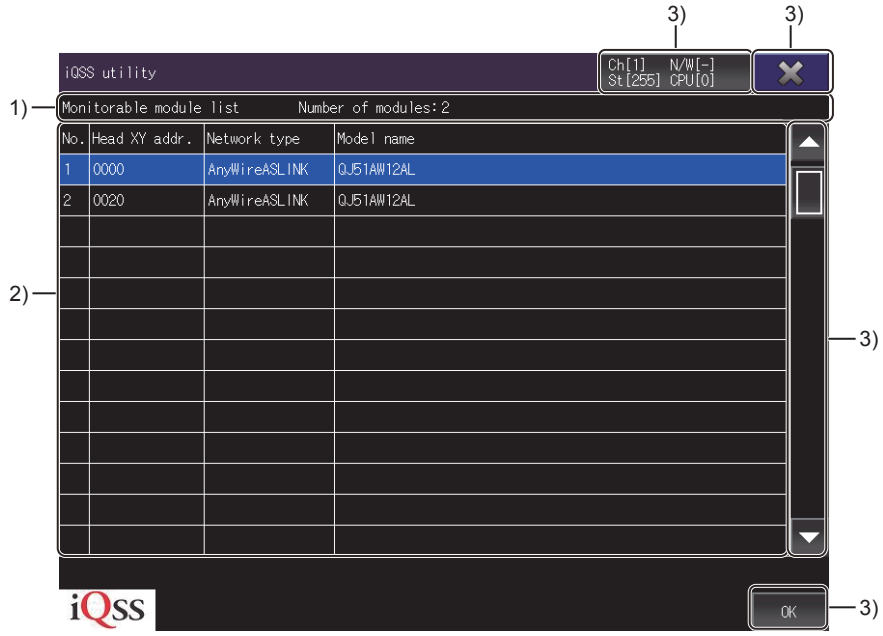
22.5.1 iQSS utility screen

This section explains the structure of the screen and the common operations when the iQSS utility is executed.

■1. Display contents and key functions

The following explains the structure of the system configuration screen and the function of the keys displayed on the screen after the iQSS utility is started.

(1) Displayed contents



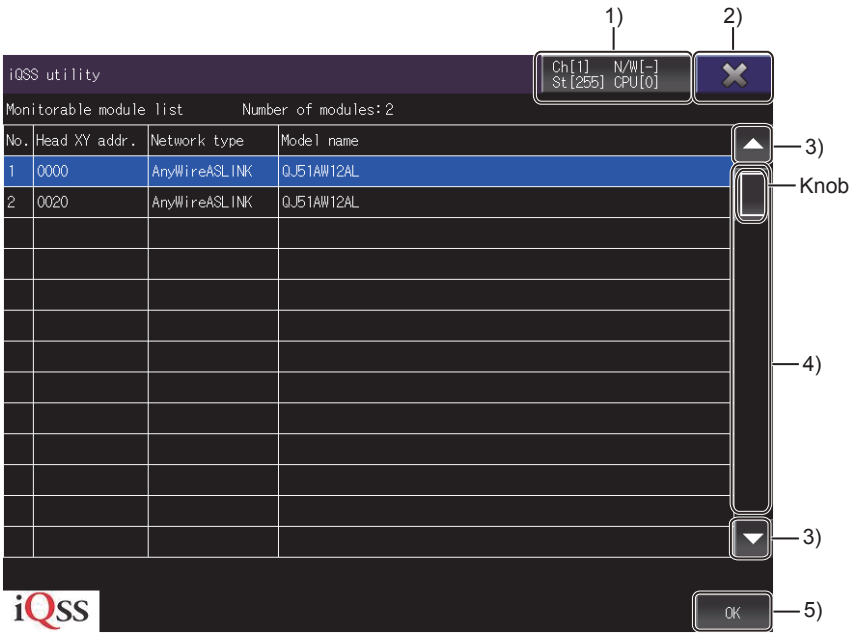
1) Title display area
Displays the title and the number of modules on the connection destination.

2) Module list display area
Lists modules that can be monitored.

3) Touch key
The keys used for the operations on the iQSS utility screen

(2) Key functions

The following shows the functions of the operation keys on the iQSS utility screen.



1) Select channel key

Displays the [Select channel] window.

2) [×] key

Exits the iQSS utility.

3) Scroll key

Scrolls the contents in the list up or down by one item.

4) Scroll bar

Touch an area above or below the knob to scroll one page up or down.
You can also scroll the page by sliding the knob.

5) [OK] key

Displays the device list information screen of the selected device.

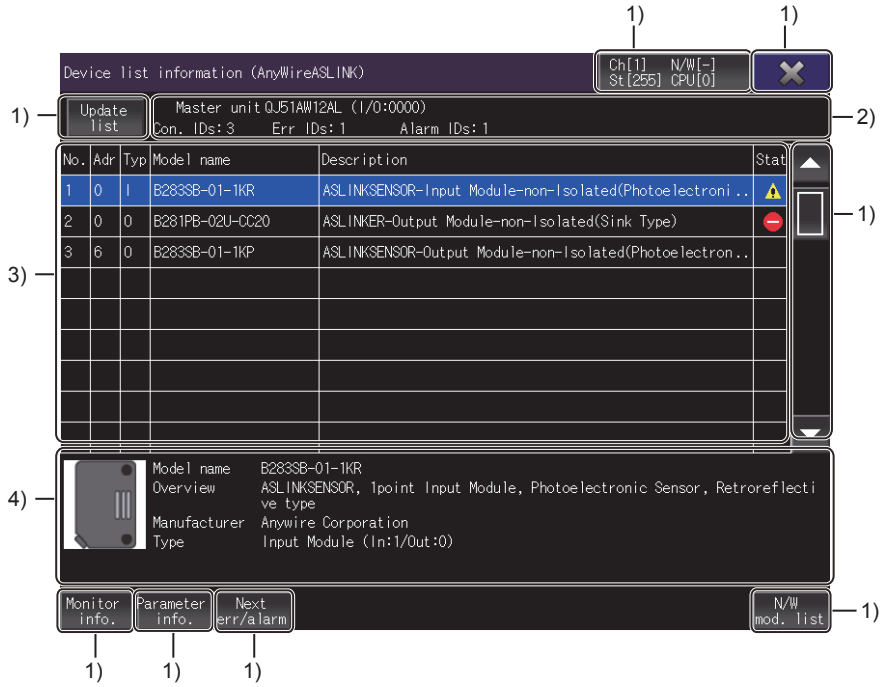
22.5.2 Device list information screen

This section explains the structure of the screen and the common operations on the device list information screen.

■1. Display contents and key functions

The following explains the display data of the device list information screen and the functions of the keys displayed on the screen.

(1) Displayed contents



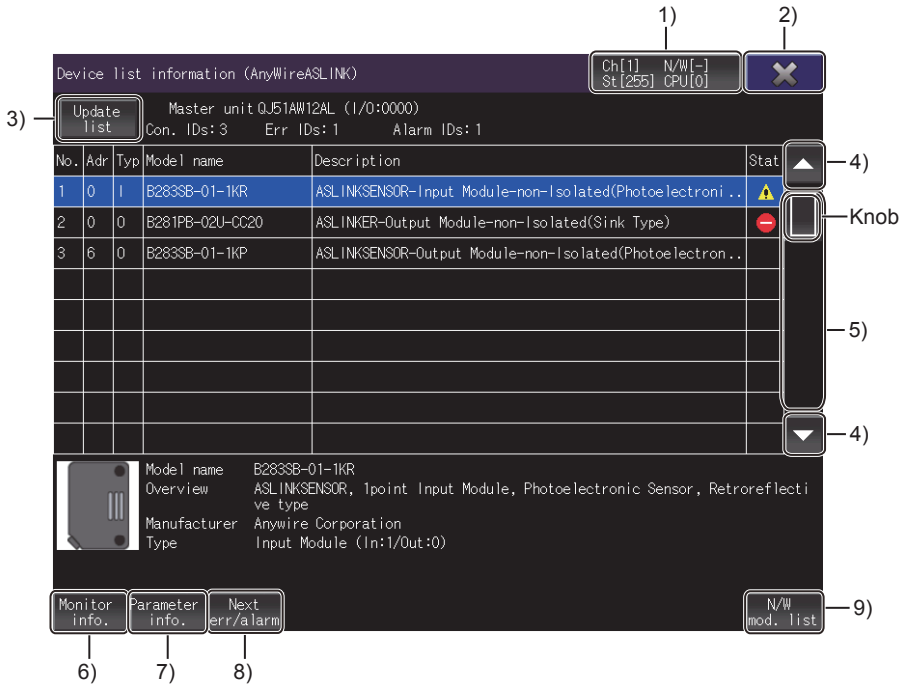
1) Touch key
The keys used for the operations on the device list information screen

2) Network information display area
Displays the network information of the connection destination.

3) Device list display area
Lists devices that can be monitored.

4) Selected device information display area
Displays the information of the device selected in the device list display area.

(2) Key functions



1) Select channel key
Displays the [Select channel] window.

2) [×] key
Exits the iQSS utility.

3) [Update list] key
Updates the information in the device list display area.

4) Scroll key
Scrolls the contents in the list up or down by one item.

5) Scroll bar
Touch an area above or below the knob to scroll one page up or down.
You can also scroll the page by sliding the knob.

6) [Monitor info.] key
Switches the screen to the monitoring information screen.

7) [Parameter info.] key
Switches the screen to the parameter information screen.

8) [Next err/alarm] key
Moves the cursor to the device in which an error or alarm has occurred.

9) [N/W mod. list] key
Switches the screen to the iQSS utility screen.

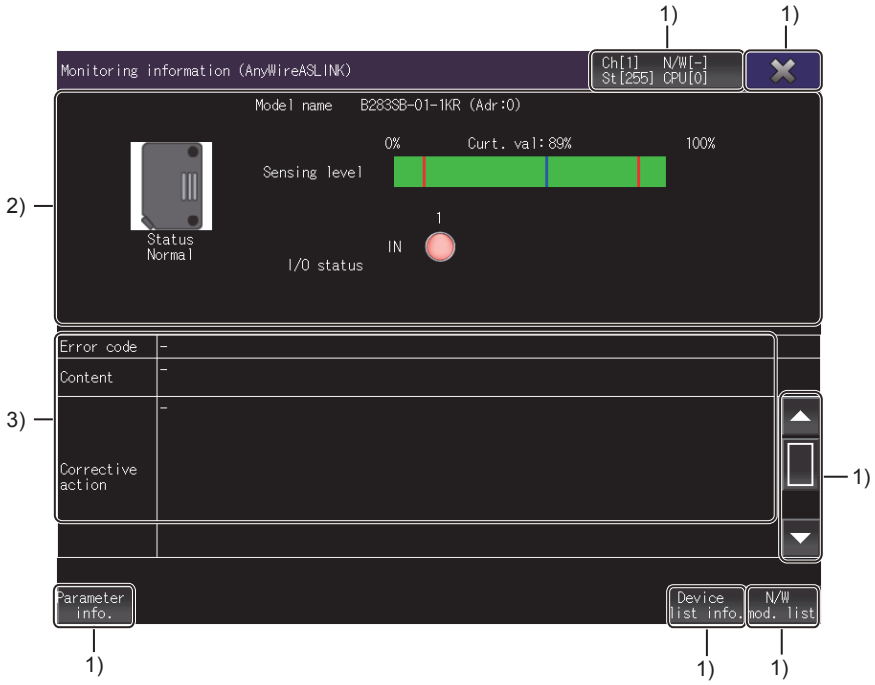
22.5.3 Monitoring information screen

This section explains the structure of the screen and the common operations on the monitoring information screen.

■1. Display contents and key functions

The following explains the display data of the monitoring information screen and the functions of the keys displayed on the screen.

(1) Displayed contents



1) Touch key
The keys used for the operations on the monitoring information screen

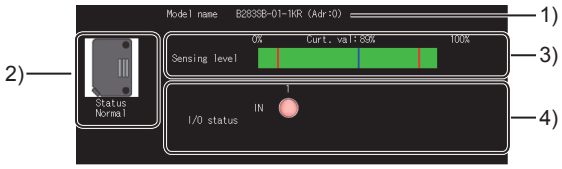
2) Monitored device status display area
Displays the status of the device being monitored.

➠ (a) Monitored device status display area

3) Error status display area
Displays the error code, content, and corrective action if an error occurs in the device being monitored.

(a) Monitored device status display area

The following explains the display data of the monitored device status display area and the functions of the keys displayed in the area.



1) [Model name]

Displays the model of the device being monitored.

2) [Status]

Displays the status of the device being monitored.

The following shows the items displayed in [Status].

If multiple states are detected, the state having the highest priority is displayed.

Displayed item	Priority
[Slave module voltage drop]	High
[Sensing level drop]	
[I/O disconnection]	↓
[I/O short-circuit]	
[I/O volt. drop]	Low
[Normal]	

3) [Sensing level]

Displays the current sensing level in a numerical value and bar graph when an ASLINKAMP or ASLINKSENSOR is selected on the device list information screen.

In the bar graph, the current value is always refreshed while the monitoring information screen is being displayed and the left side from the current value is filled in green.

When the sensing level value is outside the range, [0%] is displayed.

4) [I/O status]

Displays the I/O status of the device being monitored.

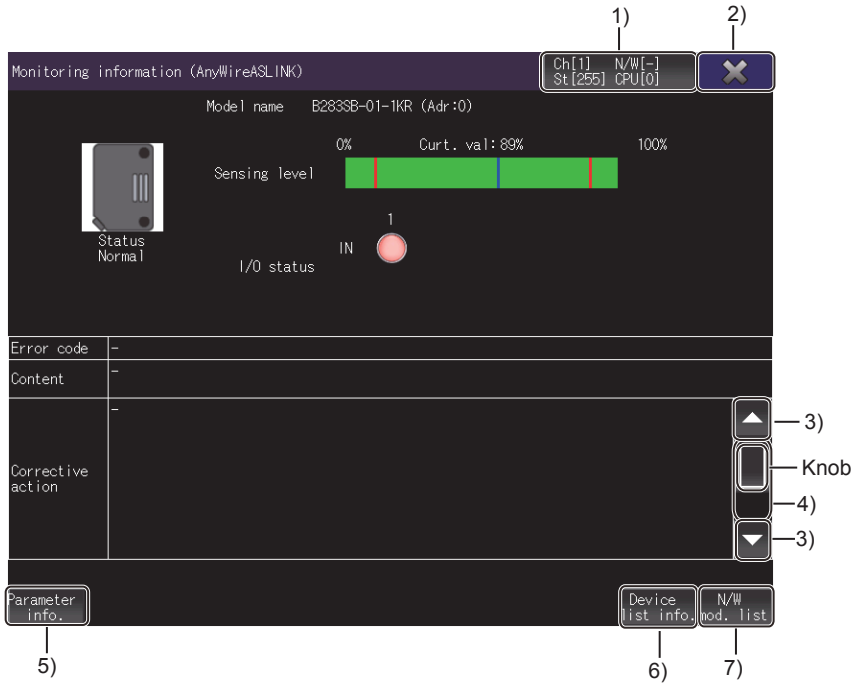
When the device being monitored has no I/O, no item is displayed.

For a device that has nine I/Os or more, touching the left key or the right key scrolls the display left or right eight I/Os.

For a device that has eight I/Os or less, the left key and the right key do not appear.

(2) Key functions

The following shows the functions of the operation keys on the monitoring information screen.



1) Select channel key

Displays the [Select channel] window.

2) [×] key

Exits the iQSS utility.

3) Scroll key

Scrolls the contents in the list up or down by one item.

4) Scroll bar

Touch an area above or below the knob to scroll one page up or down.
You can also scroll the page by sliding the knob.

5) [Parameter info.] key

Switches the screen to the parameter information screen.

6) [Device list info.] key

Switches the screen to the device list information screen.

7) [N/W mod. list] key

Switches the screen to the iQSS utility screen.

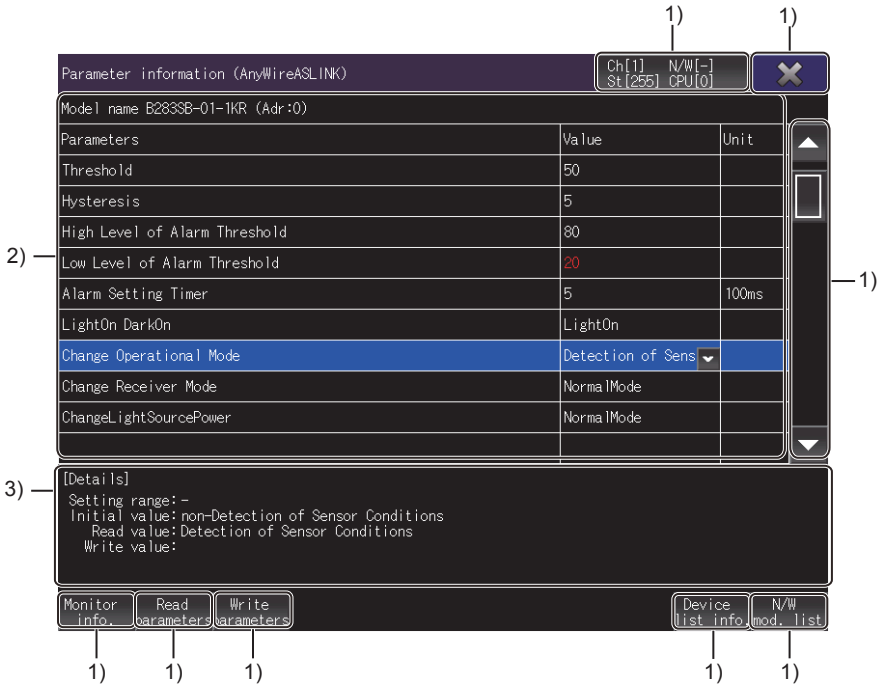
22.5.4 Parameter information screen

This section explains the structure of the screen and the common operations on the parameter information screen.

■1. Display contents and key functions

The following explains the display data of the parameter information screen and the functions of the keys displayed on the screen.

(1) Displayed contents



1) Touch key

The keys used for the operations on the parameter information screen

2) Parameter display area

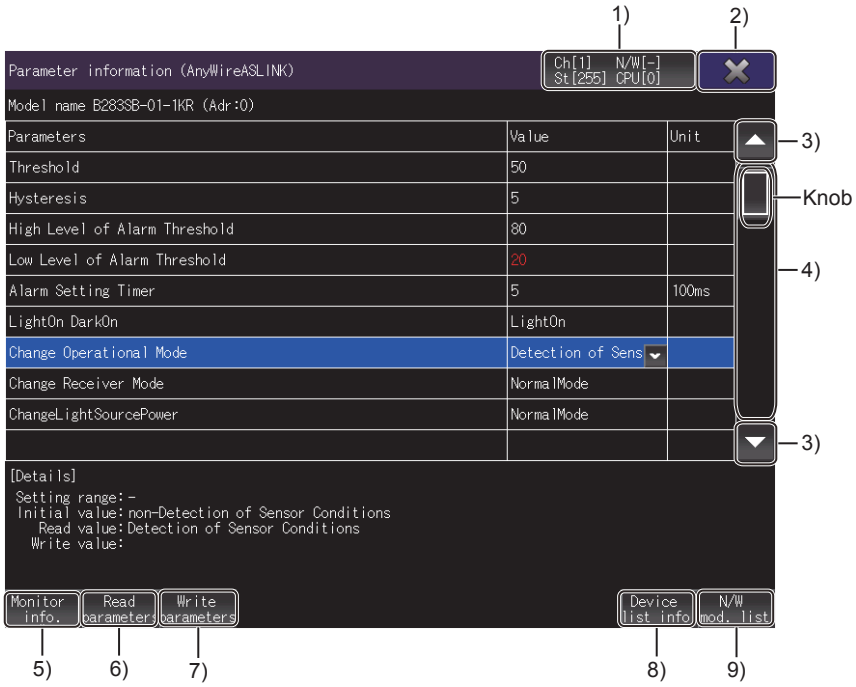
Lists the parameters of the device being monitored. Parameter change is available.
Up to 128 parameters are displayed.
The 129th parameter and later are not displayed.

3) Detailed parameter information display area

Displays the details of the parameter selected in the parameter display area.

(2) Key functions

The following shows the functions of the operation keys on the parameter information screen.



1) Select channel key
Displays the [Select channel] window.

2) [×] key
Exits the iQSS utility.

3) Scroll key
Scrolls the contents in the list up or down by one item.

4) Scroll bar
Touch an area above or below the knob to scroll one page up or down.
You can also scroll the page by sliding the knob.

5) [Monitor info.] key
Switches the screen to the monitoring information screen.

6) [Read parameters] key
Reads the parameter information of the device being monitored and refreshes the parameter display area.

7) [Write parameters] key
Writes the parameter information changed in the parameter display area to the device being monitored.

8) [Device list info.] key
Switches the screen to the device list information screen.

9) [N/W mod. list] key
Switches the screen to the iQSS utility screen.

22.6 Error Messages and Corrective Actions

For the error messages displayed in the iQSS utility and the corrective actions, refer to the following.

➠ MELSEC-Q/L AnyWireASLINK Master Module User's Manual

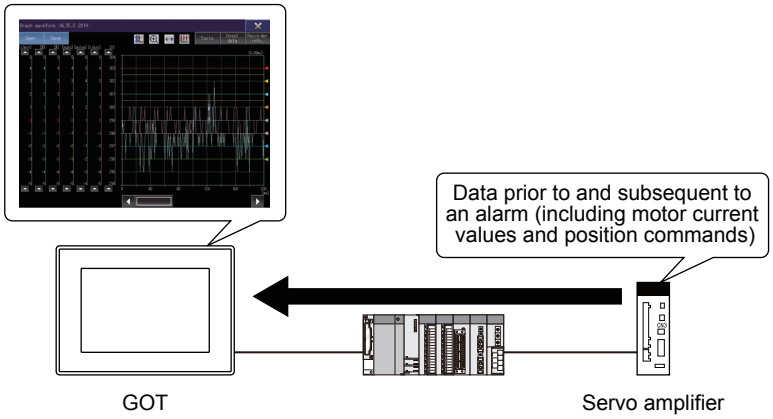
23. DRIVE RECORDER

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

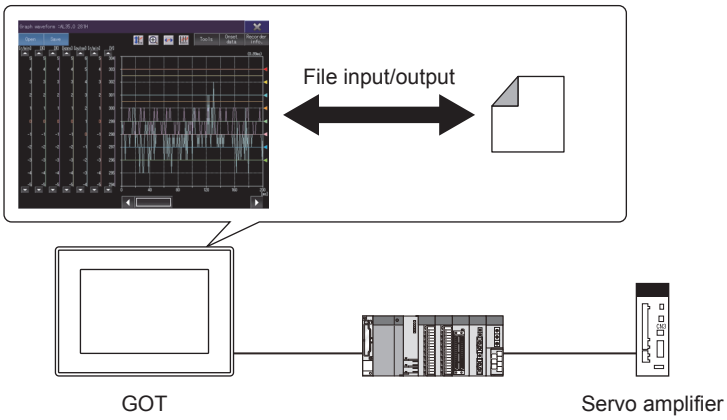
23.1 Features

The drive recorder function reads the data prior to and subsequent to an alarm from a connected servo amplifier, and displays the data (including motor current values and position commands) in waveform or list form on the GOT.

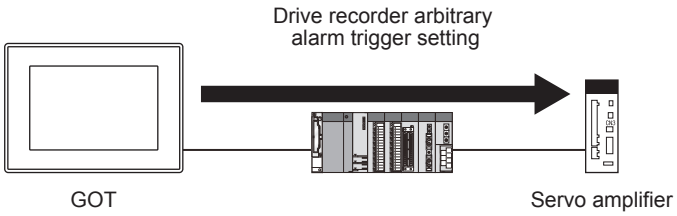
- When an alarm occurs in the connected servo amplifier, you can check the data prior to and subsequent to the alarm with the GOT instead of MR Configurator2.



- The data read from the connected servo amplifier can be output to a file.
  The file is viewable on the GOT or MR Configurator2.



- The drive recorder arbitrary alarm trigger setting is changeable on the GOT. In this setting, you can specify an alarm to save data only when the specified alarm occurs in the connected servo amplifier.



23.2 Specifications

23.2.1 System configuration

This section describes the system configuration of the drive recorder.
For connection type settings and precautions regarding the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

The drive recorder supports the following servo amplifiers.

Servo amplifier	Model
MELSERVO-J4 *3	MR-J4-□B, MR-J4-□B-RJ, MR-J4W2-□B, MR-J4W3-□B, MR-J4-□GF *1*2, MR-J4-□GF-RJ *1*2
MELSERVO-JE	MR-JE-□B

*1 To monitor the servo amplifier through a simple motion module (CC-Link IE Field Network) on the PLC, the following connections cannot be used.
- The GOT and RCPU are connected by using the CC-Link IE Field Network connection.
- The GOT and RCPU are connected by using the CC-Link IE Controller Network connection.
- The GOT and RCPU are connected through an Ethernet module (or the network part of an RnENCPU).

*2 To monitor the servo amplifier through a CC-Link IE Field Network module on the PLC, the following connections cannot be used.
- The GOT and RCPU are connected by using the CC-Link IE Field Network connection.
- The GOT and RCPU are connected by using the CC-Link IE Controller Network connection.
- The GOT and RCPU are connected through an Ethernet module (or the network part of an RnENCPU).

*3 To monitor the servo amplifier through a simple motion module (SSCNET III/H or CC-Link IE Field Network) or a CC-Link IE Field Network module on the PLC, the following connections cannot be used.
- The GOT and the motion controller CPU (Q series) are directly connected by Ethernet.
- The GOT and CR800-Q (Q172DSRCPU) are directly connected by Ethernet.

Connect a target servo amplifier to the GOT through a motion controller CPU, a simple motion module, or a CC-Link IE Field Network module.

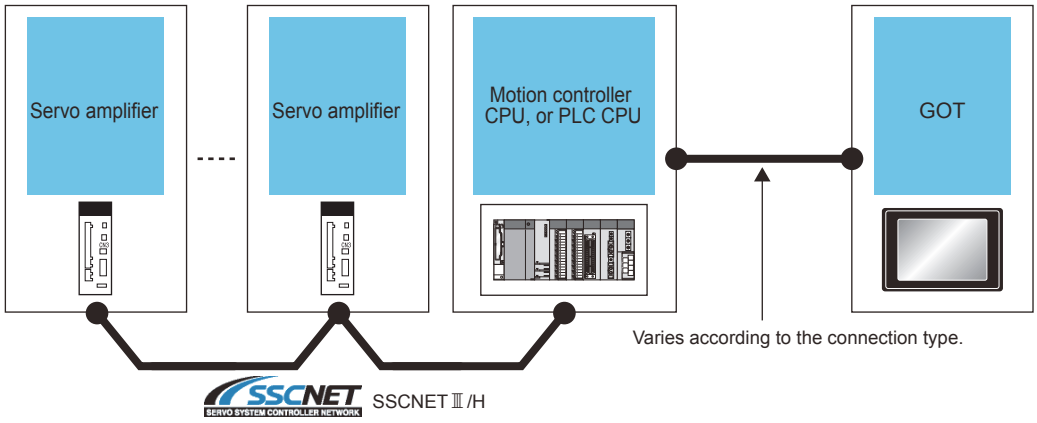
(1) Applicable motion controller CPUs, simple motion modules, and CC-Link IE Field Network modules

Controller	Model
Motion controller CPU(MELSEC iQ-R Series)	R16MTCPU, R32MTCPU, R64MTCPU
Motion controller CPU(Q Series)	Q172DSCPU, Q173DSCPU, Q170MSCPU, Q170MSCPU-S1
Simple motion module	RD77GF4 *1, RD77GF8 *1, RD77GF16 *1, RD77GF32, RD77MS2, RD77MS4, RD77MS8, RD77MS16, FX5-40SSC-S, FX5-80SSC-S, QD77GF4 *2, QD77GF8 *2, QD77GF16 *2*3, QD77MS2, QD77MS4, QD77MS16, LD77MS2, LD77MS4, LD77MS16
PLC CPU module with built-in CC-Link IE *4*5	R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU
CC-Link IE Field Network master/local module *4	RJ71GF11-T2 *6, RJ71GF11-T2(MR) *6, QJ71GF11-T2 *7, LJ71GF11-T2 *7
Ethernet module *4	RJ71EN71 *6

*1 Use a module with version 02 or later.
*2 On MR Configurator2, set [Motion mode] in [CC-Link IE Communication mode setting for communication] in [Operation mode].
*3 Use a module having a serial number starting with 17102 or later.
*4 To connect to the CC-Link IE Field Network through the module, the PLC connected to the GOT must be a master station.
*5 Use a module with version 09 or later of the network part.
*6 Use a module with version 09 or later.
*7 On MR Configurator2, set [IO mode] in [CC-Link IE Communication mode setting for communication] in [Operation mode].

■2. Connection type

(1) When connecting the GOT to a servo amplifier through a motion controller CPU or simple motion module (SSCNET III/H)

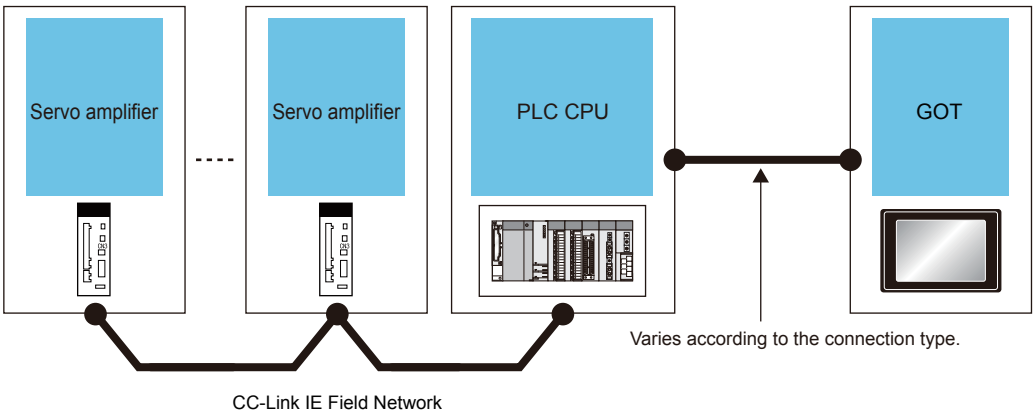


When a servo amplifier is connected to the GOT through a motion controller CPU (Q series), use a connection type other than the CC-Link IE Field Network connection between the CPU and the GOT.

For the connection method, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

(2) When connecting the GOT to a servo amplifier through a simple motion module (CC-Link IE Field Network) or CC-Link IE Field Network module



For the connection method between the GOT and the PLC, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the drive recorder to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Required hardware

Data storage is required for the following operations.

- Saving the data read from a servo amplifier in a file
- Displaying the data of a file that is read from the data storage

■5. Applicable hardware

A USB mouse is usable.

23.2.2 Access range

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

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

23.2.3 Precautions

■1. Sending commands from pieces of equipment

Do not send commands from pieces of equipment to one servo amplifier simultaneously.
Doing so may cause the servo amplifier to exhibit unintended behavior.

■2. Network number duplication

When the GOT is connected to the routed PLC by Ethernet, do not overlap the network number in the controller settings and the network number of the CC-Link IE Field Network where the servo amplifier is connected.
Otherwise, the GOT cannot communicate with the servo amplifier.

■3. Functions that cannot be used together

The drive recorder and servo amplifier graph cannot be used together if the functions are started with the special function switch.
When the servo amplifier graph is used, exit it and start the drive recorder.

23.3 Operations for Display

The following explains how to display the drive recorder screen after the GOT is turned on.

Step 1. Turn on the GOT.

Step 2. Perform one of the following operations.
- In the utility, touch [Monitor] → [Drive recorder] from the main menu.
- Touch a module on the system configuration screen of the system launcher, and then touch [Drive recorder] on the extended function selection screen.
- Touch the special function switch (Drive recorder) set in the project.
- Touch [Drive recorder] in the context menu of the CC-Link IE Field Network diagnostics.

Step 3. The [Select channel] window appears only at the first startup of the drive recorder.
(When the connection destination is set for the special function switch or only one channel is applicable, the [Select channel] window does not appear.)
Touch the key corresponding to the channel No. to be used.

➠ 23.4.6 [Select channel] window

Step 4. The [Select station] window appears only at the first startup.
(When the connection destination is set for the special function switch, the [Select station] window does not appear.)
Touch a history key or the [Input station number] key.

➠ 23.4.7 [Select station] window

When you touch the [Input station number] key, the [Input station No.] window appears.
In the [Input station No.] window, set the network number and the station number, and then touch the [OK] key.

➠ 23.4.8 [Input station No.] window

Step 5. The [Drive recorder information list] screen appears.
(When the connection destination is set for the special function switch, drive recorder information is read from the connected servo amplifier automatically. Thus, the following operations are not required.)
Touch the connection destination (servo) key.

➠ 23.4 [Drive recorder information list] screen

Step 6. The [Select connection destination (servo)] window appears.
Specify a servo amplifier to be connected, and touch the [OK] key.

➠ 23.4.11 [Select connection destination (servo)] window

Step 7. The [Select connection destination (servo)] window closes.
Touch the [Read] key on the [Drive recorder information list] screen to read drive recorder information from the servo amplifier.

The method of displaying the drive recorder screen determines the type of the screen.

Method	Description
Using the utility, system launcher, or CC-Link IE Field Network diagnostics	The GOT screen is switched to the drive recorder screen. For the details of the system launcher, refer to the following. ➠ 2. SYSTEM LAUNCHER For the CC-Link IE Field Network diagnostics, refer to the following. ➠ 24. CC-Link IE Field Network DIAGNOSTICS
Using a special function switch	The drive recorder screen appears as a system window. For information on how to display the drive recorder screen with a special function switch, refer to the following. ➠ ■1. Displaying the drive recorder screen with a special function switch

■1. Displaying the drive recorder screen with a special function switch

To use a special function switch, place the switch on a user-created screen.
For the setting method, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(1) Settings of the special function switch

Set the following items for the special function switch.

Item	Description
Window size	Specify the window size for the [Graph waveform] screen.
Graph waveform size	Specify the size of the graph display area on the [Graph waveform] screen. ➠ 23.5 [Graph waveform] screen
Connection destination	Specify a servo amplifier to be connected, and specify a controller through which the servo amplifier is connected to the GOT. Thus, upon displaying the drive recorder screen, the GOT reads drive recorder information automatically.

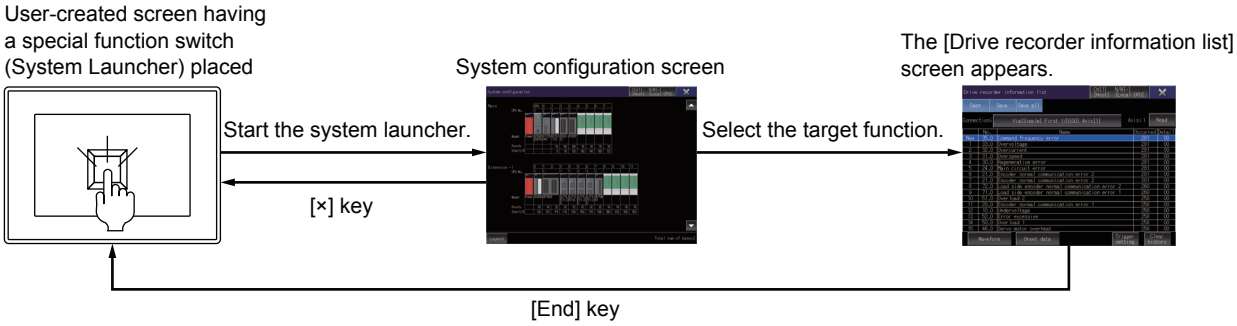
(2) Settings for using the system window

When the drive recorder screen is displayed with a special function switch, the screen appears as a system window.
Displaying such a system window requires an overlap window.
Set an overlap window to be used as the system window in the project.
For the setting method, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■2. Starting the function by using the special function switch (System launcher)

You can start the drive recorder from a user-created screen by selecting the connection destination with a special function switch (System launcher).



POINT

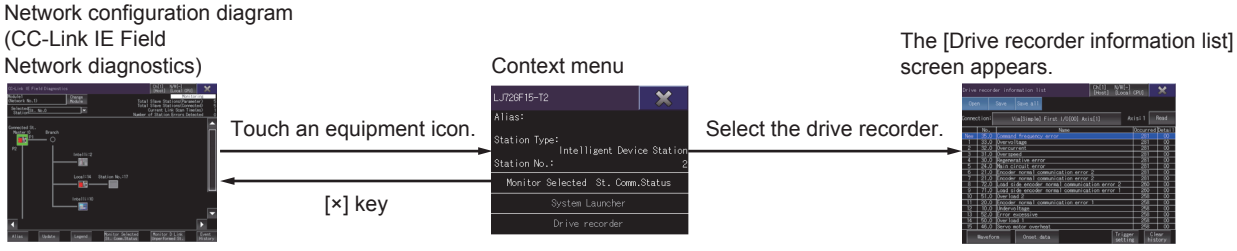
When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.
For the details of the system launcher function, refer to the following.

➠ 2. SYSTEM LAUNCHER

■3. Starting the drive recorder by using the CC-Link IE Field Network diagnostics

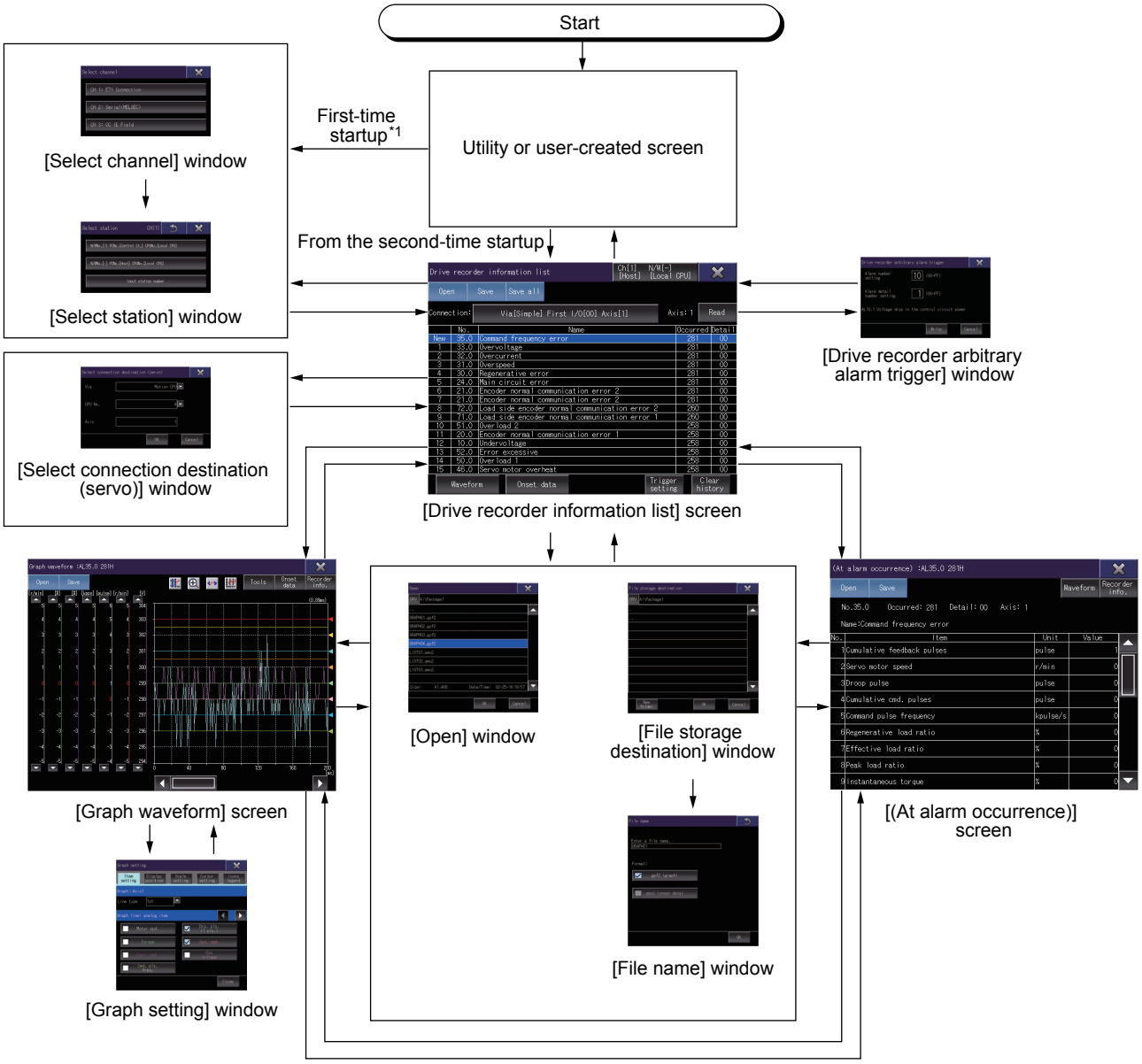
You can start the drive recorder from the CC-Link IE Field Network diagnostics by selecting [Drive recorder] in the context menu of the CC-Link IE Field Network diagnostics.



For the context menu of the CC-Link IE Field Network diagnostics, refer to the following.

➠ 24.4.3 Context menu

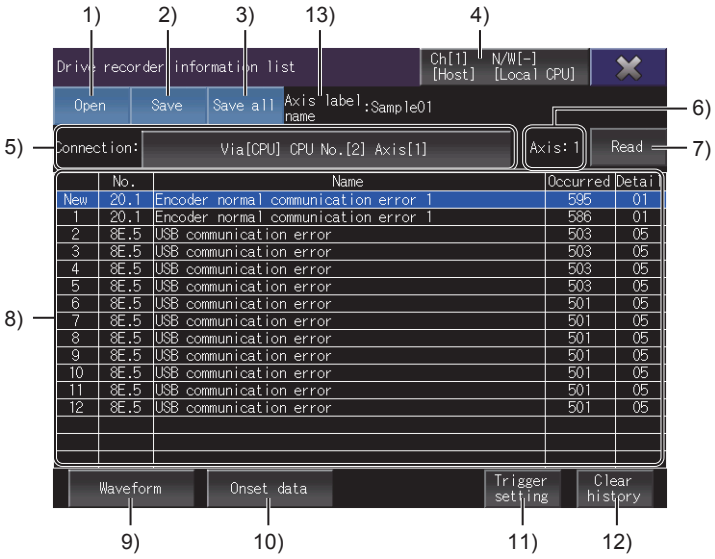
23.3.1 Screen transition



*1 The [Drive recorder information list] screen appears from the first-time startup of the drive recorder function, if the function is started with the special function switch in which the connection destination is specified.

23.4 [Drive recorder information list] screen

This screen displays drive recorder information that is read from a target servo amplifier or file.



1) [Open] key

Displays the [Open] window.

Open a drive recorder information file.

➠ 23.4.1 [Open] window

2) [Save] key

Displays the [File storage destination] window.

Save the data of an alarm selected in the alarm history list in a file.

➠ 23.4.3 [File storage destination] window

3) [Save all] key

Displays the [File storage destination] window.

Collectively save the data of each alarm in a file.

➠ 23.4.3 [File storage destination] window

4) Connection destination key

Displays the [Select channel] window.

Switch between the connected PLC CPUs.

➠ 23.4.6 [Select channel] window

5) Connection destination (servo) key

Displays the [Select connection destination (servo)] window.

Switch between the connected servo amplifiers.

➠ 23.4.11 [Select connection destination (servo)] window

6) Axis number or station number

The relevant axis number is displayed when [Motion CPU] or [Simple Motion (SSCNET III/H)] is selected for [Via].

The relevant station number is displayed when [Simple Motion (CC-Link IE Field)] or [CC-Link IE Field module] is selected for [Via].

Displays [-] before data is read.

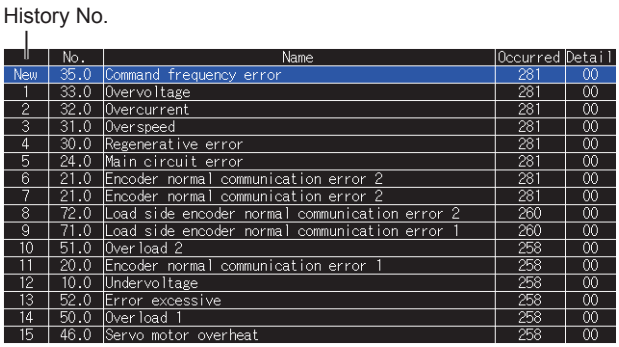
7) [Read] key

Reads drive recorder information from the axis selected in the [Select connection destination (servo)] window.

8) Alarm history list

Displays the list of read alarms.

Touch the row of an alarm to select the alarm.



Item	Description
History No.	Numbers assigned to the alarms that are listed in reverse chronological order
[No.]	Alarm number
[Name]	Alarm name
[Occurred]	Time between the instant when the monitored servo amplifier starts operating and the instant when an alarm occurs
[Detail]	Alarm detail number

9) [Waveform] key

Switches the screen to the [Graph waveform] screen.

Displays the waveform data of an alarm selected in the alarm history list. The data was collected at the alarm occurrence.

➠ 23.5 [Graph waveform] screen

10) [Onset data] key

Switches the screen to the [(At alarm occurrence)] screen.

Lists the data of an alarm selected in the alarm history list. The data was collected at the alarm occurrence.

➠ 23.6 [(At alarm occurrence)] screen

11) [Trigger setting] key

Displays the [Drive recorder arbitrary alarm trigger] window.

Set the drive recorder arbitrary alarm trigger.

