MITSUBISHI

# GPP Function software for Windows SW4D5C-GPPW-E(V), Ladder Logic Test Function software for Windows SW4D5C-LLT-E(V)

OPERATING MANUAL

## Starting GPPW

MELSEC

Mitsubishi Programmable Logic Controller

# SAFETY PRECAUTIONS

**(Read these precautions before using.)**

- When using Mitsubishi equipment thoroughly read this manual and the associated manuals referenced within.

- Also pay careful attention to safety and handle the module properly. These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the PLC system safety precautions.

These SAFETY PRECAUTIONS classify the safety precautions into two categories: "DANGER" and "CAUTION".

| | |
|---|---|
| **⚠ DANGER** | Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly. |
| **⚠ CAUTION** | Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly. |

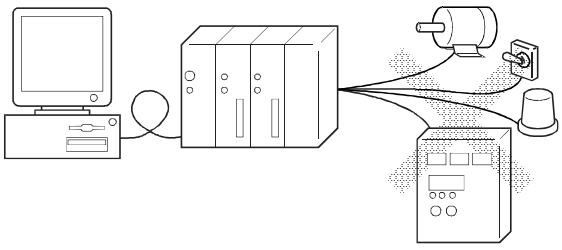
Depending on circumstances, procedures indicated by ⚠ CAUTION may also be linked to serious results.
In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always make it available to the end user.

## USE PRECAUTIONS

### ⚠ DANGER

- This manual is an introduction the GPPW module and is intended to facilitate its use.
  Be familiar with GPPW functions before connecting the system control units (CPU, I/O unit, special unit to external equipment) for learning.
  Operation mistakes could cause errors or damage to the module.

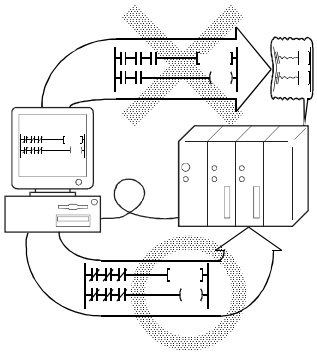


Be sure to observe the following when using the control unit for the system.

## DESIGN PRECAUTIONS

### ⚠ DANGER

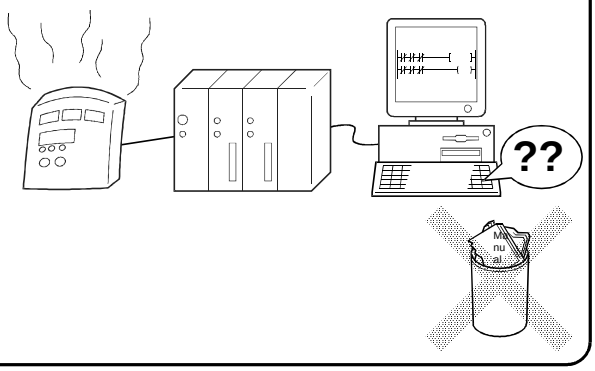
- Install an interlock circuit external to the PLC that keeps the entire system safe even during data change, program change or status control from GPPW to the PLC in operation.
  Also, determine corrective actions, etc. between GPPW and PLC CPU for occurrence of data communications errors due to cable contact and other faults in online operation of GPPW and PLC CPU.

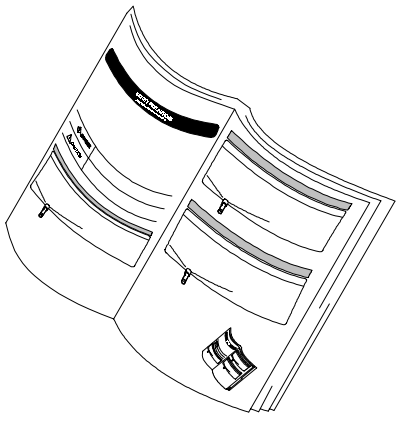


## STARTUP AND MAINTENANCE PRECAUTIONS

### ⚠ CAUTION

- Carefully read the manual before starting the online operation which is performed by connecting the peripheral device to the running CPU module (especially program modification, forced output, running status change). Particularly for remote access, start it after fully confirming safety.
  Operation mistakes could cause errors or damage to the module.



## Revisions

*The manual number is noted at the lower left of the back cover.

| Print Date | *Manual Number | Revision |
|---|---|---|
| Sep. 1999 | IB(NA)-0800057-A | First edition |

# Introduction

Thank you very much for purchasing Mitsubishi General Purpose PLC MELSEC Series.

This manual "Starting GPPW" is intended for first-time users of the Windows version GPP Software Package GPPW.

This manual uses screen display examples and figures to help you understand procedures for installation on the personal computer, start-up operations, basic principles of GPPW, circuit creation and editing.

With this manual, anyone can easily master the operation of the GPPW.

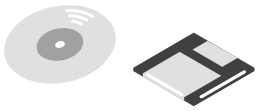
To help you master operations with the GPPW, this manual demonstrates the most frequently used GPPW functions.

# Parts of this Manual

This manual consists of the following five parts.

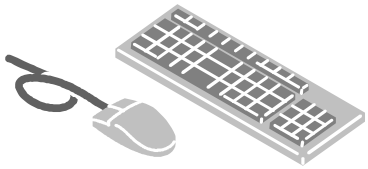
## Part 1 Getting started

Explains GPPW features, installation procedures, GPPW system configuration and operation flow.



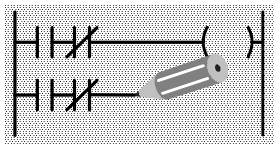
## Part 2 Basics

Explains mouse basic operations, GPPW screen configuration and GPPW basic principles.



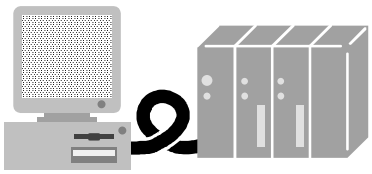
## Part 3 Offline operations

Explains operations required for circuit creation, the method and editing of circuit creation and comment writing, and printing.



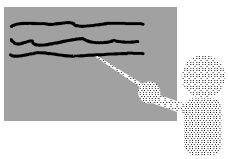
## Part 4 Online operations

Explains basic operations for online operation.



## Part 5 Useful functions

Explains useful functions for GPPW operations.



# How to use this manual

Sections in this manual are assigned to even page numbers. The section titles show actual operations.

Operations in this manual are described as ACPU for PLC series.

Function keys are described as GPPQ type. (Refer to Part 5, 1.2.)

**Chapter number and title**
Describes the chapter number and the title.

**Part number and title**
Describes the part number and the title.

## 3 Offline operations

### 1 Creating a circuit

A PLC CPU is only a box if a program is not installed.
It is necessary to create a circuit (program) that controls the PLC.
This chapter describes creating the project required for the circuit and its reading.

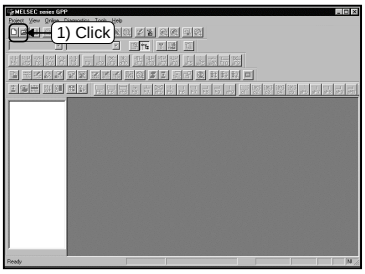
**Chapter details**
Describes the chapter details.

### 1.1 Creating a new project

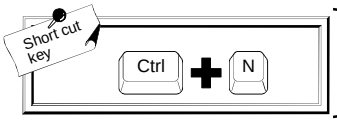
This section describes operations for setting PLC series and PLC type and creating a new project.
Only one project can be opened with GPPW.
To open and edit multiple projects, it is necessary to start multiple GPPWs.

**Section number and title**
Describes the section number and the title.

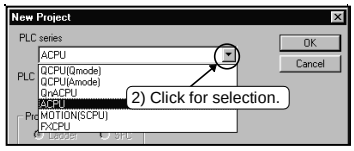
**Section details**
Describes the section details.




1) Click on the tool bar.




**Short cut key**
Describes the short cut key on the keyboard that allows direct access.



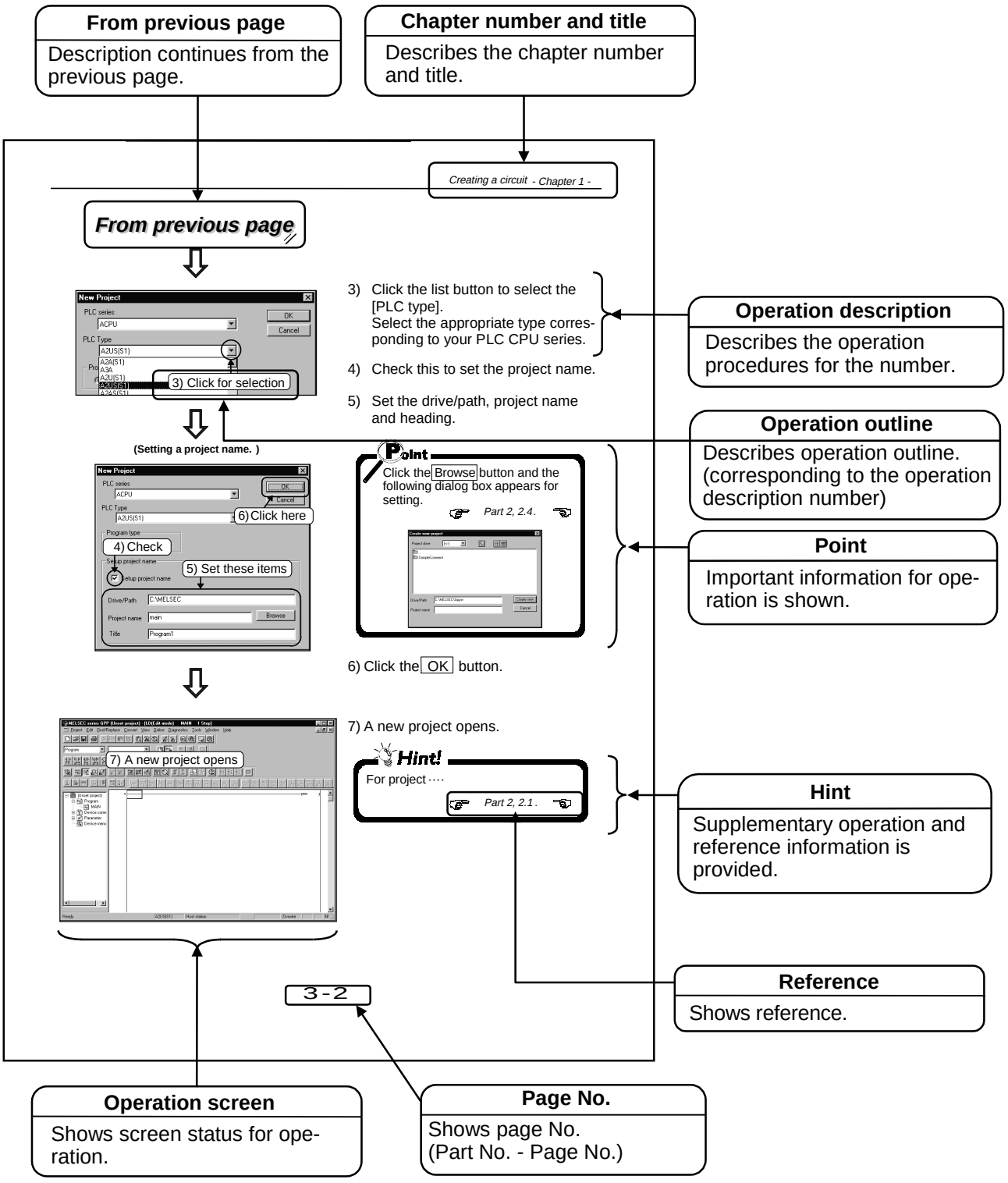

2) Click the [PLC series] from the list buttons.
Select the appropriate type corresponding to your PLC series.
Choose "ACPU" here

*To the following page*

3 - 1

**To the following page**
Description continues to the following page.

- Operation outline number corresponds to the operation description number.
- The left half of the page shows screens for operation procedures. The right half of the page shows operation procedures for the screens.
- Keys in this manual show general key descriptions available for any type of keyboard.



# [Contents]

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# Offline operations

## 5 Useful functions

### 3 Using Logic Test functions



## Appendix

### Appendix



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# Abbreviation

- **GPPA**
  Abbreviation of Type SW □ IVD-GPPA GPP software package.

- **GPPQ**
  Abbreviation of Type SW □ IVD-GPPQ GPP software package.

- **MEDOC**
  Abbreviation of Type SW □ IM-MEDOC software package.
  * MEDOC is a programming software package used out of Japan.

- **GPPW**
  Abbreviation of Type SW4D5C-GPPW software package.

- **Windows**
  Abbreviation of Microsoft Windows 95 , Microsoft Windows 98 and Microsoft Windows NT Work Station 4.0.

- **Logic Test function (LLT)**
  Abbreviation of Type SW4D5C-LLT ladder logic test tool software package.

MEMO

# Part 1



# Getting Started

**1. Getting Started**

# 1 Getting started

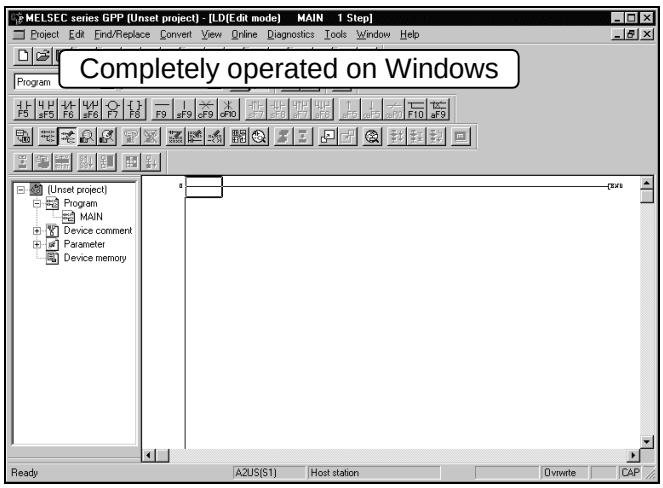
GPPW is a programming software package that operates on Windows.
Since it is used on Windows machines, operation performance is much better than the conventional GPPA and GPPQ.
This chapter explains information you need for GPPW operation.

## 1.1 What GPPW can do

This section explains functions and features of GPPW.

### ——Easy operation on Windows——

The program is easy to understand and can be operated on Windows.



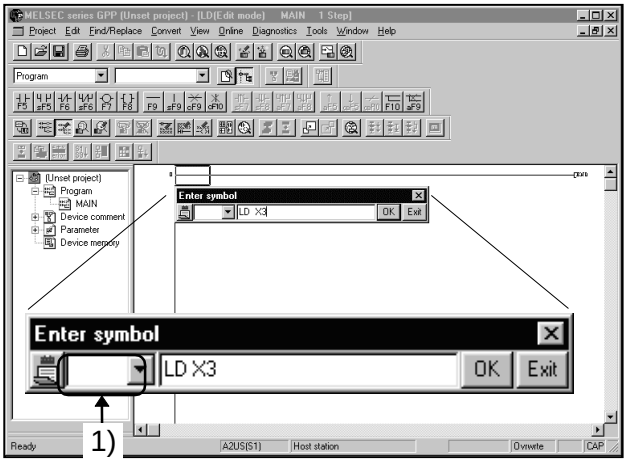

Circuits can be easily and quickly created with the tool bar, the menu bar, the program list window.

**Hint!**

Since the program is operated on Windows, you can easily cut, copy and paste between projects.

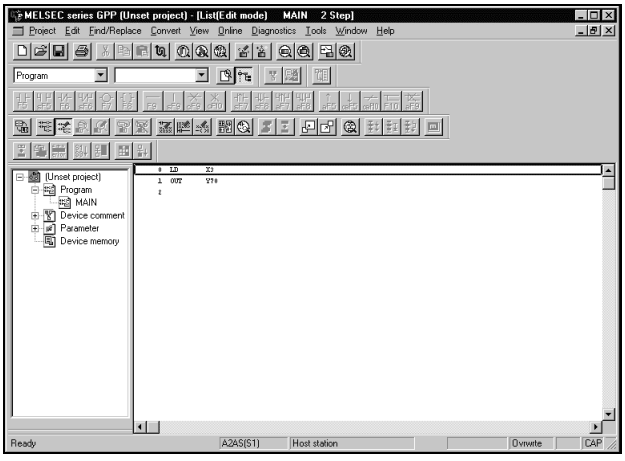
## ——List expressions (mnemonic language)/lists/SFCs can be input——

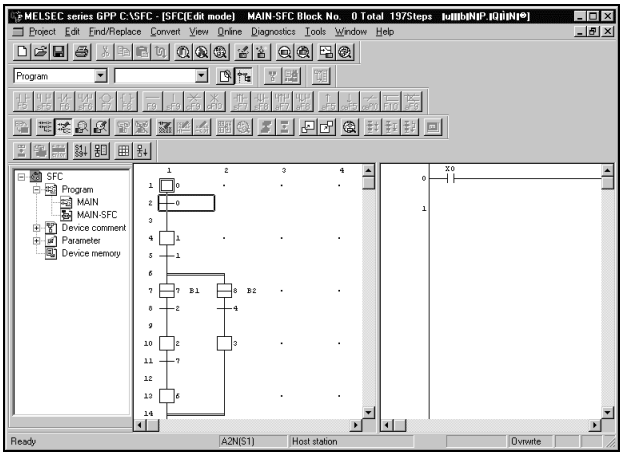
List expressions may be entered either in the circuit input window or list input window to create circuits.
Circuits can also be created with tool buttons, menus or function keys.
Further, SFC input which is a describing method clear in operation sequence can be used to create programs.
For the SFC input, refer to the GPP Function Software for Windows SW4D5C-GPPW-E(V) Operating Manual (SFC) (SH-080033).




**Point**

If 1) is not blank, an error occurs at the time of list expression input.

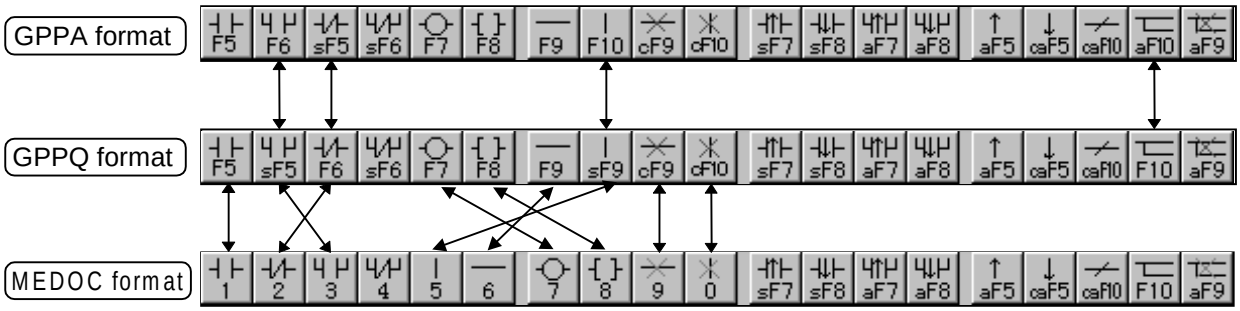




## ——Compatible function keys with GPPA, GPPQ and MEDOC——

The GPPW functions keys are compatible with those of GPPA, GPPQ and MEDOC. This facilitates smooth conversion from conventional package to GPPW.

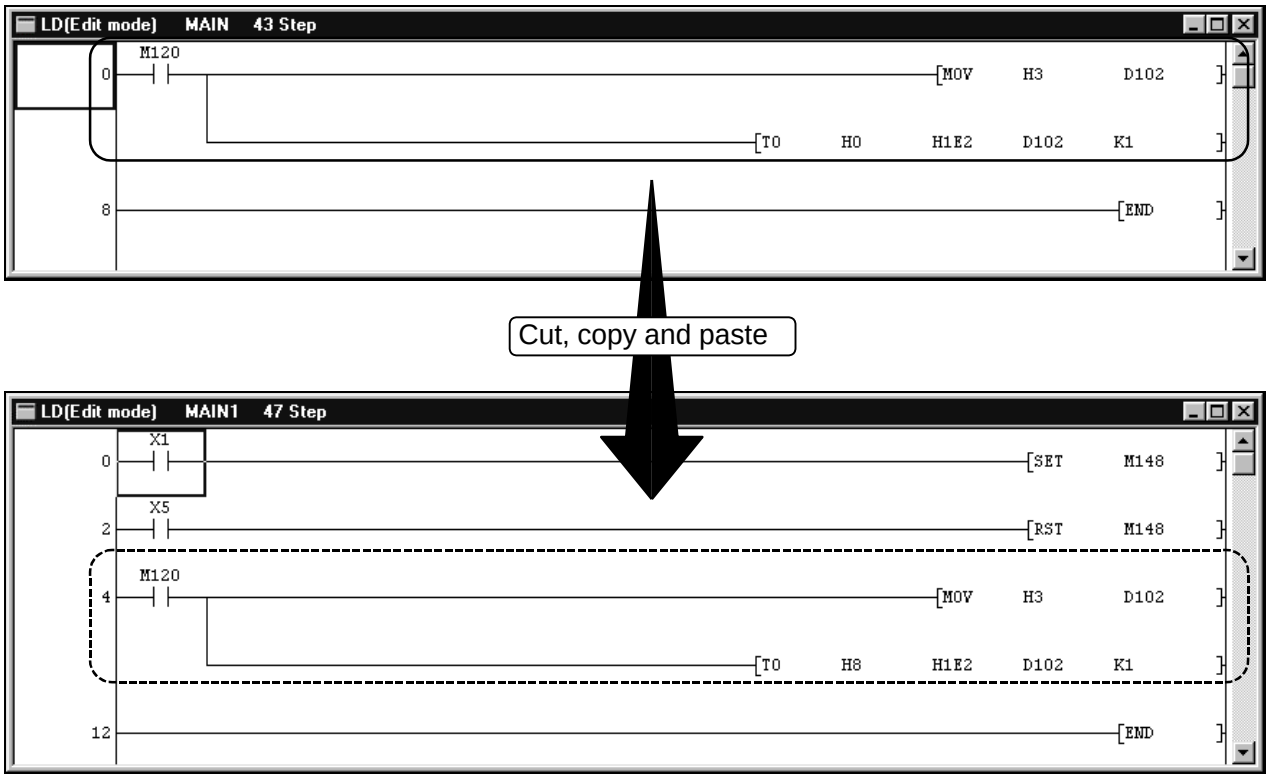
☞ *Part 5, 1.2.* ☜




## ——A circuit can be used between multiple projects.——

With cut, copy and paste functions, a circuit can be used between multiple projects.

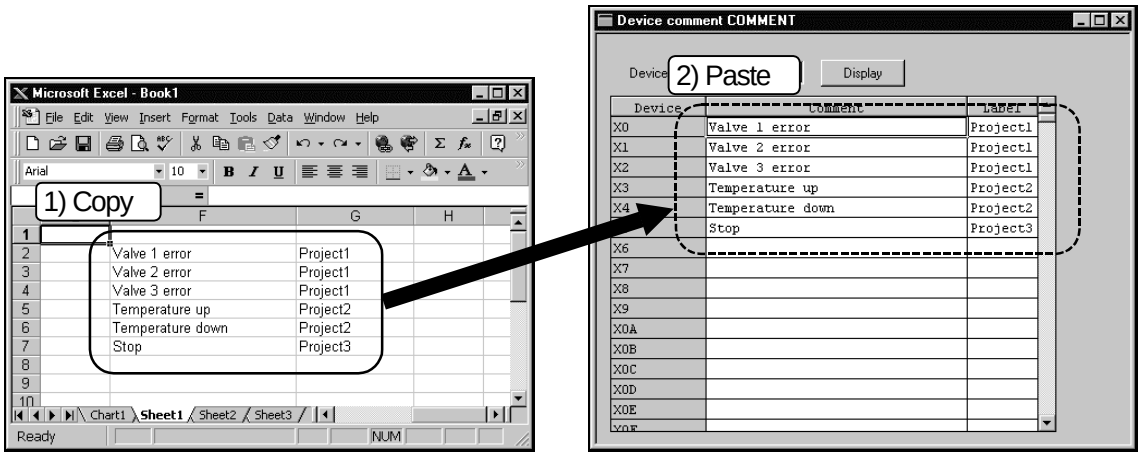
☞ *Part 5, 2.3.* ☜



## ——A comment developed in a spreadsheet software such as Excel can be used——

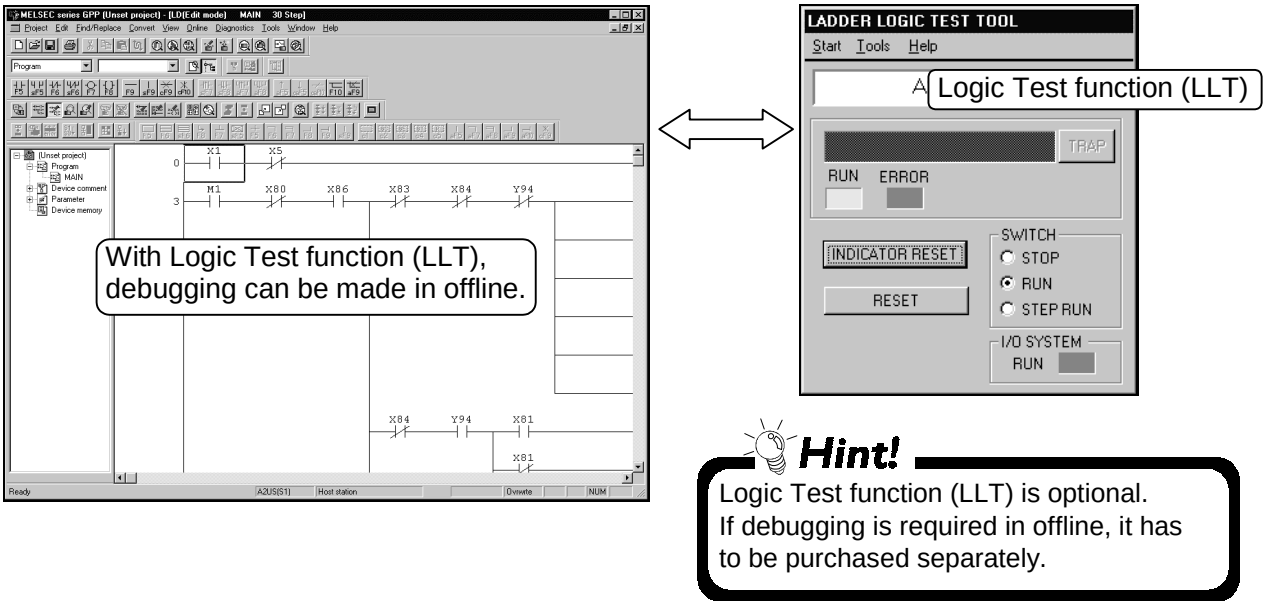
With cut, copy and paste functions, a comment developed in a spreadsheet software such as Excel can be used.

☞ *Part 5, 2.1.* ☜



## ——Debugging can be made in offline——

With the Logic Test Function (LLT), debugging can be performed using Monitor or Test from GPPW, without debugging equipment such as a PLC.




**Hint!**

Logic Test function (LLT) is optional.
If debugging is required in offline, it has to be purchased separately.

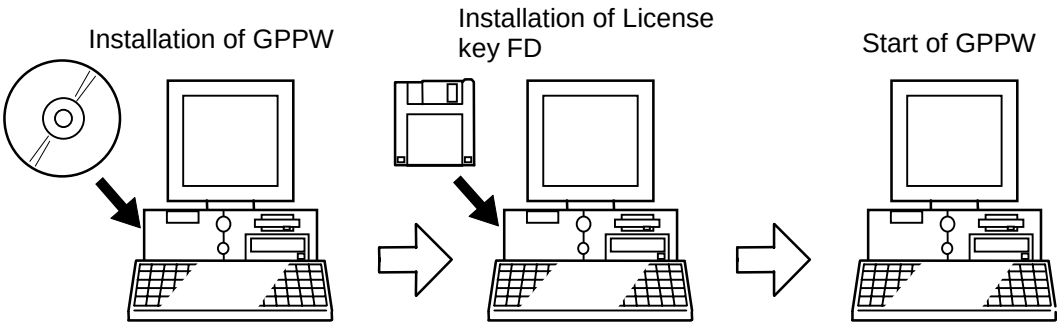
GPPW's debugging functions that can be performed by the Logic Test function (LLT)

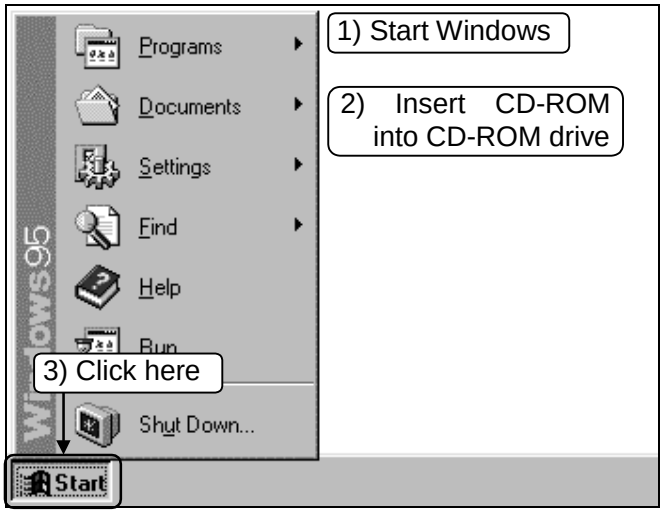
- Circuit monitor, device monitor
- Device test
- PLC writing
- PLC diagnostics
- Skip execution
- Partial operation
- Step execution
- Remote operation
- Program monitor list
- I/O system setting function ---------- With simple settings, this function simulates the operation of an external device.
- Device memory monitor function -- • Monitors the device memory states.
  • Shows a device ON/OFF chart.

MEMO

## 1.2 Installing operation of GPPW

To use GPPW, it is necessary to install the License key FD after installing GPPW.

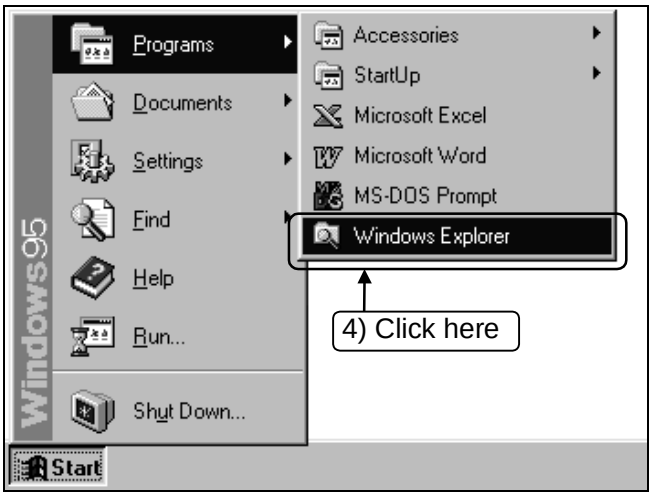



1) After turning on the power of the personal computer, make sure that Windows has started.

2) Insert CD-ROM into CD-ROM drive.

3) Click the Start button.




4) Click [Programs] - [Windows Explorer] menu.

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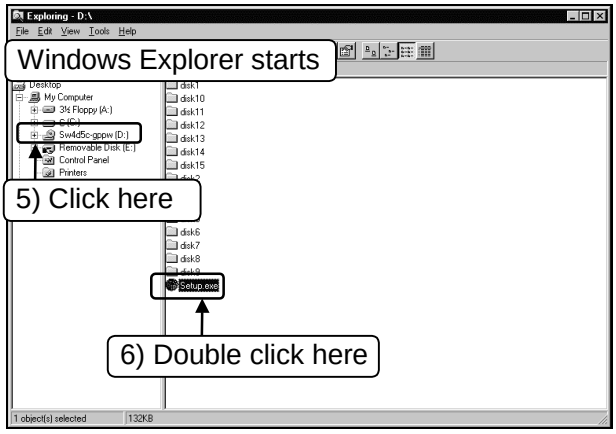


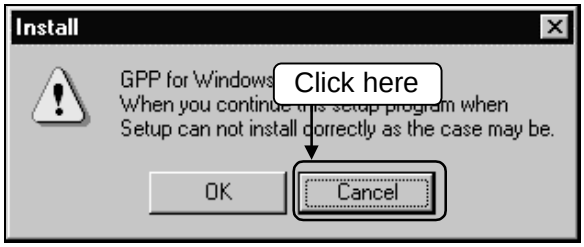

5) Click the CD-ROM drive with GPPW.

6) Double click the "SETUP.EXE".

**Point**

End all other applications on the Windows before installation.


7) Click OK after confirming that other applications are not running.




If the message shown on the left appears, click the Cancel button, uninstall the product, and then perform installation.


If the message shown on the left appears, click the OK button, uninstall the license key FD, and then perform installation.


If the message shown on the left appears, always install the product in the personal computer where the product of old version has been installed.

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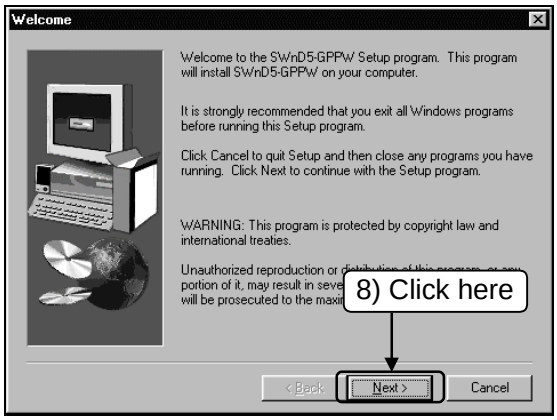
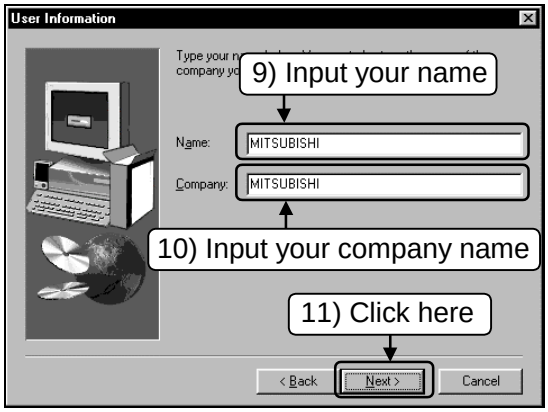


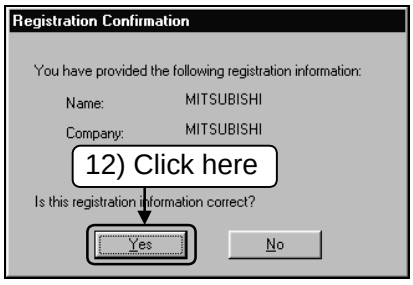

8) Read the explanation and click the Next button.




9) Input your name.

10) Input your company name.

11) Make sure that your name and company name are correctly input. Click the Next button.




12) Check the registration details. Click the Yes button.

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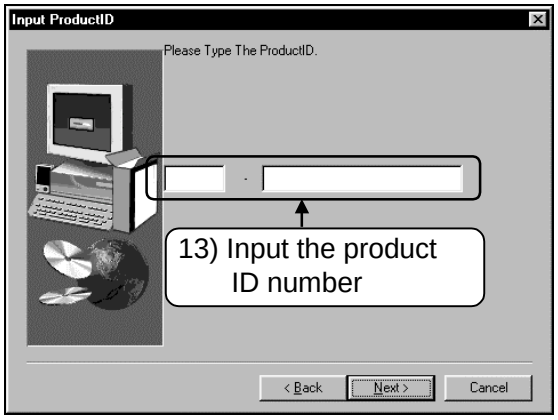
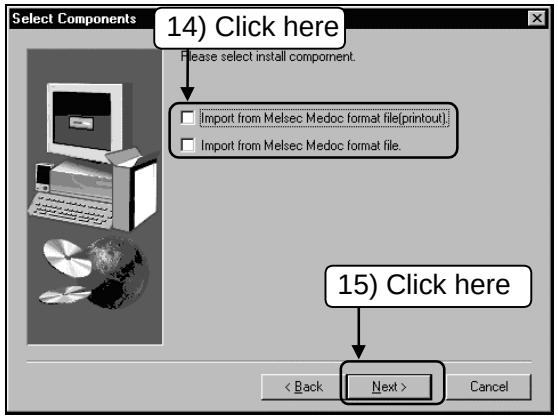



13) Input the product ID number and click the Next button.

**Point**

The product ID number is shown on the "Software Registration" accompanying the product.




14) Click the check box if you want to import to GPPW the data output as a printout data file on MELSEC MEDOC.

15) Click the Next button.

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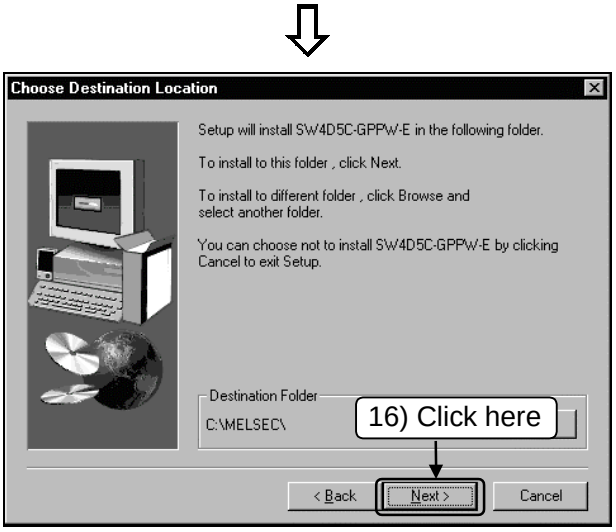
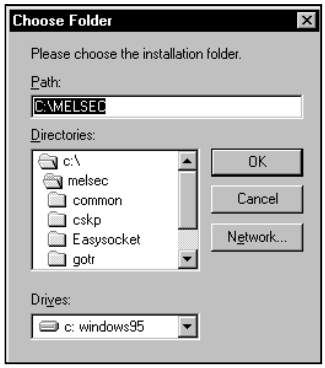
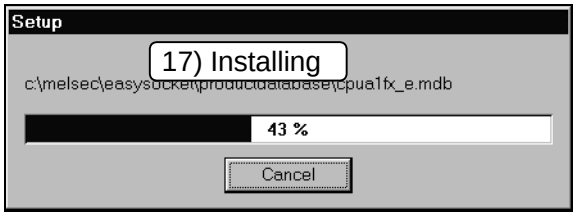



16) Click the Next button and the following dialog box appears to set the installation destination.

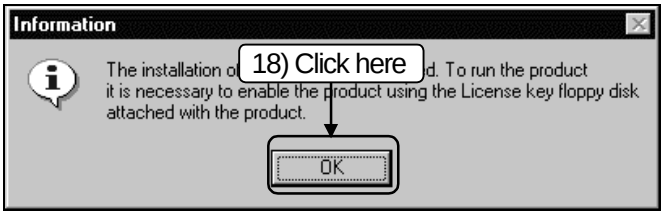
**Point**

Click the Browse button and the following dialog box appears to set the installation destination.

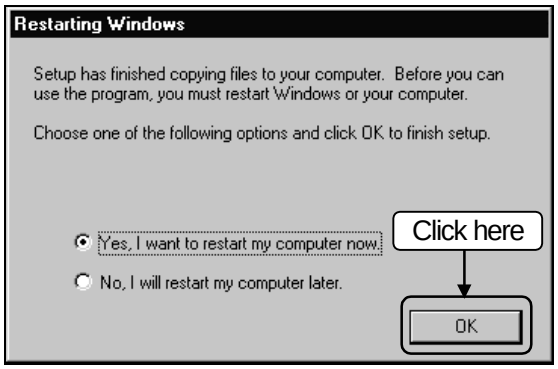



17) Installation starts.




18) Installation has completed.
Click the OK button.



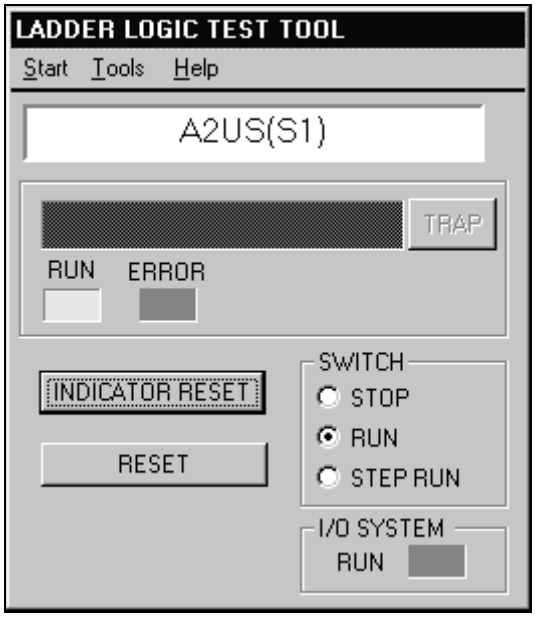

If the message shown on the left appears, Windows must be restarted.
Click the OK button to restart Windows.
This completes the installation of GPPW.
To start GPPW, the license key FD must be installed.

**Point**

If installation fails midway, delete GPPW and install it again.

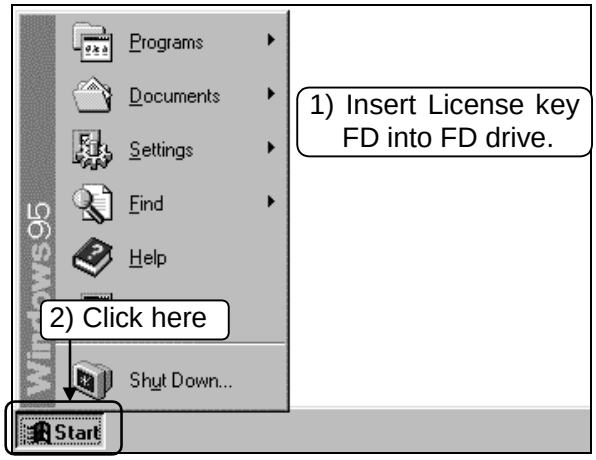
## ——Installing operation of the Logic Test function (LLT)——

The installing operation of the Logic Test function is similar to that of GPPW. The installation of the License key FD is also similar.
Since the Logic Test function is started from GPPW, its icon is not registered.
To confirm the installation of the Logic Test function, click the [Tools]-[Start ladder logic test] menu of GPPW and make sure that the Logic Test function starts.
If the following screen appears, the function was installed properly.



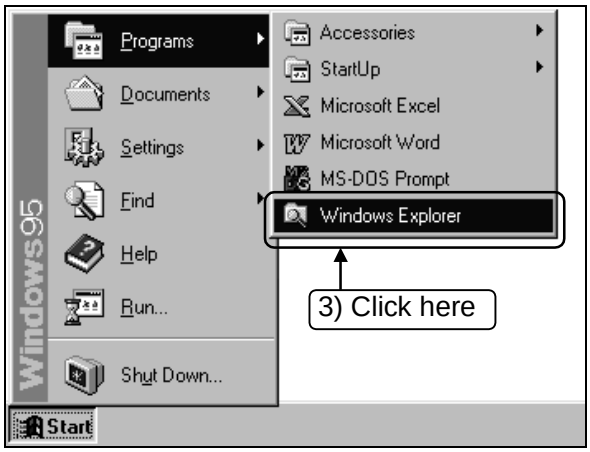
## 1.3 Using the License key FD to ready GPPW to start

The License key FD is designed to ready GPPW to start.
After installing GPPW, install the License key FD to make GPPW ready to start.

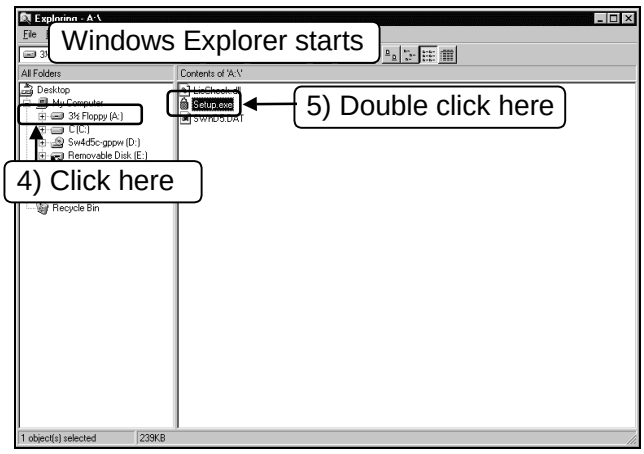



1) Insert the License key FD into the FD drive.

2) Click the Start button.




3) Click [Programs] - [Windows Explorer] menu.

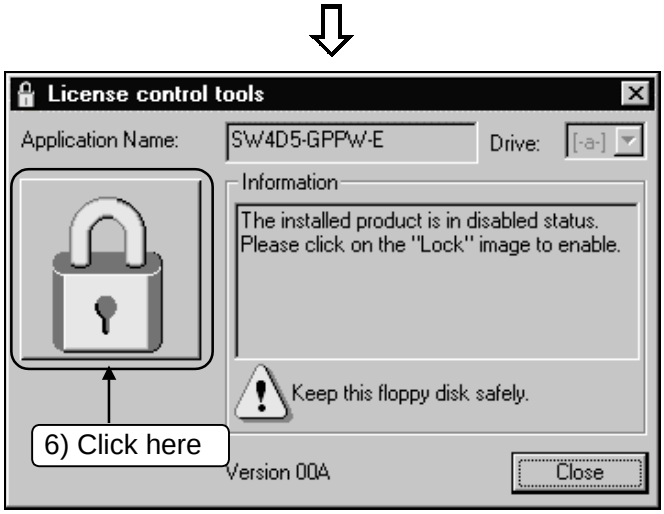



4) Click the FD drive which contains the License key FD.

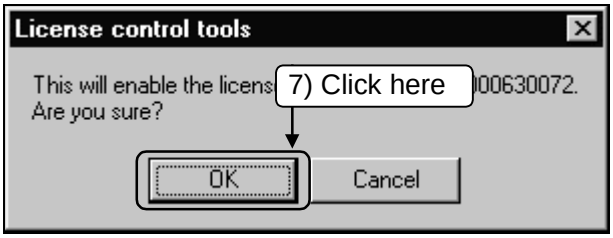
5) Double click the "SETUP.EXE".

***To the following page***

## *From previous page*




6) Click the key picture.




7) Confirm the message and click OK.

