

Introduction

Thank you for purchasing the Mitsubishi general-purpose MELSEC series sequencer.
Read this manual and make sure you understand the functions and performance of MELSEC series sequencer thoroughly in advance to ensure correct use.
Please make this manual available to the end user.

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17.2 Specifying the Connection Destination

A	QnA	FX
•	•	•

[Purpose]

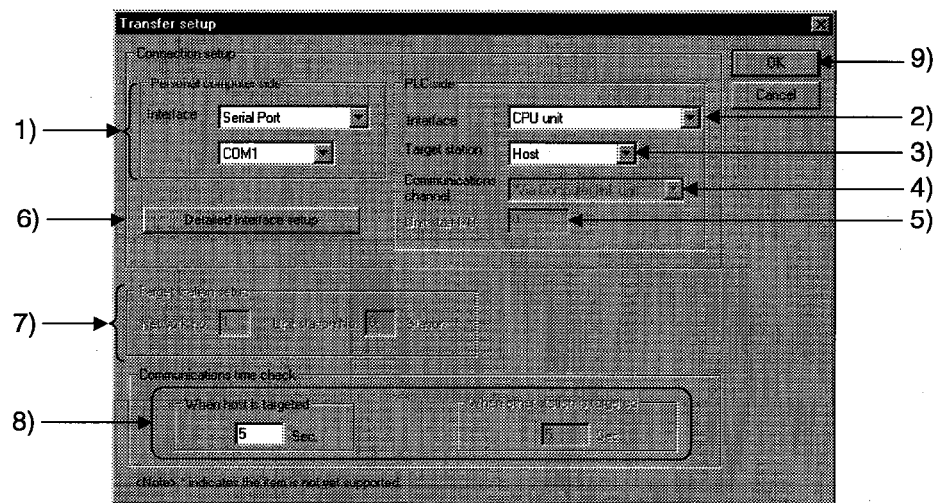
Specifies the interfaces at the peripheral device and PLC, and the route, etc., for access from a peripheral device to the PLC.

[Operating Procedure]

Select [Online] → [Transfer setup].

[Dialog Box]

When the FX series is selected, settings 2) through 8) are not possible.



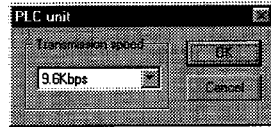
[Description]

- 1) Personal computer side
Sets the interface at the personal computer connected to PLC.
Set COM1 to 10 as the serial port.
For a MELSECNET II board, set the first board or the second board.
For a MELSECNET/10 board, make a setting from among the 1st to 4th boards.
The FX series models are only compatible with serial ports.
- 2) PLC side
Sets the interface at the PLC connected to the peripheral device.
- 3) PLC side target station
Sets "HOST " or "OTHER station" for the PLC to which the connection from the peripheral device is made.
- 4) Communications channel
Sets the route for access when the interface at the PLC side is a computer link module, MELSECNET II remote I/O module, MELSECNET/10 remote I/O module, or CC-Link, and the applicable station is an other station.
- 5) Unit start I/O
Sets the first I/O address of the module in hexadecimal when a computer link module route is specified.

6) **Detailed interface setup** button

If the interface at the PLC side is a PLC module, computer link module, serial communication module or CC-Link, you will be prompted to set details of the interface at the personal computer side.

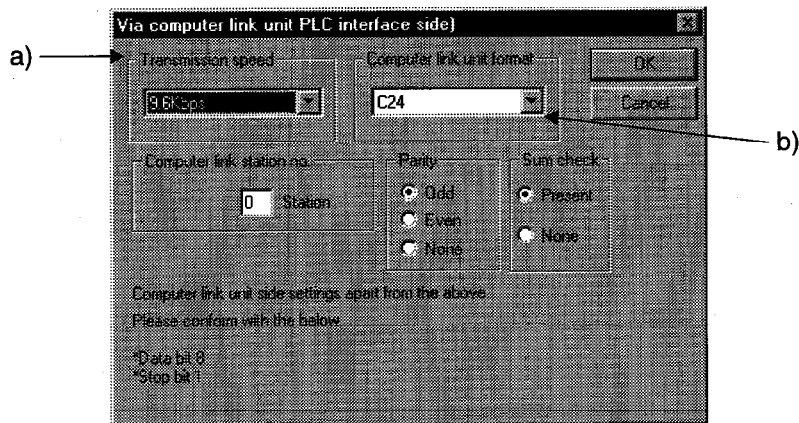
- When the interface at the PLC side is a PLC module



Asterisks mark items that cannot be selected.

Note that the PLC that allow communication at a transmission speed of 38.4 Kbps are QnA series PLC with a function version of 9707B or later. For details on interpreting module versions, see Appendix 7.

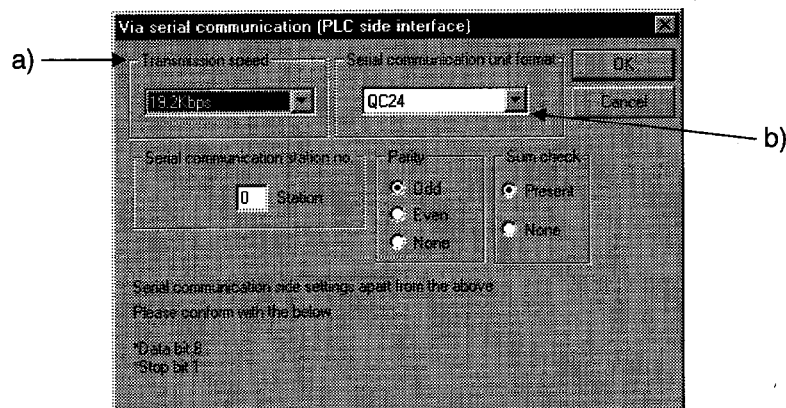
- When the interface at the PLC side is a computer link module



- a) Transmission speed
Select 9.6 kbps or 19.2 kbps.

- b) Computer link unit format
Select C24 or UC24

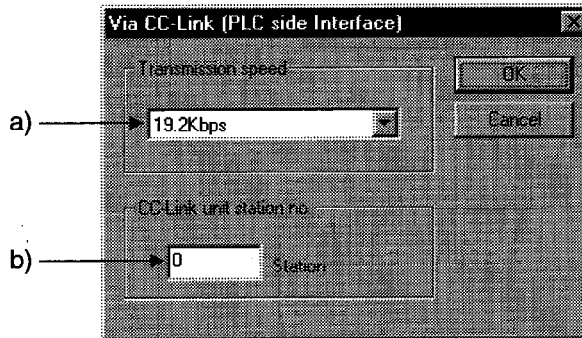
- When the interface at the PLC side is a serial communication module



- a) Transmission speed
Select 9.6 kbps or 19.2 kbps.

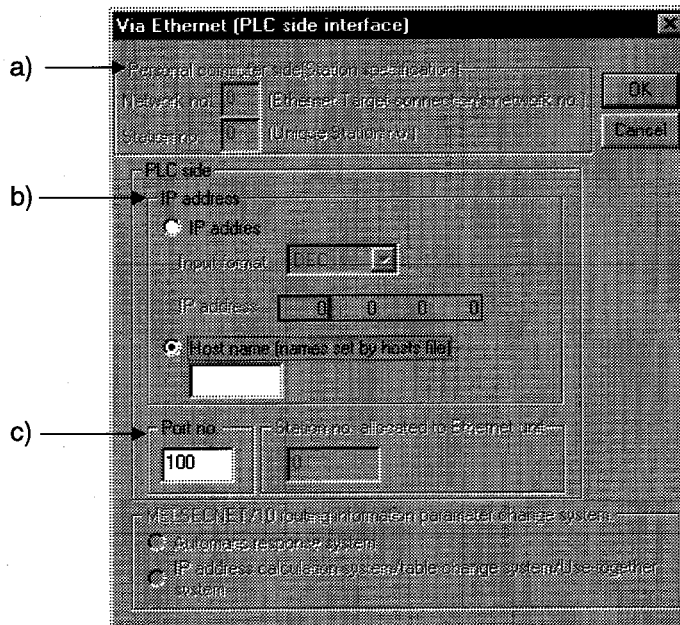
- b) Serial communication unit format
Select QC24

- When the interface at the PLC side is CC-Link or AJ65BT-G4



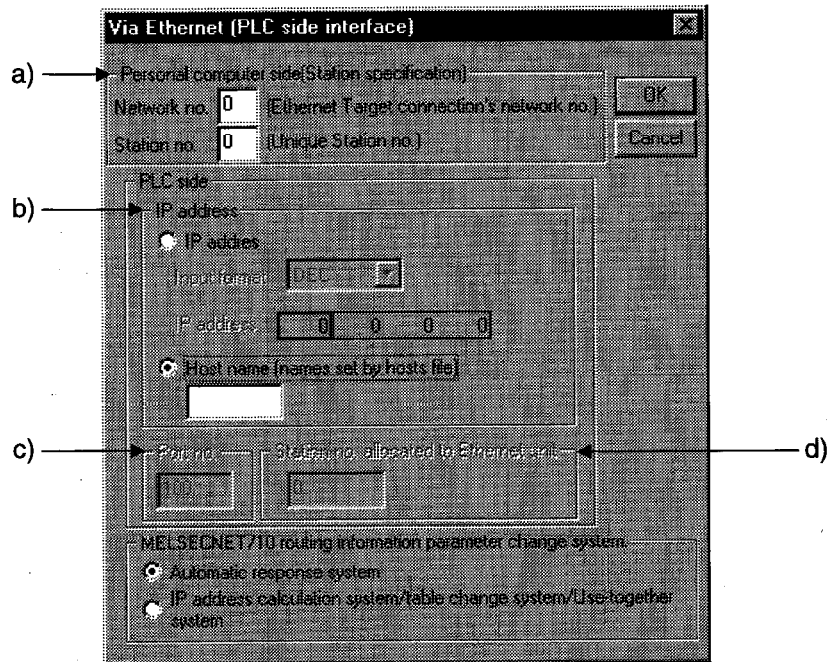
- a) Transmission speed
For A series this is fixed at 9.6 kbps.
For QnA series, select 9.6 kbps, 19.2 kbps, or 38.4 kbps.
- b) CC-Link unit station no.
Designate the master station/local station in the CC-Link.

- When there is an Ethernet board at the personal computer side
<For A series>



- a) Personal computer side (station designation)
With the A series, station setting is not possible at the personal computer side.
- b) IP address
 - IP address
Select decimal or hexadecimal.
 - Host name
For the host name, set a name set in the "hosts" file within 64 characters.
- c) Port no.
Set the port No. of the communication destination E71 set with the sequence program.

<For QnA series>



a) Personal computer side

Network no.

Set the network No. set for QE71 in the network parameters of the connection destination PLC (consider it a local station).

Station no.

Designate a station number that is not being used as the QE71 station number (this will be the station number at the personal computer side).

b) IP address

IP address

Select decimal or hexadecimal.

For the host name, set a name set in the "hosts" file within 64 characters.

Host name

For the host name, set a name set in the "hosts" file within 64 characters.

c) Port no.

This setting is not possible with the QnA series.

d) station no. allocated Ethernet unit

Sets the relaying QE71 station number when an other station routed through MELSECNET/10 is selected as the applicable station at the PLC side. (Set the station number set for QE71.)

7) Target station setup

Sets the necessary items for specifying the station accessed through a communication route when accessing another station.

- 8) Communications time check
Set the time for the time check with respect to the PLC accessed by GPPW.
The host station setting range is 1 to 99 seconds.
(A series, QnA series, FX series)
The other station setting range is 1 to 9999 seconds. (A series, QnA series)
- 9) button
Click this button after setting the necessary settings.

POINTS

- For details on the applicable station access range when routing through MELSECNET II or MELSECNET/10, see Appendix 1.
- When connecting to E71, create the following items in the sequence program.
Connection destination IP address, connection destination port No., IP address at personal computer side, port No. at personal computer side.
In addition, set DIP switch SW3 on the front face of E71 to "ON."
- There are the following restrictions on access to an AnUCPU via Ethernet.
 - (1) Make the PLC type "AnACPU."
 - (2) Sequence programs, device memories, etc., can be used within the AnACPU specification range.
Accordingly, subprogram 2, subprogram 3, and device and network parameters expanded with the AnUCPU cannot be accessed.
- Notes on C24/UC24 present multidrop connection destination designations
The settings made with the buttons differ according to the setting method for the PLC side setting of the connection destination designation.

PLC side	Interface	→ computer link
Applicable station	→ host station	
In this case the //interface detailed setting// button setting is "host station."		
PLC side	Interface	→ computer link
Applicable station	→ other station	
Communication route	→ via computer link module	
In this case, the <input type="button" value="Detailed interface setup"/> button setting is "multidrop destination."		
- Notes on using a MELSECNET(II/10) composite system
When accessing an other station via a C24 or E71 module with GPPW, MELSECNET/10 is recognized as MELSECNET II.
Accordingly, when the same station exists in MELSECNET II and MELSECNET/10 loops, even if, for example, "via MELSECNET/10" is selected as the connection destination designation, it may not be possible to connect to the station to which access is desired at the MELSECNET/10 destination.
In other words in this case communication is executed from the station of the module indicated by the "valid module" setting in the network parameters.
To access all stations by accessing an other station via the C24 or E71 module, do not set more than one of the same station number within the network.

17.2.1 Setting method for communication via a MELSECNET/10 port

A	QnA	FX
•	•	×

For details on the method for installing the MELSECNET/10 driver, refer to manuals packed with the products.

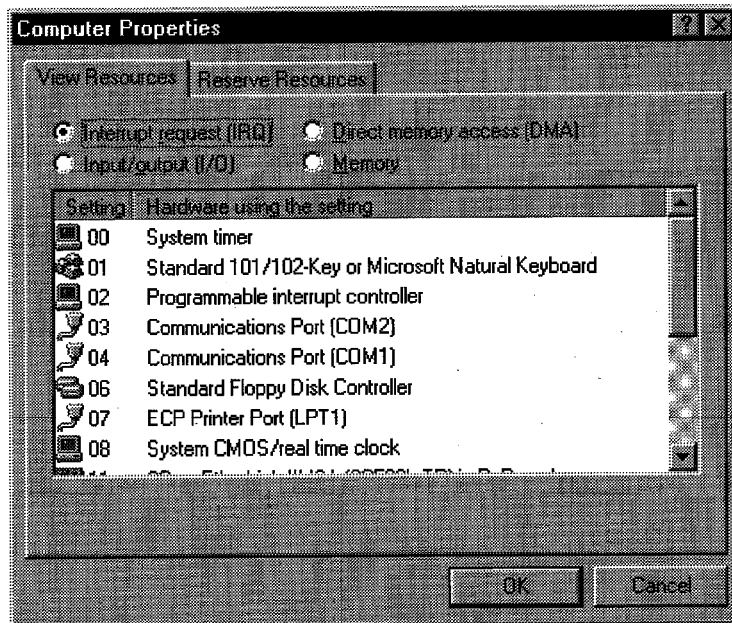
The necessary board settings apart from those relating to MELSECNET/10 are I/O address, IRQ, and memory address.

For I/O address, IRQ, and memory address, open the Control panel in Windows 95, then open the System dialog box, and click the **Property** button in the Device Manager sheet.

The example is based on Windows 95.

[Interrupt request (IRQ) setting dialog box]

Set a free IRQ from the dialog box below.

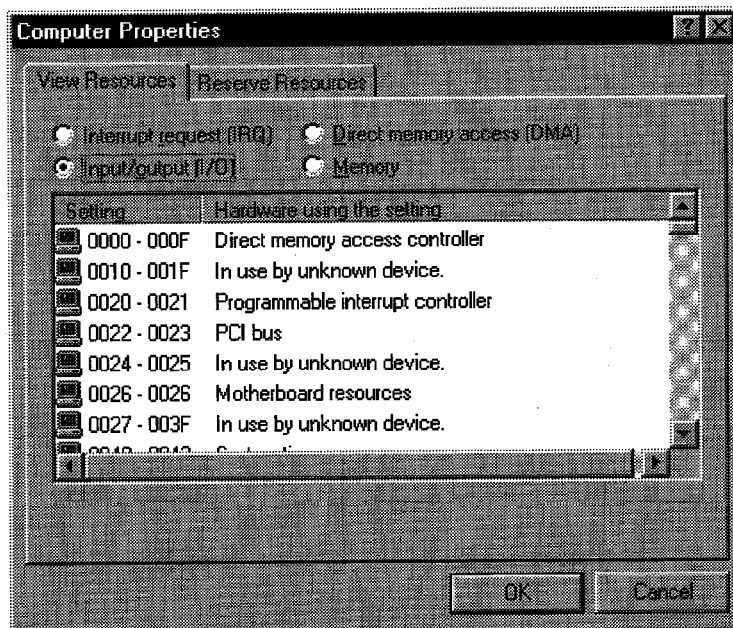
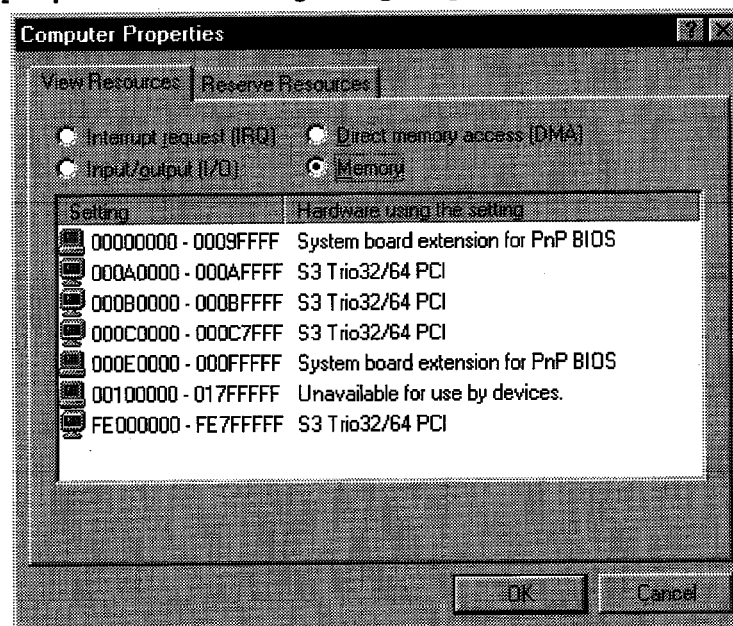


The IRQs that can be set with A70BD-J71QLP23 are 3, 4, 5, 7, 10, 11, 12, and 15, giving a total of 8.