➠ 23.4.12 [Drive recorder arbitrary alarm trigger] window

12) [Clear history] key

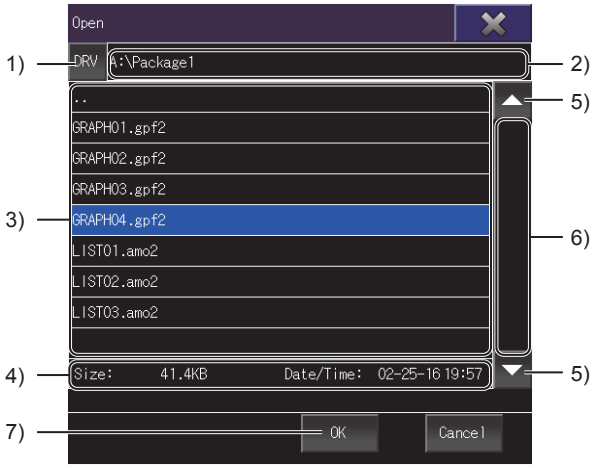
Deletes the drive recorder information in the connected servo amplifier.

13) [Axis label name]

Displays the axis label name only when the axis label is set.

23.4.1 [Open] window

Open a drive recorder information file.



1) [DRV] key

Switches the window to the [Select drive] window.
Change the GOT drive from which files are read.

➠ 23.4.2 [Select drive] window

2) File path

Displays the path to the files displayed in the list.

3) File list

Lists the files in the selected drive.
Up to 200 folders and files in the same path are displayed.
Because the 201st or subsequent folders and files are not displayed, make sure to store a maximum of 200 folders and files in the same path.
You can open a file having the extension .gpf2 or .amo2.
However, the following *.gpf2 files are not supported.

- Files that are saved with the servo amplifier graph function
- Files that are not saved with the drive recorder function of MR Configurator2

To scroll the file list up or down, touch and slide the list.

4) File information

Displays the file size and creation date and time of the file selected in the file list.

5) Scroll keys

Scroll the file list up or down one row.

6) Scroll bar

Touch an empty area of the scroll bar above or below the knob to scroll the file list up or down one page.
Alternatively, touch and slide the knob to scroll through the list.

7) [OK] key

Opens the file selected in the file list.
When a GPF2 file is opened, the [Graph waveform] screen appears.

➠ 23.5 [Graph waveform] screen

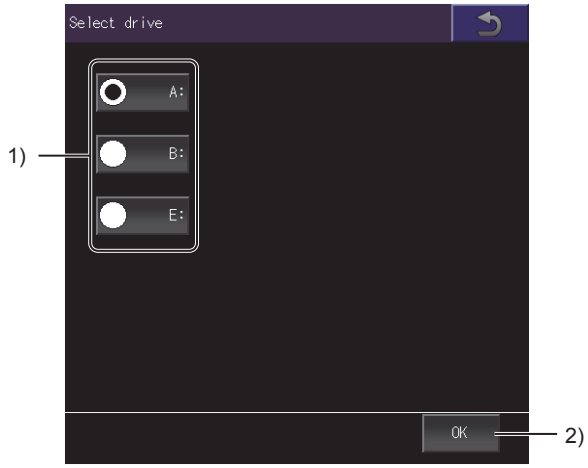
If the GPF2 file contains multiple waveform data saved with MR Configurator2, the GOT displays the latest waveform data in the file.

When an AMO2 file is opened, the [(At alarm occurrence)] screen appears.

➠ 23.6 [(At alarm occurrence)] screen

23.4.2 [Select drive] window

Change the target drive from which files are read or to which files are stored.

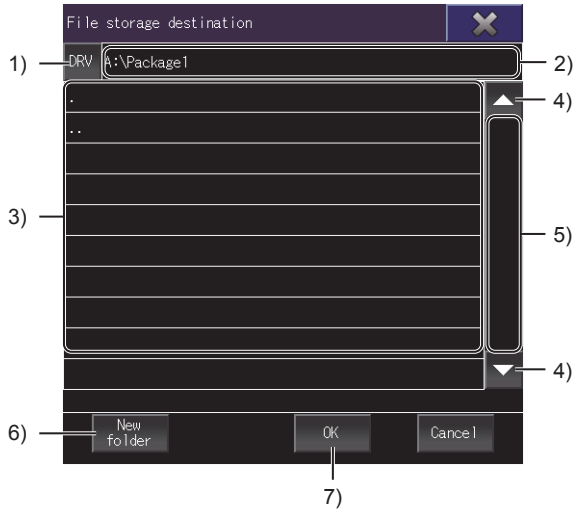


1) Drives
Select a GOT drive from which files are read or to which files are stored.

2) [OK] key
Changes the target drive to the selected drive.

23.4.3 [File storage destination] window

Select the file save destination.



1) [DRV] key
Switches the window to the [Select drive] window.
Change the GOT drive to which files are stored.

➠ 23.4.2 [Select drive] window

2) Folder path
Displays the path to the folders displayed in the list.

3) Folder list
Lists the folders in the drive.
Up to 200 folders in the same path are displayed.
Because the 201st or subsequent folders are not displayed, make sure to store a maximum of 200 folders in the same path.
To scroll the folder list up or down one row, touch and slide the list.

4) Scroll keys
Scroll the folder list up or down one row.

5) Scroll bar

Touch an empty area of the scroll bar above or below the knob to scroll the folder list up or down one page.
Alternatively, touch and slide the knob to scroll through the list.

6) [New folder] key

Switches the window to the [Folder name] window.
Create a folder.

➠ 23.4.4 [Folder name] window

7) [OK] key

Confirms the file save destination selected, and switches the window to the [File name] window.
Set the name of the file to be saved.

➠ 23.4.5 [File name] window

23.4.4 [Folder name] window

Create and name a new folder.

1) Folder name

Set the name of the folder to be created.
Make sure that the path (including the file extension) consists of 78 characters or less.
For the restrictions on the folder name and file name used in the GOT, refer to the following.

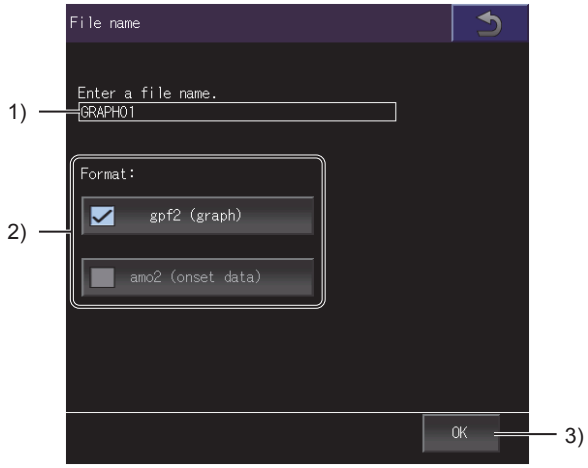
➠ GT Designer3 (GOT2000) Screen Design Manual

2) [OK] key

Creates a folder.

23.4.5 [File name] window

Name a file and save it in the specified format.



1) File name

Set the name of the file to be created.

Make sure that the path (including the file extension) consists of 78 characters or less.

For the restrictions on the folder and file names used with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

When the [File name] window is displayed with the [Save all] key, all the data collected at alarm occurrences are saved in files (*.gpf2 or *.amo2) by alarm basis.

The date and time at which drive recorder information was read to the GOT and an alarm history number (indicating the occurrences of alarms in reverse chronological order) are appended to each file name.

Example) Waveform data (*.gpf2)

File name_yyyymmdd_hhmmss_**.gpf2

- Alarm history number
- Date and time at which drive recorder information was read

2) [Format]

Select a file format.

The following shows the items to be selected.

- [gpf2 (graph)]
- [amo2 (onset data)]

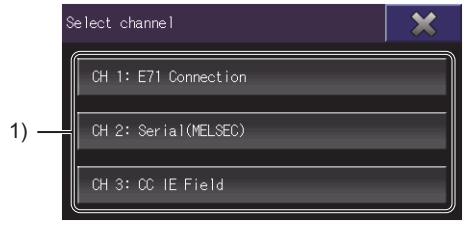
When the [File name] window is displayed from the [Graph waveform] screen or the [(At alarm occurrence)] screen, the file format is fixed.

3) [OK] key

Saves the file.

23.4.6 [Select channel] window

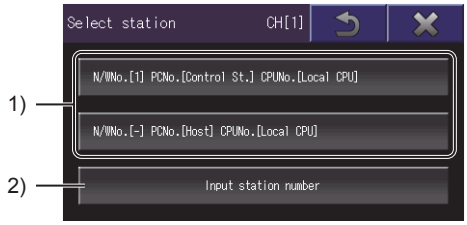
Select a channel.



1) Channel key
Confirms the channel selection, and switches the window to the [Select station] window.

23.4.7 [Select station] window

Select a network number and station number from the connection history.



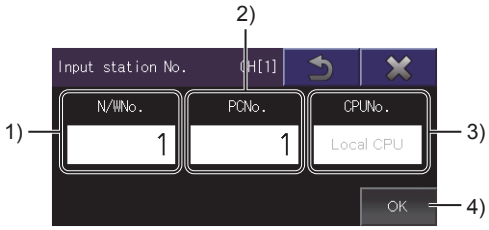
1) History key
Confirms the selection of the network number and station number, and establishes communication with the target servo amplifier.
The history keys of the last three connections are displayed.

2) [Input station number] key
Switches the window to the [Input station No.] window.
Set a network number and a station number.

➠ 23.4.8 [Input station No.] window

23.4.8 [Input station No.] window

Set a network number and a station number.



1) [N/WNo.]
Switches the window to the [Input N/W No.] window.
Set a network number.

➠ 23.4.9 [Input N/W No.] window

2) [PCNo.]
Switches the window to the [Input PLC No.] window.
Set a PLC station number.

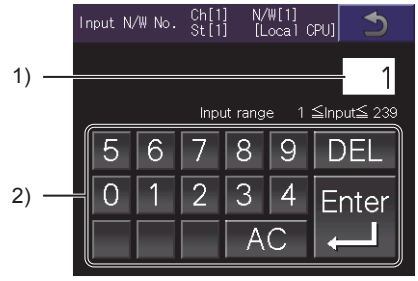
➠ 23.4.10 [Input PLC No.] window

3) [CPUNo.]
CPU number
This number cannot be changed.

4) [OK] key
Confirms the entry of the network number and PLC station number, and establishes communication with the target servo amplifier.

23.4.9 [Input N/W No.] window

Set a network number.

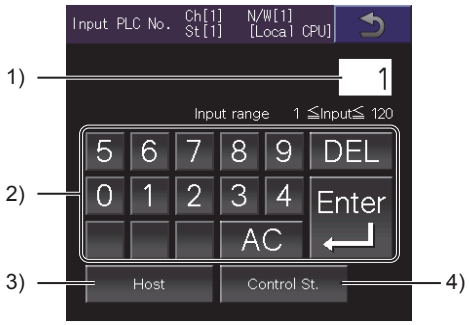


1) Network number
Network number to be set

2) Input keys
Input keys for entering a network number.
Touch the [Enter] key to confirm the entry of the network number and switch the window to the [Input station No.] window.

23.4.10 [Input PLC No.] window

Set a station number.



1) PLC station number
PLC station number to be set

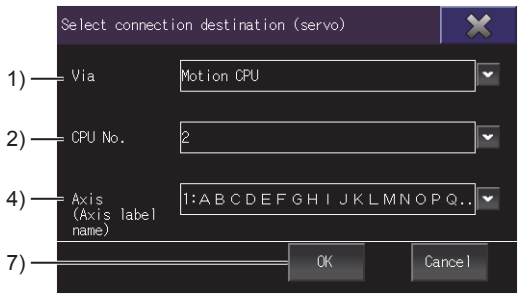
2) Input keys
Input keys for entering a PLC station number
Touch the [Enter] key to confirm the entry of the PLC station number and switch the window to the [Input station No.] window.

3) [Host] key
Specifies the PLC station number with the host station number, and switches the window to the [Input station No.] window.

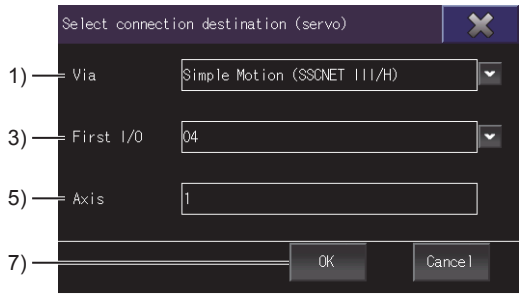
4) [Control station] key
Specifies the PLC station number with the control station number, and switches the window to the [Input station No.] window.

23.4.11 [Select connection destination (servo)] window

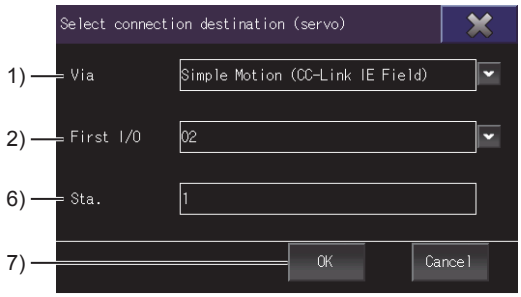
Set a servo amplifier from which data is read.



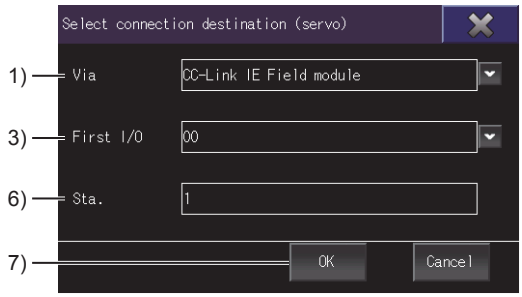
When [Motion CPU] is selected for [Via]



When [Simple Motion (SSCNET III/H)] is selected for [Via]



When [Simple Motion (CC-Link IE Field)] is selected for [Via]



When [CC-Link IE Field module] is selected for [Via]

1) [Via]

Select the type of a controller through which a target servo amplifier is connected to the GOT.

The following shows the items to be selected.

- [Motion CPU]
- [Simple Motion (SSCNET III/H)]
- [Simple Motion (CC-Link IE Field)]
- [CC-Link IE Field module]

2) [CPU No.]

This item is displayed when [Motion CPU] is selected for [Via].

Select the CPU No. of a motion controller CPU through which a target servo amplifier is connected to the GOT.

3) [First I/O]

This item is displayed when [Simple Motion (SSCNET III/H)], [Simple Motion (CC-Link IE Field)], or [CC-Link IE Field module] is selected for [Via].

Select the start I/O No. of a simple motion module or CC-Link IE Field Network module through which a target servo amplifier is connected to the GOT.

4) [Axis (Axis label name)]

Select an axis from which data is read when [Motion CPU] is selected for [Via].

Displays the axis label name only when the axis label is set.

5) [Axis]

Select an axis from which data is read when [Simple Motion (SSCNET III/H)] is selected for [Via].

6) [Sta.]

Select the number of the station from which data is read when [Simple Motion (CC-Link IE Field)] or [CC-Link IE Field module] is selected for [Via].

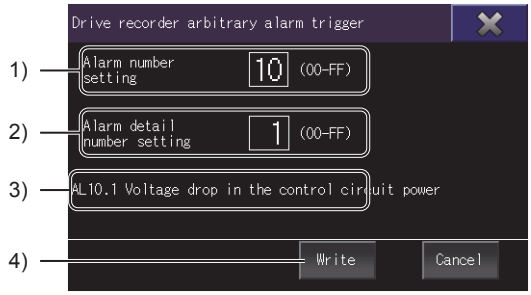
7) [OK] key

Confirms the settings that specify a servo amplifier to be connected.

Touch the [Read] key on the [Drive recorder information list] screen to read drive recorder information from the set axis.

23.4.12 [Drive recorder arbitrary alarm trigger] window

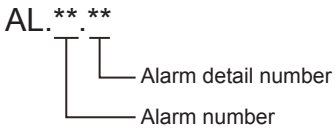
Set the drive recorder arbitrary alarm trigger and write the settings to a target servo amplifier.



1) [Alarm number setting]

Specify an alarm number so that the drive recorder function saves data only when the relevant alarms occur on a target servo amplifier.

The following shows the details of a servo amplifier alarm.



If you set this item to 0, the drive recorder arbitrary alarm trigger is disabled.

2) [Alarm detail number setting]

Specify an alarm detail number so that the drive recorder function saves data only when a specific alarm occurs on a target servo amplifier.

If you set this item to 0, the alarms targeted for saving data are determined only by the specified alarm number.

3) Alarm name

Displays the name of the specified alarm.

4) [Write] key

Writes the settings to a target servo amplifier.

Upon completion of the writing, the display returns to the [Drive recorder information list] screen.

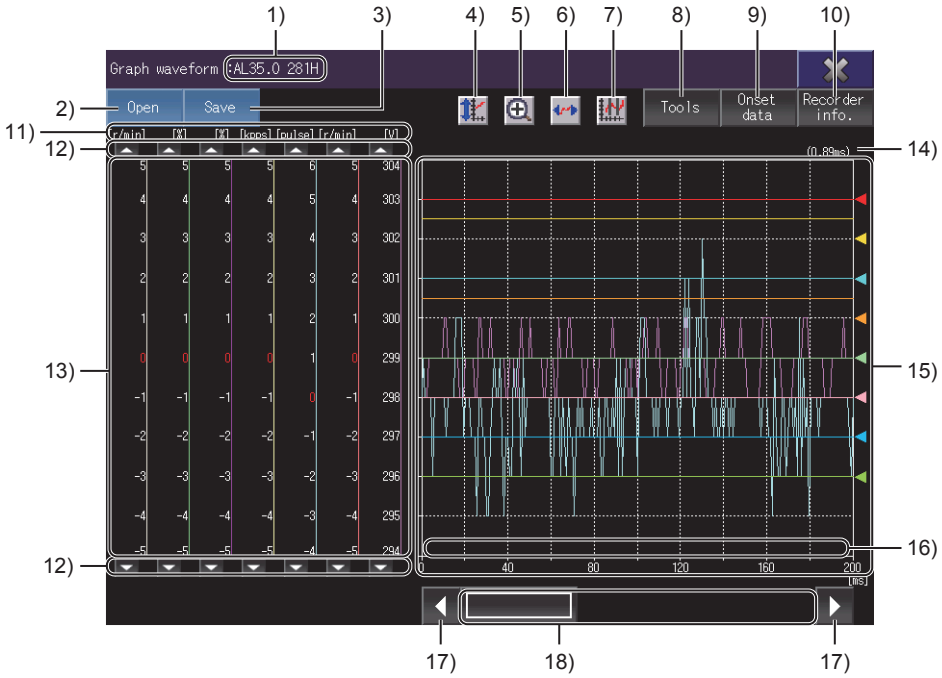
The following shows examples of drive recorder arbitrary alarm trigger settings.

Example 1) Specifying AL.10.1 as the target alarm
Set the alarm number to 10, and set the alarm detail number to 1.

Example 2) Specifying AL.10 as the target alarm
Set the alarm number to 10, and set the alarm detail number to 0.

23.5 [Graph waveform] screen

This screen displays the drive recorder information in waveform.



1) Alarm information

Information on the alarm being displayed

When data is read from a servo amplifier, an alarm number is displayed.

When data is read from a file, the name of the file is displayed.

2) [Open] key

Displays the [Open] window.

Open a drive recorder information file.

➠ 23.4.1 [Open] window

3) [Save] key

Displays the [File storage destination] window.

The displayed waveform data can be saved as a file.

➠ 23.4.3 [File storage destination] window

Data read from a file cannot be saved.

4) Scale optimization key

Returns the enlarged or repositioned graph display area to its original state when the [Graph waveform] screen was displayed.

5) Zoom in mode key

Enables or disables the zoom in mode for waveform data.

While using the zoom in mode, you cannot enable the move mode.

➠ 23.5.2 ■1. Zoom in mode

6) Move mode key

Enables or disables the move mode for waveform data.

While using the move mode, you cannot enable the zoom in mode.

➠ 23.5.2 ■2. Move mode

7) Cursor key

Displays or hides cursors on the graph display area.

To display the maximum and minimum values within a range, use the cursors to define the range.

➠ 23.5.2 ■3. Cursor display

8) [Tools] key

Displays the [Graph setting] window.

Select the items to be displayed, and set the positions of scales.

➠ 23.5.1 [Graph setting] window

9) [Onset data] key

Switches the screen to the [(At alarm occurrence)] screen.

➠ 23.6 [(At alarm occurrence)] screen

This key is disabled when data is read from a file.

10) [Recorder info.] key

Switches the screen to the [Drive recorder information list] screen.

➠ 23.4 [Drive recorder information list] screen

11) Unit by analog channel

Unit in which the data of an analog channel is measured

For the unsupported item, the unit does not appear.

12) Scroll keys by analog channel

Scroll the waveform data of an analog channel up or down one scale mark.

To continue scrolling the waveform data, touch and hold a scroll key.

13) Scale

Scale of waveform data

The color of each line on the right of scale values corresponds to the color of each line in the waveform.

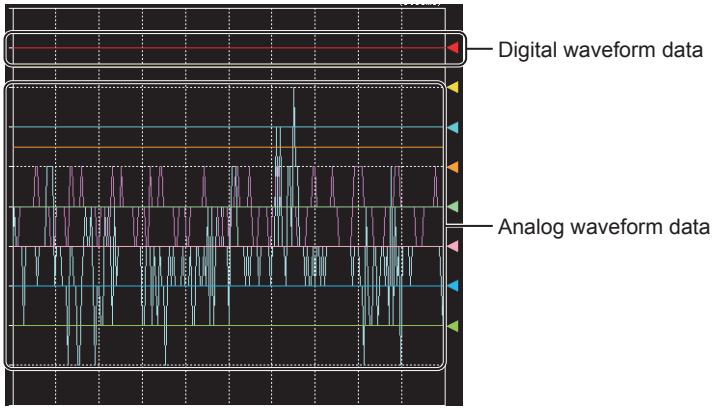
To change the display position or scale, touch the [Tools] key.

14) Sampling time

Sampling time of the drive recorder function on the servo amplifier side

15) Graph display area

Displays digital and analog waveform data.



An arrow is displayed on the right edge of a digital waveform.

The digital waveform data displayed at the same height as the arrow is in the OFF state, and the data displayed above the arrow is in the ON state.

To change the display position of digital waveform data, touch the [Tools] key.

To change the display position of analog waveform data, touch a scroll key of an analog channel or the [Tools] key.

16) Trigger point

Timing at which data is saved by the drive recorder function on the servo amplifier side

17) Scroll keys

Scroll the graph display area up or down one scale mark.

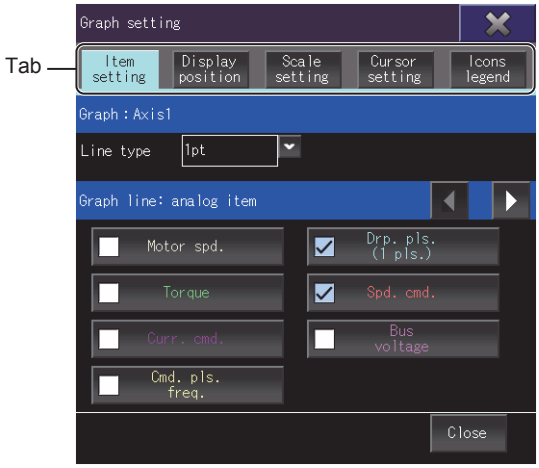
18) Scroll bar

Touch an empty area of the scroll bar left or right of the knob to scroll the graph display area left or right one scale mark.

Alternatively, touch and slide the knob to scroll through the area.

23.5.1 [Graph setting] window

Set the display contents of the [Graph waveform] screen.



Switch between tabs and set each item.

Item	Description
[Item setting] tab	Set the graph line type, and set whether to display an item. ➠ ■1. [Item setting] tab
[Display position] tab	Set the display position of a scale. ➠ ■2. [Display position] tab
[Scale setting] tab	Set the scale increment (interval between scale marks). ➠ ■3. [Scale setting] tab
[Cursor setting] tab	Switch between the vertical and horizontal cursors, and set an item for which the cursors are displayed. Define a range by the cursors to display the maximum and minimum values within the range. ➠ ■4. [Cursor setting] tab
[Icons legend] tab	Displays the description of each icon on the [Graph waveform] screen.

■1. [Item setting] tab

Set the graph line type, and set whether to display an item.

1) [Line type]

Select a graph line type.

The following shows the items to be selected.

- [1pt]
- [2pt]
- [1pt (dotted)]
- [2pt (dotted)]

2) Target item

Displays the item to be set.

To switch between the items, touch the item switching key.

- [Graph line: analog item]
- [Graph line: digital item]
- [Graph V-axis: analog item]
- [Graph V-axis: digital item]

3) Item switching keys

Switch between target items.

4) Display selection

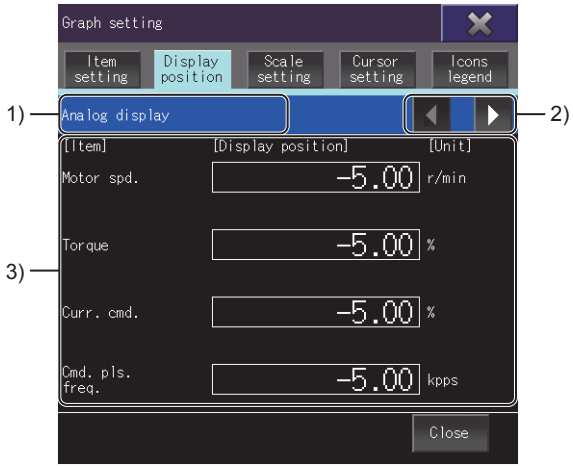
Set whether to display an item.

The characters of an item appear in the same color as the corresponding line in the waveform.

For the unsupported item, the item name appears as [Unsupported].

■2. [Display position] tab

Sets the display position of each scale.



1) Target item

Displays the item to be set.

To switch between the items, touch the item switching key.

- [Analog display]
- [Digital display]

2) Item switching keys

Switch between target items.

3) Item list

Lists the display positions and units of all items.

Touch the display position of an item and set a value.

The set value is applied as the minimum scale value for the item.

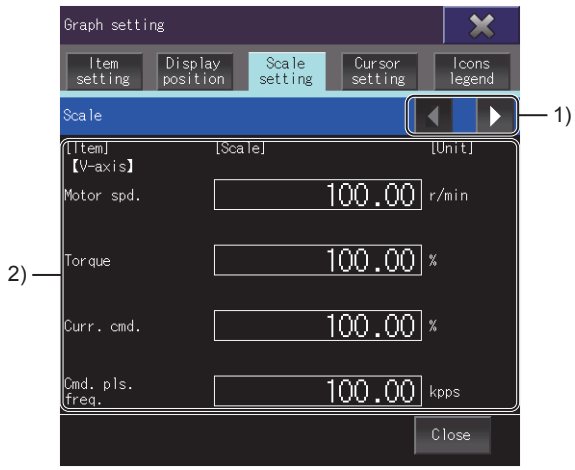
However, if the set value is between two scale values, the smaller scale value becomes the minimum.

Example) When the set value is 30 and the set scale increment is 20 (scale values: 0, 20, 40...)
In this case, the minimum scale value becomes 20.

For the unsupported item, the item name appears as [Unsupported], and the unit does not appear for the analog display.

■3. [Scale setting] tab

Set the scale increment (interval between scale marks).



1) Item switching keys

Switch between the contents in the item list.

2) Item list

Lists the scale increments and units of all items.

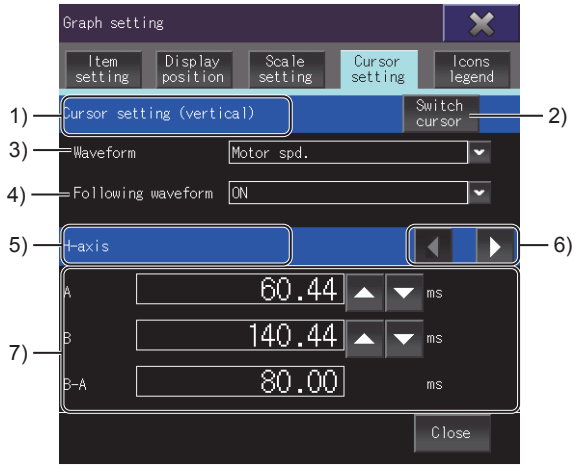
Each item has a different setting range.

You can set a value with up to two decimal places. (The value set for [Time] must be an integer.)

For the unsupported item, the item name appears as [Unsupported] and the unit does not appear.

■4. [Cursor setting] tab

Switch between the vertical and horizontal cursors, and set an item for which the cursors are displayed.
Define a range by the cursors to display the maximum and minimum values within the range.



1) Cursor orientation

Displays the current orientation of cursors.

To switch between the vertical and horizontal cursors, touch the [Switch cursor] key.

- [Cursor setting (vertical)]
- [Cursor setting (horizontal)]

2) [Switch cursor] key

Switches between the vertical and horizontal cursors.

3) [Waveform]

Select the item for which the cursors are displayed.

For the unsupported item, the item name appears as [Unsupported].

4) [Following waveform]

Turn on or off the waveform following function.

When the waveform following function is on, the cursors follow the waveform movements.

When the waveform following function is off, the cursors do not follow the waveform movements.

5) Display target

Displays the display target of the cursor value list.
To switch between the targets, touch the item switching key.
The display target is fixed to [V-axis] for horizontal cursors.

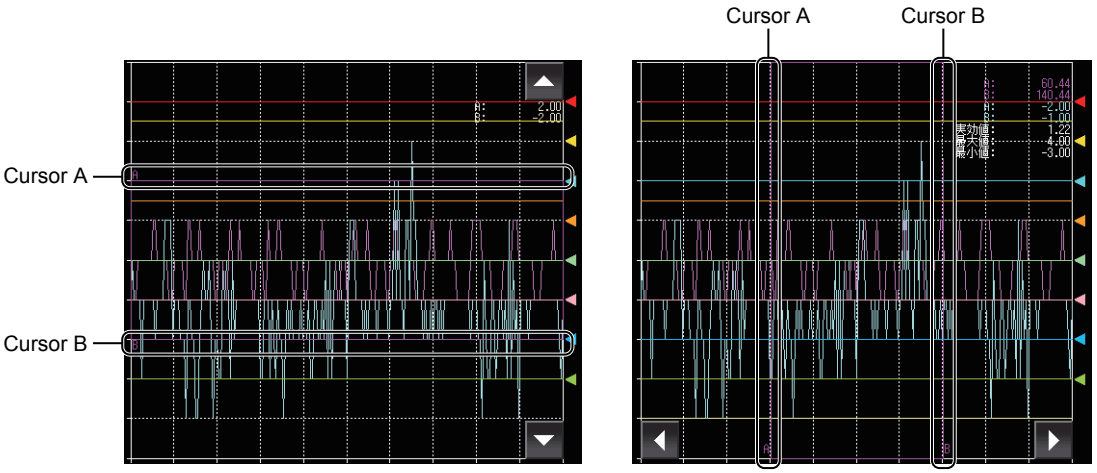
- [V-axis]
- [H-axis]
- [Interval A-B]

6) Item switching keys

Switch between the display targets of the cursor value list.
This key is displayed for vertical cursors.

7) Cursor value list

Set the positions of cursors A and B, and display the maximum and minimum values within the range defined by the cursors.



Different items are displayed for horizontal and vertical cursors.

Cursor orientation	Display target	Item	Description
Horizontal	[V-axis] *1	[A]	Displays the position of cursor A. To change the set value of [A], touch the value and set a new one. Cursor A moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[B]	Displays the position of cursor B. To change the set value of [B], touch the value and set a new one. Cursor B moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[A-B]	Displays the difference between cursor A and cursor B.
Vertical	[H-axis]	[A]	Displays the position of the cursor A. To change the set value of [A], touch the value and set a new one. Cursor A moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[B]	Displays the position of the cursor B. To change the set value of [B], touch the value and set a new one. Cursor B moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[B-A]	Displays the difference between cursor A and cursor B.
	[V-axis] *1	[A]	Displays the value under cursor A for the item selected in [Waveform].
		[B]	Displays the value under cursor B for the item selected in [Waveform].
		[A-B]	Displays the difference between the values under cursor A and cursor B.
	[Interval A-B]	[Eff. val.]	Displays the effective value within the range defined by cursor A and cursor B.
		[Max val.]	Displays the maximum value within the range defined by cursor A and cursor B.
		[Min val.]	Displays the minimum value within the range defined by cursor A and cursor B.

*1 For the unsupported item, the unit does not appear.

23.5.2 Operating procedure

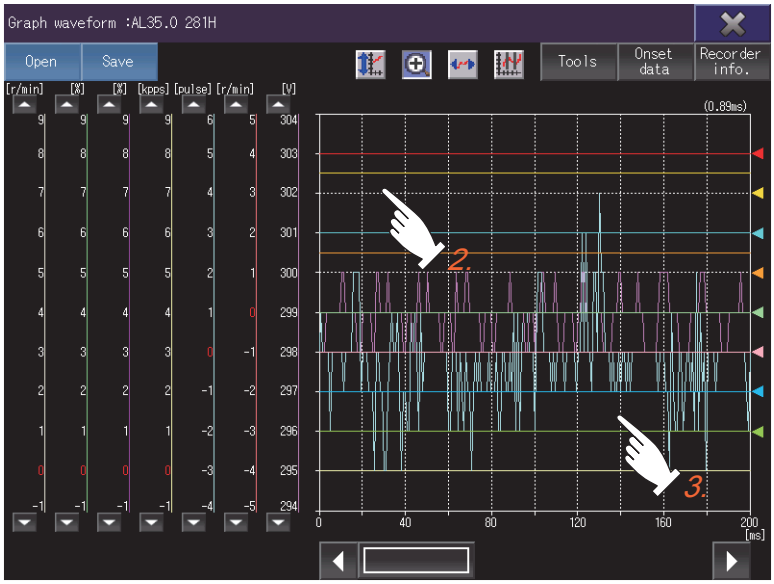
This section describes the operations on the graph display area.

■1. Zoom in mode

Enlarge a part of the graph display area by the following procedure.

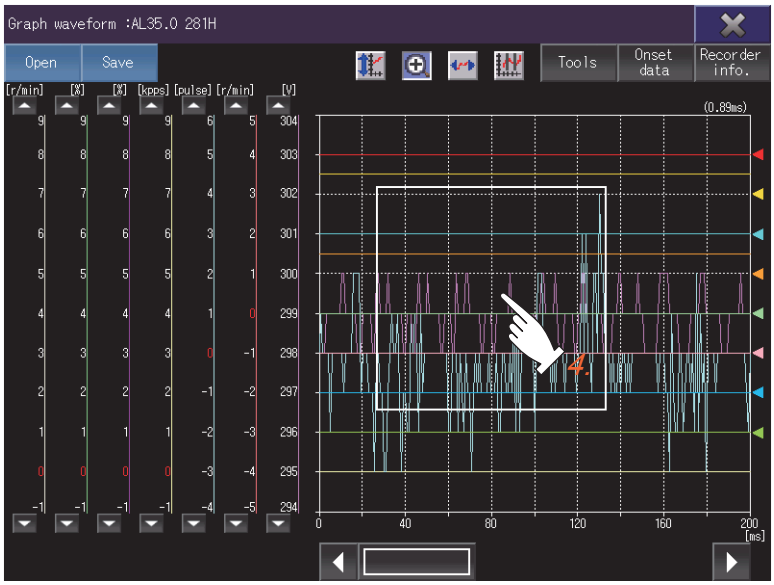
Step 1. Touch the zoom in mode key.

Step 2. Touch the start point of an area to be enlarged.



Step 3. Slide your finger on the display and release the finger at the end point.
A square with the start point on the top left corner and the end point on the bottom right corner appears to indicate the area to be enlarged.

Step 4. To enlarge the area, touch inside the square.
To cancel the enlarging and dismiss the square, touch outside the square.
To return to the original state, touch the scale optimization key.

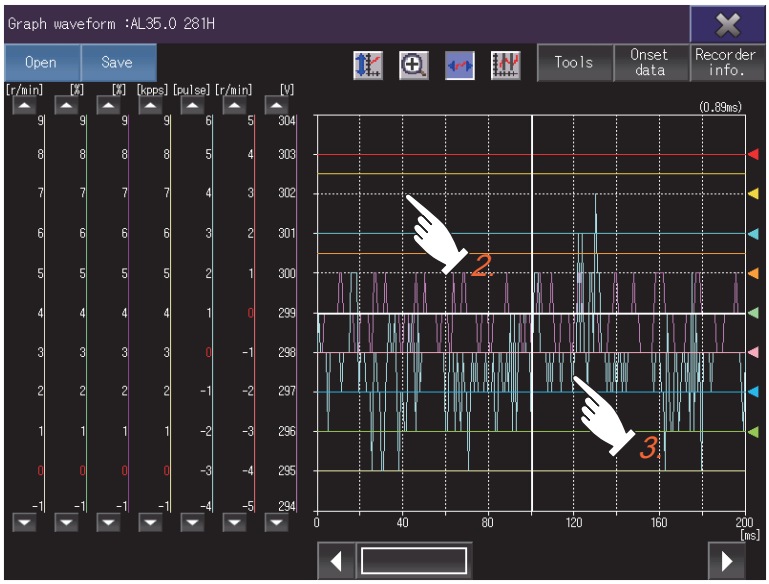


■2. Move mode

Move the waveform on the graph display area by the following procedure.

Step 1. Touch the move mode key.
Two lines crossing at right angles appear on the graph display area.

Step 2. Touch the start point of a movement.

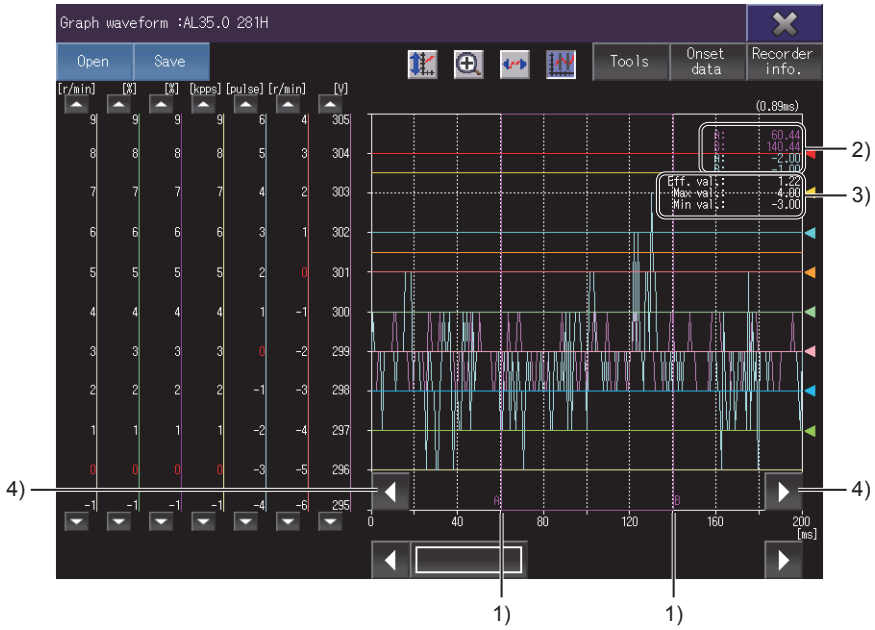


Step 3. Slide your finger on the display and release the finger at the end point.
The waveform travels the distance from the start point to the end point, in the direction opposite to the movement of your finger.
To return to the original state, touch the scale optimization key.

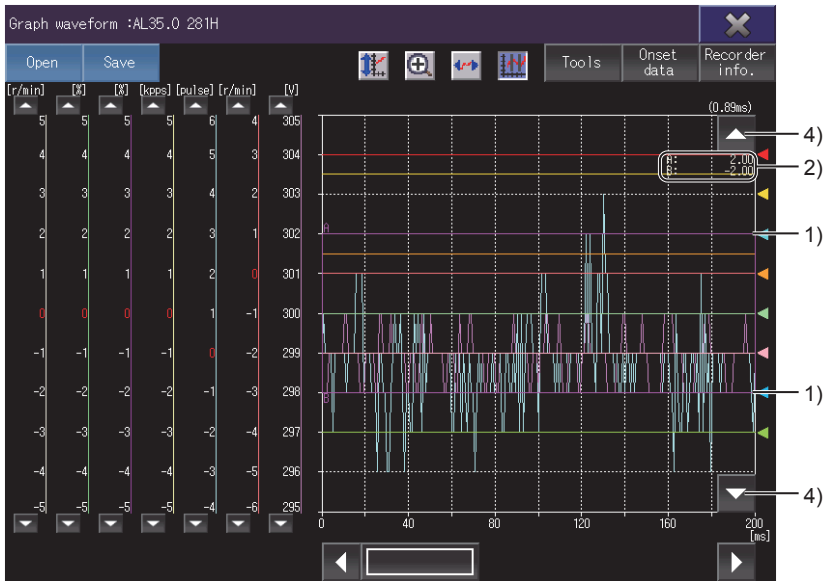
■3. Cursor display

Display the maximum and minimum values within a range defined by cursors.
To display cursors on the graph display area, touch the cursor key.
To switch between the vertical and horizontal cursors, touch the [Tools] key.

Vertical cursors



Horizontal cursors



1) Cursor
Define a range by cursor A and cursor B.

2) Values of vertical axes and horizontal axes
The values of vertical axes and horizontal axes are displayed according to the positions of cursor A and cursor B.
The characters of an item appear in the same color as the corresponding line in the waveform.

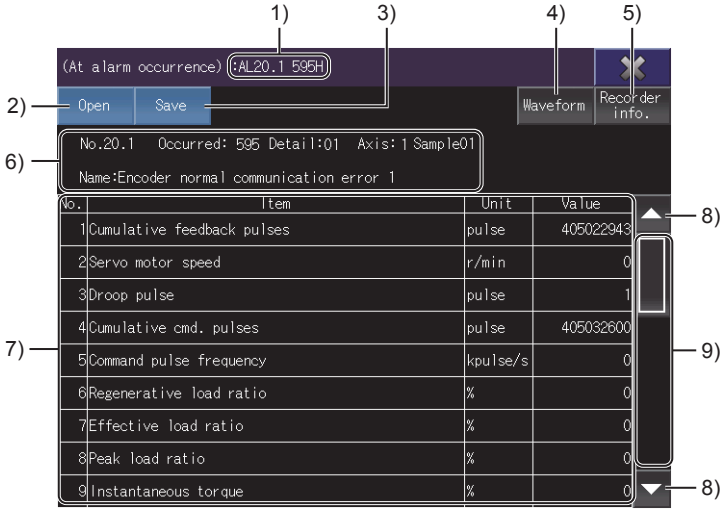
3) Effective value, maximum value, and minimum value
Indicates the effective value, maximum value, and minimum value within the range defined by the cursors.
These items are displayed when vertical cursors are used.

4) Cursor movement keys

Move the cursors with the distance between cursor A and cursor B unchanged.
To continue moving the cursors, touch and hold a cursor movement key.
The cursor movement keys do not appear when the zoom in mode or the move mode is enabled.
To change the distance between cursor A and cursor B, touch the [Tools] key.

23.6 [(At alarm occurrence)] screen

This screen lists the data that was collected at the occurrence of an alarm.



1) Alarm information

Displays the information on the selected alarm.
When data is read from a servo amplifier, an alarm number is displayed.
When data is read from a file, the name of the file is displayed.

2) [Open] key

Displays the [Open] window.
Open a drive recorder information file.

➠ 23.4.1 [Open] window

3) [Save] key

Displays the [File storage destination] window.
Save the data in a file.

➠ 23.4.3 [File storage destination] window

Data read from a file cannot be saved.

4) [Waveform] key

Switches the screen to the [Graph waveform] screen.

➠ 23.5 [Graph waveform] screen

This key is disabled when data is read from a file.

5) [Recorder info.] key

Switches the screen to the [Drive recorder information list] screen.

➠ 23.4 [Drive recorder information list] screen

6) Alarm detail information

Item	Description
[No.]	Alarm number
[Occurred]	Time between the instant when the monitored servo amplifier starts operating and the instant when an alarm occurs
[Detail]	Alarm detail number

Item	Description
[Axis], [Sta.]	• When [Motion CPU] or [Simple Motion (SSCNET III/H)] is selected for [Via] Number of the axis from which data is read. Only when the axis label is set, the axis label name is also displayed. When data is read from a file, [-] is displayed. • When [Simple Motion (CC-Link IE Field)] or [CC-Link IE Field module] is selected for [Via] Number of the station from which data is read.
[Name]	Alarm name

7) List of data at occurrence of an alarm

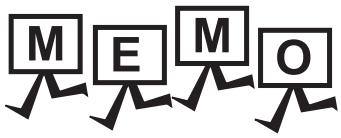
Item	Description
[No.]	Data numbers by servo amplifier
[Item]	Items corresponding to each data number When data is read from a file, the data is displayed in the same language as the file.
[Unit]	Unit of each item
[Value]	Values at occurrence of an alarm

8) Scroll keys

Scroll the list up or down one row.

9) Scroll bar

Touch an empty area of the scroll bar above or below the knob to scroll the list up or down one page. Alternatively, touch and slide the knob to scroll through the list.


MEMO

24. CC-Link IE Field Network DIAGNOSTICS

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

24.1 Features

The CC-Link IE Field Network diagnostics function monitors and diagnoses the status of the CC-Link IE Field Network.
The following describes the features of the CC-Link IE Field Network diagnostics.

■1. Diagnosing the CC-Link IE Field Network on the GOT

The function enables you to diagnose the status of the CC-Link IE Field Network and check errors on the GOT instead of using a personal computer.