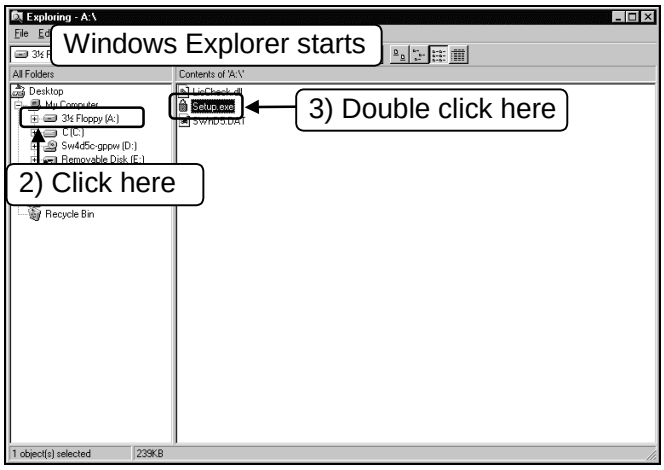

8) As the installation of the License key FD is complete, click Close. This allows GPPW to be started.

**Point**

Save the License key FD carefully and take charge of it so that you can readily identify the personal computer where it had been installed.
If you mislay the License key FD or if the License key FD does not match the personal computer where it had been installed, installation/uninstallation cannot be performed.

## 1.4 Uninstalling operation of GPPW

To uninstall GPPW, it is necessary to uninstall the License key FD and then uninstall GPPW.




1) Insert the License key FD into the FD drive, and click the [Start] - [Programs] - [Windows Explorer] menu to start Explorer.

2) Click the FD drive which contains the License key FD.

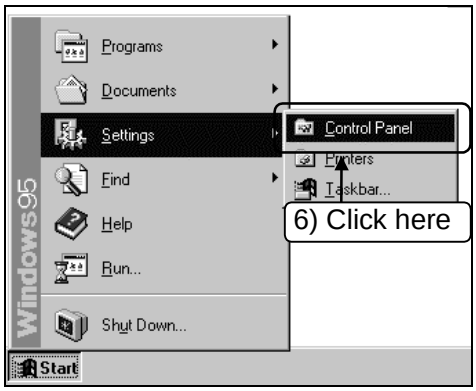
3) Double click the "SETUP.EXE".


4) Click the key picture.

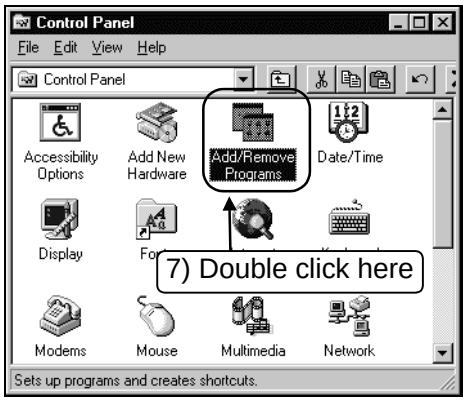

5) Since uninstallation of the License key FD is complete, click Close .

*To the following page*

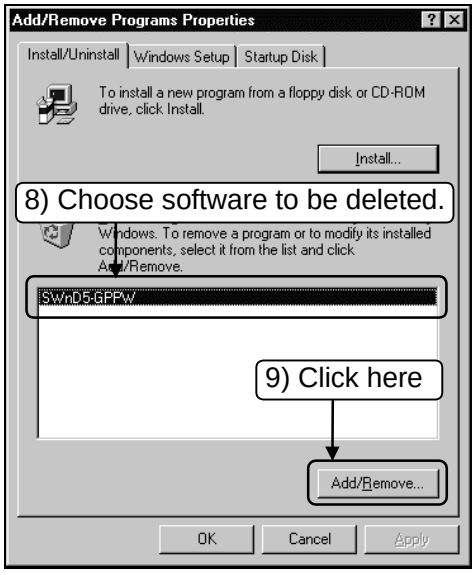
***From previous page***




6) Click the [Start]-[Settings]-[Control Panel] menu to start Control Panel.




7) Double click Add/Remove Programs.

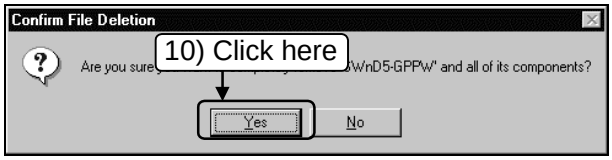



8) Choose the software package to be deleted.

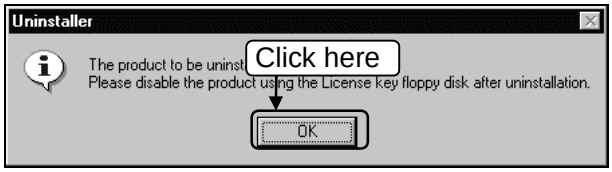
9) Click Add/Remove... .

***To the following page***

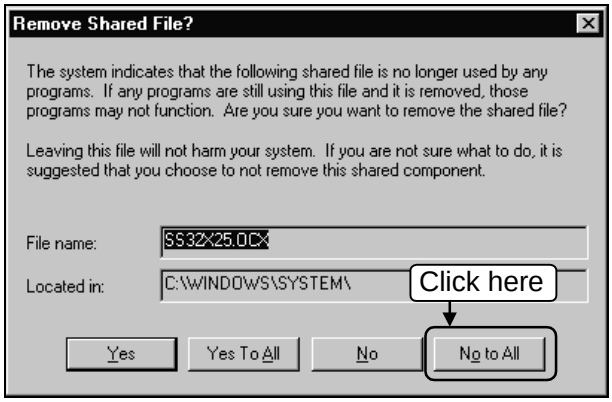
*From previous page*




10) Click Yes .



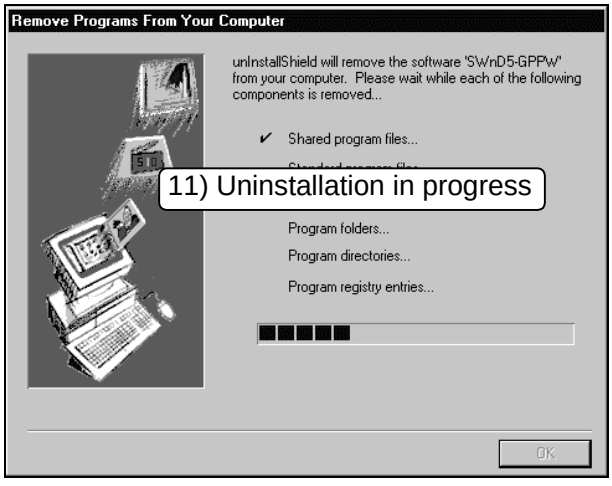

If the message shown on the left appears, click OK , uninstall GPPW, and then uninstall the License key FD.




If the display provided on the left appears, click No to All .

**Point**

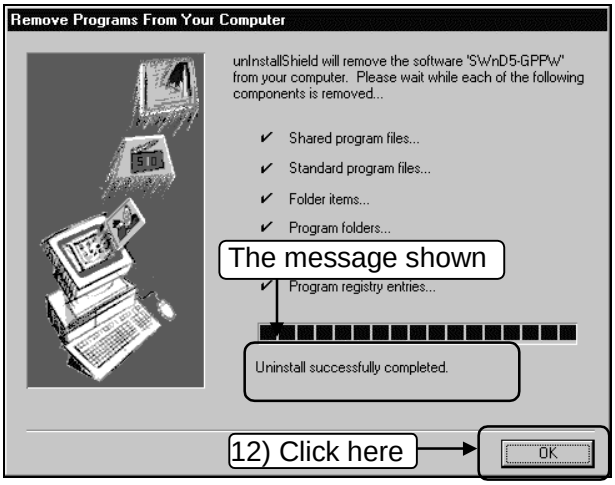
Choosing Yes deletes the shared file of the Windows-compatible MELSEC software package group. To delete only GPPW, therefore, click No to All.



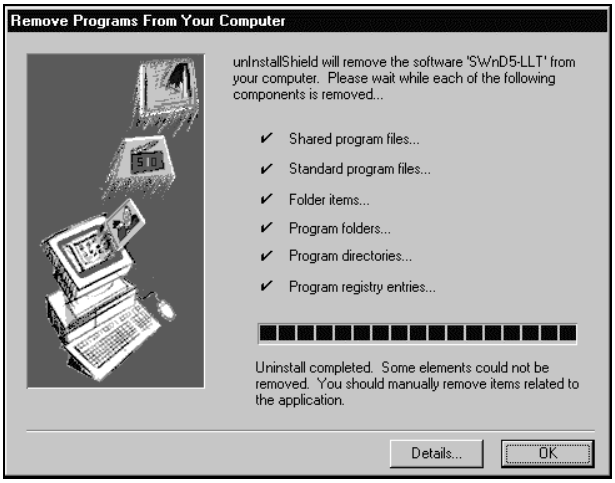

11) Uninstallation starts.

*To the following page*

## *From previous page*




12) As the message appears on completion of uninstallation, click the OK button.
This completes uninstallation.



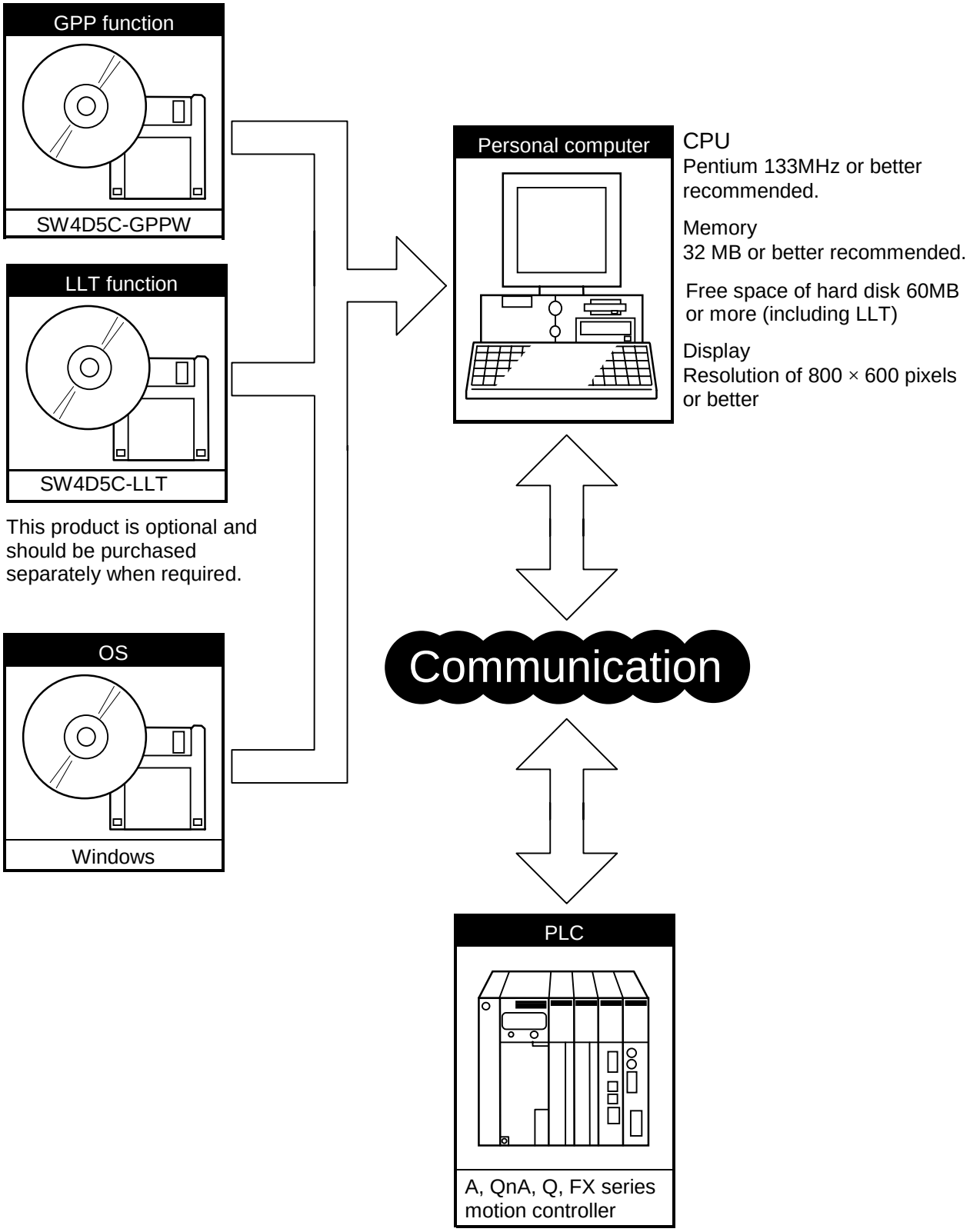

If the message shown on the left appears, open Explorer, check files, and remove unnecessary files.
It should be noted that if you remove any necessary file by mistake, the other applications may not start.

## ——Uninstalling operation of the Logic Test function (LLT)——

The uninstalling operation of the Logic Test function (LLT) is similar to that of GPPW.

## 1.5 Required items to gain access to PLC

This section explains the required devices and software to gain access to PLC.

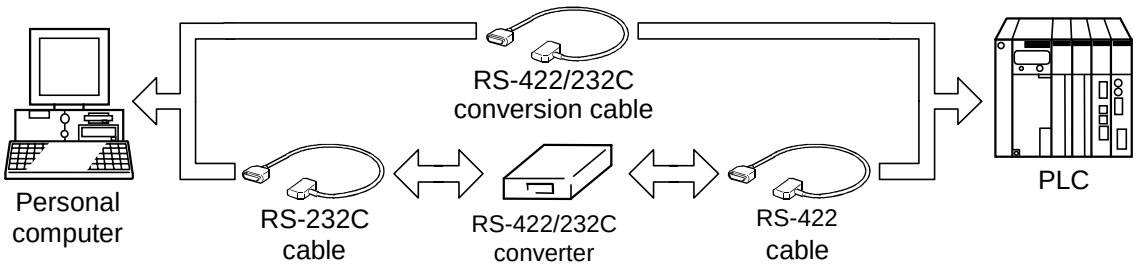


## ——Types of communication routes——

This section describes communication routes for direct link with the PLC CPU.
For details of communication routes other than direct link and each equipment, refer the GPP Function Software for Windows SW4D5C-GPPW-E(V) Operating Manual (SH-080032).

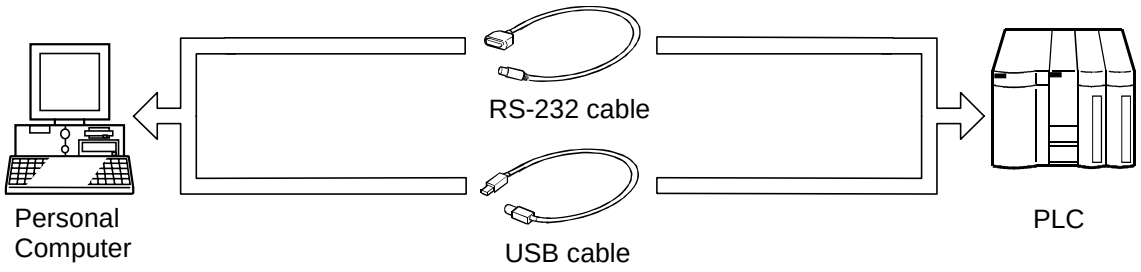
### (1) Direct link to ACPU or QnACPU

Communication is performed with the direct link between the COM port of the personal computer and the RS-422 connector of the ACPU or QnACPU.



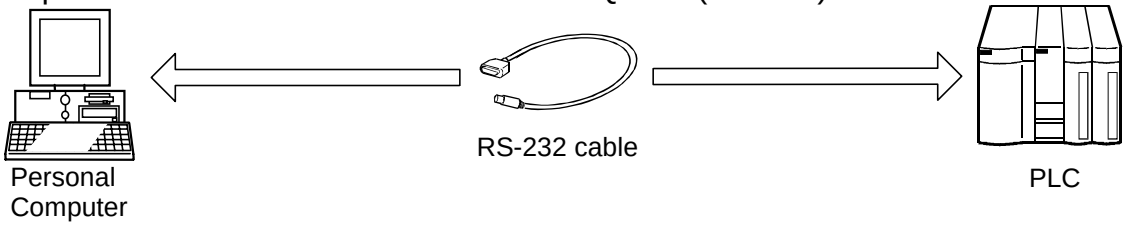

### (2) Direct link to QCPU (Q mode)

Communication is performed with the link between the COM port of the personal computer and the RS-232 connector or USB connector of the QCPU (Q mode).



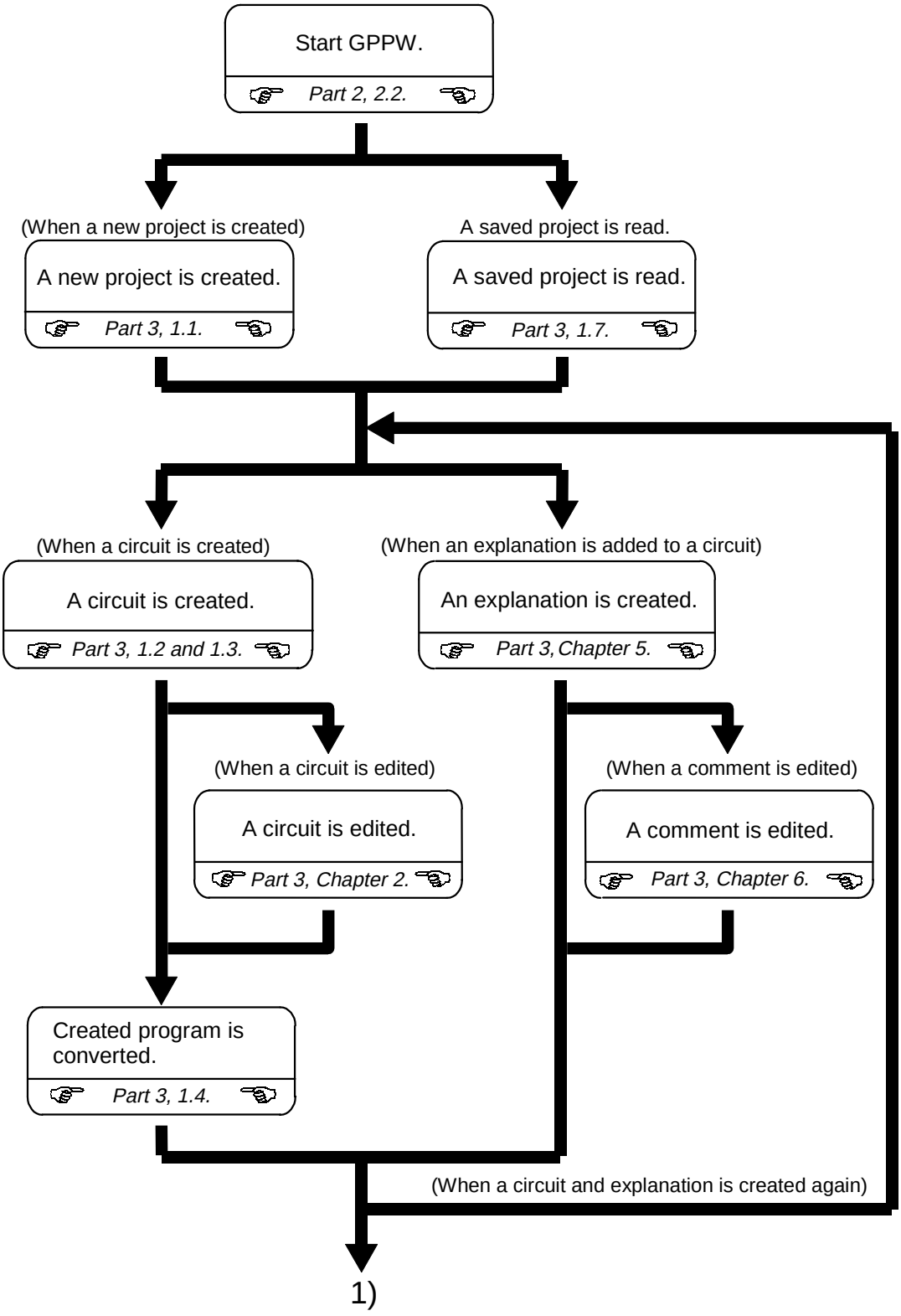

### (3) Direct link to QCPU (A mode)

Communication is performed with the link between the COM port of the personal computer and the RS-232 connector of the QCPU (A mode).



## 1.6 Operation flow

This section explains operations from start-up to end of GPPW.



1)

A project is saved.

Part 3, 1.6.

Stop PLC CPU.

Make Connection Setup.

Part 4, 1.1.

Write data on PLC CPU.

Set PLC CPU to RUN status.

(When PLC CPU status is monitored)

PLC CPU status is monitored.

(When debugging)

Debugging operations are made.

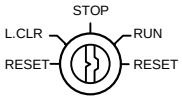
End GPPW.

Part 2, 2.3.

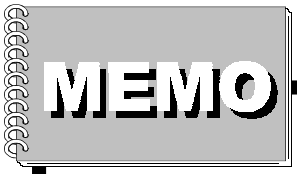
**Hint!**

To change the PLC mode of the ACPU, QnACPU or QCPU, use either of the following switches of the corresponding PLC CPU to set the mode.

For ACPU, QnACPU
<RUN/STOP key switch>




For QCPU
<RUN/STOP switch>


MEMO

# Part 2

2

# Basics

# 2 Basics

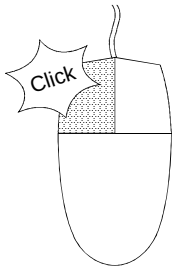
## 1 Introduction

The most frequent operation in GPPW is using a mouse. A mouse is an indispensable item for using the Windows software package.
This chapter explains basic mouse operations and GPPW screen configurations.

### 1.1 How to use the mouse

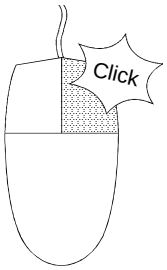
Click, double click and drag with a mouse is explained.

**——Left click (hereinafter referred to as click)——**



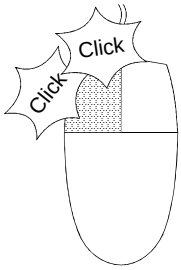

Press the left button of the mouse without moving the mouse position.

**——Right click——**



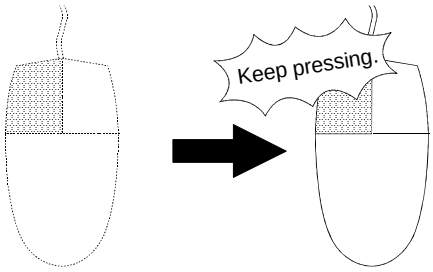

Press the right button of the mouse without moving the mouse position.

## ——Double click——




Press the left button of the mouse twice quickly without moving the mouse position. This operation is for the left button only, not for the right button.

## ——Drag——

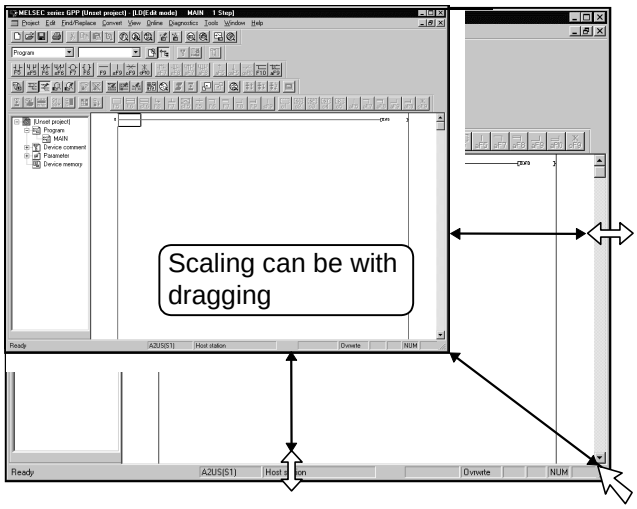



Move the mouse with the left button pressed. This operation is for the left button only, not for the right button.

## 1.2 Common mouse operations

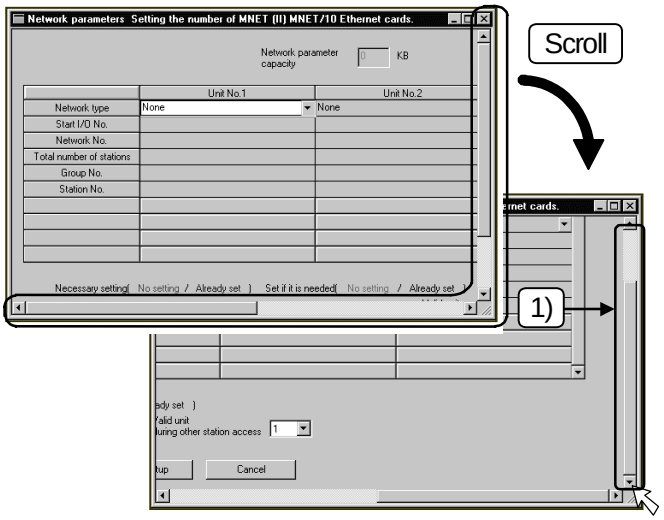
This section explains common mouse operations such as tab changes, menu selections and dialog box operations.

### ——Scaling of a window——



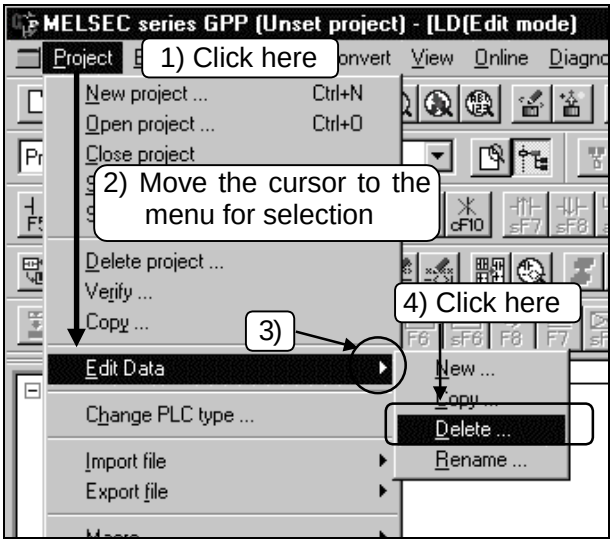

Drag the edge of the window with a mouse to scale the window.

### ——Scroll bar operation——




Keep clicking ▲ mark to scroll the screen and display the hidden part. Dragging 1) can also scroll the screen.

## ——Menu operations——



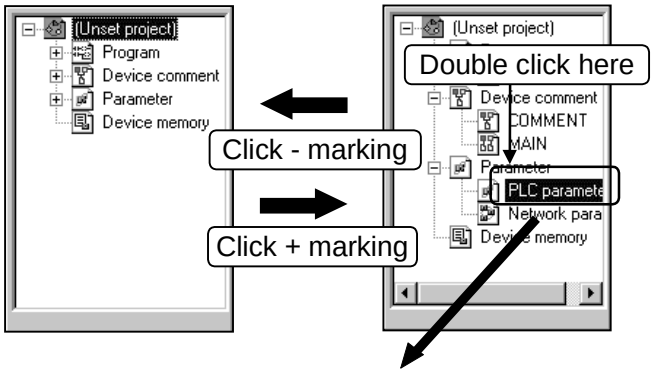

1) Click the desired menu.

2) Move the cursor to the menu for selection.

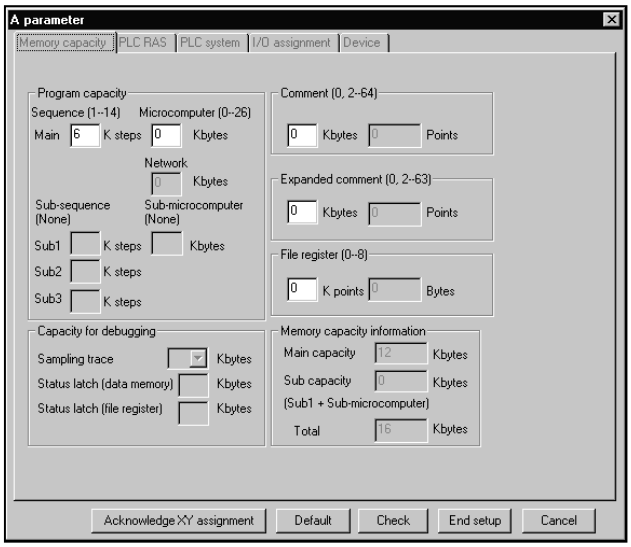
3) Additional menus are displayed at ▶.

4) Click the menu for execution.

## ——Operation of project data list——

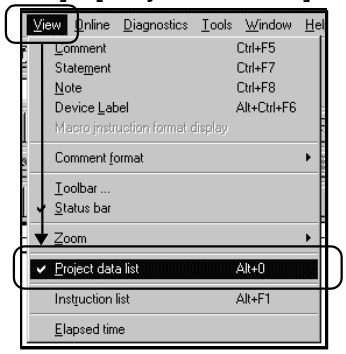



Click + marking on the project data list. The details for the item are displayed. Double click one of the details and the corresponding screen appears.



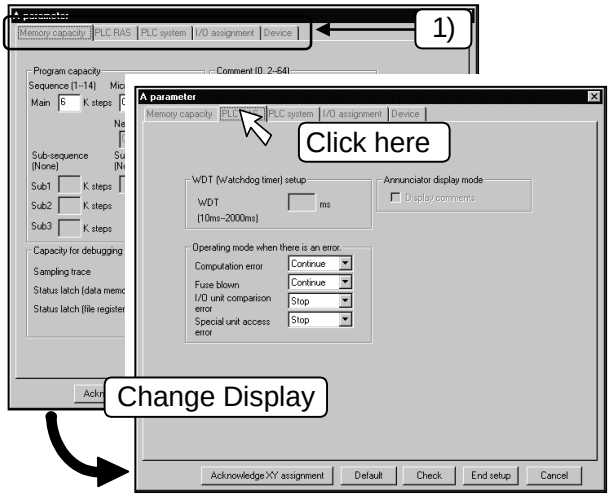

**Hint!**

If the project data list is not displayed, click [View] - [Project data list] menu.



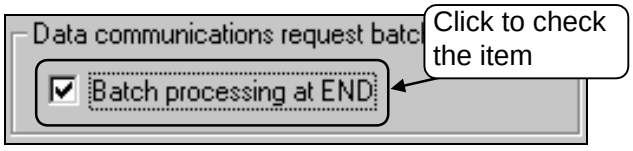
## ——Operation of dialog box——

### (1) Tab change



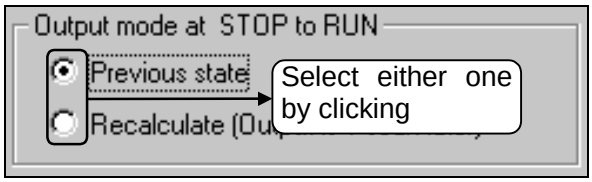

Area 1) as shown in a dialog box is called tab.
Click this tab to change items for settings.

### (2) Check box ON/OFF



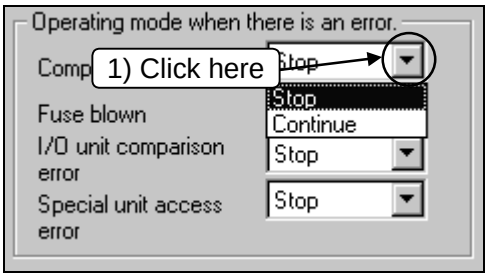

☑ marking by clicking makes the item effective. Clicking on the item with ☑ marking cancels checking and makes the item ineffective.

### (3) Setting of radio button



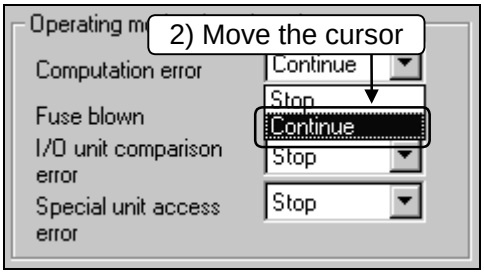

Radio button is a button for selecting one of multiple items. Click one item to be effective and the previous item is canceled.

## (4) Setting of list box

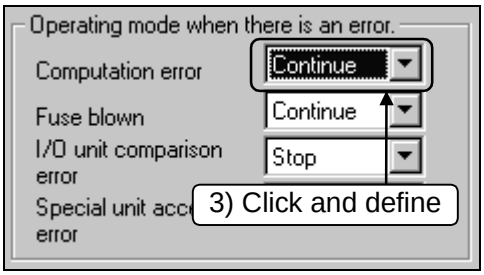



This is to select one out of multiple items.

1) Click ▼ to display multiple items.



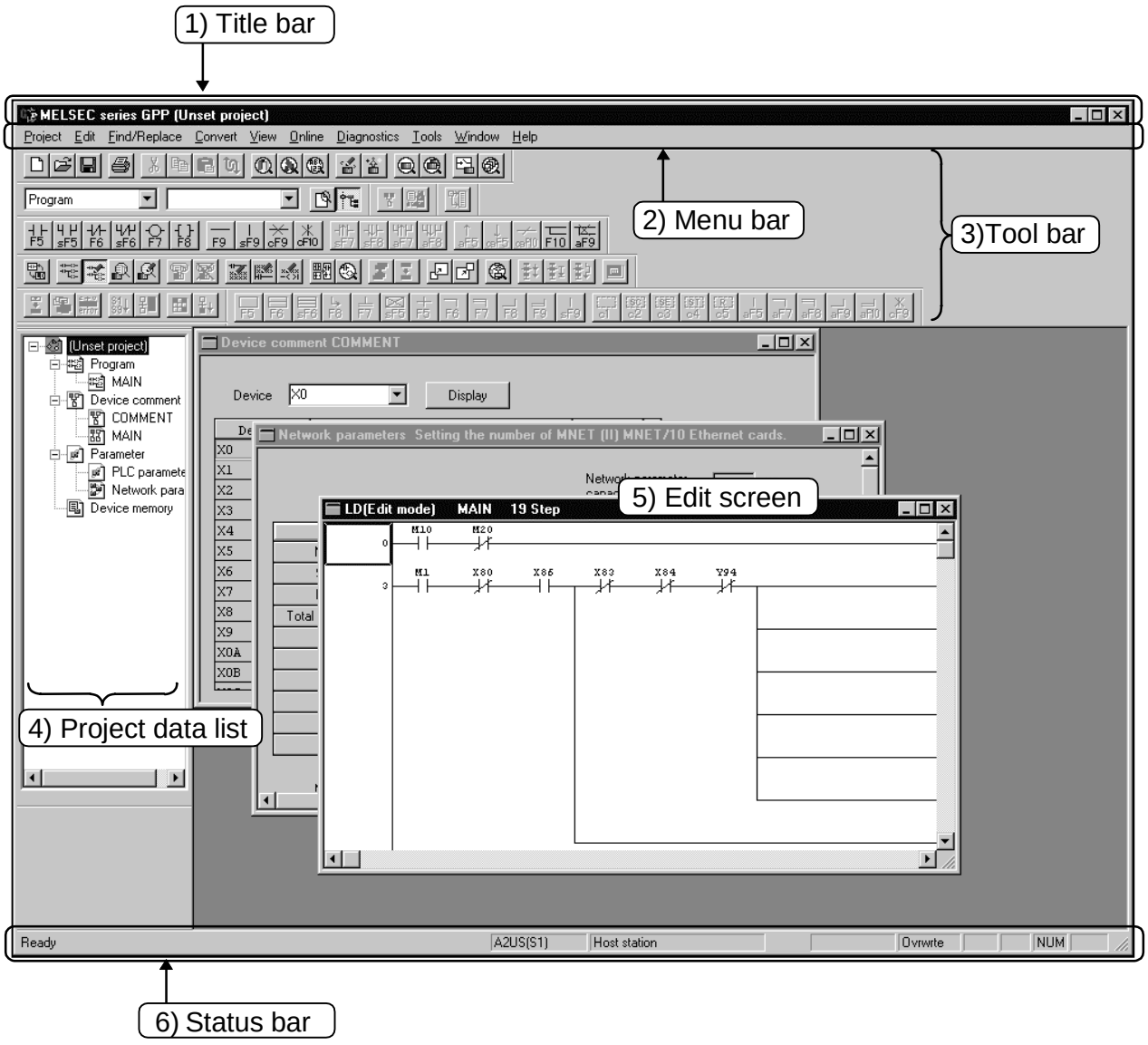

2) Move the cursor to the item to be set.




3) When the item to be set is determined, click and define the item.

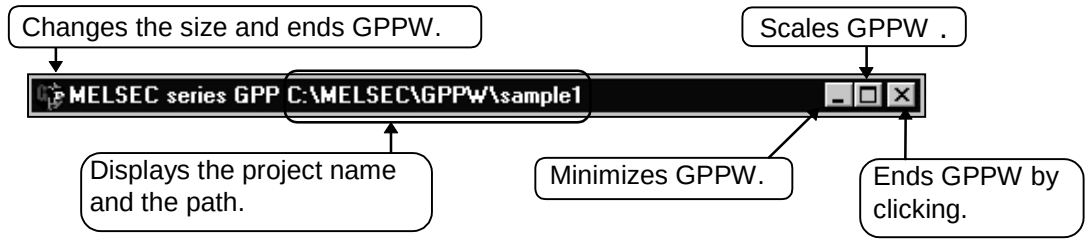
## 1.3 Screen configuration

This section explains how GPPW screens are configured.



## 1) Title bar

Displays the project name which is open.

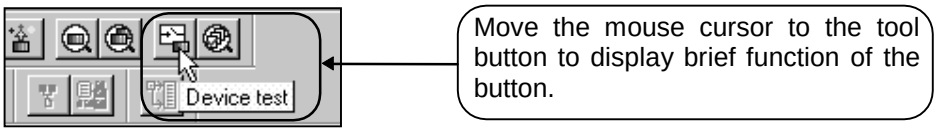



## 2) Menu bar

This is most frequently used in GPPW operations.
Select the menu and display the drop down menu. Various functions can be used from the drop down menu.

## 3) Tool bar

Frequent used functions are shown in buttons. This facilitates speedy operations.




## 4) Project data list

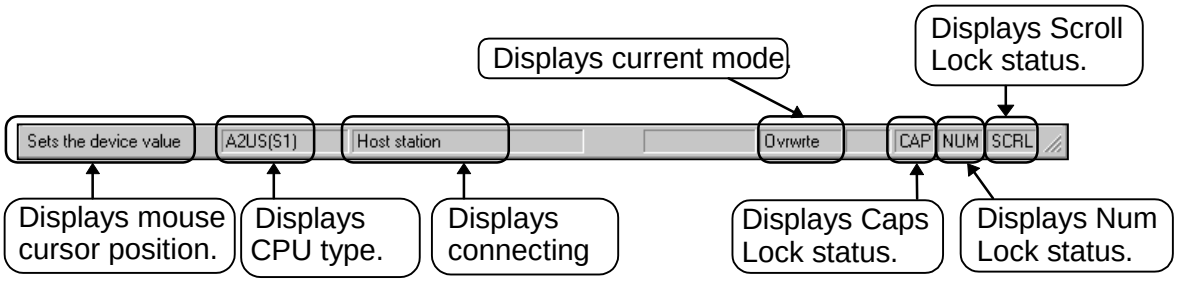
The Circuit creation screen, dialog box, etc. can be directly read.
Data in the project is listed in each category.

## 5) Edit screen

The Circuit creation screen and comment creation screen are displayed for settings of circuit, comment and parameter. Various screens are displayed depending on the edit details.

## 6) Status bar

Status information of GPPW is displayed.



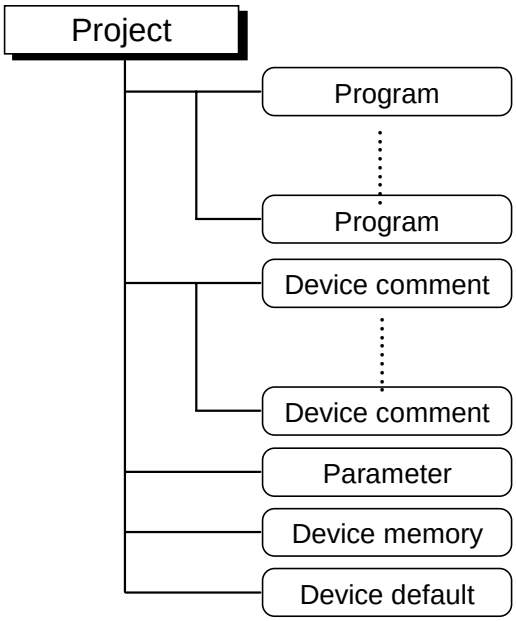
## 2 Basics for GPPW operations

To perform any operation with GPPW, you must understand its basic principles.

This chapter explains the basics required for GPPW operations.

### 2.1 What is a "project"?

This section explains a GPPW "project."




A project is a collection of components including a program, device comments, parameter, device memory and device default (for QnACPU, QCPU (Q mode) only).

| Item | Details |
|---|---|
| Program | Sequence program required for operation of PLC CPU. |
| Device comment | Comment for device of sequence program.<br>Two types of comments are available; "Common comment" which is common to projects, and "Comment for each program" which varies on each program. |
| Parameter | Settings for the network or the device range. |
| Device memory | Displays the current device value. Input of a new value changes the device value. |
| Device default | Value used as a default at the start-up of PLC CPU.<br>(for QnACPU, QCPU (Q mode) only) |

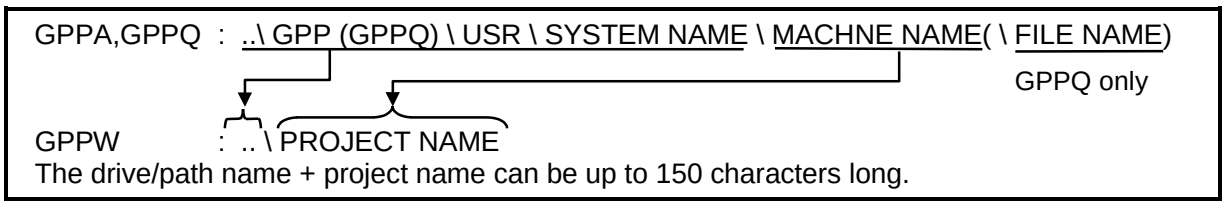
## ——1 project for 1 GPPW——

GPPW can edit only 1 project. To edit multiple projects, it is necessary to start multiple GPPWs.

☞ *Part 5, 2.3.* ☜

## ——Comparison with GPPA and GPPQ——

GPPW has no system names as were previously used in GPPA and GPPQ. The machine name has become the project name. A project can be created at any location.




## ——Device comment——

There are two comments in GPPW; a common comment and a comment for each program.

| Comment type | Number of comments | Details |
|---|---|---|
| Common comment | 1 | Device comment which is common to the programs in the project. |
| Comment for each program | Same as the number of programs | Device comment set for each program. The same name as the program name must be set. |

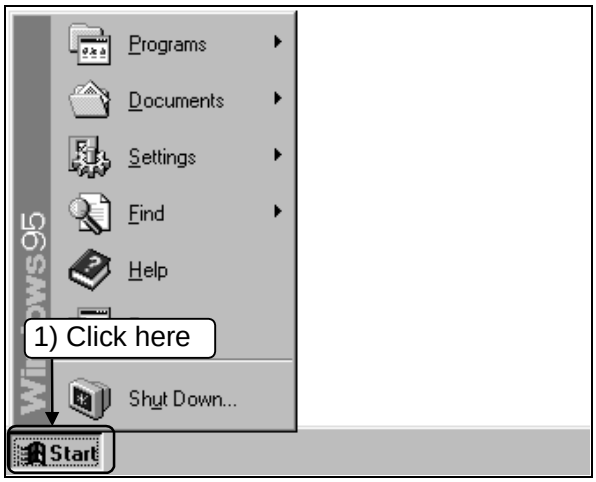
If the data of two device comments overlap, the priority can be set by clicking the [Tools]-[Options] menu.

The default setting is as follows.

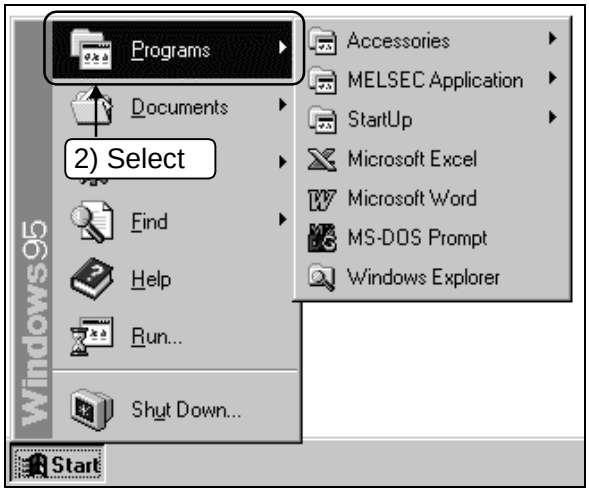
**Comment for each program < Common comment**

## 2.2 Starting GPPW

This section explains starting GPPW.




1) Click the Start button.



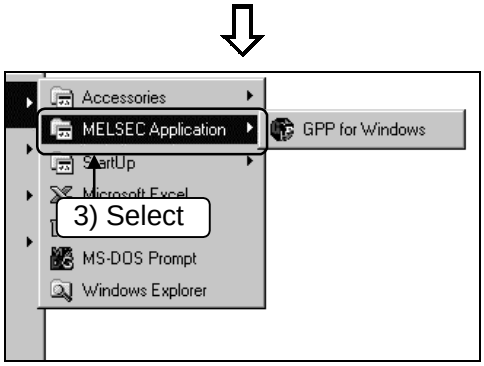

2) Select the [Programs] menu.

**Point**

Move the mouse cursor for selection.
(Click or double click is not required.)

***To the following page***

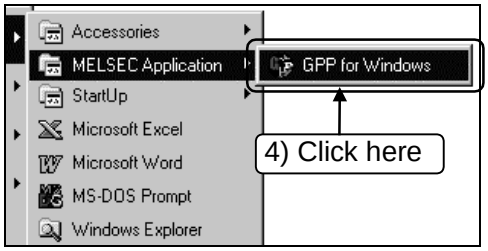
## *From previous page*



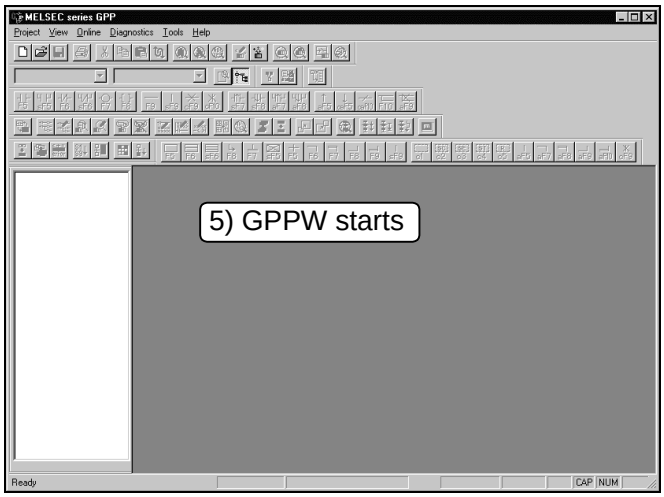

3) Select the [MELSEC Application] menu.