However, IRQ5 (printer port 2) and IRQ10 (port default) are usually free.

[I/O port address setting dialog box]

Set a free I/O address from the dialog box below.

**[I/O port address setting dialog box]**

- 1) Even if a resource is shown to be free in the properties above, it may actually be in use elsewhere. In this case check while changing the resource (IRQ).
- 2) With some models, even if a free resource is set with a peripheral device that supports plug and play, it will not operate.

17.2.2 Setting method for communication via an Ethernet board

A	QnA	FX
•	•	×

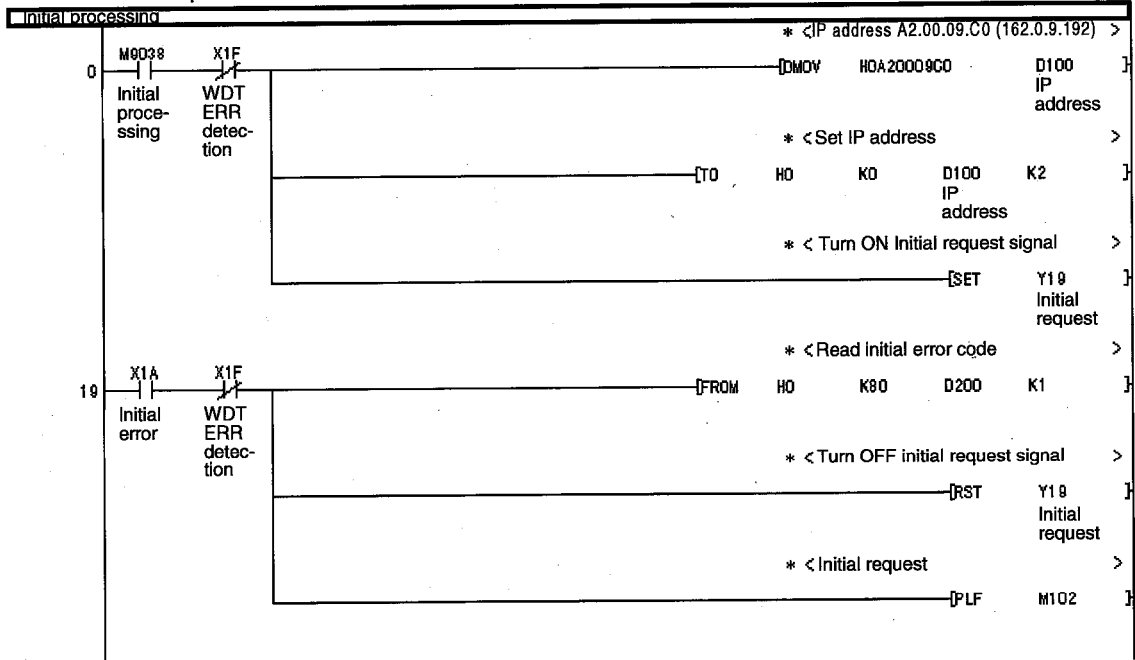
The points to check and points to note when communicating via an E71/QE71 from GPPW are described here.

	A Series	QnA Series
Sequence program	Sequence program required	Sequence program not required
Parameters	Not required	Required
Compatible models	Only AJ71E71-S3 and A1SJ71E71-B2/B5-S3 supported. (Because AJ71E71 cannot communicate when the PLC is set to STOP.)	QE71, PLC must be version 9707B or later Q4AR is not compatible.
Switch settings	Operation mode setting switch ... 0 (online) Communication condition setting switch ... SW2 OFF (BIN code)	
LEDs of E71/QE71	When communication is possible, RUN LED is lit and RDY LED is flashing. Open processing required	When communication is possible, RUN LED is lit and RDY LED is flashing.
Cable	10Base2 or 10Base5 can be connected. For 10BaseT, MAU (transceiver) is required. When using 10Base5 with MAU, 12 V (external power supply) is required.	
Points to check when executing communication	Before starting communication with GPPW, check the connection by executing ping (in MS-DOS mode). When OK: C:\>ping 10.97.29.57 Reply from 10.97.29.57: bytes=32 time<10ms TTL=32 When NG: C:\>ping 10.97.29.55 Request timed out. If "ping" is unsuccessful, check the connection, IP address at the Windows side, etc.	
Interface detailed settings (1)	For designation by host name, settings must be made in the "hosts" file (e.g. under C:\Windows). For designation by IP address, no "hosts" file is necessary.	

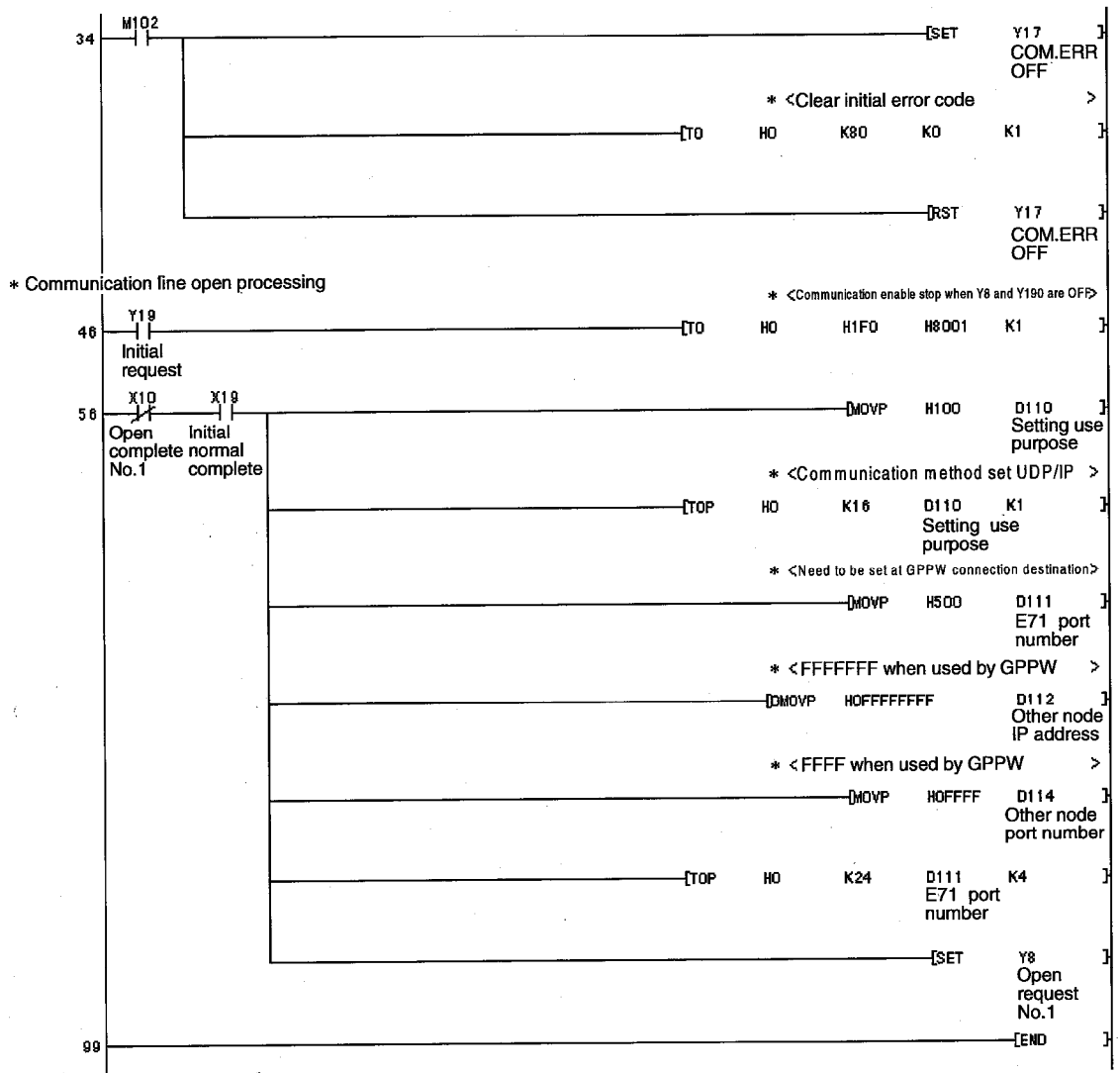
	A Series	QnA Series
Interface detailed settings (2)	The port number is the port number (for example, 500H) designated at step 72 of the supplied sequence program. The port number is designated in the range 100H to FFFEH. Designate a port number from 410H upward that is not used for another purpose.	The network No. is the network No. set in the network parameters. Set the station No. by selecting one among the numbers not used in other settings and excluding the PLC station No. set by the network parameter. For communication with an other station (Ethernet or MELSECNET/10), set "station number allocated to other station Ethernet module."
Others	When AnU is selected, connection via Ethernet is not possible (use within the specification range of AnA is possible).	Communication via MELSECNET(II) is not possible (because Ethernet communications are executed as MELSECNET/10).
	Communication via LAN is only possible within the same segment. If the communication is attempted beyond a router/gateway, correct operation cannot be guaranteed (communication is possible but will be stopped part way through).	

Sequence program (E71)

Example:



(continued on next page)



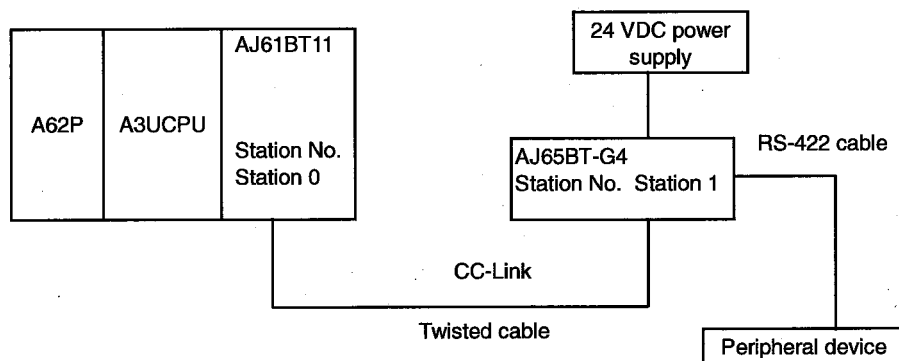
17.2.3 Setting method for communication via CC-Link (AJ65BT-G4)

17.2.3(1) When using A series

A	QnA	FX
•	×	×

Examples of the module switch settings, parameter settings, program settings, etc., are presented here based on the system configuration shown below.

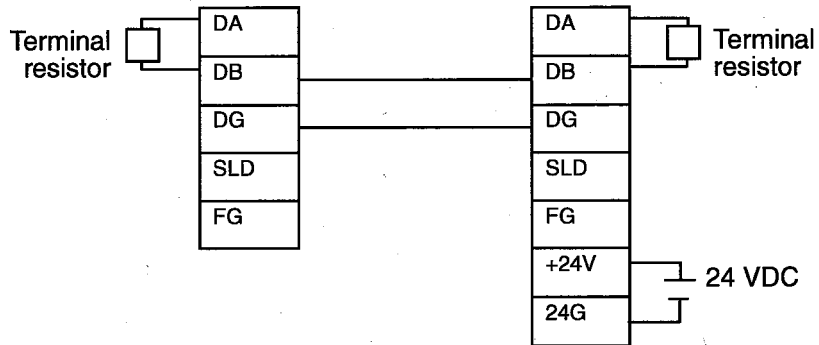
(1) Example configuration



(2) Module switch settings

Module Name	Name		Setting	Details	
AJ61BT11	STATION No. (station No. setting switch)		0	Station 0 (master station)	
	MODE (mode setting switch)		0	Online	
	B RATE (transmission speed setting switch)		4	10 Mbps	
	Condition setting switches		All OFF	All OFF	
AJ65BT-G4	STATION No. (station No. setting switch)		1	Station 1 (local station)	
	B RATE (data link transmission speed setting switch)		4	10 Mbps	
	DIP switches for operation settings	Operating mode setting	SW1	OFF	"A" mode
		Setting for transmission speed between peripheral devices	SW2	OFF	9600 bps (fixed)
			SW3	OFF	
		Parity bit yes/no setting	SW4	OFF	
			SW5	OFF	
		Not used	SW6	OFF	
Not used		SW7	OFF		
Test mode setting	SW8	OFF	Online mode		

(3) Cable connection



(4) Parameter setting

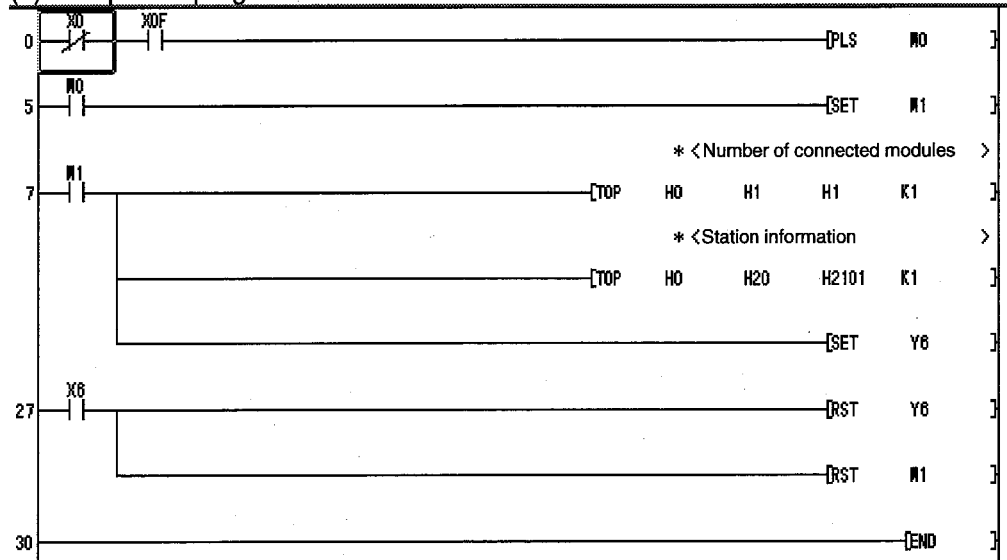
Set the CC-Link parameters at the CC-Link master module.

There is no need for setting at the other local stations.

The minimum required parameter settings for data link operation are indicated below.

Address	Item	Details	Set Value
1H	Number of connected modules	Set the number of modules of the connected remote stations/local stations.	1H
20H	Station information	AJ65BT-G4	2101H

(5) Sequence program

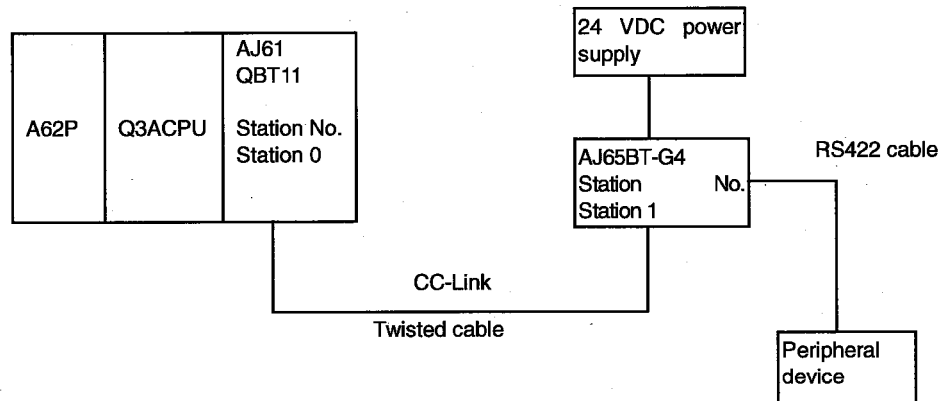


17.2.3(2) When using QnA series

A	QnA	FX
×	•	×

Examples of the module switch settings, parameter settings, program settings, etc., are presented here based on the system configuration shown below.

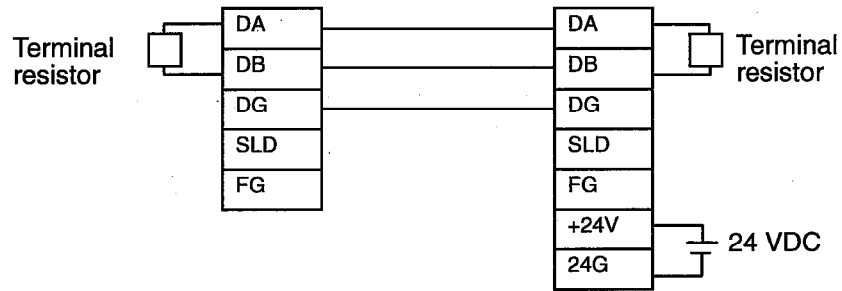
(1) Example configuration



(2) Module switch settings

Module Name	Name	Setting	Details				
AJ61QBT11	STATION No. (station No. setting switch)	0	Station 0 (master station)				
	MODE (mode setting switch)	0	Online				
	B RATE (transmission speed setting switch)	4	10 Mbps				
	Condition setting switches	All OFF	All OFF				
AJ65BT-G4	STATION No. (station No. setting switch)	1	Station 1 (local station)				
	B RATE (data link transmission speed setting switch)	4	10 Mbps				
	DIP switches for operation settings	Operating mode setting	SW1	ON	QnA Mode		
		Setting for transmission speed between peripheral devices (Kbps)	SW2	9.6	19.2	38.4	Match to the transmission speed with GPPW.
			SW3	OFF	ON	OFF	
			SW4	OFF	OFF	ON	
		Parity bit yes/no setting	SW5	OFF			
			SW6	OFF			
Not used		SW7	OFF				
Not used	SW8	OFF			Online mode		

(3) Cable connection



(4) Parameter setting

Set the CC-Link parameters at the CC-Link master module.