■2. Displaying the event history and outputting data to a CSV file

The function acquires and displays the event history and event details in chronological order, and outputs the data into a CSV file.

24.2 Specifications

➠ 24.2.1 System configuration
24.2.2 Supported diagnostics items and station types
24.2.3 Access range
24.2.4 Precautions

24.2.1 System configuration

This section explains the system configuration of the CC-Link IE Field Network diagnostics.
For connection type settings and precautions concerning the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

Controller	Model
RCPU	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU, R08SFCPU, R16SFCPU, R32SFCPU, R120SFCPU, R08PCPU, R16PCPU, R32PCPU, R120PCPU
C controller module (MELSEC iQ-R Series)	R12CCPU-V
MELSEC iQ-F	FX5U, FX5UC
QCPU (Q mode)	Q00UJCPU *1, Q00UCPU *1, Q01UCPU *1, Q02UCPU *1, Q03UDCPU *1, Q04UDHCPU *1, Q06UDHCPU *1, Q10UDHCPU *1, Q13UDHCPU *1, Q20UDHCPU *1, Q26UDHCPU *1, Q03UDECPU *1, Q04UDEHCPU *1, Q06UDEHCPU *1, Q10UDEHCPU *1, Q13UDEHCPU *1, Q20UDEHCPU *1, Q26UDEHCPU *1, Q50UDEHCPU *1, Q100UDEHCPU *1, Q03UDVCPU *1, Q04UDVCPU *1, Q06UDVCPU *1, Q13UDVCPU *1, Q26UDVCPU *1, Q04UDPVCPU *1, Q06UDPVCPU *1, Q13UDPVCPU *1, Q26UDPVCPU *1
C controller module (Q Series)	Q12DCCPU-V, Q24DHCCPU-V, Q24DHCCPU-LS, Q26DHCCPU-LS
LCPU *2	L02SCPU, L02SCPU-P, L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT

*1 Use the Universal model QCPU that has a serial number starting with 12012 or later in the first 5 digits.
*2 Use the LCPU that has a serial number starting with 13012 or later in the first 5 digits.

■2. Connection type

This function can be used in the following connection types.

○: Available, ×: Unavailable

Function		Connection type between the GOT and controller		
Name	Description	Direct CPU connection*1	Serial communication connection*2	Ethernet connection (Ethernet port built in the CPU)
CC-Link IE Field Network diagnostics	Diagnosing the status of the CC-Link IE Field Network, displaying the event history, and outputting data to a CSV file	○	○	○

*1 The RCPU and MELSEC iQ-F do not support this connection.
*2 The MELSEC iQ-F does not support this connection.

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the CC-Link IE Field Network diagnostics to the GOT.
To use an extended function that can be started from the CC-Link IE Field Network diagnostics, also incorporate the applicable system application (extended function) into the package data.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Applicable hardware

A USB mouse is usable.

24.2.2 Supported diagnostics items and station types

The following shows the station types supported by the CC-Link IE Field Network diagnostics, and the available diagnostics items by station type.

■1. Available diagnostics items by station type

○: Available, ×: Unavailable

Item		Type of the target station		
		Master station	Local station	Submaster station
Network configuration diagram monitor	Displaying the system configuration diagram (Acquiring the connection information)	○	○	○
	Displaying the cable disconnection	○	○	○
	Selecting a module on another network to be diagnosed upon startup of the diagnostics function	○	○	○
	Starting the system launcher	○	○	○
	Starting the drive recorder*3	○	×	×
	Deleting the disconnected station	○	○	○
Selected station communication status monitor*1	Displaying the status of the selected station	○	○	○
	Displaying the MAC address	○	○	○
	Displaying the IP address	○	○	○
	Displaying the error details (troubleshooting)	○	○	○
Disconnected station status monitor	Displaying the disconnected station	○	○	○
Network event history*2	Displaying the events that have occurred on the own station	○	○	○
	Displaying all network events	○	×	○
	Saving the event history	○	○	○
	Clearing the own station event history	○	○	○
	Clearing the whole network event history	○	×	○
	Displaying the network event details	○	○	○

*1 The status of an unsupported module is not displayed.
*2 Not available when the connection destination is an RCPU or MELSEC iQ-F.
*3 Available only when the selected station is MR-J4-GF.

■2. Starting other functions from the module selected in the network configuration diagram

○: Available, ×: Unavailable

Function	Selected module					
	Master/local module	Head module	Bridge module	Counter module	Simple motion module	Servo amplifier
Starting the system launcher	○	○	×	○	○	×
Starting the drive recorder function	×	×	×	×	×	○*1

*1 This function can be started when MR-J4-GF is a selected station.

24.2.3 Access range

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

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

24.2.4 Precautions

■1. Monitoring other networks

To monitor other networks, configure the routing parameter setting on the GOT and PLC sides.
For the routing parameter setting, refer to the following.

- Routing parameter setting on the GOT side

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

- Routing parameter setting on the PLC side

➠ User's manual of the CC-Link IE Field Network master/local module used

24.3 Operations for Display

This section explains how to display the CC-Link IE Field Network diagnostics screen after the GOT is turned on.

Step 1. Turn on the GOT.

Step 2. Display the CC-Link IE Field Network diagnostics screen.
Display the screen by one of the following methods.

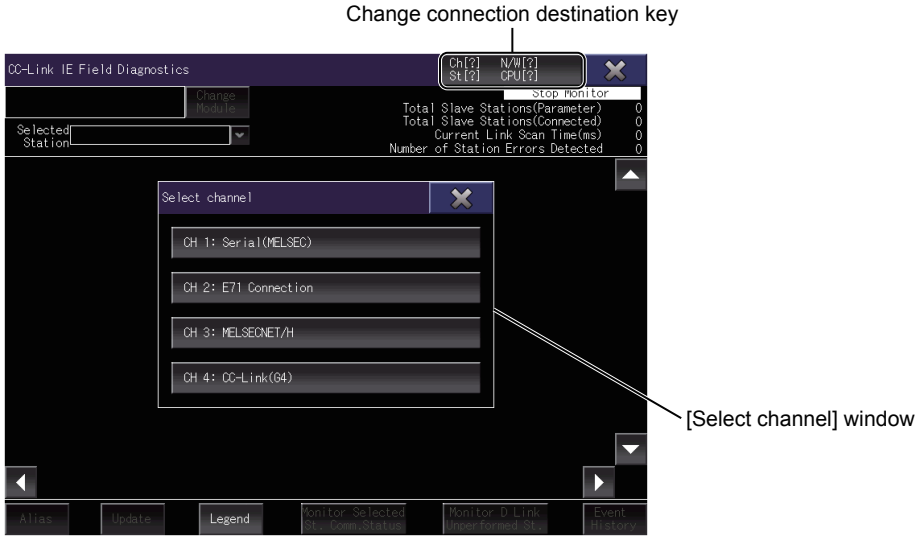
- Using the special function switch (CC-Link IE Field Network diagnostics) set in the project
  For information on how to set a special function switch, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  In the utility, touch [Monitor] → [CC-Link IE Field Network diagnostics] from the main menu.
  For information on how to display the utility, refer to the following.

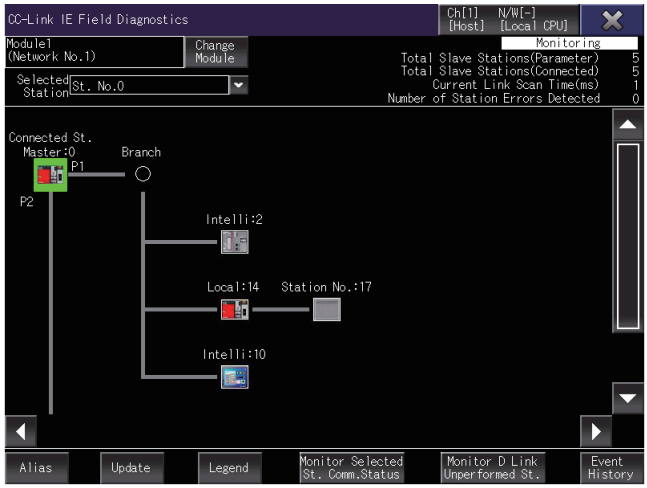
  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number.
Set the channel number of the controller for which the CC-Link IE Field Network diagnostics is performed.
After the GOT is turned on, the [Select channel] window is displayed automatically only at the first startup of the network monitor.
To display the [Select channel] window after the first startup, touch the change connection destination key on the CC-Link IE Field Network diagnostics screen.

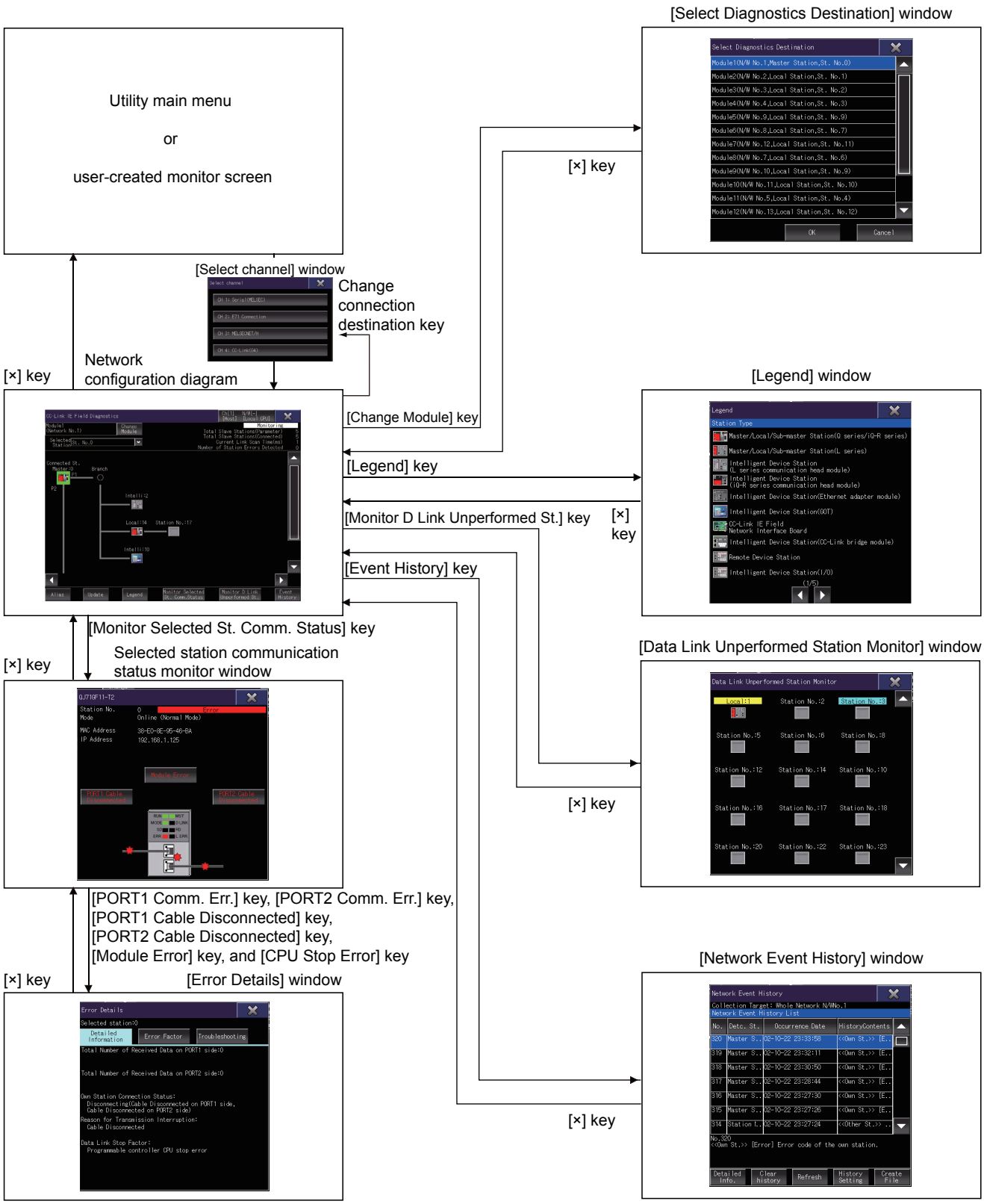
➠ 24.4 Operating Procedure



Step 4. Start the CC-Link IE Field Network diagnostics.
Select a channel number to start the CC-Link IE Field Network diagnostics.

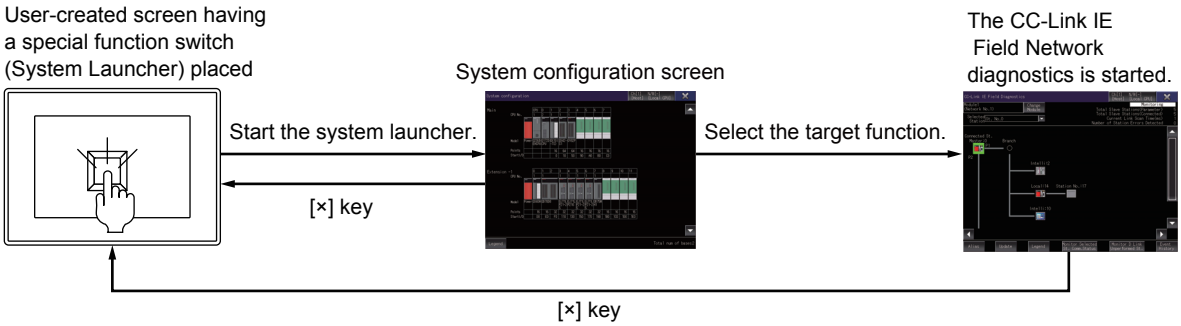


■1. Screen transition



(1) Starting the function by using the special function switch (System launcher)

You can start the CC-Link IE Field Network diagnostics from a user-created screen by selecting the connection destination with a special function switch (System launcher).



POINT

When the system launcher does not support the connection destination

When the system launcher does not support the set connection destination, a dialog appears at the startup.

For the details of the system launcher, refer to the following.

➠ 2. SYSTEM LAUNCHER

24.4 Operating Procedure

This section explains the display data of the CC-Link IE Field Network diagnostics screen and the functions of the keys displayed on the screen.
The display screen of the CC-Link IE Field Network diagnostics varies with the GOT model.

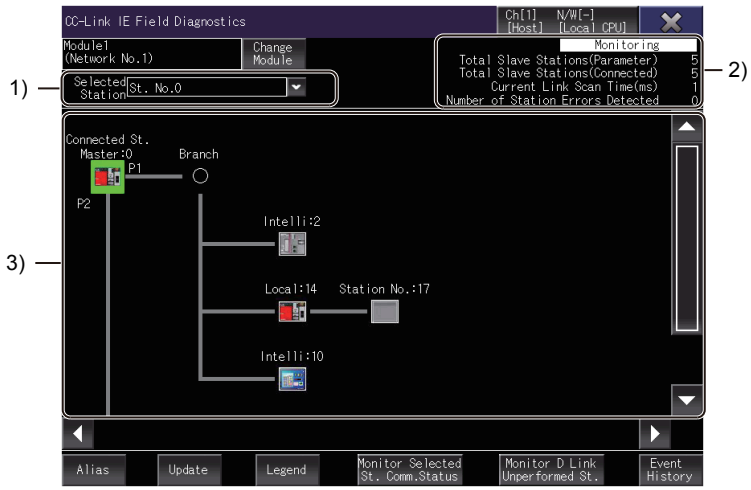
24.4.1 Network configuration diagram screen

This section explains the screen layout and the common operations when the CC-Link IE Field Network diagnostics is performed.

■1. Display contents and key functions

(1) Displayed contents

The following explains the structure of the network configuration diagram screen and the functions of the keys displayed on the screen after the CC-Link IE Field Network diagnostics is started.



1) [Selected Station]

Select a monitoring target station in the list box.
The network configuration diagram of the selected station appears in the network configuration diagram display area.

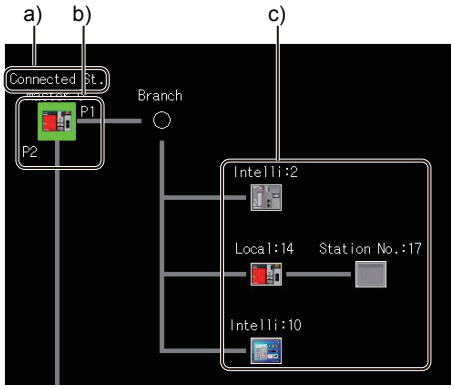
2) Network status display area

Displays the status of the network being monitored.
The following shows the display items.

- Monitoring status
  Displays the current monitoring status.
  [Monitoring], [Stop Monitor], or [Communication error] is displayed.
- [Total Slave Stations(Parameter)]
  Indicates the total number of slave stations specified with parameters.
  The displayed value ranges from [1] to [120].
- [Total Slave Stations(Connected)]
  Indicates the number of slave stations connected in the network configuration diagram.
  The master station and disconnected station are not included.
  The displayed value ranges from [1] to [120].
- [Current Link Scan Time(ms)]
  Indicates the link scan time of the network being monitored.
  The displayed value ranges from [0] to [65535].
- [Number of Station Errors Detected]
  Indicates the total number of stations where errors have occurred in the network configuration diagram.

3) Network configuration diagram display area

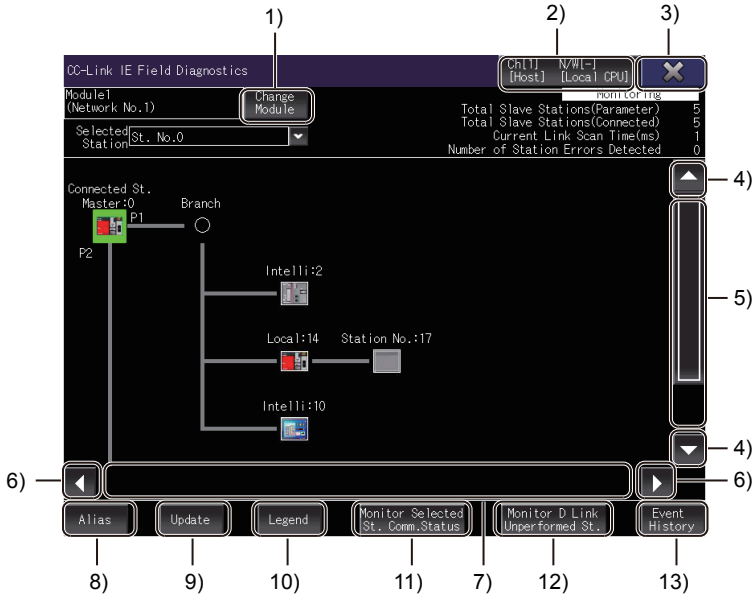
Displays the network configuration diagram of the diagnostics target network.
The following shows the display items.



a) Station connected with the GOT
b) Port where a cable is connected
- P1: PORT1
- P2: PORT2

c) Equipment icon
The station type and station number, or the device name and station number are displayed above each equipment icon.
To switch the display between station type and device name, use the [Alias] key.
The background color of text varies with the station type as shown below.
- Turquoise: Reserved station
- Orange: Reserved station that is temporarily canceled
- Yellow: Temporary error invalid station
- Gray: Error invalid station
- Red: Master station that is operating as a submaster station

(2) Key functions



1) [Change Module] key

Displays the [Select Diagnostics Destination] window.
While the [Select Diagnostics Destination] window is being displayed, monitoring of the network configuration diagram has stopped.

➠ 24.4.2 [Select Diagnostics Destination] window

2) Change connection destination key

Displays the [Select channel] window.

3) [×] key

Closes the CC-Link IE Field Network diagnostics, and returns to the screen where the diagnostics was started.

4) Up/down scroll key
Scrolls the network configuration diagram display area up or down one row.

5) Up/down scroll bar
Touch an empty area of the scroll bar above or below the knob to scroll the network configuration diagram display area up or down one page.
Alternatively, touch and slide the knob to scroll through the area.

6) Left/right scroll key
Scrolls the network configuration diagram display area left or right one column.

7) Left/right scroll bar
Touch an empty area of the scroll bar above or below the knob to scroll the network configuration diagram display area left or right one page.
Alternatively, touch and slide the knob to scroll through the area.

8) [Alias] key
Switches the display between the station type and device name.

9) [Update] key
- For the master station that has the serial number starting with 17022 or later in the first 5 digits
  Updates the network configuration diagram if it differs from the actual one.
- For the master station that has the serial number starting with 17021 or earlier in the first 5 digits
  Deletes disconnected stations from the network configuration diagram.
  The deleted stations are displayed in the [Data Link Unperformed Station Monitor] window.

➠ 24.4.7 [Data Link Unperformed Station Monitor] window

10) [Legend] key
Displays the [Legend] window.

➠ 24.4.4 [Legend] window

11) [Monitor Selected St. Comm. Status] key
Displays the window for monitoring the communication status of the selected station.

➠ 24.4.5 Communication status monitor window

12) [Monitor D Link Unperformed St.] key
Displays the [Data Link Unperformed Station Monitor] window.

➠ 24.4.7 [Data Link Unperformed Station Monitor] window

13) [Event History] key
Displays the [Network Event History] window.
While the [Network Event History] window is being displayed, monitoring of the network configuration diagram has stopped.

➠ 24.4.8 [Network Event History] window

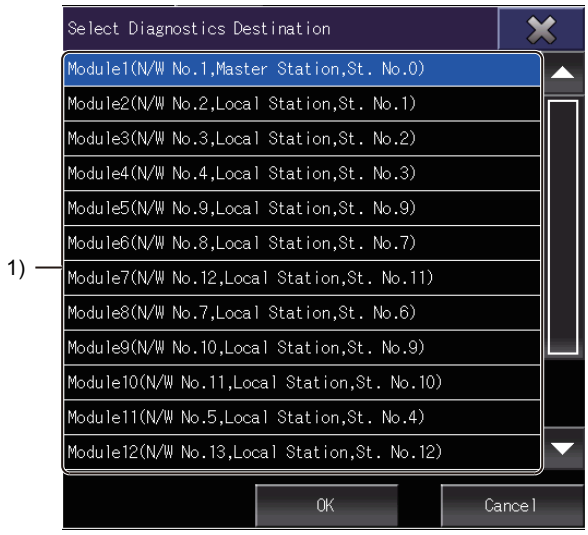
24.4.2 [Select Diagnostics Destination] window

When multiple CC-Link IE Field Network modules have been connected to the CPU of the connected station, select a diagnostics destination module.

■1. Display contents and key functions

The following explains the structure of the [Select Diagnostics Destination] window and the functions of the keys displayed on the window.

(1) Displayed contents



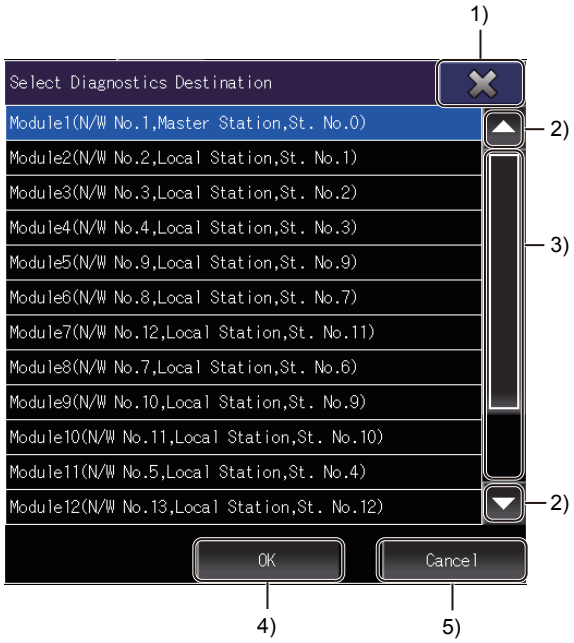
1) Module selection list

Displays the list of the CC-Link IE Field Network modules connected to the CPU of the connected station.
The following shows the display items.

- Module number
  Displays the module number of each CC-Link IE Field Network module.
  The displayed value ranges from [1] to [64].
- Network number
  Displays the network number of each CC-Link IE Field Network module.
  The displayed value ranges from [1] to [239].
- Station type
  Displays the station type of each CC-Link IE Field Network module.
  [Master Station], [Local Station], or [Sub-Master Station] is displayed.
- Station number
  Displays the station number of each CC-Link IE Field Network module.
  The displayed value ranges from [0] to [120], or [Sta.No. not set] is displayed.

(2) Key functions

The following shows the operation keys in the [Select Diagnostics Destination] window.



1) [×] key

Closes the [Select Diagnostics Destination] window, and returns to the network configuration diagram.

2) Up/down scroll key

Scrolls the contents in the list up or down one row.

3) Up/down scroll bar

Touch an empty area of the scroll bar above or below the knob to scroll one page up or down.
Alternatively, touch and slide the knob to scroll through the list.

4) [OK] key

Closes the [Select Diagnostics Destination] window and displays the selected diagnostics destination in the network configuration diagram display area.

5) [Cancel] key

Cancels the selected item, closes the [Select Diagnostics Destination] window, and returns to the network configuration diagram.

24.4.3 Context menu

Touch an equipment icon in the network configuration diagram to display the context menu.

■1. Display contents and key functions

The following explains the structure of the context menu and the functions of the keys displayed on the menu.

(1) Displayed contents

1) Title bar
Displays the model of the module in the selected station.

2) [Alias]
Displays the user-specified name of the module in the selected station.
Displays nothing when no model name is specified.

3) [Station Type]
Displays the station type of the selected station.

4) [Station No.]
Displays the station number of the selected station.

(2) Key functions

1) [×] key
Exits the context menu and returns to the network configuration diagram.

2) [Monitor Selected St. Comm. Status] key
Displays the window for monitoring the communication status of the selected station.
This key can be used for all selected stations.

3) [System Launcher] key
Exits the CC-Link IE Field Network diagnostics and starts the system launcher.
When the one of the following stations is selected, the system launcher is not started.
- CC-Link IE Field Network interface board
- Remote device station
- Partner product

4) [Drive recorder] key
Exits the CC-Link IE Field Network diagnostics and starts the drive recorder when a master station is monitored and MR-J4-GF is selected.

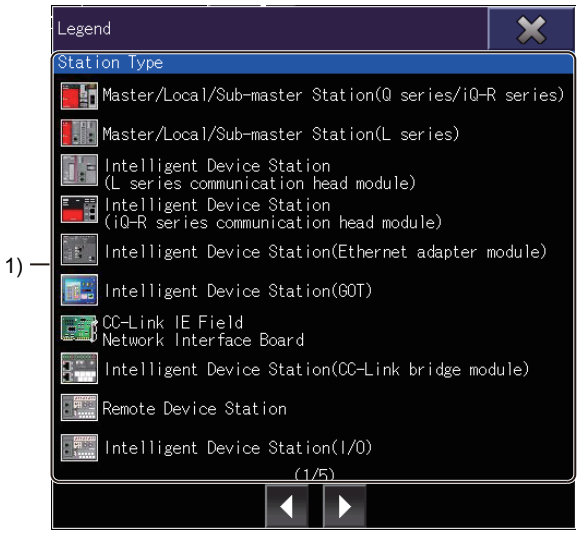
24.4.4 [Legend] window

This window lists the descriptions of the icons appearing on the network configuration diagram.

■1. Display contents and key functions

The following explains the structure of the [Legend] window and the functions of the keys displayed on the window.

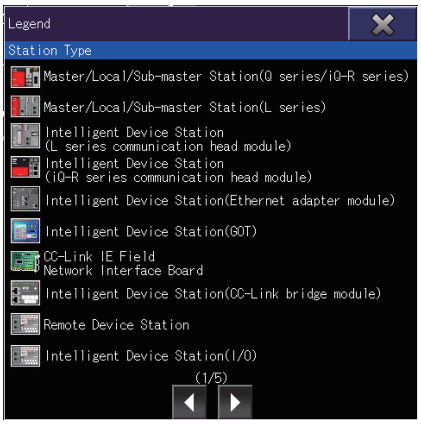
(1) Displayed contents



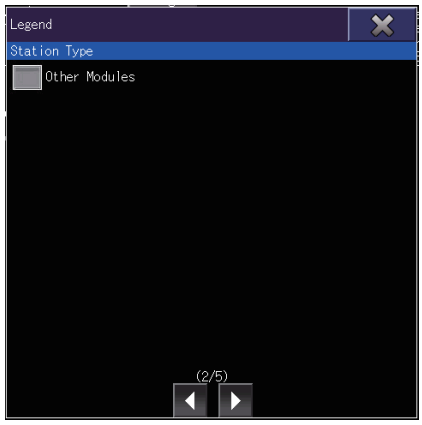
1) Legend display area

Lists the descriptions of the icons that indicate the equipment status and the communication status between stations.

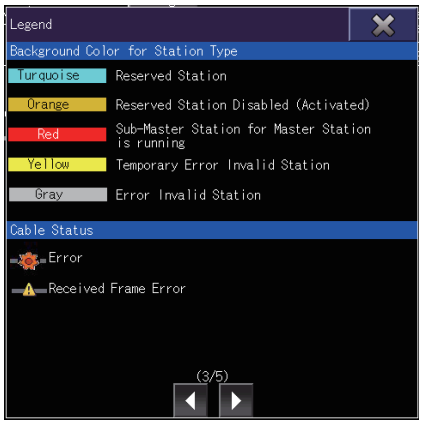
The following shows the display items.



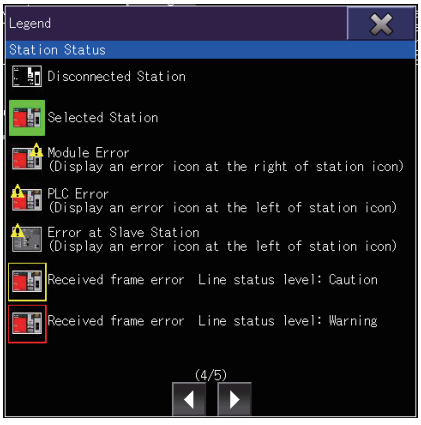
[Legend] window (1/5)



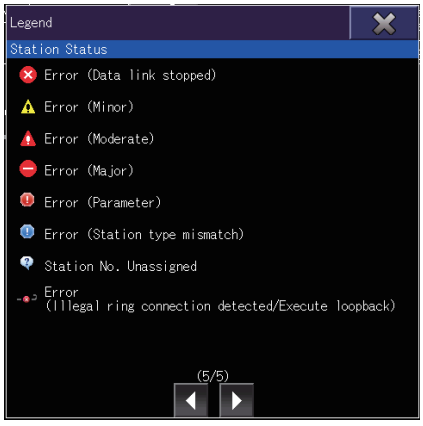
[Legend] window (2/5)



[Legend] window (3/5)



[Legend] window (4/5)



[Legend] window (5/5)

(2) Key functions

The following shows the operation keys in the [Legend] window.

1) [×] key

Exits the [Legend] window and returns to the network configuration diagram.

2) Left key

Moves to the previous page.

3) Right key

Moves to the next page.

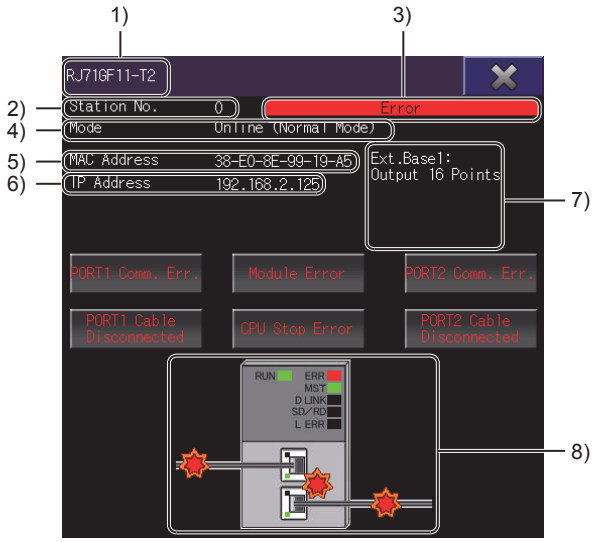
24.4.5 Communication status monitor window

This window displays the communication status of the module that is selected in the network configuration diagram.

■1. Display contents and key functions

The following explains the structure of the communication status monitor window and the functions of the keys displayed on the window.

(1) Displayed contents



1) Title bar
Displays the module type of the selected station.

2) [Station No.]
Displays the station number of the selected station.

3) Error notification
Displays [Error] when an error has occurred in the selected station.

4) [Mode]
Displays the mode of the selected station.
The following shows the display items.
- [Online]
- [Online (Normal Mode)]
- [Online (High-Speed Mode)]
- [Online (High-Speed Remote Net Mode)]
- [Loop Test]

5) [MAC Address]
Displays the MAC address of the selected station.

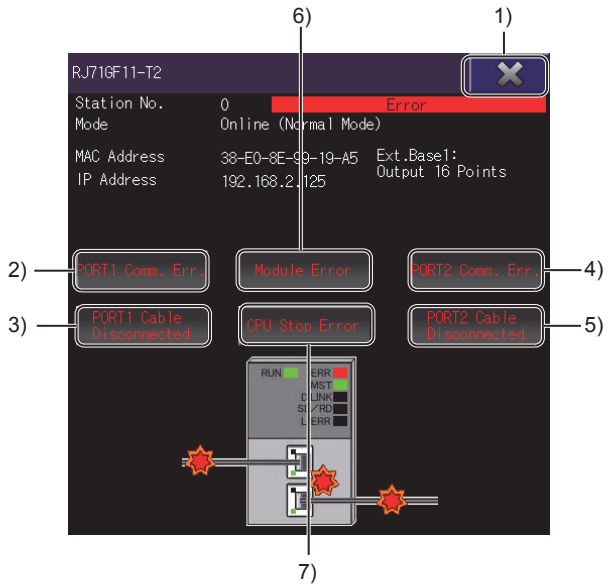
6) [IP Address]
Displays the IP address set for the CC-Link IE Field Network module.
In the following cases, no IP address is displayed.
- Station where no IP address has been set
- Station where no station number has been set
- Remote device station
- Bridge module
- Counter module
- Motion module

7) Extension module name display area
Displays the type and number of points of each extension module that is connected to the selected main module.
Displays nothing when no extension module is connected.
Displays nothing when the extension module information cannot be acquired from the connected station.

8) Communication status of the selected station
Displays the communication status of the selected station.

(2) Key functions

The following shows the operation keys on the communication status monitor window.



1) [×] key

Closes the communication status monitor window, and returns to the network configuration diagram.

2) [PORT1 Comm. Err.] key

Appears when the line status of PORT1 in the selected station is abnormal.
Touch this key to display the [Error Details] window.

➠ 24.4.6 [Error Details] window

3) [PORT1 Cable Disconnected] key

Appears when the cable connected to PORT1 in the selected station is faulty.
Touch this key to display the [Error Details] window.

➠ 24.4.6 [Error Details] window

4) [PORT2 Comm. Err.] key

Appears when the line status of PORT2 in the selected station is abnormal.
Touch this key to display the [Error Details] window.

➠ 24.4.6 [Error Details] window

5) [PORT2 Cable Disconnected] key

Appears when the cable connected to PORT2 in the selected station is faulty.
Touch this key to display the [Error Details] window.

➠ 24.4.6 [Error Details] window

6) [Module Error] key

Appears when an error has occurred in the module.
Touch this key to display the [Error Details] window.

➠ 24.4.6 [Error Details] window

7) [CPU Stop Error] key

Appears when a CPU stop error has occurred.
Touch this key to display the [Error Details] window.

➠ 24.4.6 [Error Details] window

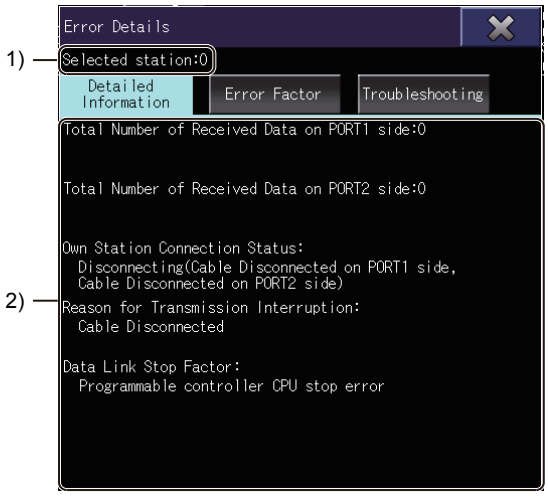
24.4.6 [Error Details] window

This window displays the error details when an error has occurred in the module that is selected in the network configuration diagram.

■1. Display contents and key functions

The following explains the structure of the [Error Details] window and the functions of the keys displayed on the window.

(1) Displayed contents



1) [Selected station]

Displays the station number of the selected station.

2) Display area for detailed information, error factors, or troubleshooting

Displays detailed information, error factors, or troubleshooting for the generated error.

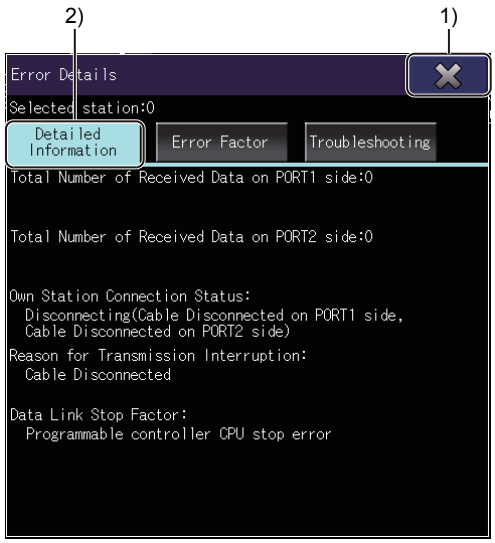
To switch the display, touch the [Detailed Information] key, [Error Factor] key, or [Troubleshooting] key.

The following lists the display items of [Detailed Information].

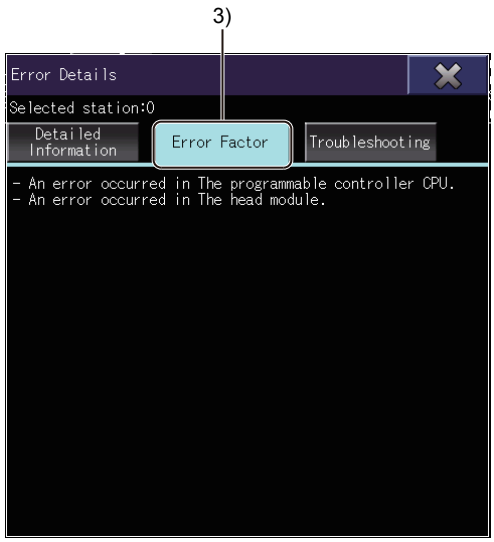
- [Total Number of Received Data on PORT1 side]
- [Total Number of Received Data on PORT2 side]
- [Own Station Connection Status]
- [Reason for Transmission Interruption]
- [Disconnected Cable Detecting Count on PORT1 side]
- [Disconnected Cable Detecting Count on PORT2 side]
- [Data Link Stop Factor]

(2) Key functions

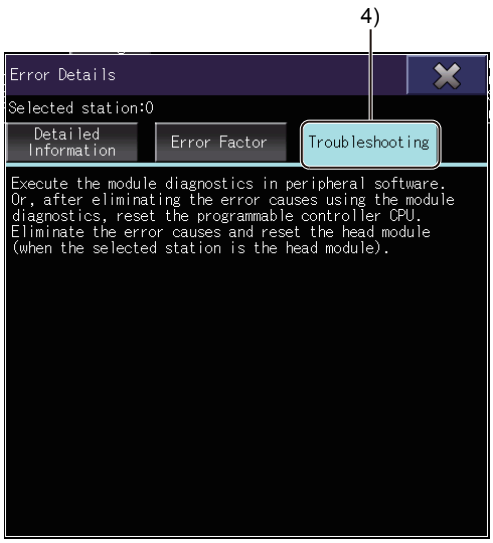
The following shows the functions of the operation keys on the other station CPU operation status monitor screen.



When [Detailed Information] is selected



When [Error Factor] is selected



When [Troubleshooting] is selected

1) [×] key

Closes the [Error Details] window, and returns to the network configuration diagram.

2) [Detailed Information] key

Displays the error details in the display area.

3) [Error Factor] key

Displays the error factors in the display area.

4) [Troubleshooting] key

Displays the troubleshooting in the display area.

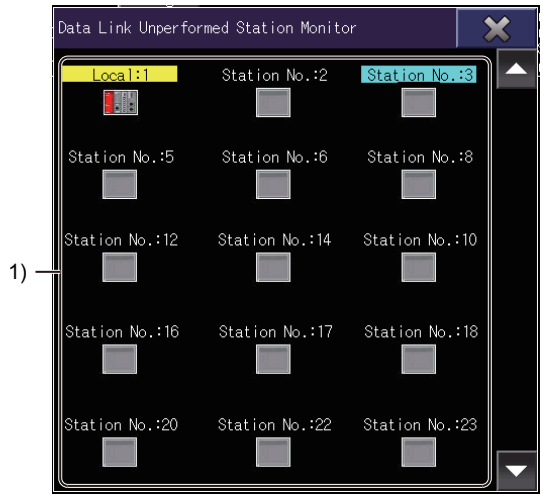
24.4.7 [Data Link Unperformed Station Monitor] window

This window lists the stations where data link is not performed.

■1. Display contents and key functions

The following explains the structure of the [Data Link Unperformed Station Monitor] window and the functions of the keys displayed on the window.

(1) Displayed contents



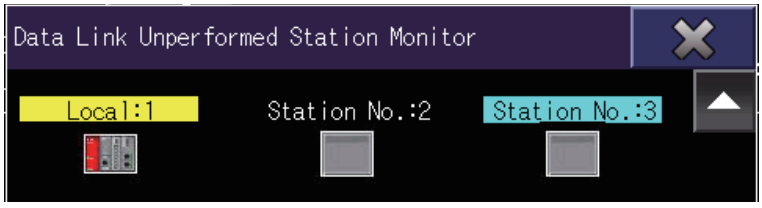
1) Data link unperformed station display area

Lists the icons of the stations where data link is not performed.

The station type and station number are displayed above each icon.

The background color of text varies with the station type as shown below.

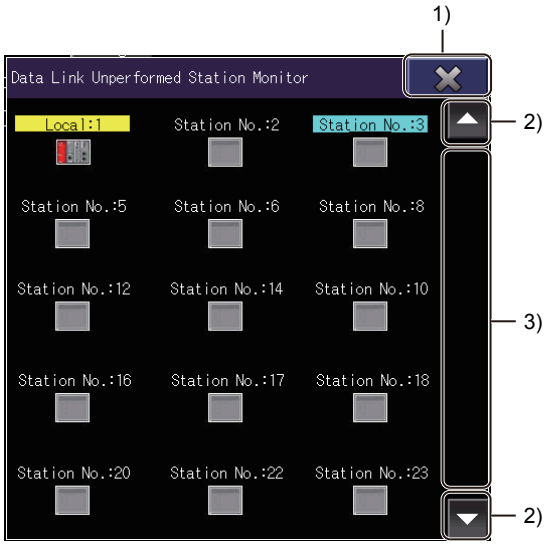
- Turquoise: Reserved station
- Orange: Reserved station that is temporarily canceled
- Yellow: Temporary error invalid station
- Gray: Error invalid station



When the master station has the serial number starting with 17021 or earlier in the first 5 digits, updating the network configuration diagram deletes the disconnected stations. The deleted stations are displayed as data link unperformed stations.

(2) Key functions

The following shows the operation keys on the [Data Link Unperformed Station Monitor] window.



1) [×] key

Closes the [Data Link Unperformed Station Monitor] window, and returns to the network configuration diagram.

2) Up/down scroll key

Scrolls the contents in the list up or down one row.

3) Up/down scroll bar

Touch an empty area of the scroll bar above or below the knob to scroll one page up or down.
Alternatively, touch and slide the knob to scroll through the list.

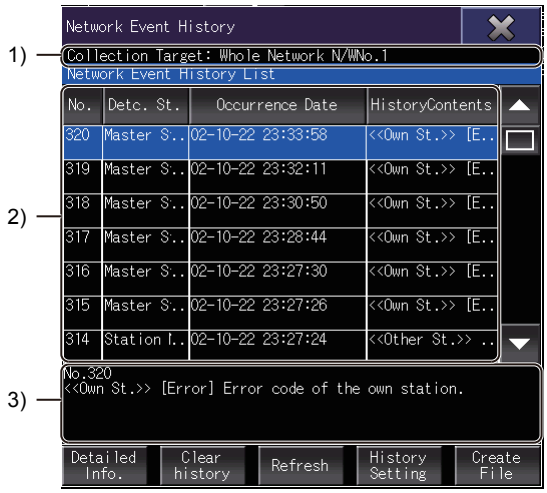
24.4.8 [Network Event History] window

This window displays the history of events that have occurred on the network and details of the history in chronological order.

■1. Display contents and key functions

The following explains the structure of the [Network Event History] window and the functions of the keys displayed on the window.

(1) Displayed contents



1) Collection target display area
Displays the collection target.

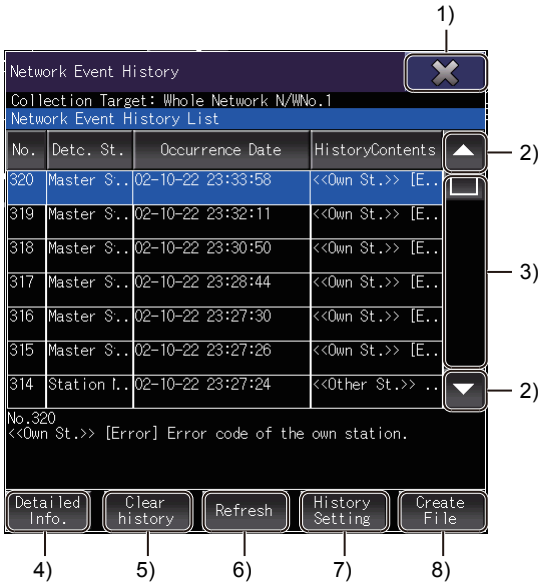
2) Network event history list display area
Displays the network event history list.
The following shows the display items.