**Point**

Move the mouse cursor for selection.
(Click or double click is not required.)




4) Click the [GPP for Windows].




5) GPPW starts.

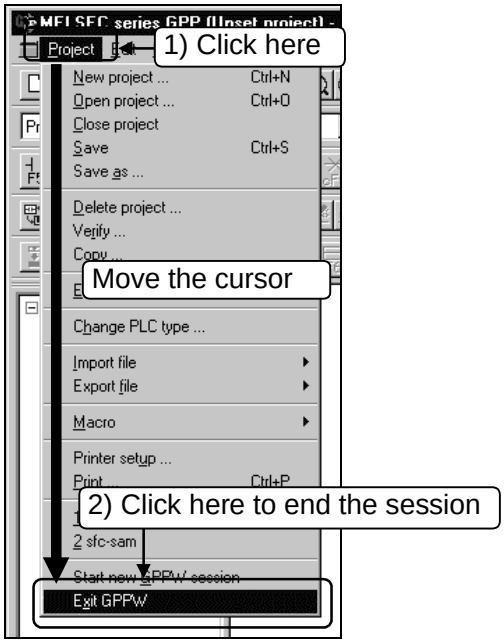
**Hint!**

Refer to "Start-up" for creation and start-up of the short cut key icon.

## 2.3 Ending a GPPW session

This section explains the three ways to end a GPPW session.

### ——Method 1——



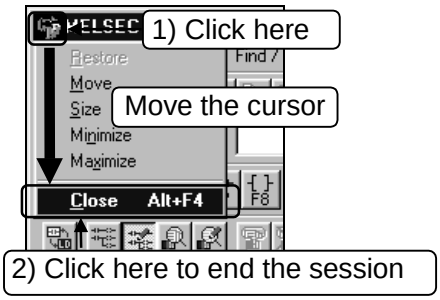

1) Click the [Project] menu.

2) Move the cursor and click the [End GPPW] menu to end GPPW.

### ——Method 2——

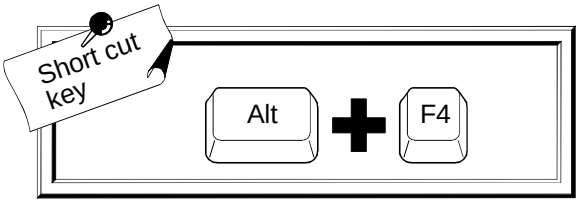

Click [X] at the upper right of the screen. GPPW ends.

## ——Method 3——



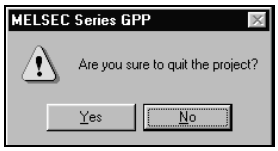

1) Click  at the upper left of the screen

2) Move the cursor and click the [Close] menu. GPPW ends.




## ——Dialog box appears for the following cases——

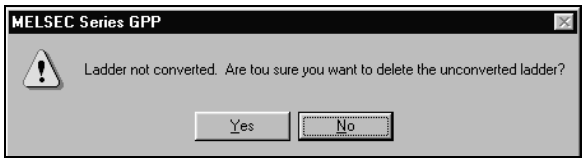
**(Normal end)**




Yes .....The project ends.

No .....GPPW does not end.

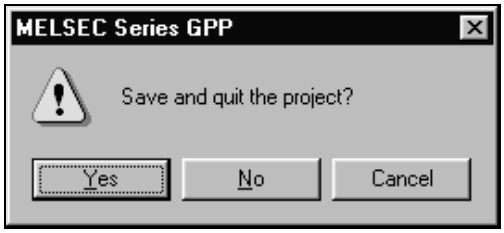
**(When circuit is not converted)**




Yes .....GPPW ends without conversion.

No .....GPPW does not end. (Circuit editing continues.)

**(When the project is not saved)**



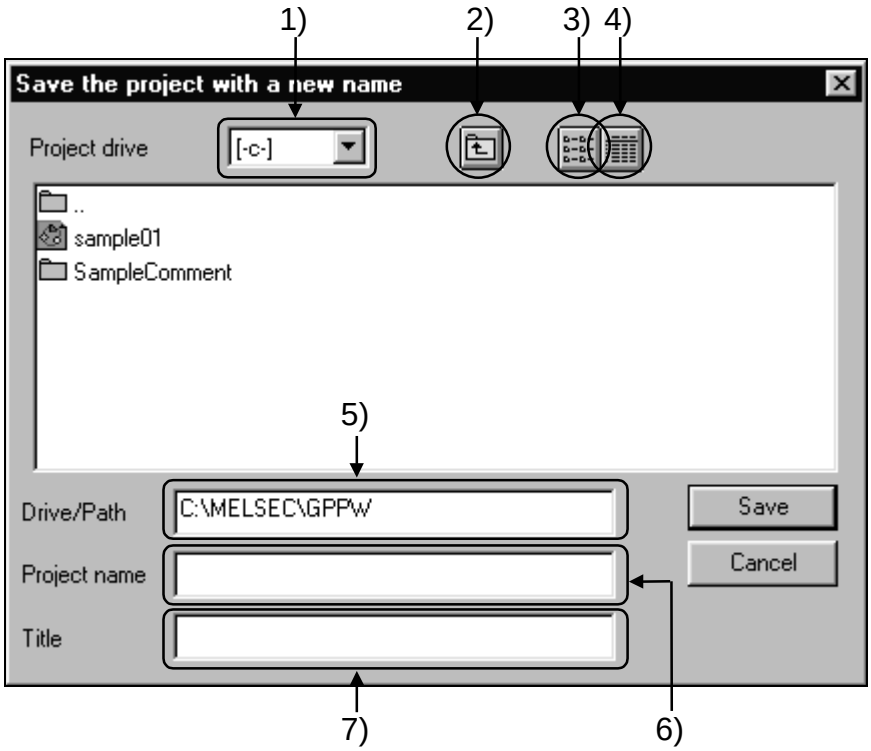

Yes .....The project is saved before ending GPPW.

No .....GPPW ends without saving the project.

Cancel .....GPPW does not end.

## 2.4 Designation of project

This section explains reading, saving, deleting and creating a project.




### 1) Drive of project

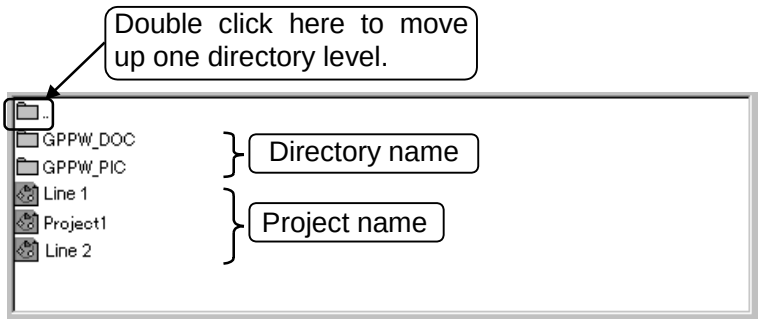
Designates the drive for saving the project.

### 2) button

Click this button to move up one directory level.

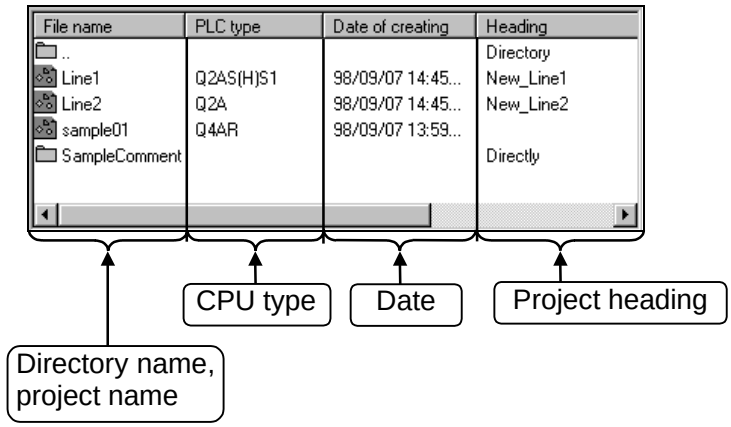
### 3) button

Click this button to display the list of directory names and project names in the current directory.



## 4) button

Click this button to display the details of directory names and project names in the current directory.




## 5) Drive/Path

Designates the path which saves the project (where the project is saved).
The drive/path can be specified by entering it directly or double clicking the on screen directory.

## 6) Project name

Designates the project name.
To designate the project name, input the project name directly or double click the project name on the screen. Double click the project name for the definition.

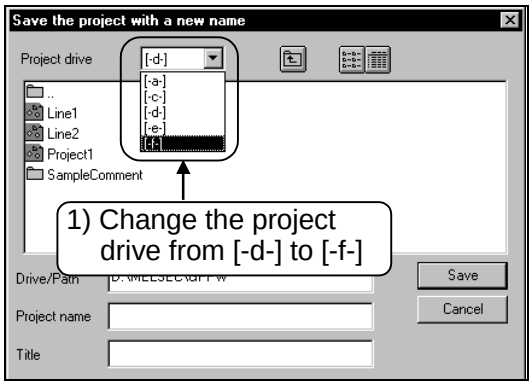
## 7) Heading

Designates heading for the project.

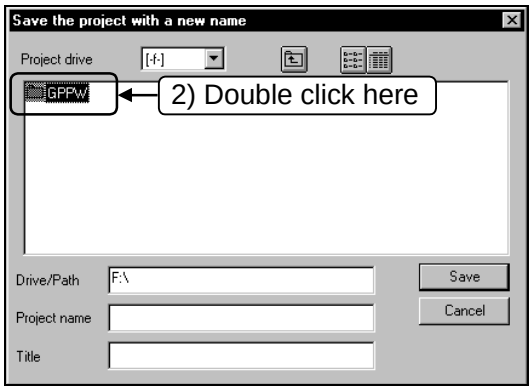
## ——Let's practice with a project for setting.——

**Setting example**

| | |
|---|---|
| Setting action | :Saving project |
| Project name to be saved | :Factory |
| Factory | :Program for M plant |
| Drive for saving project | :F:\GPPW\ |
| GPPW installation drive | :D:\MELSEC\GPPW |




1) Change from [-d-] to [-f-].




2) Double click the drive to change the Drive/Path to "F:\GPPW\".

**Hint!**

A project can be created in any directory.

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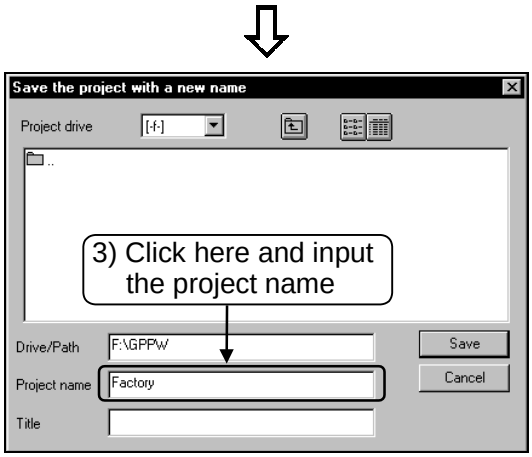
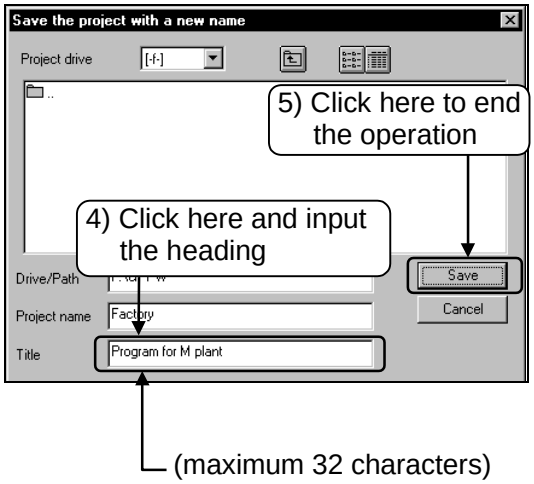



3) Click and the character cursor (|) appears. Input "Factory" as a project name.




4) Click and the character cursor (|) appears. Input "Program for M plant" as a heading.

5) Click the Save button to end the operation.

**Hint!**

There are the following restrictions on the characters and number of characters that may be used as project names.
<Restrictions on characters/number of characters>

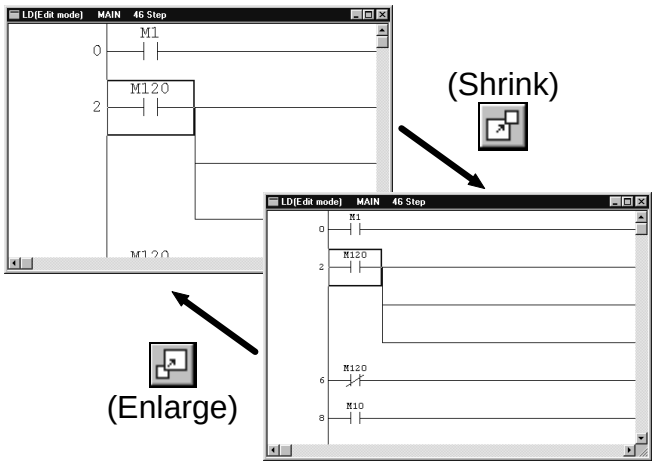
- '/', '\', '>', '<', '*', '?', ' " ', '|', ':' and ';' are not allowed.
- The drive/path + project name can be up to 150 characters long.

When using a GPPW created program in the other format, changing the project name on GPPW to within 8 characters will be very convenient since it allows the same project name and machine name to be used on GPPW, GPPQ and GPPA.

## 2.5 Frequent operations

This section explains frequent GPPW operations.

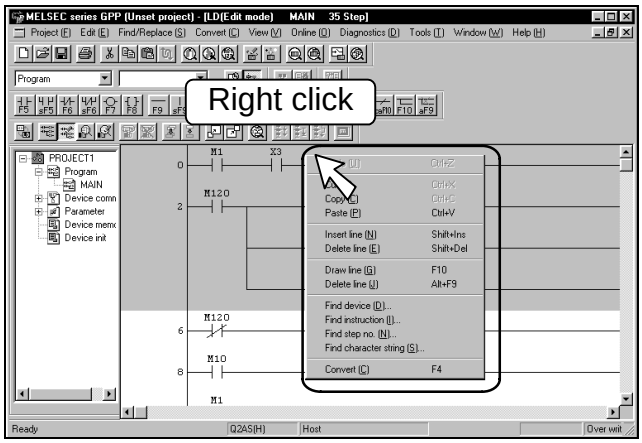
### ——Scaling of circuit.——




Click  on the tool bar to enlarge the circuit.

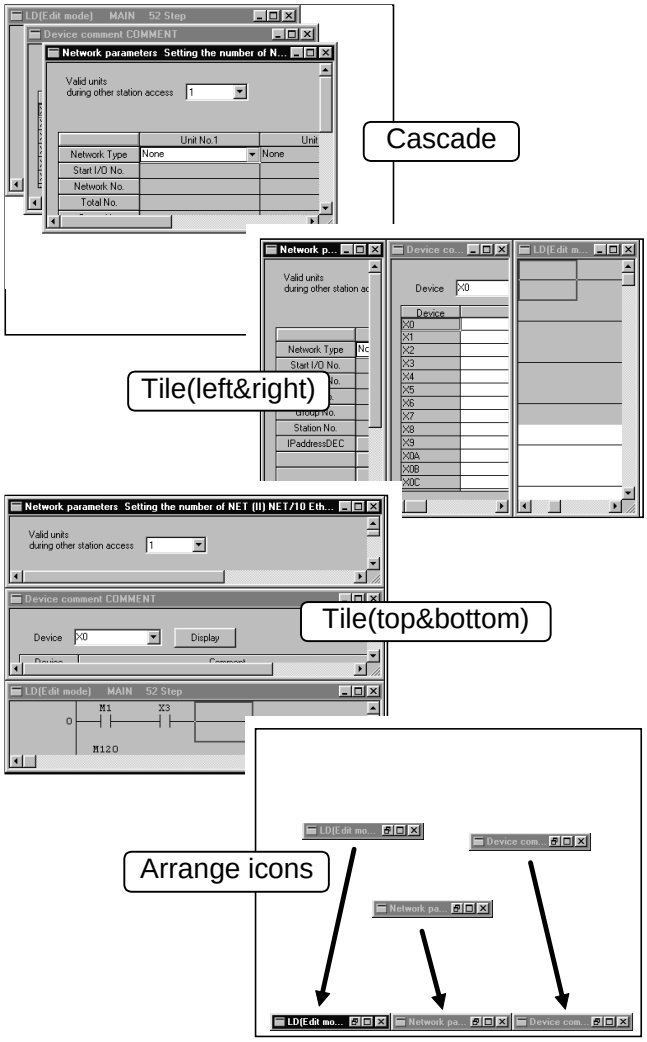
Click  to shrink the circuit.

### ——Right click——

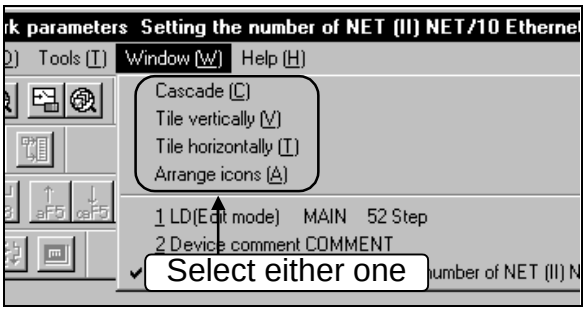



Right click on the circuit screen or the project data list. The menu in the left appears.

## ——Display of editing screens——

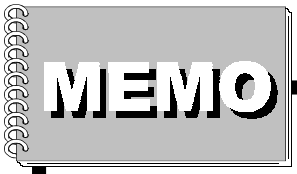



[Window] menu can change the display of editing screens.




**Hint!**

- Alignment of screens is effective only for windows which are open.
- "Arrange icons" is effective only for windows which are shown as icons.


MEMO

# Part 3

# Offline operations

3



3

# 3 Offline operations

## 1 Creating a circuit

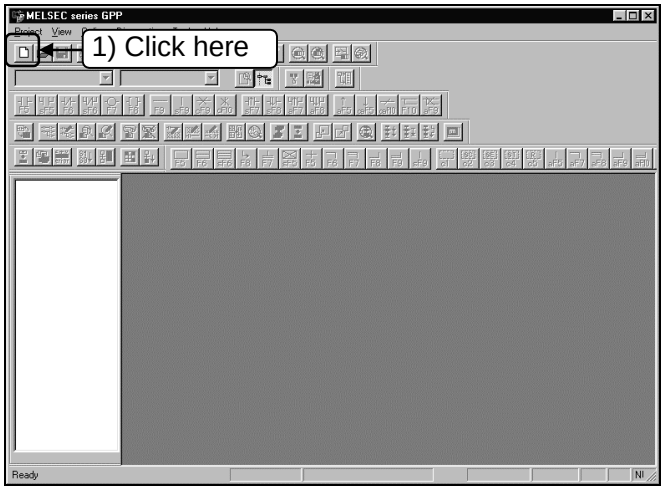
A PLC CPU is only a box if a program is not installed.

It is necessary to create a circuit (program) that controls the PLC.

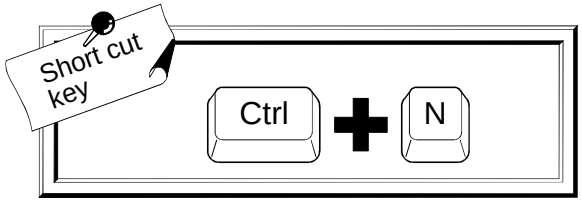
This chapter describes creating the project required for the circuit and its reading.

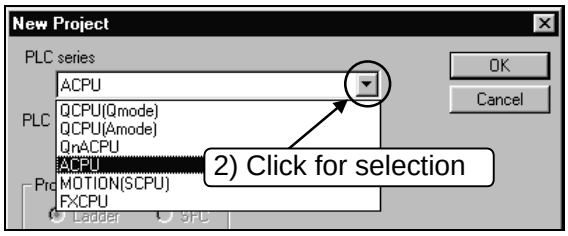
### 1.1 Creating a new project

This section describes setting PLC series and PLC type and creating a new project.
Only one project can be opened with GPPW.
To open and edit multiple projects, it is necessary to start multiple GPPWs.




1) Click  on the tool bar.




2) Click the [PLC series] from the list buttons.
Select the appropriate type corresponding to your PLC CPU series.
Choose "ACPU" here.

***To the following page***

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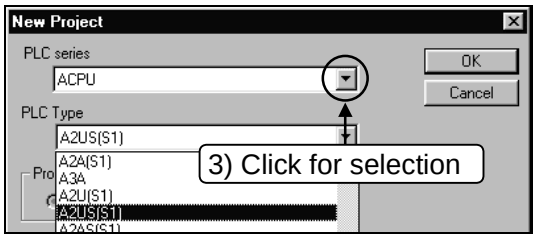
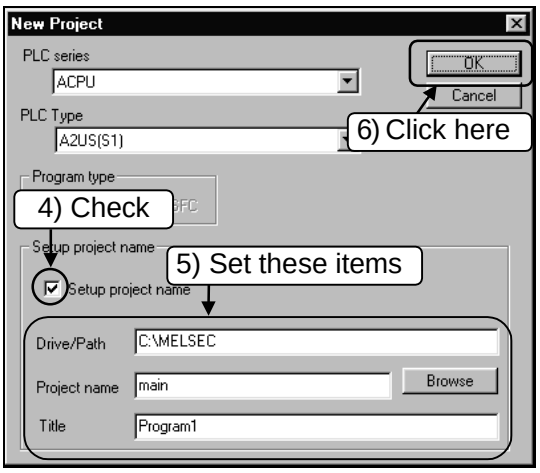



3) Click the list button to select the [PLC type].
Select the appropriate type corresponding to your PLC CPU series. Choose "A2US(S1)" here.

4) Check this to set the project name.

5) Set the drive/path, project name and heading.

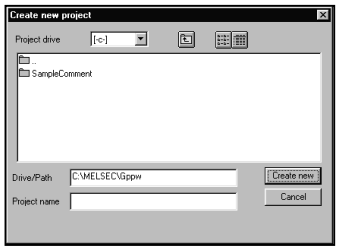
**(Setting a project name.)**



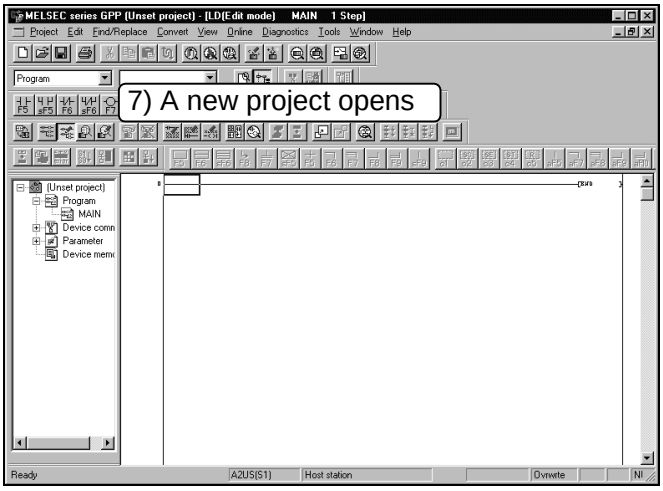

**Point**

Click the Browse button and the following dialog box appears for setting.

☞ *Part 2, 2.4.* ☜




6) Click the OK button.




7) A new project opens.

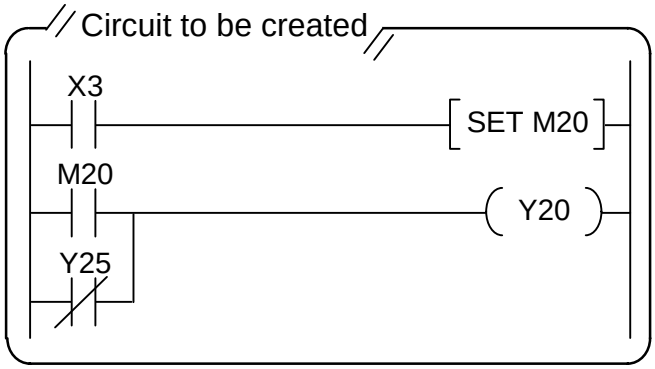
**Hint!**

For project····

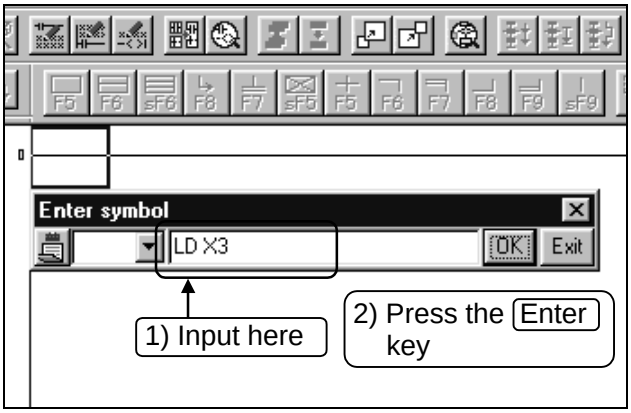
☞ *Part 2, 2.1* ☜

## 1.2 Creating a circuit with list expressions (mnemonic language)

This section explains creating an example circuit with list expressions.
To create a circuit, be sure to change the mode to write mode.




Method to create a circuit in the left is explained.




⇩

***To the following page***

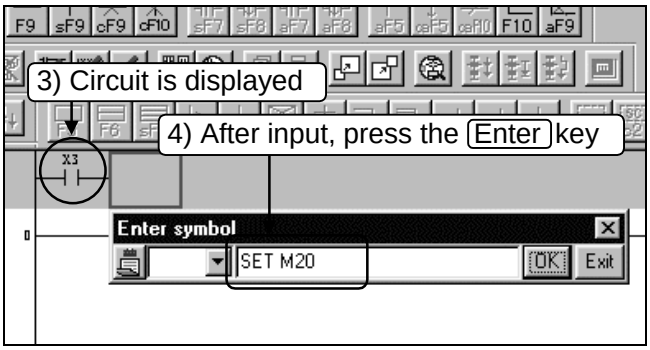
1) Input "LD␣X3".
When the input is made, the circuit input window opens.
If the input is not correct, press the Esc key.

2) If the input is correct, press the Enter key.

**Hint!**

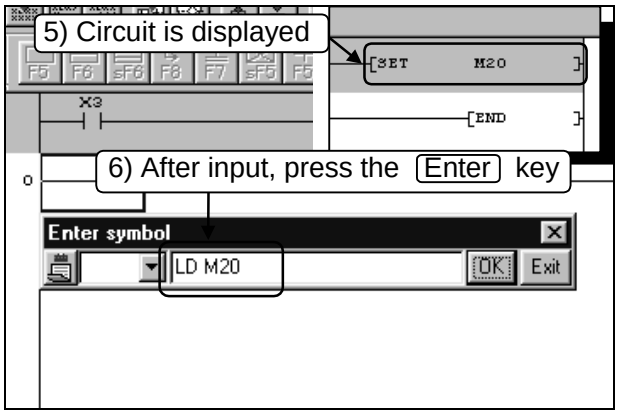
- Click the OK button to define the input.
- Click the Exit button to delete the input.

***From previous page***




3) Input circuit (⊣X3⊢) is displayed.

4) Input "SET␣M20". After the input, press the Enter key.

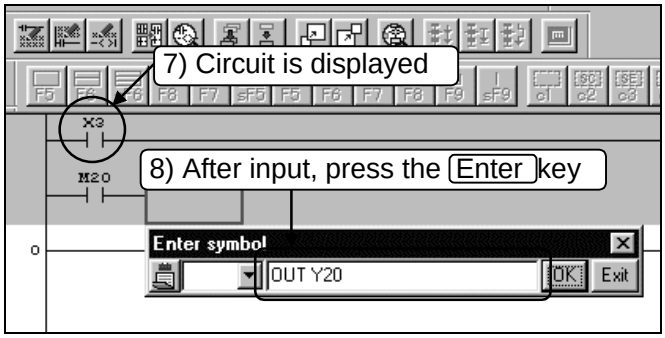



5) Input circuit (⊣[SET M20]⊢) is displayed.

6) Input "LD␣M20". After the input, press the Enter key.

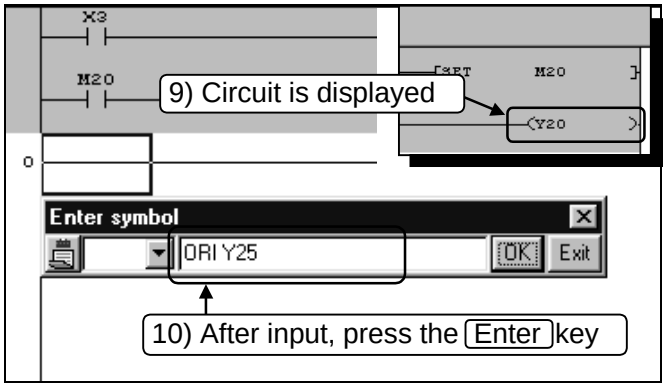
***To the following page***

*From previous page*




7) Input circuit (⊣M20⊢) is displayed.

8) Input "OUT␣Y20".
After the input, press the Enter key.

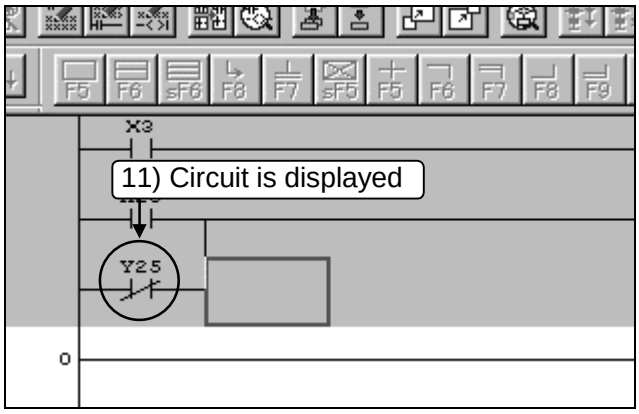



9) Input circuit (⊣Y20⊢) is displayed.

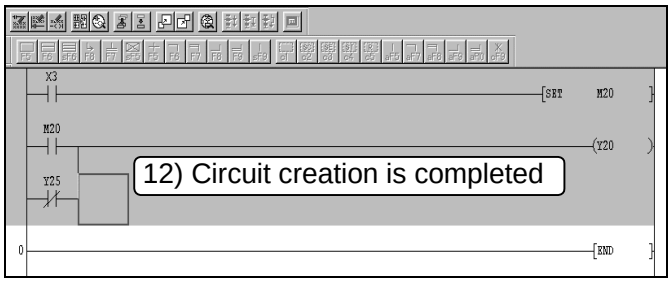
10) Input "ORI␣Y25".
After the input, press the Enter key.

*To the following page*

## *From previous page*




11) Input circuit ($\overset{Y25}{\dashv\not\vdash}$) is displayed.




12) Now, the circuit creation is completed.

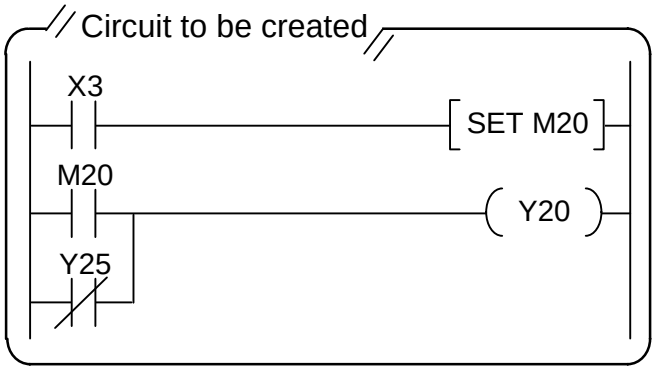
**Point**

Conversion is required after creation of a circuit.

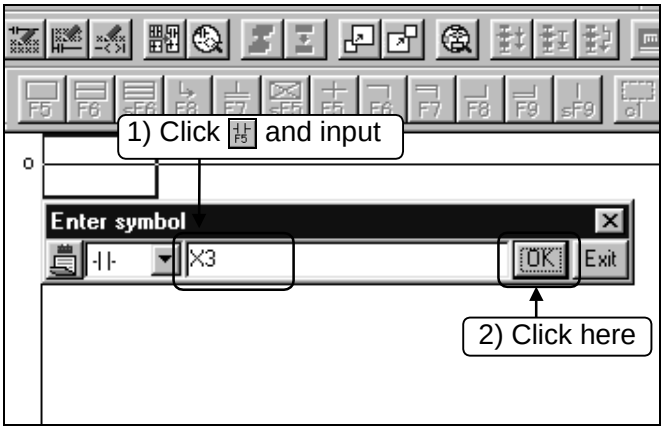
☞ *Part 3, 1.4.* ☜

## 1.3 Creating a circuit with tool buttons

This section explains creating an example circuit with tool buttons.
To create a circuit, be sure to change the mode to write mode.
(This section deals mainly with mouse operations.)




Method to create a circuit in the left is explained.

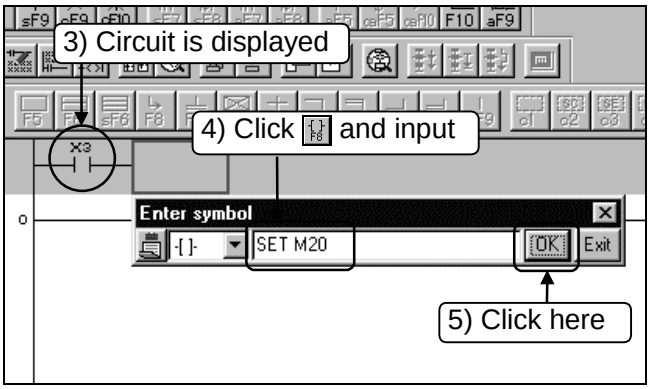



1) Click F5 on the tool bar and the circuit input window opens. Input "X3".
   If the input is not correct, click the Exit button.

2) If the input is correct, click the OK button.

***To the following page***

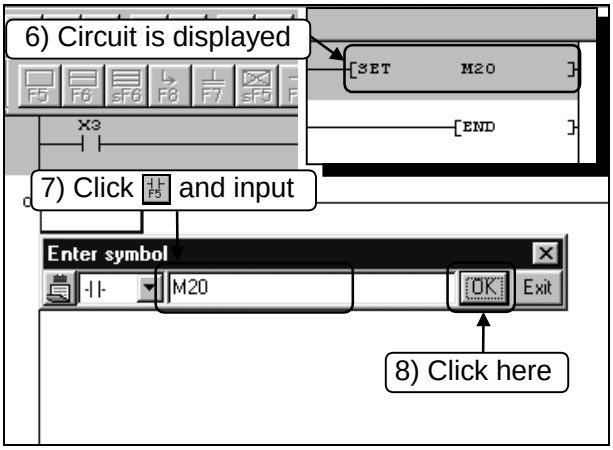
***From previous page***




3) Input circuit (X3) is displayed.

4) Click F8 on the tool bar and input "SET␣M20".

5) Click the OK button.



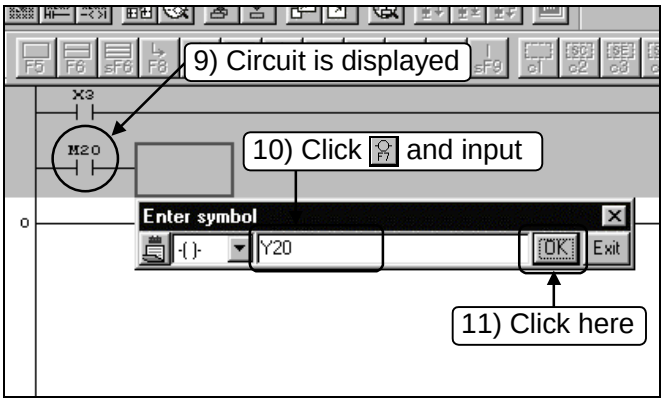

6) Input circuit (SET M20) is displayed.

7) Click F5 on the tool bar and input "M20".

8) Click the OK button.

***To the following page***

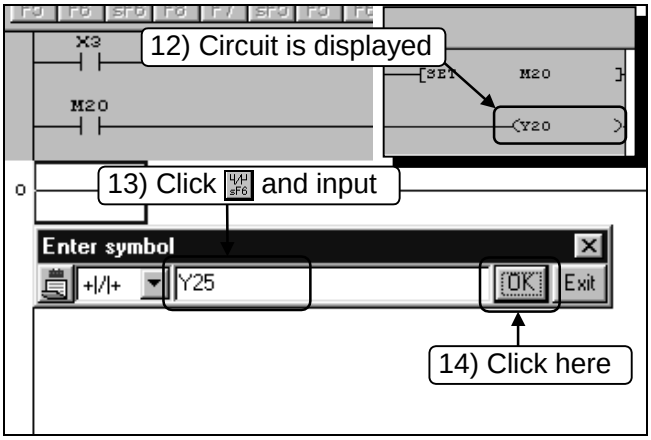
*From previous page*




9) Input circuit (M20) is displayed.

10) Click F7 on the tool bar and input "Y20".

11) Click the OK button.



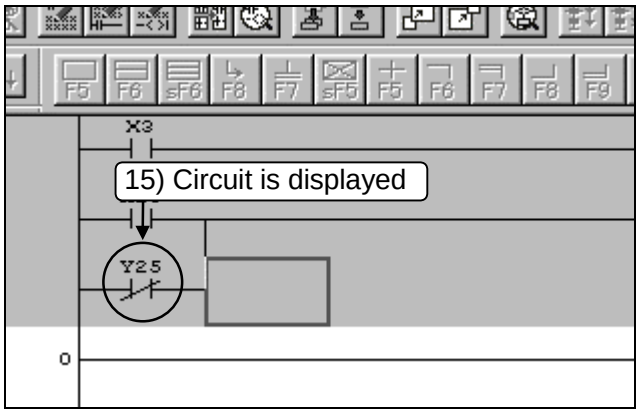

12) Input circuit (Y20) is displayed.

13) Click sF6 on the tool bar and input "Y25".

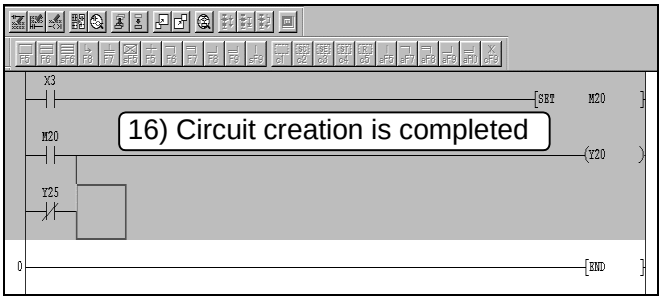
14) Click the OK button.

*To the following page*

## *From previous page*




15) Input circuit ($\overset{Y25}{\dashv\not\vdash}$) is displayed.




16) Now, the circuit creation is completed.

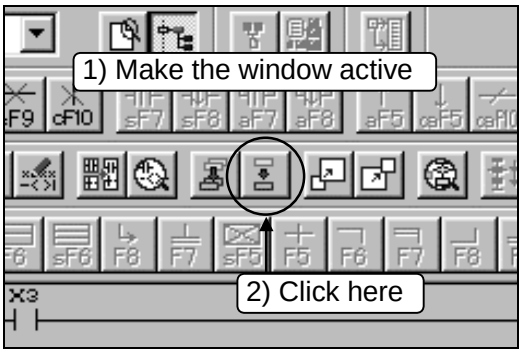
**Point**

Conversion is required after creation of a circuit.

☞ *Part 3, 1.4.* ☜

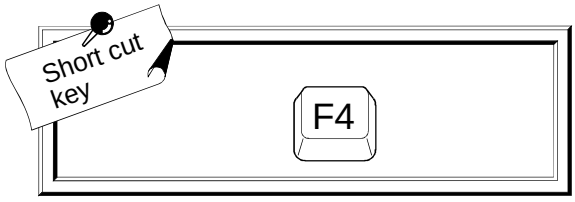
## 1.4 Converting a created circuit

This section explains converting a created circuit (program).




1) Click the window for the circuit to be converted and make it active.

2) Click  on the tool bar.
Now, conversion is complete.




**Hint!**

If an error occurs during conversion, the faulty area on the circuit turns gray. Check the circuit.

MEMO

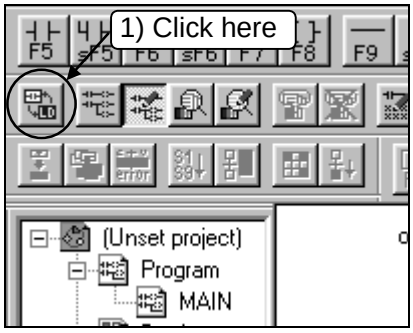
## 1.5 Creating a program with list commands

This section explains creating the programs described in 1.2 and 1.3 with list commands. Be sure to set the operation to the write mode before program creation.

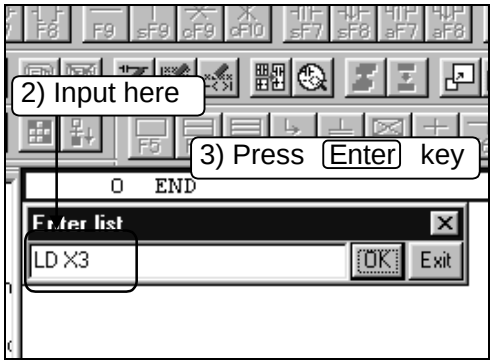
List to be created

```
LD      X3
SET     M20
LD      M20
ORI     Y25
OUT     Y20
END
```

Operations for creating a list as shown to the left are explained.




1) Click the button to switch to the list display.

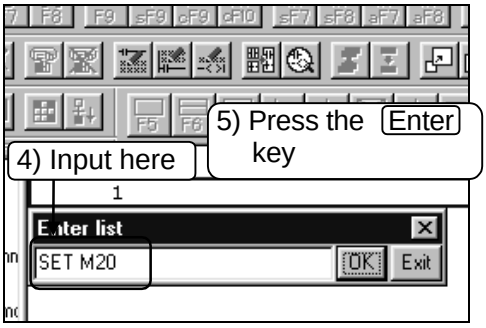



2) Input "LD X3".
Press the Esc Key if input is wrong.

3) After inputting correctly, press the Enter key.

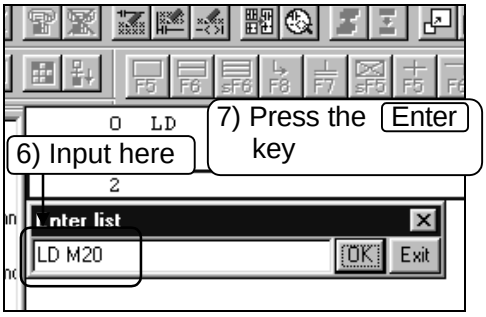
*To the following page*

## *From previous page*



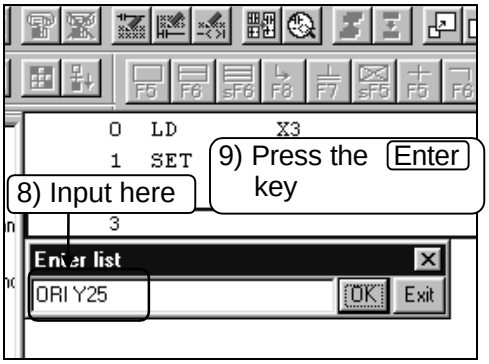

4) Input "SET M20".

5) Press the Enter key.



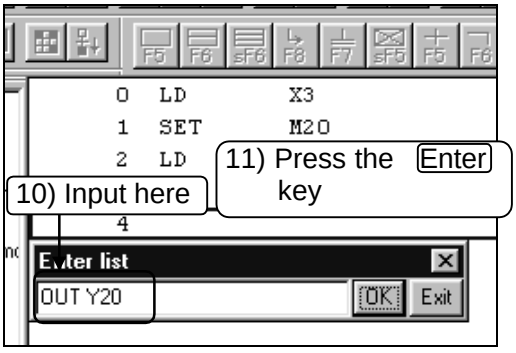

6) Input "LD M20".

7) Press the Enter key.




8) Input "ORI Y25".

9) Press the Enter key.




10) Input "OUT Y20".

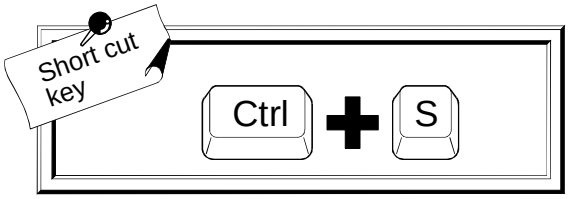
11) Press the Enter key.
Now, programming with list commands is complete.

## 1.6 Saving a created project

The created programs, comments and parameters are saved by project.
This section explains saving created projects.

### ——Saving a new project or overwriting a project——

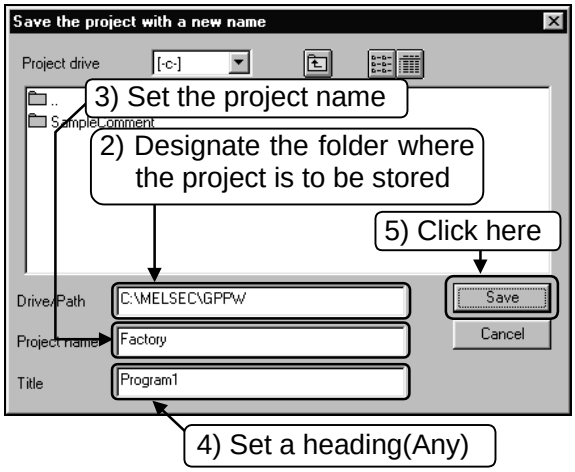

1) Click  on the tool bar.




**Point**

For overwriting, this completes the saving operation.

**(For saving a new project only)**




2) Designate the folder where the project is to be stored.

3) Set the project name.

4) Set a heading as required.