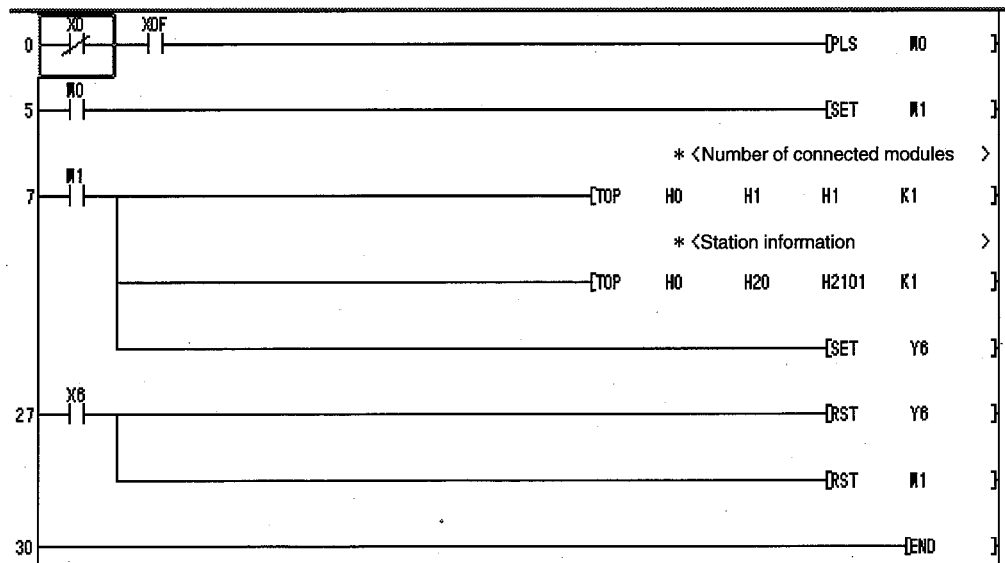
There is no need for setting at the other local stations.

The minimum required parameter settings for data link operation are indicated below.

Address	Item	Details	Set Value
1H	Number of connected modules	Set the number of modules of the connected remote stations/local stations.	1H
20H	Station information	AJ65BT-G4	2101H

(5) Link start method

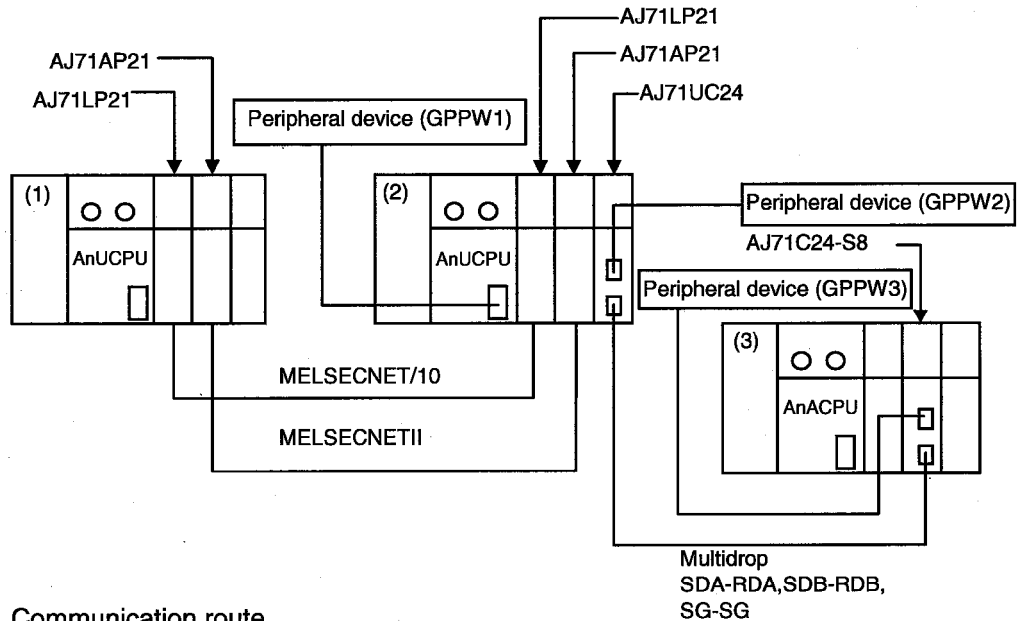
1. Set the network parameters in GPPW in the CC-Link setting dialog box. (Automatic refresh)
2. When parameters are set with a sequence program:
If the network parameters are set with a sequence program, set the number of modules in the CC-Link setting dialog box to "0."



17.2.4 Setting method for communication via a computer link module

A	QnA	FX
•	×	•

An example of the module switch settings and other settings based on the system configuration indicated below is presented here.



Communication route

Peripheral Device	PLC No.	(1)	(2)	(3)
	GPPW1		•	•
GPPW2		•	•	•
GPPW3		•	•	•

(2) Mode setting switch and STATION NO. setting of mounted UC24
 Mode setting switch: A
 STATION NO. : 0

(2) Switch settings of mounted UC24

Item	Setting Details
Main channel setting	RS-232C
Data bit setting	8
Transmission speed setting	9600 bps
Parity bit yes/no setting	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enabled/disabled setting	Enabled
Computer link/multidrop link setting	Computer link (set "computer link" for multidrop also)

- (2) If a 9-25 pin + AC30N2A or equivalent is used when connecting GPPW to a mounted UC24, write "1" (do not check CD terminal) to 10B of the buffer memory.
- (3) Mode setting switch and STATION NO. settings of the mounted U24-S8
 Mode setting switch: A
 STATION NO. : 1

(3) Switch settings of mounted C24-S8

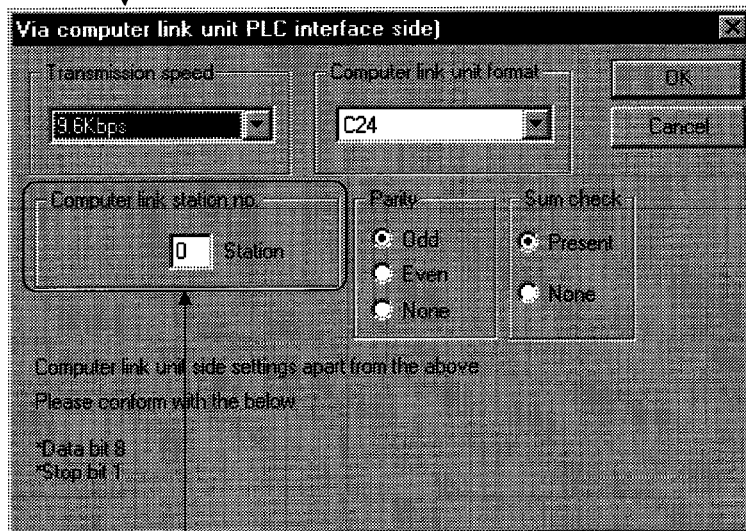
Item	Setting Details
Main channel setting	RS-422
Data bit setting	8
Transmission speed setting	9600 bps
Parity bit yes/no setting	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enabled/disabled setting	Enabled

- (3) If a 9-25 pin + AC30N2A(See 17.1 for details on wiring) or equivalent is used when connecting GPPW to a mounted UC24, write "1" (do not check CD terminal) to 10B of the buffer memory.

The dialog box setting example here is for accessing the C24-S8 in (3) from GPPW in a multidrop connection.

[Operating Procedure]

Select [Online] → [Transfer setup], then click the **Detailed interface setup** button.

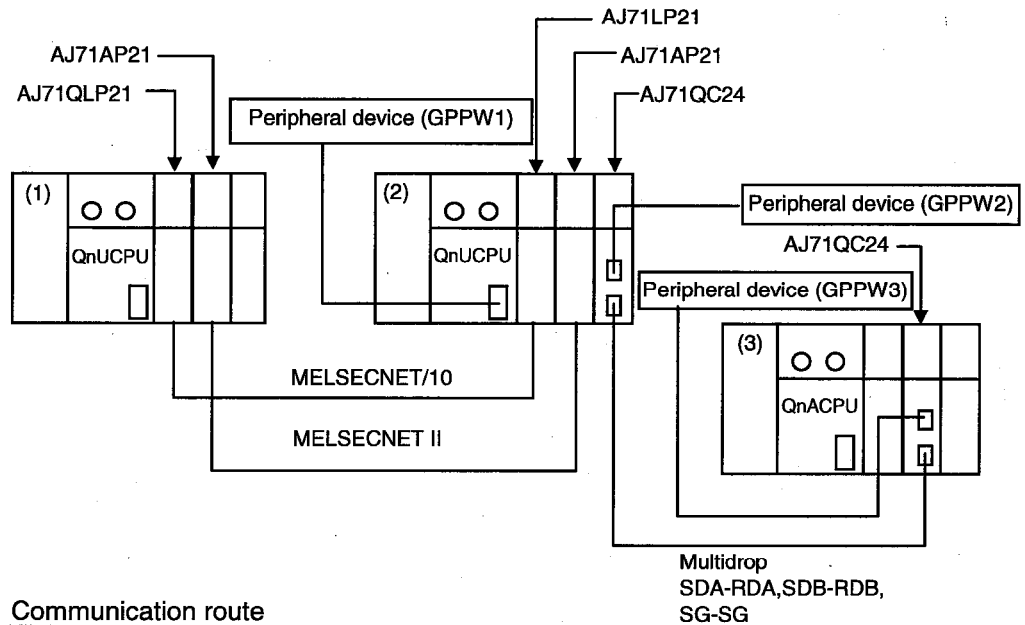


The computer link station number does not have to be set.

17.2.5 Setting method for communication via a serial communication module

A	QnA	FX
×	•	×

An example of the module switch settings and other settings based on the system configuration indicated below is presented here.



Communication route

Peripheral Device	PLC No.	(1)	(2)	(3)
	GPPW1		•	•
GPPW2		•	•	•
GPPW3		•	•	•

- (2) Mode setting switch and STATION NO. setting of mounted QC24
 Mode setting switch: 5
 STATION NO. : 0

- (2) Switch settings of mounted QC24

Item	Setting Details
Operation setting	Independent setting
Data bit setting	8
Parity bit yes/no setting	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enabled/disabled setting	Enabled
Setting change enabled/disabled setting	Enabled
Transmission speed setting	9600 bps
-	SW13 to SW15 are all OFF.

(2) Use a 9-25 pin + AC30N2A (see 17.1 for details on wiring) or equivalent to connect GPPW to the mounted QC24.

(3) Mode setting switch and STATION NO. settings of the mounted QC24
STATION NO. : 1

(3) Switch settings of mounted Q24

Item	Setting details
Operation setting	Independent setting
Data bit setting	8
Parity bit yes/no setting	Odd
Stop bit setting	1
Sum check yes/no setting	Yes
Online change enabled/disabled setting	Enabled
Setting change enabled/disabled setting	Enabled
Transmission speed setting	9600 bps
-	SW13 to SW15 are all OFF.

(3) Use a 9-25 pin + AC30N2A (see 17.1 for details on wiring) or equivalent is to connect GPPW to the mounted UC24.

17.3 Using PLC Read/Write

PLC read and PLC write access the PLC and read/write data. Since the same kind of dialog box is used for PLC read and PLC write operations, a common explanation is given for both here.



17.3.1 Executing PLC read/PLC write

A	QnA	FX
•	•	•

[Purpose]

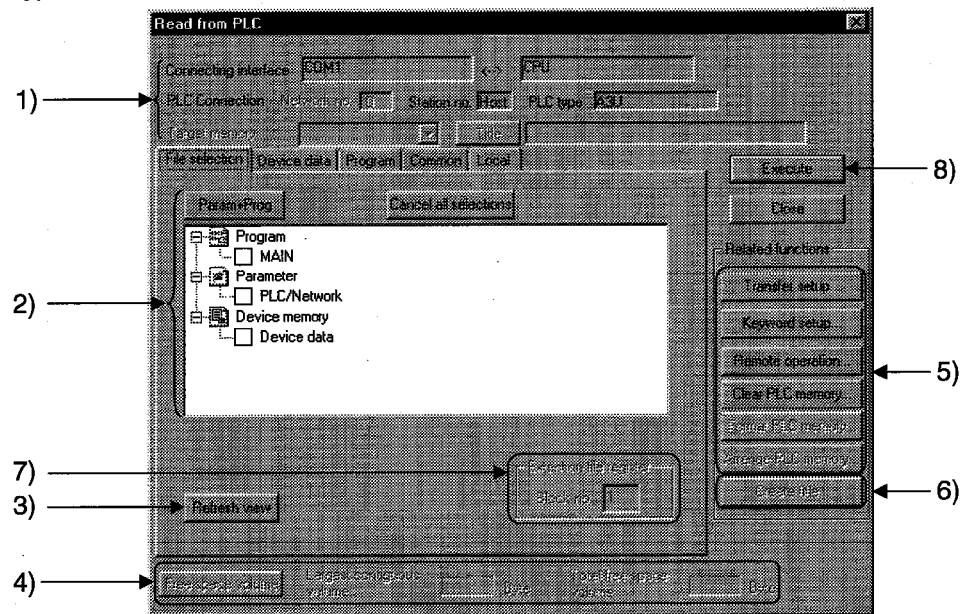
Selects data and subjects it to a PLC read or PLC write operation.

[Operating Procedure]

Select [Online] → [Read from PLC] ([Write to PLC]), or click ( ).

[Dialog Box]

The screen for "PLC read" is shown here; the screen for "PLC write" is of the same type.



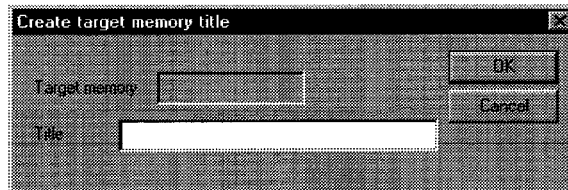
[Description]

Items in parentheses relate to "PLC write."

- 1) Connecting interface
Displays the connecting interface and accessed station. With the QnA series, the applicable memory is set. On clicking the Title button, the label assigned to the QnA series memory is displayed.

- 2) PLC data (active data)

For "PLC read", the list of data in the applicable memory is displayed.
For "PLC read", if there is no data for either comment 1/comment 2 or extension comment, nothing is displayed. Note that it is not possible to select more than one data item each for file register and device initial value (when using QnA series).
For "PLC write", a data list of the opened project is displayed.
Select the parameters and all programs of the project with the **Param + Prog** buttons.
Clear all data with the **Cancel all selections** button.
- 3) **Refresh view** button
Clicking this button updates the PLC data in the PLC read window.
This button is not featured with "PLC write."
When several peripheral devices are connected to the PLC, click the **Refresh view** button to check the latest PLC data before reading the PLC file.
- 4) **Freespace volume** button (QnA series only)
Clicking this button when using the QnA series displays the maximum contiguous area and total free area of the applicable memory.
This button is not effective with the A series.
- 5) Related function
Clicking the buttons displays functions related to PLC read/PLC write.
 - See Section 17.2 Specifying the Connection Destination
 - See Section 19.5 Operating the PLC Remotely
 - See Section 20.1 Registering New Entry Codes/Changing Entry Codes
 - See Section 21.1 Clearing the PLC Memory
 - See Section 21.2 Formatting a QnAnCPU
 - See Section 21.3 Sorting the QnACPU Memory
- 6) Create title
Creates a label for the applicable memory when using QnA series.
Clicking this button displays the dialog box shown below.



Set a label of up to 32 characters, then click the **OK** button.

7) Extension file register

For A series:

A block No. can be designated only if extension file register was selected at 2).

For QnA series:

Set any required file name at the PLC side.

The file name can be designated when writing. As a default, the GPPW device name is set.

Set the range for file register reading (writing).

Whole range

All file registers are read.

Range specification

The designated range of file registers is read (written to).

For FX series:

This setting is not possible with the FX series.

8) **Execute** button

Click this button after setting the necessary settings.

[Operating Procedure]

1. Set the access destination as described in "Specifying the Connection Destination."
2. Display the PLC read (write) dialog box.
3. At 2), check the checkbox of the data name for which PLC read (write) is to be carried out.
4. When the file selection is a program, device comment, or device memory, set the range setting and other settings on the relevant tabbed sheet.
5. Click 5).
Now check the parameters at the peripheral device and PLC sides.
If there is a mismatch in the parameter data, reading (writing) is suspended.
Note also that, with the QnA series, if the same data exists at the reading destination (writing destination), you will be prompted to indicate whether or not you wish to overwrite this data.

POINTS

- If online change is necessary, set this function by selecting [Tools] → [Options], and setting to the online change mode from the write mode or monitor mode.
Alternatively, select [Convert] → [Convert (Online change)].
For details on online change, see Section 17.7.
For details on online change settings, see Section 16.7.
- With the A series, as long as the program capacity settings match, program reading (writing) is possible; even if there is a mismatch with, for example, the device comment capacity.
However, if parameter reading (writing) is executed at the same time, no capacity mismatch will occur.
- When writing to the E²PROM of a memory cassette with built-in RAM/E²PROM for AnUCPU (A4UMCA-8E, 32E, 128E), set the memory switch to "ROM."
- The number of subprograms that can be written with an A4UCPU differs according to the installed memory cassette.
The subprograms that can be written are indicated below.

Memory Cassette	A3NMCA-0 to 56	A3AMCA-96	A4UMCA-128	A4UMCA-8E,32E	A4UMCA-128E
Writing possible Subprograms	Sub 1 only	Sub 1,2,3	Sub 1,2,3	Sub 1 only	Sub 1,2,3

- With the QnA series, if a program with peripheral statements/notes appended is written, the statements/notes are not written to the PLC.
Therefore, when reading out a program from the PLC, be careful not to save (by overwriting) the program with no statements or notes.
Since the CPU/GPP setting is made when the statements/notes are created, see Section 10.1 or Section 10.2.
- When using the QnA series, it is not possible to write a device memory to an IC memory card.
Similarly, it is not possible to write file registers to the built-in RAM.
- When using the QnA series, when multiple sequence programs are written to the memory using "PLC write", carry out program setting in the PLC parameters.
- When batch writing data to an FX series model, set the PLC to the STOP status.
If the PLC is in the RUN status, batch writing is not possible; in this case use the online change function described above.
- If the program memory of an FX series model is an EPROM cassette, write programs with a ROM writer. If it is an EEPROM cassette, set the protect switch OFF before writing.