- Network event number
- [Detc. St.]
- [Occurrence Date]
- [HistoryContents]

3) Display area for event details
Displays the number and details of the event selected in the network event history list.

(2) Key functions

The following shows the operation keys in the [Network Event History] window.



1) [×] key

Closes the [Network Event History] window, and returns to the network configuration diagram.

2) Up/down scroll key

Scrolls the contents in the list up or down one row.

3) Up/down scroll bar

Touch an empty area of the scroll bar above or below the knob to scroll one page up or down. Alternatively, touch and slide the knob to scroll through the list.

4) [Detailed Info.] key

Displays the [Detailed Information] window.

➠ (3) [Detailed Information] window

5) [Clear history] key

Deletes the network event history that the module retains.

6) [Refresh] key

Acquires the latest network event history from the module and updates the network event history list.

7) [History Setting] key

Displays the [History Acquisition Setting] window.

➠ (4) [History Acquisition Setting] window

8) [Create File] key

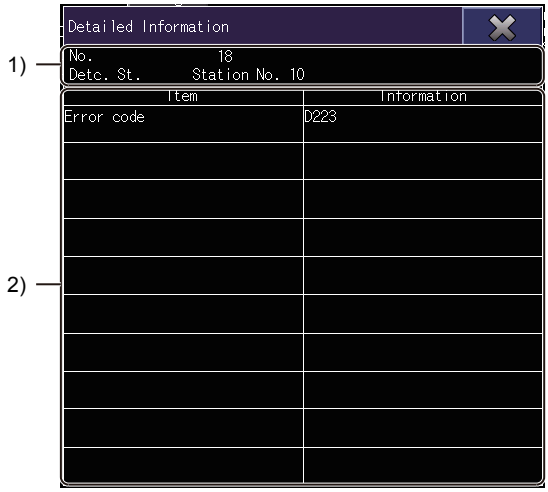
Displays the [Create File] window.

➠ (5) [Create File] window

(3) [Detailed Information] window

The following explains the structure of the [Detailed Information] window and the functions of the keys displayed on the window.

(a) Displayed contents



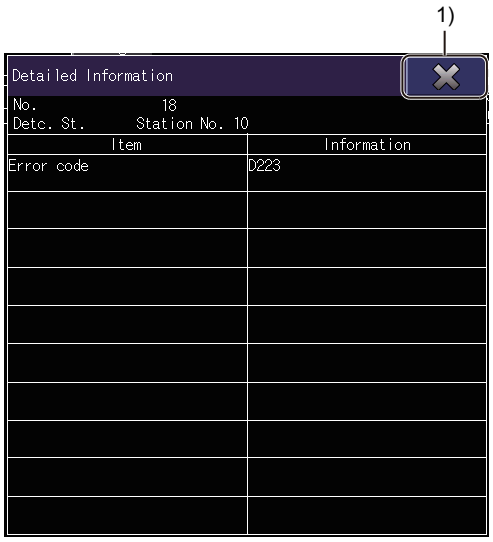
1) Collection target display area

Displays the collection target.

2) Detailed information display area

Displays the details of the event selected in the network event history list.

(b) Key functions



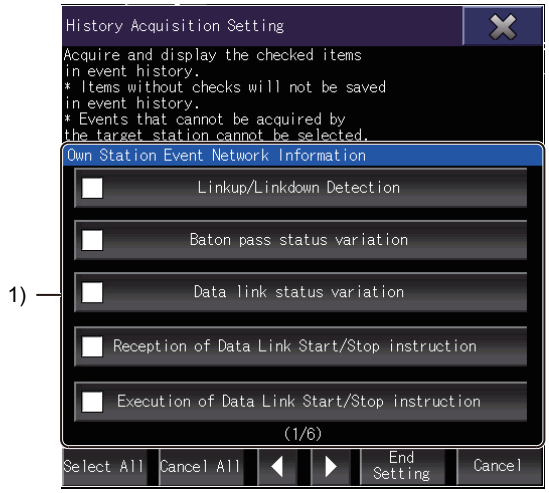
1) [×] key

Closes the [Detailed Information] window.

(4) [History Acquisition Setting] window

The following explains the structure of the [History Acquisition Setting] window and the functions of the keys displayed on the window.

(a) Displayed contents



1) Event history acquisition setting list

Lists the collection target events.

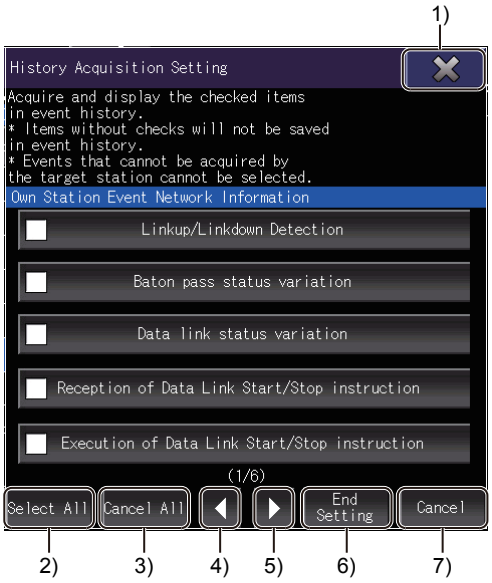
Select the event to save it in the history.

The following table lists the collection target events.

Display item		Details
Events on the own station	Linkup/Linkdown Detection	Indicates that the linkup or linkdown is detected on PORT1 or PORT2 of the own station.
	Baton pass status variation	Indicates that the baton pass status of the own station is changed.
	Data link status variation	Indicates that the data link status of the own station is changed.
	Reception of Data Link Start/Stop instruction	Indicates that the own station receives the data link start/stop instruction.
	Execution of Data Link Start/Stop instruction	Indicates that the own station sends the data link start/stop instruction to the own station or another station.
	Reception of Enable/Disable temporary Error Invalid Station instruction	Indicates that the own station receives the enable/disable temporary error invalid station instruction from the master station.
	Execution of Enable/Disable temporary Error Invalid Station instruction	Indicates that the own station sends the enable/disable temporary error invalid station instruction to the slave station.
	Reception of Enable/Restore reserved station instruction	Indicates that the own station receives the enable/restore reserved station instruction from the master station.
	Execution of Enable/Restore reserved station instruction	Indicates that the own station sends the enable/restore reserved station instruction to the slave station.
	Reception of station No. setting	Indicates that the own station receives the station number setting instruction from the master station.
	Execution of station No. setting	Indicates that the own station sends the station number setting request to a station where no station number is set.
	Parameter changes	Indicates that the parameter setting of the module in the own station is changed.
	Own station PLC run status change	Indicates that the RUN status of the CPU in the own station is changed.
	Received Frame Error	Indicates that a frame error occurs on PORT of the own station.
	Error in own station module	Indicates that an error occurs in the module of the own station.
	Error in own station PLC	Indicates that an error occurs in the PLC of the own station.

Display item		Details
Events on other stations	Baton pass status variation	Indicates that the baton pass status is changed.
	Data link status variation	Indicates that the data link status of a station is changed.
	Temporary Error Invalid Station setting status change	Indicates that the setting status of a temporary error invalid station is changed by the enable/disable temporary error invalid station instruction.
	Reserved station status change	Indicates that the setting status of a reserved station is changed by the enable/restore reserved station instruction.
	Own station PLC run status change	Indicates that the RUN status of the CPU in a station is changed.
	Received Frame Error	Indicates that PORT1 or PORT2 in another station receives a faulty frame.
	Error in PLC	Indicates that a CPU error (continuation/stop) occurs in another station.
	Parameter Error	Indicates that the parameter analysis result contains an error.
	Master station overlap/station No. overlap	Indicates that a master station duplication error or station number duplication error occurs on the network.
	Path was switched while using Loopback function	Indicates that path switching occurs when the loopback function is used.

(b) Key functions



1) [×] key
Exits the [History Acquisition Setting] window.

2) [Select All] key
Selects all items of the own station events and other stations events.

3) [Cancel All] key
Clears all items of the own station events and other stations events.

4) Left key
Moves to the previous page.

5) Right key
Moves to the next page.

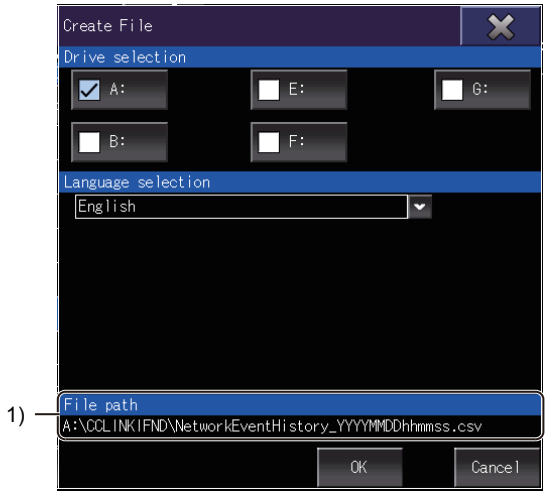
6) [End Setting] key
Ends the setting.

7) [Cancel] key
Discards the setting and exits the [History Acquisition Setting] window.

(5) [Create File] window

The following explains the structure of the [Create File] window and the functions of the keys displayed on the window.

(a) Displayed contents



1) File path

Displays the path where a CSV file is to be saved.

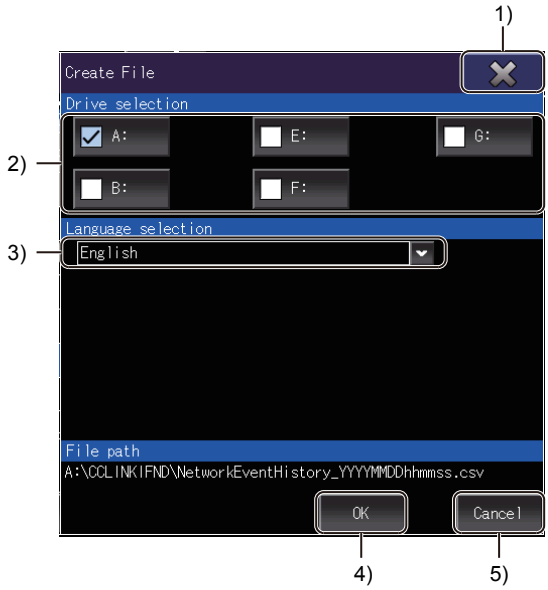
The drive that has been selected in [Select drive] is used.

The following shows an example of a CSV file name.

NetworkEventHistory_YYYYMMDDhhmmss.csv

Year, Month, Date, Hour, Minute, Second

(b) Key functions



1) [×] key
Exits the [Create File] window.

2) [Drive selection]
Select the drive to save the CSV file.
Select a drive that the GOT can access when the [Create File] window is displayed.

3) [Language selection]
Select the language for the CSV file.
The following shows the selectable languages.

- Japanese
- English
- Chinese (Simplified)
- Chinese (Traditional)
- Korean

4) [OK] key
Creates a CSV file with the set language in the selected drive.

5) [Cancel] key
Discards the setting and exits the [Create File] window.

24.5 Error Messages and Corrective Actions

This section describes the error messages displayed when the CC-Link IE Field Network diagnostics is executed, and the corrective actions.

Error message[1*]	Description	Corrective action
Failed to access the □: drive. Check for the memory card and the access switch status.	The GOT cannot access the drive where the file saved.	• Check that a memory card has been installed to the drive. • Check that the access switch is on.(Only when drive A is used)
The drive is write protected. The file cannot be saved. Check the write destination drive (*:).	The format of the memory card (file storage destination drive) is invalid.	Format the memory card so as to be compatible with the GOT.
The drive is write protected. The file cannot be saved. Check the write destination drive (*:).	The memory card (file storage destination drive) is write-protected.	Check that the memory card is not write-protected. Otherwise, remove the write protection.
Free space in the □: drive is insufficient. Failed to save the file. Select the drive with sufficient free space.	The memory card (file storage destination drive) does not have enough space.	• Use a memory card having enough space. • Delete unnecessary files to free up space on the memory card.
Failed to create a file. Check if the write destination memory card is correct and try the operation again.	The file creation has failed due to factors other than those above.	Check the memory card, install it again, and create the file.
Communication error occurred. Please confirm that cables and communication routes are correct. Please also check that the PLC is running and the routing information is set.	The communication with the connected PLC CPU cannot be established.	• Check the connection between the PLC and the GOT. (No disconnected connectors and no broken cables) • Check that no error occurs in the PLC. • When using the Ethernet connection, check that the routing parameter setting on GT Designer3 is correct.
Cannot access the connection destination. Please select the connection destination again.	The communication with the connected PLC CPU cannot be established.	• Check the connection between the PLC and the GOT. (No disconnected connectors and no broken cables) • Check that no error occurs in the PLC. • When using the Ethernet connection, check that the routing parameter setting on GT Designer3 is correct.
The device set to the connection destination is not supported by this function.	The CC-Link IE Field Network diagnostics does not support the PLC CPU that is specified as the connection destination.	Specify a PLC CPU that is supported by the CC-Link IE Field Network diagnostics.
This function can not be performed using the current connection target setting. Please change the Current Connection Destination and try again.	For the serial connection, another station has been specified as a connection destination of the PLC CPU.	For the serial connection, specify the own station as a connection destination of the PLC CPU.
Selected module does not exist. Please select again.	• The module selected in the [Select Diagnostics Destination] window does not exist in the connected station. • While the module monitored in the last session is not mounted on the connected station, the CC-Link IE Field Network diagnostics is started by using a special function switch with no module specified. • While the module monitored in the last session is not mounted on the connected station, the CC-Link IE Field Network diagnostics is started from the utility. • A module nonexistent in the connected station is specified in the setting of the special function switch with which the CC-Link IE Field Network diagnostics is started.	Mount the target CC-Link IE Field Network module on the connected master station.
CC-Link IE Field module does not exist in connected station.	• The connected station has no CC-Link IE Field Network module when the [OK] button in the [Select Diagnostics Destination] window is touched. • The connected station has no CC-Link IE Field Network module when the [Change Module] key is touched.	Add a CC-Link IE Field Network module as a station controlled by the connection destination PLC CPU.

Error message[1*]	Description	Corrective action
Unable to start CC-Link IE Field diagnostics. The following reasons are possible. • CC-Link IE Field module is not the online mode. • Unsupported communication mode has been set in this version. Please set the module operation mode of module parameter to online mode.	The CC-Link IE Field Network module to be diagnosed is not in the online mode or loop test mode.	Change the mode of the diagnostics target CC-Link IE Field Network module to the online mode or line test mode.
Select station No. is not set. Please execute again after setting station No.	The user has attempted to start the system launcher or the drive recorder from the context menu of a station that has no station number.	Use peripheral software to set a station number for the selected station.
Unable to start CC-Link IE Field diagnostics. The following reasons are possible. • CC-Link IE Field module does not exist in the connecting station. • The I/O assignment setting of system parameter and PLC structure do not match. Correct the I/O assignment setting of PLC after checking PLC structure in system monitor.	The connected station has no CC-Link IE Field Network module, or the CC-Link IE Field Network diagnostics is started when the connected PLC has the incorrect I/O assignment setting.	• Add a CC-Link IE Field Network module as a station controlled by the connection destination PLC CPU. • Use peripheral software to check if the I/O assignment setting of the PLC is correct.
This function can not be performed using the current connection target setting. Please change the Current Connection Destination and try again.	A connection type unsupported by the CC-Link IE Field Network diagnostics is specified.	Specify a connection type (serial connection or Ethernet connection) that is supported by the CC-Link IE Field Network diagnostics.
The set port No. is not supported by this function. Review the port No. in the Ethernet setting on the GOT.	A port number unsupported by the CC-Link IE Field Network diagnostics is set when the Ethernet connection is used.	Specify a port number supported by the CC-Link IE Field Network diagnostics in the Ethernet setting on GT Designer3. • RCPU: 5006 (fixed) • MELSEC iQ-F: 5562 (fixed) • QCPU: 5006 • LCPU: 5006 (fixed)
The same network No. is used in the Ethernet setting the diagnostics target. Review the network No. of the Ethernet setting.	A network number registered in the Ethernet setting is specified for the diagnostics target module that is connected by Ethernet.	Check the Ethernet setting on GT Designer3. Specify a network number other than those registered in the Ethernet setting for the diagnostics target module.
The link module is not in the online mode. Please set the link module's switch to the online mode.	The CC-Link IE Field Network module to be diagnosed is not in the online mode.	Set the online mode for the CC-Link IE Field Network module to be diagnosed.
The network No. and the station No. of the connection destination do not exist in the Ethernet setting. Please review the settings in the screen design software.	The PLC CPU connected by Ethernet has the network number and station number that are not registered in the Ethernet setting.	Add the network number and station number of the connected PLC CPU to the Ethernet setting on GT Designer3.
This function does not support setting the Ethernet unit as the connection destination.	An Ethernet interface module is specified in the Ethernet setting when the Ethernet connection is used.	Specify a Built-in Ethernet port CPU in the Ethernet setting on GT Designer3.
Connected station No. has not been set. Please set it.	No station number has been set for the module selected in the [Select Diagnostics Destination] window.	Set the station number for the selected station with the peripheral software.

*1 "□:" indicates the name of the selected drive.

25. SYSTEM LAUNCHER (SERVO NETWORK)

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

25.1 Features

The system launcher (servo network) function can be used when the system launcher is used.
For details of the system launcher, refer to the following.

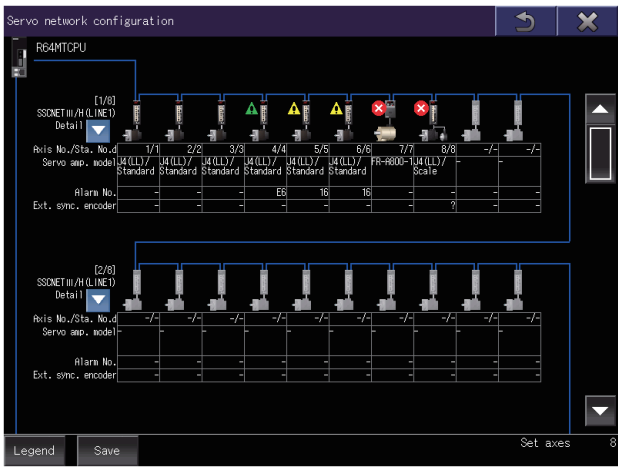
➠ 2. SYSTEM LAUNCHER

The system launcher (servo network) enables the following functions for the motion controller CPU connected to the GOT and the servo amplifier connected to the simple motion module.

■1. Displaying the configuration of the servo system controller network

The configuration of the servo system controller network can be displayed from the system launcher by using this function.
Each system application applicable to a module can be started.

➠ 25.4.1 Servo network configuration diagram



■2. Displaying the system configuration of a module

The system configuration of a module in the servo system controller network can be displayed.

➠ 25.4.2 System Configuration screen

■3. Displaying an error that has occurred in a servo amplifier

When an error occurs in the motion controller CPU connected to the GOT or servo amplifier connected to the simple motion module, an error icon appears on the controller and the communication error details can be displayed.

➠ 25.4.3 Alarm Display screen

■4. Saving information of the servo system controller network in a file

The configuration of the servo system controller network, system configuration of all connected servo amplifiers, and alarm information can be saved to a Unicode text file or CSV file in a data storage.

➠ 25.4.4 Create file screen

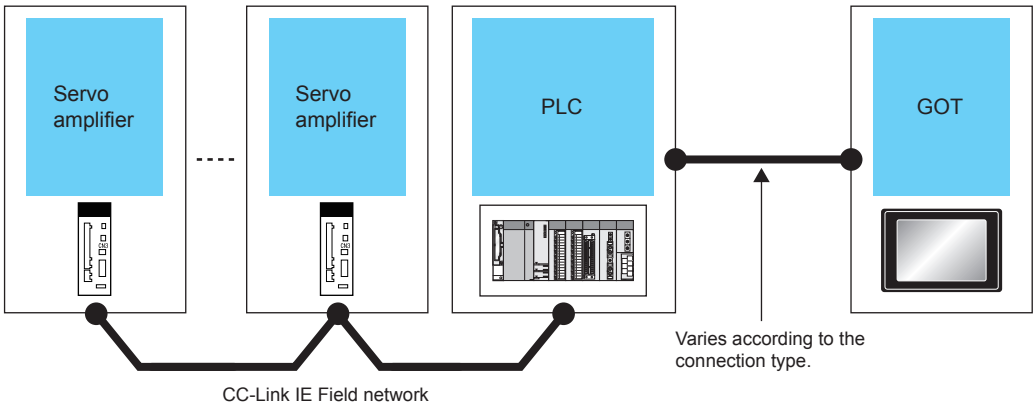
25.2 Specifications

➠ 25.2.1 System configuration
25.2.2 Precautions

25.2.1 System configuration

This section explains the system configuration of the system launcher (servo network).
For connection type settings and precautions concerning the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1



■1. Target controller of the GOT

The controllers that can be connected to the GOT are the same as those of the system launcher.
For details of the controllers, refer to the following.

➠ 2.2.1 ■1. Target controller

■2. Target controllers of the servo amplifier and inverter

For the motion controller CPUs and simple motion modules that can be connected to the servo amplifier and inverter, refer to the following.

(1) MR-J4(W)-B(-RJ)

Operation mode	Connection method	Motion controller CPU and simple motion module
Standard	SSCNET III/H	Q17nDSCPU, Q170MSCPU, RnMTCPU, LD77MS, QD77MS, RD77MS
Fully closed		
Linear		
DD motor		

(2) MR-JE-B

Operation mode	Connection method	Motion controller CPU and simple motion module
Standard	SSCNET III/H	LD77MS, QD77MS, RD77MS

(3) MR-J4-B-LL

Operation mode	Connection method	Motion controller CPU and simple motion module
Standard	SSCNET III/H	Q17nDSCPU, Q170MSCPU, RnMTCPU*1

*1 Use a controller with software version 03 or later.

(4) FR-A800-1

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	Q17nDSCPU*1*2, Q170MSCPU*1*2, RnMTCPU*1*3, RD77MS*1*3

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.
*2 Use a controller with software version 0J or later.
*3 Use a controller with software version 07 or later.

(5) FR-A800-2

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	Q17nDSCPU*1*2, Q170MSCPU*1*2, RnMTCPU*1*3, RD77MS*1*3

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.
*2 Use a controller with software version 0J or later.
*3 Use a controller with software version 07 or later.

(6) LJ72MS15

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	Q17nDSCPU*1*2, Q170MSCPU*1*2, RnMTCPU*1*3

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.
*2 Use a controller with software version 0C or later.
*3 Use a controller with software version 09 or later.

(7) VCII series manufactured by Nikki Denso Co., Ltd.

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	Q17nDSCPU*1*2, Q170MSCPU*1*2, RnMTCPU*1, LD77MS*1*3, QD77MS*1*3, RD77MS*1

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.
*2 Use a controller with software version 0D or later.
*3 Use a controller having a serial number stating with 16012 or later in the first 5 digits.

(8) VPH series manufactured by Nikki Denso Co., Ltd.

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	Q17nDSCPU*1*2, Q170MSCPU*1*2, RnMTCPU*1*3, LD77MS*1*4, QD77MS*1*4, RD77MS*1*3

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.
*2 Use a controller with software version 00H or later.
*3 Use a controller with software version 07 or later.
*4 Use a controller having a serial number stating with 17012 or later in the first 5 digits.

(9) AlphaStep/5-phase series manufactured by ORIENTAL MOTOR Co., Ltd.

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	Q17nDSCPU*1*2, Q170MSCPU*1*2, LD77MS*1*3, QD77MS*1*3

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.
*2 Use a controller with software version 00H or later.
*3 Use a controller having a serial number stating with 17012 or later in the first 5 digits.

(10) αSTEP AZ series manufactured by ORIENTAL MOTOR Co., Ltd.

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	RnMTCPU*1, RD77MS*1

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.

(11) 5-phase ST series manufactured by ORIENTAL MOTOR Co., Ltd.

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	RnMTCPU*1, RD77MS*1

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.

(12) IAI electric actuator controller manufactured by IAI Corporation

Connection method	Motion controller CPU and simple motion module
SSCNET III/H	Q17nDSCPU[*1], Q170MSCPU[*1], RnMTCPU[*1*2], LD77MS[*1], QD77MS[*1], RD77MS[*1]

*1 Only the settings from the motion controller CPU and simple motion module can be read.
The controller cannot be connected with servo amplifiers.
*2 Use a controller with software version 08 or later.

■3. Servo motor

The following table lists the servo motors that can be monitored by the system launcher (servo network).

Type	Model
Rotary servo motor	HG-KN053(J), HG-KN13(J), HG-KN23(J), HG-KN43(J), HG-KN73(J), HG-SN52(J), HG-SN102(J), HG-SN152(J), HG-SN202(J), HG-SN302(J), HG-KR053, HG-KR13, HG-KR23, HG-KR43, HG-KR73, HG-KR053W0C, HG-KR13W0C, HG-KR23W0C, HG-KR43W0C, HG-KR73W0C, HG-MR053, HG-MR13, HG-MR23, HG-MR43, HG-MR73, HG-RR103, HG-RR153, HG-RR203, HG-RR353, HG-RR503, HG-SR51, HG-SR52, HG-SR81, HG-SR102, HG-SR121, HG-SR152, HG-SR201, HG-SR202, HG-SR301, HG-SR352, HG-SR421, HG-SR502, HG-SR524, HG-SR702, HG-SR1024, HG-SR1524, HG-SR2024, HG-SR3524, HG-SR5024, HG-SR7024, HG-SR51W0C, HG-SR52W0C, HG-SR81W0C, HG-SR102W0C, HG-SR121W0C, HG-SR152W0C, HG-SR201W0C, HG-SR202W0C, HG-SR301W0C, HG-SR352W0C, HG-SR421W0C, HG-SR502W0C, HG-SR524W0C, HG-SR702W0C, HG-SR1024W0C, HG-SR1524W0C, HG-SR2024W0C, HG-SR3524W0C, HG-SR5024W0C, HG-SR7024W0C, HG-UR72, HG-UR152, HG-UR202, HG-UR352, HG-UR502, HG-JR53, HG-JR73, HG-JR103, HG-JR153, HG-JR203, HG-JR353, HG-JR503, HG-JR601, HG-JR701M, HG-JR703, HG-JR801, HG-JR903, HG-JR11K1M, HG-JR15K1M, HG-JR22K1M, HG-JR30K1M, HG-JR37K1M, HG-JR12K1, HG-JR15K1, HG-JR20K1, HG-JR25K1, HG-JR30K1, HG-JR37K1, HG-JR534, HG-JR734, HG-JR1034, HG-JR1534, HG-JR2034, HG-JR3534, HG-JR5034, HG-JR7034, HG-JR9034, HG-JR701M4, HG-JR11K1M4, HG-JR15K1M4, HG-JR22K1M4, HG-JR30K1M4, HG-JR37K1M4, HG-JR45K1M4, HG-JR55K1M4, HG-JR6014, HG-JR8014, HG-JR12K14, HG-JR15K14, HG-JR20K14, HG-JR25K14, HG-JR30K14, HG-JR37K14, HG-JR53W0C, HG-JR73W0C, HG-JR103W0C, HG-JR153W0C, HG-JR203W0C, HG-JR353W0C, HG-JR503W0C, HG-JR703W0C, HG-JR903W0C, HG-JR11K1MW0C, HG-JR15K1MW0C, HG-JR22K1MW0C, HG-JR534W0C, HG-JR734W0C, HG-JR1034W0C, HG-JR1534W0C, HG-JR2034W0C, HG-JR3534W0C, HG-JR5034W0C, HG-JR7034W0C, HG-JR9034W0C, HG-JR11K1M4W0C, HG-JR15K1M4W0C, HG-JR22K1M4W0C, HG-AK0136, HG-AK0236, HG-AK0336
Linear servo motor (primary side)	LM-FP2B-06M(U518), LM-FP2B-06M(U519), LM-FP2D-12M(U520), LM-FP2D-12M(U521), LM-FP2F-18M(U522), LM-FP2F-18M(U523), LM-FP4B-12M(U524), LM-FP4B-12M(U525), LM-FP4D-24M(U526), LM-FP4D-24M(U527), LM-FP4F-36M(U528), LM-FP4F-36M(U529), LM-FP4H-48M(U530), LM-FP4H-48M(U531), LM-FP5H-60M(U532), LM-FP5H-60M(U533), LM-U2PAB-05M(U512), LM-U2PBB-07M(U515), LM-H3P2A-07P(U850), LM-H3P3A-12P(U851), LM-K2P1A-01M-2SS1, LM-U2PAD-10M(U513), LM-U2PAF-15M(U514), LM-U2PBD-15M(U516), LM-H3P3B-24P(U852), LM-H3P3C-36P(U853), LM-H3P7A-24P(U855), LM-K2P2A-02M-1SS1, LM-U2PBF-22M(U517), LM-H3P3D-48P(U854), LM-H3P7B-48P(U856), LM-H3P7C-72P(U857), LM-K2P1C-03M-2SS1, LM-U2P2B-40M(U509), LM-H3P7D-96P(U858), LM-K2P2C-07M-1SS1, LM-K2P3C-14M-1SS1, LM-U2P2C-60M(U510), LM-K2P2E-12M-1SS1, LM-K2P3E-24M-1SS1, LM-U2P2D-80M(U511)
Direct drive motor	TM-RFM002C20, TM-RFM004C20, TM-RFM006C20, TM-RFM006E20, TM-RFM012E20, TM-RFM012G20, TM-RFM040J10, TM-RFM018E20, TM-RFM048G20, TM-RFM072G20, TM-RFM120J10, TM-RFM240J10, TM-RG2M004E30, TM-RG2M009G30, TM-RU2M004E30, TM-RU2M009G30

■4. Connection type

This function can be used in the following connection types.

(1) Connection type between the GOT and controller

The connection type between the GOT and controller that can be connected to the GOT is the same as that of the system launcher.
For details of the connection type, refer to the following.

➠ 2.2.1 ■1. Target controller

(2) Connection type between the inverter or servo amplifier and controller

Connect the inverter or servo amplifier to the controller with SSCNET III/H.

■5. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the system launcher (servo network) to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, sufficient free space is required?in the user area.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■6. Extended function that can be started from the system launcher (servo network)

The following table lists the extended functions that can be started from the system launcher (servo network).

Extended function	Description
System launcher	The system launcher can be started by touching the motion icon or return key.
Drive recorder	The drive recorder can be started from the context menu of the system launcher (servo network) function.
Servo amplifier graph	

■7. Applicable hardware

A USB mouse is usable.

25.2.2 Precautions

■1. External synchronous encoder information cannot be acquired.

When the motion controller CPU is connected, the external synchronous encoder information cannot be acquired.

■2. Operation mode information cannot be acquired for the servo amplifier that is set to the axis No. 0.

The servo amplifier for which axis No. 0 is set cannot acquire the operation mode information.
[-] is displayed regardless of the operation mode setting.

■3. When an external synchronous encoder is connected to the MR-J4-B(-RJ), the operation mode information cannot be acquired.

When the RnMTCPU and an external synchronous encoder are to the MR-J4-B(-RJ), the operation mode information cannot be acquired.
[Scale] is displayed regardless of the operation mode setting.

■4. The display order of the servo network configuration diagram varies depending on the software version used.

When the RnMTCPU is connected, the display order of the servo network configuration diagram varies depending on the software version of the PLC used.
The display order of the servo network configuration diagram is as follows.

- When the software version is 10 or later: The connected controllers are displayed in the order of hardware connected.
  Controllers that are not connected but set are displayed after the connected controllers in order of station number.
- When the software version is earlier than 10: The controllers are displayed in order of station number.

25.3 Operations for Display

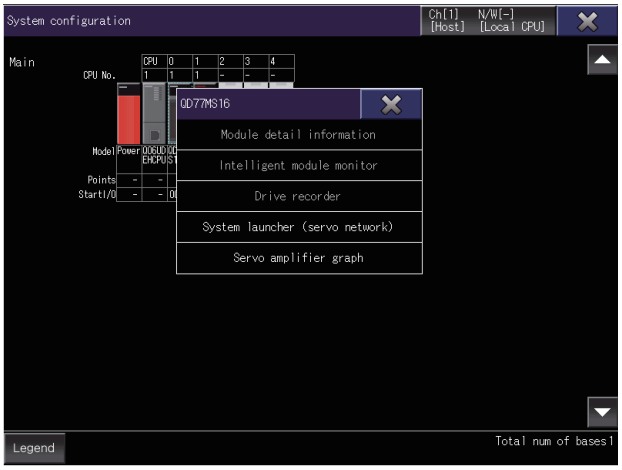
This section explains how to display the system launcher (servo network) screen after the GOT is turned on.

Step 1. Turn on the GOT.

Step 2. Display the System configuration screen of the system launcher.
For the display operation of the system launcher, refer to the following.

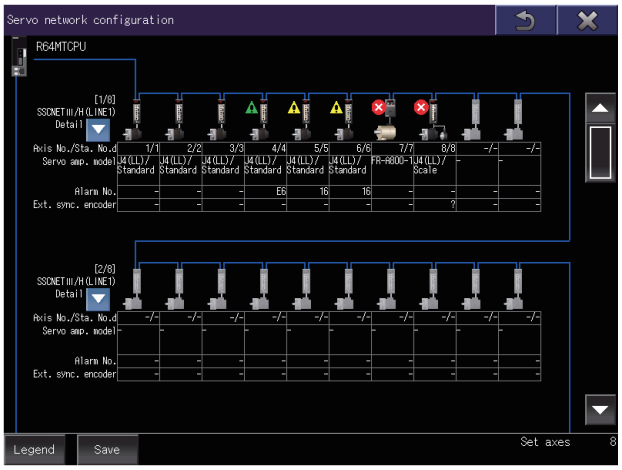
➠ 2.3 Operations for Display

Step 3. Touch the motion controller CPU or simple motion module on the System configuration screen to display the function list.

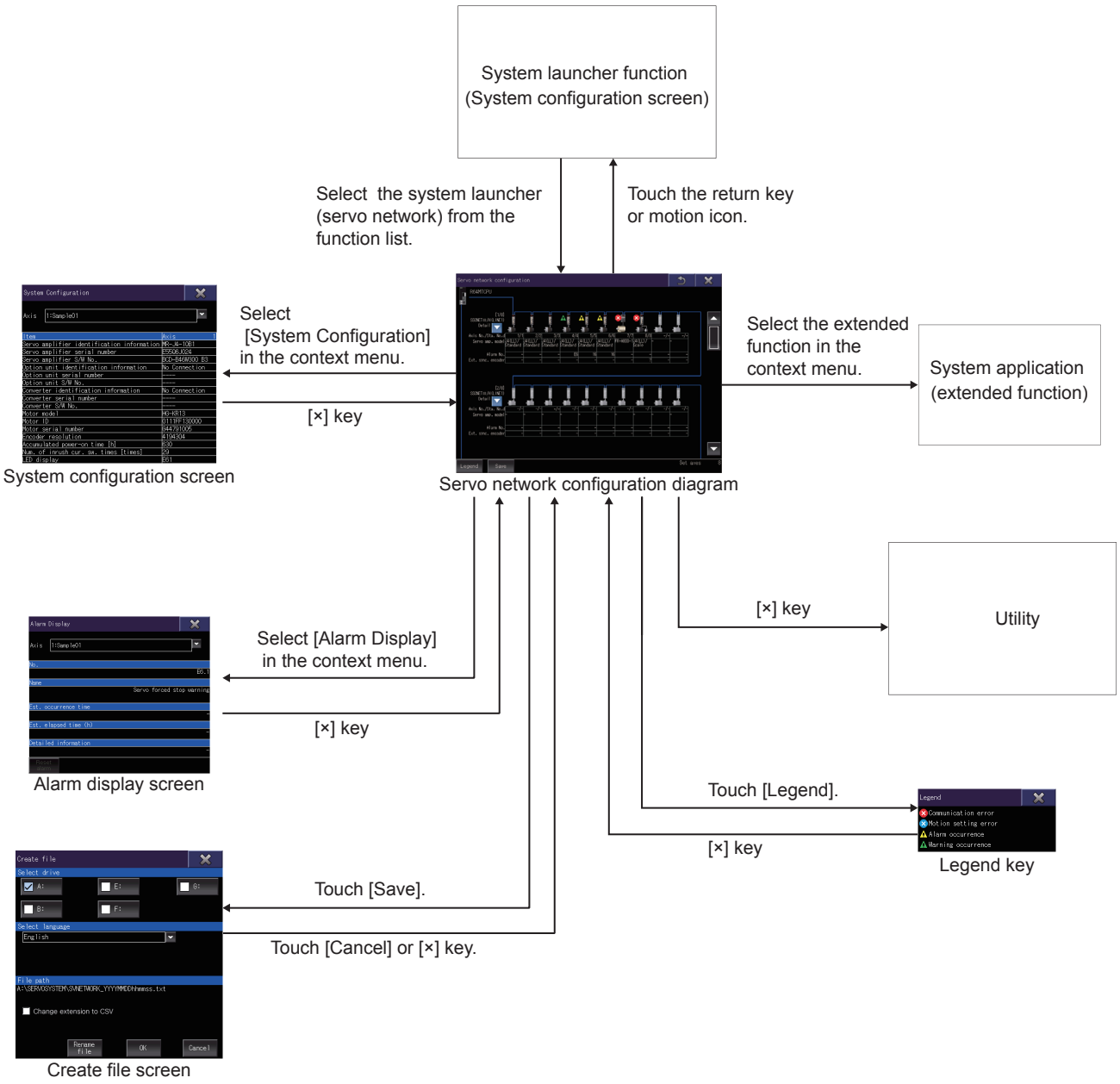


Step 4. Touch the system launcher (servo network) from the function list to display the servo network configuration diagram.

➠ 25.4 Operating Procedure



■1. Screen transition



25.4 Operating Procedure

This section explains screen operations for the system launcher (servo network).
The display screen of the system launcher (servo network) varies depending on the GOT used.

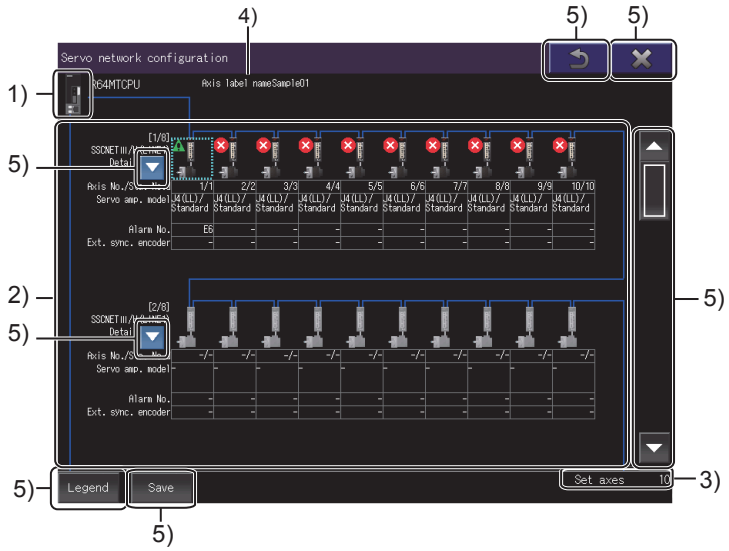
25.4.1 Servo network configuration diagram

This section explains the screen layout and the common operations when the system launcher (servo network) is executed.

■1. Display contents and key functions

The following explains the structure of the servo network configuration diagram and the function of the keys displayed on the screen after the system launcher (servo network) is started.

(1) Displayed contents



1) Controller icon

The icon of the motion controller CPU or simple motion module of the configuration diagram.

2) Servo amplifier information display area

Displays information of composing modules.
The number of lines and modules to be displayed depend on the GOT model.

GOT resolution	Number of lines	Number of modules (horizontal)	Number of modules (vertical)
VGA	2	8	5
SVGA	2	10	6
XGA	3	12	10
WVGA	2	10	5
WXGA	3	16	10

The displayed items are as follows.

- [Number of steps]
- [Connection system]
- [Axis No./Sta. No.d]
- [Servo amp. model]
- [Alarm No.]
- [Ext. sync. encoder]
- [Servo icon]
- [Error icon]

3) Number of setting axes display area

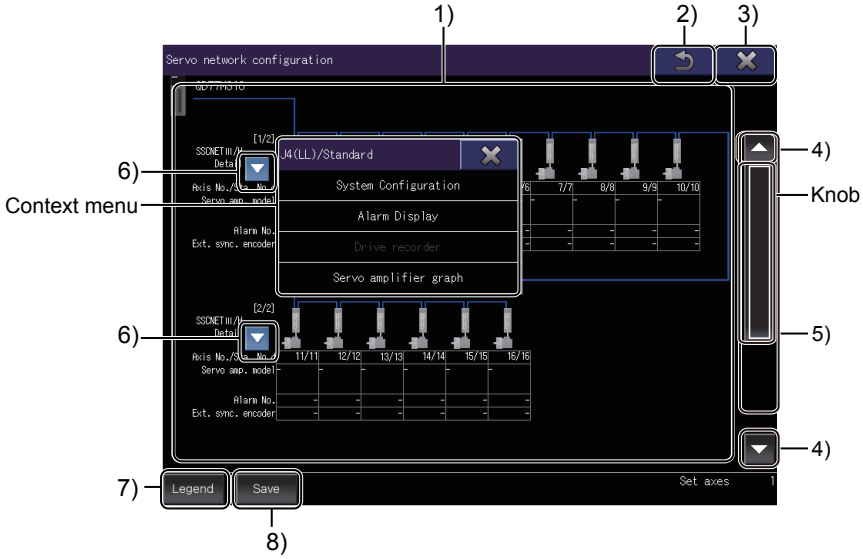
Displays the number of axes set in the motion controller CPU or simple motion module.

4) [Axis label name]
Displays the axis label name only when the axis label is set for the selected servo amplifier.

5) Touch key
The keys used for the operations on the System configuration screen.

(2) Key functions

The following shows the functions of the operation keys on the Servo network configuration screen.



1) Servo amplifier information display
Touch the display position of a module to be operated to display the context menu.

2) Return key
Closes the system launcher (servo network) and displays the system configuration of the system launcher.

3) [×] key
Closes the system launcher (servo network) and displays the main menu of the utility.

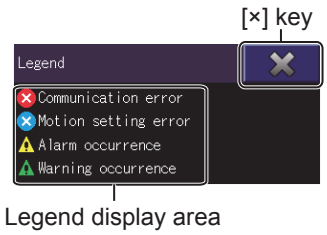
4) Scroll key
Scrolls the display up or down one stage.

5) Scroll bar
Touch an area above or below the knob to scroll one page up or down.
You can also scroll the page by sliding the knob.

6) List display button
Displays the detailed information of each module on the target base unit.
The following shows the display items.

- [Servo amplifier ID information]
- [Servo amplifier serial number]
- [Motor model]
- [Motor ID]
- [Axis label name]
- [Communication status information]

7) [Legend] key
Displays the [case] window.



- **[×] key**
  Exits the [case] window and returns the screen to the system configuration screen.
- **Legend display area**
  Lists the descriptions of the icons appearing on the system configuration diagram.

8) [Save] button

Saves the configuration of the servo system controller network, system configuration of all connected servo amplifiers, and alarm information in a data storage as a Unicode text file.

➡ 25.4.4 Create file screen

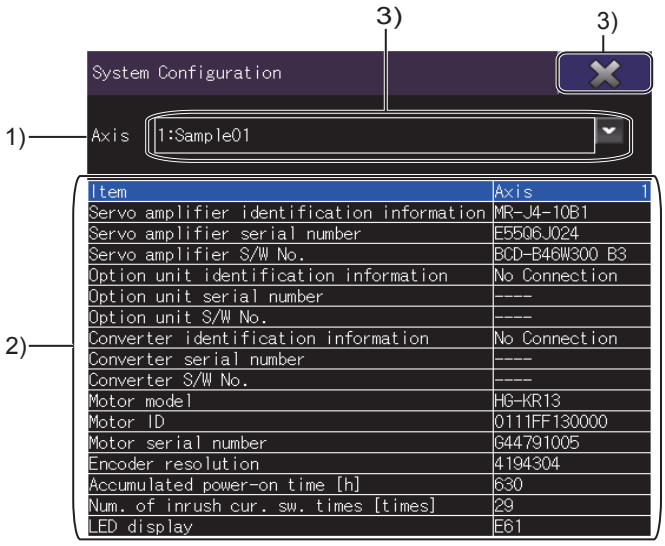
25.4.2 System Configuration screen

This screen is started from the context menu of the servo network configuration diagram.

■1. Display contents and key functions

The following explains the structure of the System Configuration screen and the function of the keys displayed on the screen.

(1) Displayed contents



Item	Axis 1
Servo amplifier identification information	MR-J4-10B1
Servo amplifier serial number	E55Q6J024
Servo amplifier S/W No.	BCD-B46W300 B3
Option unit identification information	No Connection
Option unit serial number	-----
Option unit S/W No.	-----
Converter identification information	No Connection
Converter serial number	-----
Converter S/W No.	-----
Motor model	HG-KR13
Motor ID	0111FF130000
Motor serial number	G44791005
Encoder resolution	4194304
Accumulated power-on time [h]	630
Num. of inrush cur. sw. times [times]	29
LED display	E61

1) [Axis]

Displays the displayed axis number.