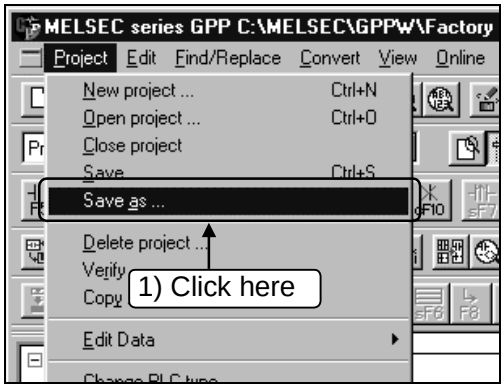
5) After setting the items, click the Save button.

**Hint!**

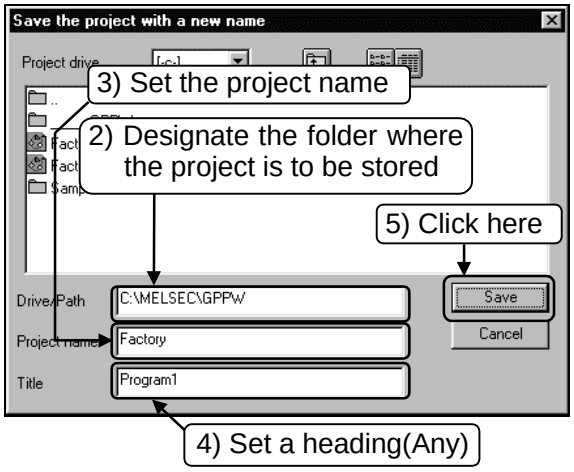
For more details of designating method of the project, see… *Part 2, 2.4.*


6) Click Yes button. Now, saving is completed.

## ——Saving a new project or overwriting a project——




1) Click [Project]-[Save as] on the menu.




2) Designate the folder where the project is to be stored.

3) Set the project name.

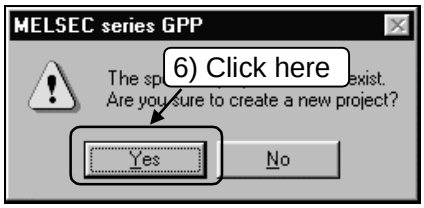
4) Set a heading as required.

5) After setting the items, click the Save button.

**Hint!**

For more details of designating method of the project, see··

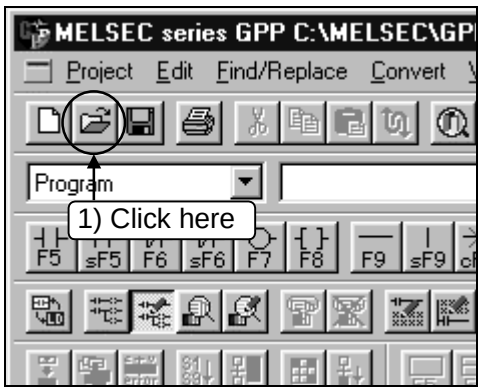
*Part 2, 2.4.*



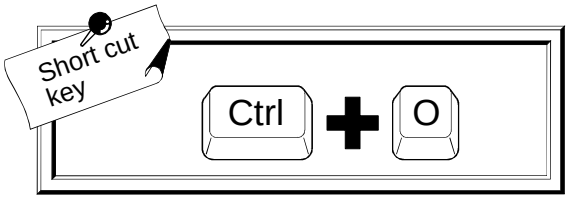

6) Click Yes button. Now, saving is completed.

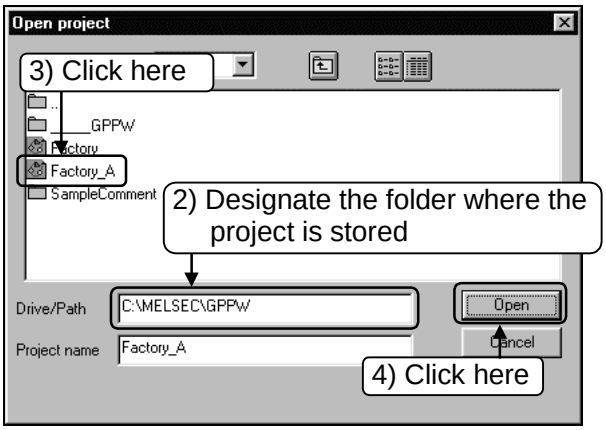
## 1.7 Reading a saved project

This section explains reading a created project.




1) Click  on the tool bar.




2) Designate folder where the project is stored.

3) Click the project to read.

4) Click the Open button to read the designated project.

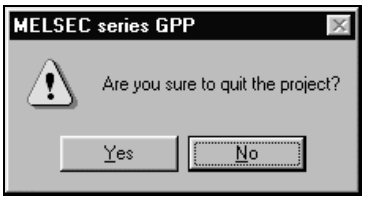
**Hint!**

For more details of designating method of the project, see··

*Part 2, 2.4.*

## ——The dialog box is displayed in the following cases——

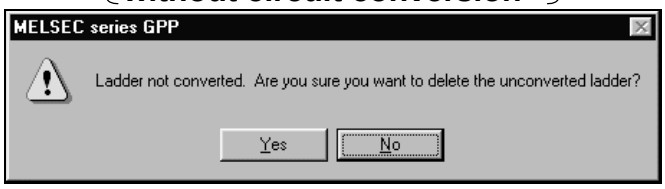
**(If another project is opened and saved)**




Yes ..... Ends the already open project and reads the specified project.

No ..... Continues the open project.

**If another project is opened without circuit conversion**




Yes ..... Ends the project without conversion.

No ..... Continues the open project. (Continues editing of the circuit.)

**If another project is opened and not saved**


Yes ..... Saves the open project, then opens the specified project.

No ..... Opens the specified project without saving the open project.

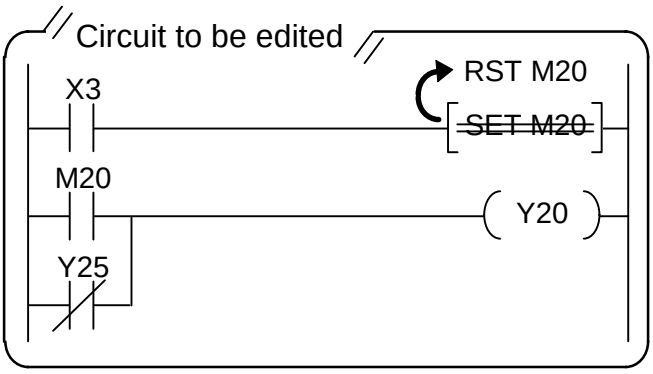
Cancel ... Continues the open project as it is.
(Does not read the specified project.)

## 2 Editing a circuit

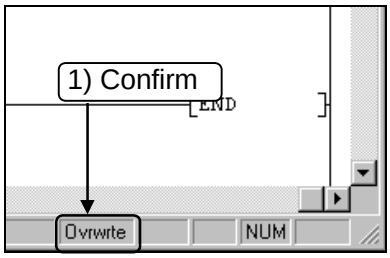
Editing (cut, copy, paste) is indispensable for circuit creation.
This chapter explains editing operations that are important for circuit creation.
Be sure to switch to write mode before editing circuits.

### 2.1 Correcting part of a circuit

This section explains correcting part of a circuit.




This section explains operations for editing part of circuit shown on the left. (SET␣M20→RST␣M20)

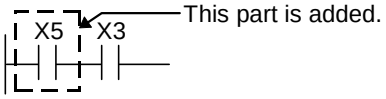



1) Confirm that “Ovrwrte” is displayed at the lower right of the screen.

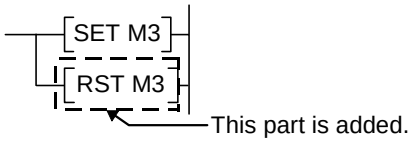
**Point**

If “Insert” is displayed, press the Ins key to change the display to “Ovr wrte.”
If “Insert” is displayed, a contact or a coil is added to the circuit.

<If you try to change X3 to X5>

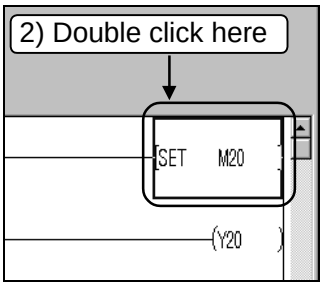



<If you try to change SET to RST>

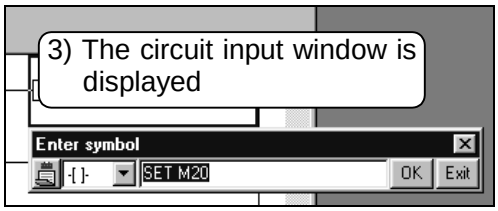



*To the following page*

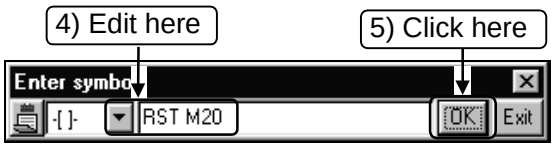
## *From previous page*




2) Double click the area to be edited.

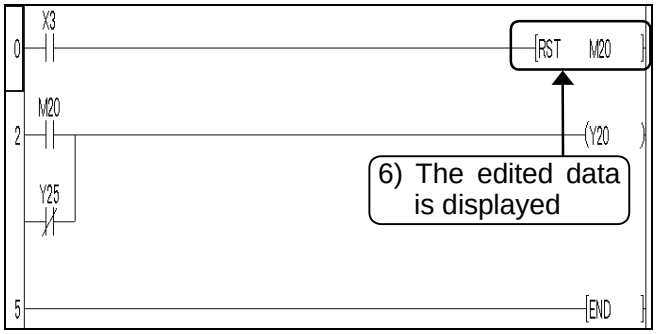



3) The circuit input window is displayed.




4) Clicking the window displays the cursor (|). Edit the data to "RST␣M20".

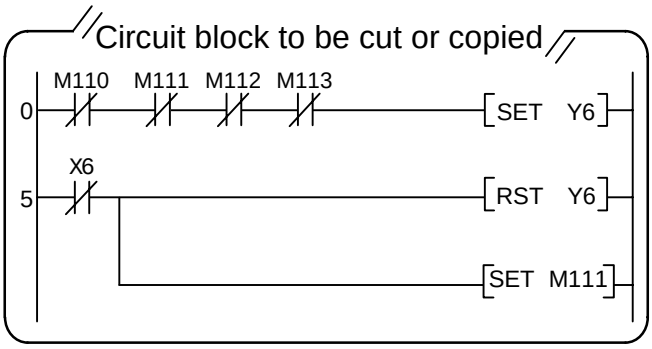
5) After editing, click the OK button.



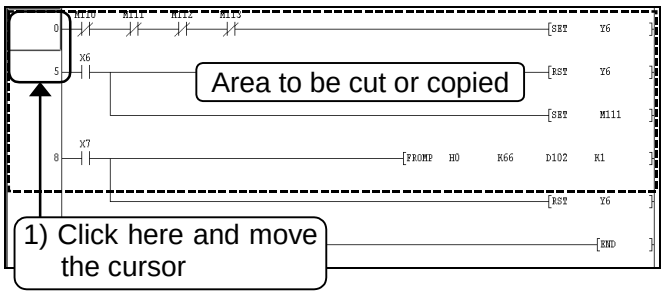

6) The edited circuit is displayed.

## 2.2 Cutting and copying a circuit block

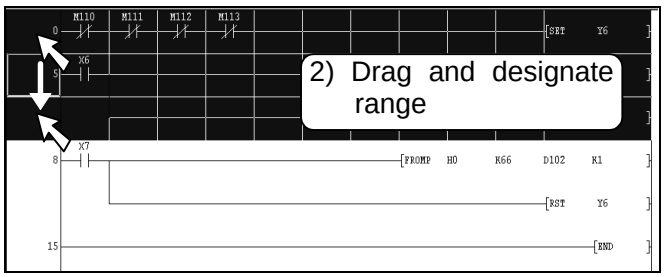
This section explains operations for cutting and copying a circuit block.




This section explains operations for cutting and copying the circuit block shown on the left.




1) Click the step number of the circuit block to be cut or copied, and move the cursor.




2) Drag the mouse vertically to designate the range to be cut or copied. The designated area is highlighted.

**Hint!**

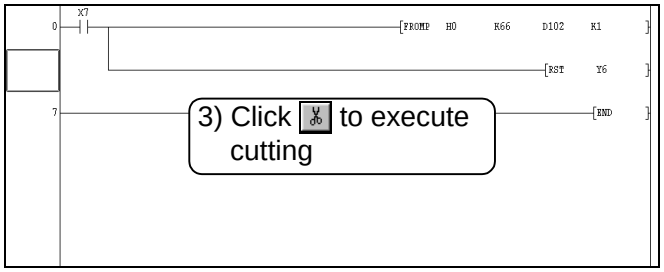
To designate a single-line circuit block, drag horizontally for easier range designation.

***To the following page***

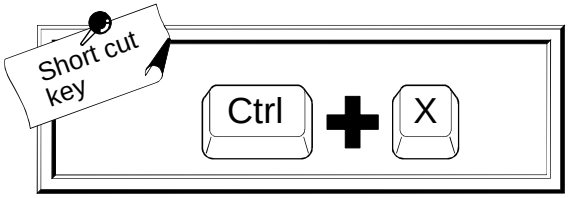
## *From previous page*

To cut the circuit : Go to 3).
To copy the circuit : Go to 4) to 7).

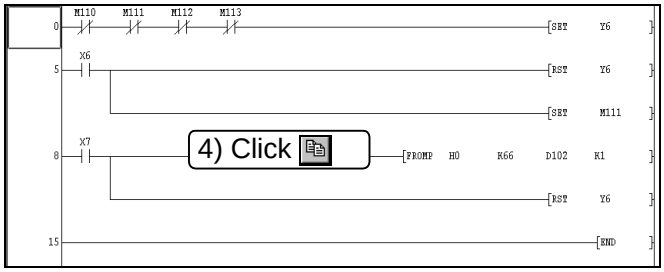
**(To cut the circuit)**



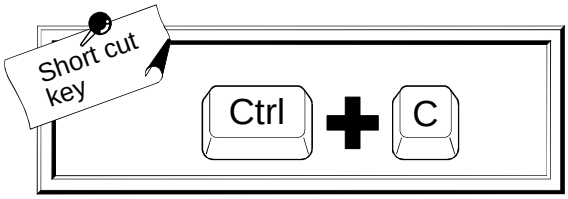

3) Click on the tool bar. The circuit in the designated range is cut. After cutting, the remaining circuits are shifted upward to fill the vacancy.




**(To copy the circuit)**

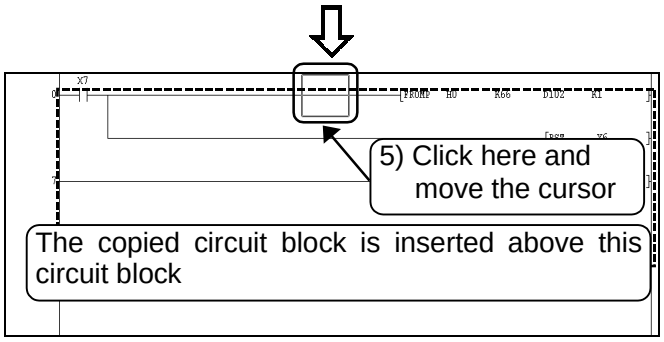



4) Click on the tool bar.




## *To the following page*

## *From previous page*



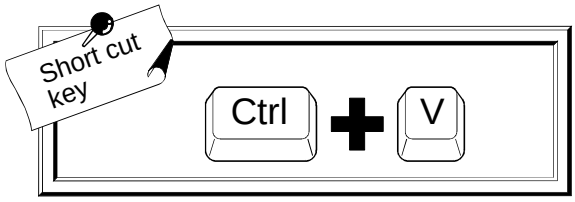

5) Click (anywhere) on the circuit block under the line to be pasted with the copied block.

**Point**

- The circuit block is inserted above the cursor position.
- The circuit block cut or copied are always inserted when pasted. To overwrite, delete the line to be overwritten before pasting.

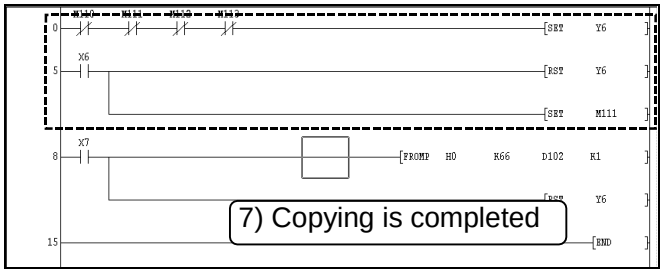
☞ *Part 3, 2.3.* ☜


6) Click  on the tool bar.




*To the following page*

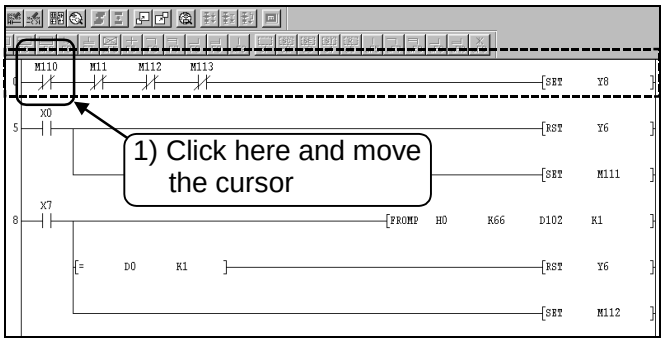
***From previous page***




7) The copied circuit block is pasted.

## 2.3 Inserting or deleting a line

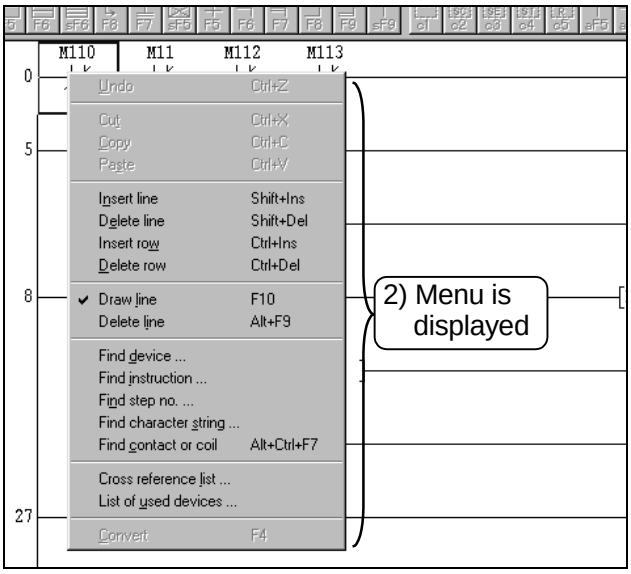
This section explains operations for inserting or deleting a line.




1) Click (anywhere) on the line to be inserted or deleted, and move the cursor.

**Point**

The line is inserted above the cursor line.



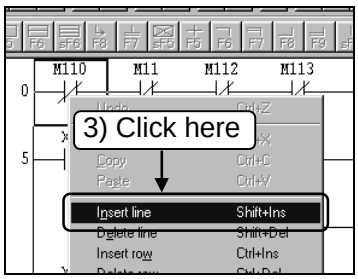

2) Right-click on the circuit creation screen to display the menu.

To inset a line, go to 3).
To delete a line, go to 5).

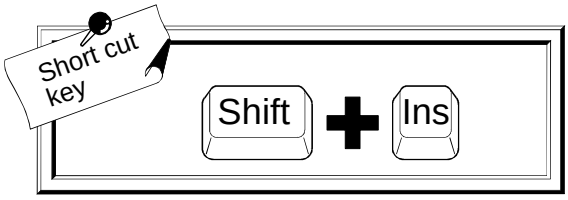
***To the following page***

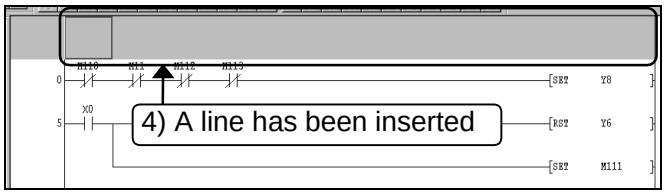
## *From previous page*

**(To insert a line)**



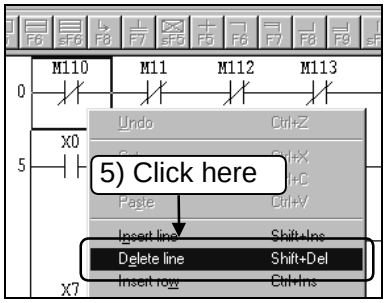

3) Click the [Insert line] menu.



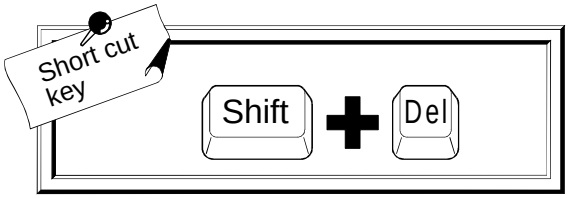



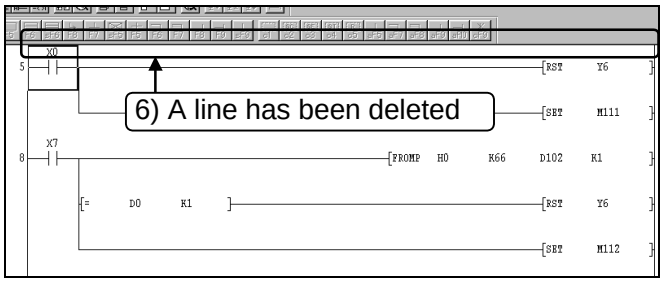

4) A line is inserted above the cursor line.

**(To delete a line)**




5) Click the [Delete line] menu.



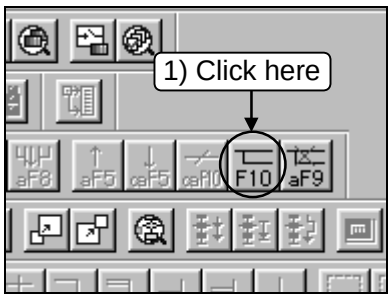




6) A line is deleted at the cursor.

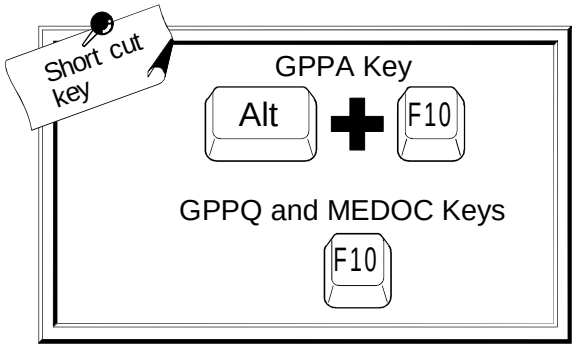
## 2.4 Creating and deleting a ruled line

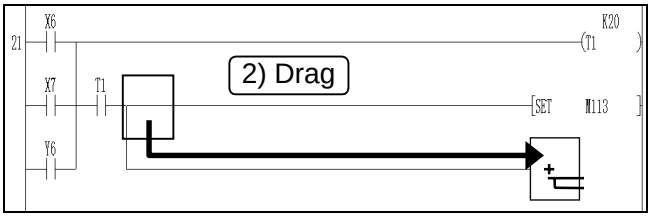
This section explains creating or deleting a ruled line.

### ——Creating a ruled line——




1) Click on the tool bar.

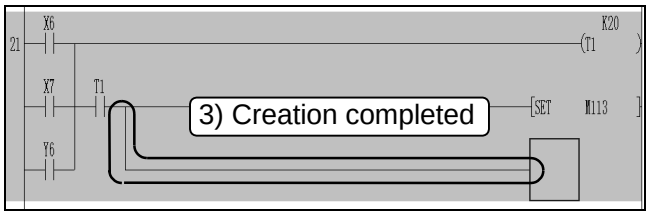



2) Drag the mouse from the start position to the end position.

**Point**

Vertical ruled lines are created on the left of the cursor.

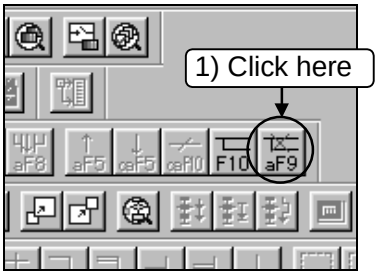



3) Release the left mouse button. Ruled lines are created.

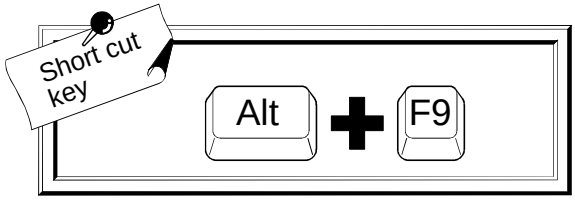
**Hint!**

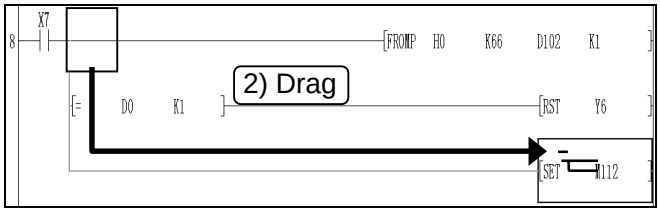
The "END" line cannot be deleted.

## ——Deleting a ruled line——

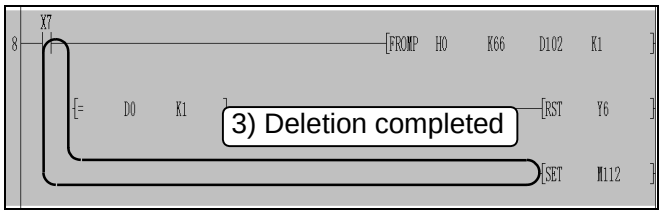



1) Click  on the tool bar.




2) Drag the mouse from the start position to the end position.




3) Release the left mouse button. Deletion is completed.

**Hint!**

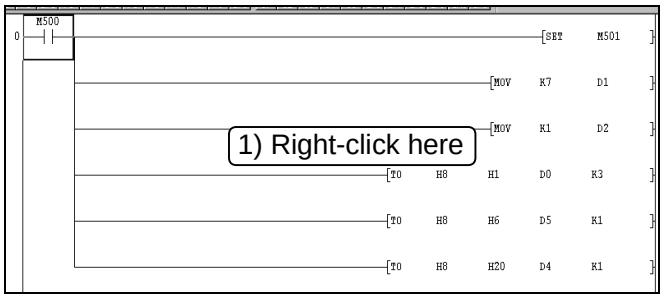
The "END" line cannot be deleted.

## 3 Searching a circuit

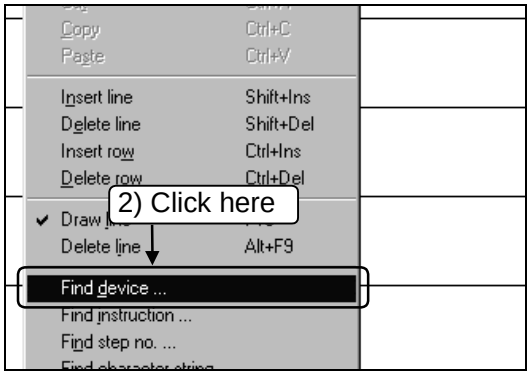
This operation quickly finds circuits to be edited,debugged,or monitored.

### 3.1 Searching with a designated device

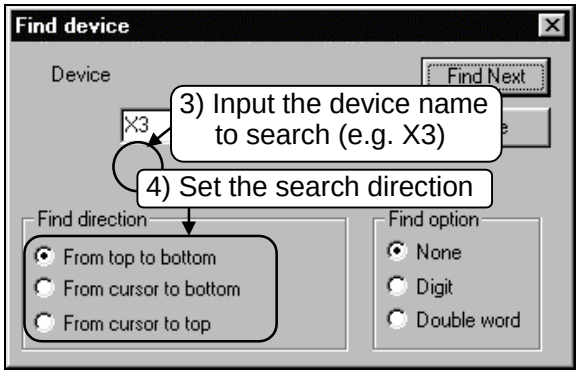
This section explains operations for searching circuits for the designated device name.




1) Right-click on the circuit creation screen, or click  on the tool bar.




2) Click the [Find device] menu.
(Not required when operating from the tool bar.)




3) Input the device name to search.

4) Set the find direction.

**Hint!**

Find direction
- "From top to bottom"
  Searches from the 0 step to the END command.
- "From cursor to bottom"
  Searches from the cursor position to the END command.
- "From cursor to top"
  Searches from the cursor position to the 0 step.

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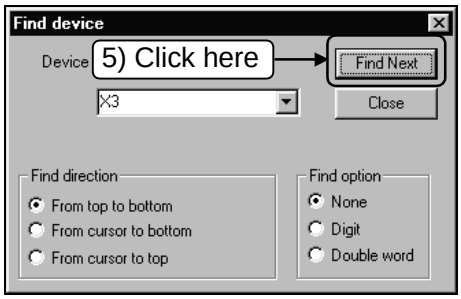
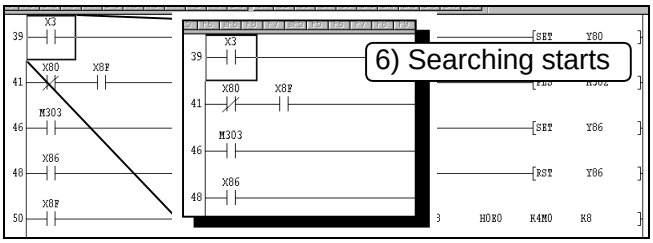


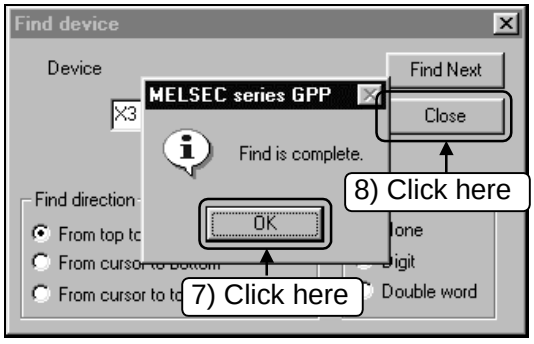

5) Click the Find Next button.




6) Starts searching.
The cursor moves to the circuit found first.

**Hint!**

Every time the Find Next button is clicked, the cursor moves to circuits with the designated device name one after another.




7) If there is no circuit with the designated device name in the following steps, a dialog box to notice the end of search is displayed.
Click the OK button.

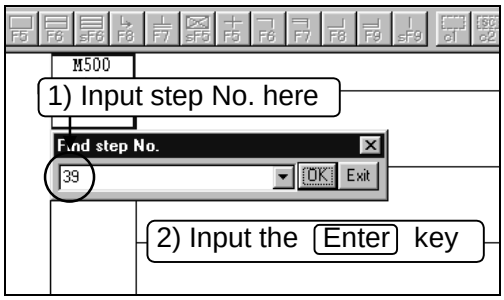
8) Click the Close button.
Now, operations for searching devices are completed.

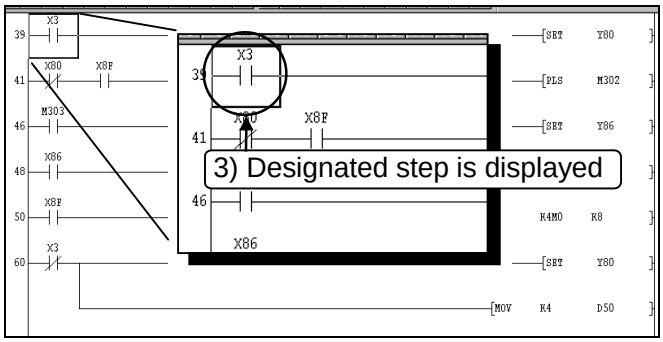
**Hint!**

Find option
- "Digit"
  If the searched device is designated as "X1", "K4X0" of "M0V K4X0 D0" is searched because it contains devices "X0 to X7".
- "Double word"
  If the search device is designated as "D1", "D0" of "DMOV D0 R0" is searched because it contains both devices of D0 and D1.

## 3.2 Searching with a step No.

This section explains operations for displaying the step of the designated number on the screen.




1) Input the step number to be displayed.

**Point**

For searching with step No., no operation is required to display menu. Inputting a step No. automatically displays the Step No. Search window.

2) Press the Enter key.

3) The circuit of the designated step number is displayed.

**Hint!**

To continue searching a step number, repeat the above procedures.

MEMO

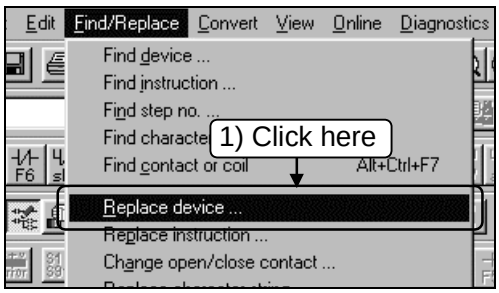
## 4 Replacing within a circuit

This chapter explains replacing a circuit device or command with the designated device or command.

Be sure to set the operation to the write mode before replacing circuit .

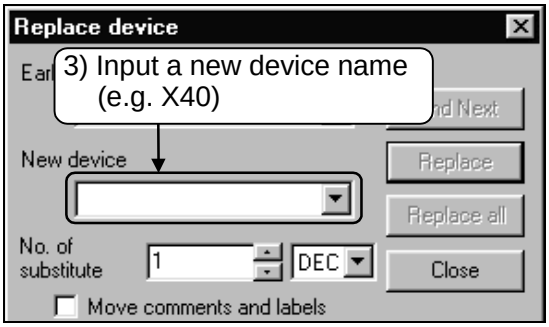
### 4.1 Replacing with a designated device

This section explains replacing a device in a circuit with the designated device.




1) Click the [Find/Replace]-[Replace device] menu.


2) Input the name of the device to be replaced (old device name).




3) Input a device name after replacement (new device name).

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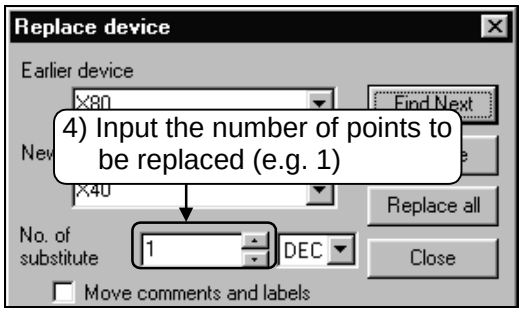
From previous page



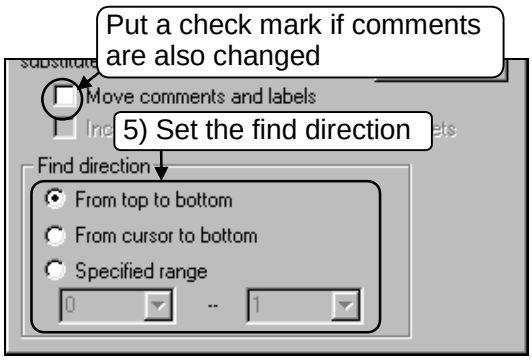

4) Input the number of points to be replaced from the old device. The number of points can be set in decimal or hexadecimal.

**Hint!**

Example of setting number of points for replacement
Old device: X0, New device: X20
Number of points for replacement: 3

| | |
|---|---|
| X0 → | → X20 |
| X1 → | → X21 |
| X2 → | → X22 |

Three devices from X0 will be replaced.




5) Set the find direction.

**Hint!**

Find direction
- 「From top to bottom」
  Searches from 0 step to END command.
- 「From cursor to bottom」
  Searches from the cursor position to END command.
- 「Specified range」
  Searches within the designated step range.

To the following page

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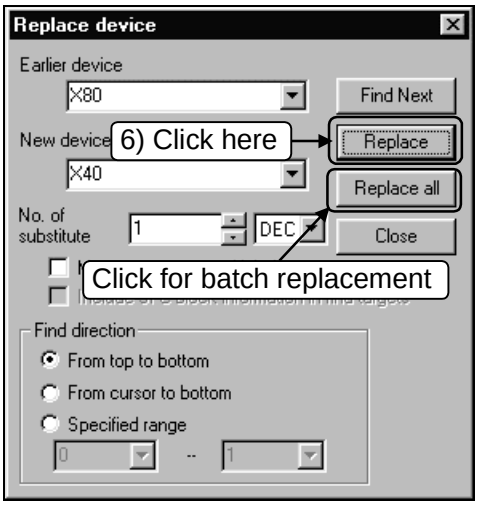
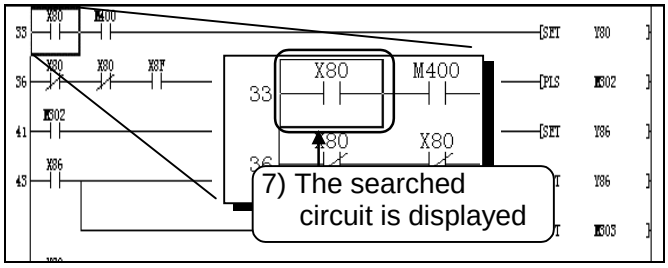



6) Click the Replace button.
To replace the old devices in the circuit with the new devices in a batch, click the Replace all button.




7) The cursor is displayed on the circuit found first (X80).

**Point**

The first click on the Replace button does not replace the character string but searches the old string. Next click on the Replace button executes replacement of the searched character string.


8) Click the Replace button.

**Hint!**

To search the next device without replacement, click the Find Next button.

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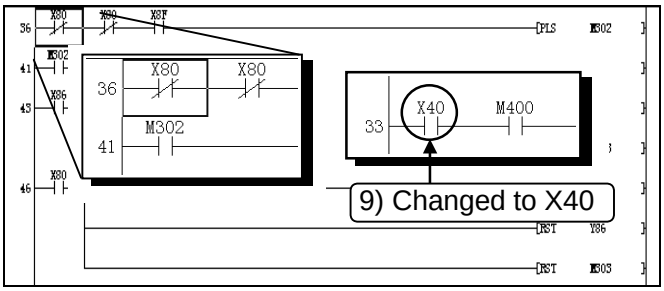
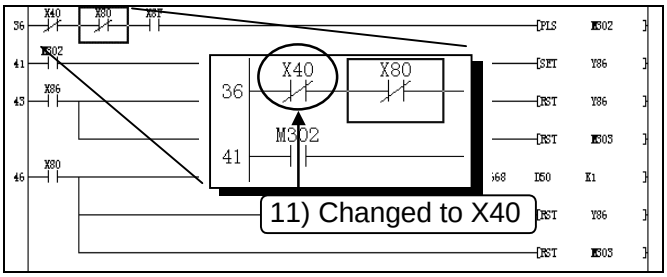



9) X80 of step 33 is changed to X40, and the cursor moves to the next old device (X80).

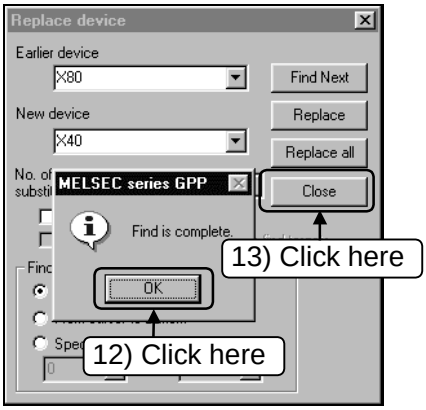

10) Click the Replace button.




11) X80 of step 36 is changed to X40, and the cursor moves to the next old device (X80).

**Hint!**

Every time the Replace button is clicked, old device names are changed to the new device names one after another.




12) If there is no old device name in the following steps, a dialog box to notice the end of search is displayed.

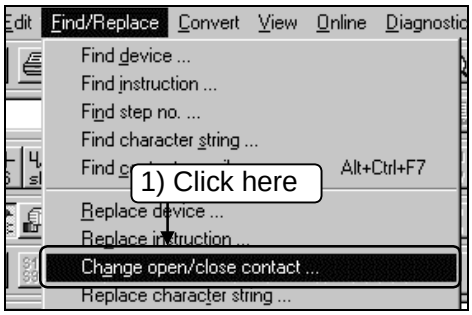
Click the OK button.

13) Click the Close button.

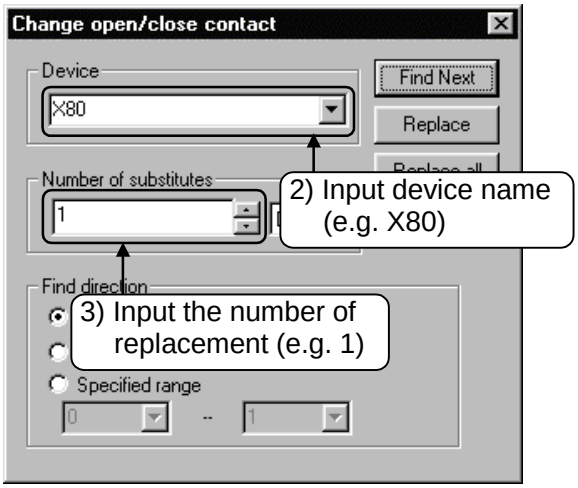
Now, operations for replacing devices are completed.

## 4.2 Replacing open contact with close contact and vice versa

This section explains replacing open contact in the circuit to close contact and vice versa.




1) Click the [Find/Replace]-[Change open/close contact] menu.

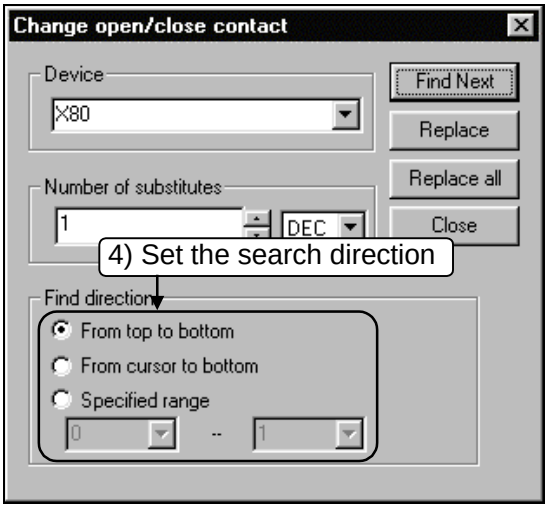



2) Input the device name to be replaced (old device name).

3) Input the number of points to be replaced from the old device.
The number of points can be set in decimal or hexadecimal.

**Hint!**

Example of setting number of points for replacement
Device: X0, Number of points for replacement: 3
X0, X1 and X2 (three points) will be replaced for A to B contact.




4) Set the find direction.

**Hint!**

Find direction
- 「From top to bottom」
  Searches from 0 step to END command.
- 「From cursor to bottom」
  Searches from the cursor position to END command.
- 「Specified range」
  Searches within the designated step range.

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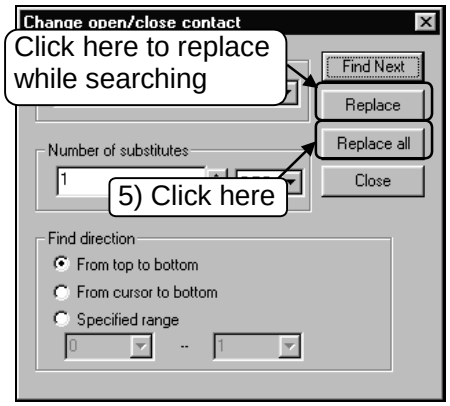
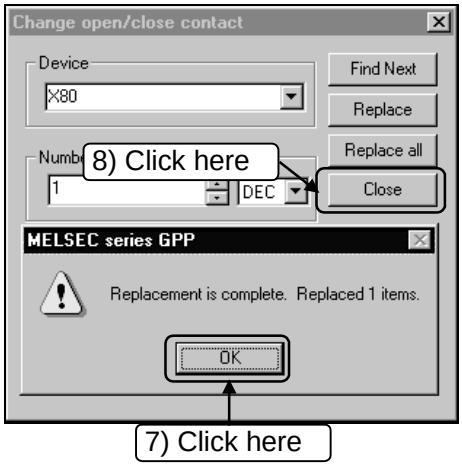



5) Click the Replace all button.

By clicking the Replace button, AB contacts can be replaced while searching the device name.

☞ *Part 3, 4.1.* ☜


6) Contacts of the designated device name are replaced.
If a device name of open contact (⊣ ⊢) is designated, the contact is replaced with close (⊣/⊢) contact.
If a device name of open branch (└┤ ├┘) is designated, the contact is replaced with close (└┤/├┘) branch contact.




7) After completing open/close contact replace-ment, a dialog box is displayed to notice completion.
Click the OK button.

8) Click the Close button.
Now, operations for replacing open contact with close contact and vice versa are completed.

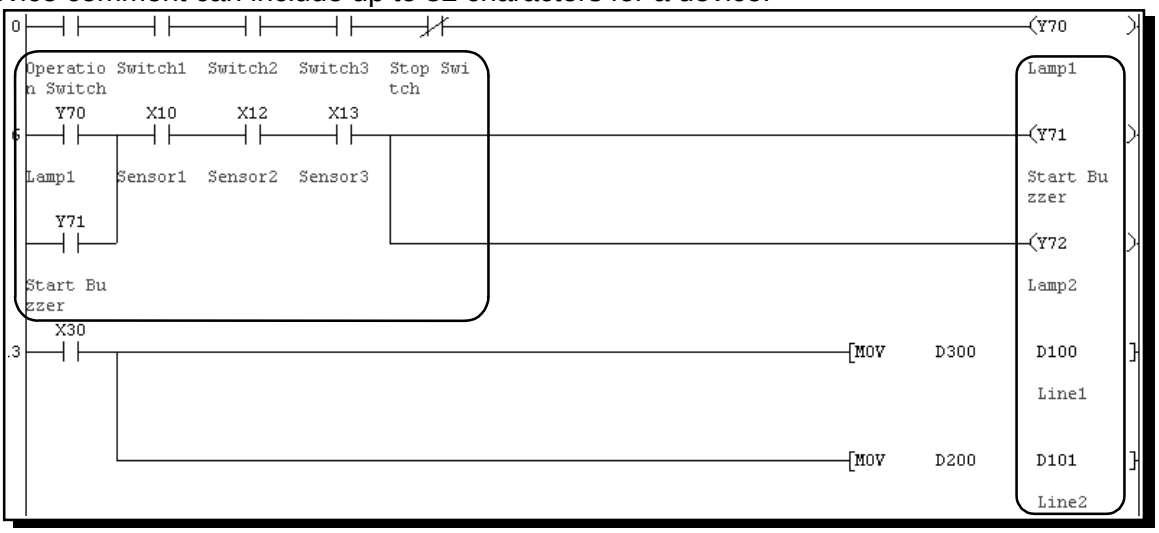
## 5 Explaining circuit components

This chapter explains the following :

Creating device comments to describe meaning and application of each device
Creating statements to describe the operation of the circuit block
Creating notes to describe the coil and the application instruction

### What is a device comment?

A device comment describes each device of the created circuit so that the application of each device can be viewed on the circuit creation screen.
A device comment can include up to 32 characters for a device.