17.3.2 Setting the read/write range for device data

A	QnA	FX
•	•	•

[Purpose]

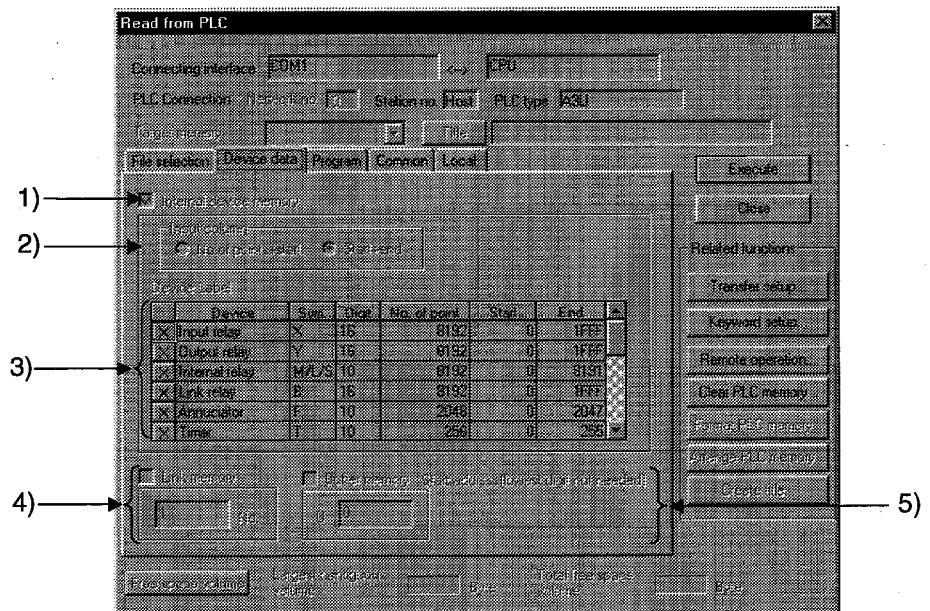
Sets the type, range, etc., of the devices to be read (written) when device memory has been selected on the <<File selection>> sheet.

[Operating Procedure]

Select [Online] → [Read from PLC] ([write to PLC]) → <<Device data>> tab, or click () → then click the <<Device data>> tab

[Dialog Box]

The screen for "PLC read" is shown here; the screen for "PLC write" is of the same type.



[Description]

- 1) Internal device memory
 Reads (writes) the designated built-in device data.
 Check the checkbox to select it.
 If device memory has been selected in the <<File selection>> sheet, an error will be displayed if the Internal device data checkbox is cleared.
- 2) Input column (A series and QnA series only)
 Sets the range designation method for the devices to be read (written).
 - ⊙ No. of points + start
 Set the number of device points and the first device number.
 - ⊙ Start + end
 Set the first device number and the final device number.

3) Device Level

The default settings are for all device types, and the entire range of each. The devices that can be read (written) with the A series and QnA series are indicated below.

A series

Readable/writable devices	M/L/S ^{*1} , B, F, T ^{*2} , C ^{*2} , D, W, A, Z, V
Readable devices	X, Y, special D, special M

QnA series

Readable/writable devices	M, L, B, F, SB, V, S, T ^{*2} , ST ^{*2} , C ^{*2} , D, W, SW, FX, FY, FD, Z
Readable devices	X, Y, SM, SD

*1 : With the A series, a single range setting is made for the three device types M, L, and S.

*2 : Three types - contact, coil, and present value - are read (written).

FX series

With the FX series, all the readable/writable devices are designated.

4) Link memory Start address(QnA series only)

Checking this checkbox with the QnA series causes batch reading of the link memory of the designated data link module or network module.

The range of modules that can be designated is 1 to 4.

Since "PLC write" is not possible with a link memory, only reading can be designated.

The data can be read to J*W** of the device memory.

For details on the device designation method, see the QnACPU Programming Manual (Common Instructions).

This setting is not possible with the A series.

5) Buffer memory start address(QnA series only)

Checking this checkbox with the QnA series causes batch reading of the buffer memory of the designated special function module.

To designate the special function module, set the first output number (however, the lowest digit is unnecessary).

The setting range is 0 to 1FF.

Since "PLC write" is not possible with respect to a buffer memory, only reading can be set.

The data can be read to U*G** of the device memory.

For details on the device designation method, see the QnACPU Programming Manual (Common Instructions).

This setting is not possible with the A series.

<Setting Example>

Case where the first I/O number is 40

U	4
---	---

POINT

- Only one device memory per project can be stored at the peripheral device.



17.3.3 Setting the program reading/writing range

A	QnA	FX
•	•	•

[Purpose]

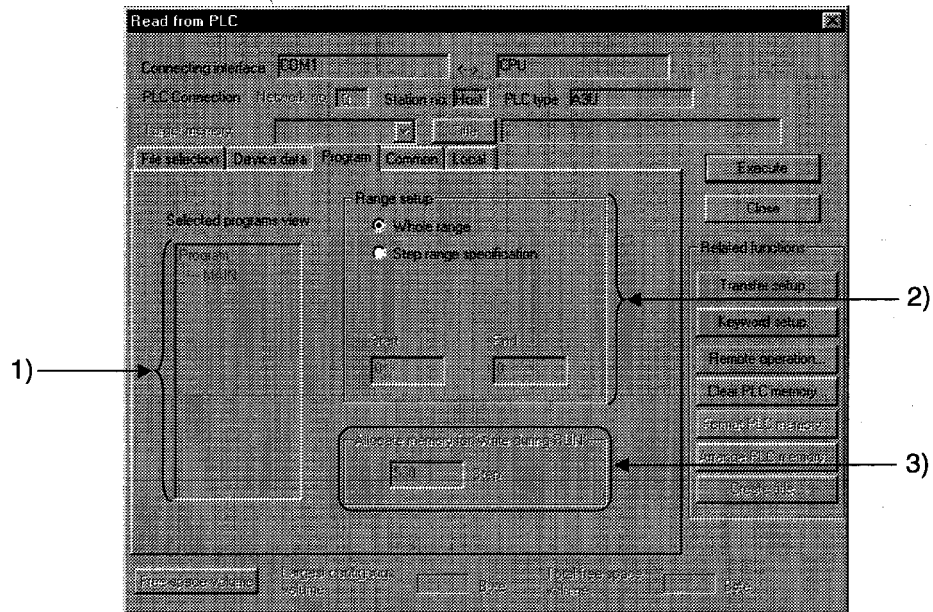
Sets the program range for reading/writing.

[Operating Procedure]

Select [Online] → [Read from PLC] ([Write to PLC]) → <<Program>> tab, or click ( ) → then click the <<Program>> tab.

[Dialog Box]

The dialog box for "PLC read" is shown here; the dialog box for "PLC write" is of the same type.







[Description]

- 1) Selected programs view
Displays a list of programs selected for read (write) data using file selection.
- 2) Range setup
Sets the range for programs selected for read (write) data.
When multiple programs have been selected, the All range setting is automatically made.
 - Ⓐ Whole range
The whole range is read (written).
 - Ⓑ Step range specification
The range designated by first and final step numbers is read (written).
- 3) Allocate memory for "Write during RUN"
With the QnA series, to accommodate the increase in steps during online change, an area equivalent to the number of steps secured for online change is secured when a program is written to the PLC.
For details on online change, see Section 17.7.
This setting is not possible with the A series and FX series.

17.3.4 Setting the comment read/write range

A	QnA	FX
•	•	•

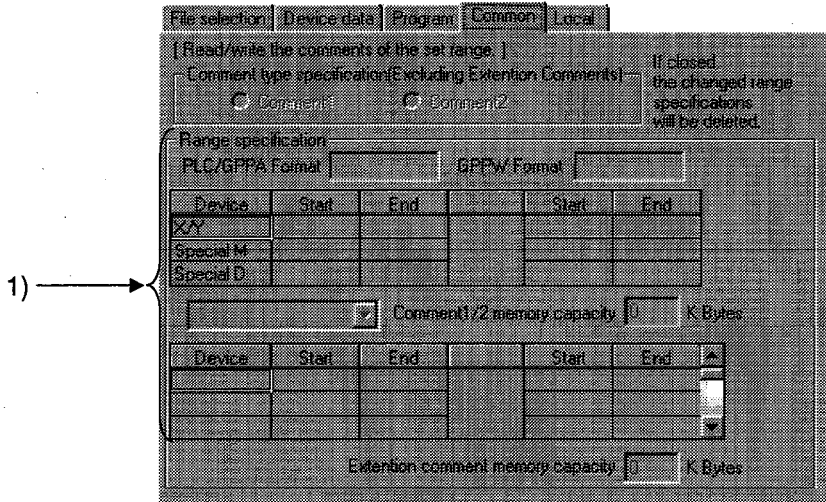
[Operating Procedure]

- Reading (writing) comments common to all programs
 Select [Online] → [Read from PLC] ([Write to PLC]) → <<Common>> tab, or click  () , then click the <<Common>> tab.
- Reading (writing) program-specific comments
 Select [Online] → [Read from PLC] ([Write to PLC]) → <<Local>> tab, or click  () , then click the <<Local>> tab.

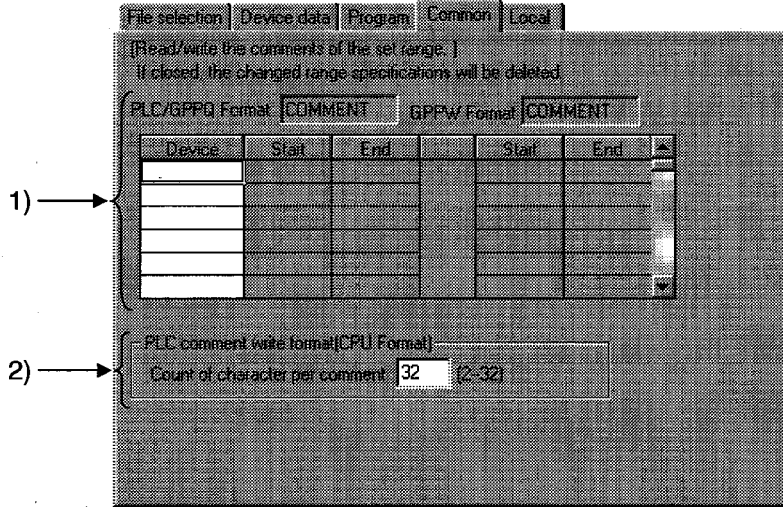
[Dialog Box]

A series PLC read the <<Common>> sheet and QnA series PLC write. The <<Common>> sheet is shown here; the <<Local>> sheet is of the same type. (However, the A series <<Local>> sheet has no range setting for extension comments.)

- A series PLC read <<Common>> sheet:



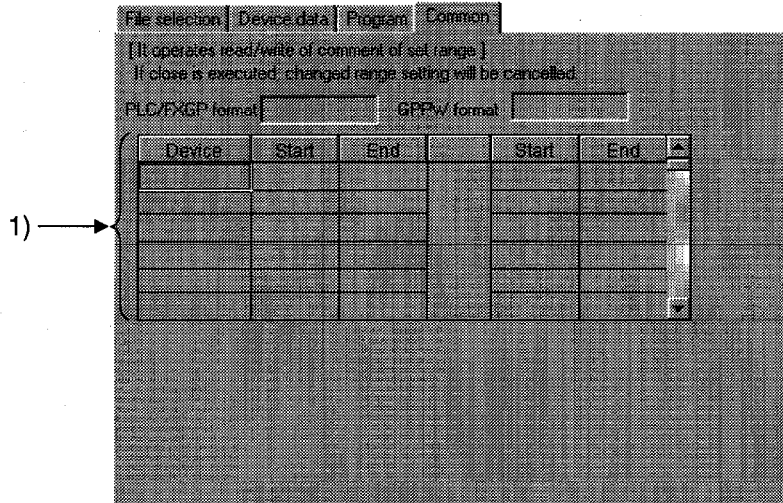
- A series PLC write <<Common>> sheet:



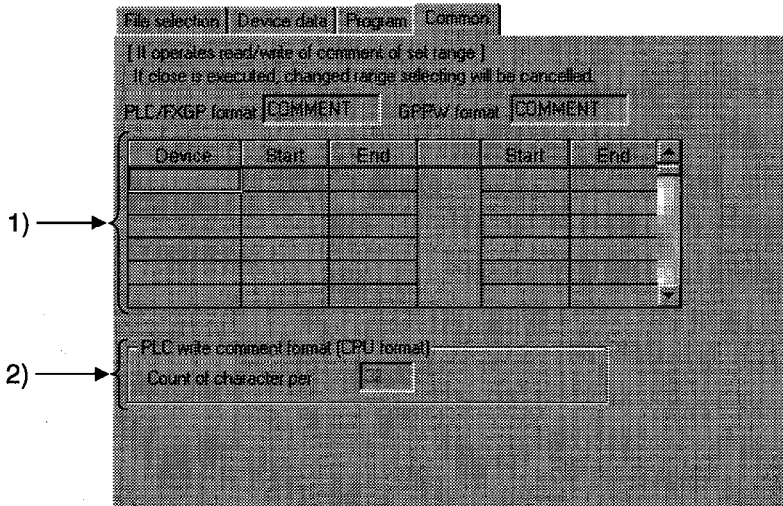
[Dialog Box]

The FX series PLC read <<Common>> sheet and PLC write <<Common>> sheet are shown here. With the FX series, there is no <<Local>> tab.

- FX series PLC read <<Common>> sheet:



- FX series PLC write <<Common>> sheet:



[Description]

1) Device range setting

Sets the range of device comments to be read (written) when device comment data has been selected by file selection.

The details of comment range setting when editing device comments are set.

If the read (write) range is incorrect, it is changed.

However, when the range is changed, the comment range setting for device comment editing is also automatically changed.

For details on comment range setting, see Section 9.9.

When writing with the A series, always carry out range setting. Note, however, that no range designation is required when the entire range is to be read.

When reading (writing) the entire range with the QnA series, no range designation is required.

When reading with the FX series, all that is required is to select the comment data file: range setting is not necessary.

2) PLC write comment form (QnA series only)

Sets the number of characters of comments written to a QnA series PLC.

In device comment editing, comments of up to 32 characters can be created, but memory capacity can be saved by reducing the number of characters written to the PLC.

The setting range is 2 to 32 characters.

There is no setting for reading.

This setting is not possible with the A series.

POINTS

- There are two types of device comment: comments common to all programs and program-specific comments. This is not the case with previous packages (GPPA, GPPQ, FXGP(DOS), FXGP(WIN)). Therefore, first read Section 9 "SETTING DEVICE COMMENTS" before reading (writing) device comments.
- With the A series, it is not possible to read (write) device comments unless a comment memory capacity setting has been made. Make the PLC parameter memory capacity setting by referring to the comment capacity displayed under the range designation.
- With the QnA series, device comment reading is CPU format.

17.4 Verifying Data at the Peripheral Device and PLC

A	QnA	FX
•	•	•

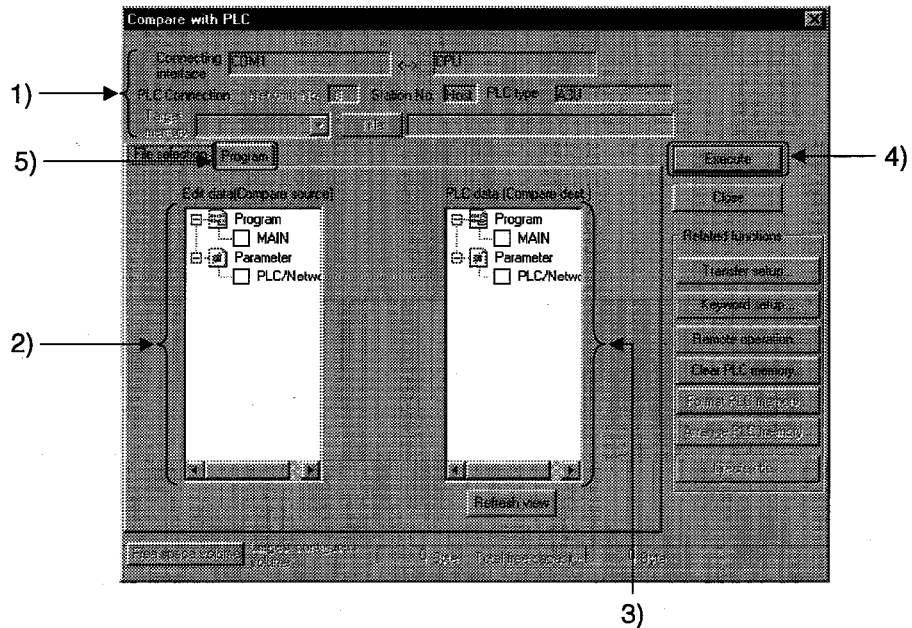
[Purpose]

Compares and verifies programs, parameters, or other data in the PLC against data at the peripheral device.

[Operating Procedure]

Select [Online] → [Compare with PLC].

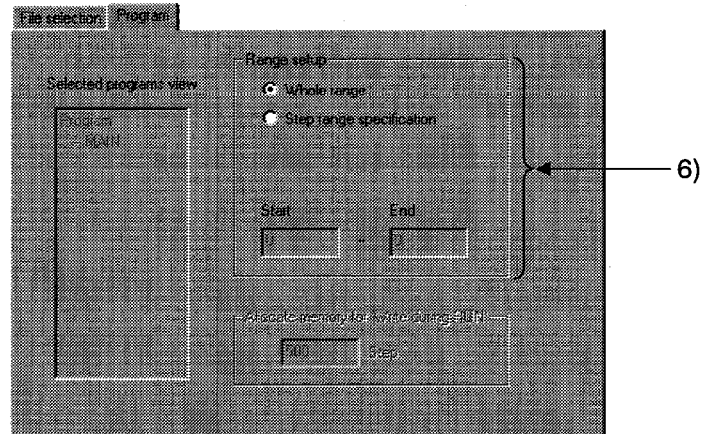
[Dialog Box]



[Description]

- 1) Connection destination information
Displays the connected interface or applicable station for access.
With the QnA series, set the applicable memory.
- 2) Edit data (Compare source)
Displays the list of project programs and parameter data.
Check a data name checkbox to select the data.
- 3) PLC data (Compare dest.)
Displays the list of programs and parameter data in the PLC.
Check a data name checkbox to select the data.
- 4) **Execute** button
Click this button after setting the necessary settings.

- 5) <<Program>> tab
Clicking this tab displays the sheet shown below.



- 6) Range setup
Sets the range for program verification.
- Whole range
The entire range of the selected program is verified.
 - Step range specification
Only the designated range of the selected program is verified.
Set the range with the first step number and final step number.

[Operating Procedure]

1. Set the access destination as described in "Specifying the Connection Destination."
2. Display the PLC compare window.
3. Check the checkboxes of the data to be verified at (2) and (3) to select it.
4. If verifying a program, select the range at (5).
5. After making the necessary settings, click (4).
After completion, the verification result dialog box is displayed.

POINTS

- When multiple data have been selected in file selection, verification is done between data with the same data name.
If corresponding data names have not been selected at the verification source and verification destination, an error is displayed.
When sequence programs and device comments are verified one by one at the verification source and verification destination, it is possible to designate differing data names.
- If the number of points of discrepancy in the result of verification exceeds 100, those up to the one hundredth are displayed, and verification after that point is suspended.
Verify the part after the suspension of verification again after either designating the range or correcting the verification data.