Displays the axis number and axis label name only when the axis label is set.

2) List of system configuration information

The following shows the system configuration of the servo amplifier.

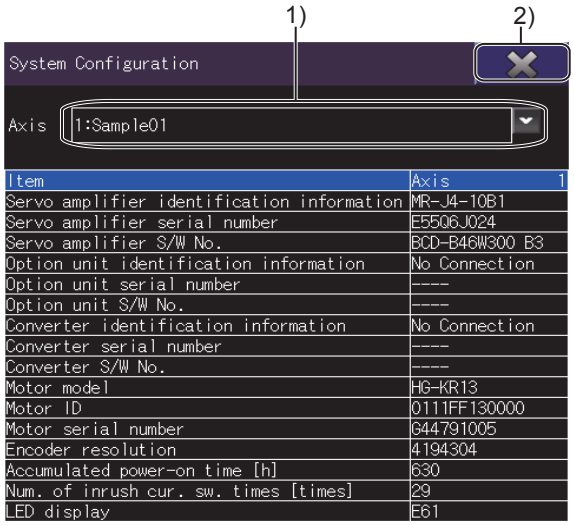
The items to be displayed are as follows.

- Servo amplifier ID information
- Servo amplifier serial number
- Servo amplifier S/W No.
- Option unit identification information
- Option unit serial number
- Option unit S/W No.
- Converter identification information
- Converter serial number
- Converter S/W No.
- Motor model
- Motor ID
- Motor serial number
- Encoder resolution
- Accumulated power-on time [h]
- Num. of inrush cur. sw. times [times]
- LED display (Displays the character on the servo amplifier LED.)

3) Touch key

The keys used for the operations on the System Configuration screen.

(2) Key functions



1) Axis number key
Sets the axis number to be displayed.

2) [×] key
Returns to the servo network configuration diagram.

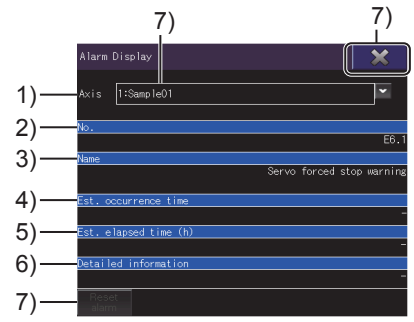
25.4.3 Alarm Display screen

This screen is started from the context menu of the servo network configuration diagram.

■1. Display contents and key functions

The following explains the structure of the Alarm Display screen and the function of the keys displayed on the screen.

(1) Displayed contents



1) [Axis]
Displays the axis number of the displayed configuration.
Displays the axis number and axis label name only when the axis label is set.

2) [No.]
Displays an alarm number.

3) [Name]
Displays an alarm name.

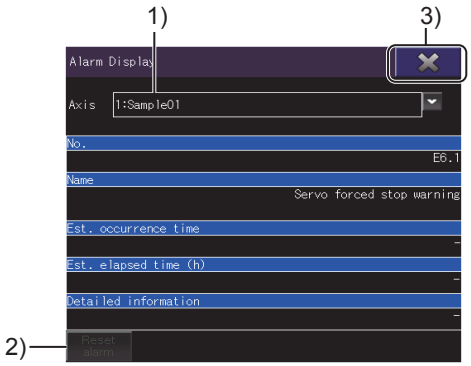
4) [Est. occurrence time]
Displays the estimated time when an alarm occurs.

5) [Est. elapsed time (h)]
Displays the elapsed time after an alarm occurred.
The unit is time.

6) [Detailed information]
Displays the detailed information.

7) Touch key
The keys used for the operations on the Create file screen.

(2) Key functions



1) Axis number key
Sets the axis number to be displayed.

2) [Alarm Reset] key
Deletes the alarm information that has been occurred.

3) [×] key
Displays the servo network configuration diagram.

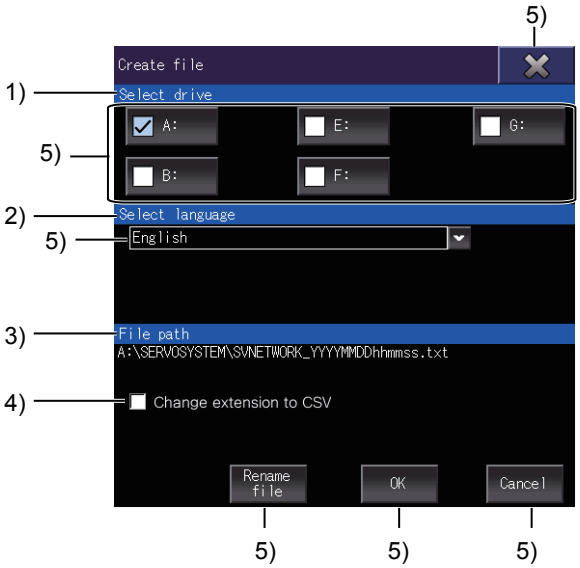
25.4.4 Create file screen

This screen is used to output the information of the servo network configuration to a file.
Touch the [Save] key of the servo network configuration diagram and start the screen.

■1. Display contents and key functions

The following explains the structure of the Create file screen and the function of the keys displayed on the screen.

(1) Displayed contents



1) [Select drive]
Displays selectable drives to save a file.

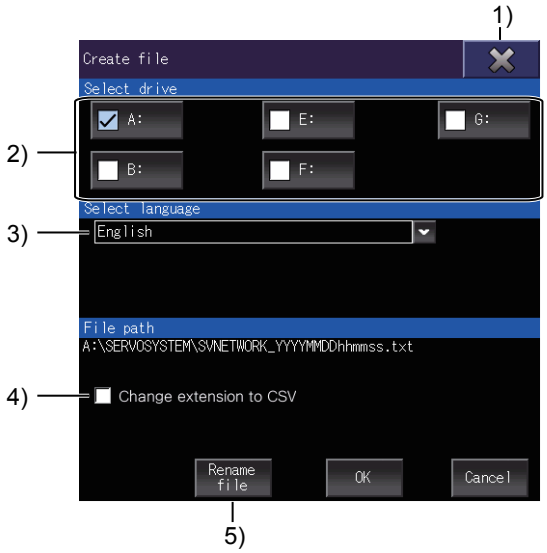
2) [Select language]
Displays the language of the file.

3) [File path]
Displays the path to the file.

4) [Change extension to CSV]
Saves the file in CSV format.

5) Touch key
The keys used for the operations on the Create file screen.

(2) Key functions



1) [×] key
Exits the Create file screen and returns the screen to the servo network configuration diagram.

2) Drive keys
Select a drive to save a file.

3) Language selection key
Select the language of a file.

4) [Change extension to CSV]
Saves the file in CSV format.

5) [Rename file] key
Rename the file.

25.5 Error Messages and Corrective Actions

This section explains the error messages displayed when a file is created, and the corrective actions.

Error message*1	Description	Corrective action
Failed to access the □: drive. Check for the memory card and the access switch status.	The GOT cannot access the drive where the file saved.	• Check that the data storage is mounted correctly on the drive. • Check if the SD card cover has been closed.(Only when drive A is used)
The drive is write protected. The file cannot be saved. Check the write destination drive (*:).	The memory card (file storage destination drive) is write-protected.	Check if the data storage mounted on the drive of the write destination is not write-protected.
Free space in the □: drive is insufficient. Failed to save the file. Select the drive with sufficient free space.	The memory card (file storage destination drive) does not have enough space.	• Use a data storage having enough space. • Delete unnecessary files to free up space on the memory card.
The drive is write protected. The file cannot be saved. Check the write destination drive (□:).	The format of the memory card (file storage destination drive) is invalid.	Format the data storage so as to be compatible with the GOT.
The file name including the path name is too long. The file cannot be created. Correct the file name or the path name.	The file name including the path is too long.	Set the file name so that the total number of characters in the path is within 78 characters.
Failed to access the specified connection destination. Check the connection type.	A communication error has occurred during the acquisition of the information necessary for file saving.	Change the connection destination settings of the programmable controller and servo amplifier, and connect them again.
Failed to create a file. Check if the write destination memory card is correct and try the operation again.	The file creation has failed due to factors other than those above.	Check that the data storage is correct, and mount it on the drive again.

*1 "□:" indicates the name of the selected drive.

26. MOTION PROGRAM EDITOR

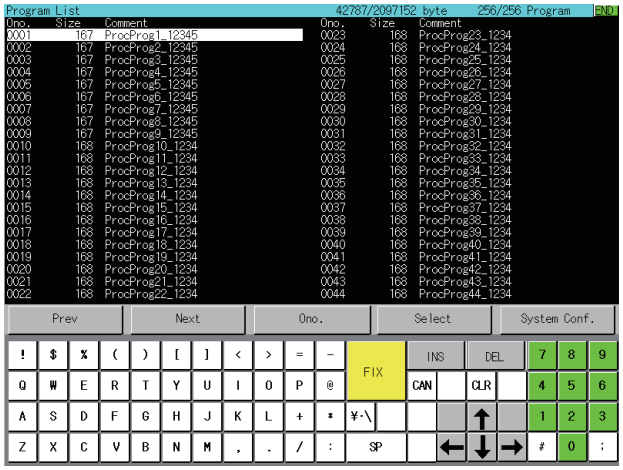
GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

26.1 Features

The motion program editor lists the programs of a motion controller CPU (MELSEC iQ-R series), and allows you to edit each program.
The following shows the features of the motion program editor.

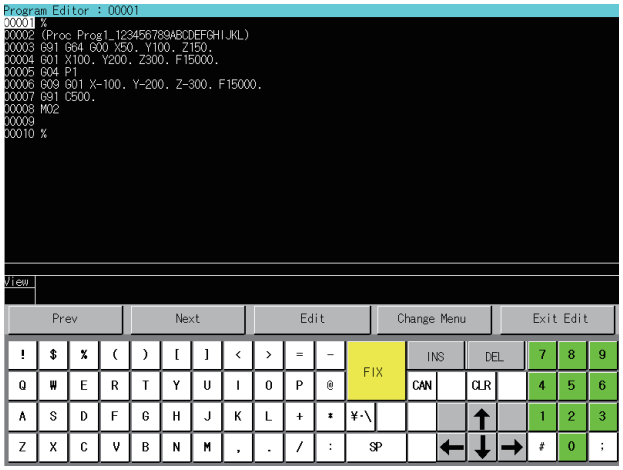
■1. Viewing the G-code program list on the GOT

The GOT lists the G-code programs stored in the connected motion controller CPU (MELSEC iQ-R series).



■2. Editing a G-code program on the GOT

You can edit G-code programs listed on the GOT in the line editor format.



26.2 Specifications

26.2.1 System configuration

This section explains the system configuration of the motion program editor.
For connection type settings and precautions concerning the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. GOT

The following shows the GOT models that support the motion program editor.
- GT27-X
- GT27-S
- GT25-S

■2. Target controller

Controller*1
R16MTCPU, R32MTCPU, R64MTCPU

*1 When all the following conditions are satisfied, the motion program editor is available.
- The operating system software is SW10DNC-RMTFW Ver.14 or later.
- The add-on library is Gcode_Ctrl.adm Ver.0102 or later.
- Any item other than [Not Used] is set in the G-code control setting in the basic setting.

■3. Connection type

This function can be used in the following connection types.
○: Available, ×: Unavailable

Function		Connection type between the GOT and controller
Name	Description	Ethernet connection
Motion program editor	Listing and editing G-code programs	○

■4. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the motion program editor to the GOT.
For the communication method between GT Designer3 and the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For the information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■5. Applicable hardware

A USB mouse is usable.

26.2.2 Access range

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

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

26.2.3 Precautions

■1. Operating system software for the motion controller CPU (MELSEC iQ-R series)

The usable operating system software is SW10DNC-RMTFW only.

■2. Setting up the motion controller CPU (MELSEC iQ-R series)

To use the motion program editor, set up the motion controller CPU (MELSEC iQ-R series) as shown below.

- Install the operating system software to the add-on library.
- Set the G-code control setting to an item other than [Not Used] in the basic setting.

■3. Language switching

When the system language is switched in the utility, the language of the motion program editor is switched accordingly. However, as the following items are obtained from the motion controller CPU, they are displayed on the GOT as is. The language does not change.

- Comments in a G-code program
- Entry in the program display area, error display area, or program edit area on the [Program Editor] screen

■4. Case where the motion program editor is unusable

When no G-code program is written in the motion controller CPU (MELSEC iQ-R series), the [program list] screen cannot be displayed.

26.3 Operations for Display

This section explains how to display the motion program editor screen after the GOT is powered on.

Step 1. Power on the GOT.

Step 2. Display the motion program editor screen.
Display the screen by one of the following methods.

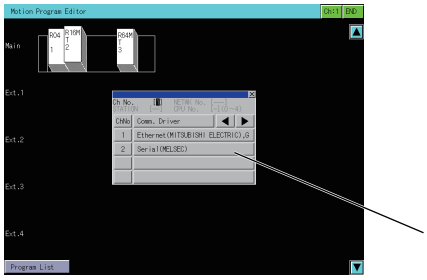
- Using the special function switch (Motion program editor) set in the project
  For information on how to set a special function switch, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  In the utility, touch [Monitor] → [Motion program editor] from the main menu.
  For information on how to display the utility, refer to the following.

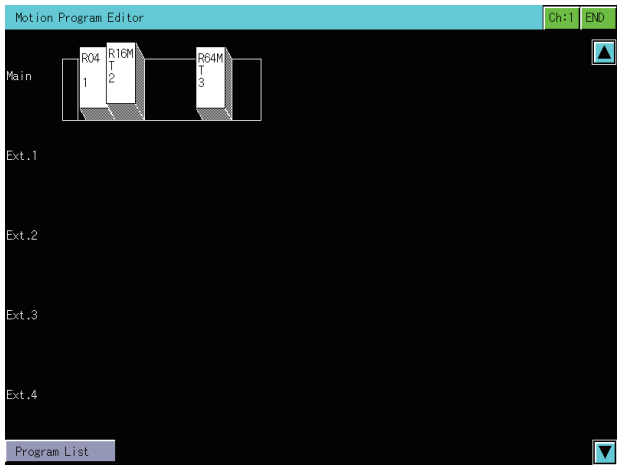
  ➠ GOT2000 Series User's Manual (Utility)

Step 3. Set the channel number in the communication setting window.
After the GOT is powered on, the communication setting window is displayed only at the first startup of the motion program editor.
To display the communication setting window after the first startup, touch the [Ch:] key on the motion program editor screen.

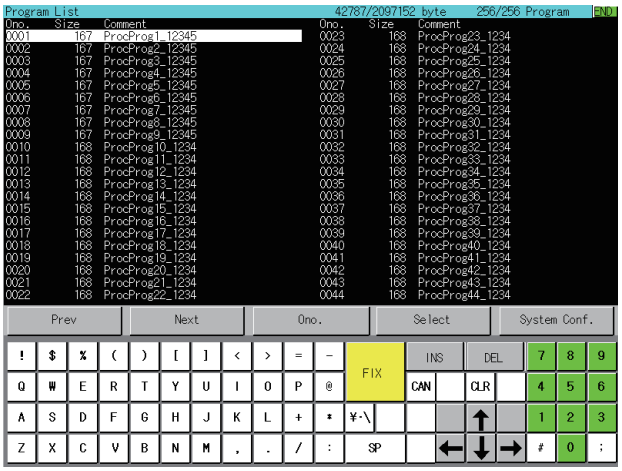
➠ 26.4 Operating Procedure



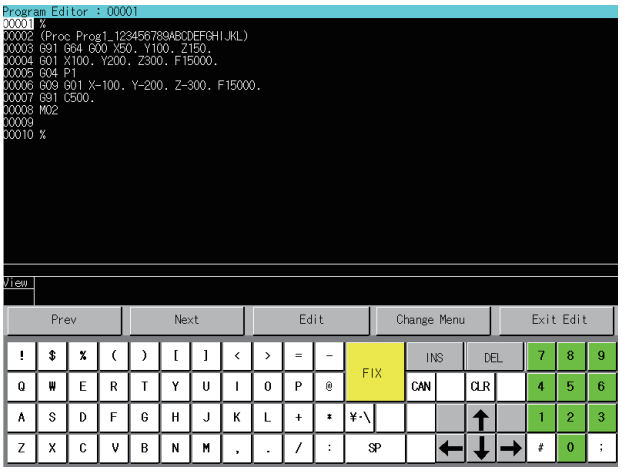
Step 4. On the system configuration screen, select a motion controller CPU (MELSEC iQ-R series) and touch the [Program List] key.



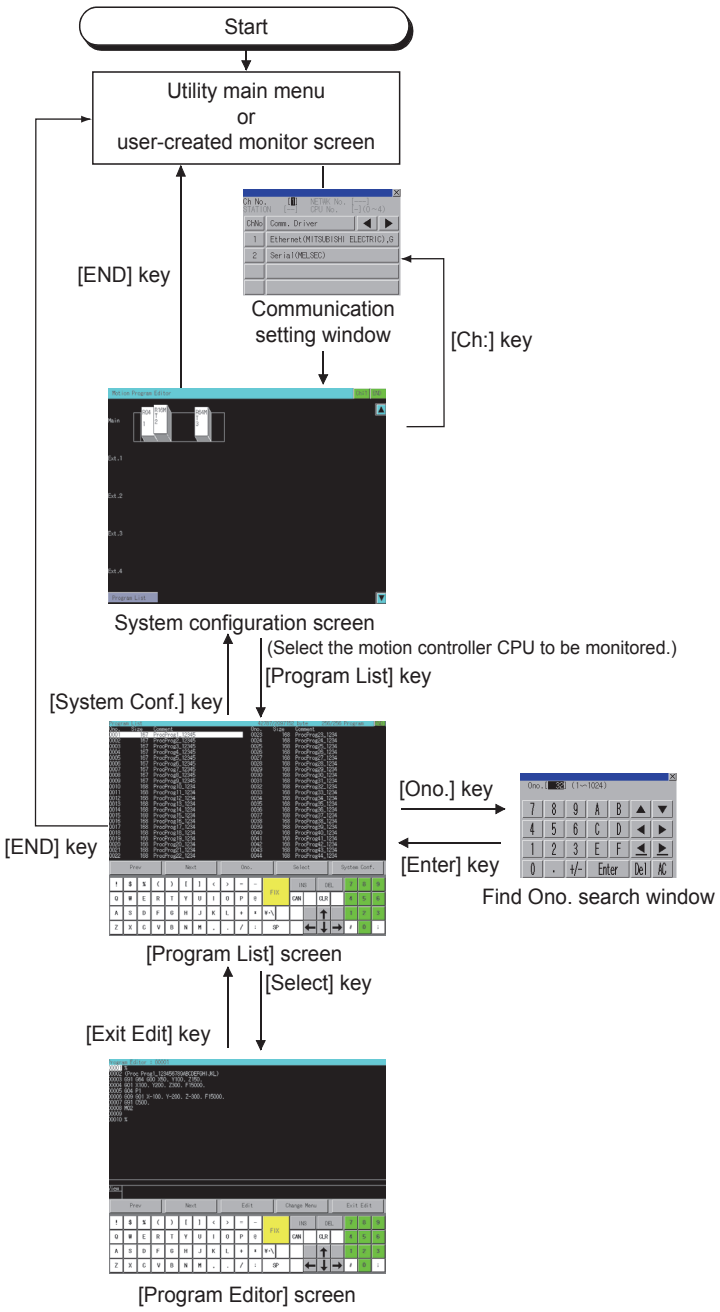
Step 5. On the [Program List] screen, select a program to be edited and touch the [Select] key.



Step 6. The program is displayed on the [Program Editor] screen.



■1. Screen transition



At the next startup, the last displayed screen appears.
However, the last displayed screen does not appear when the GOT is restarted by writing the package data, turning off and then on the GOT, or resetting the GOT.

26.4 Operating Procedure

This section explains screen operations for the motion program editor.

➠ 26.4.1 System configuration screen
26.4.2 [Program List] screen
26.4.3 [Program Editor] screen

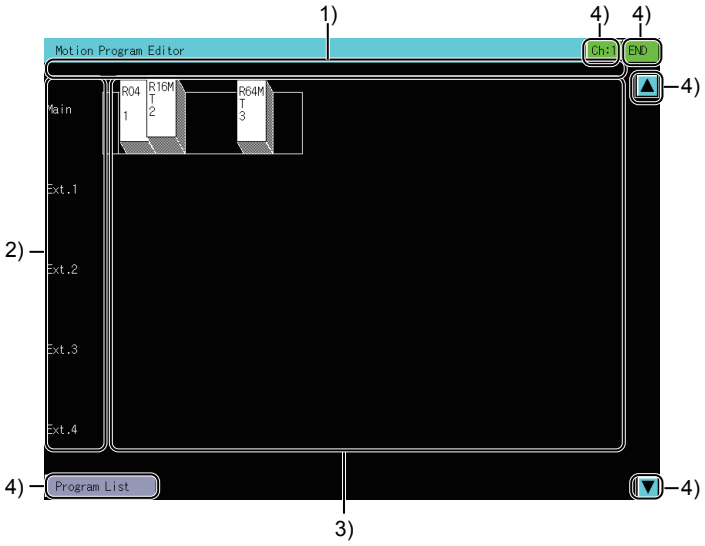
26.4.1 System configuration screen

This section explains the screen layout and the common operations when the motion program editor is executed.

■1. Display contents and key functions

The following explains the layout of the system configuration screen displayed upon startup of the motion program editor and the functions of the operation keys on the screen.

(1) Displayed contents



1) Error notification area
Displays a message when an error occurs.
For the details of the error messages, refer to the following.

➠ 26.5 Error Messages and Corrective Actions

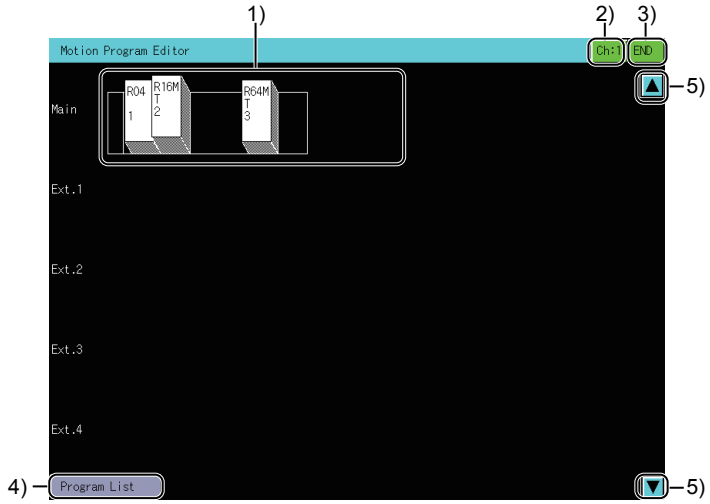
2) Base type display area
Displays the base unit types and the level number of each extension base unit in the system displayed in the module information display area.

3) Module information display area
Displays the modules of the connected system in the configuration diagram and the information on each module.

4) Touch keys
Keys for the operations on the system configuration screen.

(2) Key functions

The following shows the functions of the operation keys on the system configuration screen.



1) Module information display area

Touch a CPU icon to select the motion controller CPU (MELSEC iQ-R series) that has the program to be edited.

2) [Ch:] key

Displays the communication setting window.

3) [END] key

Exits the motion program editor and returns to the screen where the motion program editor was started.

4) [Program List] key

Switches the system configuration screen to the [Program List] screen.

➠ 26.4.2 [Program List] screen

5) Scroll key

Scrolls the display up or down one stage.

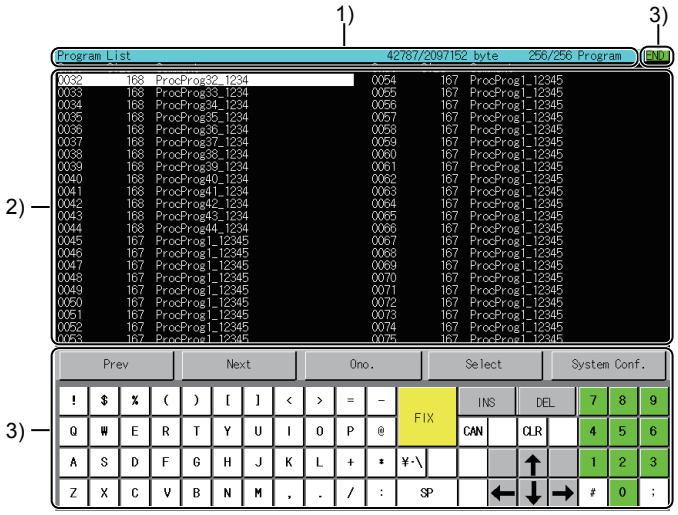
26.4.2 [Program List] screen

This screen lists the programs stored in the motion controller CPU (MELSEC iQ-R series) that has been selected on the system configuration screen.

■1. Display contents and key functions

The following explains the layout of the [Program List] screen and the functions of the operation keys on the screen.

(1) Displayed contents



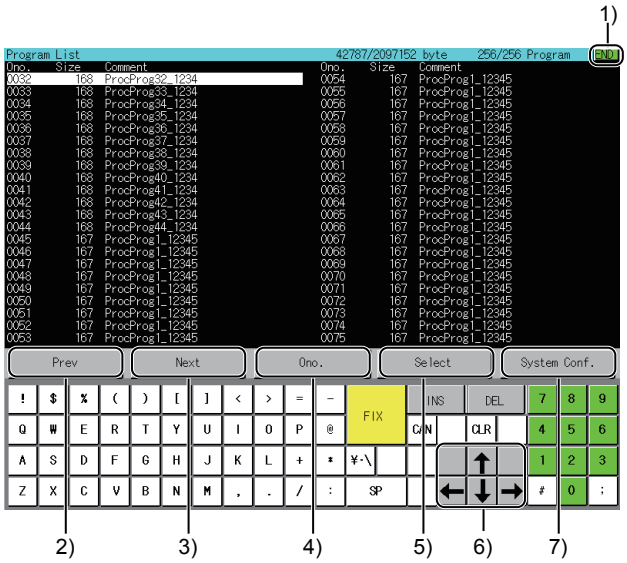
1) Title bar
Displays the program size and the number of programs.

2) Program information display area
Displays the information on each program.

3) Touch keys
Keys for the operations on the [Program List] screen.

(2) Key functions

The following shows the functions of the operation keys on the [Program List] screen.



1) [END] key

Exits the motion program editor and returns to the screen where the motion program editor was started.

2) [Prev] key

Scrolls up one page.

3) [Next] key

Scrolls down one page.

4) [Ono.] key

Displays the Find Ono. window.

➠ ■2. Searching for a program by program number (Ono.)

5) [Select] key

Displays the contents of the program under the cursor on the [Program Editor] screen.

➠ 26.4.3 [Program Editor] screen

6) Arrow keys

Move the cursor in a specified direction.

7) [System Conf.] key

Exits the [Program List] screen and displays the system configuration screen.

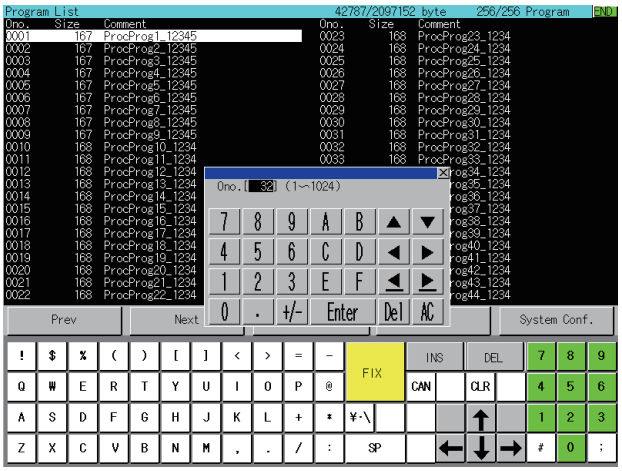
➠ 26.4.1 System configuration screen

■2. Searching for a program by program number (Ono.)

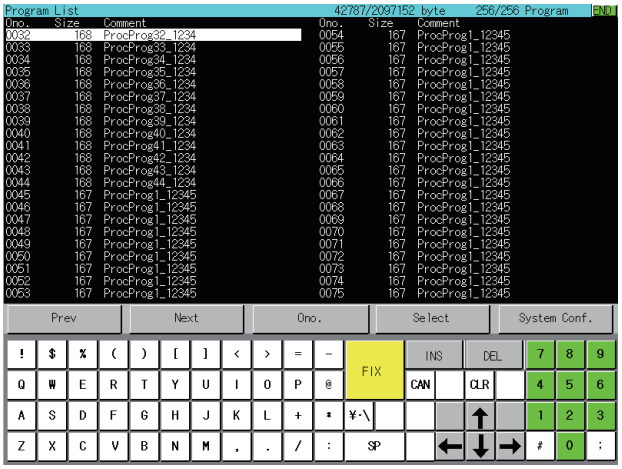
Specify an Ono. to search for the corresponding program on the [Program List] screen.

Step 1. Touch the [Ono.] key to display the Find Ono. window.

Step 2. Enter an Ono. and touch the [Enter] key.



Step 3. The cursor moves to the corresponding row.



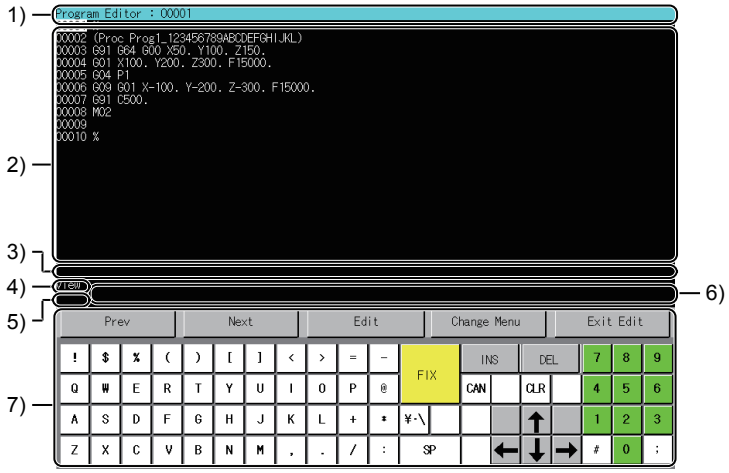
26.4.3 [Program Editor] screen

Edit the program selected in the [Program List] screen.

■1. Display contents and key functions

The following explains the layout of the [Program Editor] screen and the functions of the operation keys on the screen.

(1) Displayed contents



1) Title bar
Displays the Ono. of the program to be edited.

2) Program display area
Displays the contents of the program.

3) Error display area
Displays an editing error.

4) Editor mode display area
Displays the editor mode.
The following shows the available editor modes.
- [View]: View program mode
- [Edit]: Edit program mode
- [LDel]: Delete line mode
- [Srch]: Search mode

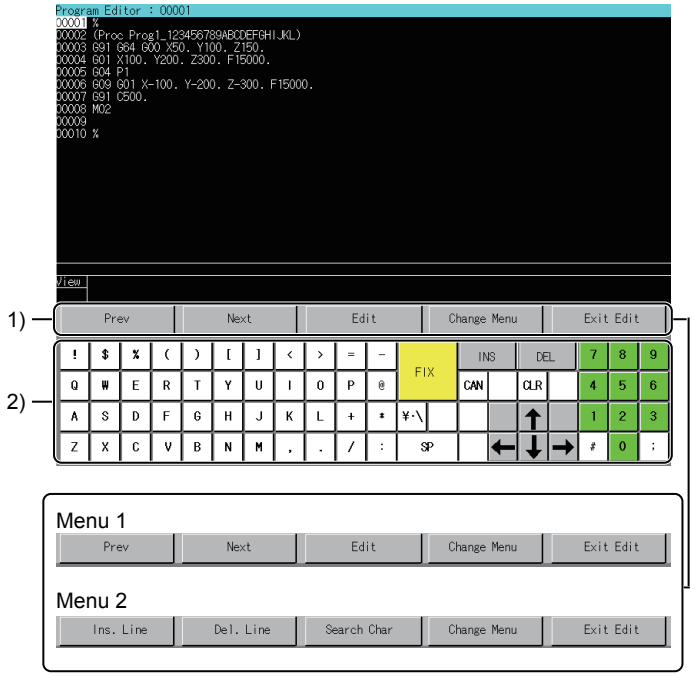
5) Text-entering mode display area
Displays the text-entering mode when the edit program mode is used.
The following shows the available text-entering modes.
- [OVR]: Overtype mode
- [INS]: Insert mode

6) Program edit area
Displays the source code in the selected line upon switching from the view program mode to the edit program mode.
Up to 126 characters are displayed in two lines: 94 characters in the first line and 32 characters in the second line.

7) Touch keys
Keys for the operations on the [Program Editor] screen.

(2) Key functions

The following shows the functions of the operation keys on the [Program Editor] screen.



1) Menu keys

The menu key set is switched with the [Change Menu] key.

- [Prev] key
  Scrolls up one page.
  The cursor moves to the top of the page.
- [Next] key
  Scrolls down one page.
  The cursor moves to the top of the page.
- [Edit] key
  Enters the edit program mode.
- [Ins. Line] key
  Inserts a line above the selected line and enters the edit program mode.
- [Del. Line] key
  Enters the delete line mode.
- [Search Char] key
  Enters the search mode.
- [Change Menu] key
  Switches between menu 1 and menu 2.
- [Exit Edit] key
  Saves edits, exits the motion program editor, and returns to the [Program List] screen.
  If the save operation fails, the screen will not return to the [Program List] screen.
  If a save operation is performed while the motion controller CPU (MELSEC iQ-R series) is running under the following conditions, the save operation will fail and an error message will appear.
  • The motion program CPU has insufficient free space.
  • A program is running.
  • The program format is invalid.
  Check the error message and corrective action.

➠ 26.5 Error Messages and Corrective Actions

2) Software keyboard

Use the software keyboard to edit a program.

The usable keys and their functions vary depending on the editor mode.

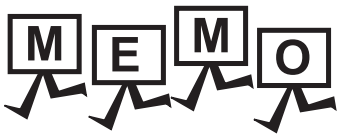
Key	Mode	Function
Up and down arrows	• View program mode • Edit program mode • Delete line mode	Move the cursor up or down. Touch each key moves the cursor up or down one line.
	• Search mode	Up arrow key: Search for a string upward from the selected line. Down arrow key: Search for a string downward from the selected line.
Right and left arrows*1	• Edit program mode • Delete line mode • Search mode	Move the cursor to the right or left. Touch each key moves the cursor to the right or left one character.
Characters*1	• Edit program mode • Delete line mode • Search mode	Input each one-byte alphanumeric character.
[INS]*1	• Edit program mode • Delete line mode • Search mode	Switch between the insert mode and the overtype mode. In the insert mode, new text is inserted to the left of the cursor. In the overtype mode, the text under the cursor is overwritten.
[DEL]*1	• Edit program mode • Delete line mode • Search mode	Delete a character. Touch the key deletes the character under the cursor.
[CLR]*1	• Edit program mode • Delete line mode • Search mode	Reset an editing error. The error display area goes blank.
[FIX]*1	• Edit program mode	Reflect the entry in the program edit area to the program display area. The program edit area goes blank, and the edit program mode switches to the view program mode.
	• Delete line mode	Delete the selected line. The delete line mode switches to the view program mode.
	• Search mode	Search for a string downward from the selected line.
[CAN]*1	• Edit program mode	Delete the entry in the program edit area. The edit program mode switches to the view program mode.
	• Delete line mode	Cancel the deletion of the selected line. The delete line mode switches to the view program mode.
	• Search mode	Delete the entry in the program edit area. The search mode switches to the view program mode.

*1 The key is unusable in the view program mode.

26.5 Error Messages and Corrective Actions

This section explains the error messages displayed when the motion program editor is executed, and the corrective actions.

Error message	Description	Corrective action
Impossible to save. SD card is in write protect.	Saving a G-code program has failed because the SD card in the motion controller is write-protected.	Unprotect the SD card, and save the G-code program.
Impossible to save. The capacity of SD card is insufficient.	Saving a G-code program has failed because the SD card in the motion controller has insufficient free space.	Check the free space of the SD card.
Impossible to save. SD card is not inserted, or in unusable status.	• Saving a G-code program has failed because no SD card is inserted in the motion controller. • Saving a G-code program has failed because the SD card was disabled by turning on SM606 (SD memory card forced disable instruction). • Saving a G-code program has failed because accessing the SD card in the motion controller (MELSEC iQ-R series) was disabled by pressing the SD memory card access control switch on the front of the controller.	• Insert a SD card and save the G-code program. • Check that SM606 (SD memory card forced disable instruction) is off, and save the G-code program. • Check that accessing the SD card is enabled, and save the G-code program.
G-code program does not exist. Please execute again after writing G-code program.	The [Program List] screen cannot be brought up from the system configuration screen because no G-code program exists in the connected motion controller CPU (MELSEC iQ-R series).	Write a G-code program to the motion controller CPU. ➠ 26.2.1 ■2. Target controller
Impossible to save Program size is over.	Saving a G-code program has failed because the program is larger than the available memory of the connected motion controller CPU (MELSEC iQ-R series).	Reduce the size of the program.
Impossible to save The operating program is being edited.	Failed to save the G-code program file because the program to be edited is running.	Stop the program, and save it.
Impossible to save The format of the program is incorrect.	Saving a G-code program has failed because the program format is invalid.	Check that the program format is correct.
No PLC Communications	The GOT cannot communicate with the connected motion controller CPU (MELSEC iQ-R series).	• Check the communication setting. • Check the connection between the controller and the GOT (disconnected or cut cables). • Check that no error has occurred in the controller. • Check that the connected motion controller CPU is supported by the motion program editor.
This PLC type is not supported	An unsupported motion controller CPU (MELSEC iQ-R series) has been selected on the system configuration screen.	Select a supported motion controller CPU (MELSEC iQ-R series) on the system configuration screen. ➠ 26.2.1 ■2. Target controller
Controller's OS type is different	An operating system software other than SW10DNC-RMTFW is installed on the connected motion controller CPU (MELSEC iQ-R series).	Install the SW10DNC-RMTFW operating system software on the motion controller CPU. ➠ 26.2.1 ■2. Target controller
GOT-Motion Program Editing Function is not available in this version.	The version of the operating system software in the connected motion controller CPU (MELSEC iQ-R series) is not supported by the motion program editor..	Install a supported version of the operating system software on the motion controller CPU. ➠ 26.2.1 ■2. Target controller
Communication Channel Setup Error.	The required communication driver is not installed on the GOT.	Install an applicable communication driver.

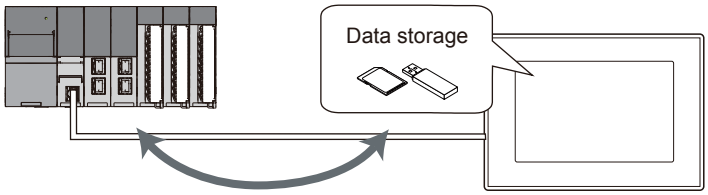

MEMO

27. MOTION PROGRAM I/O

GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

27.1 Features

With the motion program I/O, the GOT can copy or delete a G-code program in the connected motion controller CPU (MELSEC iQ-R series).



Copy or delete a G-code program.

27.2 Specifications

➠ 27.2.1 System configuration
27.2.2 Access range
27.2.3 Precautions

27.2.1 System configuration

This section explains the system configuration of the motion program I/O.
For connection type settings and precautions concerning the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. GOT

The following shows the GOT models that support the motion program I/O.

- GT27-X
- GT27-S
- GT25-S

■2. Target controller

Controller*1
R16MTCPU, R32MTCPU, R64MTCPU

*1 When all the following conditions are satisfied, the motion program I/O is available.
- The operating system software is SW10DNC-RMTFW Ver.14 or later.
- The add-on library is Gcode_Ctrl.adm Ver.0102 or later.
- Any item other than [Not Used] is set in the G-code control setting in the basic setting.

■3. Connection type

This function can be used in the following connection types.
○: Available, ×: Unavailable

Function		Connection type between the GOT and controller
Name	Description	Ethernet connection
Motion program I/O	Copying or deleting a G-code program	○

■4. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the motion program I/O to the GOT.
For the communication method between GT Designer3 and the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For the information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■5. Required hardware

A data storage is required to use the motion program I/O.

■6. Applicable hardware

A USB keyboard is usable.

27.2.2 Access range

One GOT can execute the motion controller I/O on up to three motion controller CPUs (MELSEC iQ-R series) by switching between them.

27.2.3 Precautions

■1. Precautions for using the motion program I/O

(1) Executing the motion program I/O while the motion controller CPU is running

A G-code program can be copied or deleted while the motion controller CPU (MELSEC iQ-R series) is running.
However, the G-code program cannot be copied in the following cases.

- When the program running is the copy destination
- When the total data size of G-code programs to be copied to the motion controller CPU exceeds 2 MB
- When the format of the G-code program to be copied to the motion controller CPU is invalid

If you delete a G-code program, the program file will be deleted, but its contents loaded into the motion controller CPU will not be deleted.

(2) Copying a G-code program from the data storage to the motion controller CPU (MELSEC iQ-R series)

Multiple G-code programs cannot be copied in a batch.

(3) Editing a G-code program while any G-code program is being copied to the motion controller CPU (MELSEC iQ-R series)

Do not edit any G-code program in the motion controller CPU (MELSEC iQ-R series) with engineering software while any G-code program is being copied to the CPU.

■2. Folder names and file names which cannot be used

The following folder names and file names cannot be used.

- Kanji, hiragana, katakana, one-byte katakana
- Folder names starting with G2
- Folder and file names starting with a period (.) or backslash (\)
- Folder and file names ending with a period (.) or backslash (\)
- Folder and file named consisting of one period (.) or two periods(..) only
- ~TEMP.GCD

27.3 Operations for Display

■1. Starting the motion program I/O

This section explains how to display the motion program I/O screen after the GOT is powered on.

Step 1. Power on the GOT.

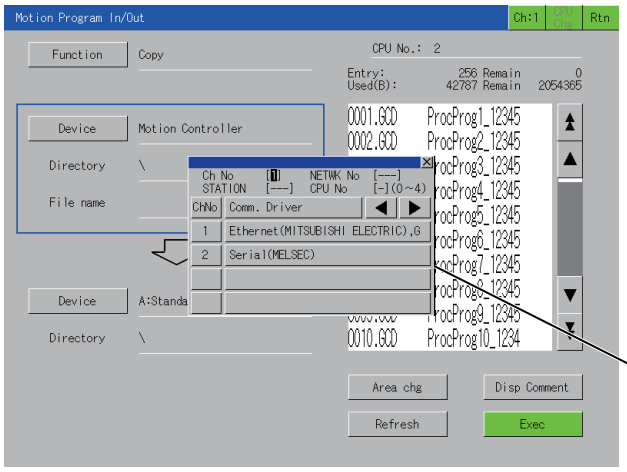
Step 2. Display the motion program I/O screen.
Display the screen by one of the following methods.

- Using the special function switch (Motion program input/output) set in the project
  For information on how to set a special function switch, refer to the following.

  ➠ GT Designer3 (GOT2000) Screen Design Manual
- Starting from the utility
  In the utility, touch [Monitor] → [Motion program I/O] from the main menu.
  For information on how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)

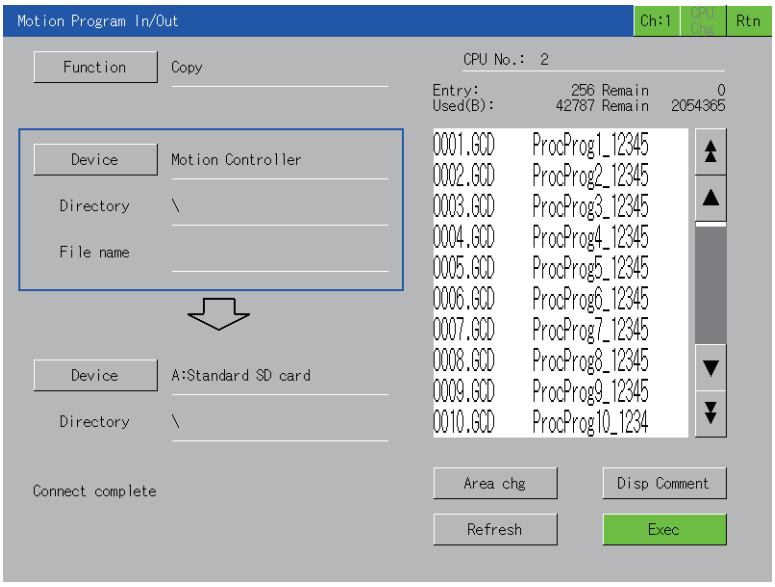
Step 3. Set the channel number.
Set the channel number of the motion controller CPU (MELSEC iQ-R series) connected to the GOT in the communication setting window.
When the channel number is not set, touching the [×] key closes the communication setting window and sets the channel number to [1].