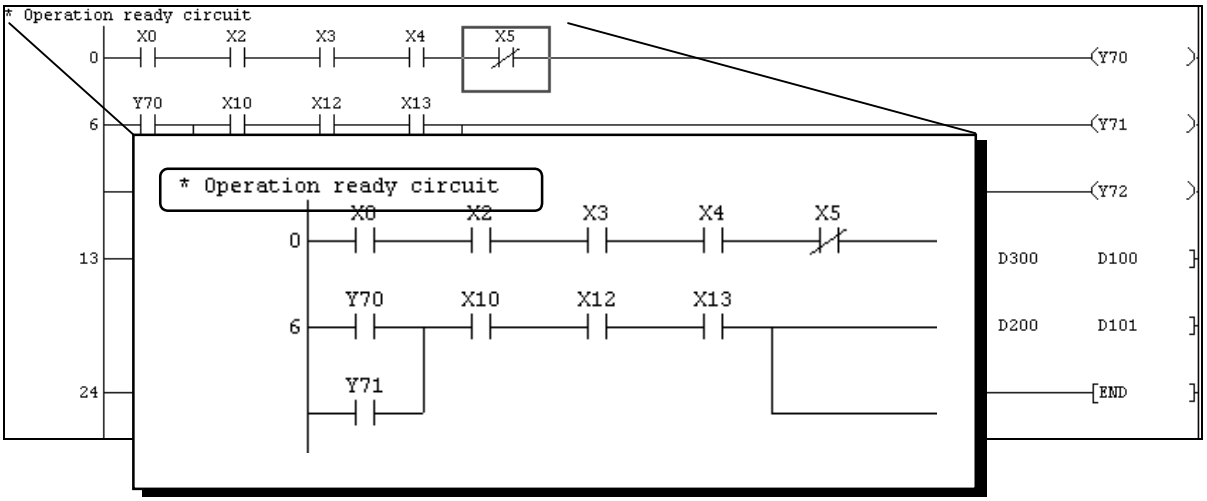



When creating a comment, tiling the circuit creation screen and the comment creation screen allows creating a device comment while referring to the device used in the created circuit.

☞ *Part 2, 2.5.* ☜

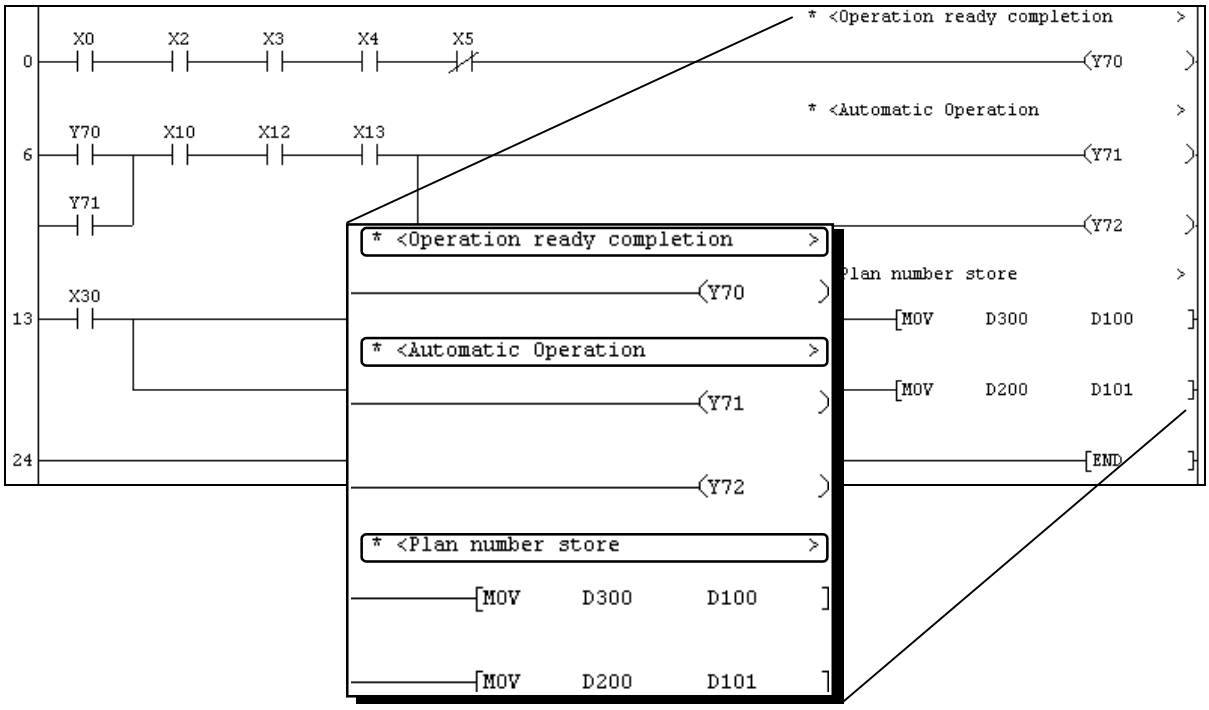
## What is a statement?

A statement makes the circuit creation screen more comprehensible by explaining the circuit function of each circuit block.
A statement can include up to 64 characters.




## What is a note?

A note makes the circuit creation screen more comprehensible by explaining the application and other information of the coil and application instruction circuits.
A note can include up to 32 characters.

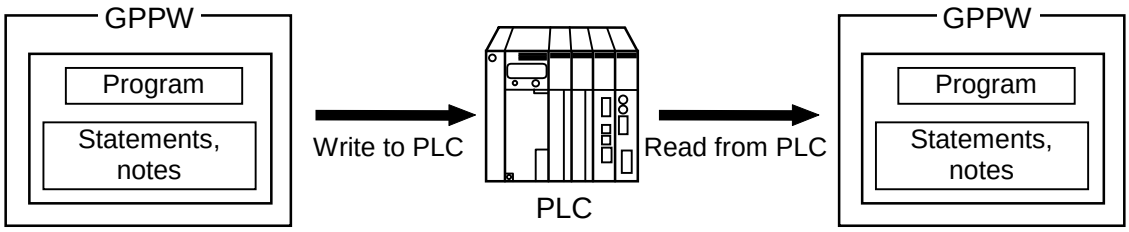


## What are an embedded statement and an embedded note (can be set when QnACPU or QCPU is used)?

A character string set in an embedded statement or embedded note is handled as part of a sequence program. Therefore, performing write to PLC writes it to the PLC CPU automatically and performing read from PLC reads it automatically.
Embedded statements and embedded notes are very useful because merely executing read from PLC sets statements and notes.
It should be noted that the number of steps will be consumed in proportion to the number of characters used.
(A space is also handled as one character.)

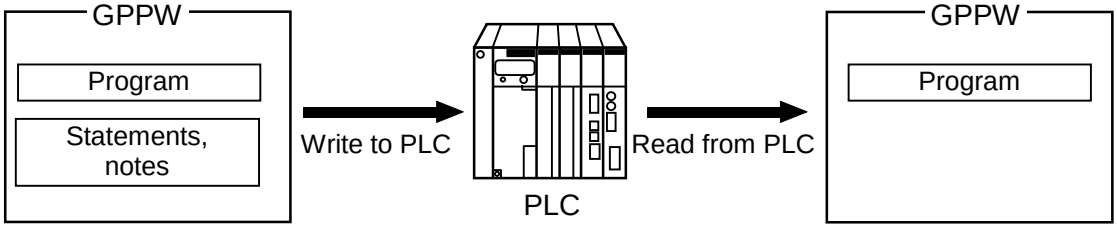
<Number of consumed steps>

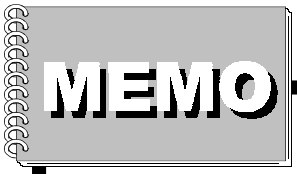
$2+\frac{\text{number of characters}}{2}$ steps (Fractional portion is rounded down)




## What are a separate statement and a separate note?

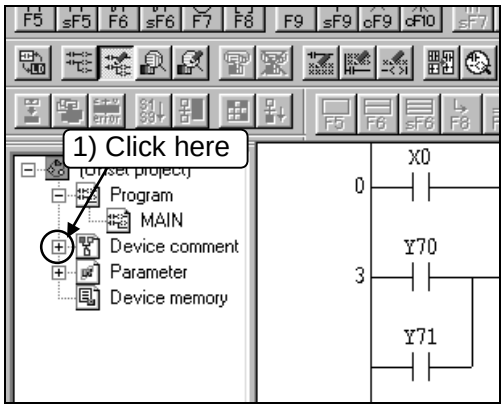
A character string set in a separate statement or separate note is controlled only on GPPW. Therefore, the statements and notes are not written to the PLC if write to PLC is performed.
A character string set in a separate statement or separate note is headed by "*".



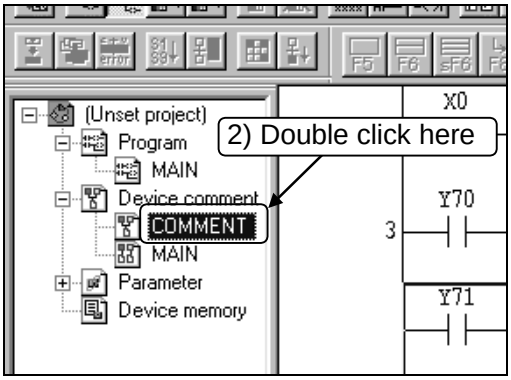

MEMO

## 5.1 Creating device comments

This section explains creating comments for designated devices.
There are two kinds of comments: the "common comment" (one comment per project) and the "program comment" (one comment per program).
Here, the common comment is described.



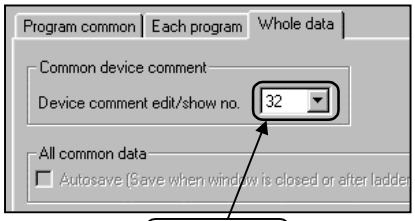

1) Click the + mark of [Device comment] in the project data list.




2) Double click [COMMENT] (common comment).

**Point**

If the comment is to include 17 characters or more, click the [Tools] - [Options] set the number of characters for display to 32.

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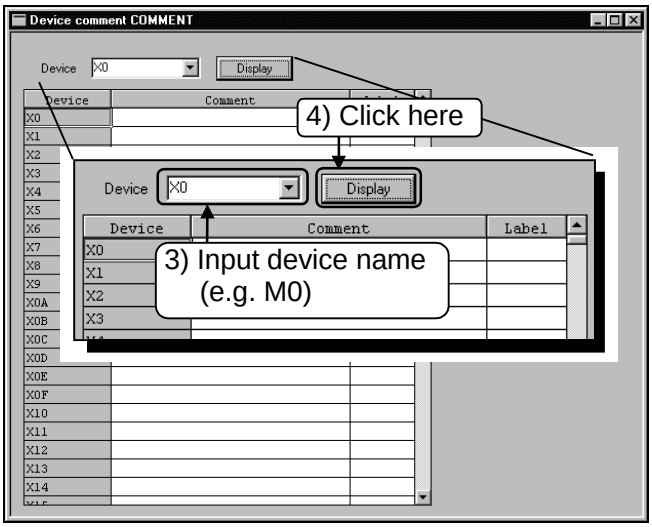
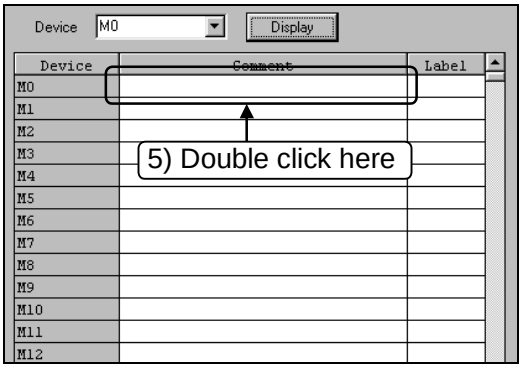



3) The comment creation screen is displayed.
Input the device name for which a comment is created.

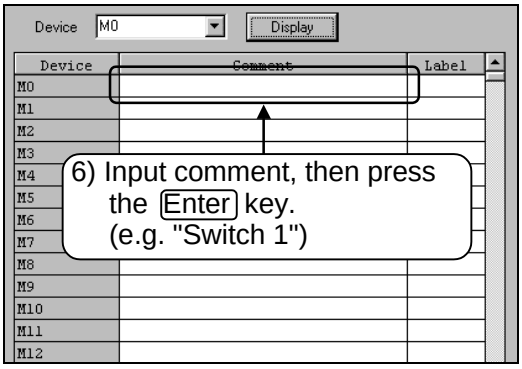
4) Click the Display button.




5) The device name is displayed from M0.
Double click the comment column next to the device name to which a comment is input.

**Hint!**

The cursor ( ) can be moved by pressing ↓ , ↑ , → , and ← keys.




6) Input the comment to the designated device name, then press the Enter key.
A comment can include up to 32 characters .
To correct the input comment, press BS or Del key and re-input.

☞ *Part 3, 6.1.* ☜

**Point**

Comments can be created by Windows applications.

☞ *Part 5, Chapter 2.* ☜

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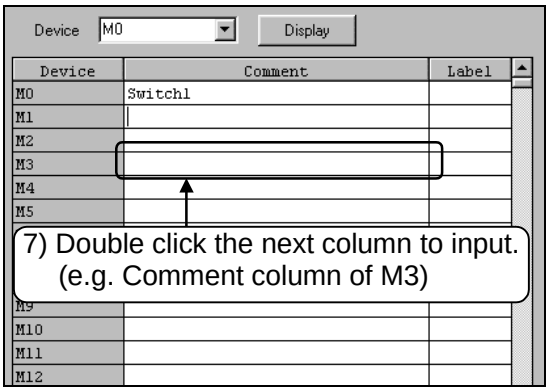
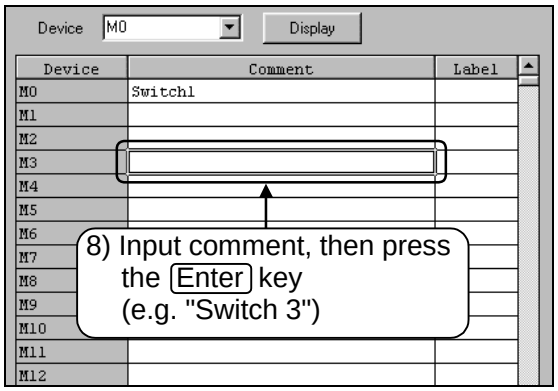
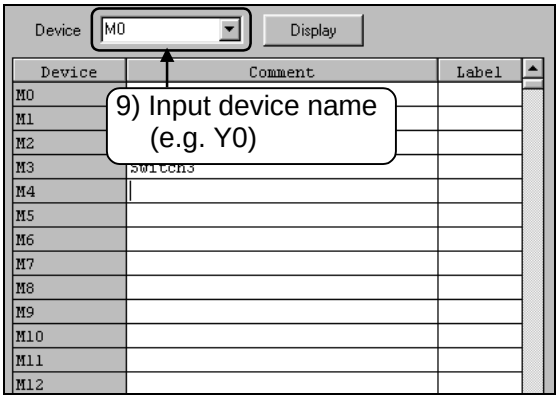



7) Double click next comment column for input.



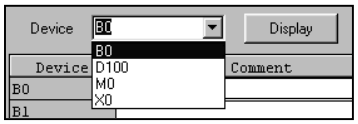

8) Input comment for the designated device name, then press the Enter key.




9) Create comment for other devices. Input the device name for comment creation.

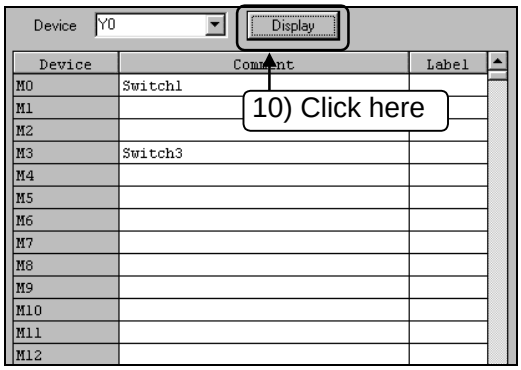
**Hint!**

The device names for which comments have been created are registered to the list box「Device name」
It is possible to designate a device name for comment creation by clicking a registered device name.

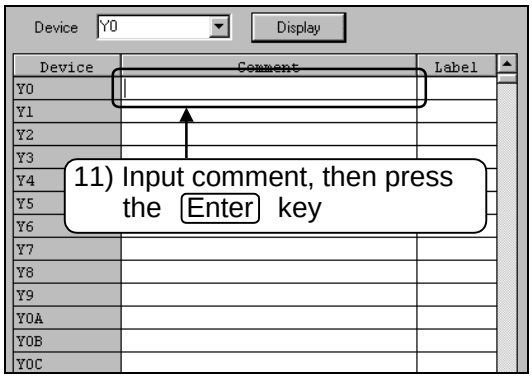



*To the following page*

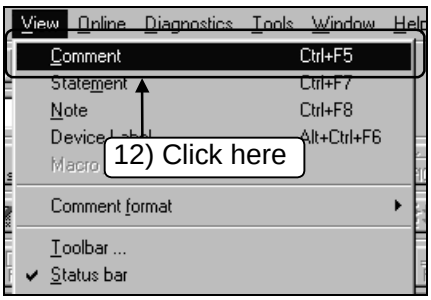
## *From previous page*



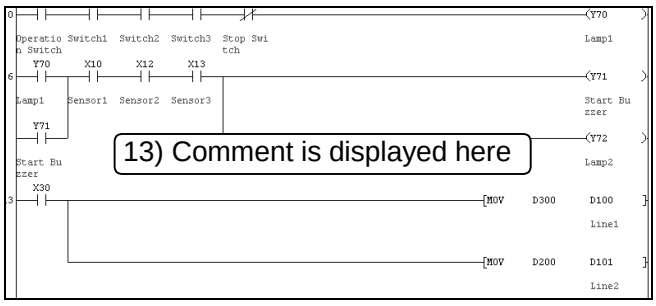

10) Click the Display button.




11) The device name is displayed from Y0.
Click the comment column and input comment.



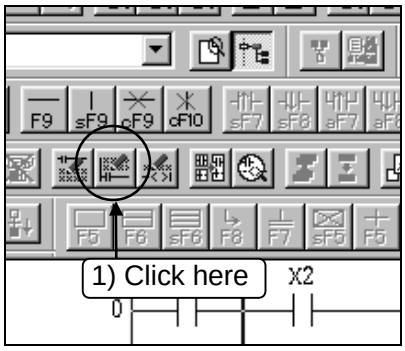

12) Confirm the created comment on the circuit creation screen.
Click the [View]-[Comment] menu.



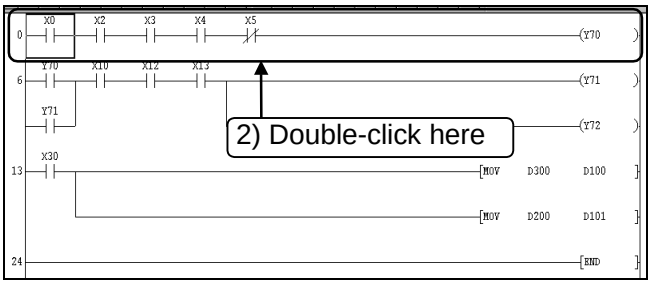

13) The comment created for the device is displayed.

## 5.2 Creating statements for each circuit block

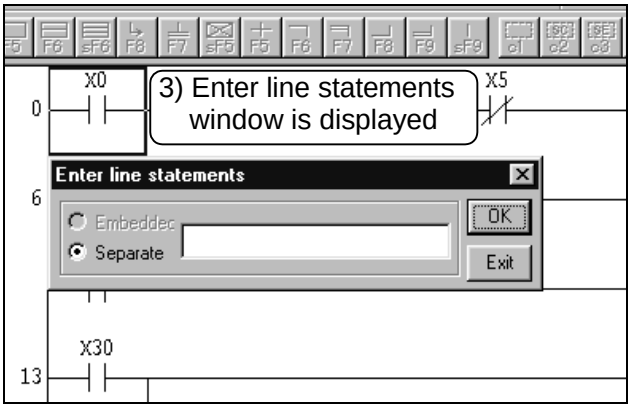
This section explains creating statements for the designated circuit block.
Be sure to switch to writing mode before creating statements.




1) Click  on the toolbar.



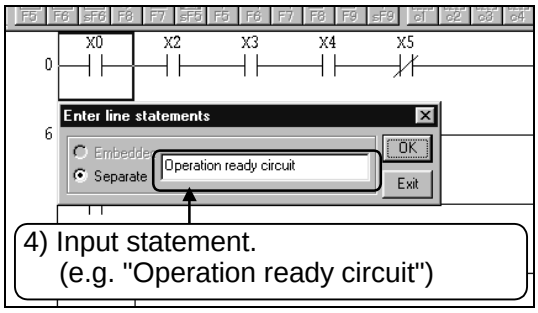

2) Double-click the lower row of the position to be annotated with a statement.




3) Enter line statements window is displayed.

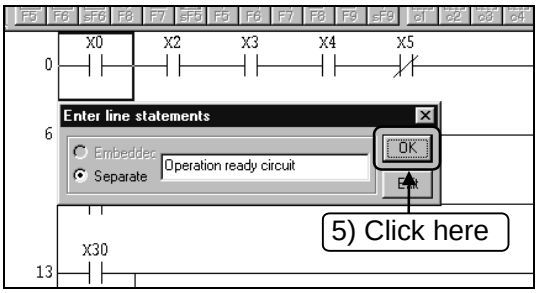
***To the following page***

## *From previous page*

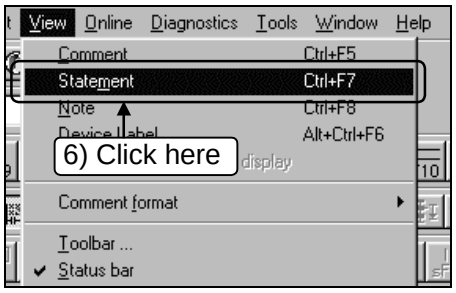



4) Enter the statement.
Any statement can be up to 64 characters long.
To correct the statement once entered, press the BS and Del keys and enter the statement again.

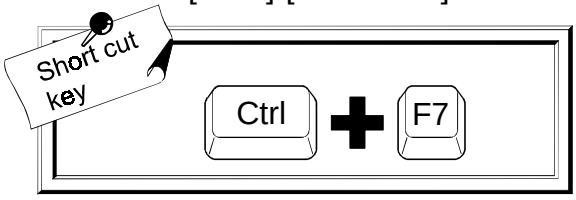
☞ *Part 3, 6.5.* ☜

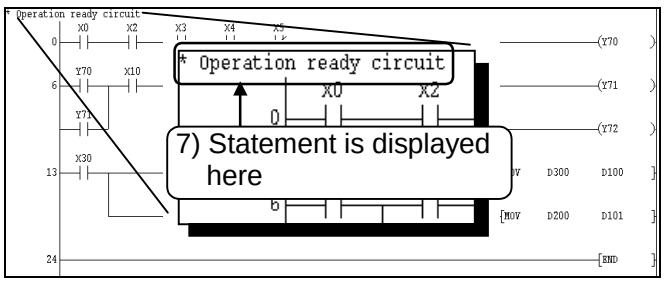



5) Click the OK button.




6) Check the created statement on the circuit creation screen.
Click the [View]-[Statement] menu.

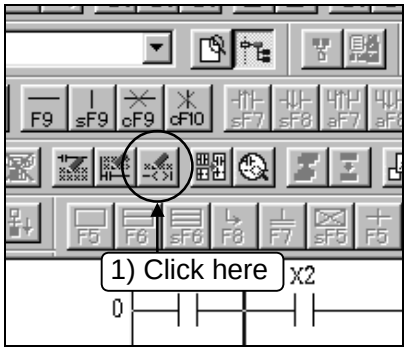


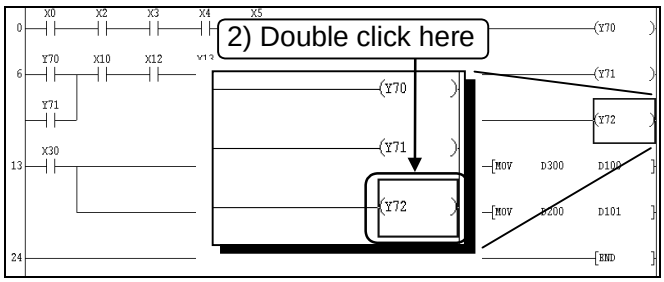

7) The created statement appears.

## 5.3 Creating a note for coil and application instruction

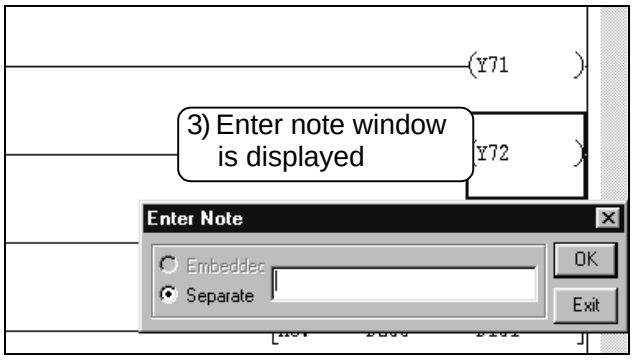
This section explains creating a note for the designated coil and application instruction.
Be sure to switch to writing mode before creating a note.




1) Click  on the toolbar.



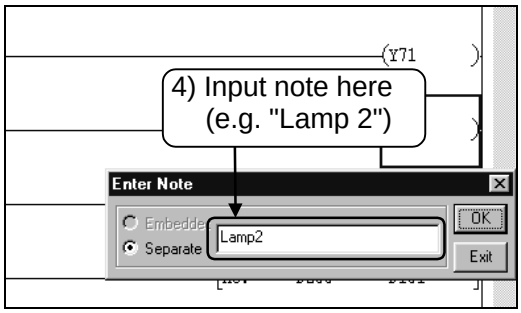

2) Double-click the position of a coil or application instruction to be annotated with a note.




3) The Enter note window appears.

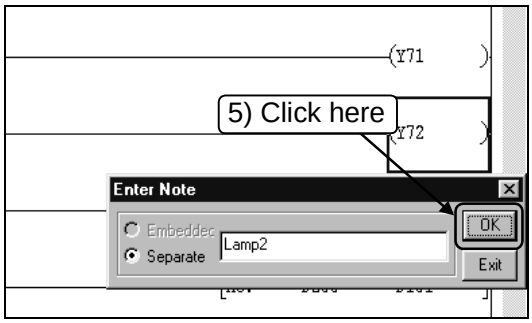
***To the following page***

## *From previous page*

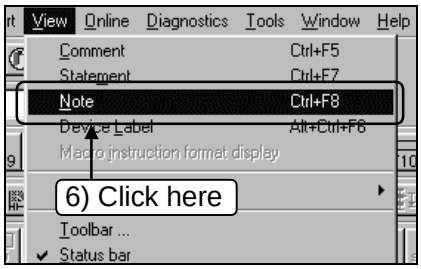



4) Enter the note.
Any note can be up to 32 characters long.
To correct the note once entered, press the BS and Del keys and enter the note again.

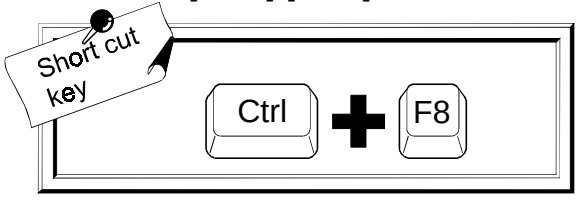
☞ *Part 3, 6.5.* ☜

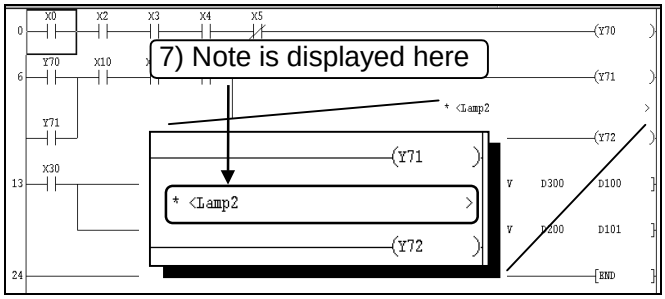



5) Click the OK button.




6) Check the created note on the circuit creation screen.
Click the [View]-[Note] menu.



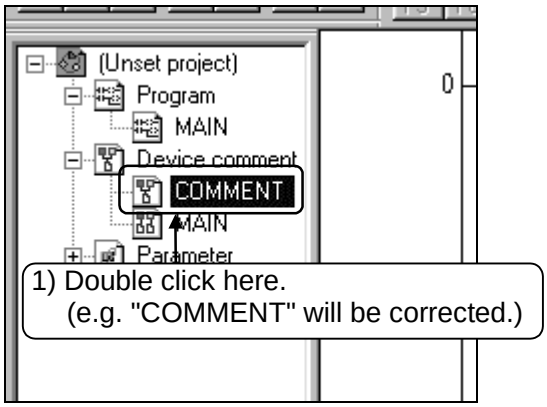

7) The note created for the coil or the application instruction is displayed.

## 6 Editing comments

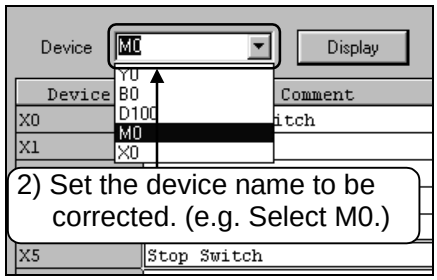
This chapter explains how to edit (correct,delete,copy) the device comment , the statement and the note for the device comment.

### 6.1 Correcting device comments

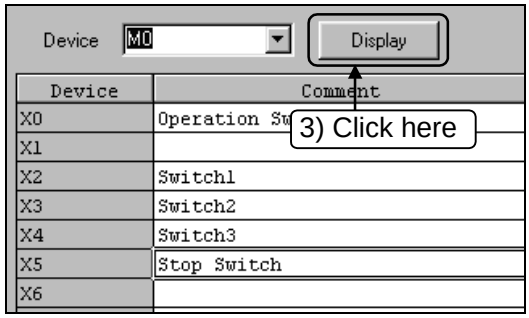
This section explains correcting comments for the designated device.




1) Double click the comment to be corrected in「Device comment」shown in the project data list.



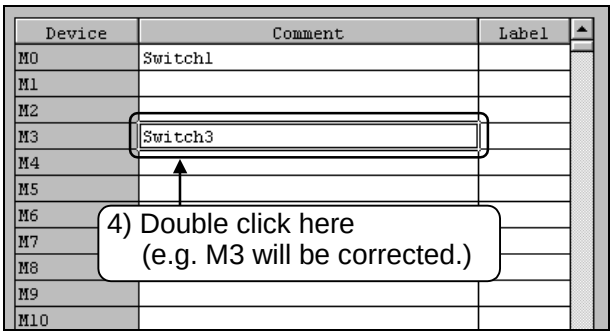

2) The comment creation screen is displayed.
Use the「Device」list box to set the device name to be corrected.



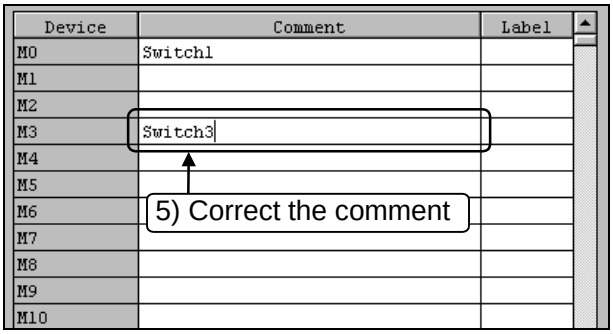

3) Click the Display button.

*To the following page*

## *From previous page*




4) Double click the comment column to be corrected.




5) A cursor (|) is displayed.
Correct the comment.

**Point**

Use the following keys for correcting comment.

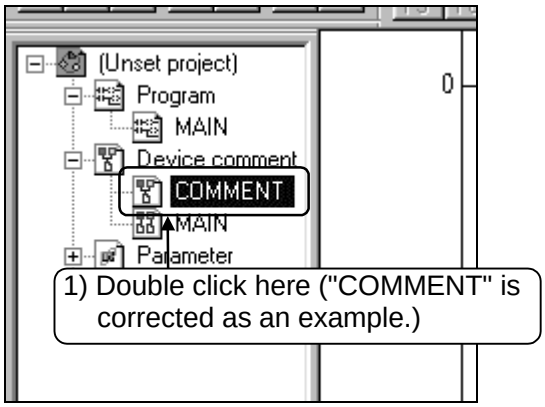
- Move cursor: → and ← keys
- Delete characters at the left of the cursor: BS key
- Delete all: Del key

After correcting the comment, press the Enter key.

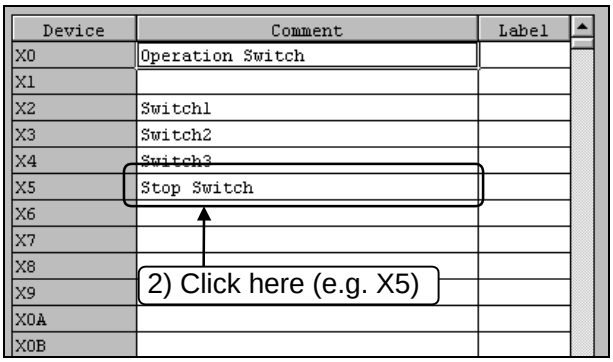
## 6.2 Deleting (cutting) device comments

This section explains deleting (cutting) the device comment for the designated device.

### ——Deleting (cutting) each comment——



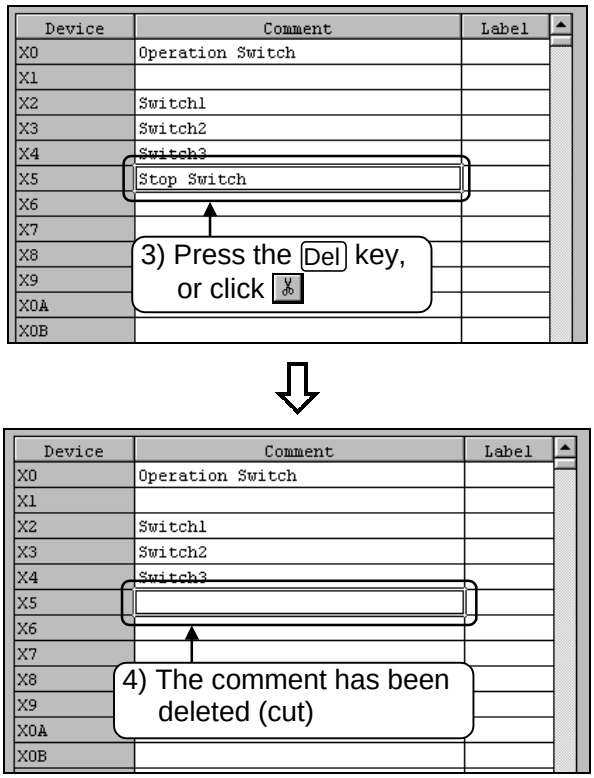

1) Double click the comment to be deleted (cut) in the project data list.



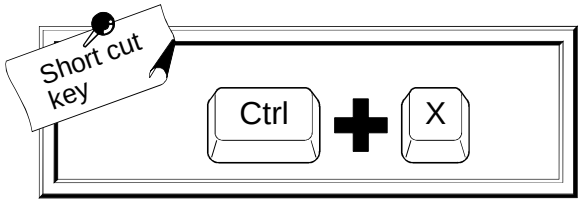

2) The comment creation screen is displayed.
Click the comment column to delete (cut), and move the cursor.

*To the following page*

## *From previous page*




3) Press the Del key, or click .
To cut the column, click on the tool bar.



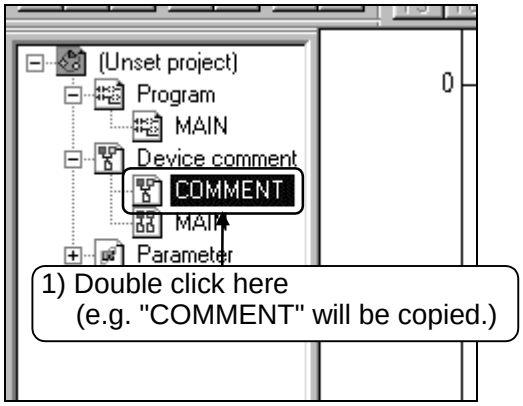

4) The comment has been deleted (cut).

**Hint!**

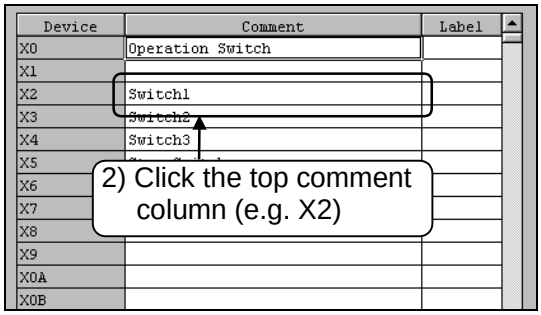
If the comment is cut by clicking , the cut comment can be pasted on other device comment columns by a paste operation.

☞ *Part 3, 6.3.* ☜

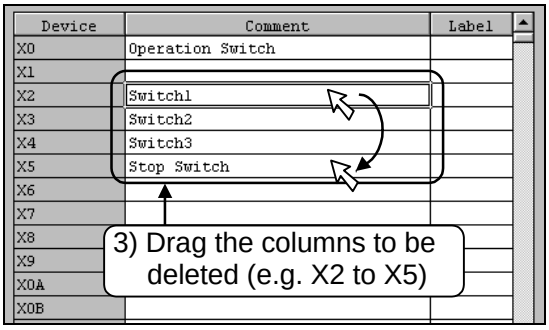
## ——Deleting (cutting) a series of comments in batch——




1) Double click comment to be corrected in ⌈Device comment⌋ shown in the project data list.



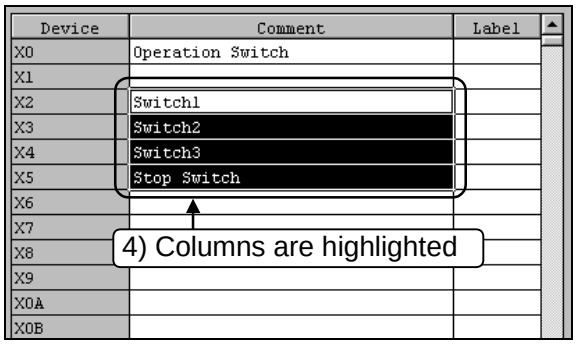

2) The comment creation screen is displayed.
Click the top of the comment columns to be deleted (cut), and move the cursor.



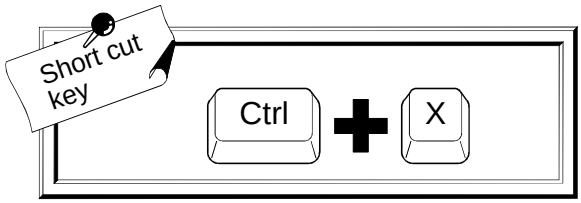

3) Confirm that the cursor ( ) is displayed, and drag the range to be deleted (cut).

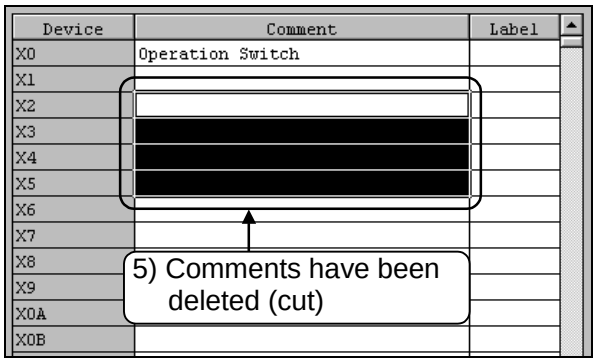
*To the following page*

## *From previous page*




4) The comment columns in the dragged area are highlighted (except for the top column).
To redo the range specification, click any comment column.
To delete the columns, press the Del key.
To cut the columns, click on the tool bar.




5) Now the designated comments have been all deleted (cut).

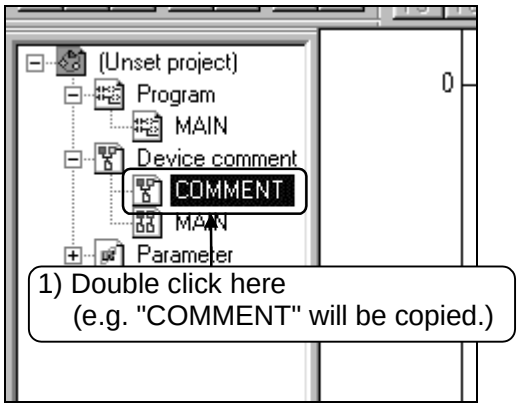
**Hint!**

If the comment is cut by clicking , the cut comment can be pasted on other device comment columns by a paste operation.

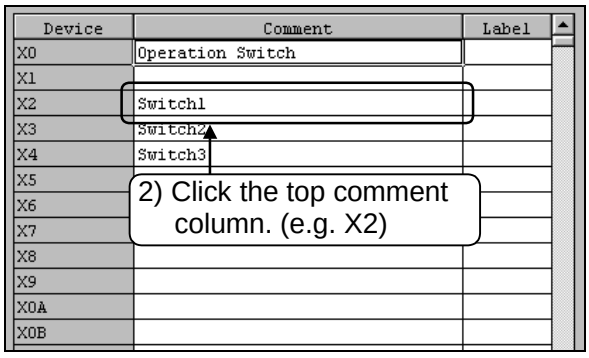
☞ *Part 3, 6.3.* ☜

## 6.3 Copying device comments

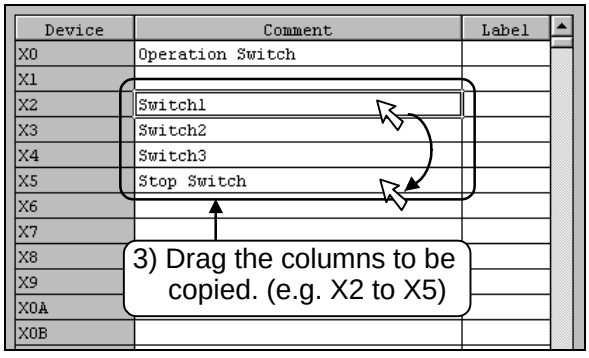
This section explains copying comments for the designated device.




1) Double click the comment to be copied in ⌈COMMENT⌋ shown in the project data list.



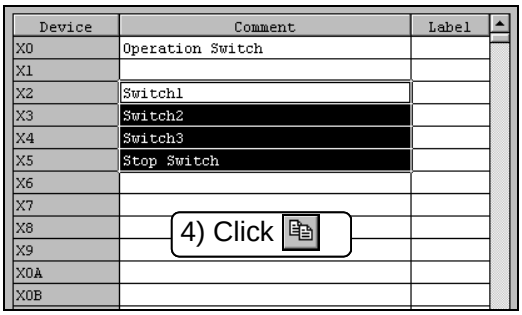

2) The comment creation screen is displayed.
Click the top of the comment columns to be copied, and move the cursor.



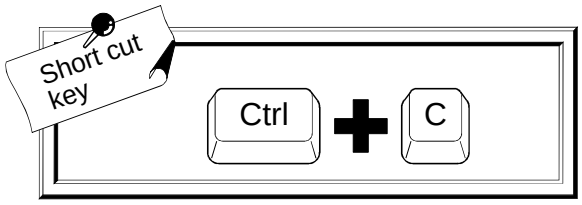

3) Confirm that the cursor ( ▭ ) is displayed, and drag the range to be copied.

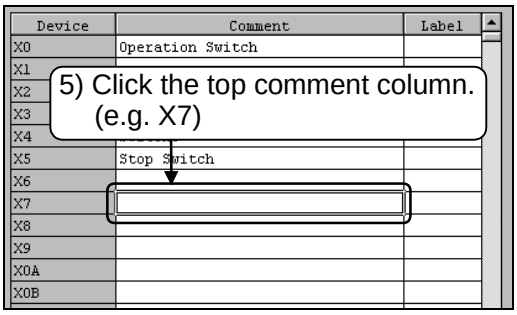
***To the following page***

## *From previous page*

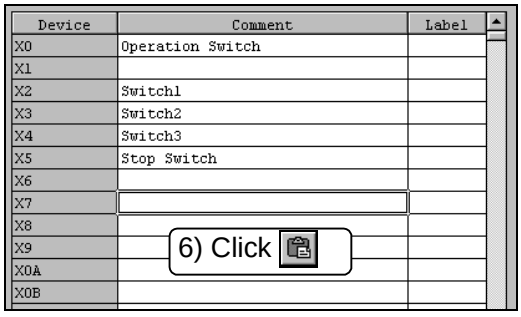



4) The comment columns in the dragged area are highlighted.
To redo the range specification, click any comment column.
Click on the tool bar.

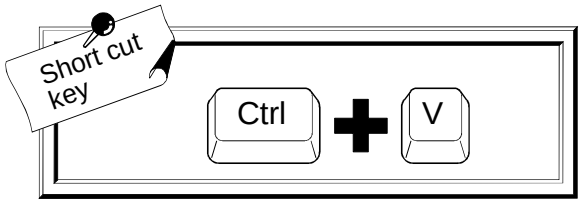


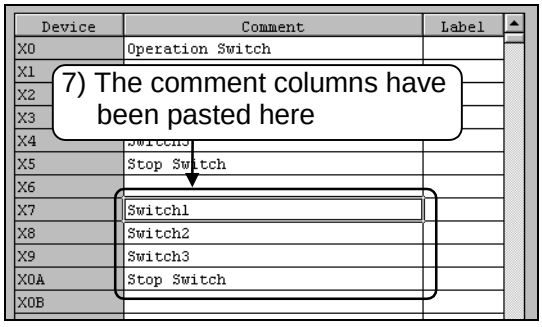




5) Click the top column for pasting comments, and move the cursor.




6) Confirm that the cursor ( ) is displayed, and click on the tool bar.



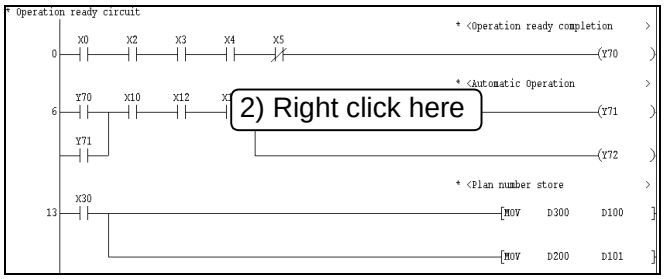




7) Now, the comments have been pasted to the area from the designated column.