17.5 Deleting Data in the PLC

A	QnA	FX
×	•	×

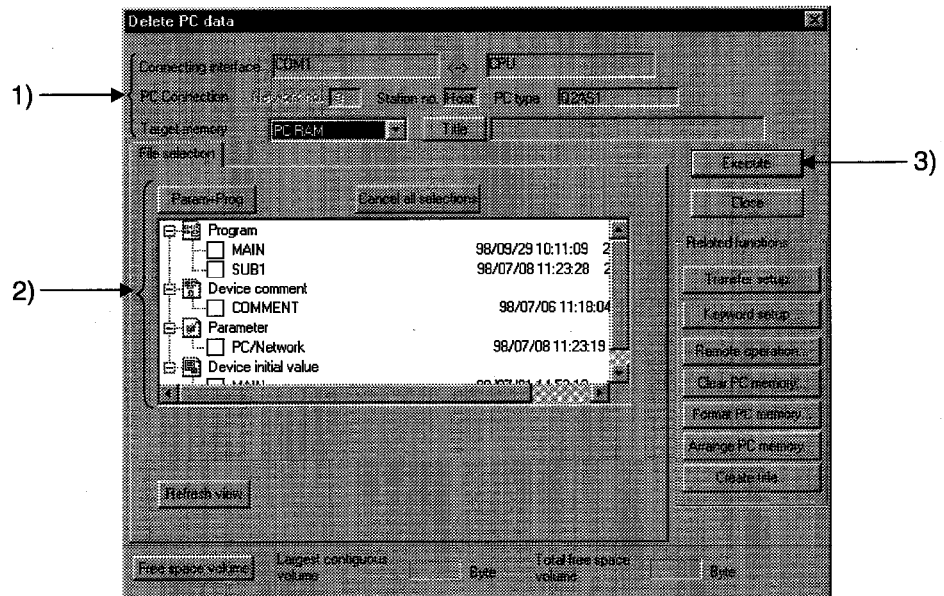
[Purpose]

Deletes data such as programs and parameters in the PLC when using the QnA series.

[Operating Procedure]

Select [Online] → [Delete PLC data].

[Dialog Box]



[Description]

- 1) Connection destination information
Displays the connected interface/applicable station for access.
Set the applicable memory.
- 2) PLC data
Displays the list of data in the applicable memory.
Check the checkbox for the data name to be deleted to select it.
Select the project parameters and all programs by clicking the **Param + Prog** buttons.
Cancel all data by clicking the **Cancel all selections** button.
- 3) **Execute** button
Click this button after setting the necessary settings.

[Operating Procedure]

1. Set the access destination as described in "Specifying the Connection Destination."
2. Display the PLC file delete dialog box.
3. Check the checkbox for the data name to be deleted in 2) to select it.
4. After making the necessary settings, click 3).

POINT

- PLC file deletion is possible for the QnA series only.
When using the A series, select [Online] → [clear PLC memory] to all-clear the data in the memory cassette, then write only the necessary data again.
For details on PLC memory clear, see Section 21.1.1.

17.6 Changing PLC Data Attributes

A	QnA	FX
×	•	×

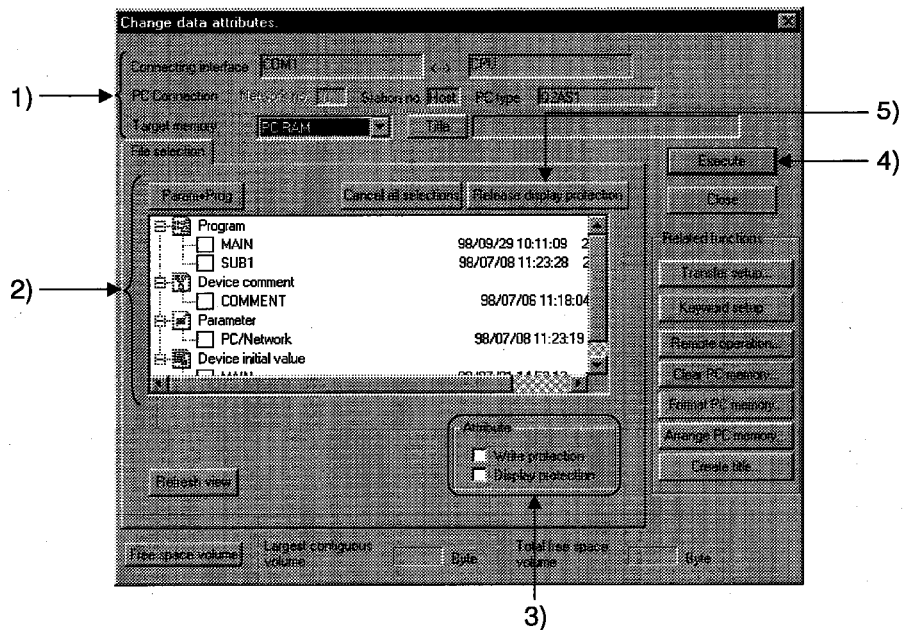
[Purpose]

Changes the attributes to "writing disabled" and "display disabled" in order to protect programs, parameter data and other data in QnA series PLC from unwanted access.

[Operating Procedure]

Select [Online] → [Change PLC data attributes].

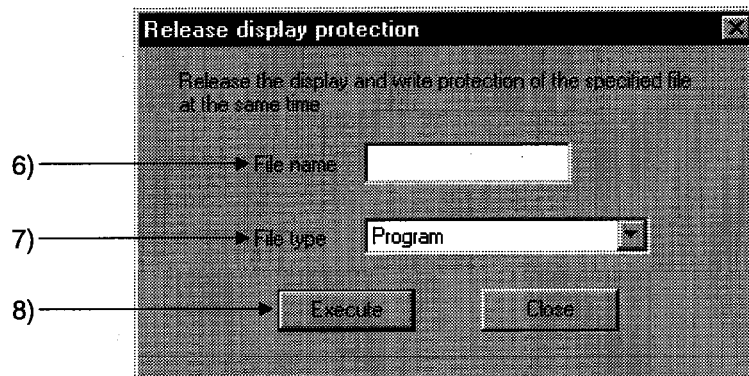
[Dialog Box]



[Description]

- 1) Connection destination information
Displays the connected interface/applicable station for access.
Set the applicable memory.
- 2) PLC data
Displays the list of data in the applicable memory.
Check the checkbox for the data name whose attributes are to be changed to select it.
Select the project parameters and all programs by clicking the **Param + Prog** buttons.
Cancel all data by clicking the **Cancel all selections** button.

- 3) **Attribute**
Sets the data attributes.
If both the Display prohibited and Write prohibited checkboxes are selected by checking them, data is neither written nor displayed.
 - When write disable is selected:
Data cannot be written or deleted by access from a peripheral device.
 - When display disable is selected:
The existence of the data is not indicated in the display on accessing from a peripheral device.
- 4) **Execute** button
Click this button after setting the necessary settings.
- 5) **Release display prohibition** button
Releases data for which the display disable or write disable status is set from the disabled status.
On clicking the **Release display prohibition** button, the dialog box shown below is displayed.



- 6) **File name**
Set the file name for which the display disable or write disable status is to be canceled.
If the file name for which the parameter has been changed and the set file name do not match, the "disabled" status cannot be released.
- 7) **File type**
Set the file type for which the disabled status is to be cancelled.
- 8) **Execute** button
After setting the file name and file type, click the **Execute** button.
If the set file name or file type does not agree with that at the PLC side, the disabled status cannot be canceled.

[Operating Procedure]

- Changing to the "write disabled"/"display disabled" status
 1. Set the access destination by as described in "Specifying the Connection Destination."
 2. Display the PLC data attribute change dialog box.
 3. Check the checkbox for the data name to be deleted at 2) to select it.
 4. Set the type of attribute at 3).
 5. Click 4).
- Canceling the write disabled or display disabled status
 1. Set the access destination as described in "Specifying the Connection Destination."
 2. Display the PLC data attribute change dialog box.
 3. Click 5) to display the display disabled cancellation dialog box.
 4. Set 6) and 7).
 5. After setting the necessary settings, click 8).

POINTS

- PLC data attribute change is only possible with the QnA series.
- Be sure not to forget a data name whose display has been disabled.
If the correct data name cannot be set, it will not be possible to designate the data for access, making reading and writing impossible.
To delete or change display disabled data when you have forgotten the name, initialize the memory by selecting [Online] → [format PLC memory], then write the necessary data again.
See Section 21.2 for details on PLC memory formatting.
- It is possible to change the same attribute of several data at the same time, but disabled statuses have to be canceled one by one.
- If neither selection has been made in attribute designation, the write disabled status of the selected data is canceled.

17.7 Executing Online Change

A	QnA	FX
•	•	•

[Purpose]

In the ladder editing window, changes a part of a sequence program and then writes it to the PLC while it is in the RUN status.

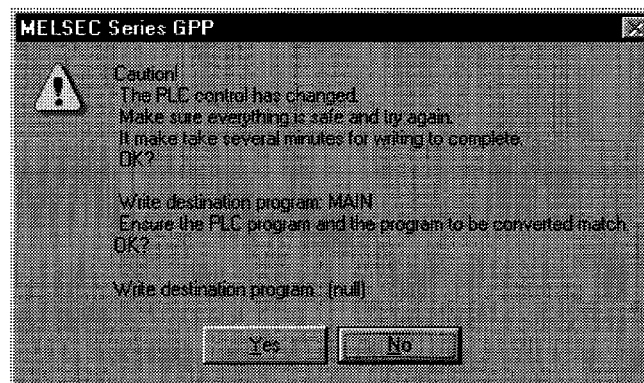
Online change is possible in the write mode and in the monitor write mode.

There are two types of online change, as described below.

- Method using the [Convert (Online change)] menu item
Select the [Convert (Online change)] menu item at conversion.
This method is intended for use when online change is not done frequently.
- Method using options setting
Set the online change setting in advance, so that online change is automatically done at conversion.
This method is intended for use when online change is done frequently.

[Operating Procedure]

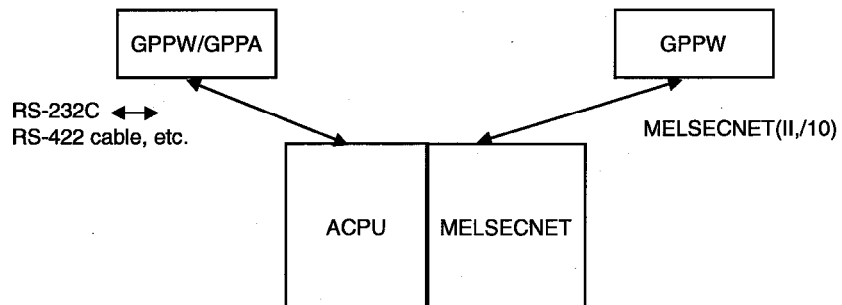
- Setting online change by menu operation before conversion.
 1. Change and correct the program.
 2. Convert the program by selecting [Convert] → [Convert (Online change)] (**[Shift] + [F4]**).
 Confirm online change in the dialog box shown below.
- Executing online change at program conversion by options setting
 1. Select [Tools] → [Options] → <<Common>> and then set the online change setting to "Write during RUN (while PLC is running)."
See Section 16.7 for details on the online change setting.
 2. Change and correct the program.
 3. Convert the program by selecting [Convert] (**[F4]**).
 Execute online change in the dialog box shown below.



POINTS

A series, QnA series

- When there is a deletion while an OUT instruction is in effect, or when the relevant device has disappeared from the program due to a device number change, the output status is held.
Forcibly switch OFF outputs that are unnecessary for control by selecting [Online] → [Debug] → [Device test].
See Section 19.1 for details on the device test.
- If the PLC is in the STEP-RUN status, online change is not possible.
- With the A series, online change with respect to other stations is not possible. With the QnA series, online change with respect to other stations is possible via MELSECNET/10.
- Before executing online change with respect to an A2CCPU or A2CJCPU, first select [Tools] → [Options] → <<Common>> sheet and set the edit object (shift forward setting) to "1 ladder block (Don't shift the program forward)" on the <<Common>> sheet after, otherwise an error will occur and the PLC will go down.
See Section 16.7 for details on the condensation setting.
- It is not possible to execute online change with respect to E²P-ROMs other than A series AnUCPU.
- With the QnA series, it is not possible to execute online change beyond the number of steps set for the steps secured for write during RUN on the <<program>> sheet (after selecting [Online] → [Write PLC] → << program>> sheet).
To solve this problem, first convert the program online, then select [Online] → [Write PLC].
In cases where the number of steps is greatly increased by executing online change, secure a large number of steps for online change in advance when writing the program.
- With the QnA series, when online change is executed with respect to the built-in RAM during boot operation, write the converted program to the IC memory card after STOP by using PLC write.
- Online change with respect to ACPUs
When online change is executed simultaneously from several GPPW/GPPAs to one ACPU, correct operation is not possible (the program may be damaged).
The same applies via C24 and Ethernet.



17.7.1 Operating conditions when FXCPU is selected

A	GnA	FX
×	×	•

When executing online change with respect to an FXCPU, carry out the operation under the following conditions.

[Hardware]

Model name : FX_{2C} series

FX, FX₂ series (version No. V2.1 or later)

FX_{ON} series (version No. V1.10 or later)

FX_{2N}, FX_{2NC} series

Memory type FX_{2N} series : Built-in RAM, option RAM cassette or option EEPROM cassette (protect switch OFF)

FX_{2NC} series : Built-in RAM or option memory board (protect switch OFF)

FX, FX₂, FX_{2C} series : Built-in RAM or option RAM cassette

FX_{ON} series : Built-in EEPROM

PLC operating state : RUN or STOP

[Program]

• Common considerations for PLC

- (1) For ladder change, no more than one ladder block can be changed at one time, and neither the number of steps before the modification nor the number of steps after the modification must exceed 127 (including NOP immediately after the ladder block, with the exception of the final block).
For program changes larger than this, use batch transfer.
- (2) There must be no addition, deletion, or changes to label P, I in the modified ladder block.
- (3) The change will not be possible if an output instruction of high-speed counter C235 to 255, or an application instruction in the range FNC90 to 98, in the ladder block before or after modification.
- (4) There must be no new insertion of a 1 ms retentive timer.

• Cautions when using FX, FX₂ (V3.07 or later) and FX_{2C} PLC

- (1) Program insertion or overwriting of a substitute instruction at the location of a new instruction is not possible.
If a substitute instruction has already been programmed, the function of this substitute instruction is lost by executing online change at that part.
- (2) With the PLC listed above, the operation speed for FNC10 to 12 (CMP, ZCP, MOV) and FNC20 to 25 (ADD, SUB, MUL, DIV, INC, DEC) instructions is made "high-speed" provided neither a word device with digit designation nor index qualification is used.
However, when online change or insertion is executed, the high-speed processing function of this part is lost.
- (3) The OFF execution time of the application instructions of FX, FX₂ (V3.07 or later) and FX_{2C} is shortened.
However, when online change or insertion is executed, the shortening function of this part is lost, and the value becomes approximately 60% of that of the FX₂ (V2.30 and earlier) series.

On switching the PLC from STOP to RUN after executing online change, functions (1) through (3) are recovered.

- Cautions when using FX, FX₂ (V2.1 to V2.30) PLC
 - (1) When additional application instructions and device numbers are written with a FX, FX₂ (V3.07 or later) PLC, these instructions are written directly into the program memory of the PLC.

The PLC continues operation while treating these instructions as not to be processed.

However, on switching the operating state of the PLC from STOP to RUN, a program check is executed and [PROG-E LED] flashes.

In a case like this, change the incompatible application instructions and device numbers, then batch transfer a correct program.
 - (2) If a device number not supported by FX, FX₂ (V2.1 to V2.30) has been designated as the operand of an application instruction, this instruction is written directly into the program memory of the PLC.

At this time, an operation error occurs because the device number for this instruction is out of range, but the PLC continues operating, treating this instruction as not to be processed.

However, on switching the operating state of the PLC from STOP to RUN, a program check is executed and [PROG-E LED] flashes.

In a case like this, batch transfer a program with a correct operand set for the application instruction.

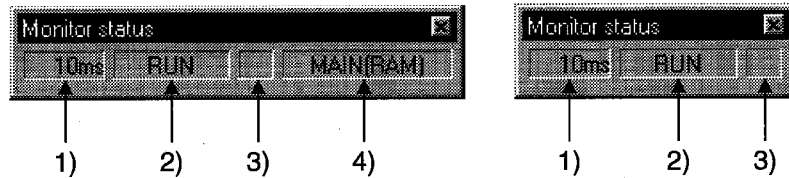
- Cautions when using an FX_{ON} (V1.10 or later) PLC
 - (1) When a device number that is not compatible with FX_{ON} is written, the message "It cannot write during RUN because order or device that cannot write in changed program during RUN is included" is displayed and changes to the program are stopped.
 - (2) Since the FX_{ON} has no pulse execution type application instructions, if any are written the message "Write bad" is displayed and changes to the program are stopped.

18. MONITORING

This section describes the monitoring of the operation processing of the PLC through an online connection between the peripheral device and PLC.

(1) Monitor mode

In the monitor mode, the monitor status dialog box shown below is displayed whether during monitoring or when monitoring it is stopped.



(1) Scan time

Indicates the maximum scan time of the monitored PLC.
For the A series, it is in 10 ms units.

(2) PLC status

Indicates the operating state of the PLC, as determined by the PLC key switch or by remote operation from a peripheral device.

(3) Monitor execution status

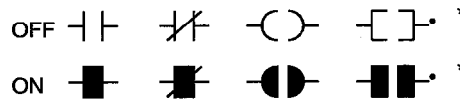
Flashes while monitoring is in progress.

(4) Active program



With the A series and FX series, the name of the program currently being executed at the PLC is displayed.
With QnA, nothing is displayed.

(2) ON/OFF status

The ladder ON/OFF status is determined as follows.



*: Only comparison instructions which are equivalent to contacts, and SET, RST, PLS, PLF, SFT, SFTP, MC, FF, DELTA, DELTAP instructions, which are equivalent to coils, are supported.
(FF, DELTA, and DELTAP are QnA series instructions.)

POINTS
<ul style="list-style-type: none"> The display of ON/OFF statuses and present values is maintained while monitoring is stopped. The indication for the monitoring of RST instructions is the ON/OFF status of the device being reset. When the device to be reset is OFF  When the device to be reset is ON  For points to note about monitoring display when the FX series is selected, see Appendix 11.