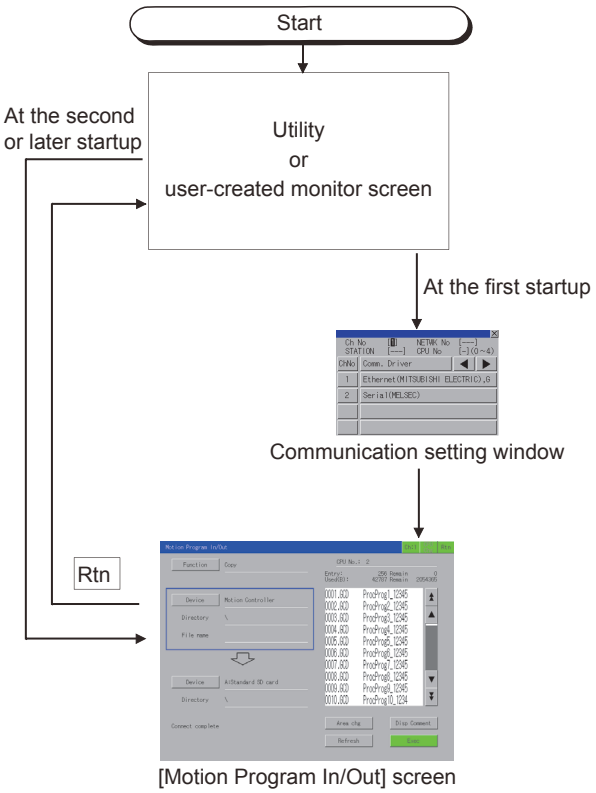
After the GOT is powered on, the communication setting window is displayed only at the first startup of the motion program I/O.
To display the communication setting window at the second or later startup, touch the channel key on the [Motion Program In/Out] screen.

➠ 27.4 Operating Procedure

Step 4. The motion program I/O starts after the channel number is selected.



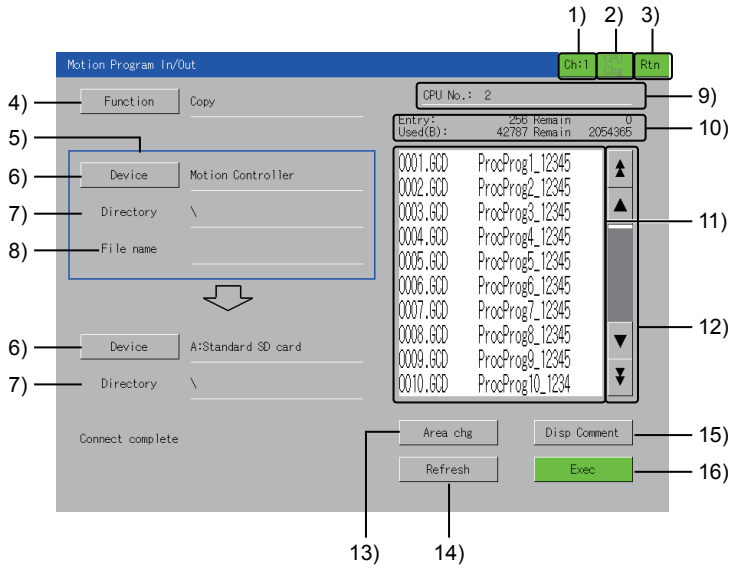
■2. Screen transition



If the motion program I/O is exited with the [Rtn] key, the last displayed screen will appear at the next startup of the motion program I/O.

■1. Displayed contents

This section explains the display data of the [Motion Program In/Out] screen and the functions of the operation keys on the screen.



1) Channel key

Displays the communication setting window.

The channel number set in the communication setting window appears on the key.

2) [CPU Chg] key

Switches between the motion controller CPUs (MELSEC iQ-R series) to be monitored.

The CPU numbers other than those of the motion controller CPUs are ignored.

3) [Rtn] key

Exits the motion program I/O and returns to the monitor screen or the utility screen.

4) [Function] key

Displays the function selection window. Select a function to be executed.

For the details of the function selection window, refer to the following.

➠ (1) Function selection window

5) Area

The current device area is enclosed in a blue frame, and the files stored in the specified device are displayed in the list.

6) [Device] key

Displays the device selection window.

Select the target to which the function selected with the [Function] key is executed.

For the details of the device selection window, refer to the following.

➠ (2) Select device window

7) [Directory]

The operations and display contents differ depending on the item selected with the [Device] key.

- When [Motion Controller] is selected
  The root directory of the motion controller CPU (MELSEC iQ-R series) is displayed.
- When an item other than [Motion Controller] is selected
  The directory of the G-code program selected in the list is displayed.

8) [File name]

Displays the name of the file selected in the list.

Up to 28 characters can be displayed.

9) [CPU No.]

Displays the CPU No. of the motion controller CPU (MELSEC iQ-R series).

10) Status display

Displays the information of the item selected with the [Device] key.

The display contents depend on the item selected with the [Device] key.

- When [Motion Controller] is selected
  [Entry] and [Remain]:
  Displays the number of registered G-code programs and the remaining number of programs that can be registered.
  [Used] and [Remain]:
  Displays the used space and the available space of the motion controller CPU (MELSEC iQ-R series).
- When an item other than [Motion Controller] is selected
  [Used] and [Remain]:
  Displays the used space and the available space of the data storage.

11) List

Displays the files of the item selected with the [Device] key.

When an item other than [Motion Controller] is selected with the [Device] key, the directory name is enclosed in angle brackets < >.

Touching < > displays the files in the touched directory.

Touching <..> displays the files in the parent directory.

Up to 1024 directories and files can be listed.

12) Scroll keys

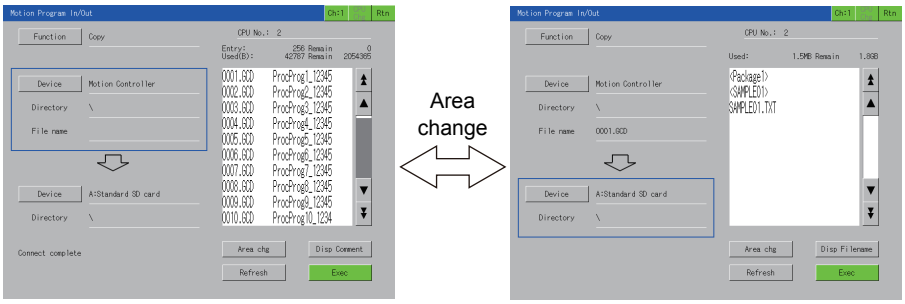
Scroll the list up or down by 10 or 50 items.

13) [Area chg] key

Switches the device areas.

The files in the specified directory in the blue frame are displayed in the list.

When [Delete] is selected with the [Function] key, the areas cannot be switched.



14) [Refresh] key

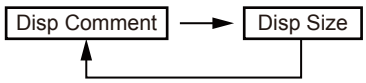
Updates the list.

15) [Disp Filename] key

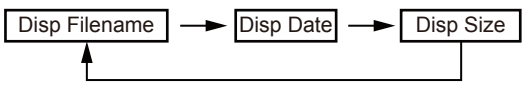
Changes the display contents of the list each time when the key is touched.

The display contents depend on the item selected with the [Device] key.

- When [Motion Controller] is selected
  The following shows the contents to be switched.



- When an item other than [Motion Controller] is selected
  The following shows the contents to be switched.

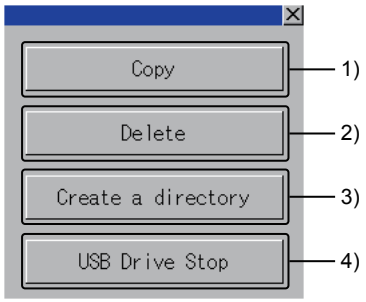


16) [Exec] key

Executes the specified operation.

(1) Function selection window

The following shows the key functions on the function selection window.



1) [Copy] key

Copies a G-code program between the motion controller CPU (MELSEC iQ-R series) and the data storage in the GOT.

➠ ■2. Copying a G-code program

2) [Delete] key

Deletes a G-code program from the motion controller CPU (MELSEC iQ-R series) or the data storage in the GOT.

➠ ■3. Deleting a file

3) [Create a directory] key

Creates a directory in the data storage.

When [Motion Controller] is selected with the [Device] key, a directory cannot be created.

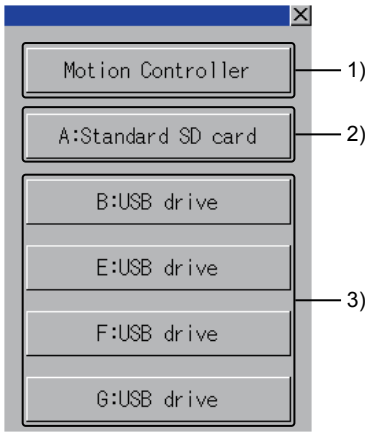
➠ ■4. Creating a directory

4) [USB Driver Stop] key

Stops the operation of the USB drive selected in the [Device] key.

(2) Select device window

The following shows the key functions on the select device window.



1) [Motion Controller] key

The motion controller CPU (MELSEC iQ-R series) is selected as the target to which the function is executed.

2) [A:Standard SD card] key

The SD card is selected as the target to which the function is executed.

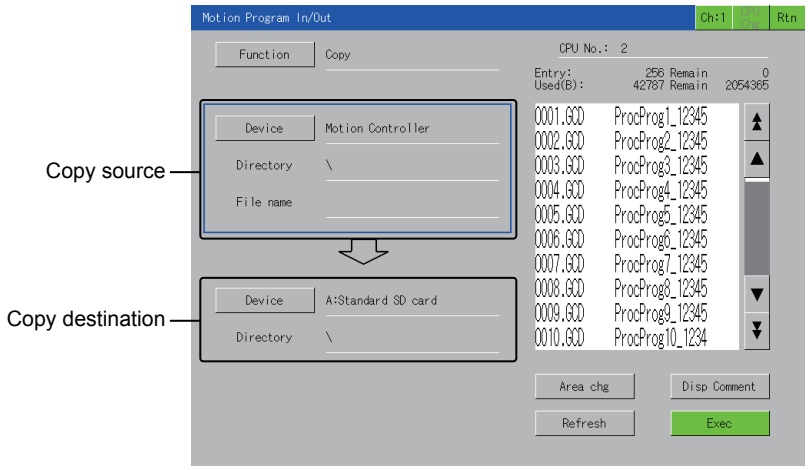
3) USB drive keys

The USB drive is selected as the target to which the function is executed.

A USB drive in which no data storage is inserted cannot be selected.

■2. Copying a G-code program

Copy a G-code program between the motion controller CPU (MELSEC iQ-R series) and the data storage in the GOT. Select a copy source and copy destination as follows.

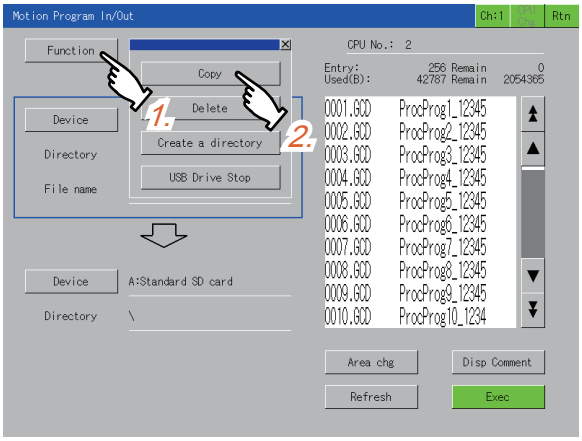


When [Motion Controller] is selected for the copy source, only a data storage can be selected for the copy destination. When the data storage is selected for the copy source, only [Motion Controller] can be selected for the copy destination.

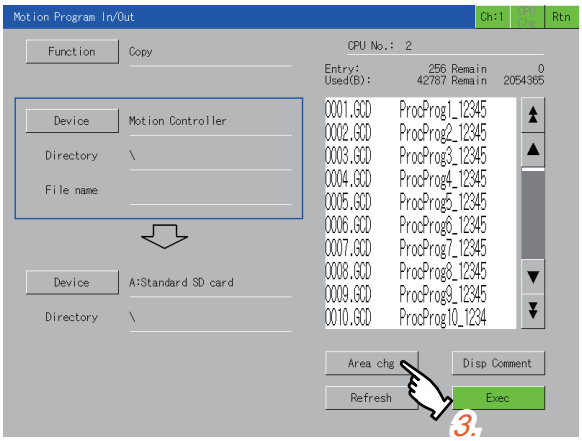
The following shows the copy procedure.
Example)
When copying the G-code program [O123.GCD] of [Motion Controller] to [A:Standard SD card]

Step 1. Touch the [Function] key to display the function selection window.

Step 2. Touch the [Copy] key on the function selection window.

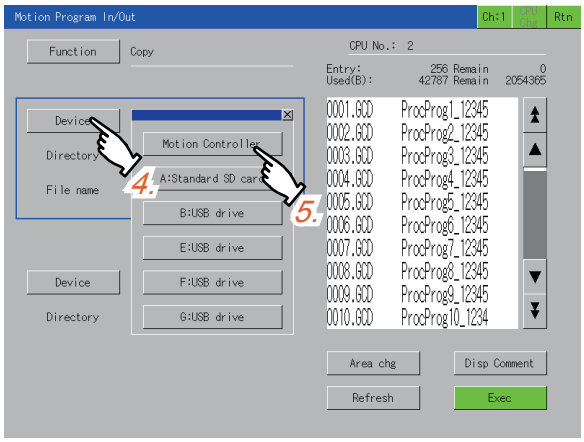


Step 3. Touch the [Area chg] key to move the frame to the copy source.

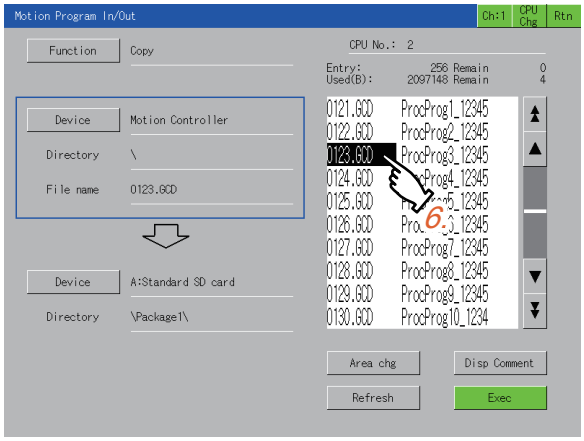


Step 4. Touch the [Device] key of the copy source to display the select device window.

Step 5. Select [Motion Controller] in the select device window.

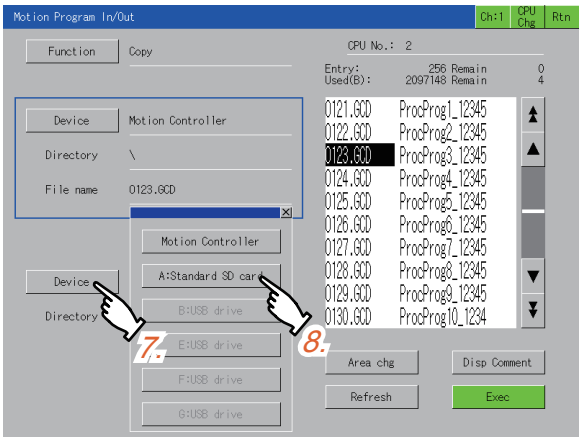


Step 6. Select the G-code program [O123.GCD] in the list.



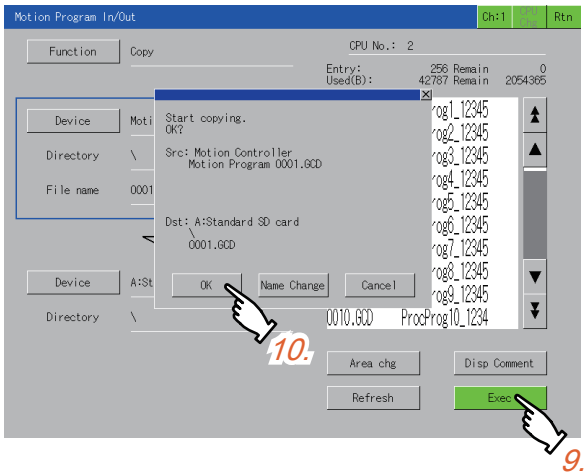
Step 7. Touch the [Device] key to display the select device window.

Step 8. Select [A:Standard SD card] in the select device window.



Step 9. Touch the [Exec] key to display the copy confirmation window.

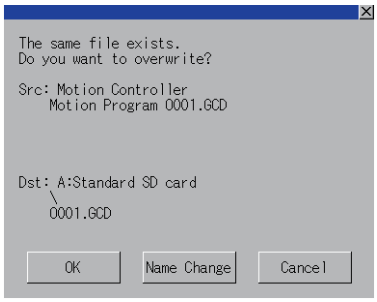
Step 10. Touch the [OK] key to copy [O123.GCD] to [A:Standard SD card].
When the copy is completed, a completion message is displayed.



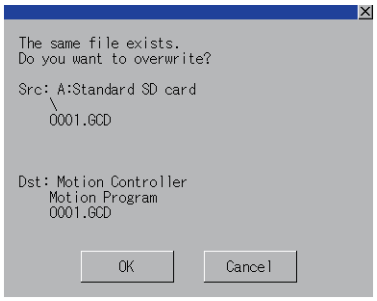
POINT

When the copy destination already has the same file

In this case, touching the [OK] key in the copy confirmation window displays the overwrite confirmation window.
To overwrite the file, touch the [OK] key. To cancel the copy, touch the [Cancel] key.



Copying a G-code program from the motion controller CPU (MELSEC iQ-R series) to the data storage



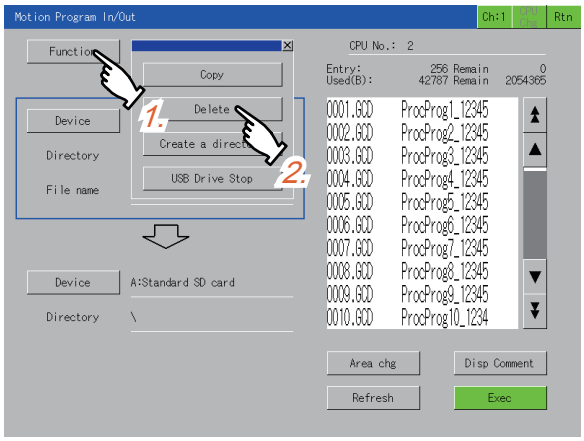
Copying a G-code program from the data storage to the motion controller CPU (MELSEC iQ-R series)

■3. Deleting a file

Delete a G-code program from the motion controller or the data storage.
The following shows the deletion procedure.
Example)
When deleting the G-code program files [O001.GCD], [O002.GCD], and [O003.GCD] of [Motion Controller]

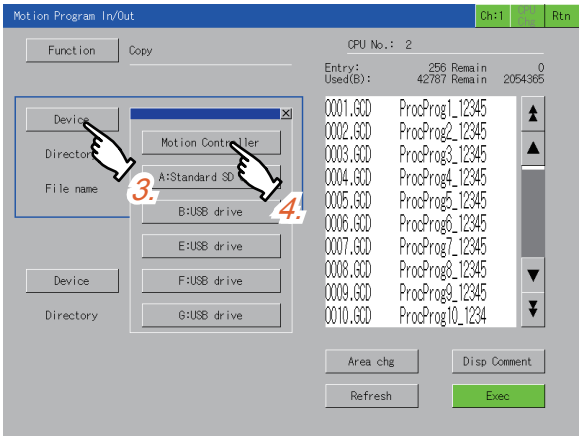
Step 1. Touch the [Function] key to display the function selection window.

Step 2. Touch the [Delete] key on the function selection window.

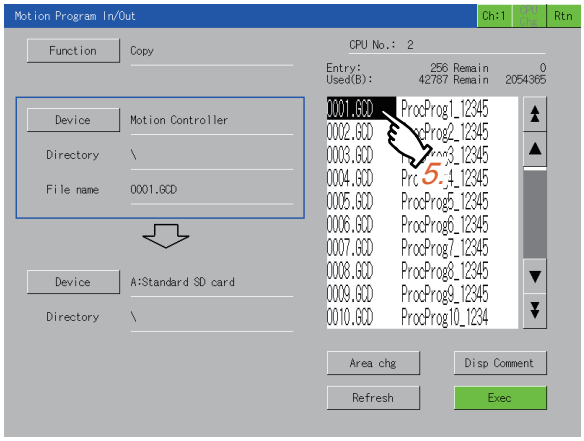


Step 3. Touch the [Device] key to display the select device window.

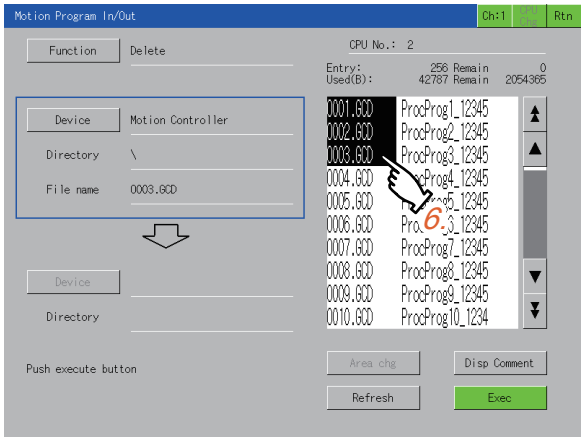
Step 4. Touch the [Motion Controller] key on the select device window.



Step 5. Select the file [O001.GCD] in the list to delete.

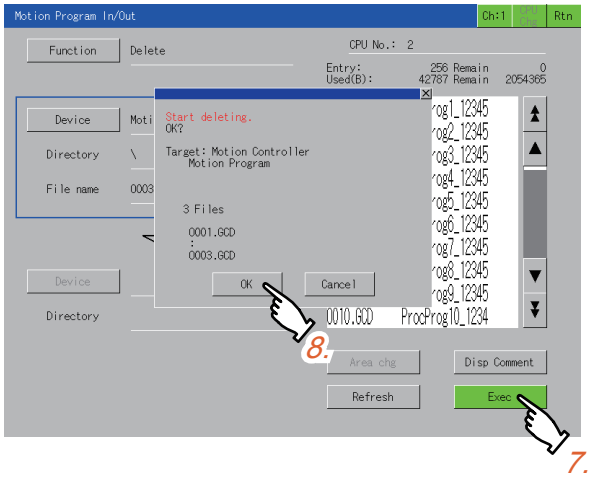


Step 6. Select the last target file [O003.GCD] in the list to delete.
The files [O001.GCD], [O002.GCD], and [O003.GCD] are all selected.



Step 7. Touch the [Exec] key to display the deletion confirmation window.

Step 8. Touch the [OK] key to delete the selected files.
When the deletion is completed, a completion message is displayed.



■4. Creating a directory

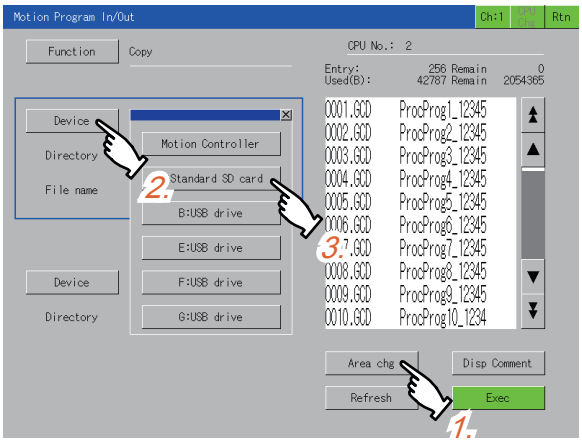
Create a directory in the data storage.
The following shows the procedure for creating a directory.
Example)
Creating the directory SAMPLE01 in [A:Standard SD card]

Step 1. Touch the [Area chg] key to move the frame to the copy source.
For the copy source, refer to the following.

➠ ■2. Copying a G-code program

Step 2. Touch the [Device] key to display the select device window.

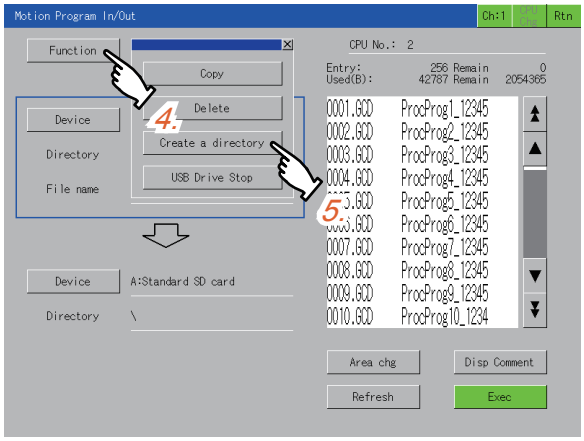
Step 3. Touch [A:Standard SD card] on the select device window.



Step 4. Touch the [Function] key to display the function selection window.

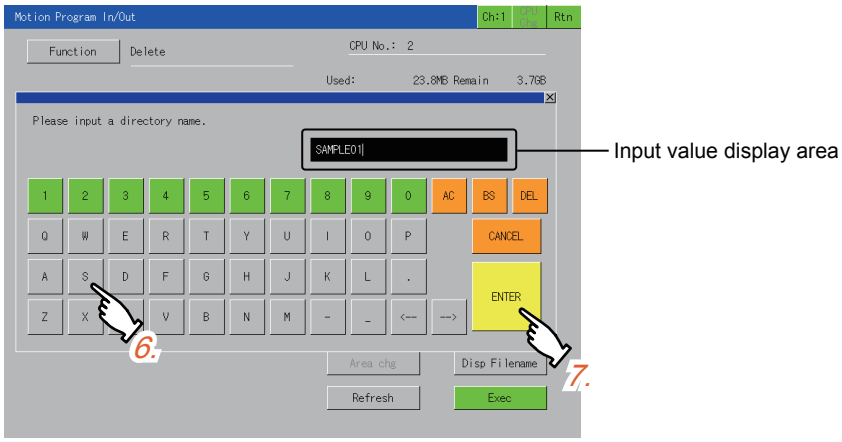
Step 5. Touch the [Create a directory] key on the function selection window to display the key window.
For the details of the key window, refer to the following.

➠ ■6. Entering characters



Step 6. Input SAMPLE01 on the key window.

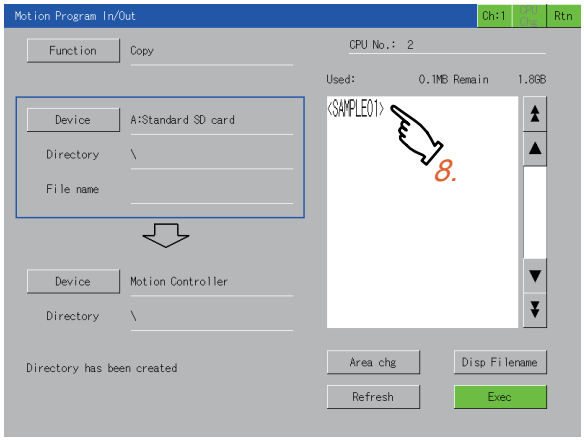
Step 7. Touch the [ENTER] key to confirm the entered directory name and close the key window.



Key input using a USB keyboard is also available.

➠ ■6. Entering characters

Step 8. The list is updated, and the SAMPLE01 directory is created.



■5. Renaming a file when copying a G-code program

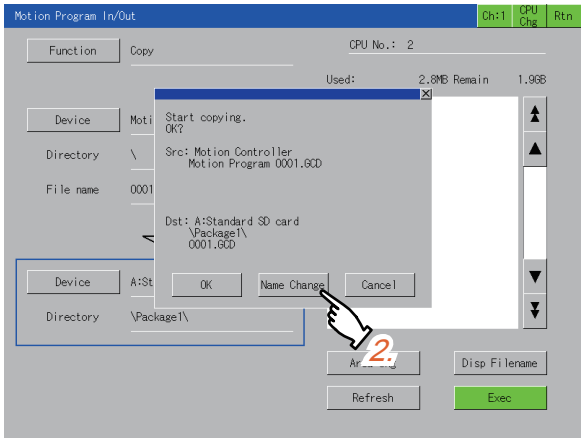
Rename a file when the file is copied to the data storage.
The following shows the procedure for renaming a file at the file output.
Example)
Renaming the G-code program file of [Motion Controller] from [O001.GCD] to [O123.GCD], and outputting the file to [A:Standard SD card]

Step 1. Copy the G-code program [O001.GCD] of [Motion Controller] to [A:Standard SD card].
For the copy procedure, refer to the following.

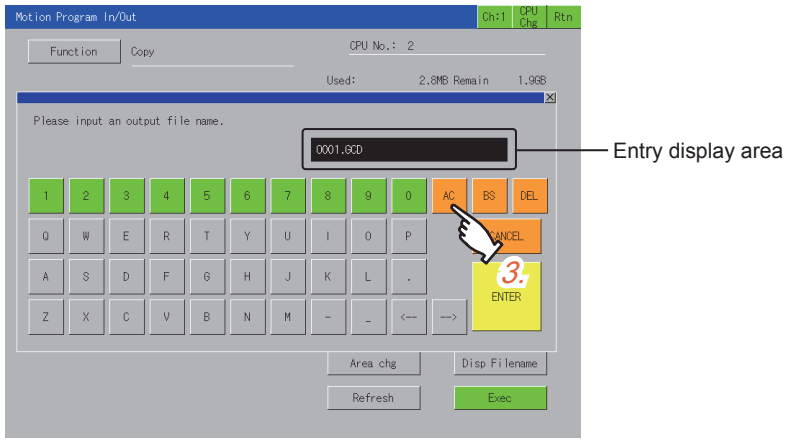
➠ ■2. Copying a G-code program

Step 2. Touch the [Name Change] key on the copy confirmation window to display the key window.
For the details of the key window, refer to the following.

➠ ■6. Entering characters



Step 3. Touch the [AC] key to delete the existing file name from the entry display area.

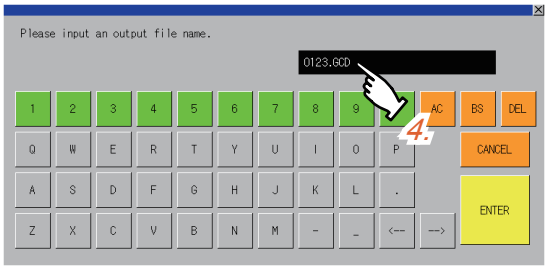


Key input using a USB keyboard is also available.

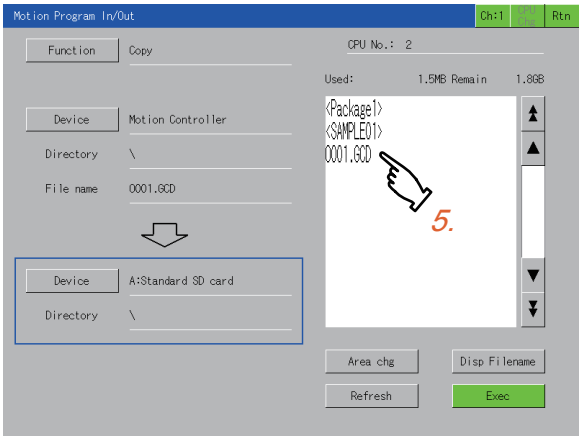
➠ ■6. Entering characters

Step 4. Input O123.GCD.
Touch the [ENTER] key to close the key window and display the copy confirmation window.
For the details of the copy confirmation window, refer to the following.

➠ ■2. Copying a G-code program



Step 5. Touch the [OK] key to start copying the renamed file.
When the copy is completed, a completion message is displayed.

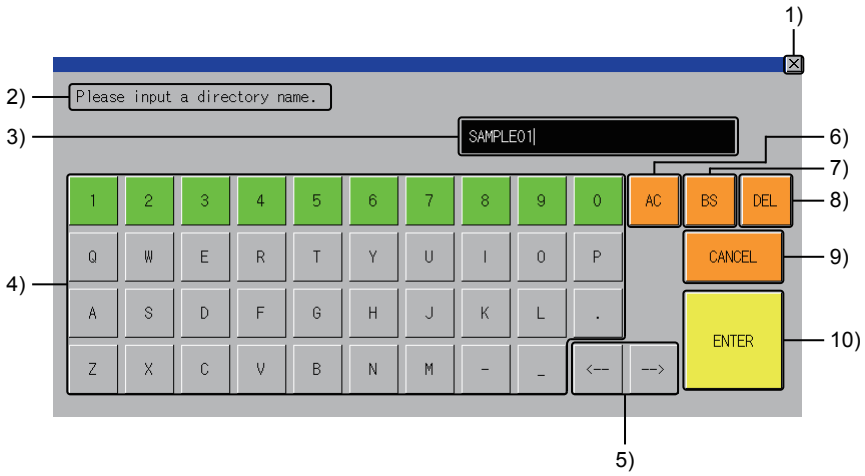


■6. Entering characters

Enter characters with the key window or a USB keyboard to create a directory or rename a file.

(1) Key window

The following shows the layout of the key window and the key functions.



1) [×] key
Cancels the entry and closes the key window.

2) Message
Displays a message.

3) Entry display area
Displays the entry.
Up to 28 characters can be displayed.

4) Software keyboard
Inserts a character at the cursor position.
Up to 28 characters can be input.

5) Cursor keys
Move the cursor.

6) [AC] key
Clears the entry.

7) [BS] key
Deletes one character to the left of the cursor.

8) [DEL] key
Deletes one character to the right of the cursor.

9) [CANCEL] key
Cancels the entry and closes the key window.

10) [ENTER] key
Confirms the entry and closes the key window.
When a file is renamed, the copy confirmation window appears.

(2) USB keyboard

A USB keyboard is usable to enter characters in the key window.
For the corresponding keys, refer to the following.

Key	Description
Characters, numbers, symbols	The key corresponding to the one in the key window enters the character in the entry display area.
Shift + Delete	Delete the entry.
Backspace	Delete one character to the left of the cursor.
Delete	Delete one character to the right of the cursor.
Esc	Cancel the entry and close the key window.
Enter	Confirm the entry and close the key window.

For information on how to set the USB keyboard, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

■7. Contents displayed in the list

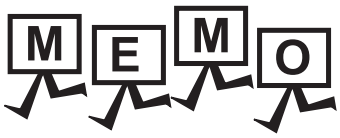
The following shows the file name displayed in the list on the [Motion Program In/Out] screen.

Target data	Description	File name displayed in the list
G-code program	G-code program	O***.GCD ("***" represents a number.)

27.5 Error Messages and Corrective Actions

This section explains the error messages displayed when the motion program I/O is executed, and the corrective actions.

Error message	Description	Corrective action
Communication error	The motion controller CPU (MELSEC iQ-R series) is powered off, the cable is disconnected, or the connected controller is not a motion controller CPU (MELSEC iQ-R series).	Correct the system configuration and communication settings.
Failed to stop USB drive	The GOT has failed to stop the USB drive.	Check the data storage in the USB drive.
Unable to exec : Program running	The GOT cannot execute the motion program I/O because the motion controller CPU (MELSEC iQ-R series) is in operation.	Stop the operation of the motion controller CPU, and execute the motion program I/O again.
Out of memory	The size of the data to be written exceeds the motion controller CPU (MELSEC iQ-R series) memory capacity.	Make enough free space by operations such as deleting unnecessary G-code programs from the motion controller CPU, and then execute the motion program I/O again.
The same name exists	The directory name cannot be created because the same name exists.	Specify a different name.
File not found	The copy source file does not exist.	Check the copy source file and execute the motion program I/O again.
Timeout	The GOT has failed to communicate with the motion controller CPU (MELSEC iQ-R series).	Correct the system configuration and communication settings.
Can't create a directory	The directory cannot be created.	• The directory cannot be created when the destination device is set to the motion controller CPU (MELSEC iQ-R series). • The data storage is not ready to write.
Directory illegal	The directory cannot be displayed because it is invalid.	Correct the directory settings, and then execute the motion program I/O again.
No. of registration over	The maximum number of programs has been exceeded.	Make enough free space by deleting unnecessary G-code programs, and then execute the motion program I/O again.
Path is too long	The directory name cannot be created because the path is too long.	Specify the directory or file name so that the number of characters in the path is 78 characters or less.
Too many files	As the data storage has too many files and directories, they cannot be listed accordingly.	Reduce the number of files and directories to 1024 or less.
File is not specified	The [Exec] key is touched even though a file is not specified.	Specify a file and touch the [Exec] key again.
Filename illegal	The file name is invalid.	Check that the file name includes no invalid character, and execute the motion program I/O again.
Memory card not exist	No data storage is inserted into the GOT.	Insert a data storage into the GOT.
Format Error	The G-code program cannot be copied because its format is invalid.	Use a valid G-code program format and execute the motion program I/O again.
The Ethernet settings of the monitoring target motion controller are not correct.	The GOT cannot communicate with the motion controller because the Ethernet settings made with GT Designer3 are incorrect.	Correct the Ethernet settings on GT Designer3, and write the project data to the GOT.
Error	Other errors	Turn off the GOT and motion controller CPU, check the data and connection status of the data storage, and then execute the motion program I/O again.


MEMO

28. SERVO AMPLIFIER GRAPH

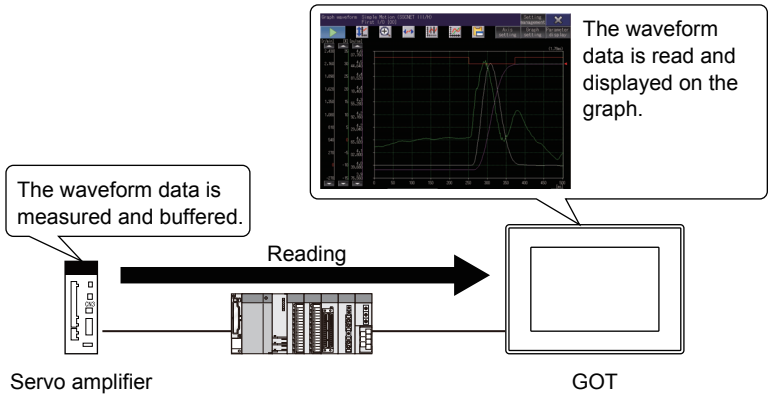
GT 27 GT 25 GT 23 GT 21 Soft GOT 2000

28.1 Features

The servo amplifier graph is a function that reads waveform data measured by the servo amplifier and displays the data on the graph.
You can check the waveform data and parameter information of the servo amplifier without using a personal computer.
The measured waveform data can be output to a file as well.
You can analyze the output file in detail by using MR Configurator2.

■1. Displaying the waveform data measured by the servo amplifier on the graph

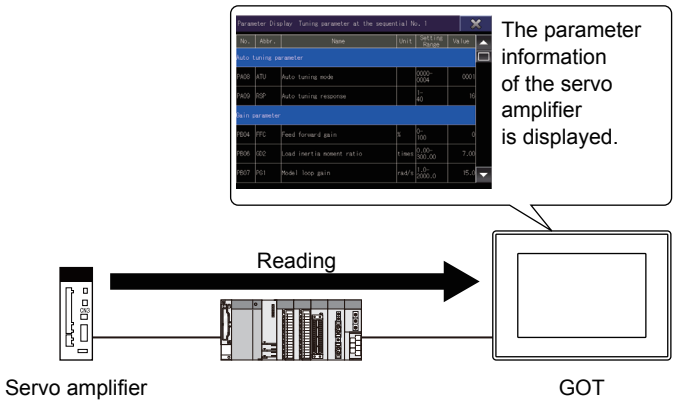
The waveform data measured by the servo amplifier can be read and displayed on the graph by operating the GOT.
The measured waveform data is saved as a history.



Up to 64 waveform data can be displayed simultaneously.
You can compare a normal waveform with an abnormal one by superimposing multiple waveforms.

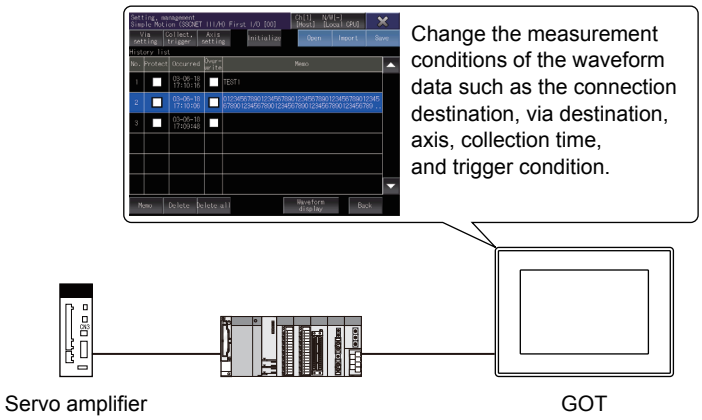
■2. Displaying the parameter information of the servo amplifier

The parameter information of the servo amplifier acquired at waveform data measurement can be displayed.



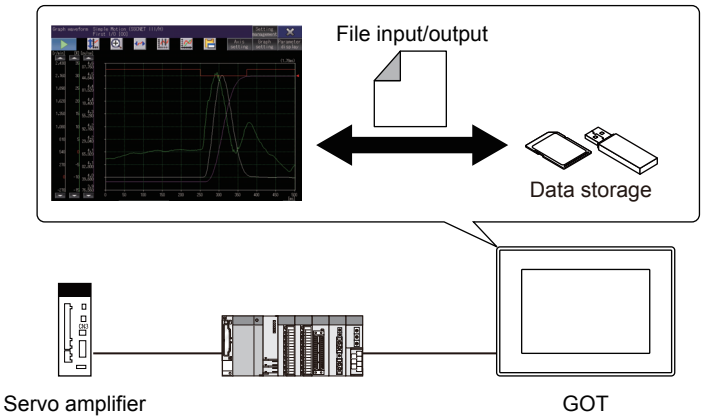
■3. Changing the measurement condition setting

You can change the measurement conditions of waveform data such as the connection destination, via destination, axis to be measured, collection time, and trigger condition.



■4. Inputting/outputting waveform data to a file

The waveform data and parameter information read from the connected servo amplifier can be output to a file.
The file is viewable on the GOT or MR Configurator2.
Also, the file output from MR Configurator2 can be input to the GOT.
The waveform data input from the file can be displayed on the [Graph waveform] screen as history data.



28.2 Specifications

28.2.1 System configuration

This section explains the system configuration of the servo amplifier graph.
For connection type settings and precautions regarding the communication unit, cable, and connection type, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■1. Target controller

The servo amplifier graph supports the following servo amplifiers.

Servo amplifier	Model
MELSERVO-J4 *2	MR-J4-□B *1, MR-J4-□B-RJ *1, MR-J4W2-□B, MR-J4W3-□B
MELSERVO-JE	MR-JE-□B

*1 The MR-J3-B compatibility mode is not supported.
*2 To monitor the servo amplifier through a simple motion module (SSCNET III/H) on the PLC, the following connections cannot be used.
- The GOT and the motion controller CPU (Q series) are directly connected by Ethernet.
- The GOT and CR800-Q (Q172DSRCPU) are directly connected by Ethernet.

For the servo motor connectable to the servo amplifier, refer to the following.

➠ Instruction manual for the servo amplifier to be used

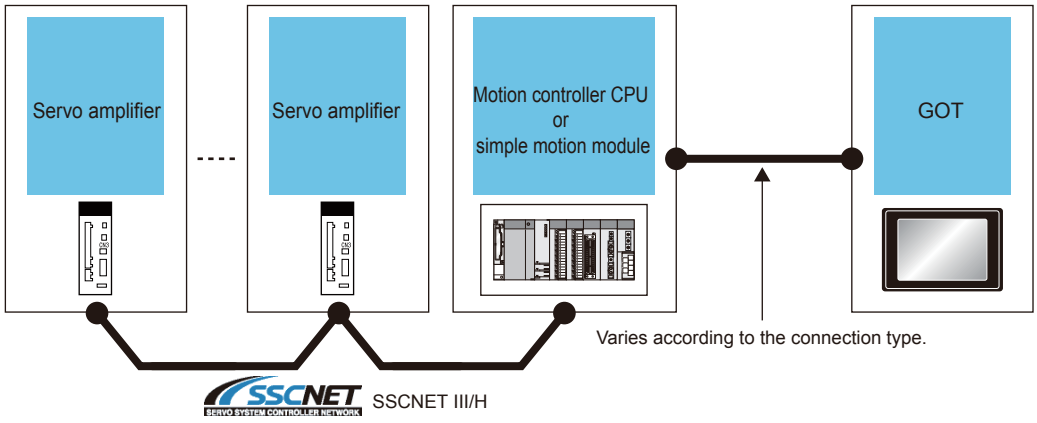
Connect a target servo amplifier to the GOT through a motion controller CPU or simple motion module shown below.

(1) Applicable motion controller CPUs and simple motion modules

Controller	Model
Motion controller CPU (MELSEC iQ-R series)	R16MTCPU, R32MTCPU, R64MTCPU
Motion controller CPU (Q series)	Q172DSCPU, Q173DSCPU, Q170MSCPU
Simple motion module	RD77MS2, RD77MS4, RD77MS8, RD77MS16, FX5-40SSC-S, FX5-80SSC-S, QD77MS2, QD77MS4, QD77MS16, LD77MS2, LD77MS4, LD77MS16

■2. Connection type

(1) Connecting a servo amplifier and the GOT through a motion controller CPU or simple motion module (SSCNET III/H)



To connect a servo amplifier and the GOT through a motion controller CPU (Q series), use a connection type other than the CC-Link IE Field Network connection.
To connect a motion controller CPU and the GOT by the CC-Link connection (intelligent device station), set the transmission method to [MELSEC (compatible)].
For the connection method, refer to the following.

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

■3. Required system application (extended function)

For the system application (extended function) required, refer to the following.

➠ 1.2 System Applications (Extended Functions) Required for Each Function

(1) System application (extended function)

Write the package data that contains the system application (extended function) for the servo amplifier graph to the GOT.
For the communication method with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(2) System application (extended function) size

To install a system application (extended function) to the GOT, enough space in the user area is required.
For information on how to check the available space of the user area and each data size, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

■4. Required hardware

Data storage is required for the following operations.

- Saving the waveform data read from a servo amplifier in a file
- Displaying the waveform data read from the file

■5. Applicable hardware

A USB mouse is usable.

■6. Applicable file

A file having the extension .gpf2 can be read, written, and imported.
The following settings are required for the gpf2 file.