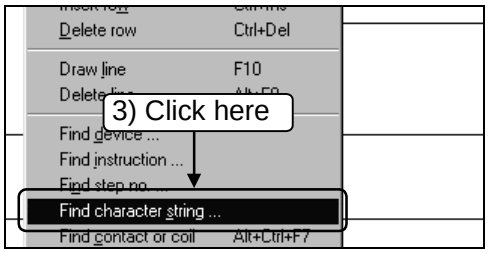
## 6.4 Searching statements and notes

This section explains searching circuits with the designated statement and note.
Display statements and notes on the circuit creation screen before searching for them.


1) Click the [View]-[Statement], [Note] menu.
Statements and notes are displayed on the circuit creation screen.



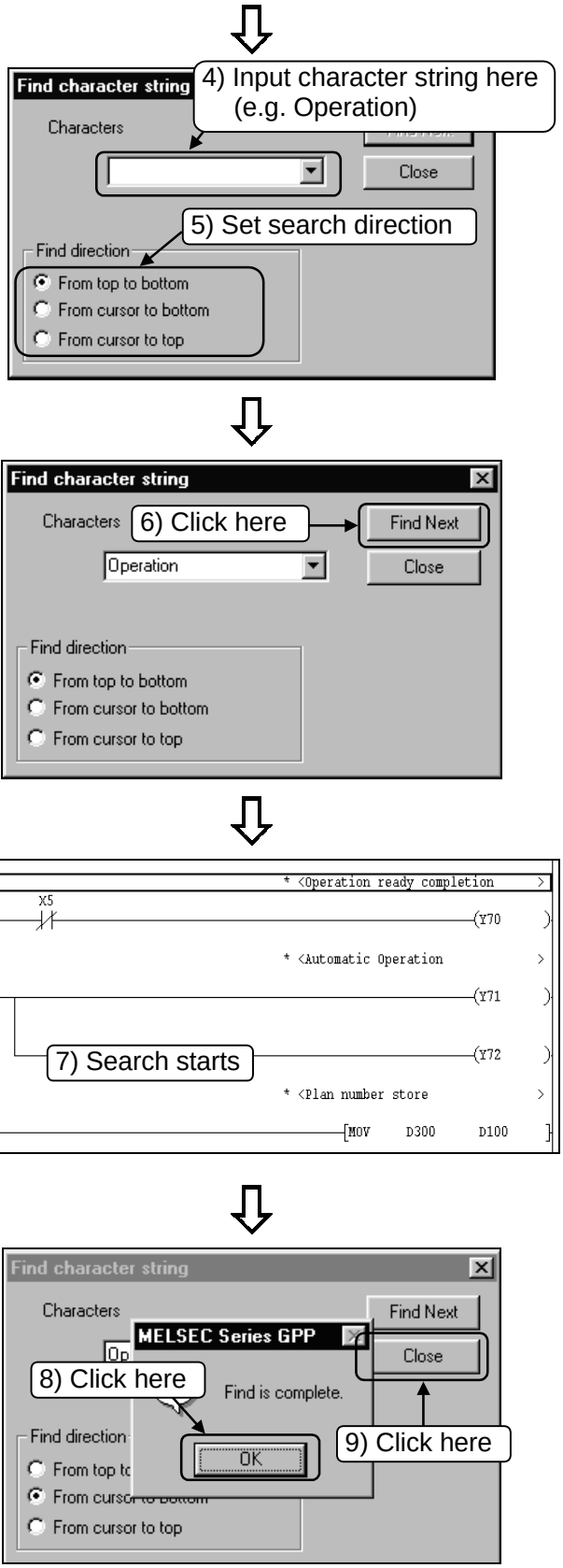

2) Right click on the circuit creation screen, or click on the tool bar.




3) Click the [Find character string] menu. (Not required when operating from the tool bar.)

***To the following page***

## *From previous page*




4) Input statement or note to search.

5) Set the find direction.

**Hint!**

Find direction
- 「From top to bottom」
  Searches from 0 step to the END command.
- 「From cursor to bottom」
  Searches from the cursor position to END command.
- 「From cursor to top」
  Searches from the cursor position to 0 step.

6) Click the Find Next button.

7) Searching starts.
The cursor moves to the circuit found first.

**Hint!**

Every time the Find next button is clicked, the cursor moves to circuits with the designated character string one after another.

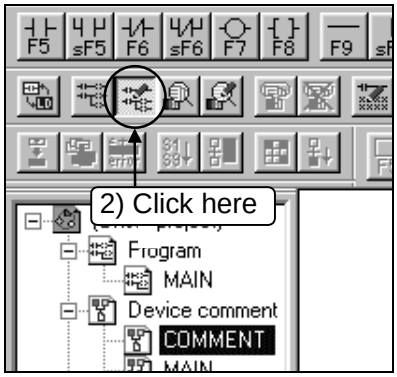
8) If there is no circuit with the designated character string in the following steps, a dialog box to notice the end of search is displayed.
Click the OK button.

9) Click the Close button.
Now, operation for searching character strings are completed.

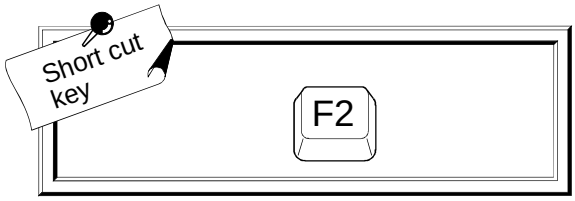
## 6.5 Correcting statements and notes

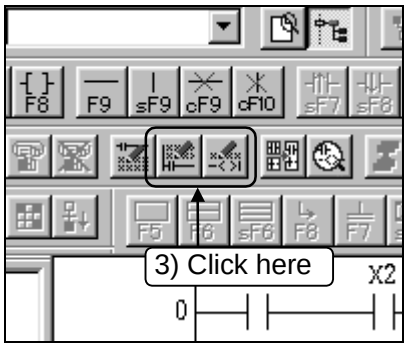
This section explains correcting statements and notes.
Display statements and notes on the circuit creation screen before correcting them so that the areas for correction can be easily checked.


1) Click the [View]-[Statement], [Note] menu.
Statements and notes are displayed on the circuit creation screen.




2) Click  on the tool bar to switch to write mode.

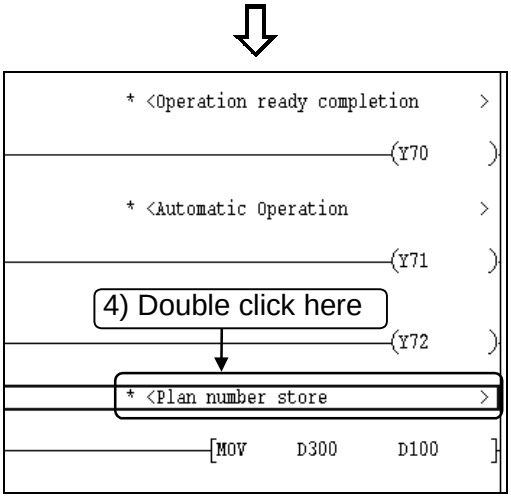


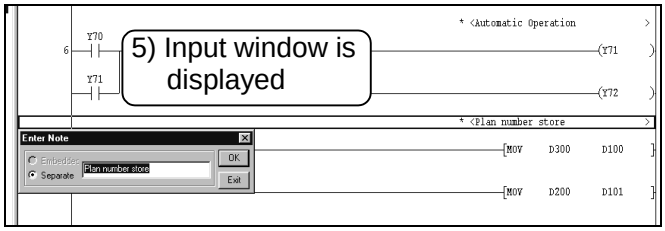

3) Click either of the following buttons on the toolbar.
- To correct a statement : 
- To correct a note : 

*To the following page*

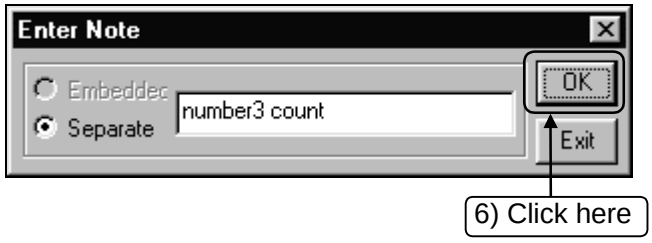
## *From previous page*



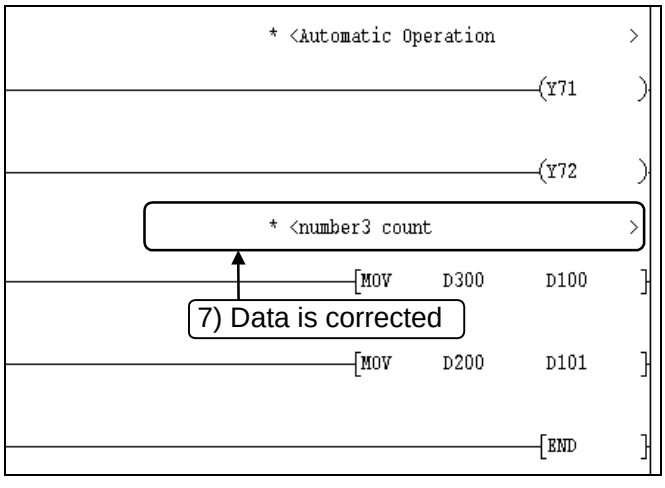

4) Double click the statement or the note for correction.




5) The input window is displayed. Correct the statement or the note.




6) After completing correction, click the OK button.




7) The corrected statement or note is displayed.

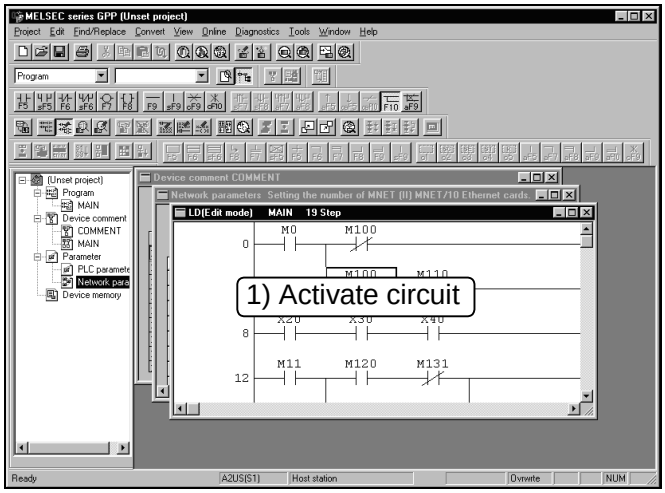
## 7 Printing

Before debugging a program and its contacts , coils and devices on the desk , print them out.

This section explains various printing operations.

### 7.1 Printing a circuit

This section explains printing the circuit with its device comment, note and statement.




1) Activate the circuit to print.


2) Click  on the tool bar.

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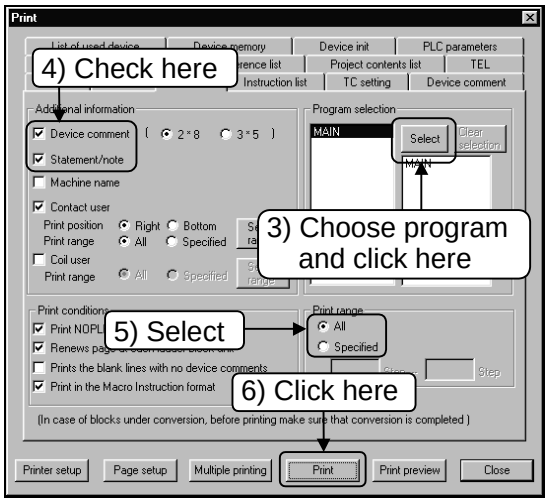
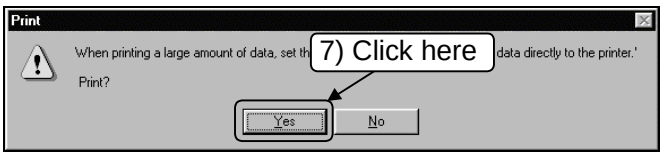
## *From previous page*




## *Execute printing*

3) Choose the program to be printed and click the Select button.

4) Put a check mark to the check box of the information added for printing. (e.g. Device comment, statement and note are added.)

5) Select the print range.

6) Click the Print button.

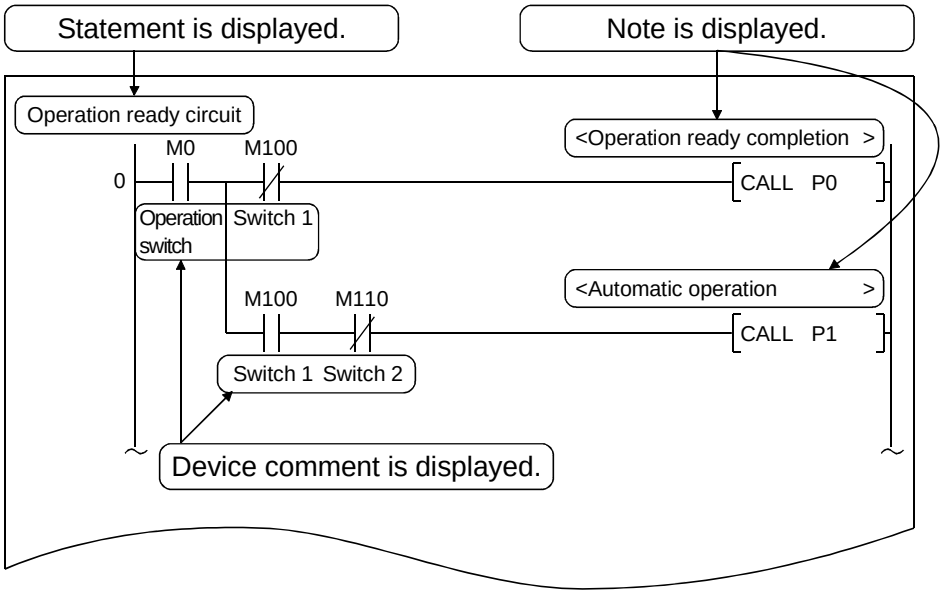
**Hint!**

By clicking the Page setup button to set smaller margins, larger characters are printed, making the circuit easy to look at.

7) Click the Yes button.

The settings made here are stored until they are changed.

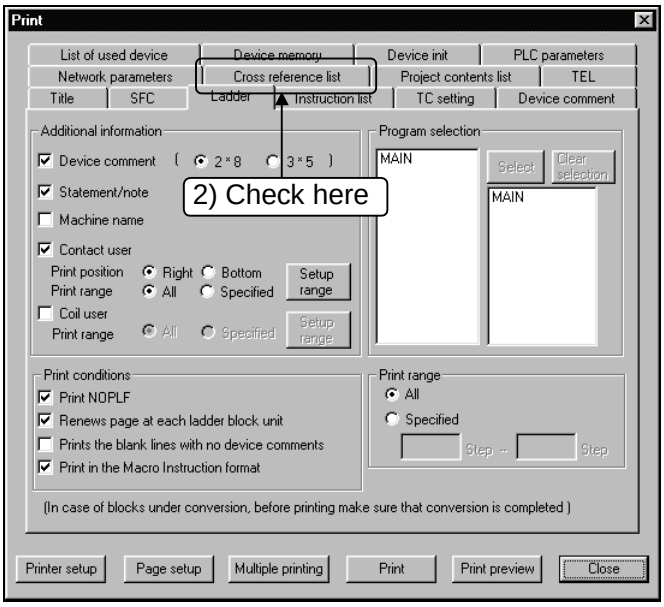
### ——The result of printing——



## 7.2 Printing contacts or coils in use

This section explains printing the circuit contacts and coils in use.

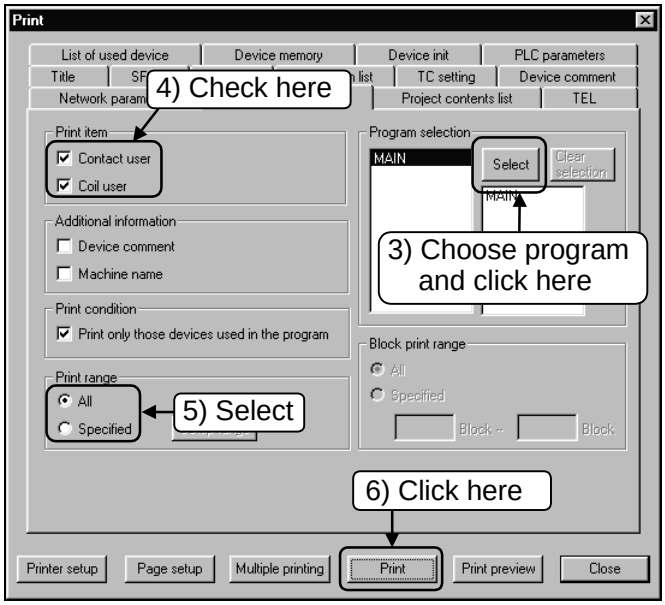

1) Click  on the tool bar.




2) Click the "Cross reference list" tab.

***To the following page***

## *From previous page*

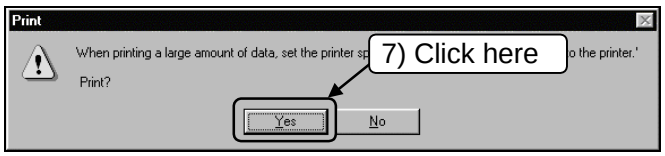



3) Choose the program to be printed and click the Select button.

4) Check that a check mark is put to the ⌈Contact user⌋ and ⌈Coil user⌋ check boxes.
(To print both contact and coil usage lists.)

5) Designate the print range.

6) Click the Print button.



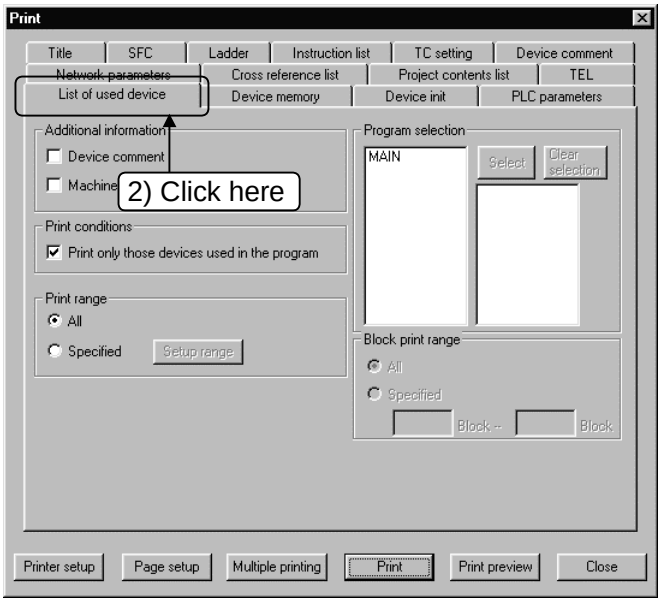

7) Click the [Yes] button.
The settings made here are stored until they are changed.

## *Execute printing*

## 7.3 Printing the device in use

This section explains printing the circuit device.

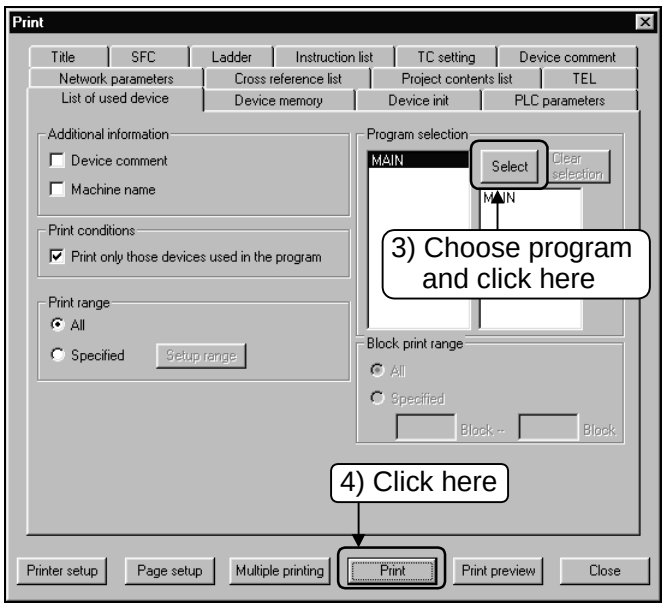

1) Click on the tool bar.




2) Click the "List of used device" tab.

***To the following page***

## *From previous page*

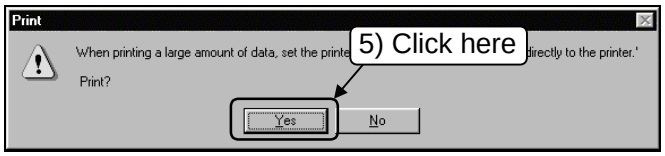



3) Choose the program to be printed and click the Select button.

4) Click the Print button.

**Hint!**

「Additional information」
Additional items to be printed other than contacts or coils are set here.
「Print conditions」
Set for printing only the devices used in the program.
「Print range」
Designates the program range for printing.
「Program selection」
Program is selected for printing.




5) Click the Yes button.
The settings made here are stored until they are changed.

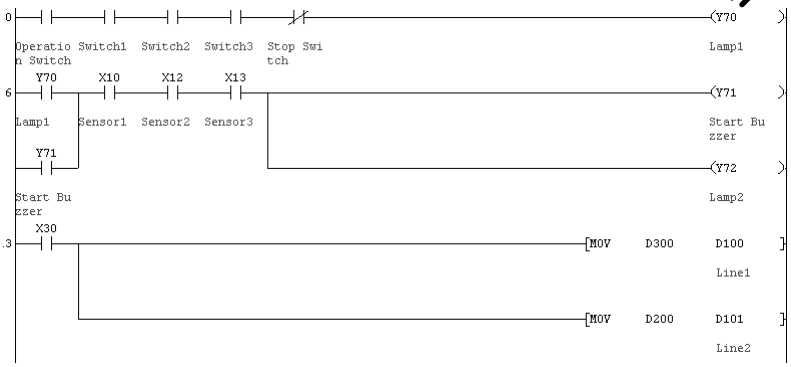
## *Execute printing*

## 7.4 Printing a list of device comments in use

This section explains printing a list of device comments used in the following circuit.

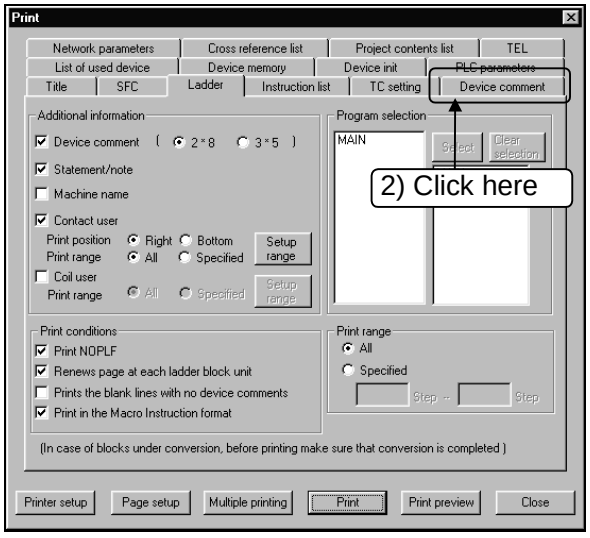
This section explains printing a list of device comments used in the following circuit.

**Device comment list circuit**





1) Click  on the tool bar.




2) Click the [Device comment] tab.

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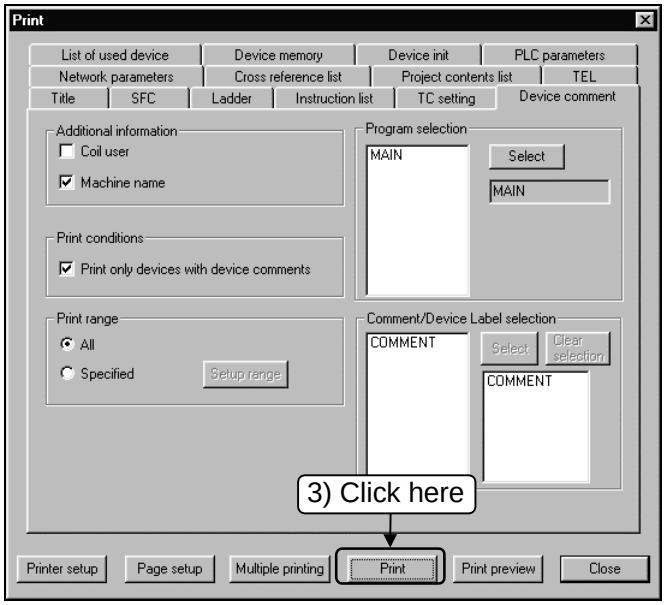
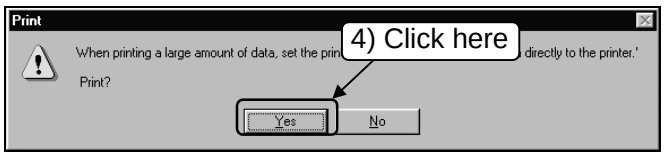
## From previous page




## Execute printing

3) Click the Print button.

4) Click the Yes button.

The settings made here are stored until they are changed.

**Hint!**

「Additional information」
Coil destination and device name are printed as required.
「Print conditions」
Set this condition to print only the devices used in the program.
「Print range」
Set the program range for printing.
「Program selection」
Select program for printing.
After printing, click Select.
「Comment/Device Label selection」
Select common comment or program comment for printing.
(Only if printing multiple files.)
After selecting, click Select.

### ——Result of printing——

Device comment list

| Device | Device comment | Dev Lbl | Coil user |
|---|---|---|---|
| X0 | Operation switch | | |
| X2 | Switch 1 | | |
| X3 | Switch 2 | | |
| X4 | Switch 3 | | |
| X5 | Stop switch | | |
| X10 | Sensor 1 | | |
| X12 | Sensor 2 | | |
| X13 | Sensor 3 | | |

MEMO

# Part 4

# Online operations

# 4 Online operations

## 1 Writing and reading to/from the PLC CPU

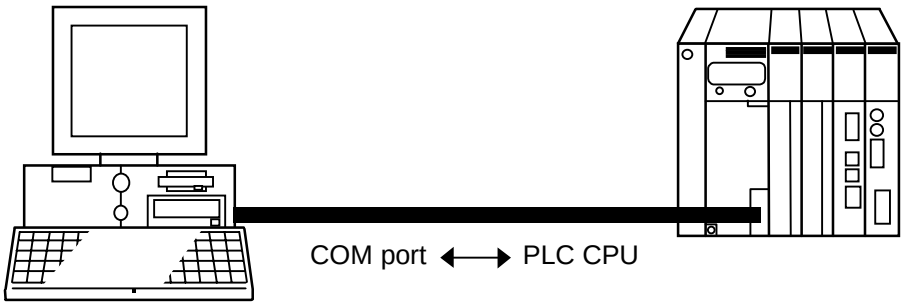
Even if a circuit (program) is created by GPPW, the PLC does not work as a PLC if data is not written to the CPU, or it cannot read the circuit (program) from the CPU for debugging.

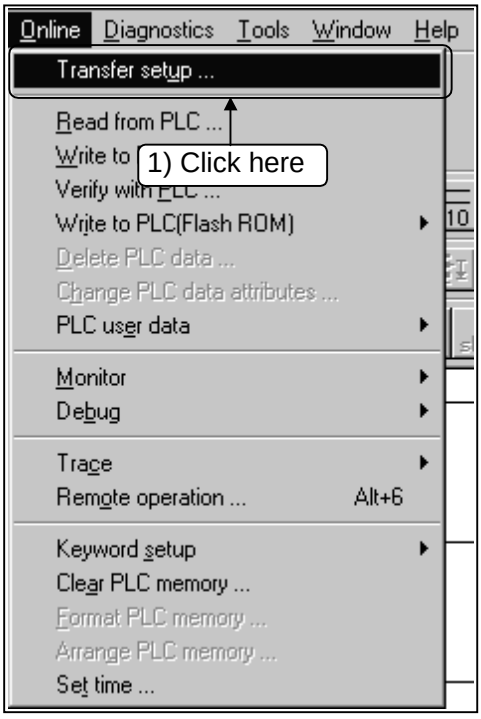
This chapter explains writing and reading the created circuit to/from the CPU.

### 1.1 Specifying the PLC CPU you want to access

This section describes operations to set the personal computer side interface, PLC CPU side interface, etc. when the personal computer and PLC CPU are connected.
In this section, access is made to the PLC CPU (own station) which is connected from the serial port (COM port) of the personal computer by a conversion cable.

Connection image




1) Click the [Online]-[Transfer setup] menu.

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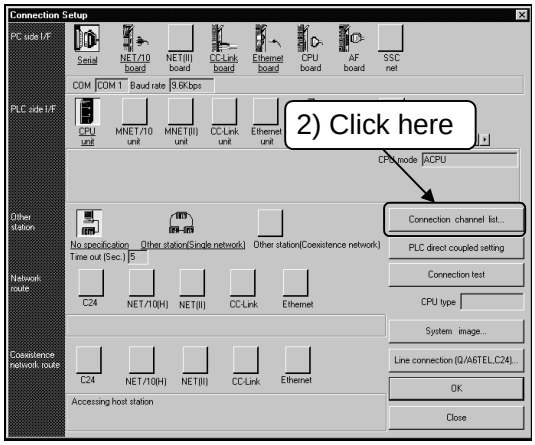
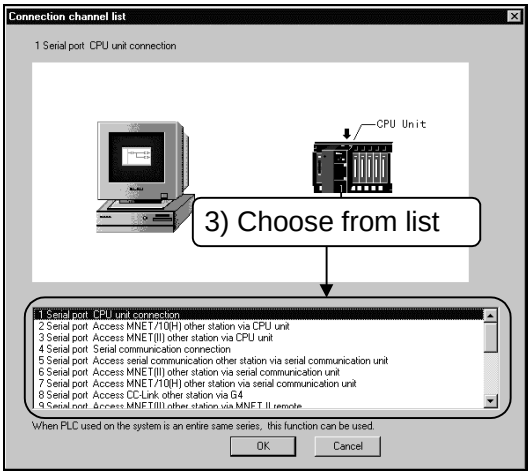
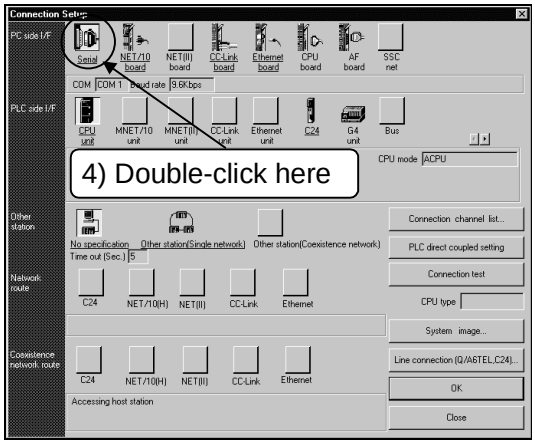



2) Click the Connection channel list button.




3) Choose the connection channel to be used. Here, select "Serial port CPU unit connection".
After making selection, Click OK button.




4) Double-click「Serial」of「PC side I/F」.

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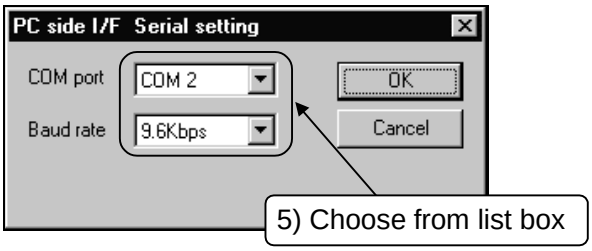
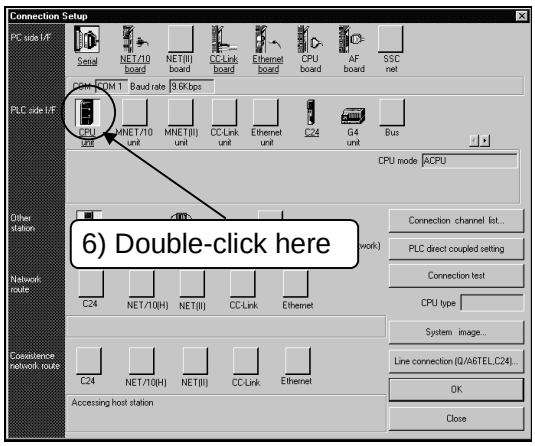
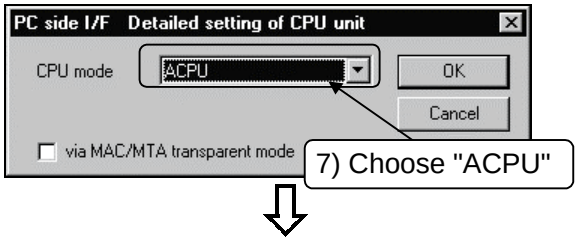


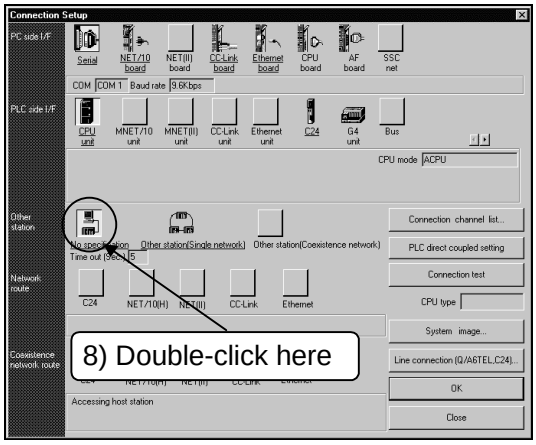

5) Set ⌈COM port⌋ and ⌈Baud rate⌋.
Here, choose "COM2" and "9.6Kbps".




6) Double-click ⌈CPU unit⌋ of ⌈PLC side I/F⌋.




7) Set the CPU mode of the PLC CPU to be connected with GPPW.
Here, choose "ACPU".




8) Double-click ⌈No specification⌋ of ⌈Other station⌋.

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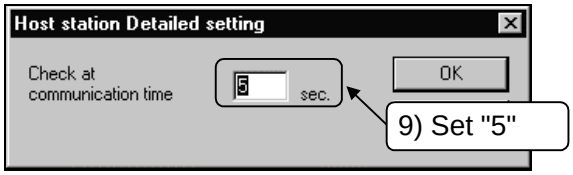
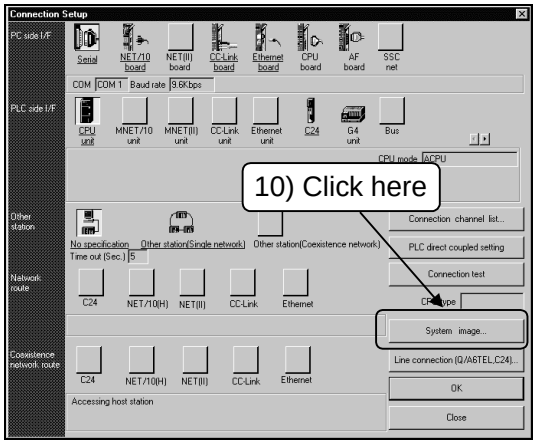
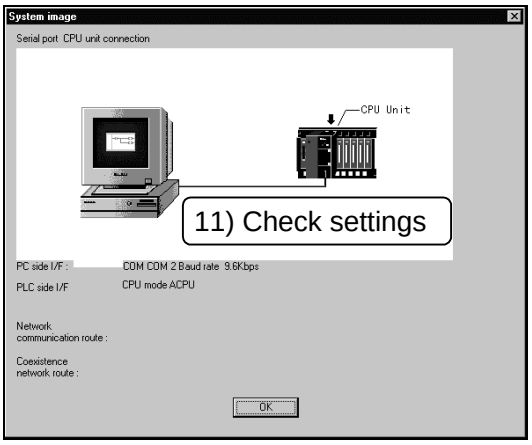



9) Set the time (seconds) to 「Check at communication time」.



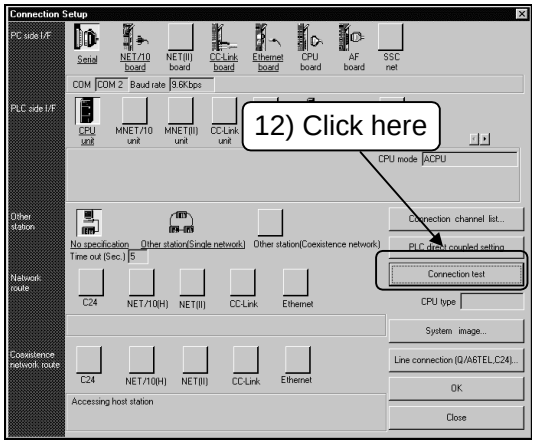

10) Click the System image button.




11) On the system image screen, check whether the settings are correct or not. Clicking the OK button returns to the Connection Setup screen.

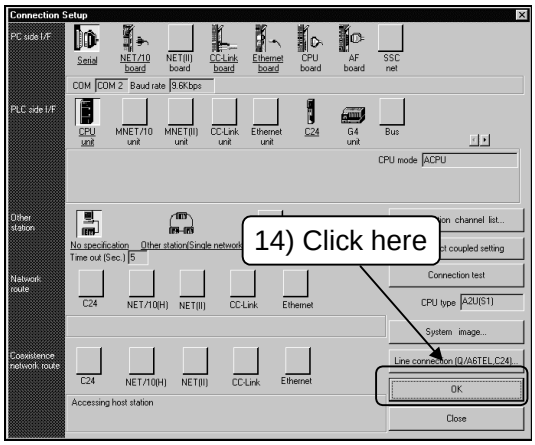
## *To the following page*

## *From previous page*




12) Click the Connection test button to check whether the connection setup is actually correct.


13) The result of the communication test with the PLC CPU appears.
If communication failed, check the connection setup, cable connections, etc.

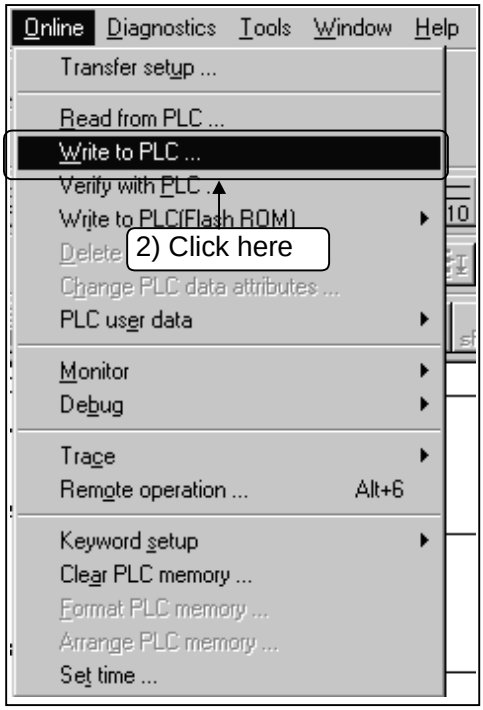



14) When the setting is finished, click the OK button.

MEMO

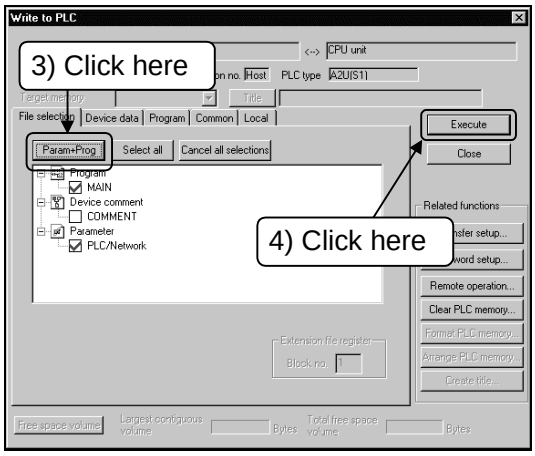
## 1.2 Writing data to the PLC CPU

This section explains writing circuits created by GPPW (sequence program) to CPU.
Reading can also be performed using the same procedure.



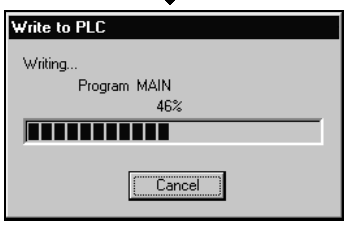

1) The following explanation assumes that the circuits (sequence programs) have already been created by GPPW.

2) Click the [Online]-[Write to PLC] menu.



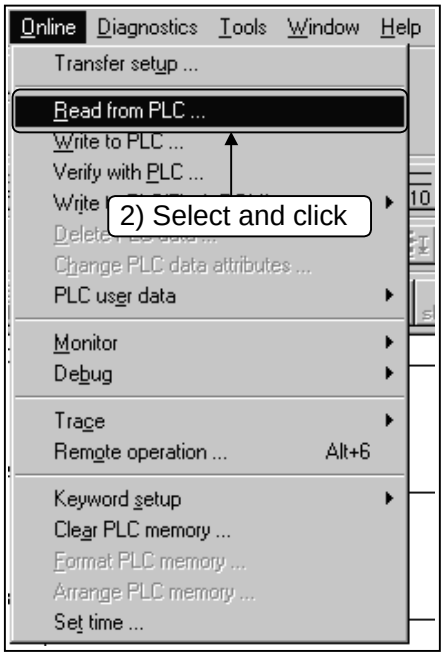

3) On the ⌈File selection⌋ screen, choose the file of the data to be written to the PLC CPU.
Here, click the Param+Prog button.

4) When the selected file is checked, click the Execute button.



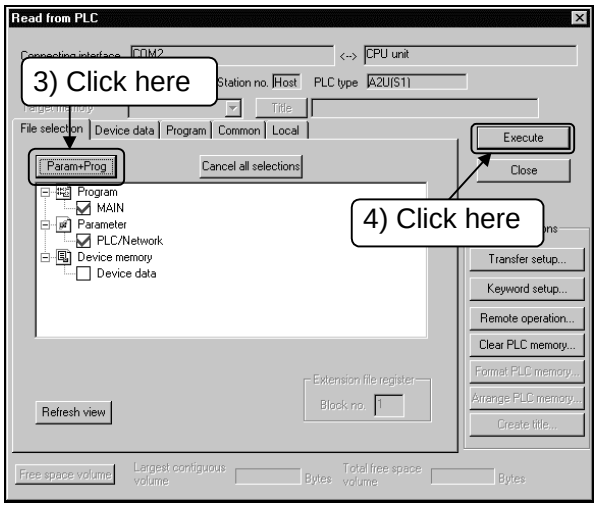

5) A dialog box for writing is displayed. When finished, the message ⌈Completed⌋ appears. Click OK to end writing.

## ——Reading circuits (sequence programs) from the CPU——



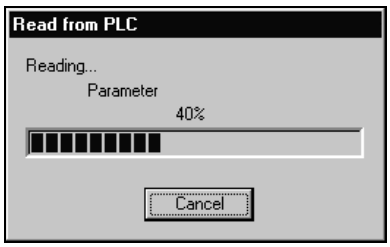

1) The following explanation assumes that the circuits (sequence programs) are in the CPU.
Set the ⌈RUN⌋ key switch of CPU to ⌈STOP⌋.

2) Click the [Online]-[Read form PLC] menu.




3) On the ⌈File selection⌋ screen, choose the file of the data to be read from the PLC CPU.
Here, click the Param+Prog button.

4) When the selected file is checked, click the Execute button.




5) A dialog box for data reading is displayed. When finished, the message ⌈Completed⌋ appears. Click OK to end reading.

## 2 Monitoring PLC status

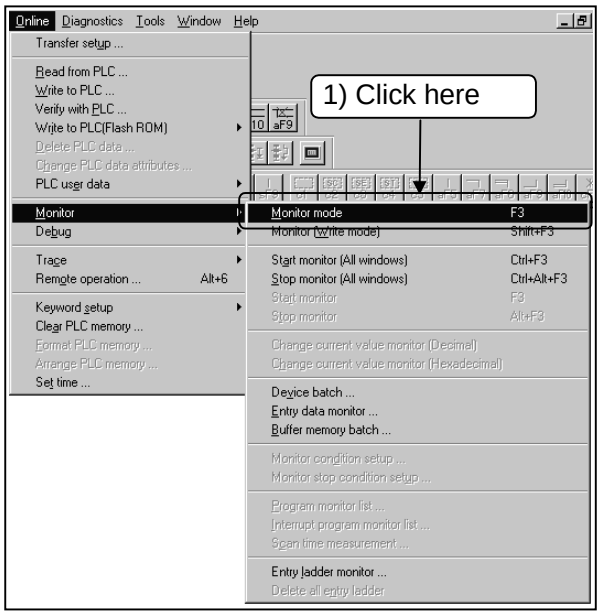
Reads a circuit (sequence program) written to PLC CPU on GPPW and monitors its operation status.

This chapter explains operations for monitoring.

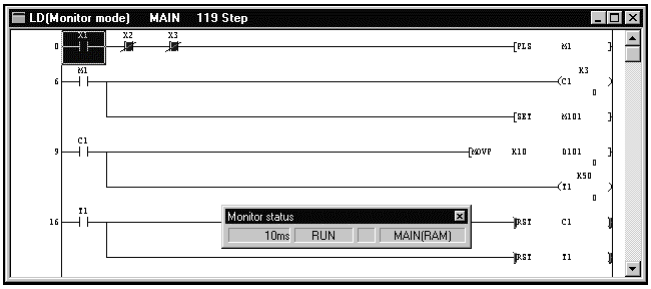
## 2.1 Monitoring the circuit status

This section explains operations to monitor the circuit (sequence program) status.
Further, this section describes operations to register and monitor only the specified circuit block out of a circuit which takes up more than one screen.

Assume that the same circuit (sequence program) as on GPPW has been written to the PLC CPU.




1) Click the [Online]-[Monitor]-[Monitor mode] menu.




2) Circuit monitoring starts.