18.1 Monitoring, and Stopping/Resuming Monitoring

A	QnA	FX
•	•	•

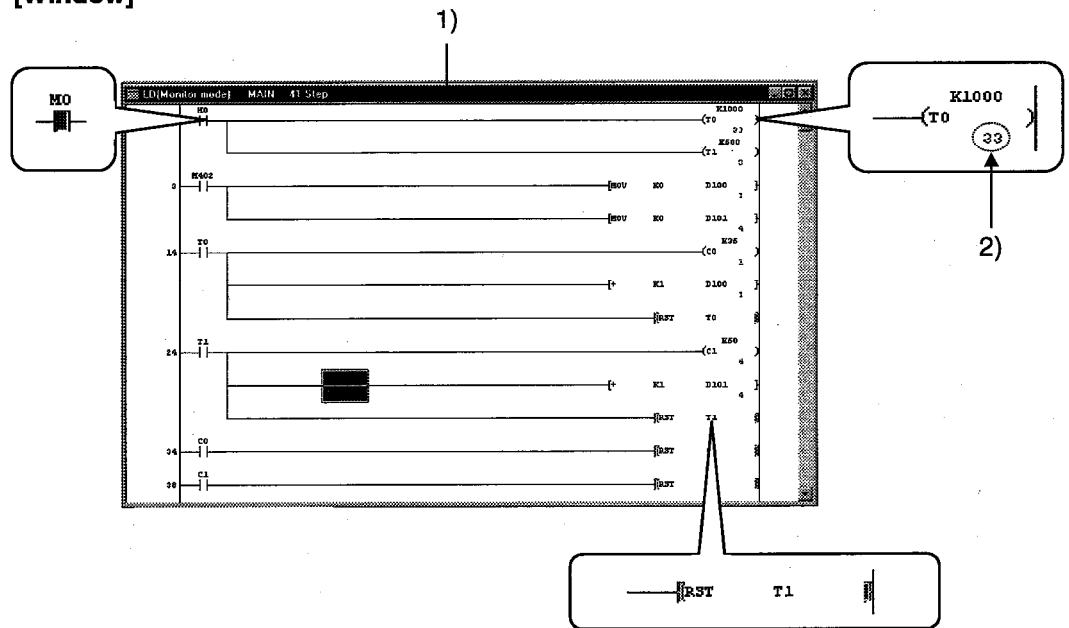
[Purpose]

Monitors the continuity, energized state, and ON/OFF states of contacts and coils while displaying the ladder. Also stops monitoring and resumes monitoring after it has been stopped.

[Operating Procedure]

- For monitoring
Select [Online] → [Monitor] → [Monitor mode], or click  ([F3]).
- To stop monitoring
Select [Online] → [Monitor] → [Stop Monitor], or click  ([Alt] + [F3]).
- To resume monitoring
Select [Online] → [Monitor] → [Start Monitor], or click  ([F3]).

[Window]



[Description]

1) LD

During monitoring, the ON/OFF states of contacts and coils and the present values of devices are displayed, and they change in accordance with the operating state of the PLC.

When monitoring is stopped the display is maintained, and is updated when monitoring is resumed.

2) Present value

Displays the present values of word devices.

The present values can be switched between decimal and hexadecimal.

For details on this switching of present values, see Section 18.4.

When monitoring a double word containing ten or more characters, it is displayed by making the characters smaller.

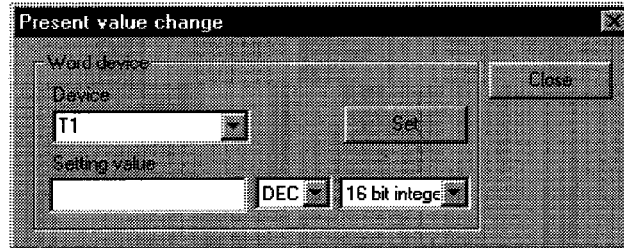
Present values can be displayed in double words or as real numbers in accordance with the data type used with an instruction.

POINTS

- In the monitor mode, check whether the status is "monitoring in progress" or "monitoring stopped" either in the monitor status dialog box display or from the Tool button display shown below.

Monitoring in progress   Monitoring stopped  

- Contacts in the ladder monitor window can be forcibly switched ON/OFF by using **[Shift]** key + double click (**[Enter]**).
- When a word device being monitored is **[Shift]** key + double-clicked (**[Enter]**), the present value change dialog box shown below is displayed.



Enter the value to be changed, then click the **[Set]** button.

- The present values of double word instructions (DMOV, DFRO, etc.) are displayed as double words.
Check the values of double words in device batch monitoring or registered device monitoring.
For details on device batch monitoring, see Section 18.5.
For details on registered device monitoring, see Section 18.6.

18.2 Monitoring/Stopping Monitoring in All Windows

A	QnA	FX
•	•	•

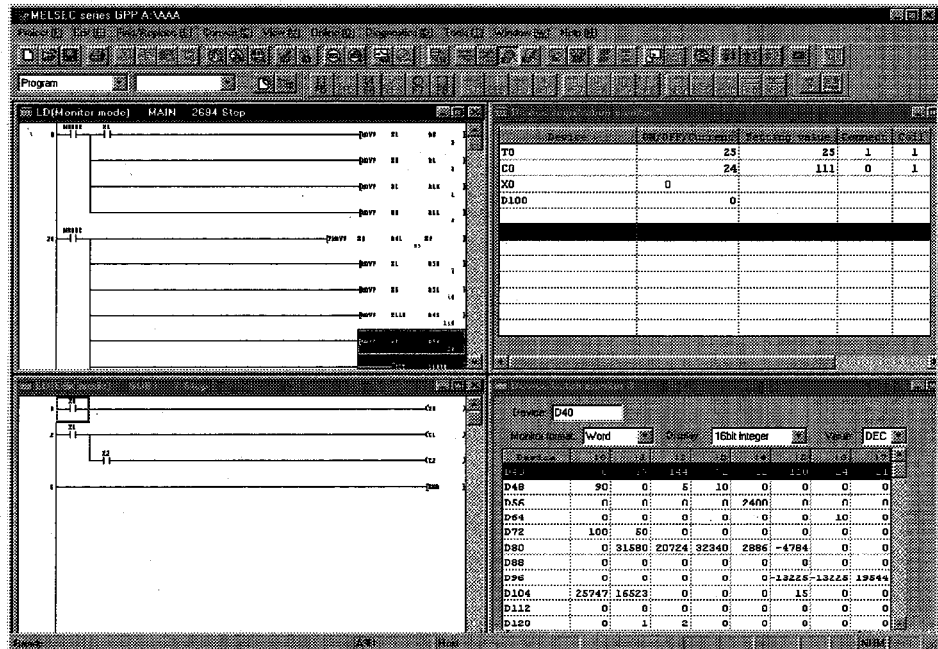
[Purpose]

Starts monitoring in all open windows: ladder monitor, device batch monitor, registered device monitor, and buffer memory batch monitor.
Also stops monitoring in all the windows where monitoring is in progress.

[Operating Procedure]

- To monitor in all windows:
Select [Online] → [Monitor] → [Start monitor (All windows)].
- To stop monitoring in all windows:
Select [Online] → [Monitor] → [Stop Monitor (All windows)].

[Window]



POINT

- When monitoring multiple windows, if the windows are overlapped they are difficult to view.
By selecting [Window] → [Tile horizontally] ([Tile vertically]), the windows are not overlapped and are easier to view.


18.3 Editing Programs During Ladder Monitoring

A	QnA	FX
•	•	•

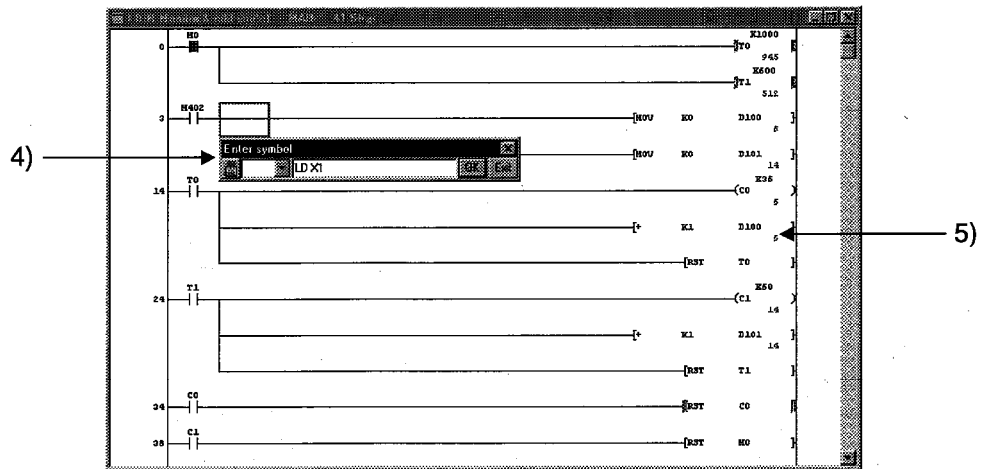
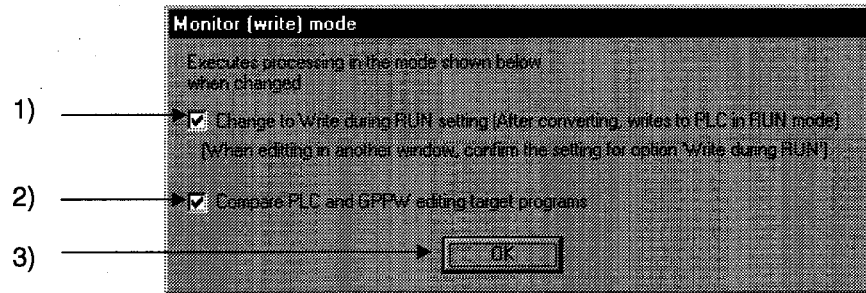
[Purpose]

Allows programs to be edited while ladder monitoring is in progress by setting the ladder window to the monitor write mode.

[Operating Procedure]

Select [Online] → [Monitor] → [Monitor (Write mode)], or click  ([Shift] + [F3]).

[Dialog Box]



[Description]

- 1) Change to Write during RUN setting (while PLC is running)".
When the checkbox is checked, on changing to the monitor write mode the online change setting is also changed simultaneously.
See Section 16.7 for details on online change setting.
- 2) Compare PLC and GPPW editing target programs
When the checkbox is checked, on changing to the monitor write mode the program in the connected PLC is verified against that at GPPW.
By verifying the program in advance, it is possible to avoid program mismatches during online change.
- 3) **[OK]** button
Clicking this button sets the ladder window in the monitor write mode.

- 4) Ladder input window
Opened to create, and change, ladder programs.
See Section 6 "CREATING CIRCUITS"
- 5) Ladder (monitor write) window
Allows ladder monitoring while displaying ON/OFF statuses and present values.

[Operating Procedure]

1. Use the "operating procedure" above while the ladder window is displayed to display the dialog box.
2. Click (1)/(2) as required.
3. Click (3).
4. The ladder window enters the monitor write mode.
5. Create/change the ladder program.
6. Convert the ladder.
If the online change setting is "Write during RUN (while PLC is running)" at this time, online change is executed on pressing "convert" (**F4**).
Online change can also be executed by pressing [Convert (Online change) (**Shift** + **F4**)].
See Section 17.7 "Executing Online Program Change (Write During RUN)"

POINTS

- If, simultaneously with switching to the monitor write mode, the online change setting is made "Write during RUN (while PLC is running)", the online change (write during RUN) setting will remain in effect thereafter, even if the write mode is changed.
- When using the FX series, program editing during ladder monitoring is only possible when a PLC that supports online change is in the online change enabled status (see Section 17.1.1.).

18.4 Switching Present Values Between Decimal and Hexadecimal

A	QnA	FX
•	•	•

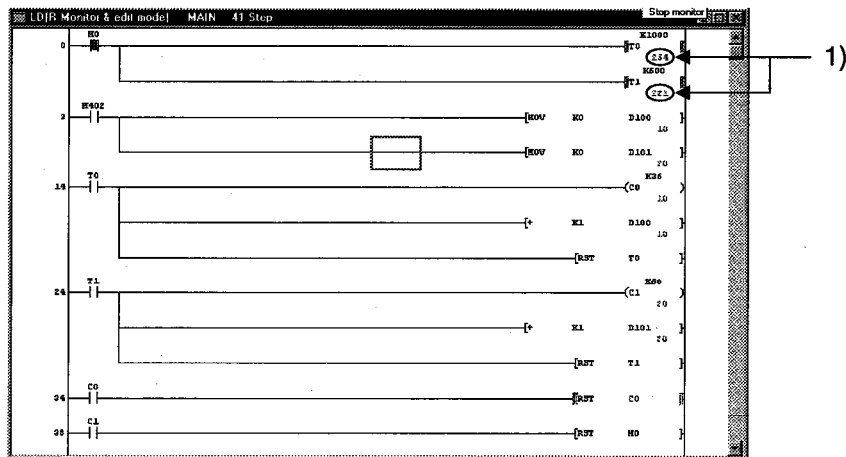
[Purpose]

Displays the device present values in the ladder monitor window in decimal or in hexadecimal format.

[Operating Procedure]

- For display in decimal:
Select [Online] → [Monitor] → [Change current value monitor (Decimal)].
- For display in hexadecimal:
Select [Online] → [Monitor] → [Change current value monitor (Hexadecimal)].

[Window]



[Description]

- 1) Device present value
Sets display in decimal or hexadecimal notation.

POINT
• Convert numbers stored in binary coded decimal (BCD) to hexadecimal.


18.5 Batch Monitoring Devices/Buffer Memories

A	QnA	FX
•	•	•

[Purpose]

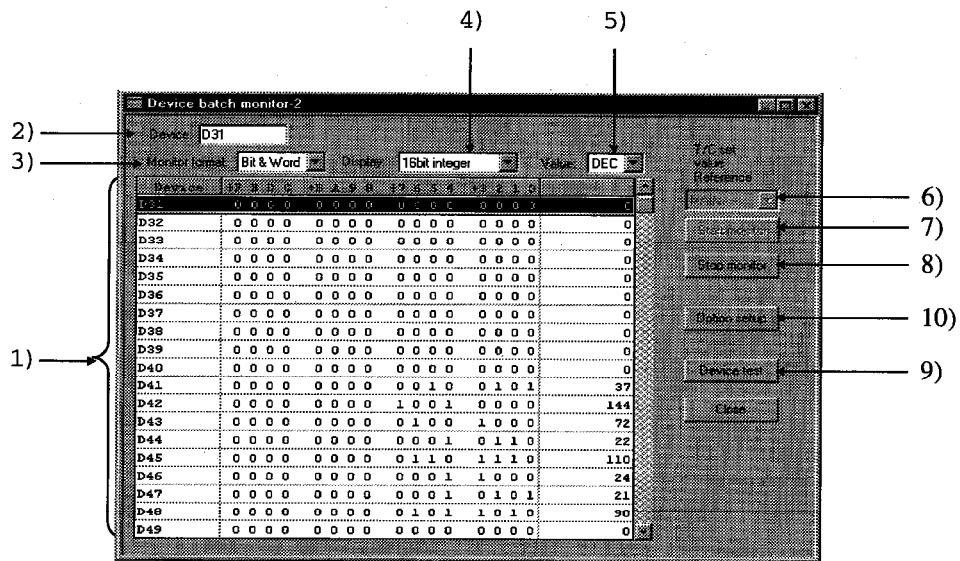
In device batch monitoring, one designated type of device is monitored.
 In buffer memory batch monitoring, a special function module is designated and its buffer memory is monitored.
 When using FXCPU, note that the only PLCs that support buffer memory monitoring are the FX_{2N} series and the FX_{2N} series.

[Operating Procedure]

- For device batch monitoring:
 Select [Online] → [Monitor] → [Device batch], or click .
- For buffer memory batch monitoring:
 Select [Online] → [Monitor] → [Buffer memory batch].

[Dialog Box]

The dialog box for device batch monitoring is shown here; the dialog box for buffer memory batch monitoring is of the same type.



[Description]

Items in parentheses relate to buffer memory batch monitoring.

- 1) Device batch monitor (buffer memory batch monitor)
 The designated device (buffer memory) is displayed in accordance with the monitor format, display, value, and option settings.
 The range not currently displayed can also be monitored by using the scroll bar. However, when T or C devices are designated for device batch monitoring, the timer/counter multi-point format is used.

2) Device (buffer memory) designation

• For device batch monitoring:

Designate the device type and actual device number.

Device designation by qualification (index, digit designation, word device bit designation) is not possible.

• For buffer memory batch monitoring:

The following is displayed for buffer memory batch monitoring.



Designate the first I/O number (lowest digit not required) of the special function module used for monitoring, and the buffer memory address (decimal/hexadecimal).

If using the FX series, enter the block number (0 to 7) of the special expansion device for the module's first address.

For the buffer memory address, enter the BFM No. (0 to 32766).

3) Monitor format

Sets the monitoring format.

When T or C is designated for device batch monitoring, the format is automatically set as timer/counter multi-point format.

Bit & WordDevices (buffer memories) are monitored as both bits and words.

Bit multi-pointDevices (buffer memories) are monitored as bits.

Word multi-point Devices (buffer memories) are monitored as words.

4) Display

Sets the word device (buffer memory) display when monitoring in the Bit & Word or Word multi-point format.

16bit integerDisplayed as 16-bit integers.

32bit integerDisplayed as 32-bit integers.

Real numberDisplayed as real numbers.

ASCII Displayed as ASCII characters

5) Value

Sets the format of numbers to be displayed when monitoring in the 16bit integer or 32bit integer format.

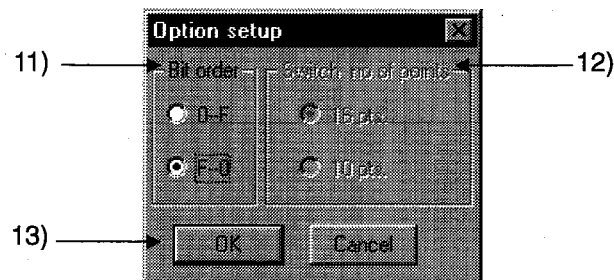
Decimal Displayed in decimal notation.

HexadecimalDisplayed in hexadecimal notation.

6) T/C set value Reference

Designates the program whose set values are to be displayed when batch monitoring T or C devices.

- 7) **Start monitor** button
Clicking this button after setting the device (buffer memory address) starts monitoring.
- 8) **Stop monitor** button
Stops device (buffer memory) batch monitoring.
- 9) **Device test** button
Clicking this button displays the device test dialog box.
See Section 19.1 "Carrying Out a Device Test"
- 10) **Option setup** button
Clicking this button displays the option setting dialog box shown below.