- Setting method: [Div specification]
- Number of collection Div: [10 Div]

28.2.2 Access range

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

➠ GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1

28.2.3 Precautions

■1. Functions that cannot be used together

The drive recorder and servo amplifier graph cannot be used together if the functions are started with the special function switch.
When the drive recorder is used, exit it and start the servo amplifier graph.

■2. Sending commands from pieces of equipment

Do not access the servo amplifier from multiple GOTs and PLCs simultaneously.
Doing so may measure invalid waveform data, or cause a communication timeout.

■3. Measuring waveform data while machine analyzer function is running

The GOT cannot acquire waveform data while the servo amplifier is running the machine analyzer function.
Acquire waveform data after exiting the machine analyzer function.

■4. Waveform data collection time

The settings of waveform data collection time are fixed as follows.
Use MR Configurator2 to collect waveform data with any settings other than the following.

- Setting method: [Div specification]
- Number of collection Div: [10 Div]

■5. Unmatched measurement condition of the file to be imported

If the measurement condition between the displayed graph and gpf2 file to be imported does not match, the file cannot be imported.

■6. No history data at import

If no history data exists, imports may fail.
In such cases, read a file in the [Open] window.

■7. Changing the setting of the routed motion controller CPU

When changing the following settings of the routed motion controller CPU or simple motion module, set the via destination again in the [Via (motion) setting] window.
Not doing so may fail to acquire waveform data.

- Servo network setting
- Connection status of the servo amplifier

28.3 Operations for Display

This section explains how to display the servo amplifier graph screen after the GOT is turned on.

Step 1. Turn on the GOT.

Step 2. Perform one of the following operations.

- In the utility, touch [Monitor] → [Servo amplifier graph] from the main menu.
  For information on how to display the utility, refer to the following.

  ➠ GOT2000 Series User's Manual (Utility)
- Touch a module on the system configuration screen of the system launcher, and then touch [Servo amplifier graph] on the extended function selection screen.
- Touch a module on the system configuration screen of the system launcher (servo network), and then touch [Servo amplifier graph] on the extended function selection screen.
- Touch the special function switch (Servo amplifier graph) set in the project.

Step 3. The [Select channel] window appears only at the first startup of the servo amplifier graph.
(When the connection destination is set for the special function switch, the [Select channel] window does not appear.)
Touch the key corresponding to the channel No. to be used.

Step 4. The [Select station] window appears only at the first startup.
(When the connection destination is set for the special function switch, the [Select station] window does not appear.)
Touch the [Input station number] key.

➠ 28.5.2 [Select station] window

Step 5. In the [Input station No.] window, set the network number and station number, and then touch the [OK] key.

➠ 28.5.3 [Input station No.] window

Step 6. Touch the [OK] key to display the [Graph waveform] screen.

➠ 28.4 [Graph waveform] screen

The method of displaying the servo amplifier graph screen determines the operation screen.

Method	Description
Using the utility, system launcher, or system launcher (servo network)	The GOT screen is switched to the servo amplifier graph screen. For the details of the system launcher and the system launcher (servo network), refer to the following. ➠ 2. SYSTEM LAUNCHER 25. SYSTEM LAUNCHER (SERVO NETWORK)
Using a special function switch	The servo amplifier graph screen appears as a system window. For information on how to display the servo amplifier graph screen with a special function switch, refer to the following. ➠ ■1. Displaying the servo amplifier graph screen with a special function switch

■1. Displaying the servo amplifier graph screen with a special function switch

To use a special function switch, place the switch on a user-created screen.
For the setting method, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

(1) Settings of the special function switch

Set the following items for the special function switch.

Item	Description
[Window size]	Specify the window size for the servo amplifier graph.
[Graph waveform size]	Specify the size of the graph display area on the [Graph waveform] screen.
[Specify Connected Station]	Specify a servo amplifier to be connected and a controller through which the servo amplifier is connected to the GOT.
[Specify the file to be read at the time of startup]	Specify a file to be read upon startup of the servo amplifier graph.

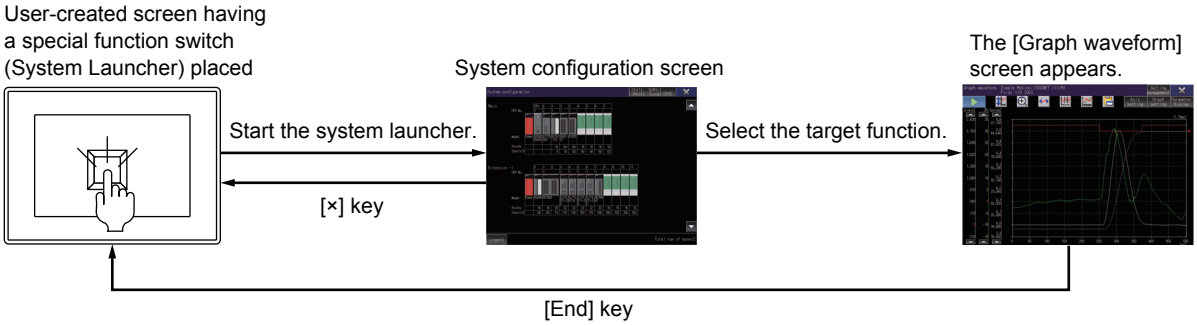
(2) Settings for using the system window

When the servo amplifier graph screen is displayed with a special function switch, the screen appears as a system window.
Displaying such a system window requires an overlap window.
Set an overlap window to be used as the system window in the project.
For the setting method, refer to the following.

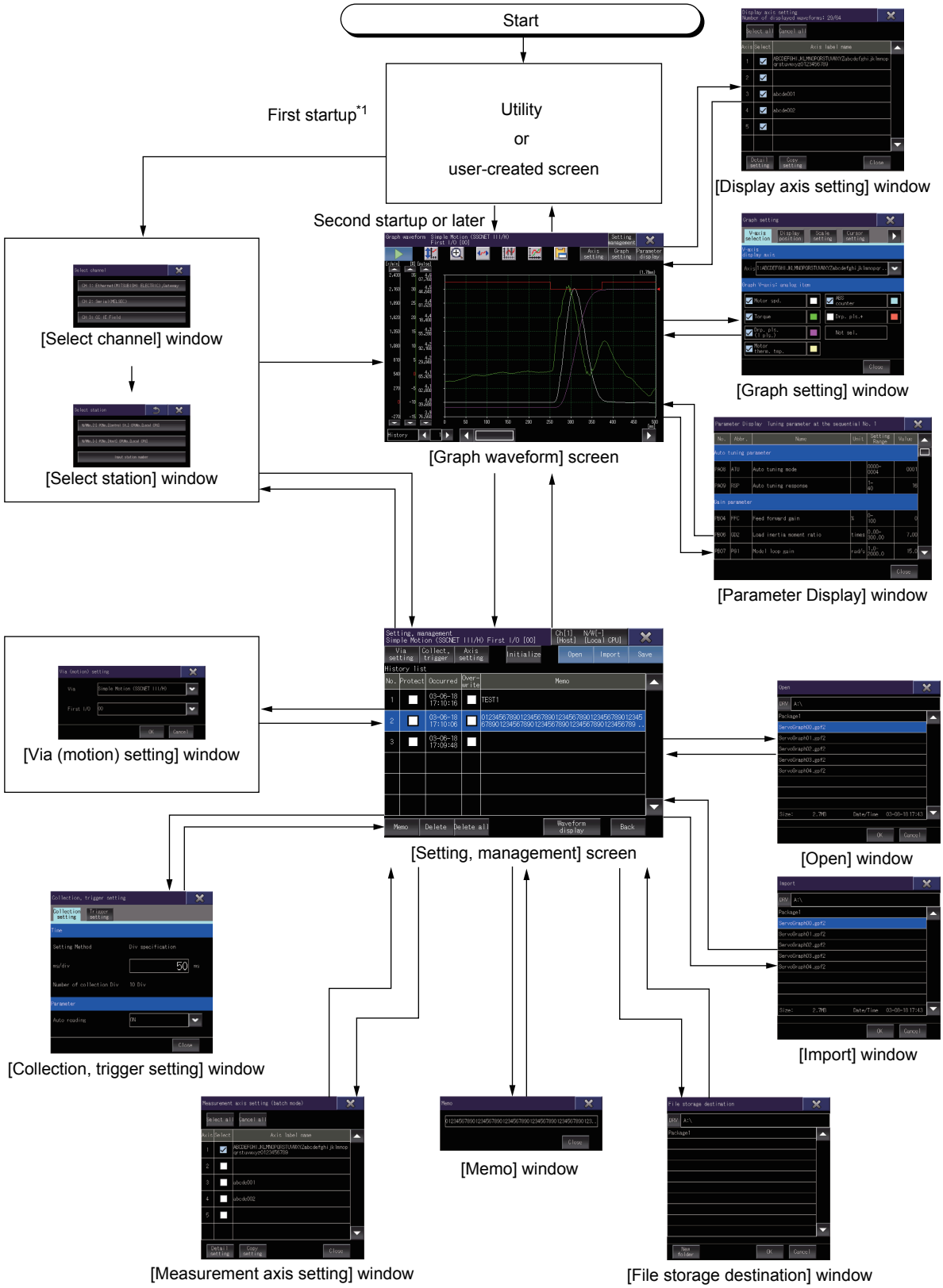
➠ GT Designer3 (GOT2000) Screen Design Manual

■2. Starting the function by using the special function switch (System launcher)

You can start the servo amplifier graph from a user-created screen by selecting the connection destination with the special function switch (System launcher).



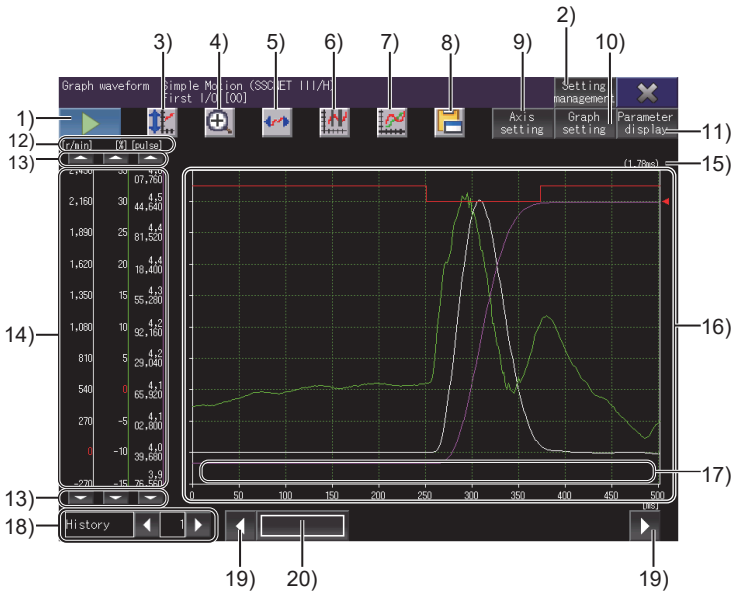
28.3.1 Screen transition



*1 The [Graph waveform] screen appears at the first startup of the servo amplifier graph function, if the function is started with the special function switch in which the connection destination is specified.

28.4 [Graph waveform] screen

This screen displays waveform data read from a target servo amplifier or file.



1) Start measurement key or stop measurement key

Start or stop measuring waveform data.

Key	Description
	Start measurement key Touch this key to start measuring waveform data by the servo amplifier.
	Stop measurement key Touch this key to stop measuring waveform data by the servo amplifier. The measured waveform data before the stop is deleted.

2) [Setting management] key

Displays the [Setting, management] window.

Set the waveform data to be acquired, and manage the history of waveform data

➠ 28.5 [Setting, management] screen

3) Scale optimization key

Returns the enlarged or repositioned graph display area to its original state when the [Graph waveform] screen was displayed.

4) Zoom in mode key

Enables or disables the zoom in mode for waveform data.

While using the zoom in mode, you cannot enable the move mode.

➠ 28.4.6 ■1. Zoom in mode

5) Move mode key

Enables or disables the move mode for waveform data.

While using the move mode, you cannot enable the zoom in mode.

➠ 28.4.6 ■2. Move mode

6) Cursor key

Displays or hides cursors on the graph display area.

To display the maximum and minimum values within a range, use the cursors to define the range.

➠ 28.4.6 ■3. Cursor display

7) Overwrite mode key

Enables or disables the overwrite mode.

Enable the overwrite mode to display the history data specified in the [Setting, management] screen over the acquired waveform data in the graph display area.

➠ 28.4.6 ■4. Overwrite mode

8) Hard copy key

Store the displayed screen to a data storage in the BMP or JPEG format, or print it with a printer.
Set the axes to be displayed on the [Graph waveform] screen.

➠ GT Designer3 (GOT2000) Screen Design Manual

9) [Axis setting] key

Displays the [Display axis setting] window.
Set axes to be displayed on the [Graph waveform] screen.

➠ 28.4.1 [Display axis setting] window

10) [Graph setting] key

Displays the [Graph setting] window.
Set a display style of the graph.

➠ 28.4.4 [Graph setting] window

11) [Parameter display] key

Displays the [Parameter Display] window.
Displays the parameter information of the servo amplifier acquired at waveform data measurement.

➠ 28.4.5 [Parameter Display] window

12) Unit by analog channel

Unit in which the data of an analog channel is measured

13) Scroll keys by analog channel

Scroll the waveform data of an analog channel up or down one scale mark.
To continue scrolling the waveform data, touch and hold a scroll key.

14) Scale

Scale of waveform data
The color of each line on the right of scale values corresponds to the color of each line in the waveform.
The display position and scale can be changed in the [Graph setting] window.

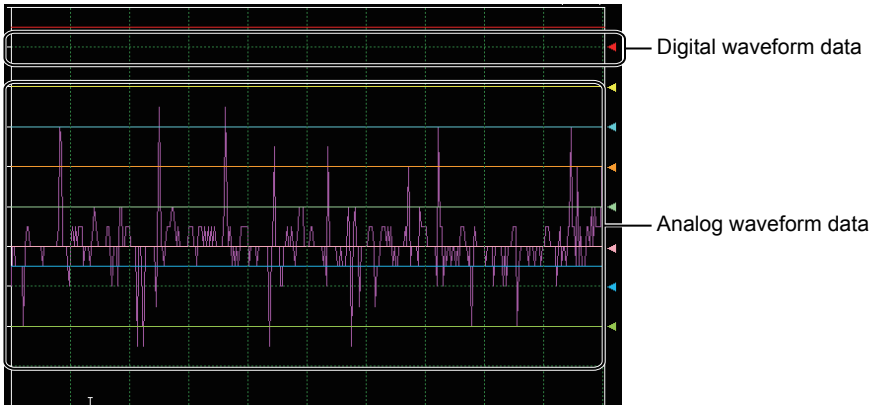
➠ 28.4.4 [Graph setting] window

15) Sampling cycle

Sampling cycle of the waveform data

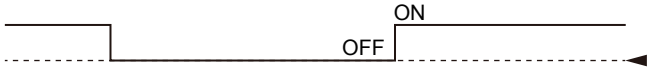
16) Graph display area

Displays the waveform data acquired by the servo amplifier.



An arrow is displayed on the right edge of a digital waveform.
The digital waveform data displayed at the same height as the arrow is in the OFF state, and the data displayed above the arrow is in the ON state.
The display position of digital waveform data can be changed in the [Graph setting] window.

➠ 28.4.4 [Graph setting] window



The display position of analog waveform data can be changed with a scroll key of an analog channel or in the [Graph setting] window.

17) Trigger point
Timing at which the waveform data is acquired.
[T] is displayed at the position where the trigger condition is satisfied.

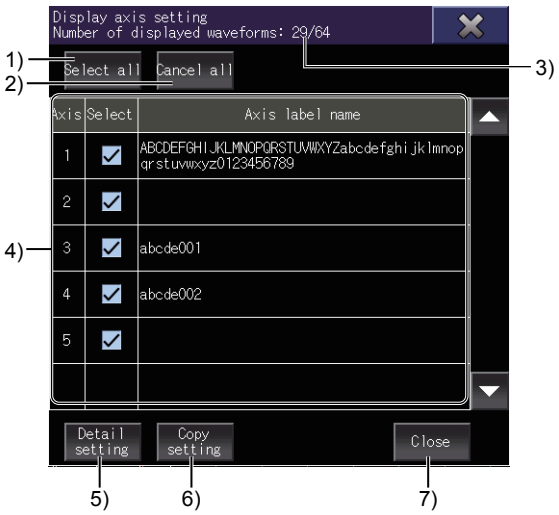
18) Select history
Select the history data to be displayed in the graph display area with color.

19) Scroll keys
Scroll the graph display area up or down one scale mark.

20) Scroll bar
Touch an empty area of the scroll bar left or right of the knob to scroll the graph display area left or right one scale mark.
Alternatively, touch and slide the knob to scroll through the area.

28.4.1 [Display axis setting] window

Set the axes to be displayed on the [Graph waveform] screen.



1) [Select all] key
Selects all items of [Select] in the display axis list.

2) [Cancel all] key
Clears all items of [Select] in the display axis list.

3) Number of displayed waveforms
The number of waveform data displayed on the [Graph waveform] screen.

4) Display axis list
Lists the axes displayed on the [Graph waveform] screen

Item	Description
[Axis]	Axis number of the servo amplifier.
[Select]	Axis displayed on the [Graph waveform] screen. Select the axis to be displayed.
[Axis label name]	Axis label name set for the axis.

5) [Detail setting] key
Displays the [Display axis setting] window (detail setting).
Set the line type of each axis, display setting items, and display colors.

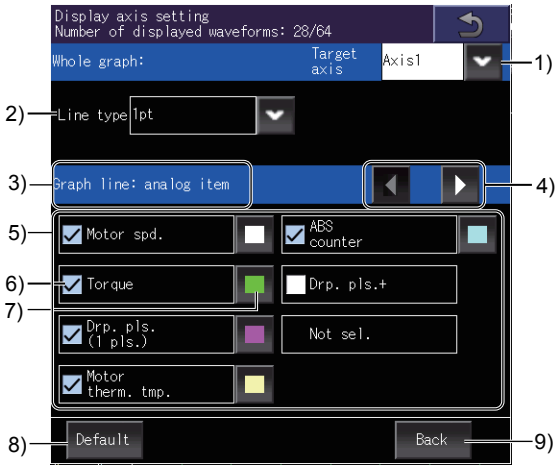
➠ 28.4.2 [Display axis setting] window (detail setting)

6) [Copy setting] key
Displays the [Copy setting] window.
Copy the display axis setting of the selected axis.

➠ 28.4.3 [Copy setting] window

7) [Close] key
Closes the [Display axis setting] window.

28.4.2 [Display axis setting] window (detail setting)



1) [Target axis]
Select a target axis to set the details.
Select [All] to set the details for all the axes.

2) [Line type]
Select a graph line type.
The following shows the items to be selected.
- [1pt]
- [2pt]
- [1pt (dotted)]
- [2pt (dotted)]

3) Item type
Displays the type of setting items.
To switch between the types of setting items, touch the item type switching keys.
- [Graph line: analog item]
- [Graph line: digital item]

4) Item type switching keys
Switch between the types of setting items.

5) Item list
Lists the setting items.

6) Display selection
Set whether to display each item.
Select the items to be displayed on the [Graph waveform] screen.

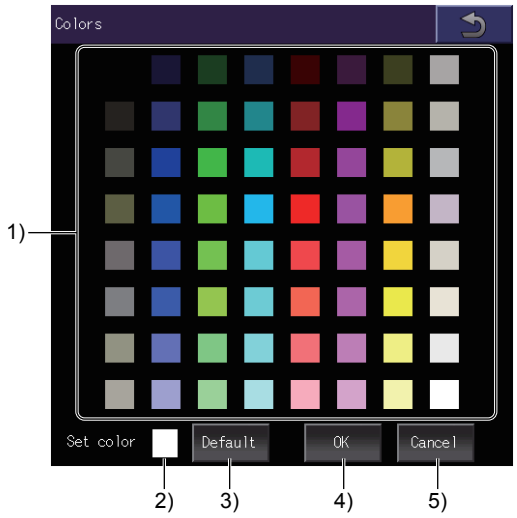
7) Color selection key
Displays the [Colors] window.
Select a graph line color of each item.

➠ ■1. [Colors] window

8) [Default] key
Initializes the display axis setting.

9) [Back] key
Closes the [Display axis setting] window (detail setting), and returns to the previous screen.

■1. [Colors] window



1) Color palette
Select a color to be set.

2) [Set color]
Current set color

3) [Default] key
Initializes the set color.

4) [OK] key
Applies the color, and returns to the previous screen.

5) [Cancel] key
Cancels the change, and returns to the previous screen.

28.4.3 [Copy setting] window

Copy the display axis setting to other axes.

Step 1. Touch the axis row to be copied on the copy screen.
The selected row turns blue.

Step 2. Touch the [Copy] key to switch the screen to the paste screen.

Step 3. Select an item of [Copy to] to which the copied row is pasted.

Step 4. Touch the [Paste] key to paste the copied row.

1) Axis list
Lists the axes to be copied or pasted.

Item	Description
[Copy to]	Axis to be copied to.
[Axis]	Axis number of the servo amplifier.
[Axis label name]	Axis label name set for the axis.

2) [Copy] key
Copies the row selected in the axis list.

3) [Paste] key
Pastes the copied row to the [Copy to] row selected in the axis list.

4) [Cancel] key
Cancels copying, and switches the screen to the copy screen.

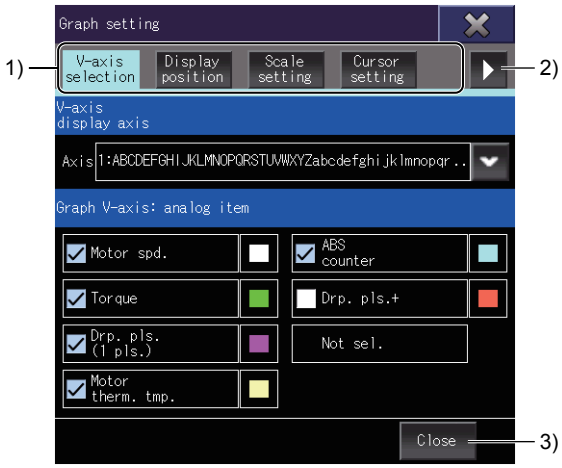
5) [Select all] key
Selects all items of [Copy to] in the axis list.

6) [Cancel all] key
Clears all items of [Copy to] in the axis list.

7) [Back] key
Closes the [Copy setting] window, and returns to the previous screen.

28.4.4 [Graph setting] window

Set a display style of the graph.
Switch between the tabs and set each item.



1) Tab

Touch each tab to switch the setting screens.

Tab name	Description
[V-axis selection] tab	Set a scale (vertical axis) of the graph. ➠ ■1. [V-axis selection] tab
[Display position] tab	Set the display position of a scale. ➠ ■2. [Display position] tab
[Scale setting] tab	Set the scale increment (interval between scale marks). ➠ ■3. [Scale setting] tab
[Cursor setting] tab	Switch between the vertical and horizontal cursors, and set an item for which the cursors are displayed. Define a range by the cursors to display the maximum and minimum values within the range. ➠ ■4. [Cursor setting] tab
[Basic color] tab	Set the background color, grid color, and clamp color of the graph. ➠ ■5. [Basic color] tab
[Icons legend] tab	Displays the description of each icon on the [Graph waveform] screen.

2) Tab page switching key

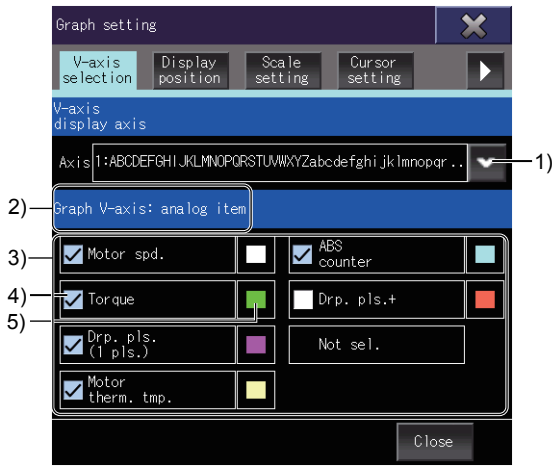
Switches between the tab pages.

3) [Close] key

Closes the [Graph setting] window.

■1. [V-axis selection] tab

Set a scale (vertical axis) of the graph.



1) [Axis]

Set an axis whose scale (vertical axis) is displayed.
Select a target axis from the pull-down menu.

2) Item type

Displays the type of setting items.
Analog items are displayed in the item list.

3) Item list

Lists the setting items.

4) Display selection

Set whether to display the scale (vertical axis) for each item.
Select the item which displays the scale (vertical axis).

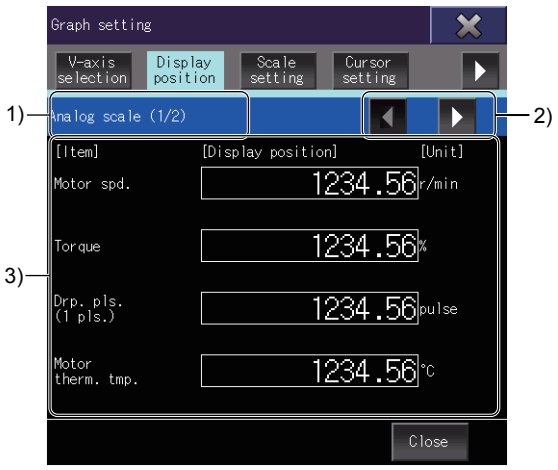
5) Display color of the scale (vertical axis)

Display color of the scale (vertical axis) for each item
Set the display color of a scale (vertical axis) in the [Display axis setting] window (Detail setting).

➠ 28.4.2 [Display axis setting] window (detail setting)

■2. [Display position] tab

Set the display position of a scale.



1) Item type

Displays the type of setting items.
To switch between the item types, touch the item type switching keys.

- [Analog scale]
- [Digital scale]

2) Item type switching keys

Switch the setting item type.

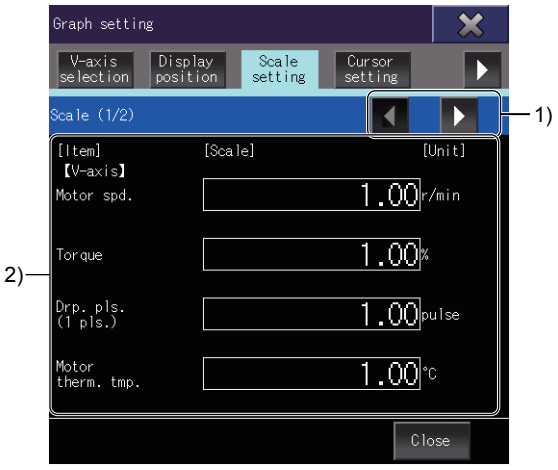
3) Item list

Lists the display positions and units of all items.
Touch the display position of an item and set a value.
The set value is applied as the minimum scale value for the item.
However, if the set value is between two scale values, the smaller scale value becomes the minimum.

Example) When the set value is 30 and the set scale increment is 20 (scale values: 0, 20, 40...)
In this case, the minimum scale value becomes 20.

■3. [Scale setting] tab

Set the scale increment (interval between scale marks).



1) Item switching keys

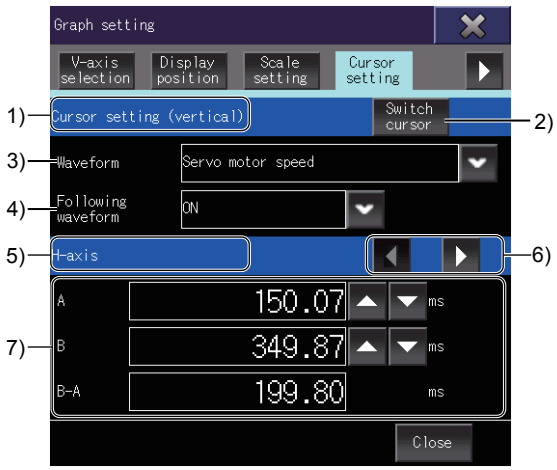
Switch between the contents in the item list.

2) Item list

Lists the scale increments and units of all items.
Each item has a different setting range.
You can set a value with up to two decimal places.
(The value set for [Time] must be an integer.)

■4. [Cursor setting] tab

Switch between the vertical and horizontal cursors, and set an item for which the cursors are displayed.
Define a range by the cursors to display the maximum and minimum values within the range.



1) Cursor orientation

Displays the current orientation of cursors.
To switch between the cursor orientations, touch the [Switch cursor] key.

- [Cursor setting (vertical)]
- [Cursor setting (horizontal)]

2) [Switch cursor] key

Switches between the vertical and horizontal cursors.

3) [Waveform]

Select the item for which the cursors are displayed.

4) [Following waveform]

Turn on or off the waveform following function.
When the waveform following function is on, the cursors follow the waveform movements.
When the waveform following function is off, the cursors do not follow the waveform movements.

5) Display target

Displays the display target of the cursor value list.
To switch between the display targets, touch the item switching keys.
The display target is fixed to [V-axis] for horizontal cursors.

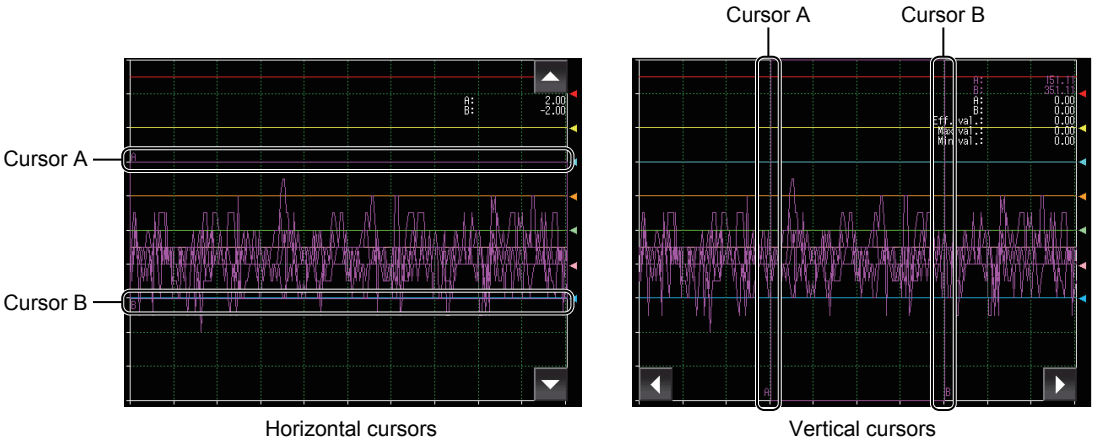
- [V-axis]
- [H-axis]
- [Interval A-B]

6) Item switching keys

Switch between the display targets.
This key is displayed for vertical cursors.

7) Cursor value list

Set the positions of cursors A and B, and display the maximum and minimum values within the range defined by the cursors.



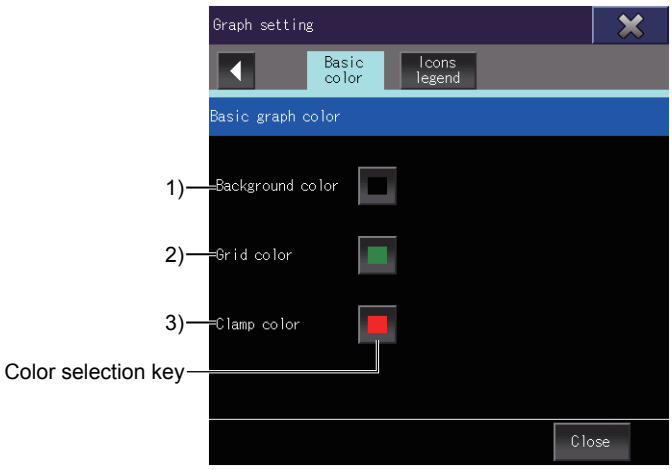
Different items are displayed for horizontal and vertical cursors.

Cursor orientation	Display target	Item	Description
Horizontal	[V-axis]	[A]	Displays the position of cursor A. To change the set value of [A], touch the value and set a new one. Cursor A moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[B]	Displays the position of cursor B. To change the set value of [B], touch the value and set a new one. Cursor B moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[A-B]	Displays the difference between cursor A and cursor B.
Vertical	[H-axis]	[A]	Displays the position of the cursor A. To change the set value of [A], touch the value and set a new one. Cursor A moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[B]	Displays the position of the cursor B. To change the set value of [B], touch the value and set a new one. Cursor B moves accordingly. Alternatively, change the set value using the keys on the right of the value.
		[B-A]	Displays the difference between cursor B and cursor A.
	[V-axis]	[A]	Displays the value under cursor A for the item selected in [Waveform].
		[B]	Displays the value under cursor B for the item selected in [Waveform].
		[A-B]	Displays the difference between the values under cursor A and cursor B.
	[Interval A-B]	[Eff. val.]	Displays the effective value within the range defined by cursor A and cursor B.
		[Max val.]	Displays the maximum value within the range defined by cursor A and cursor B.
		[Min val.]	Displays the minimum value within the range defined by cursor A and cursor B.

■5. [Basic color] tab

Set the background color, grid color, and clamp color of the graph.
Display the [Colors] window with the color selection key of each item, and set the color.

➠ 28.4.2 ■1. [Colors] window



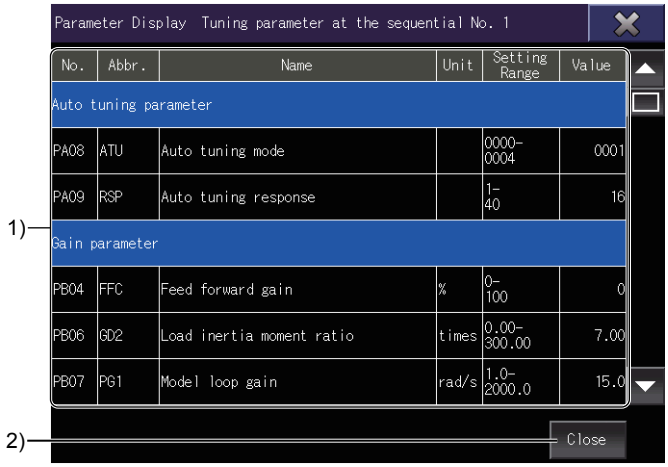
1) [Background color]
Set the background color of the graph display area.

2) [Grid color]
Set the scale color of the graph display area.

3) [Clamp color]
Set the graph line color where the measurement value is more than the upper limit or less than the lower limit.

28.4.5 [Parameter Display] window

This windows displays the parameter information acquired from the servo amplifier.



1) Parameter list

Lists the parameter information acquired from the servo amplifier.

Item	Description
[No.]	Device number of the parameter.
[Abbr.]	Abbreviation of the parameter.
[Name]	Parameter name.
[Unit]	Unit of the parameter value.
[Setting range]	Setting range of the parameter value.
[Value]	Parameter value.

2) [Close] key

Closes the [Parameter Display] window.

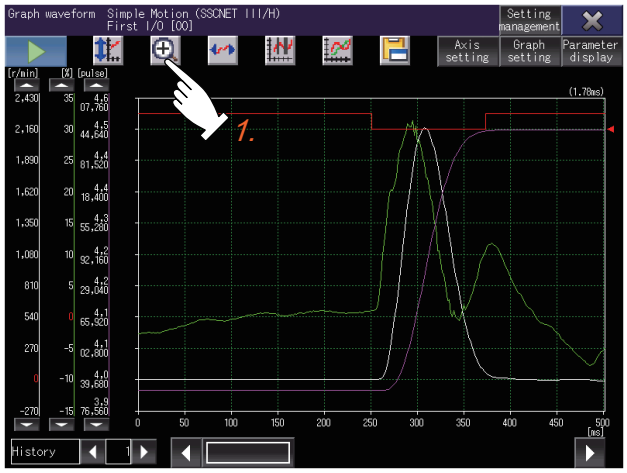
28.4.6 Operating procedure

This section describes the operations on the graph display area.

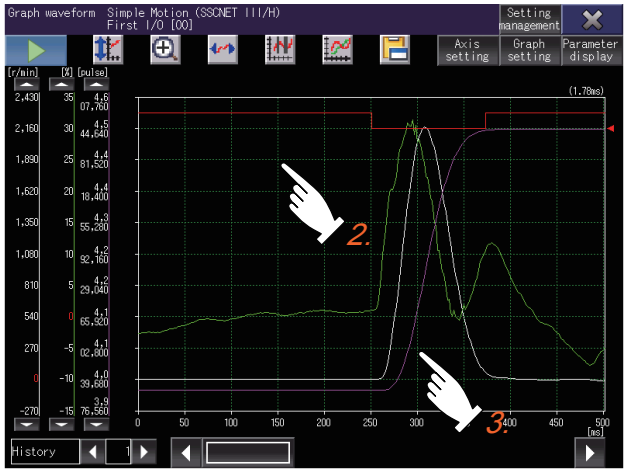
■1. Zoom in mode

Enlarge a part of the graph display area by the following procedure.
You can use the zoom in mode when the waveform data measurement is stopped.

Step 1. Touch the zoom in mode key.



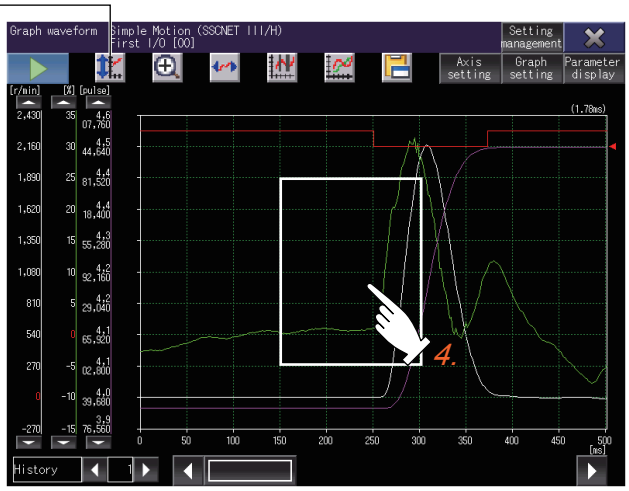
Step 2. Touch the start point of an area to be enlarged.



Step 3. Slide your finger on the display and release the finger at the end point.
A square with the start point on the top left corner and the end point on the bottom right corner appears to indicate the area to be enlarged.

Step 4. To enlarge the area, touch inside the square.
To cancel the enlarging and dismiss the square, touch outside the square.
To return to the original state, touch the scale optimization key.

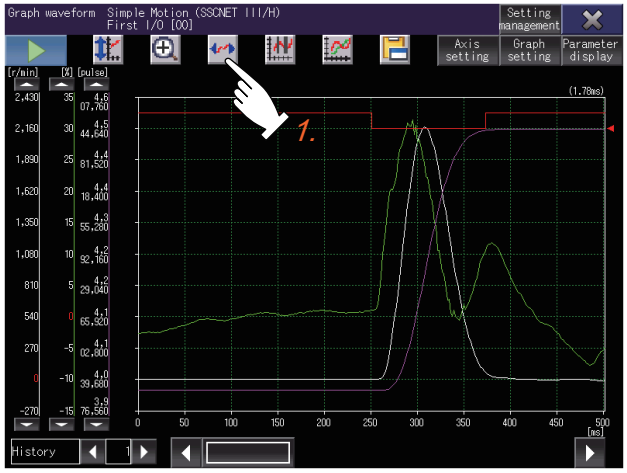
Scale optimization key



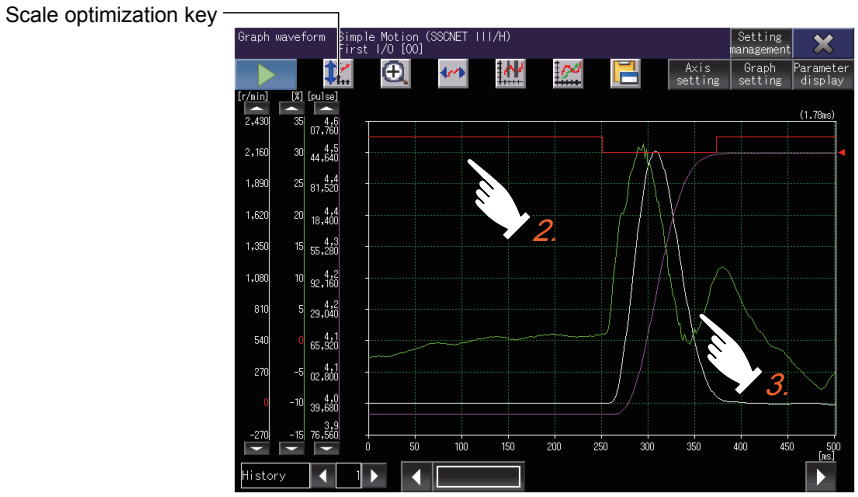
■2. Move mode

Move the waveform on the graph display area by the following procedure.
You can use the move mode when the waveform data measurement is stopped.

Step 1. Touch the move mode key.
Two lines crossing at right angles appear on the graph display area.



Step 2. Touch the start point of a movement.



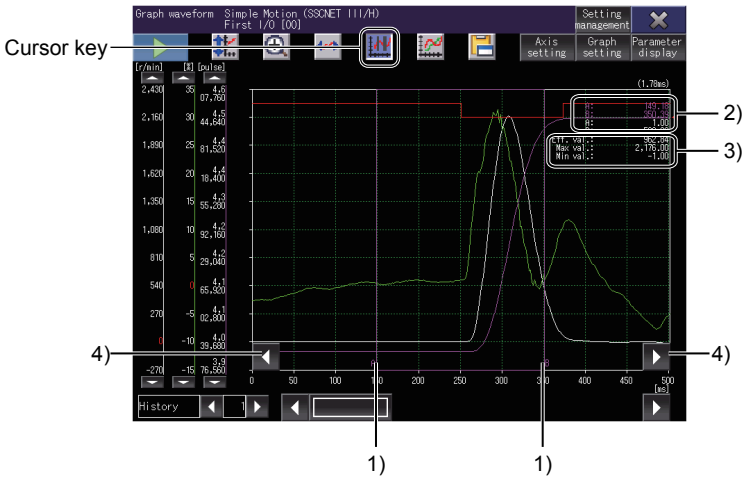
Step 3. Slide your finger on the display and release the finger at the end point.
The waveform travels the distance from the start point to the end point, in the direction opposite to the movement of your finger.
To return to the original state, touch the scale optimization key.

■3. Cursor display

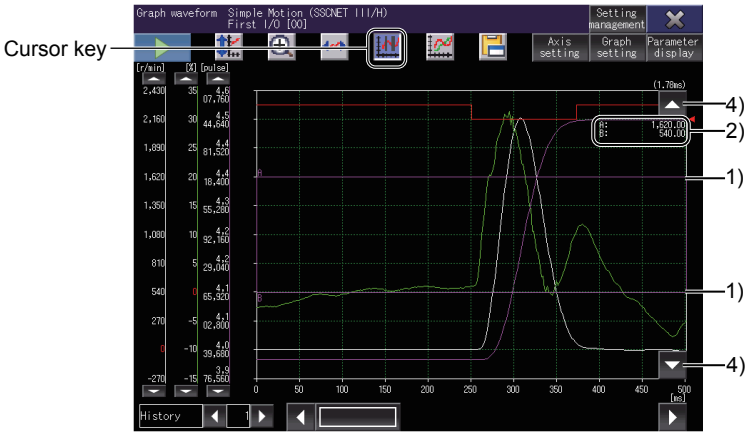
Display the maximum and minimum values within a range defined by cursors.
You can use the cursor display when the waveform data measurement is stopped.
To display cursors on the graph display area, touch the cursor key.
The cursor orientation (vertical and horizontal) can be changed in the [Graph setting] window.

➠ 28.4.4 ■4. [Cursor setting] tab

Vertical cursors



Horizontal cursors



1) Cursor
Define a range by cursor A and cursor B.

2) Values of vertical axes and horizontal axes
The values of vertical axes and horizontal axes are displayed according to the positions of cursor A and cursor B.
The characters of an item appear in the same color as the corresponding line in the waveform.

3) Effective value, maximum value, and minimum value
Indicate the effective value, maximum value, and minimum value within the range defined by the cursors.
These items are displayed when vertical cursors are used.

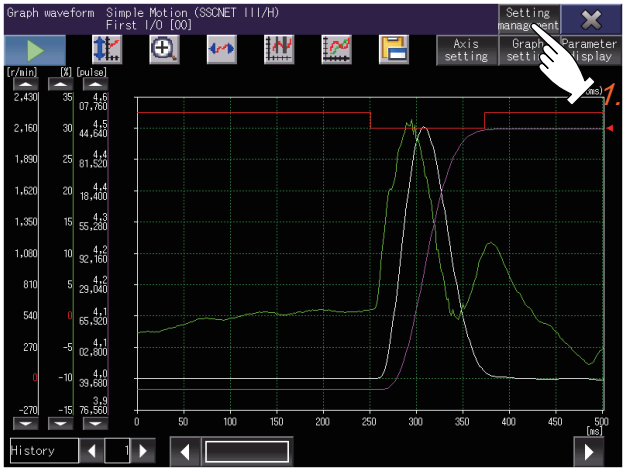
4) Cursor movement keys
Move the cursors while keeping the distance between cursor A and cursor B.
To continue moving the cursors, touch and hold a cursor movement key.
The cursor movement keys do not appear when the zoom in mode or move mode is enabled.
The distance between cursor A and cursor B can be changed in the [Graph setting] window.