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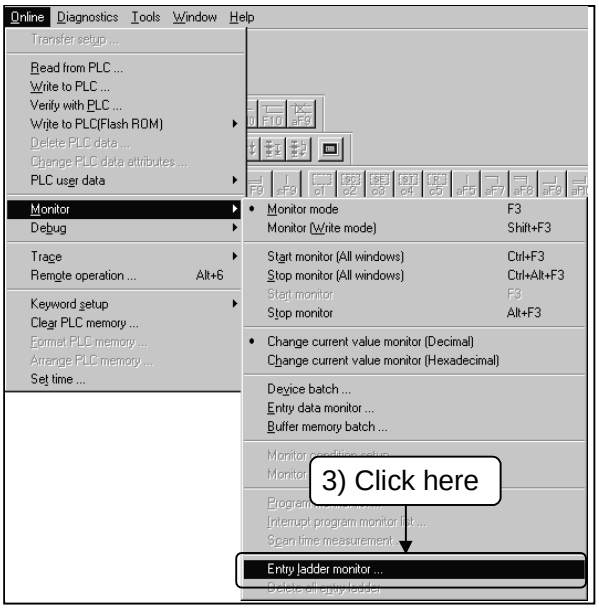
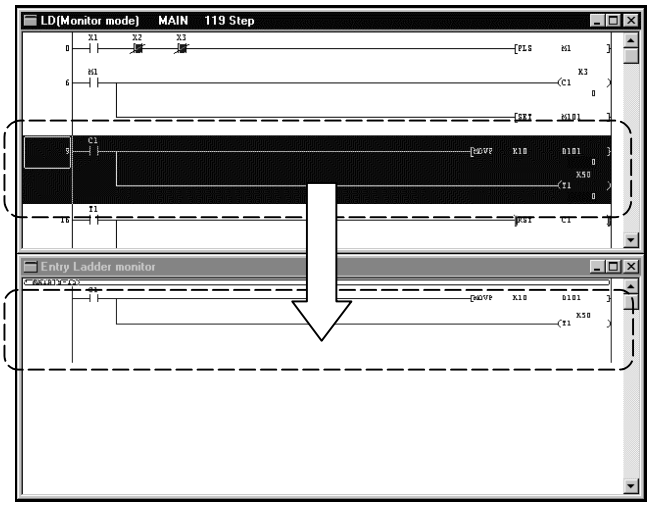



3) To monitor distant circuit areas on one screen, click the [Online]-[Monitor]-[Entry ladder monitor] menu.

**Hint!**

To avoid overlapping the ladder monitor and entry ladder monitor screens, click the [Window]-[Tile vertically]/[Tile horizontally] menu.The screens shown at bottom left are tiled vertically.

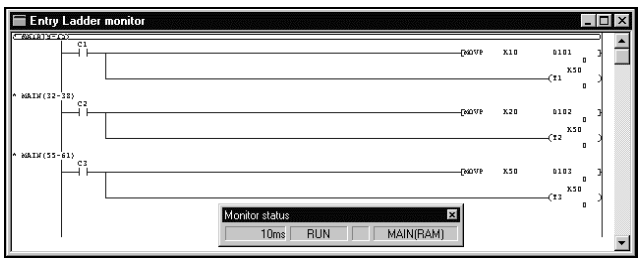



4) The entry ladder screen appears.

5) Register a circuit block by copying and pasting or dragging and dropping it from the ladder monitor screen to the entry ladder monitor screen.

**Point**

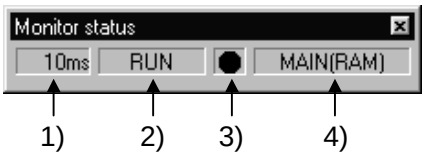
In the same project, even a different program can be entered. The program name and step number are indicated in the circuit block.



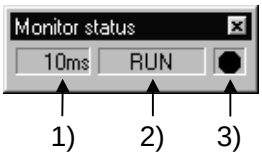

6) Clicking the [Online]-[Monitor]-[Start monitor] menu starts entry ladder monitoring.

(1) In monitoring mode, the monitor status dialog box is displayed as follows whether the monitoring is ON or OFF.

<A series>




<QnA series>




1) Scan time
The maximum scan time of the monitored PLC CPU is displayed.
The unit of scan time for A series is 10 ms.

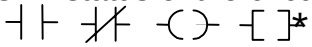
2) Condition of the PLC CPU
The operation status of the PLC CPU is displayed.

3) Monitoring status
Blinks during monitoring.

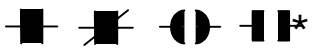
4) Executed program name
The program name being executed is displayed.
QnA series do not support this function.

(2) The ON and OFF status of the circuits are shown as follows.

OFF



ON



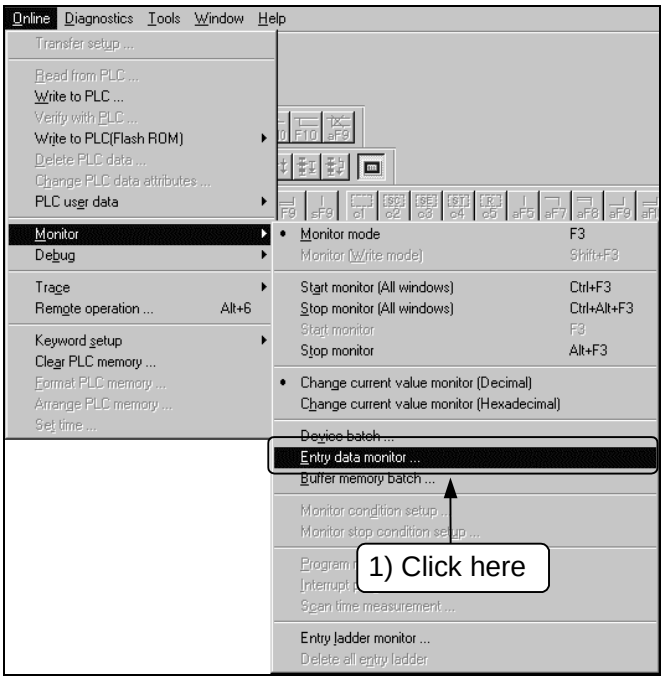
∗:Only comparison instructions equivalent to contacts and SET, RST, PLS, PLF, SFT, SFTP, MC, FF, DELTA, and DELTAP that are equivalent to coils are supported.
(FF, DELTA, and DELTAP are instructions for QnA series.)

MEMO

## 2.2 Monitoring the specified devices

This section explains operations to register and monitor devices when you want to monitor the ON/OFF and values of the specified devices intensively out of the devices scattered in a circuit.

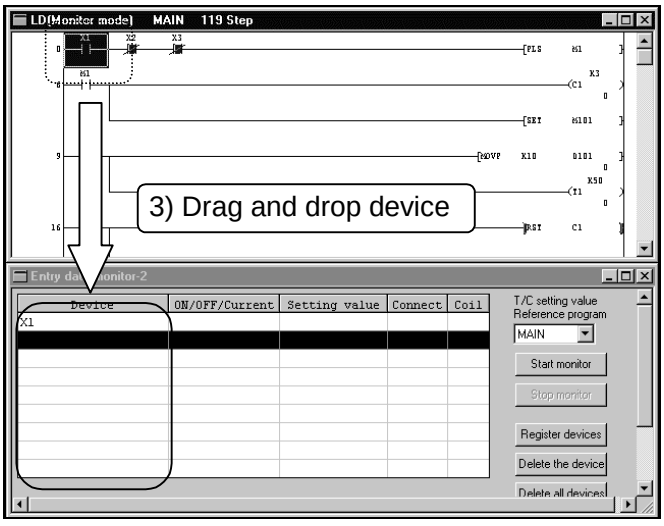
Assume that entry data monitoring is performed during circuit monitoring.




1) Click the [Online]-[Monitor]-[Entry data monitor] menu.

**Hint!**

To avoid overlapping the ladder monitor and entry data monitor screens, click the [Window]-[Tile vertically]/[Tile horizontally] menu. The screens shown at bottom left are tiled vertically.

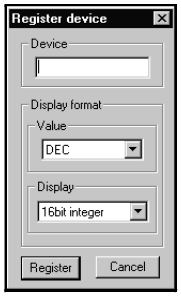



2) The entry data monitor screen appears.

3) Register a device by dragging and dropping it from the ladder monitor screen to the entry data monitor screen.

**Point**

Device entry can also be made in the following dialog box.
Click the Register device button.

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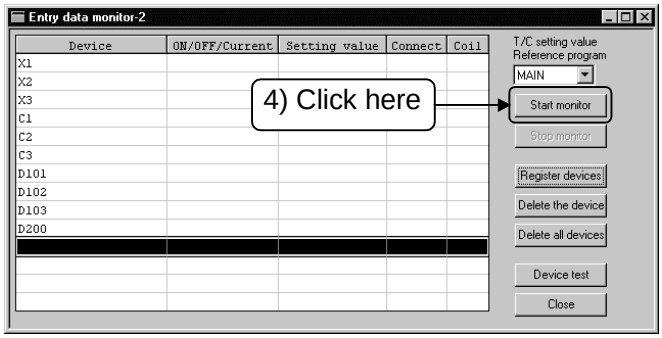
## *From previous page*




4) Repeat step 3) until device registration is completed. On completion, click the Start monitor button.

| Device | ON/OFF/Current | Setting value | Connect | Coil |
|---|---|---|---|---|
| X1 | 0 | | | |
| X2 | 0 | | | |
| X3 | 1 | | | |
| C1 | 0 | 3 | 0 | 0 |
| C2 | 3 | 5 | 0 | 0 |
| C3 | 1 | 7 | 0 | 0 |
| D101 | 10 | | | |
| D102 | 20 | | | |
| D103 | 0 | | | |
| D200 | 0 | | | |

5) The registered devices are monitored.

**Point**

Bit device ON/OFF is indicated as follows.

ON : 1
OFF : 0

## 3 Debugging a created circuit

The created circuits (sequence programs) are written to the PLC CPU to confirm that the programs operate properly.

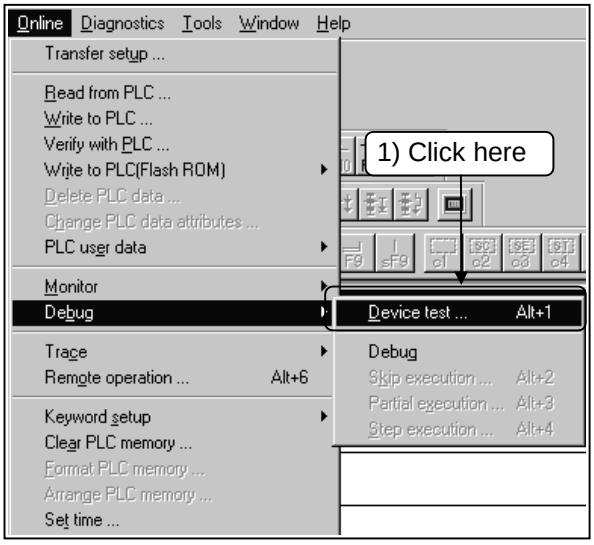
This chapter explains debugging the created circuits.

### 3.1 Turning ON/OFF contact positively

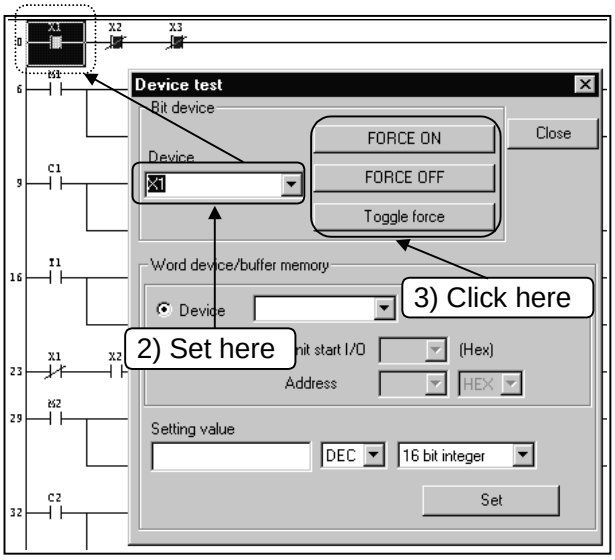
This section explains turning ON/OFF contact positively.

Suppose that this procedure is performed during circuit monitoring.

☞ *Part 4, 2.1.* ☜




1) Click the [Online]-[Debug]-[Device test] menu.




2) Set the bit device to be forced ON/OFF.

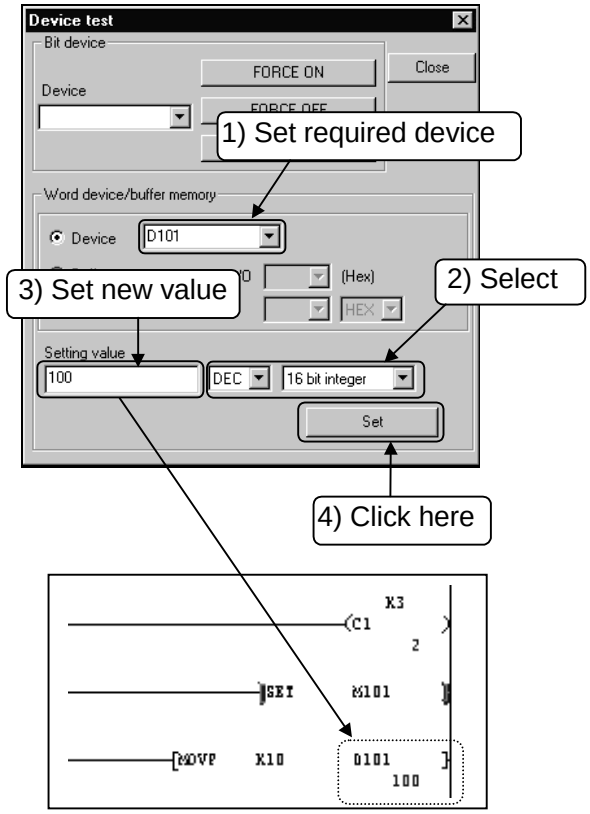
3) Click the FORCE ON / FORCE OFF button.
Clicking the Toggle force button inverts the current status.

**Hint!**

A device can be forced ON/OFF on the circuit monitor screen.
Holding down Shift and double-clicking the mouse's left button (or pressing Enter) inverts the device at the cursor position (OFF→ON , ON→OFF).

## ——Changing the present value of the word device/buffer memory——

This section describes operations to change the present value of a word device or buffer memory.
The following example provides operations to change the present value of a word device.




1) Set the word device whose present value will be changed.

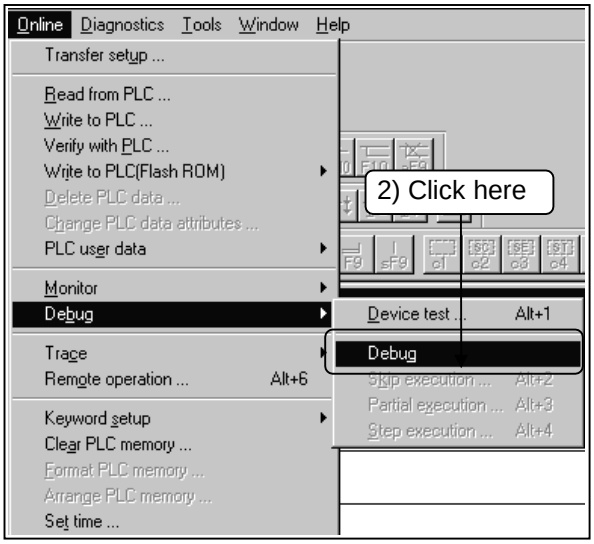
2) Choose DEC or HEX and 16 bit integer, 32 bit integer or Real number for the value to be set.

3) Set a new value.

4) Clicking the Set button changes the present value of the device.

## 3.2 Running a program step by step

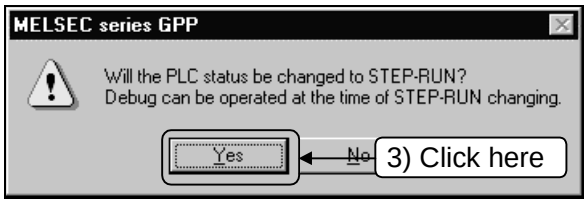
A sequence program is run while simultaneously its step operation is being checked.



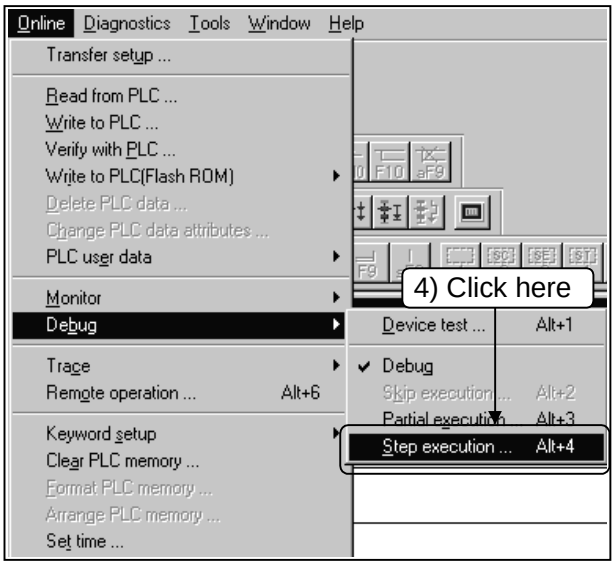

1) Display the circuit monitor screen.

☞ *Part 4, 2.1.* ☜

2) Click the [Online]-[Debug]-[Debug] menu.



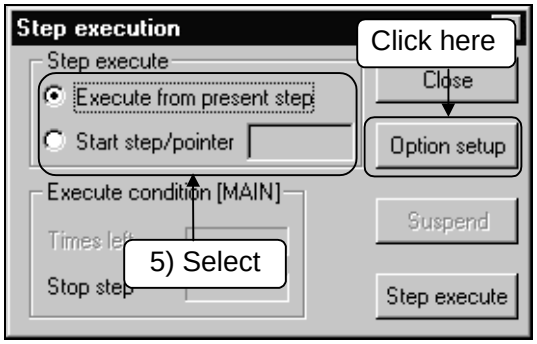

3) Click the Yes button in the ⌈STEP-RUN⌋ confirmation dialog box.



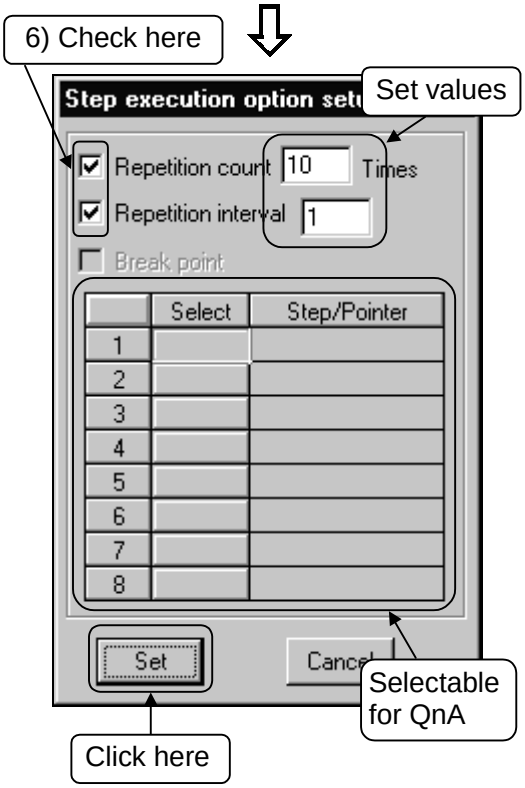

4) Click the [Online]-[Debug]-[Step execution] menu.

***To the following page***

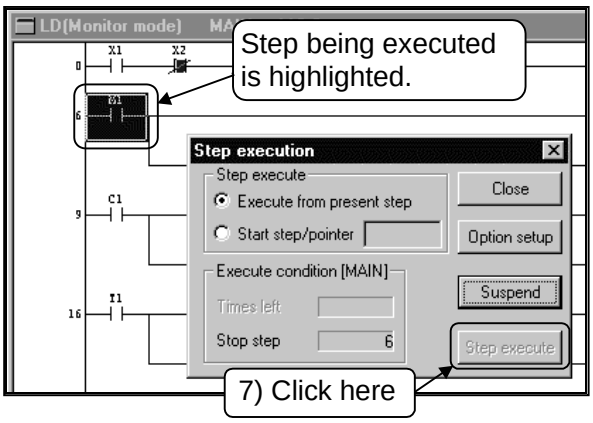
## *From previous page*




5) Choose the step execution starting position.
Then click the Option setup button.




6) Check Repetition count and set "10" Times (steps).
Check Repetition interval and set "1".
After the setting is finished, click the Set button.
(Since this example assumes the use of the A series, refer to the GPPW Operating Manual for the setting of Break point.)




7) Clicking the Step execute button executes 10 steps and makes a stop.
Further clicking the Step execute button after the stop executes the program step by step.

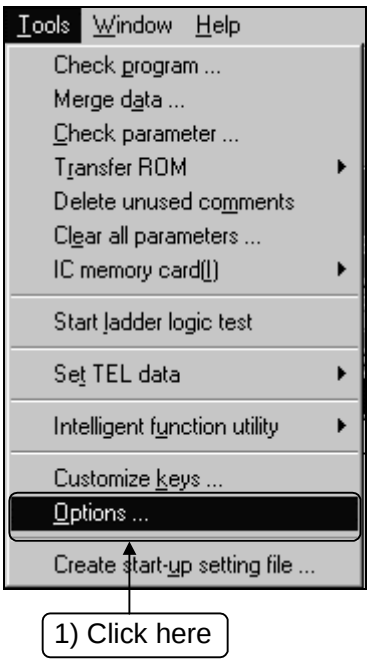
## 4 Online change

This chapter explains how to change a program while the CPU is running.

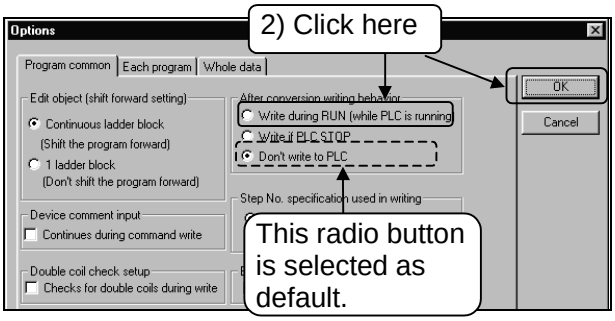
## 4.1 Online change of the PLC CPU

This section explains changing the circuit while the CPU is running.

Suppose that this procedure is performed during circuit monitoring.



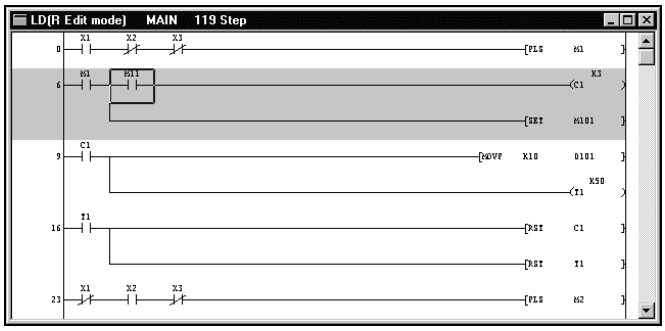

1) Click the [Tools]-[Options] menu.



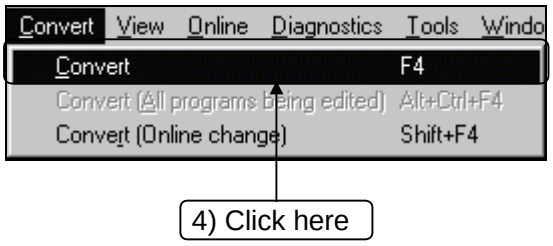

2) Select the radio button「Write during RUN (while PLC is running)」in the「After conversion writing behavior」in the「Option」dialog box.
(「Don't write to PLC」is selected as default.)

***To the following page***

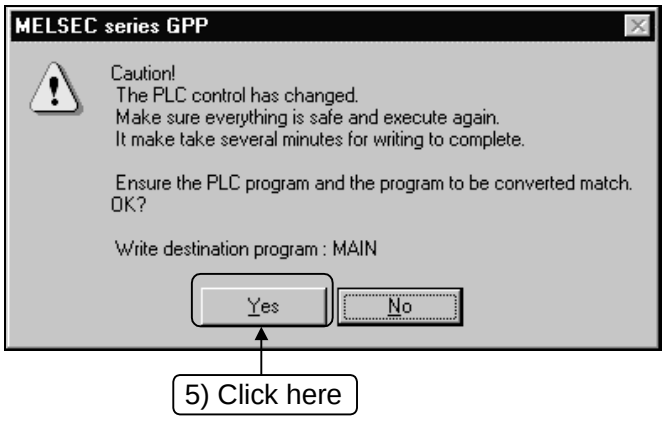
## *From previous page*




3) Correct the circuit.



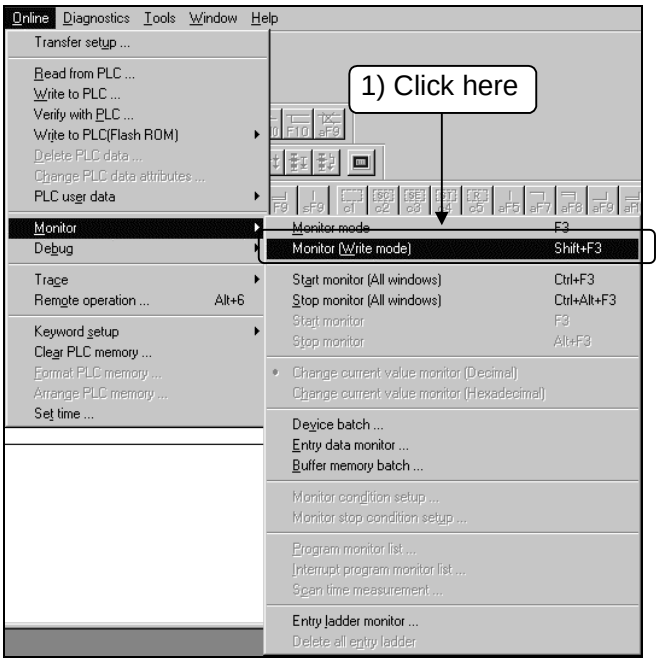

4) Click the [Convert]-[Convert] menu.



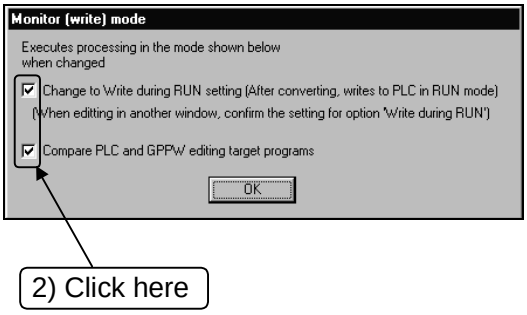

5) Perform Write during RUN by clicking the Yes button in the write during RUN confirmation dialog box.

## 4.2 Changing data during monitoring, and writing during a run

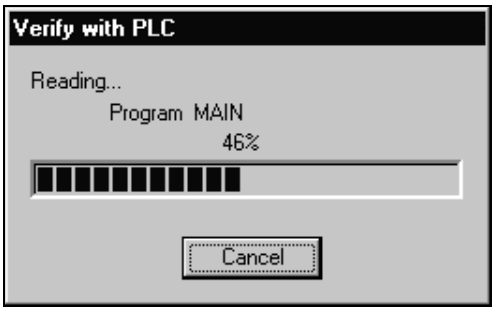
This section explains changing CPU circuit during monitoring.




1) Click the [Online]-[Monitor]-[Monitor (Write mode)] menu.




2) Select and put check marks to the check box on the ⌈Monitor (write) mode⌋ dialog box.




3) To make the circuit on GPPW identical to the one in the PLC CPU, Verify with PLC is performed automatically.

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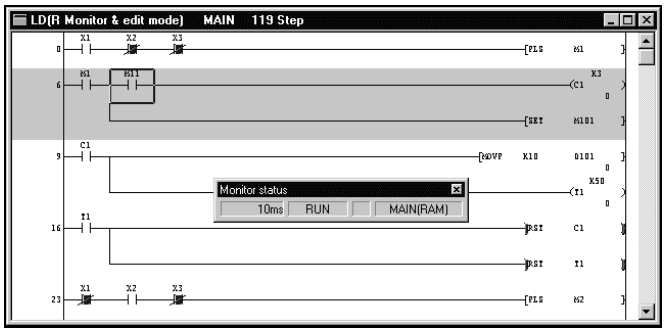
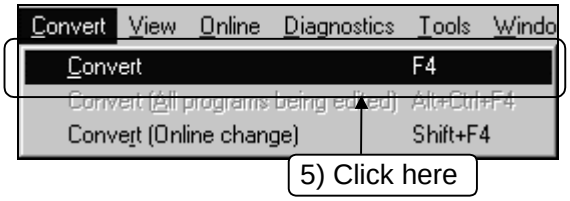
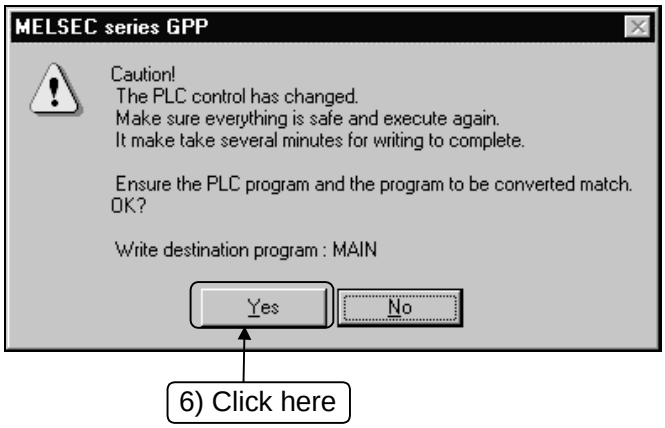



4) Correct the circuit.




5) After correcting the circuit, click the [Convert]-[Convert] menu.




6) Click the Yes button in the write during RUN confirmation dialog box. When Write during RUN is finished, a message appears to indicate that it is finished.

MEMO

# Part 5

# Useful functions

# 5 Useful functions

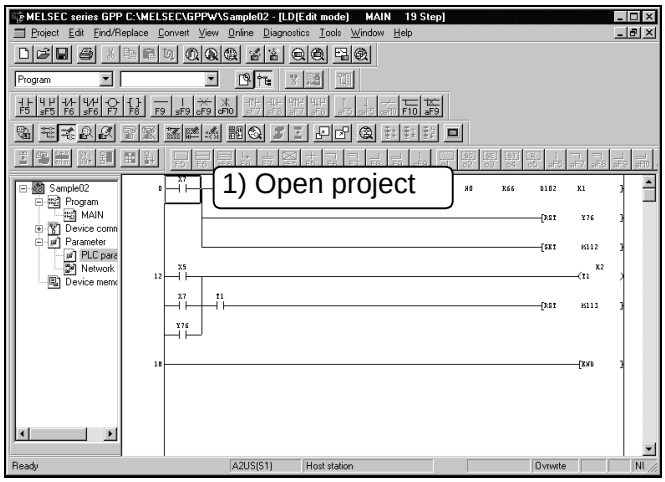
## 1 Offline operations

Although GPPW can be operated by being familiar with Parts 1 to 4 of this manual, GPPW is equipped with more convenient and easy operations.

This chapter explains useful functions for offline operations of GPPW.

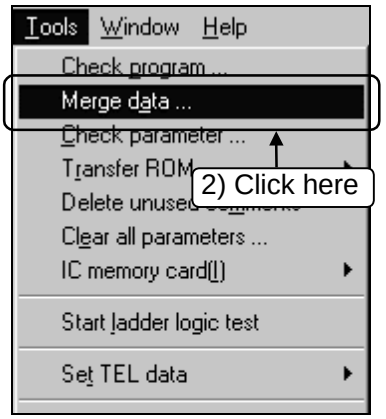
## 1.1 Associating multiple programs

Operations for associating multiple programs to make one program.




1) Read the project to which the associated program is stored.

☞ *Part 3, 1.6.* ☜




2) Click the [Tools]-[Marge data] menu.

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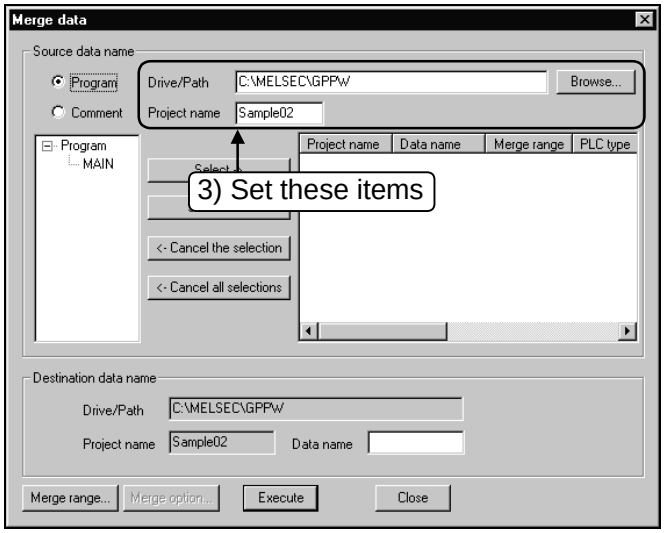
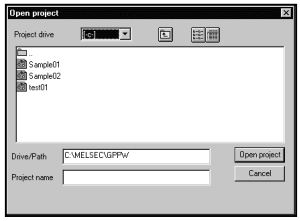
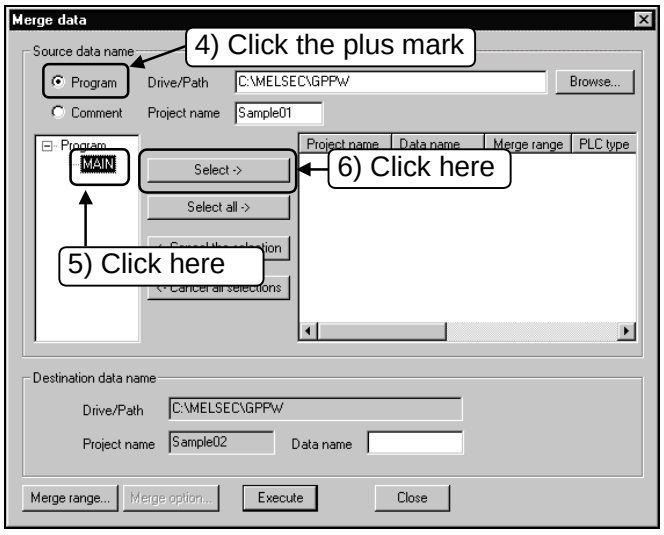



3) Set the source path and project names.

**Point**

Click the Browse button. The following dialog box is displayed for setting the source path and project names. ☞ *Part 2, 2.4.* ☜




4) Click the [Program] radio button.

5) Click the program to associate.

6) Click the Select button.

**Hint!**

To select all programs in the project, click the Select all button.

## *To the following page*

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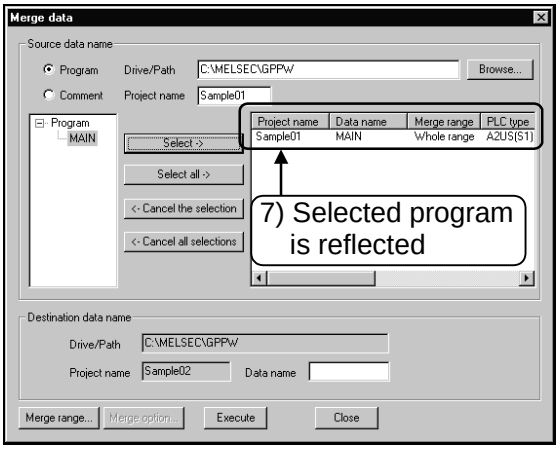
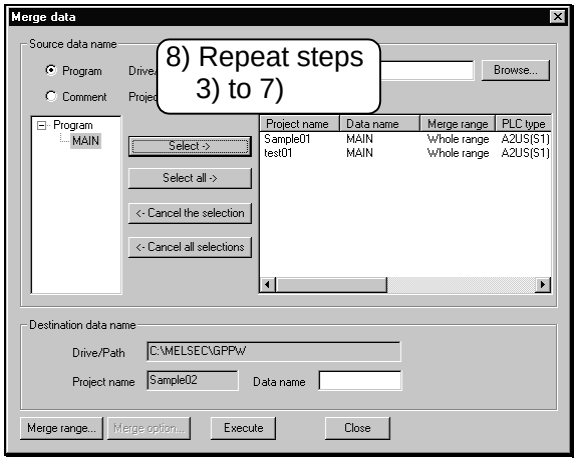



7) The selected program is reflected.

**Hint!**

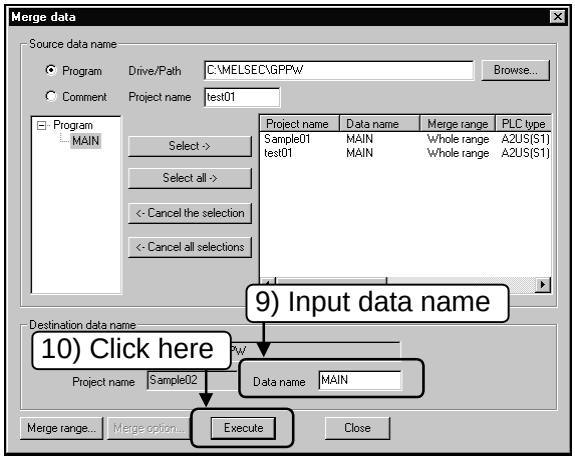
- To cancel, select program, and click the Cancel the selection button.
- To cancel all the selected programs, click the Cancel all selections button.




8) Repeat steps 3) to 7) to select the source programs.

**Hint!**

Association is carried out in the order of selection from the program selected first.




9) Input the destination data name.

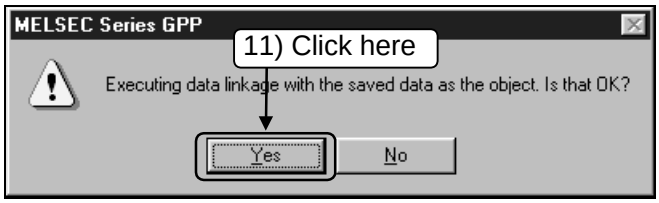
10) Click the Execute button.

**Point**

The destination program can be created only in the current project.

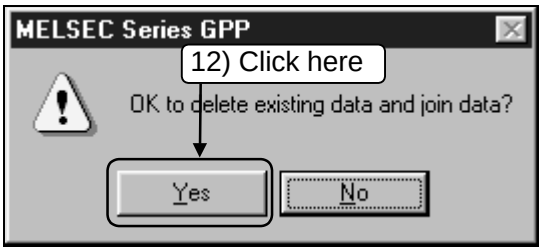
*To the following page*

## *From previous page*




11) After confirmation, click the Yes button.

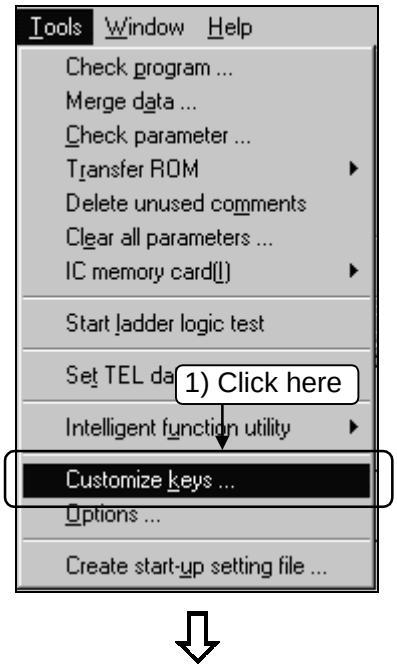
**(Only if the program exists)**



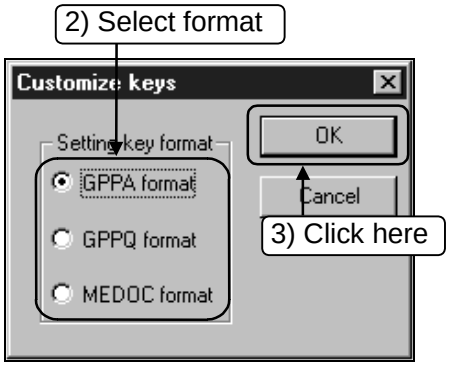

12) After confirmation, click the Yes button.
If the No button is clicked, association is not carried out.
Now, the association is completed.

## 1.2 Changing function keys in GPPA, GPPQ, and MEDOC formats

This section explains changing allocation of function keys frequently used for circuit creation to GPPA, GPPQ, and MEDOC formats.




1) Click the [Tools]-[Customize keys] menu.



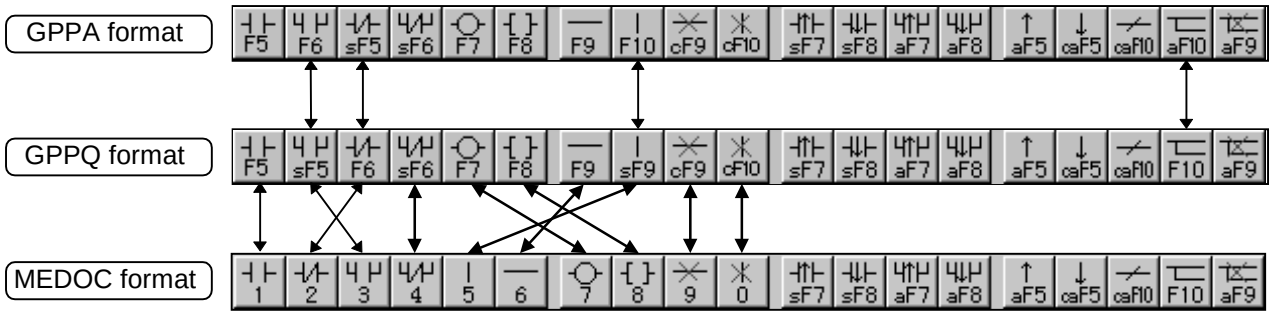

2) Select the key format by clicking.

3) Click the OK button.
Now, the format change is completed.

## ——Displaying tool bar after changing format——

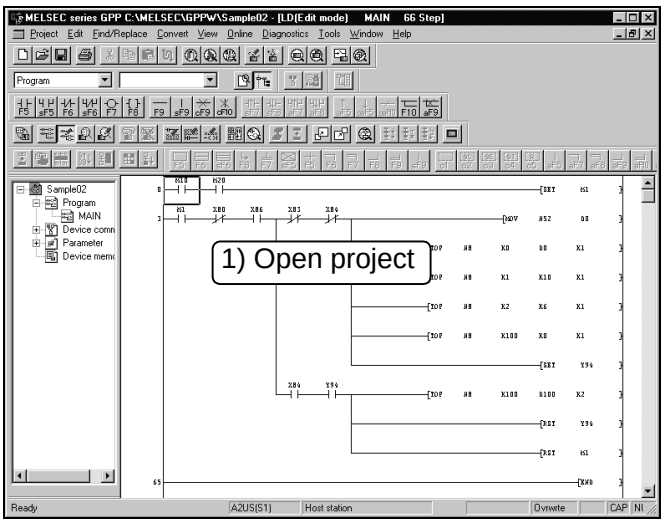
The tool bars are changed as follows according to each format. The allocation of short cut keys is also changed.

☞ *Appendix App. 1.* ☜



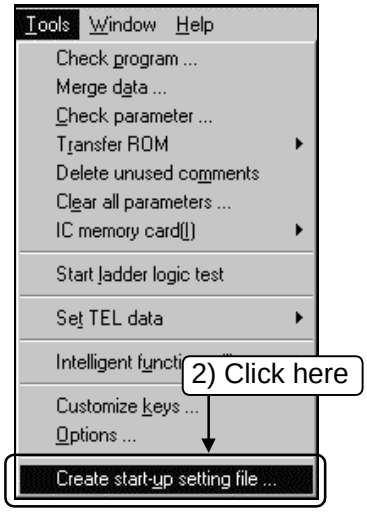
## 1.3 Setting the designated projects for quick start-up

This section explains setting the designated projects for quick start-up.

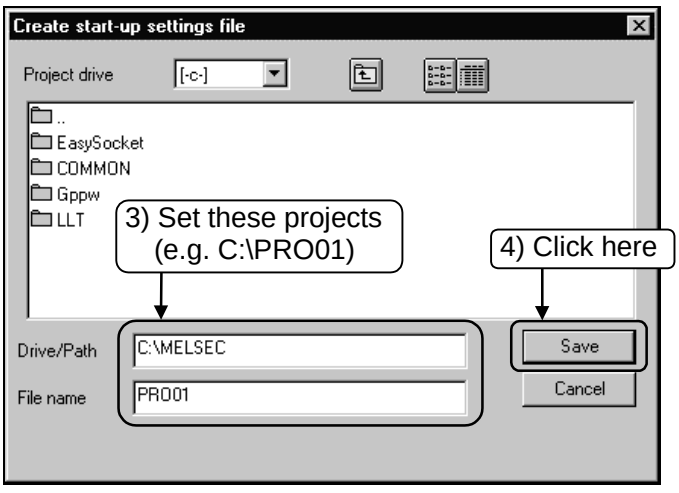



1) Read the project to start-up with GPPW.

☞ *Part 3, 1.6.* ☜



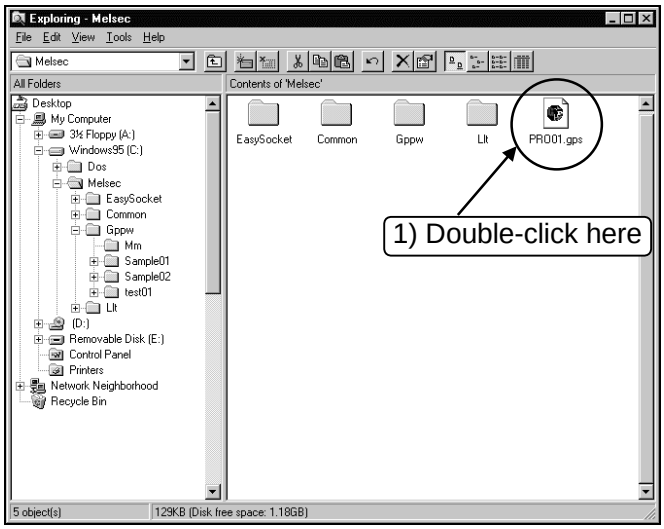

2) Click the [Tools]-[Create start-up setting file] menu.