- 11) **Bit order**
Sets the order in which the bit devices are arranged when "Bit & Word" is selected as the monitoring format.
- 0-F
Display in ascending order from the right
Suited to the monitoring of bit devices.
 - F-0
Display in ascending order from the left
Suited to the monitoring of the bits of word devices (buffer memories).
- 12) **Switch no. of point**
Sets the number of bit device points displayed in the Bit & Word format for device batch monitoring.
- 16 pts.
16 points are displayed
Set when monitoring hexadecimal notation devices such as X and Y.
 - 10 pts.
10 points are displayed
Set when monitoring decimal notation devices such as M and L.
- 13) **OK** button
Click this button after setting the option settings.

[Monitor format]

Indicates the monitoring format for device batch monitoring and buffer memory batch monitoring.

Bit & Word format

Device	Bit	Word	Word	Word	Word	Word	Word
D40	0	0000	00000	00000	00000	00000	0
D41	0	0000	00000	00010	01001	01001	37
D42	0	0000	00000	10001	00000		144
D43	0	0000	00000	01000	10000		72
D44	0	0000	00000	00001	01100		22
D45	0	0000	00000	01100	11100		110
D46	0	0000	00000	00001	10000		24

A B C

Bit multi-point format

Device	Bit	Word	Word	Word	Word	Word	Word
D40	0000	0000	0010	0101	0000	0000	0000
D42	0000	0000	0100	1000	0000	0000	1001
D44	0000	0000	0110	1110	0000	0000	0001
D46	0000	0000	0001	0101	0000	0000	0001
D48	0000	0000	0000	0000	0000	0000	0101
D50	0000	0000	0000	1010	0000	0000	0101
D52	0000	0000	0000	0000	0000	0000	0000

A B

Word multi-point format

Device	Word	Word	Word	Word	Word	Word	Word
D40	0	37	144	72	22	110	24
D48	90	0	5	10	0	0	0
D56	0	0	0	0	2400	0	0
D64	0	0	0	0	0	0	10
D72	100	50	0	0	0	0	0
D80	0	31580	20724	32340	2886	-4784	0

A C

Timer/counter multi-point format (for device batch monitoring)

Timer/Counter	ON/OFF	ON/OFF	ON/OFF	ON/OFF	ON/OFF	ON/OFF
T0	1	1		25		25
T1	0	1		25		3
T2	0	0				0
T3	0	0				0
T4	0	0				0
T5	0	0				0

A D E F G

- A Indicates the device (buffer memory address)
In the case of bit multi-point format and word multi-point format, this indicates the first number of each line.
- B Indicates the bit ON/OFF status. (1 : ON 0 : OFF)
- C Displays word device data as 16-bit integral values, 32-bit integral values, real numbers, or ASCII characters.
- D Indicates the ON/OFF status of T or C contacts. (1 : ON 0 : OFF)
- E Indicates the ON/OFF status of T or C coils. (1 : ON 0 : OFF)
- F Indicates the set values of T or C coils.
- G Indicates the present values of T or C coils.

POINTS
<ul style="list-style-type: none"> • [Shift] key+ doubling clicking ([Enter]) at the monitored part displays the device test dialog box, enabling devices to be forcibly turned ON or OFF, and their present values to be changed. <p style="text-align: right;">See Section 19.1 "Carrying Out a Device Test"</p> <ul style="list-style-type: none"> • If device batch monitoring or buffer memory batch monitoring is started up several times, the time lapse until monitoring starts, and the monitoring interval, may become longer.


18.6 Monitoring after Registering Devices

A	QnA	FX
•	•	•

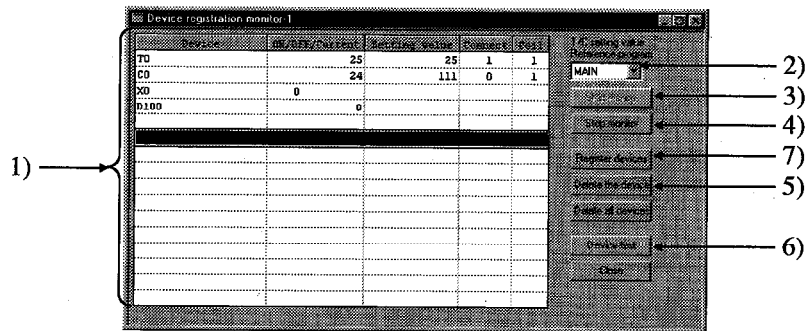
[Purpose]

Simultaneously monitors devices at some distance from each other within the ladder, or multiple types of device, in the same display.

[Operating Procedure]

Select [Online] → [Monitor] → [Device registration], or click .

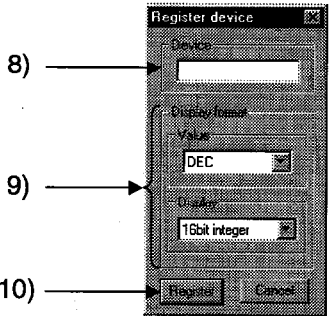
[Dialog Box]



[Description]

- 1) **Registered device monitor**
 Displays up to 64 registered device points in accordance with the device type.
 Doubling clicking (**[Enter]**) on a vacant field opens the device registration dialog box.
 T and C devices are displayed in the counter/timer format.
 32-bit integral values are displayed with "D" appended after the device as follows: D100(D).
 For real values, (E) is appended and for ASCII characters, (S) is appended.
- 2) **T/C setting value Reference program**
 Sets the program whose set values are to be displayed when T or C values are registered and monitored.
- 3) **Start monitor** button
 Click this button after completing device registration to start monitoring.
- 4) **Stop monitor** button
 Click this button to stop monitoring.
- 5) **Delete all device** button
 Clicking this button cancels the registration of a device.

- 6) **Device test** button
Clicking this button displays the device test dialog box.
see Section 19.1 "Carrying Out a Device Test"
- 7) **Register devices** button
Clicking this button displays the device registration dialog box.



- 8) **Device**
Sets the device to be registered.
- 9) **Display format**
Set when word devices are monitored.
Numeric values can be set in decimal or hexadecimal format.
The available display settings are: 16-bit integral value, 32-bit integral value, real number, ASCII characters.
- 10) **Register** button
Click this button after setting the necessary settings.

[Monitor format]

	Device	ON/OFF/Current	Setting value	Connect	Coil
Counter/timer format →	T0		25	1	1
	C0		24	0	1
Bit format →	X0	0			
Word format →	D100	0			
	A	B	C	D	

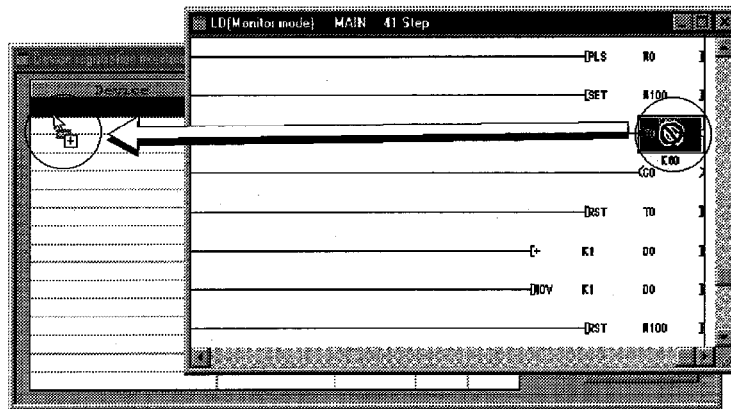
- A Indicates the registered device.
- B Indicates the ON/OFF status or present value of the registered device.
(1 : ON 0 : OFF).
- C When T or C devices are registered, the set value is indicated.
- D When T or C devices are registered, the ON/OFF statuses of contacts and coils are indicated (1 : ON 0 : OFF)

[Operating Procedure]

1. Click 7) to display the device registration dialog box.
2. Set 8) and 9) in the device registration dialog box.
3. Click 10): the devices are displayed at 1).
4. By following steps 2 and 3, register all the devices to be monitored.
5. On completion of device registration, close the device registration dialog box.
6. Click 3).

POINTS

- Devices can be registered by dropping and dragging from the ladder monitor window. It is also possible to batch drag and drop a range selected by **[Shift]** key + clicking from the ladder cursor position.



- When registered device monitoring, device batch monitoring, or buffer memory batch monitoring is started up several times, the time lapse until monitoring starts, and the monitoring interval, may become longer.
- **[Shift]** key + double clicking (**[Enter]** key) on a device name in the registration monitoring area displays the device test dialog box.

See Section 19.1 "Carrying Out a Device Test"

- With the QnA series, apart from actual device numbers, it is also possible to register words with bit designations, bit designated within a word, index qualifications, and buffer memories. An example of device registration is given below.

Device to be Registered	Example
Monitoring M0 to M15 by digit designation	K4M0
D100F that monitors b15 of D100 using bit designation	D100.F
Monitoring Xn by index qualification with Z1	X0Z1
Monitoring a special function module buffer memory with first I/O number 40 and address K30(H2E)	U4\G30

See the QnACPU Programming Manual (Common Instructions).

18.7 Setting Monitor Conditions/Stop Conditions

A	QnA	FX
X	•	X

[Purpose]

Sets the conditions under which monitoring is started and stopped on the ladder monitor window.

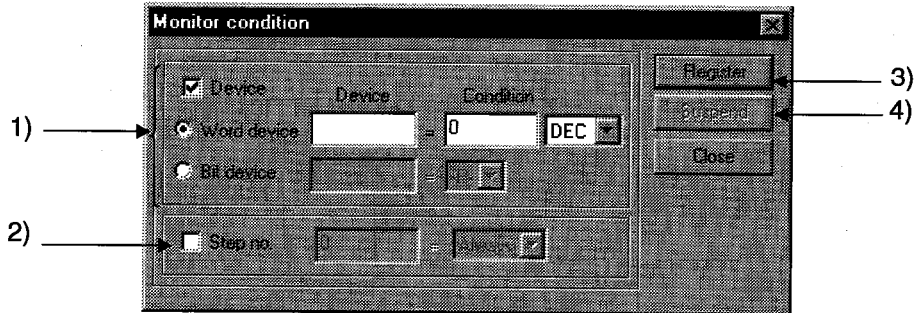
This setting is not possible with the A series.

[Operating Procedure]

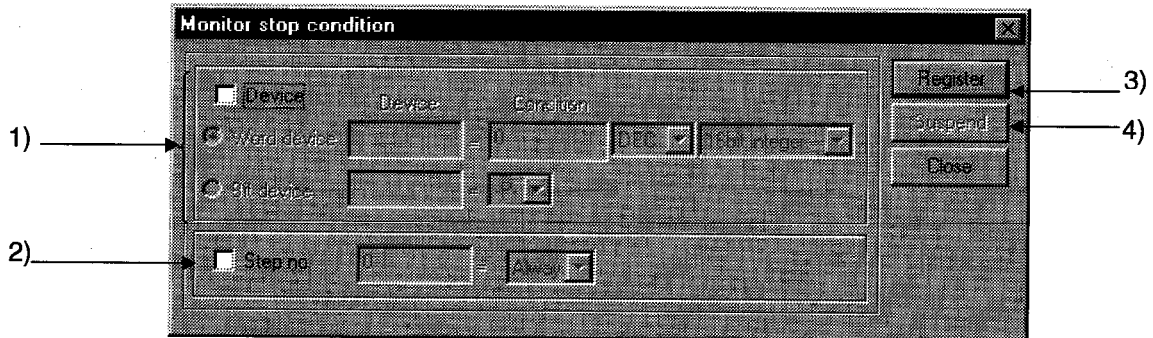
- For setting monitor conditions:
Select [Online] → [Monitor] → [Monitor condition setup].
- For setting monitor stop conditions:
Select [Online] → [Monitor] → [Monitor stop condition setup].

[Dialog Box]

Monitor condition dialog box



Monitor stop condition dialog box



[Description]

1) Device

Sets a device condition as the monitor condition (monitor stop condition). The device that is to act as the condition can be a word device or bit device.

⊙ Word device

Set the word device and numeric value (decimal or hexadecimal integral value) that is to be the condition.

For a stop condition, set a 16-bit integral value, 32-bit integral value, or real number.

⊙ Bit device

Set a bit device and condition (-P- : at leading edge -F- : at trailing edge)

- 2) Step no.
Sets, as the condition, the execution status of a designated step number in the program.
Select the execution status from among the following:
-P-..... Transition from OFF to ON
-F-..... Transition from ON to OFF
ON..... During ON status
OFF..... During OFF status
Always..... At all times during execution (if the relevant step is jumped the condition is not satisfied)
- 3) **Register** button
Clicking this button registers the set condition.
- 4) **Suspend** button
Clicking this button cancels the registered condition.

POINT

- If both device and step No. conditions are set at the same time, the monitor condition (monitor stop condition) is met when both are satisfied.

18.8 Program List Monitor

A	QnA	FX
x	•	x

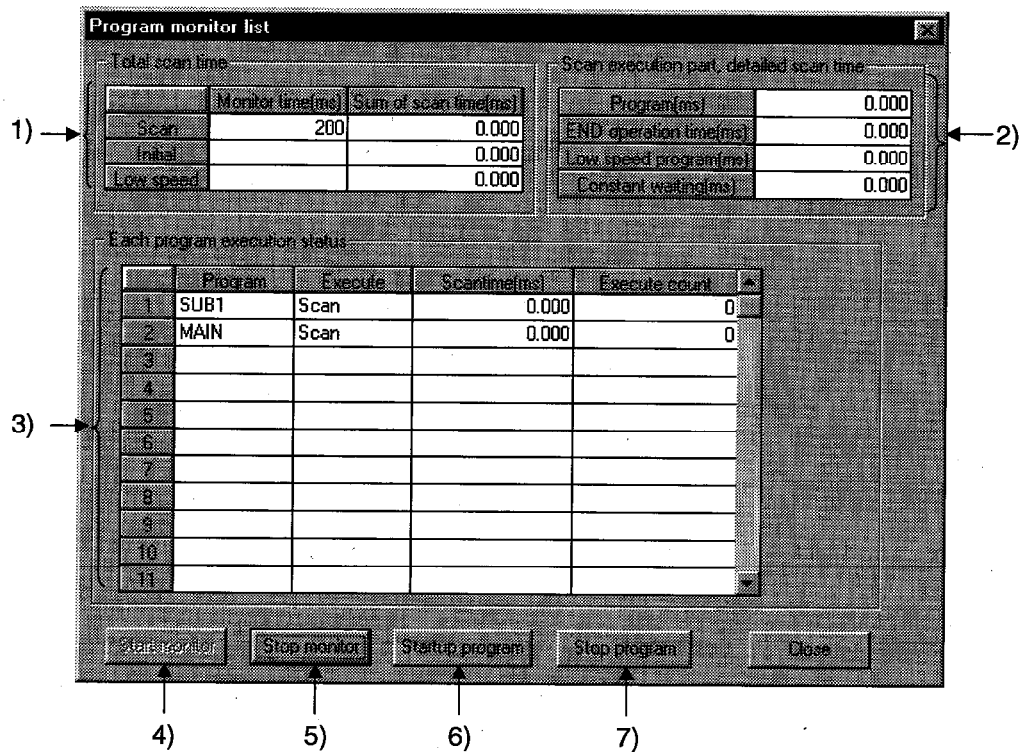
[Purpose]

Displays the processing time of the program currently being executed.

[Operating Procedure]

Select [Online] → [Monitor] → [Program monitor list].

[Dialog Box]



[Description]

- 1) Total scan time

Indicates the time set for the WDT setting in the PLC RAS settings of the PLC parameters.

 - Monitor time

Indicates the WDT times for scan programs, initial programs, and low-speed programs.

If the scan time exceeds the indicated value, a WDT error is indicated at the CPU.
 - Sum of scan time

Indicates the total time for each item in "Scan execution part detailed scan time."

- 2) Scan execution part,detailed scan time

Indicates the processing execution time for each item.

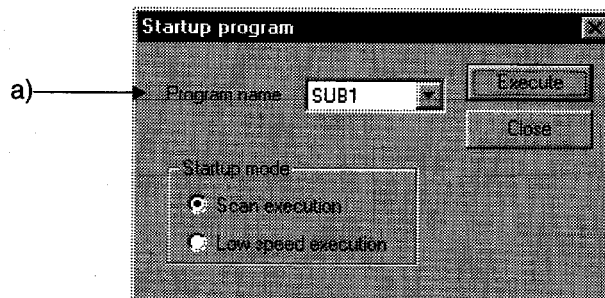
"Constant" indicates the constant scan waiting time when the setting is for constant scan.

However, if a low-speed program execution time is also set, this becomes 0.000 ms.

- 3) Each program execution status
Indicates the execution status of the program set in program setting in the PLC parameters.
- Program
Indicates program names in the order set in the parameters.
 - Execute
Indicates the program type set in the parameters.
 - Scan time
Indicates the actual scan time (present value). In the program stop (standby) status, the scan time is indicated as 0.000 ms.
 - Execute count
Indicates the number of times a program has been executed, taking the count when counting starts to be "0."
(When the maximum count of 65536 is reached, the count returns to 0.) The count is retained during the program stop status.
- 4) **Start Monitor** button
Clicking this button starts a stopped program.
- 5) **Stop tMonitor** button
Stops monitoring.
- 6) **Startup program** button
Clicking this button displays the dialog box shown below.

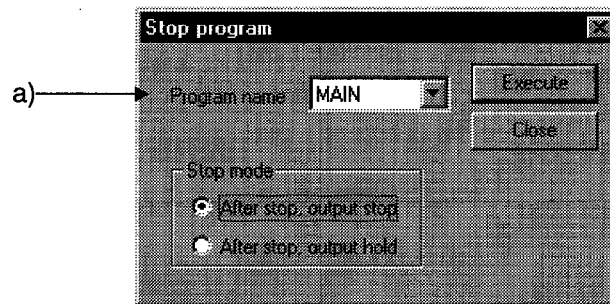
[Dialog Box]

Program startup dialog box



- a) Program name
Only programs that have been set in PLC parameter program selection can be selected.
It is not possible to type any required program name.

Program stop dialog box



- a) Program name
Only programs that have been set in PLC parameter program selection can be selected.
It is not possible to type any required program name.