➠ 28.4.4 ■4. [Cursor setting] tab

■4. Overwrite mode

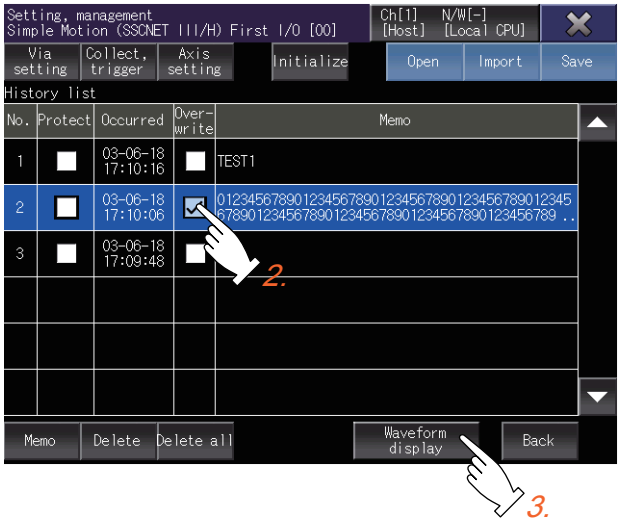
Display the waveform data read from the servo amplifier over the history data selected in the [Setting, management] screen.
You can use the overwrite mode when the waveform data measurement is stopped.
Up to 64 waveform data can be displayed simultaneously.

Step 1. Touch the [Setting management] key in the [Graph waveform] screen.



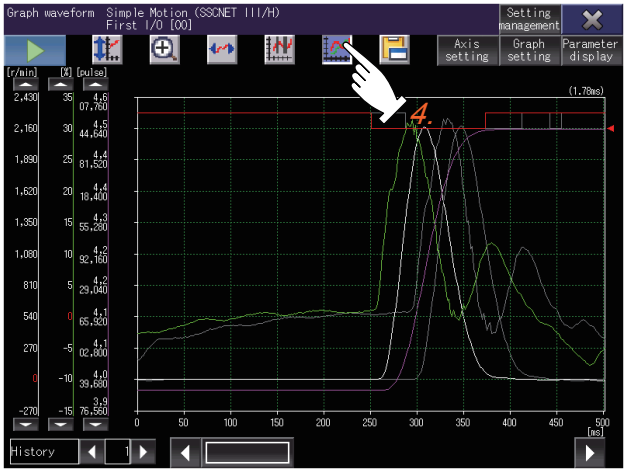
Step 2. Select an item of [Overwrite] to be displayed over the history data in the [Setting, management] screen.

➠ 28.5 [Setting, management] screen



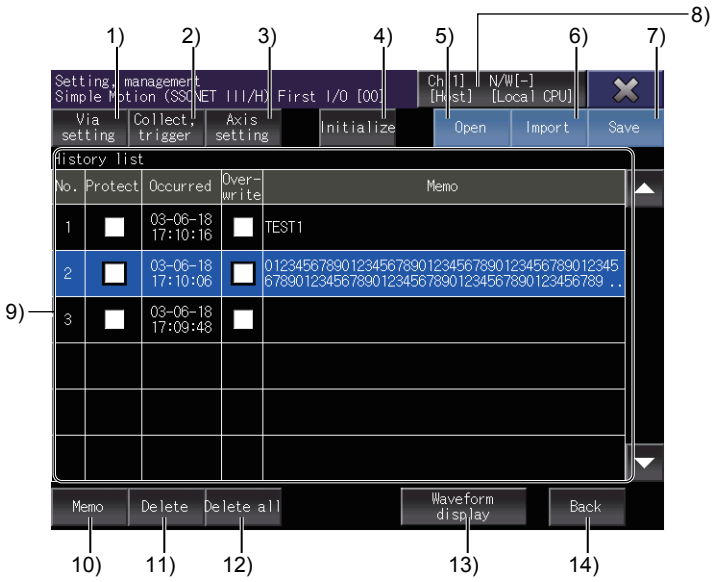
Step 3. Touch the [Waveform display] key.

Step 4. Touch the overwrite mode key in the [Graph waveform] screen to overwrite the history data.



28.5 [Setting, management] screen

Set the waveform data to be collected, and manage the history of waveform data.



1) [Via setting] key

Displays the [Via (motion) setting] window.

Switch the routed controller between motion controller CPU and simple motion module.

➠ 28.5.6 [Via (motion) setting] window

2) [Collect, trigger] key

Displays the [Collection, trigger setting] window.

Set the measurement conditions and trigger conditions of waveform data.

➠ 28.5.7 [Collection, trigger setting] window

3) [Axis setting] key

Displays the [Measurement axis setting] window.

Set an axis whose waveform data is acquired.

➠ 28.5.8 [Measurement axis setting] window

4) [Initialize] key

Initializes all the settings and history data of the servo amplifier graph.

5) [Open] key

Displays the [Open] window.

Read the settings such as the measurement condition and history data from a file.

The display of the [Graph waveform] screen is replaced with the read waveform data.

➠ 28.5.11 [Open] window

6) [Import] key

Displays the [Import] window.

Imports the history data from a file.

The imported history data is added to the top of the history list.

➠ 28.5.13 [Import] window

7) [Save] key

Displays the [File storage destination] window.

Saves the history data in a data storage.

➠ 28.5.14 [File storage destination] window

8) Connection destination setting key

Displays the [Select channel] window.

Switch between the connected servo amplifiers.

➠ 28.5.1 [Select channel] window

9) History list

Lists the history data.

Touch the row to select the data.

Item	Description
[No.]	History data number.
[Protect]	Protects the history data from being deleted. Up to 10 history data can be protected. Select the history data to be protected.
[Overwrite]	Displays the history data over waveform data in the [Graph waveform] screen, when the overwrite mode is enabled. Select the history data to overwrite.
[Memo]	History data memo.

Each history data is added to the top of the list every time waveform data measurement is completed.

When new history data is added and the saved history data exceeds 20, unprotected history data is deleted from the one with the largest [No.].

10) [Memo] key

Displays the [Memo] window.

Edit the memo of the selected history data in the history list.

➠ 28.5.17 [Memo] window

11) [Delete] key

Deletes the selected history data in the history list.

12) [Delete all] key

Deletes all the unprotected history data.

13) [Waveform display] key

Returns to the [Graph waveform] screen, and displays the history data selected in the history list.

➠ 28.4 [Graph waveform] screen

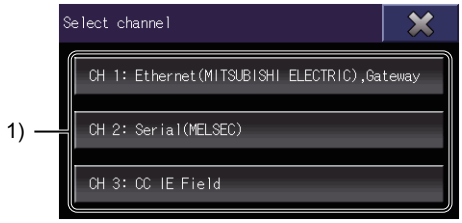
14) [Back] key

Returns to the [Graph waveform] screen.

The [Graph waveform] screen displays the waveform data that has been displayed in the previous [Graph waveform] screen.

28.5.1 [Select channel] window

Select a channel.



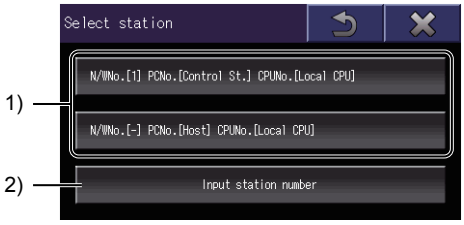
1) Channel key

Confirms the channel selection, and switches the window to the [Select station] window.

➠ 28.5.2 [Select station] window

28.5.2 [Select station] window

Select a network number and station number from the connection history.



1) History key

Confirms the selection of the network number and station number, and establishes communication with the target servo amplifier.

The history keys of the last three connections are displayed.

2) [Input station number] key

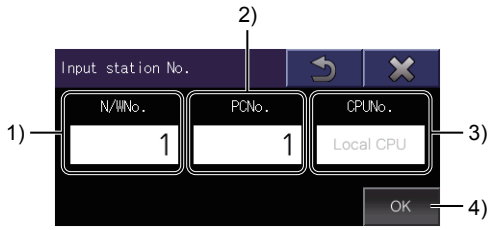
Switches the window to the [Input station No.] window.

Set a network number and a station number.

➠ 28.5.3 [Input station No.] window

28.5.3 [Input station No.] window

Set a network number and a station number.



1) [N/WNo.]
Switches the window to the [Input N/W No.] window.
Set a network number.

➠ 28.5.4 [Input N/W No.] window

2) [PCNo.]
Switches the window to the [Input PLC No.] window.
Set a PLC station number.

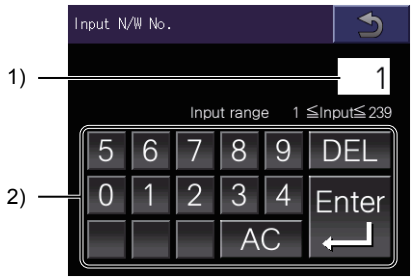
➠ 28.5.5 [Input PLC No.] window

3) [CPUNo.]
CPU number
This number cannot be changed.

4) [OK] key
Confirms the entry of the network number and PLC station number, and establishes communication with the target servo amplifier.

28.5.4 [Input N/W No.] window

Set a network number.

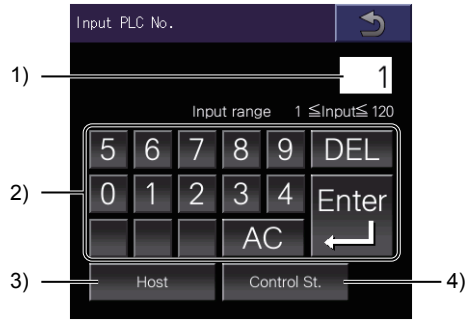


1) Network number
Network number to be set

2) Input keys
Input keys for entering a network number.
Touch the [Enter] key to confirm the entry of the network number and switch the window to the [Input station No.] window.

28.5.5 [Input PLC No.] window

Set a station number.



1) PLC station number
PLC station number to be set

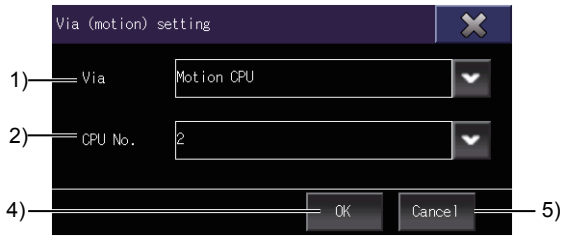
2) Input keys
Input keys for entering a PLC station number
Touch the [Enter] key to confirm the entry of the PLC station number and switch the window to the [Input station No.] window.

3) [Host] key
Specifies the PLC station number with the host station number, and switches the window to the [Input station No.] window.

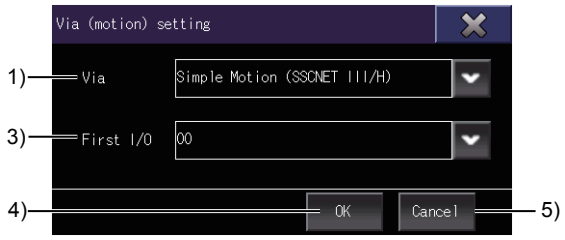
4) [Control station] key
Specifies the PLC station number with the control station number, and switches the window to the [Input station No.] window.

28.5.6 [Via (motion) setting] window

Set a motion controller CPU or simple motion module through which a target servo amplifier is connected to the GOT.



When [Motion CPU] is selected for [Via]



When [Simple Motion (SSCNET III/H)] is selected for [Via]

1) [Via]
Select the type of a controller through which a target servo amplifier is connected to the GOT.
The following shows selectable items.
- [Motion CPU]
- [Simple Motion (SSCNET III/H)]

2) [CPU No.]
This item is displayed when [Motion CPU] is selected for [Via].
Select the CPU No. of a motion controller CPU through which a target servo amplifier is connected to the GOT.

3) [First I/O]
This item is displayed when [Simple Motion (SSCNET III/H)] is selected for [Via].
Select the start I/O No. of a simple motion module through which a target servo amplifier is connected to the GOT.

4) [OK] key
Sets the via destination, and closes the [Via (motion) setting] window.

5) [Cancel] key
Deletes the input data, and closes the [Via (motion) setting] window.

28.5.7 [Collection, trigger setting] window

Set the measurement conditions and trigger conditions of waveform data.

1) Tab

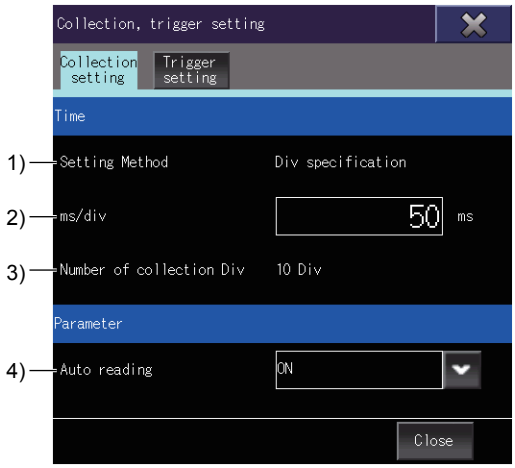
Touch each tab to switch the setting screens.

Tab name	Description
[Collection setting] tab	Set the method of collecting waveform data. ➠ ■1. [Collection setting] tab
[Trigger setting] tab	Set the trigger to acquire waveform data. ➠ ■2. [Trigger setting] tab

2) [Close] key

Closes the [Collection, trigger setting] window.

■1. [Collection setting] tab



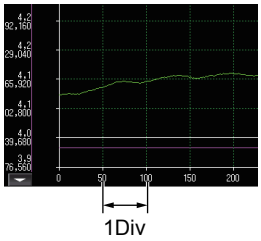
1) [Setting Method]

The setting method of waveform data collection time.
It is fixed to [Div specification].

2) [ms/div]

Set the time per division (Div).

One division (1Div) is the interval of a grid in the graph.



The setting range is [1] ms to [24000] ms.

3) [Number of collection Div]

The number of divisions collected per measurement

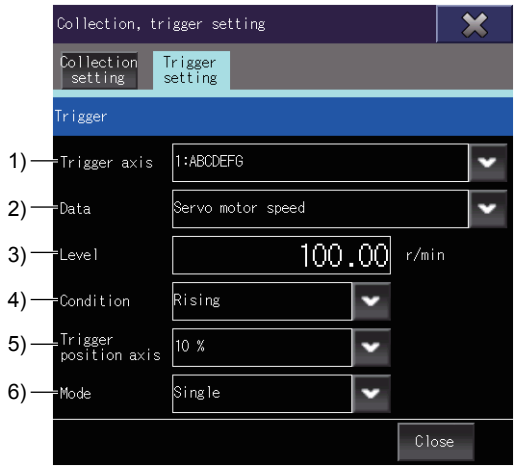
It is fixed to [10 Div].

4) [Auto reading]

Set whether to automatically read the parameter information at waveform measurement.

- ON: Parameter information is automatically read.
- OFF: Parameter information is not read.

■2. [Trigger setting] tab



1) [Trigger axis]

Select an axis to be monitored.

The axis number and axis label name are displayed on the list.

2) [Data]

Select data to be monitored.

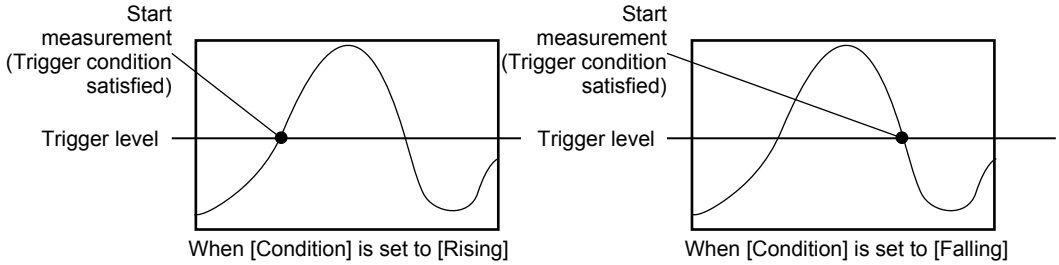
When [Not sel.] is selected, measuring and acquiring waveform data start at the same time.

3) [Level]

Select the analog channel data in [Data] to set the value for starting waveform data measurement.

When [Condition] is set to [Rising], the measurement starts when the trigger data value becomes the set value of the trigger level or higher.

When [Condition] is set to [Falling], the measurement starts when the trigger data value becomes the set value of the trigger level or lower.



4) [Condition]

Select the trigger type for starting the waveform measurement.

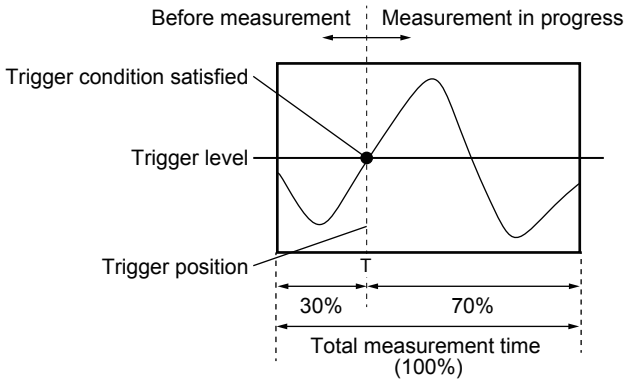
- [Rising]
- [Falling]

5) [Trigger position axis]

Select a position (trigger position) to display where the trigger condition is satisfied.
[T] is displayed at the trigger position in the graph display area.

- [10%]
- [20%]
- [30%]
- [40%]
- [50%]
- [60%]
- [70%]
- [80%]
- [90%]

Example) When [Rising] is set to [Condition], and [30%] is selected for [Trigger position axis]



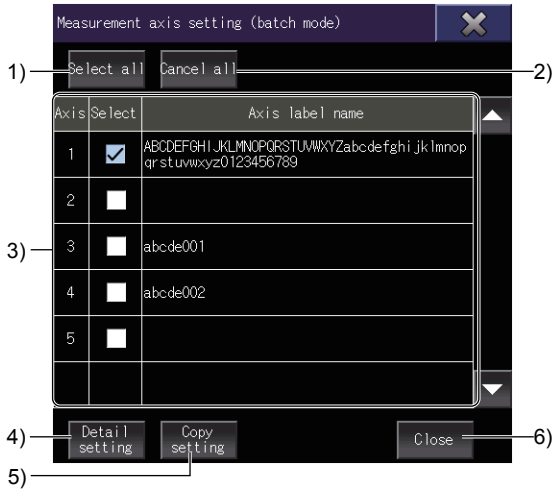
6) [Mode]

Select the mode for collecting waveform data.

- [Single]
  Acquires the waveform data once when the trigger condition is satisfied.
- [Repeat]
  Acquires the waveform data every time the trigger condition is satisfied.
  Continues acquiring the data until the measurement stop key in the [Graph waveform] screen is touched.
  The acquired waveform data and parameter information are added to the history data list.

28.5.8 [Measurement axis setting] window

Set an axis whose waveform data is acquired.



1) [Select all]
Selects all items of [Select] in the measurement axis list.

2) [Cancel all]
Clears all items of [Select] in the measurement axis list.

3) Measurement axis list
Lists the axes whose waveform data are acquired.

Item	Description
[Axis]	Axis number of the servo amplifier.
[Select]	Axis whose waveform data is acquired. Select an axis whose waveform data is acquired.
[Axis label name]	Axis label name set for the axis.

4) [Detail setting]
Displays the [Measurement axis setting] window (axis by axis setting)
Set the data to be acquired for each measurement axis.

➠ 28.5.9 [Measurement axis setting] window (axis by axis setting)

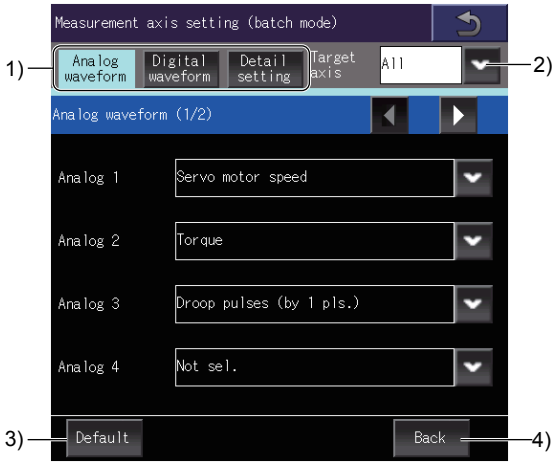
5) [Copy setting]
Displays the [Copy setting] window.
Copies the measurement axis setting to other axes.

➠ 28.5.10 [Copy setting] window

6) [Close] key
Closes the [Measurement axis setting] window.

28.5.9 [Measurement axis setting] window (axis by axis setting)

Set the data to be acquired for each axis.



1) Tab

Touch each tab to switch the setting screens.

Tab name	Description
[Analog waveform] tab	Set the measurement data of an analog waveform to be acquired. ➠ ■1. [Analog waveform] tab
[Digital waveform] tab	Set the measurement data of a digital waveform to be acquired. ➠ ■2. [Digital waveform] tab
[Detail setting] tab	Set the details of the measurement data set in the [Analog waveform] tab or [Digital waveform] tab. ➠ ■3. [Detail setting] tab

2) [Target axis]

Select a target axis to be measured.
Select [All] to measure all the axes.

3) [Default] key

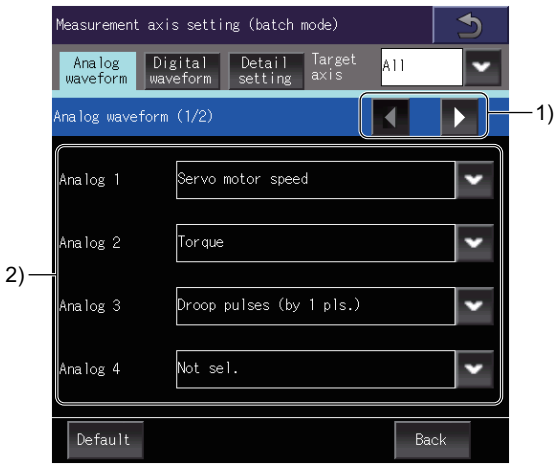
Initializes the measurement axis setting of the axis selected in [Target axis].

4) [Back] key

Saves the change, and returns to the previous screen.

■1. [Analog waveform] tab

Set the analog waveform data to be measured.



1) Page switching key

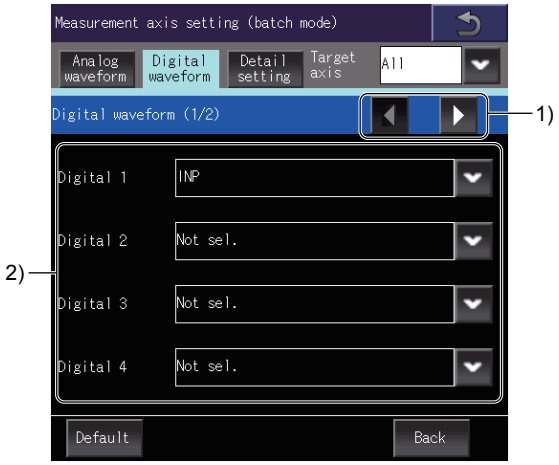
Switches between the pages of the measurement data list (analog waveform).

2) Measurement data list (analog waveform)

Lists the data to be measured.
Up to seven measurement data can be set.
Select the measurement data from the list.

■2. [Digital waveform] tab

Set the digital waveform data to be measured.



1) Page switching key

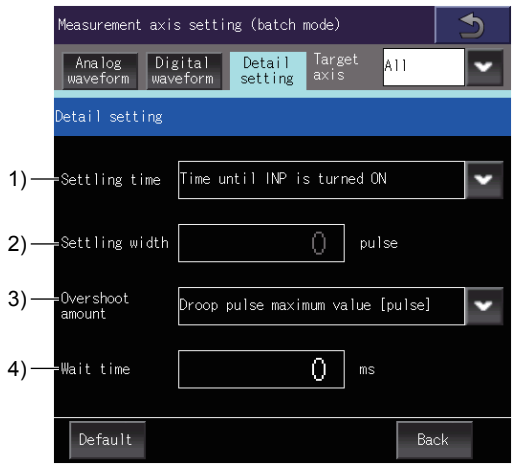
Switches between the pages of the measurement data list (digital waveform).

2) Measurement data list (digital waveform)

Lists the data to be measured.
Up to eight measurement data can be set.
Select the measurement data from the list.

■3. [Detail setting] tab

Set the details of the measurement data set in the [Analog waveform] tab or [Digital waveform] tab.



1) [Setting time]

When [Settling time] is set for the measurement data in the [Analog waveform] tab, select the measurement method of the setting time.

- [Time until INP is turned ON]
- [Time that drp. pls. comes into settle wd.]

2) [Settling width]

When [Time that drp. pls. comes into settle wd.] is selected for [Setting time], set the setting width.
The setting range is [0] pulses to [65535] pulses.

3) [Overshoot amount]

When [Overshoot amount] is set for the measurement data in the [Analog waveform] tab, select the measurement method of the overshoot amount.

- [Droop pulse maximum value [pulse]]

4) [Wait time]

When [Droop pulse maximum value [pulse]] is selected for [Overshoot amount], set the waiting time.
The setting range is [0] ms to [65535] ms.

28.5.10 [Copy setting] window

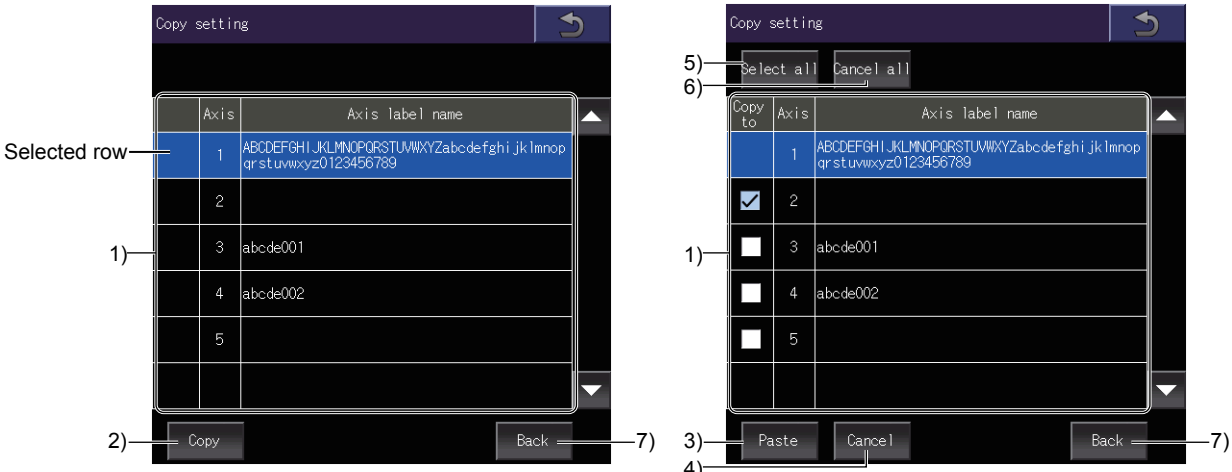
Copy the measurement axis setting to other axes.

Step 1. Touch the axis row to be copied on the copy screen.
The selected row turns blue.

Step 2. Touch the [Copy] key to switch the screen to the paste screen.

Step 3. Select an item of [Copy to] to which the copied row is pasted.

Step 4. Touch the [Paste] key to paste the copied row.



1) Axis list
Lists the axes to be copied or pasted.

Item	Description
[Copy to]	Axis to be pasted.
[Axis]	Axis number of the servo amplifier.
[Axis label name]	Axis label name set for the axis.

2) [Copy] key
Copies the row selected in the axis list.

3) [Paste] key
Pastes the copied row to the [Copy to] row selected in the axis list.

4) [Cancel] key
Cancels copying, and switches the screen to the copy screen.

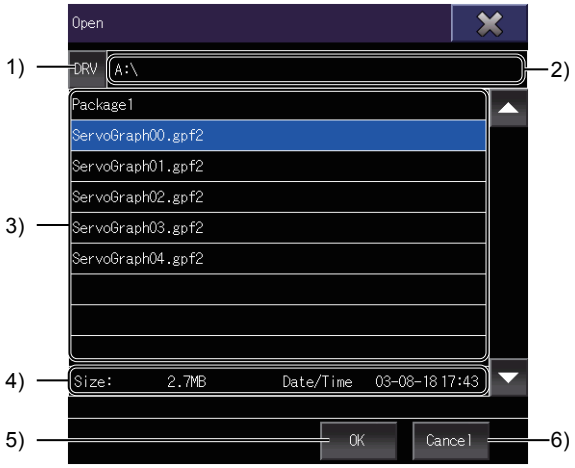
5) [Select all] key
Selects all items of [Copy to] in the axis list.

6) [Cancel all] key
Clears all items of [Copy to] in the axis list.

7) [Back] key
Closes the [Copy setting] window, and returns to the previous screen.

28.5.11 [Open] window

Read the settings such as a measurement condition and history data from a file.



1) [DRV] key

Switches the window to the [Select drive] window.

Change the GOT drive from which files are read.

➠ 28.5.12 [Select drive] window

2) File path

Displays the path to the folders displayed in the file list.

3) File list

Lists the files in the selected drive.

Up to 500 folders and files in the same path are displayed.

Because the 501st or subsequent folders and files are not displayed, make sure to store a maximum of 500 folders and files in the same path.

You can open a file having the extension .gpf2.

To scroll the file list up or down, touch and slide the list.

4) File information

Displays the file size and creation date and time of the file selected in the file list.

5) [OK] key

Opens the file selected in the file list.

When a file is opened, the [Graph waveform] screen appears.

The collection and trigger setting, measurement axis setting, display axis setting, and graph setting are replaced with those of the history data.

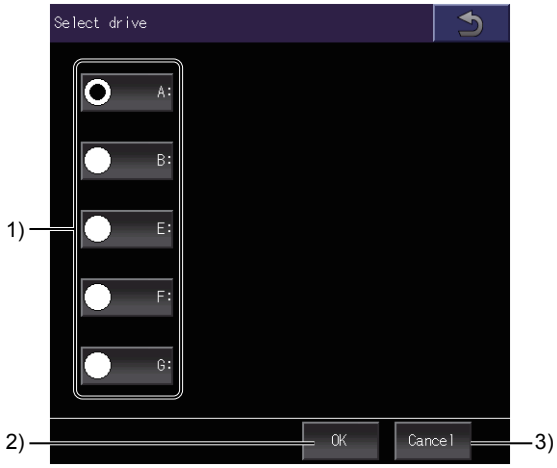
➠ 28.4 [Graph waveform] screen

6) [Cancel] key

Closes the window without opening any file.

28.5.12 [Select drive] window

Change the target drive from which files are read or to which files are stored.



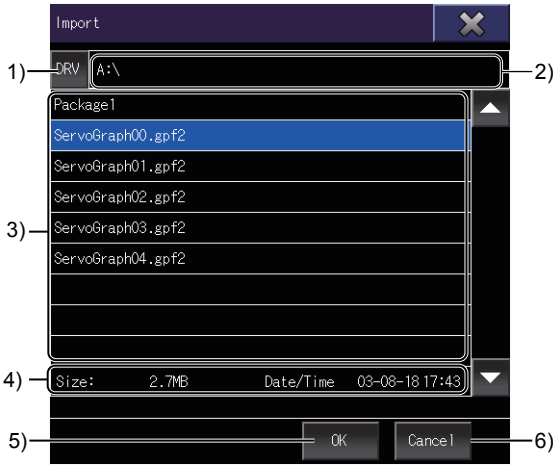
1) Drives
Select a GOT drive from which files are read or to which files are stored.

2) [OK] key
Changes the target drive to the selected drive.

3) [Cancel] key
Close the window without changing any target drive.

28.5.13 [Import] window

Import history data from a file.



1) [DRV] key
Switches the window to the [Select drive] window.
Change the GOT drive to which files are imported.

➠ 28.5.12 [Select drive] window

2) File path
Displays the path to the folders displayed in the file list.

3) File list
Lists the files in the selected drive.
Up to 500 folders and files in the same path are displayed.
Because the 501st or subsequent folders and files are not displayed, make sure to store a maximum of 500 folders and files in the same path.
You can import a file having the extension .gpf2.
To scroll the file list up or down, touch and slide the list.

4) File information
Displays the file size and creation date and time of the file selected in the file list.

5) [OK] key
Imports the file selected in the file list.
When a file is imported, new history data is added to the top of the history list in the [Setting, management] screen.

➠ 28.5 [Setting, management] screen

6) [Cancel] key
Closes the window without importing any file.

28.5.14 [File storage destination] window

Select the file storage destination.

1) [DRV] key

Switches the window to the [Select drive] window.
Change the GOT drive to which files are stored.

➠ 28.5.12 [Select drive] window

2) Folder path

Displays the path to the folders displayed in the list.

3) Folder list

Lists the folders in the drive.
Up to 500 folders in the same path are displayed.
Because the 501st or subsequent folders are not displayed, make sure to store a maximum of 500 folders in the same path.
To scroll the folder list up or down one row, touch and slide the list.

4) [New folder] key

Switches the window to the [Folder name] window.
Create a folder.

➠ 28.5.15 [Folder name] window

5) [OK] key

Confirms the file storage destination selected, and switches the window to the [File name] window.
Set the name of the file to be saved.

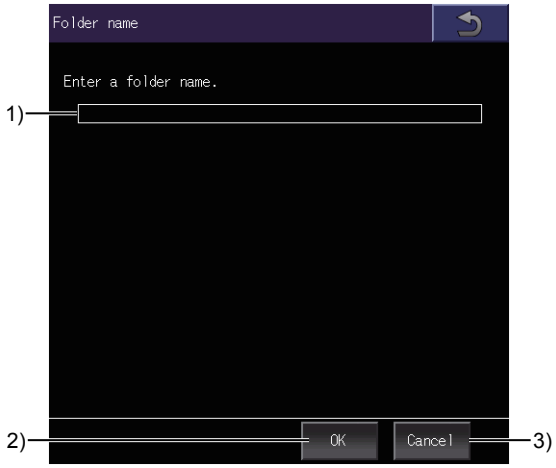
➠ 28.5.16 [File name] window

6) [Cancel] key

Deletes the input file storage destination, and closes the window.

28.5.15 [Folder name] window

Create and name a new folder.



1) Folder name

Set the name of the folder to be created.

Up to 53 characters can be set for the folder name.

Make sure that the path consists of 78 characters or less including the file extension.

For the restrictions on the folder name and file name used in the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

2) [OK] key

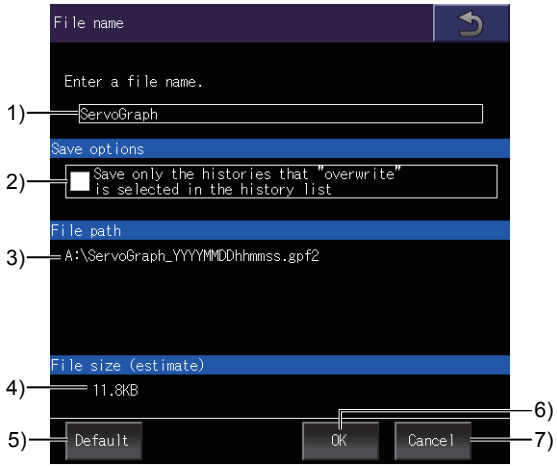
Creates the folder, and closes the window.

3) [Cancel] key

Closes the window without creating any folder.

28.5.16 [File name] window

Set the file name and save options.



1) File name

Set the first character string of the file name.

Up to 55 characters can be set for the first character string.

Make sure that the path consists of 78 characters or less including the file extension.

For the restrictions on the folder and file names used with the GOT, refer to the following.

➠ GT Designer3 (GOT2000) Screen Design Manual

The file is saved under the following name.

First character string_yyyymmddhhmmss.gpf2

- Date and time when the history data is created
- Character string set in [File name]

2) [Save only the histories that "overwrite" is selected in the history list]

Saves only the history data for which [Overwrite] is selected in the history list on the [Setting, management] screen.

3) [File path]

Displays the path to the save destination of the file

4) [File size (estimate)]

Size of the file to be saved

5) [Default] key

Initializes the setting of [File name].

6) [OK] key

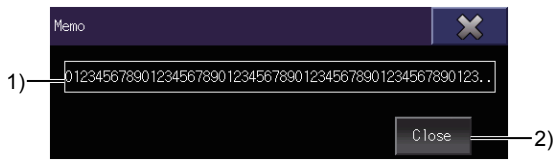
Saves the file, and closes the window.

7) [Cancel] key

Closes the window without saving any file.

28.5.17 [Memo] window

Edit the memo in the history data.



1) Memo

Set a memo to be added to the history data.

Up to 100 characters can be set in the memo.

2) [Close] key

Closes the window.

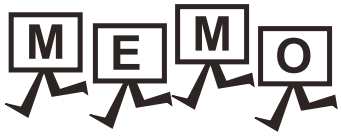
REVISIONS

* 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 Works3 Version1.100E
Nov. 2013	SH(NA)-081196ENG-B	Compatible with GT Works3 Version1.104J • Description of SAFETY PRECAUTIONS changed • Abbreviations and generic terms changed • NZ2DL is added to the compatible models for the BOX data logger.
Apr. 2014	SH(NA)-081196ENG-C	Compatible with GT Works3 Version1.112S • GT25 supported
Jun. 2014	SH(NA)-081196ENG-D	Compatible with GT Works3 Version1.117X • Description of SAFETY PRECAUTIONS changed • Network monitor supports R120CPU, R32CPU, R16CPU, R08CPU, and R04CPU. • Intelligent module monitor supports R120CPU, R32CPU, R16CPU, R08CPU, and R04CPU. • Backup/restoration supports R120CPU, R32CPU, R16CPU, R08CPU, R04CPU, Q173NCCPU, and Q172NCCPU. • Log viewer supports R120CPU, R32CPU, R16CPU, R08CPU, and R04CPU. • R motion monitor supported • CNC monitor supported • CNC data I/O supported • CNC machining program edit supported
Jul. 2014	SH(NA)-081196ENG-E	Compatible with GT Works3 Version1.118Y • Abbreviations, generic terms, and icon indications changed • Backup/restoration supports R32MTCPU and R16MTCPU.
Oct. 2014	SH(NA)-081196ENG-F	Compatible with GT Works3 Version1.122C • Description of SAFETY PRECAUTIONS has been changed. • Abbreviations, generic terms, and icon indications have been changed. • GT21 has been supported. • GT2512-S has been supported. • The CNC monitor, CNC data I/O, CNC machining program edit are now available on GT2512-S.
Jan. 2015	SH(NA)-081196ENG-G	Compatible with GT Works3 Version1.126G • Description of SAFETY PRECAUTIONS has been changed. • The system launcher is supported. • The iQSS utility is supported. • The backup/restoration function has been expanded.
Feb. 2015	SH(NA)-081196ENG-H	Compatible with GT Works3 Version1.127H • Descriptions of the sequence program monitor (ladder, R Ladder) have been partially changed.
Apr. 2015	SH(NA)-081196ENG-I	Compatible with GT Works3 Version1.130L • The motion program editor is supported. • The motion program input/output is supported.
Jun. 2015	SH(NA)-081196ENG-J	Compatible with GT Works3 Version1.134Q • The device monitor function supports R120PCPU, R32PCPU, R16PCPU, R08PCPU, and R12CCPU-V. • The Q motion monitor function supports MR-J4-B-RJ. • The log viewer supports Q173NCCPU-S01. • The R motion monitor supports MR-J4-B-RJ.

Print Date	* Manual Number	Revision
Jul. 2015	SH(NA)-081196ENG-K	Compatible with GT Works3 Version1.136S • The device monitor supports R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, and R120ENCPU. • The log viewer supports R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, and R120ENCPU.
Oct. 2015	SH(NA)-081196ENG-L	Compatible with GT Works3 Version1.144A • The device monitor supports R08SFCPU, R16SFCPU, R32SFCPU, and R120SFCPU.
Dec. 2015	SH(NA)-081196ENG-M	• Writing errors have been corrected.
May 2016	SH(NA)-081196ENG-N	Compatible with GT Works3 Version1.155M • Starting the drive recorder from the system launcher is supported. • The intelligent module monitor supports the I/O combined modules. • The backup/restoration function supports CNC C80. • The log viewer supports CNC C80. • The CNC monitor 2 is supported. • The drive recorder is supported.
Aug. 2016	SH(NA)-081196ENG-O	Compatible with GT Works3 Version1.160S • Abbreviations, generic terms, and icon indications changed • The intelligent module monitor supports RD77MS8, RD77GF4, RD77GF8, RD77GF16, QD77GF4, and QD77GF8. • The Q motion monitor supports the advanced synchronous control mode. • The drive recorder supports MELSERVO-JE.
Oct. 2016	SH(NA)-081196ENG-P	Compatible with GT Works3 Version1.165X • Abbreviations, generic terms, and icon indications changed • The ladder editor (R ladder) is available in the sequence program monitor. • The CC-Link IE Field Network diagnostics is supported. • The device monitor now supports CNC C80. • The log viewer now supports RD81DL96. • GT27-V and GT25-V now support the CNC monitor 2.
Jan. 2017	SH(NA)-081196ENG-Q	Compatible with GT Works3 Version1.170C • The system launcher supports MELSEC iQ-R series, motion controller CPU (MELSEC iQ-R series), and CNC C80. • The R motion monitor supports 64 axes. • A USB mouse is usable in the R motion monitor, network monitor, servo amplifier monitor, motion SFC monitor, sequence program monitor (Ladder or R ladder), and sequence program monitor (SFC).
Apr. 2017	SH(NA)-081196ENG-R	Compatible with GT Works3 Version1.175H • Abbreviations, generic terms, and icon indications changed • Starting the system launcher (servo network) from the system launcher is supported. • The backup/restoration function supports R64MTCPU. • The iQSS utility supports the RCPU. • The system launcher (servo network) is supported.
Jun. 2017	SH(NA)-081196ENG-S	Compatible with GT Works3 Version1.180N • Abbreviations, generic terms, and icon indications changed • The system launcher supports CR800-R (R16RTCPU). • The device monitor supports CR800-R (R16RTCPU) and CR800-D. • The sequence program monitor (R ladder) supports displaying comments. • The intelligent module monitor supports CR800-R (R16RTCPU). • The backup/restoration function supports CR800-R (R16RTCPU) and CR800-D. • The drive recorder supports displaying an axis label name. • The system launcher (servo network) supports displaying an axis label name.

Print Date	* Manual Number	Revision
Oct. 2017	SH(NA)-081196ENG-T	Compatible with GT Works3 Version1.185T • Abbreviations, generic terms, and icon indications changed • The sequence program monitor (R ladder) has been renamed the sequence program monitor (iQ-R ladder). • The sequence program monitor (iQ-R ladder) supports displaying a program using an FB or FUN. • The log viewer supports FX5CPU. • The drive recorder supports the CC-Link IE Field Network connection. • Starting the drive recorder from the CC-Link IE Field Network diagnostics is supported. • The motion program editor is supported. • The motion program I/O is supported.
Dec. 2017	SH(NA)-081196ENG-U	Compatible with GT Works3 Version1.190Y • The system launcher supports R00CPU, R01CPU, and R02CPU. • The device monitor supports R00CPU, R01CPU, and R02CPU. • The sequence program monitor (iQ-R ladder) supports R00CPU, R01CPU, and R02CPU. • The network monitor supports R00CPU, R01CPU, and R02CPU. • The intelligent module monitor supports R00CPU, R01CPU, and R02CPU. • The backup/restoration function supports R00CPU, R01CPU, and R02CPU. • The log viewer supports R01CPU and R02CPU. • The iQSS utility supports R00CPU, R01CPU, and R02CPU. • The CC-Link IE Field Network diagnostics supports R00CPU, R01CPU, and R02CPU.
Apr. 2018	SH(NA)-081196ENG-V	Compatible with GT Works3 Version1.195D • Starting the servo amplifier graph from the system launcher is supported. • Target data for the backup/restoration has been added. • Starting the servo amplifier graph (servo network) from the system launcher is supported. • GT2506HS-V supports the CNC monitor 2. • The servo amplifier graph is supported.
Jul. 2018	SH(NA)-081196ENG-W	Compatible with GT Works3 Version1.200J • The device monitor supports R08PSFCPU, R16PSFCPU, R32PSFCPU, and R120PSFCPU.
Oct. 2018	SH(NA)-081196ENG-X	Compatible with GT Works3 Version 1.205P • Abbreviations, generic terms, and icon indications changed • The system launcher supports the following items. CR800-Q (Q172DSRCPU) Displaying the product information list Outputting the product information list data to a CSV file. • The CNC monitor 2 supports the following items. GT2505-VTBD, GT2505HS-V QWERTY keyboard (GT27-X only) • The backup/restoration function supports the following items. CR800-Q (Q172DSRCPU) Connecting an inverter or servo amplifier through a QCPU or LCPU


MEMO

WARRANTY

Please check 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.

(1) 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.

(2) Gratis Warranty Range

(a) 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.

(b) 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.

(c) Even within the gratis warranty term, repairs shall be charged in the following cases.
- Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
- Failure caused by unapproved modifications, etc., to the product by the user.
- 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.
- Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
- Replacing consumable parts such as a battery, backlight, and fuse.
- 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.
- Failure caused by reasons that could not be predicted by scientific technology standards at the time of shipment from Mitsubishi.
- 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) Mitsubishi shall not accept a request for product supply (including spare parts) 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:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) 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 shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property could be greatly affected, such as in aircraft, medical, railway applications, incineration and fuel devices, manned transportation equipment, recreation and amusement devices, safety devices, shall also be excluded from the graphic operation terminal.
Even for the above applications, 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, after the user consults the local Mitsubishi representative.

SH(NA)-081196ENG-X

GOT2000 Series User's Manual (Monitor)

MODEL	GOT2000-U-MONITOR-E
MODEL CODE	1D7MJ7
SH(NA)-081196ENG-X(1810)MEE	

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

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