18.9 Monitoring the Interrupt Program List

A	QnA	FX
X	•	X

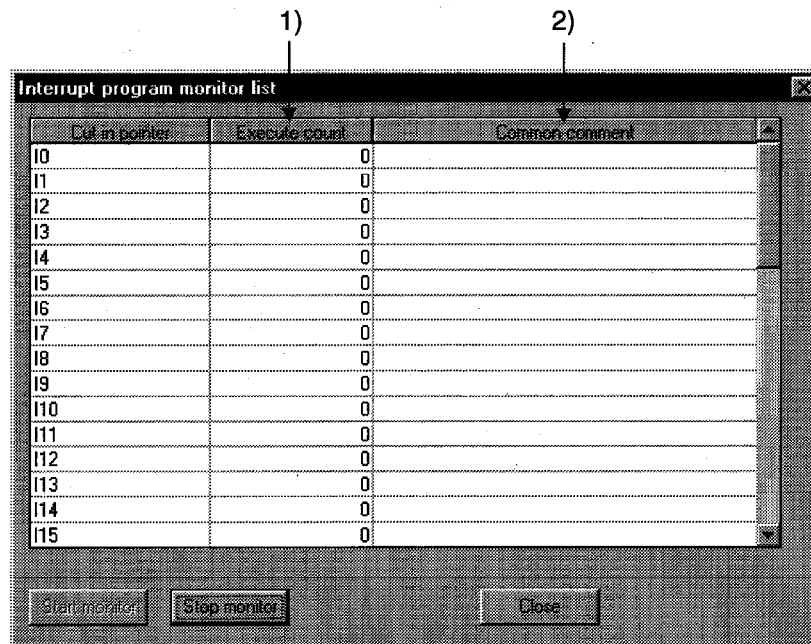
[Purpose]

Indicates the number of times interrupt programs have been executed.

[Operating Procedure]

Select [Online] → [Monitor] → [Interrupt program monitor list].

[Dialog Box]



[Description]

1) Execute count

Indicates the number of times a program has been executed, taking the count when counting starts to be "0."

(When the maximum count of 65536 is reached, the count returns to 0.)

The count is cleared to zero when the operating state of the PLC is set to RUN.

2) Common comment

Indicates comments created as device comments.

Only common comments can be indicated.

18.10 Measuring Scan Time

A	QnA	FX
X	•	X

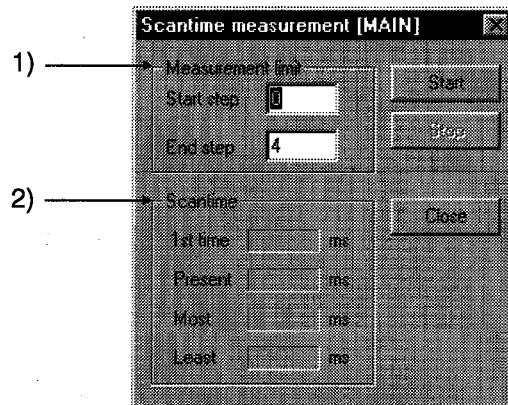
[Purpose]

Indicates the processing time for any required section of program.

[Operating Procedure]

Select [Online] → [Monitor] → [Scan time measurement].

[Dialog Box]



[Description]

- 1) Measurement limit
Set so that the start step is smaller than the end step.
- 2) Scantime
It is not possible to measure times that straddle different program files.
If the measured time is within 0.100 ms, it is indicated as 0.000 ms.

POINT

Selection range

- 1 Move the cursor to a position outside the left bus line and **[Shift]** key+ click to set the range.
During dragging the selected range turns blue. (END instructions cannot be selected.)
- 2 On selecting [Online] → [Monitor] → [Scan time measurement], the start step and end step are set in the part of the program defined by the selected range.

18.11 Executing Sampling Trace

A	QnA	FX
•	•	•

[Purpose]

Samples the contents of the designated device (ON/OFF status and present value) at constant intervals, and stores the result in the sampling trace area of the memory.

Reads and displays this stored data.

By using this function, it is possible to follow changes in the data contents of the designated device, and to monitor the ON/OFF timing of contacts and coils.

[Operating Procedure]

- 1 Set the trace count on the <<Conditions>> sheet.
- 2 Set the trace point on the <<Conditions>> sheet.
- 3 Set the trigger point on the <<Conditions>> sheet.
(When executing an STRA instruction, and when the trigger operation is at a peripheral device, set detailed settings.)
- 4 Set the device setting on the <<Trace data>> sheet.
- 5 Write the set data to the PLC.
- 6 Select Start trace on the <<Execute and status>> sheet.
- 7 Write the execution result after tracing to the PLC.
- 8 Read the result with the Trace result button.

POINTS

- When using AnNCPU, set the memory capacity in the PLC parameters.
- The setting data and trace result data is in GPPW format and there is therefore no compatibility with GPPA or GPPQ data.
- When using the A series, it is not possible to set Execute trigger on the <<Execute and status>> sheet, or the Trace data (Conditions + Results) storing dest.
- When using the A series, it is not possible to set the Information with trace or trigger point setting on the <<Conditions>> sheet.
- When using extension file registers with AnACPU or AnUCPU, there may be blocks that cannot be used, depending on the memory cassette.
Block numbers other than No. 0 to 24, 29 to 40, and 45 to 48 of A3AMCA-96, A4AMCA-128, and A4AMCA-128E cannot be used.

18.11.1 Setting execution & status display

A	QnA	FX
•	•	•

[Purpose]

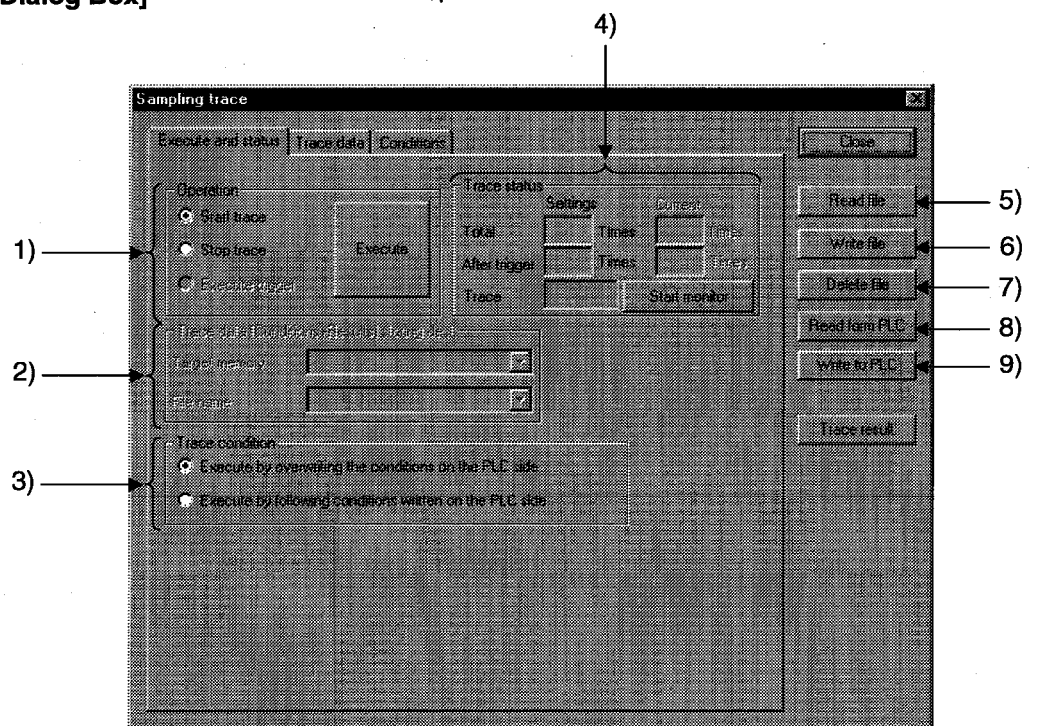
Facilitates operations such as those for trace start and trigger execution when "When a peripheral trigger operations" is set for the trigger point setting in the trace condition settings.

Sets the storage destination for trace data (condition + result).

[Operating Procedure]

Select [Online] → [Trace] → [Sampling trace].

[Dialog Box]



[Description]

1) Operation

When using the A series, trigger execution cannot be set.
Clicking the **Execute** button, starts trace status monitoring.

2) Trace data (Conditions + Results) storing dest (QnA series only)

Select the ROM, RAM of the IC memory card.
Designate an arbitrary name for the file name for storage.
The currently active sequence program name is displayed as the default.
This setting is not possible with the FX series.

3) Trace condition

Sets whether the trace is to be executed using the conditions set at the peripheral device or the settings at the PLC side.

- 4) Trace status
Indicates the current trace status.
<Total count>
Indicates the setting count after the trigger presently being executed, and the present trace count.
The count set at the GPPW side is displayed.
In cases where, for example, "Execute by following conditions written on the PLC side" is selected, the field is blank.
(For example when the count is undefined.)

<Count after trigger>
Indicates the setting count after the trigger currently being executed, and the execution count after the present trigger.

<Trace status>
Indicates the execution status of the present trace.
- 5) Read file
Reads the sampling trace condition + trace result.
- 6) Write file
Writes the sampling trace condition + trace result.
- 7) Delete file
Deletes the sampling trace condition + trace result.
- 8) Read from PLC
Reads the sampling trace condition + trace result to the PLC.
- 9) Write to PLC
Writes the sampling trace condition + trace result to the PLC.

POINTS

- Points to check at trace execution

If sampling trace cannot be executed, check the following points.

<Common points>

If the communicating PLC is of a different type, the trace cannot be executed.
Trace execution status check (trace execution command cannot be given during trace)

<Check when conditions are overwritten at the PLC side>

Device check (checks for consistency with the parameter settings)

Trace condition setting check (checks for omissions in trace condition setting, and inconsistency)

Capacity check (checks if the trace result can be accommodated in the setting capacity)

The PLC parameter and peripheral device parameter settings are checked. If there is a mismatch the trace cannot be executed.

Applicable memory check (checks whether the selected applicable memory can be used or not)

File name check (checks if a file name is set)

Extension file register block use possibility check (checked for AnACPU and AnUCPU)

- When the PLC type is changed, the sampling trace data written to file (settings + results) are deleted. (Even if the project is not saved, they are deleted and cannot be recovered.)

Example: A2N → A3A Deleted

A2A → A3A Not deleted

18.11.2 Setting trace data

A	QnA	FX
•	•	•

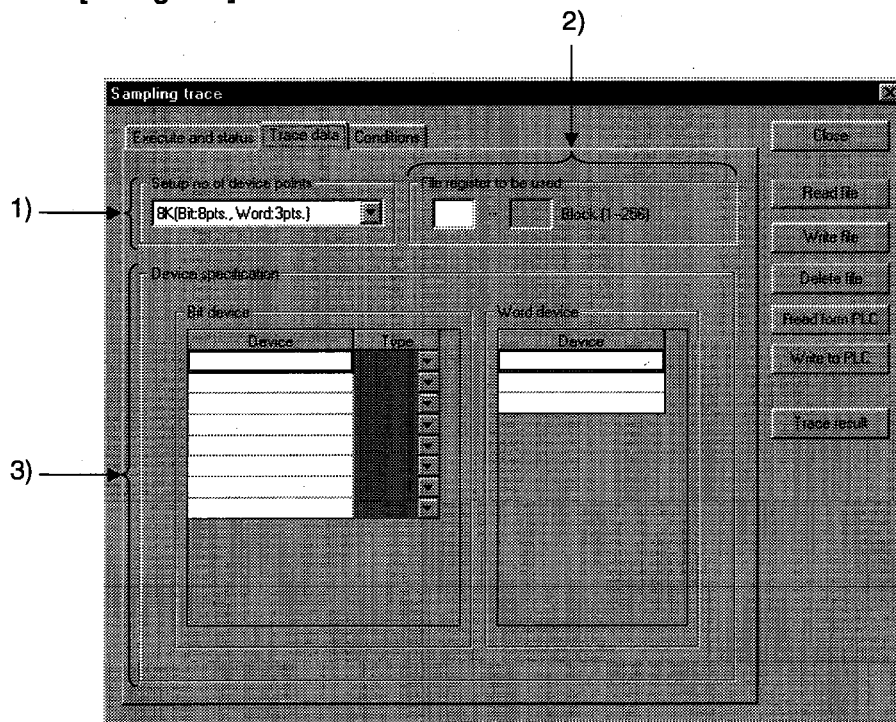
[Purpose]

Sets devices for sampling trace (bit devices, word devices).

[Operating Procedure]

Select [Online] → [Trace] → [Sampling trace] → <<Trace data>> sheet.

[Dialog Box]



[Description]

- 1) Setup no. of device points
Set for AnACPU and AnUCPU only.
The relationship between the number of points and capacity in the settings is as follows.
8 K (8 bit points, 3 word points 1 block)
15 K (16 bit points, 6 word points 1 block)
23 K (16 bit points, 10 word points 2 blocks)
- 2) File register to be used
Designates the number of the extension file register used to store result data when executing an online sampling trace with AnACPU or AnUCPU.
For the setting, designate the first number of the extension file register.

3) Device specification

Sets the devices (bit devices, word devices) for executing a trace.

The devices, and number of points, that can be set differ for each PLC.

	Bit Devices That can be Set	Word Devices That can be Set	Devices That can be Registered
AnNCPU	8 points	3 points	X,Y,M,L,S,B,F,T,C T,C,D,W,R,A,Z,V
AnACPU AnUCPU	Depends on the number of device points setting		
QnACPU Required memory capacity: up to 60K	50 points The maximum number of input characters is 16 characters (bit device)	50 points The maximum number of input characters is 17 characters (bit device)	Extension designation, bit designation for word devices with index qualification Digit designation for bit devices Indirect designation is not possible.
FXCPU ^{*1}	10 points	3 points	Contacts : X,Y,M,S,T,C Coils : T,C(Y,M ^{*2}) Present values : T,C,D,V,Z

*1 : The PLCs that support sampling trace are the FX₂, FX_{2C}, FX_{2N}, and FX_{2NC} series.

*2 : It is also possible to register Y and M as coils, but - depending on the details of operation of the PLC the ON/OFF operation of the coil may not be reflected in the sampling results.) Therefore, Y and M are usually registered as contacts.

POINTS

- About M, L, S of A series CPUs:
When using an ACPU, M, L, and S devices are automatically corrected in accordance with the parameters when they are input and displayed in the device setting field.
After registration, even if, for example, there are changes in the parameter settings, on redisplay the display is automatically corrected in accordance with the parameters.
- About the type setting field:
Setting is not possible if there has been no device input, or if devices other than T, C have been input.

18.11.3 Setting trace conditions

A	QnA	FX
•	•	•

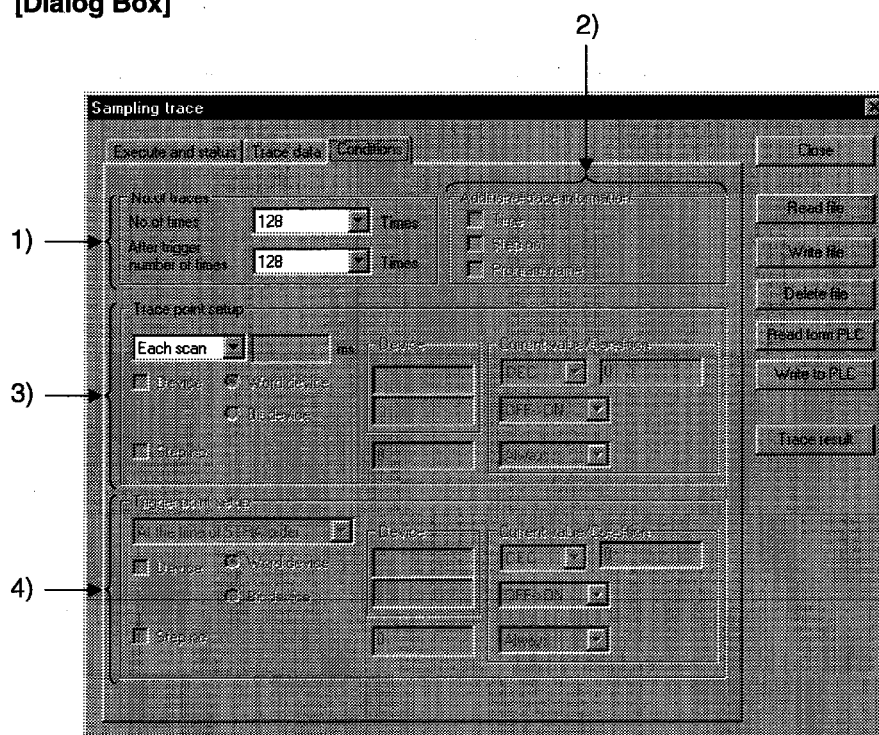
[Purpose]

Sets trace counts, trace points, and trigger points.

[Operating Procedure]

Select [Online] → [Trace] → [Sampling trace] → <<Conditions>> sheet.

[Dialog Box]



[Description]

- 1) No. of traces
Set so that the total count is larger than the count after the trigger.
When using the A series, the count can only be selected from the menu.
With the QnA series, any required count up to 8192 can be set.
With the FX series, it is not possible to set a total count. The count after the trigger can be set in the range of 1 to 512 from the menu, or alternatively any required count can be set.
- 2) Additional trace Information (QnA series only)
As information when the trace is executed, the time, step, and program name can be displayed with the results.
- 3) Trace point setup
With A series
The per time setting range is 10 to 2000 ms.
Settings can be made in 10 ms units.

With QnA series

The per time setting range is 5 to 10000 ms.
Settings can be made in 5 ms units.

With FX series

When a per scan setting is made, it is not possible to make settings in the detailed setting field.

When per scan is designated, the execution of the END instruction by the PLC becomes the trace point.

The per time setting range is 10 to 2000 ms.
Settings can be made in 10 ms units.

Detailed setting

It is possible to set both a device and step number as the trace point at the same time.

In this case, sampling trace is executed with an AND condition.

4) Trigger point setup (QnA series, FX series only)

Sets the trigger (condition) that is the origin (0 point) for trace execution.

In the input area, only those input areas that are required for the selected trigger condition are valid.

With FX series

Read the expressions associated with the sampling trace function of FXGP(DOS) or FXGP(WIN) and the expressions associated with GPPW in the following way.

FXGP(DOS), FXGP(WIN)	GPPW
Without trigger	→ Win trigger actuated
Win trigger	→ Detailed settings

For details on the detailed settings, see the trace point settings.

POINT

- **Note on repeated execution of a sampling trace:**
If a trace count of 2000 is set and the trace is actually completed at a count of 1000, note that the results of 1000 traces from the previous execution will remain.