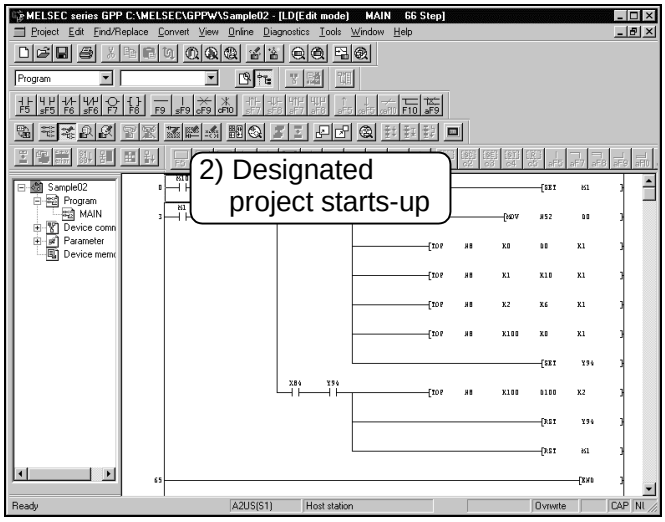

3) Set the drive/path and file names. (Since extensions (*.GPS) are added automatically, it is not necessary to set extensions.)

4) Click the Save button to save the file.
Now the setting is completed.

## ——To start-up the designated project——



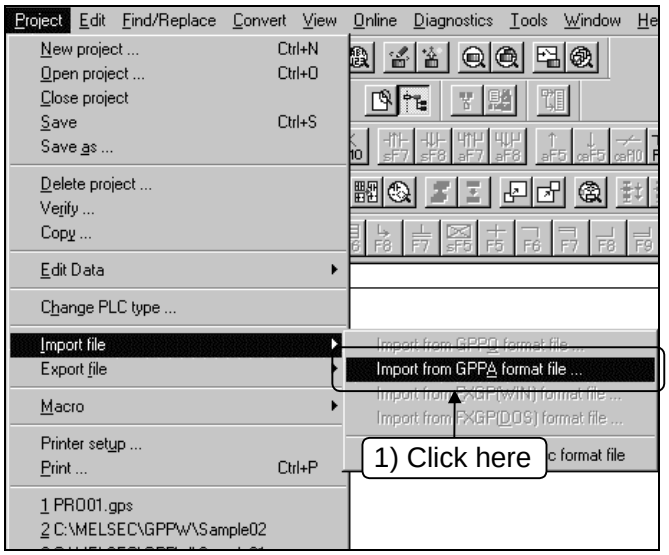

1) To start the project directly, double-click the saved file on Windows Explorer or the like.



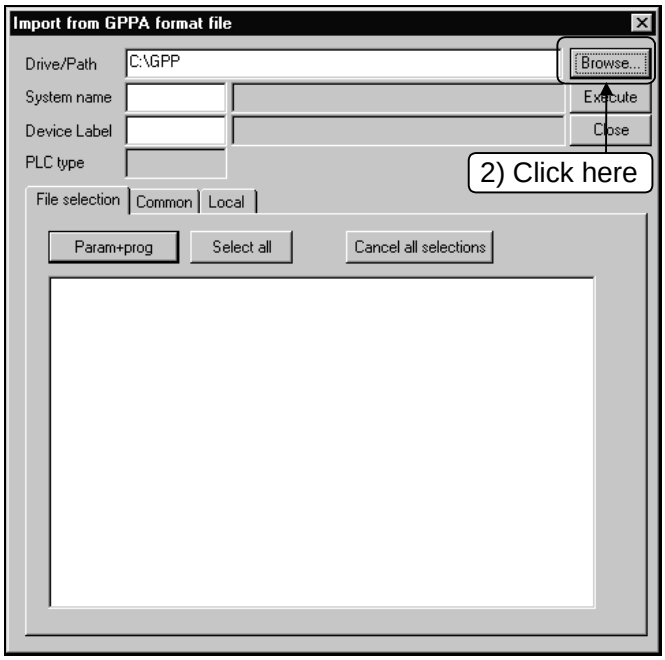

2) GPPW starts-up with the project.

## 1.4 Converting files from GPPA format to GPPW format

This section explains converting files from GPPA format to GPPW format.



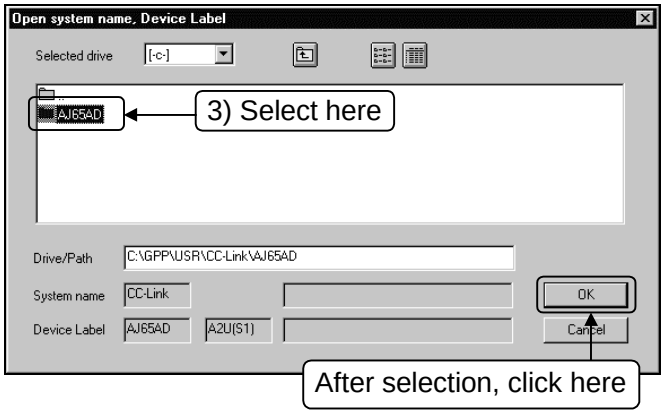

1) Click the [Project]-[Import file]-[Import from GPPA format file] menu.



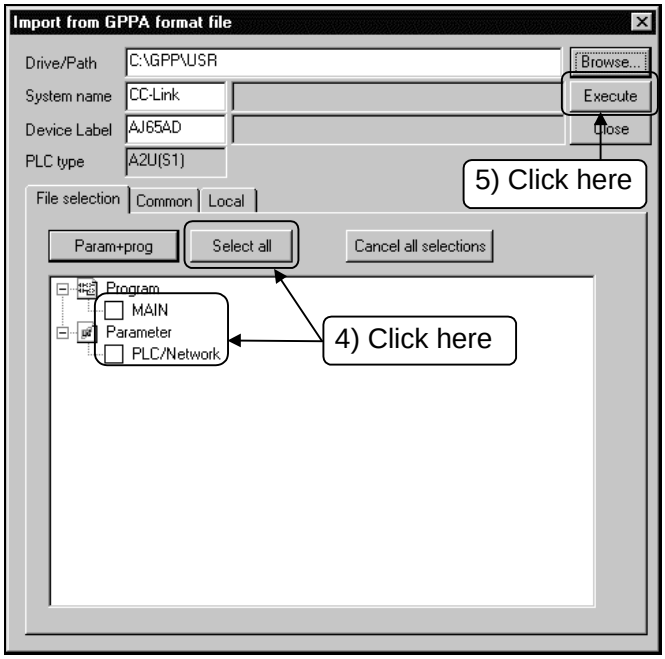

2) Click Browse. (Use Browse to check the drive/path, system name and device label. If these information are known, input them directly.)

*To the following page*

## *From previous page*




3) Select drive/path, system name, and device label. After selection, click OK



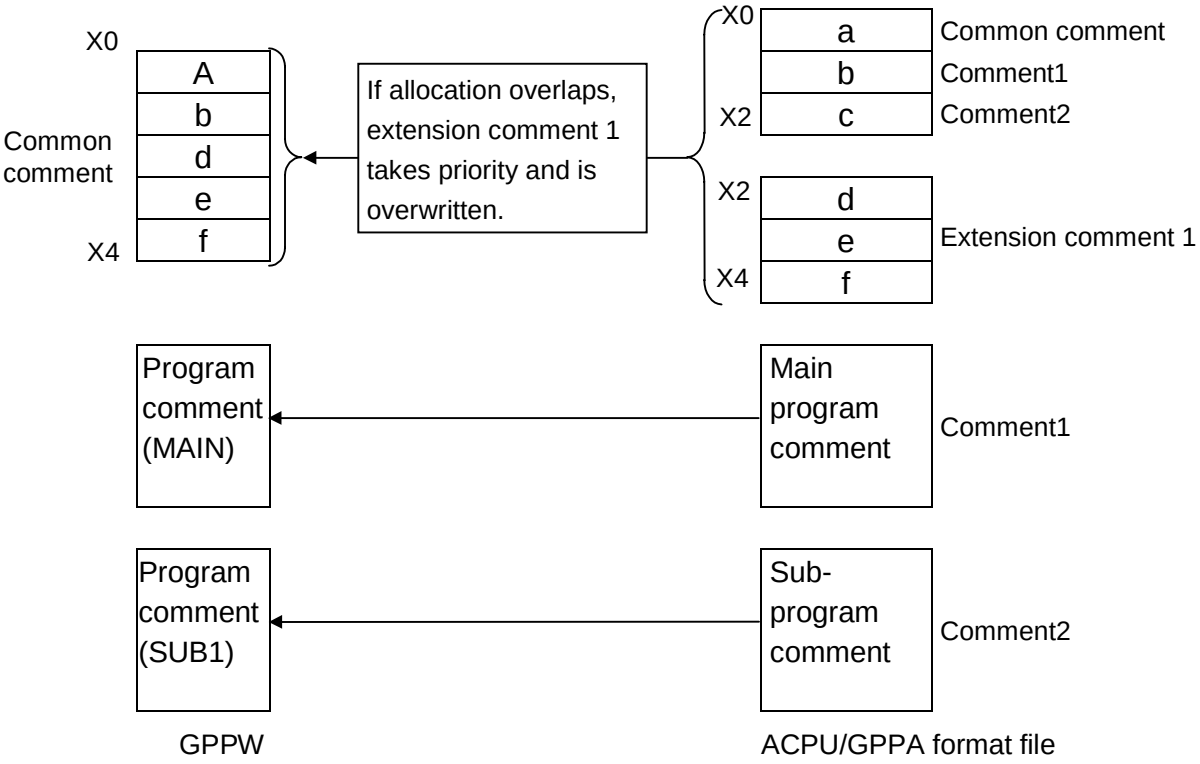

4) Select if all ( Select all ) or part of GPPA data is converted to GPPW.

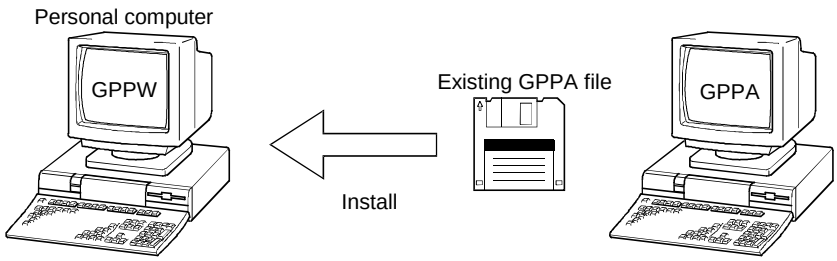
5) After selection, click Execute to execute conversion.
When message「Completed」appe-ars, conversion is completed.

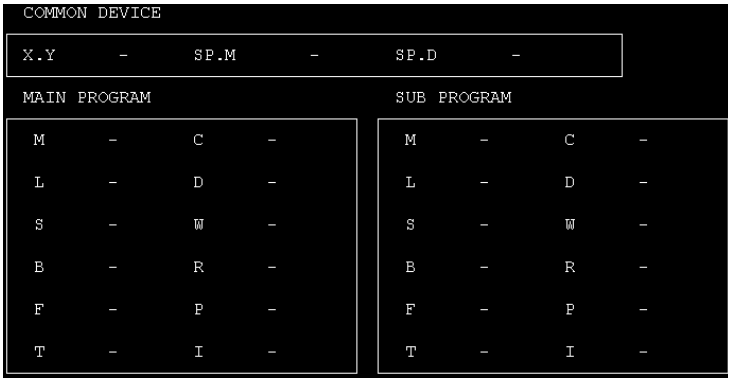
## ——Notes for converting GPPA comment files to GPPW comment files——

If comments in comment1 and comment2 and extension comments are attached to the existing data, the comment data are converted to GPPW common comments.

If the comments in comment1 and comment2 and extension comments overlap, extension comment 1 takes priority and is converted first.

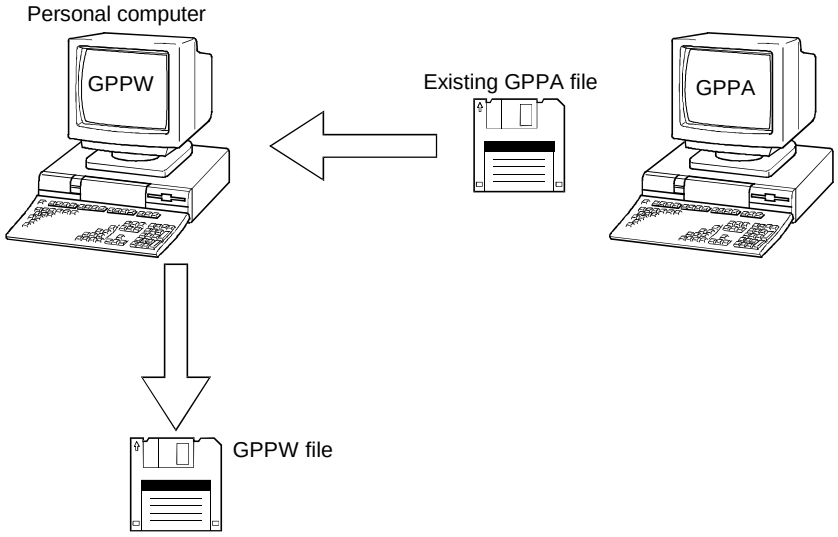


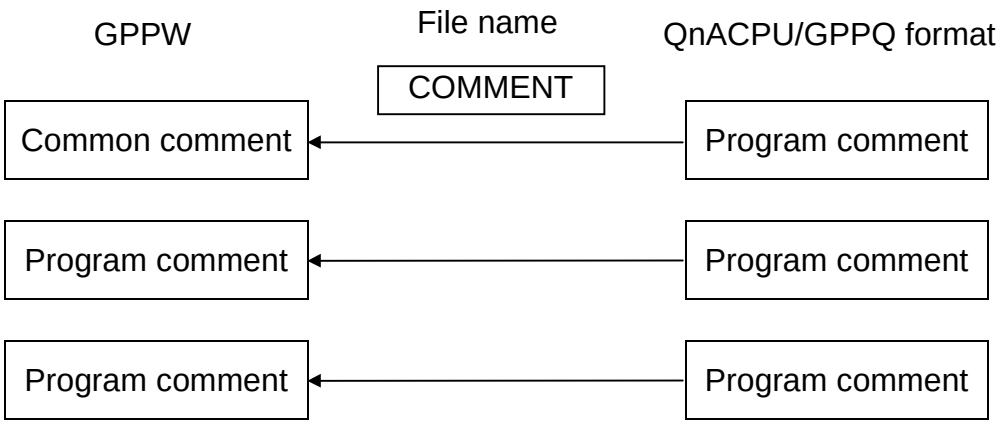



## ——Notes for converting GPPQ comment files to GPPW files——

Program comments created by GPPQ are converted as they are.
Since GPPQ does not have a concept of common comment as GPPW does, common comments of GPPQ can be converted to common comment of GPPW by changing the file name to "COMMENT".



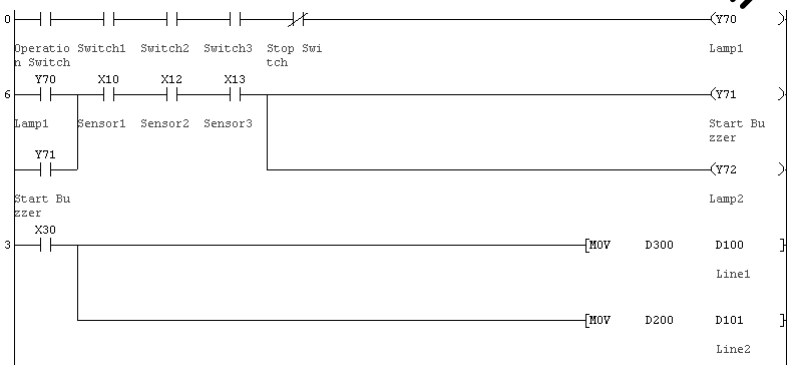



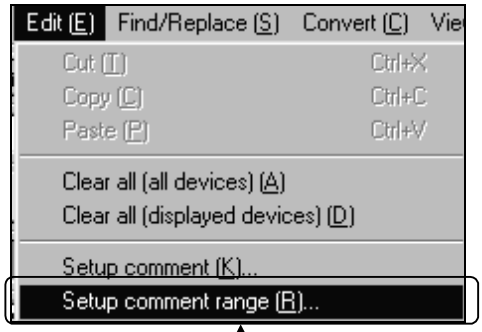
## ——Notes for writing GPPW data to ACPU/GPPA format files——

Before writing data created by GPPW to ACPU, or to a floppy disk as a GPPA file, specify the memory capacity of the PC parameter (comment and extension comment) and the comment range for writing.

Operations for setting the device comment are explained by using the following circuit.

### Circuit indicating device comment




1) Display the device comment edit screen.

☞ *Part 3, 5.1.* ☜

2) Select [Edit]-[Setup comment change].

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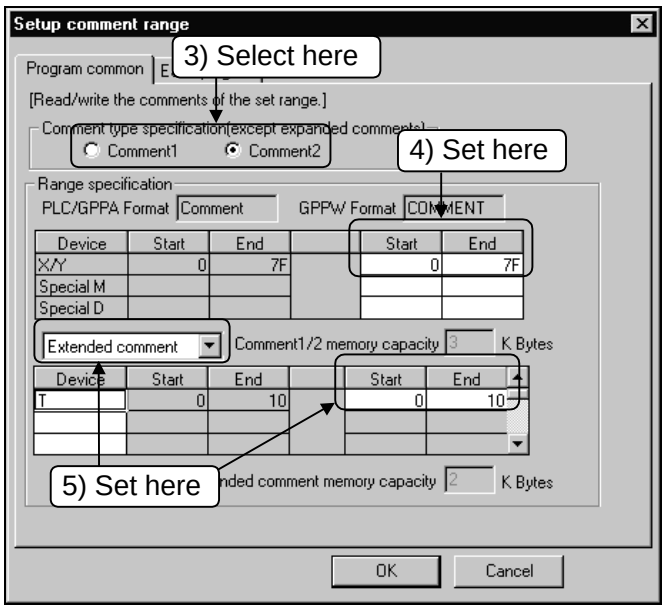
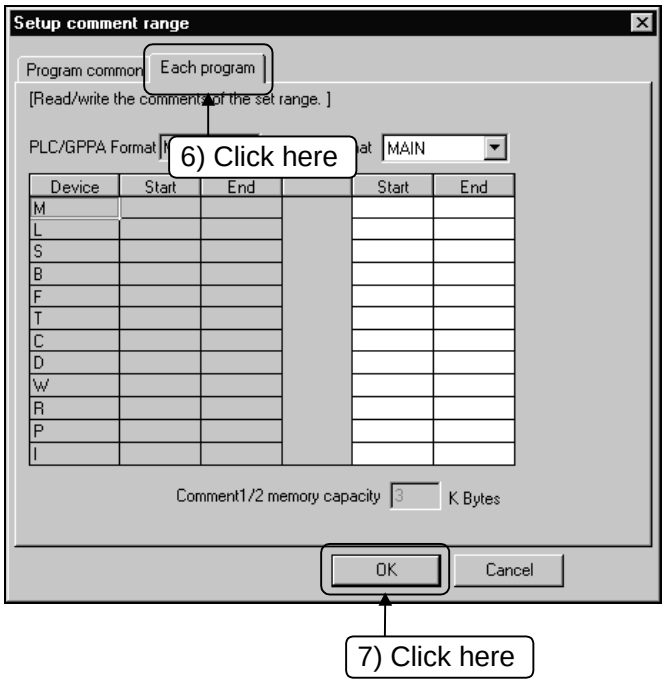
***From previous page***




3) Select comment type 「Comment2」 by using the 「Program common」 tab.

4) Set X, Y device range from "0" to "7F".

5) Select "T" for the extension comment, and set the range from "0" to "10".



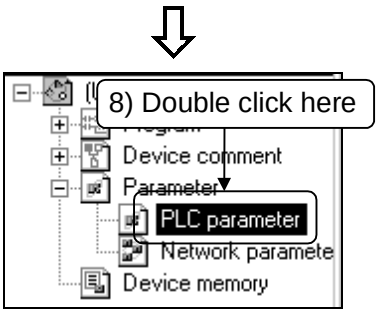

6) By selecting the 「Each program」 tab, other ranges such as M, L, and S can be set for the main program and sub-programs.
Since "X and Y" in the example circuit here are allocated to the common device, and "T" to extension comment 1, the devices are not set in each program screen. Now, setting of comment range is completed.

7) After setting, click OK.

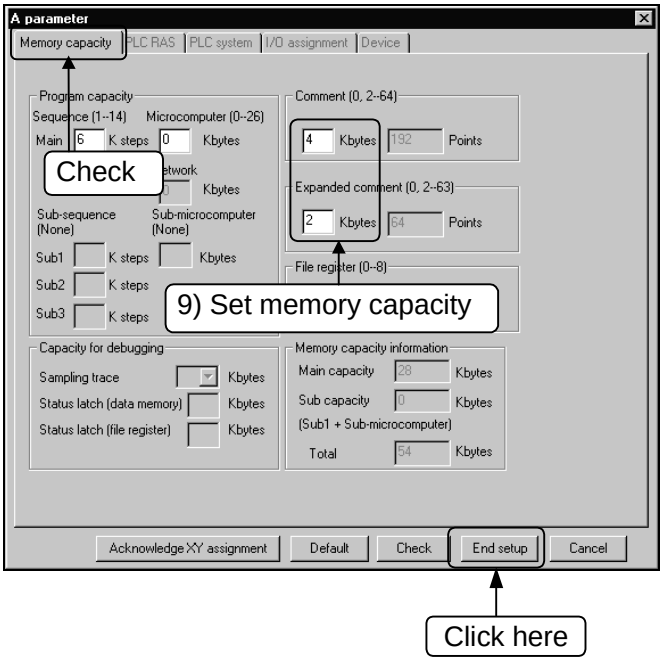
Go to setting operation of comment memory capacity.

***To the following page***

## *From previous page*

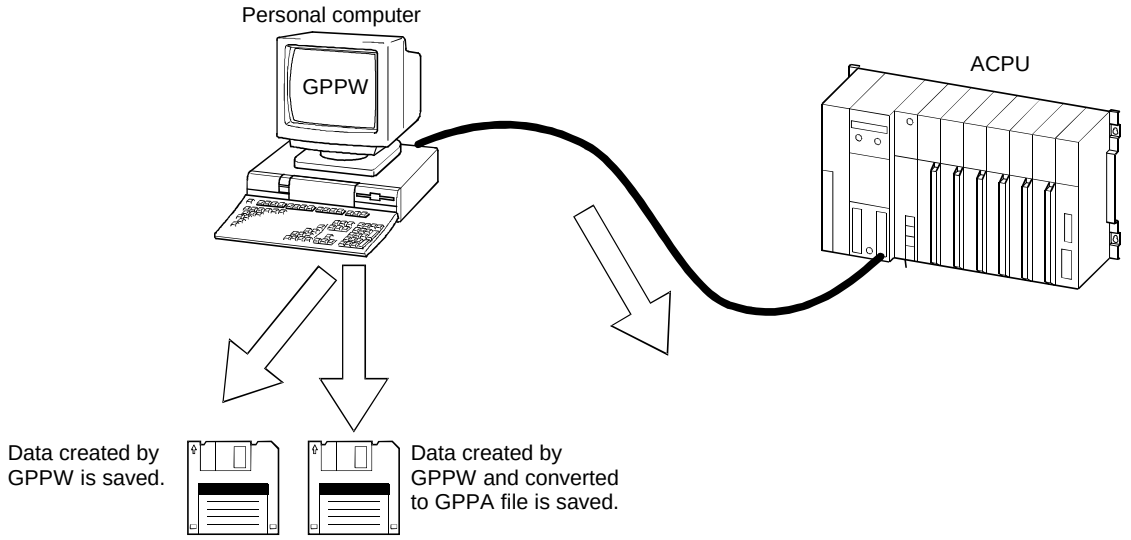



8) Double click「PLC parameter」and open the「parameter」dialog box.




9) Set the comment memory capacity to "4" and extension comment memory capacity to "2".

After setting, click End setup .




**Hint!**

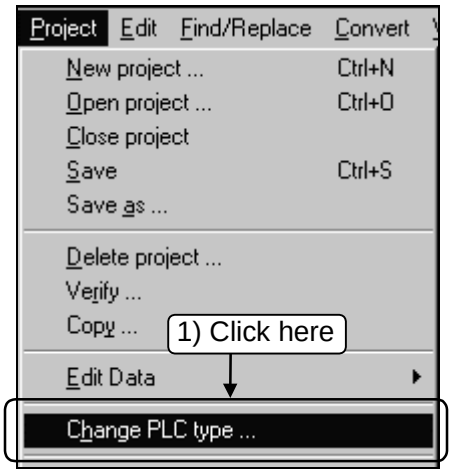
By converting files created by GPPW to GPPA format and saving them in floppy disks, the files can be used if the user has GPPA.

## 1.5 Changing project PLC type

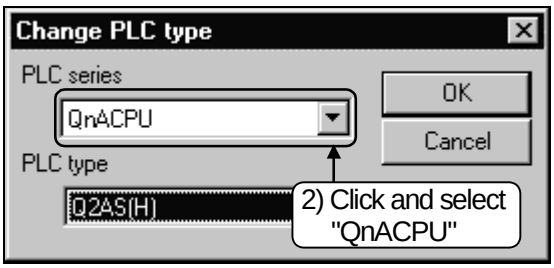
This section explains changing project PLC type set in project creation.

Here, operations for changing PLC type "A2US(S1)" to "Q2AS(H)" are described.

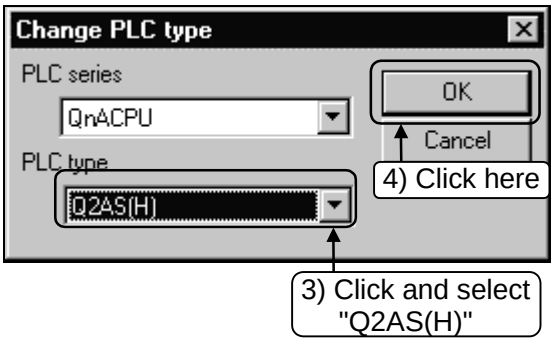
(Changing PLC type from A series to QnA series and vice versa involves restrictions. For detail, refer to the GPPW operating manual.)




1) Click the [Project]-[Change PLC type] menu.




2) Click the ⌈PLC series⌋ list button, and select PLC series to change. Here, select "QnACPU".




3) Click the ⌈PLC type⌋ list button, and select PLC type to change.
Here, select "Q2AS(H)".

4) Click the [OK] button.

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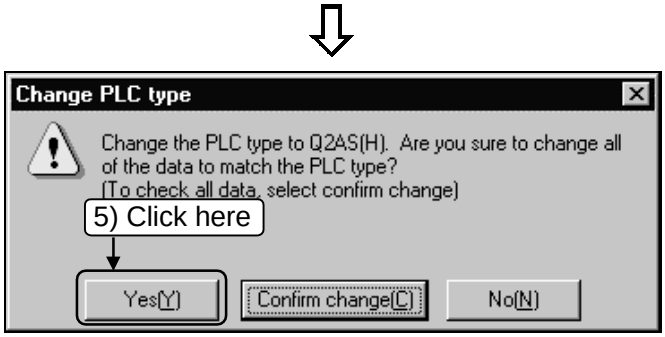



5) A dialog box to confirm change is displayed. Click the Yes button.


6) Confirm that the PLC type on the status bar at the bottom of the screen is changed to "Q2AS(H)".

## 2 Operations with Windows functions

Windows is a well-known OS that is used worldwide.
This section explains using Windows functions.

### 2.1 Using Excel files as device comment

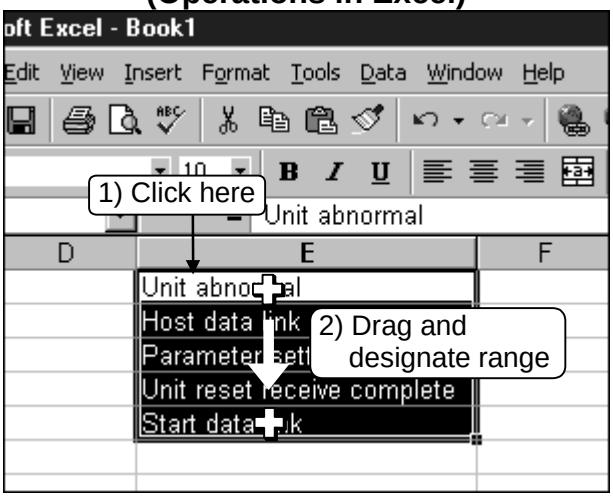
This section explains using Excel files to create device comments.

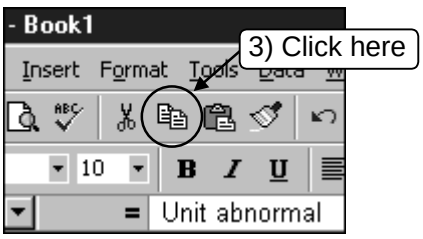
The following explanation assumes that Excel and GPPW are running.

**Hint!**

CSV or text format data can be read as the device comment or list program of GPPW by the optionally available data conversion software package SW0D5C-CNVW.

**(Operations in Excel)**

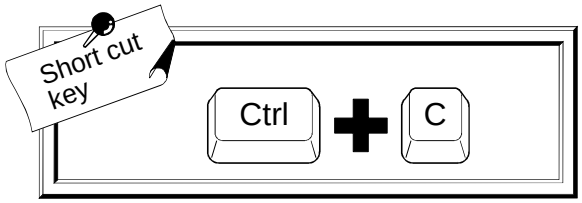



1) Click the cell containing the comment created.

2) Drag the mouse to designate the range to be used as comments. The designated area is highlighted.

3) Click on the tool bar of Excel. The comments in the designated range are copied.

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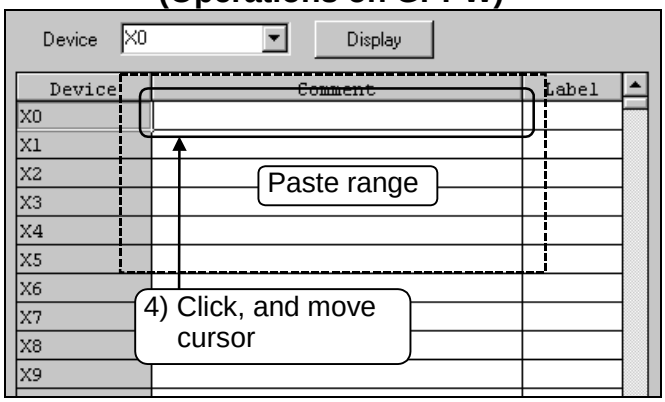
**(Operations on GPPW)**

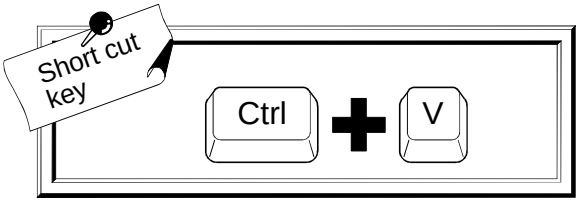


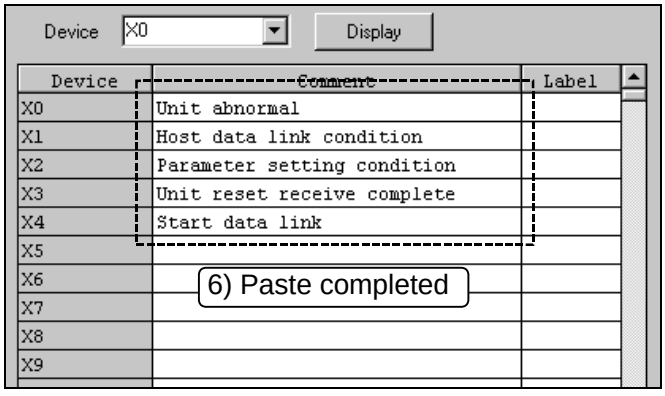

4) Click the position to paste the comment and move the cursor.

**Point**

Set the cursor position at the top of the paste range.
When pasted, the data is overwritten.


5) Click on the tool bar.




6) Now the comments are created.

**Hint!**

For comment...

☞ *Part 3, 5.1.* ☜

## 2.2 Using Word files as device comment

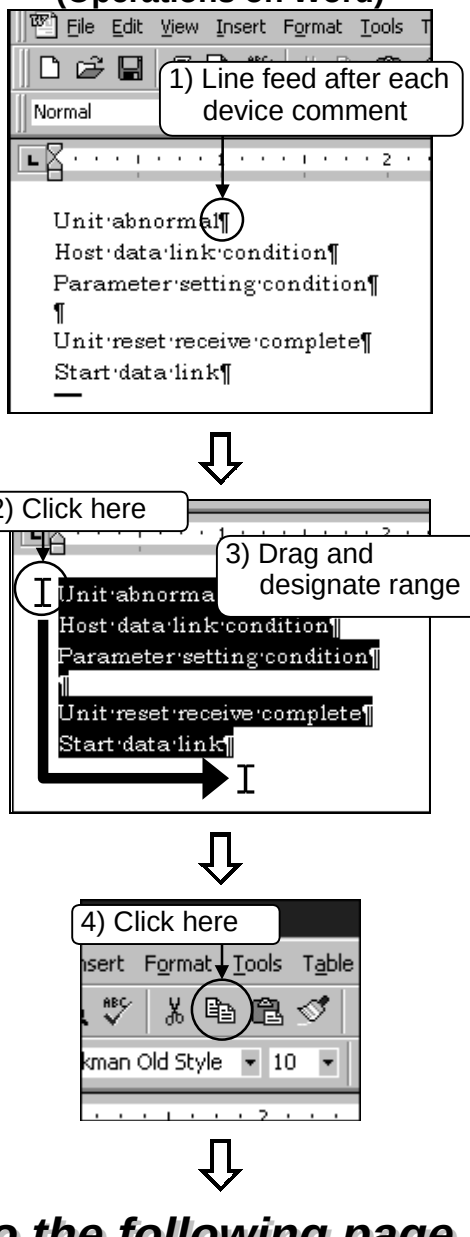
This section explains using documents created by Word as device comments.

The following explanation assumes that Word and GPPW are running.

**Hint!**

CSV or text format data can be read as the device comment or list program of GPPW by the optionally available data conversion software package SW0D5C-CNVW.

**(Operations on Word)**




1) Input comments in Word.
Press the Enter key and feed line after each device comment.

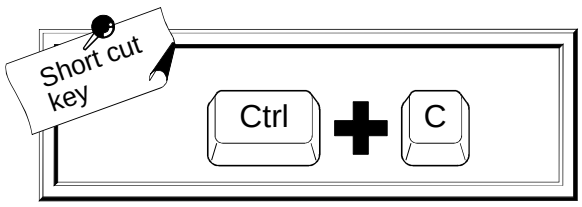
**Point**

If comments are input without line feed, the data is considered as one device comment.
Be sure to feed line for each device comment.

2) Click the top of the comment created.

3) Drag the mouse to designate the range to be used as comments. The designated area is highlighted.

4) Click on the tool bar of Word. The comments in the designated range are copied.

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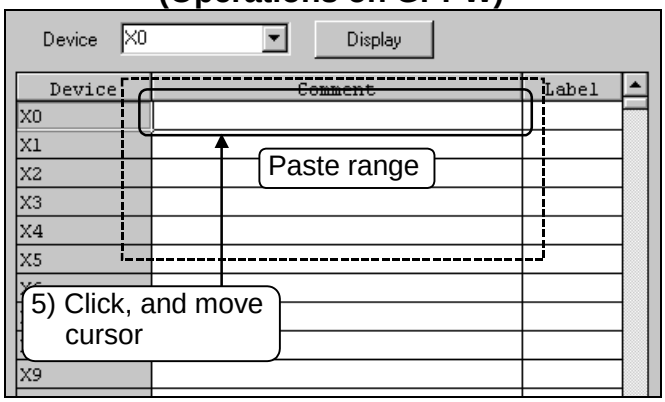
**(Operations on GPPW)**

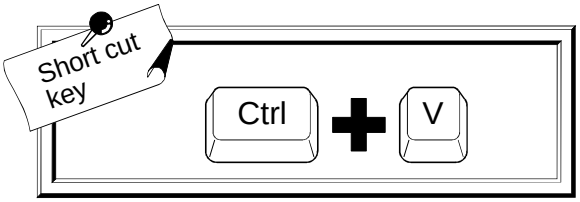


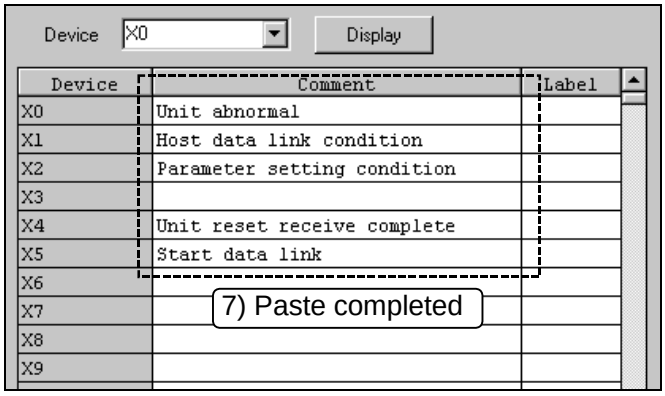

5) Click the position to paste the comment and move the cursor.

**Point**

Set the cursor position at the top of the paste range.


6) Click on the tool bar.

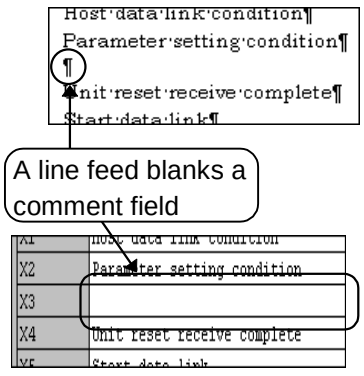



7) Now the comments are created.

**Hint!**

If a line feed is input between comments, a comment column is blanked.




For comment...

☞ *Part 3, 5.1.* ☜

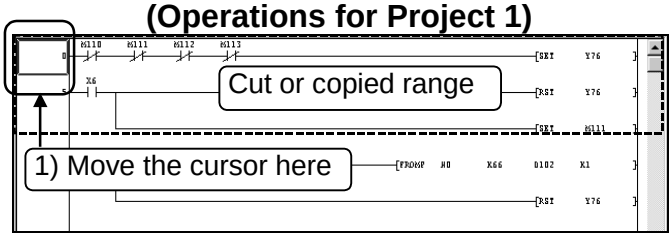
## 2.3 Opening and editing multiple projects

Since the GPPW can edit only one project at a time, multiple GPPWs must be run to edit multiple projects simultaneously. Running multiple GPPWs allows cutting, copying, and pasting operations for programs and comments among different projects.

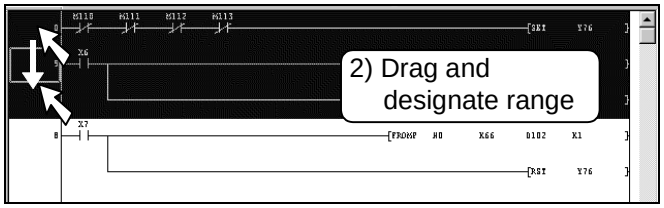
This section explains inserting a circuit block copied in Project 1 to Project 2.

The following explanation assumes that Projects 1 and 2 are already running.

**(Operations for Project 1)**



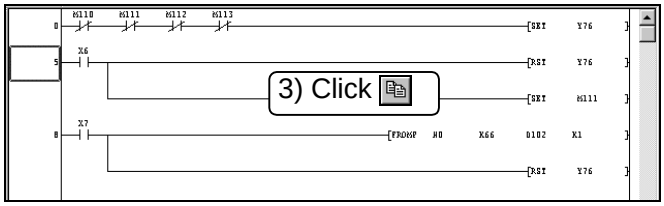

1) Move the cursor to step No. of the circuit block in Project 1 which is to be copied.



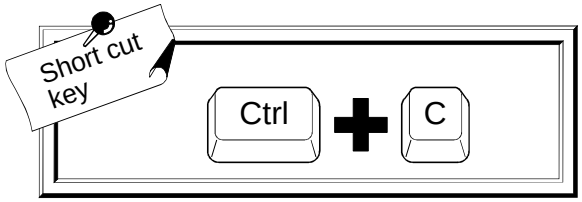

2) Drag the mouse vertically to designate the range to be cut or copied. The designated area is highlighted.

**Hint!**

To designate a single-line circuit block, drag horizontally for easier range designation.




3) Click on the tool bar. The highlighted area is released, and the circuit of the designated range is copied.

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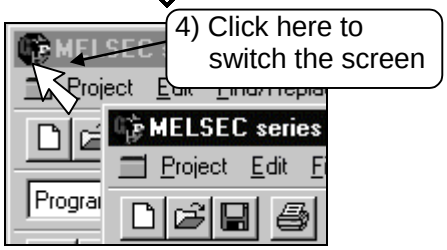
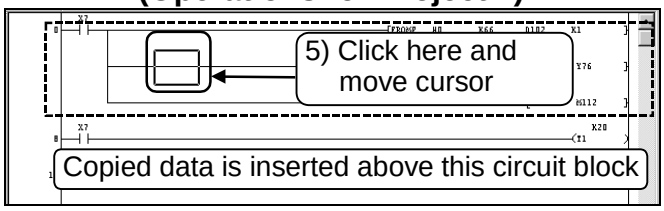



4) Move the cursor to the screen of Project 2, and click.

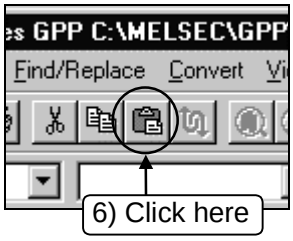
**Hint!**

Projects can be switched by using the task bar.

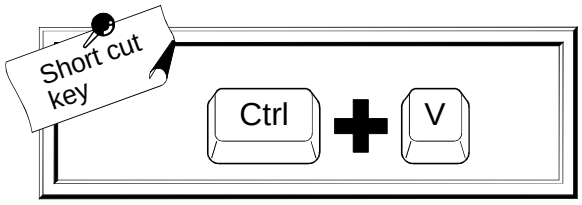

**(Operations for Project 2)**

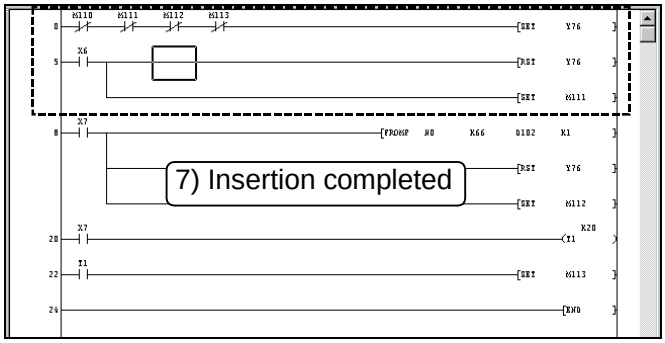



5) Click the circuit block (any position) under the insert position, and move the cursor.




6) Click on the tool bar.




7) The copied circuit block is inserted to the Project 2 circuit.

**Hint!**

Editing operations for circuits and comments between projects are same as editing within a project.

For methods of editing circuits...

*Part 3, Chapter 2.*

For methods of editing comments...

*Part 3, Chapter 6.*

## 3 Using Logic Test functions

The Logic Test function (option) is a tool that enables debugging the sequence programs created by users without connecting PLC CPU.

This function allows debugging by using a personal computer without a debugging equipment such as PLC CPU.

This section explains the operations of the Logic Test function.

### ——Outline of Logic Test function (LLT)——

Installing the Logic Test function (LLT) additionally to the personal computer installed with GPPW enables debugging of the sequence programs in off-line status (when GPPW is not connected to external devices such as PLC).
It also allows quick development of sequence programs because program creation and debugging can be performed on the same personal computer.
Debugging by the Logic Test function (LLT) is performed by writing sequence programs created with GPPW to the LLT. Writing is executed automatically with start-up of the Logic Test function.

### ——Functions supported by Logic Test function (LLT)——

◆When the Logic Test function (LLT) is installed, the online menu of GPPW becomes available in the same way as it is connected to PLC CPU. (PLC CPU emulation)

| 「Online」menu | Description |
|---|---|
| Circuit monitor, device monitor | Monitors operating status. |
| Device test | Overwrites the device value positively during monitoring. |
| PLC writing | Writes parameter files and program files. |
| PLC diagnostics | Checks the status for error. |
| Skip execution | Skips (does not perform) a program run in the range of the specified steps. |
| Step execution | Operates the sequence program step by step. |
| Partial operation | Executes the designated steps or pointer range of the program. |
| Remote operation | Operates the status of the Logic Test function (LLT). |
| Program monitor list | Monitors the run statuses and run counts of programs as a list and starts/stops a program in the list. |

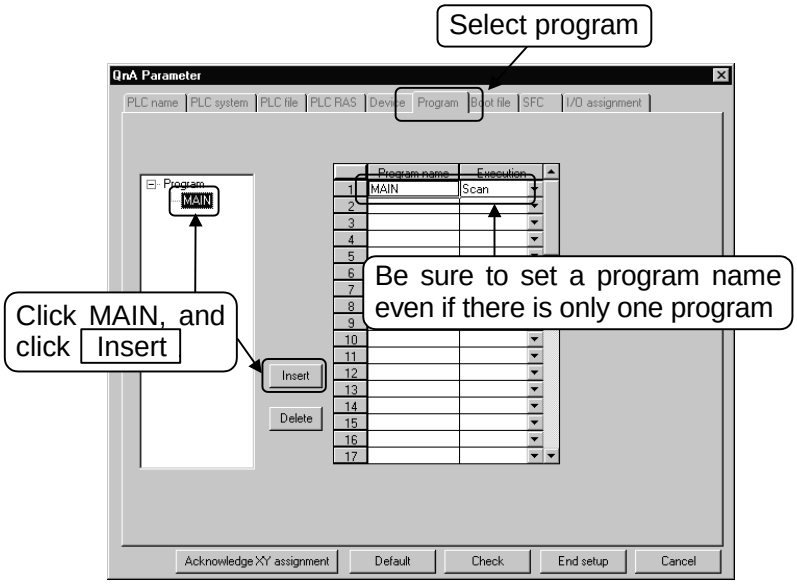
◆Functions performed by Logic Test function (LLT)

| Function | | Description | Refer to |
|---|---|---|---|
| Device Memory Monitor | Device Memory | Monitors the device memory states and conducts tests such as forced ON/OFF and present value changing of devices. | 3.3 |
| | Timming Chart | Monitors and tests device states in a sequence program using Timing Chart. | 3.4 |
| I/O system setting | | Simulates machine operations by simple setting. | 3.2 |

Note: Other than the above functions, the Logic Test function supports the "Tool function" which allows temporal storage of LLT device data and buffer memory data of special function unit.

## ——Note for start-up of Logic Test function (LLT)——

◆If QnACPU is selected for PLC series, set the「Program」tab of the PLC parameter for GPPW as follows. (For A series, no setting is required.)



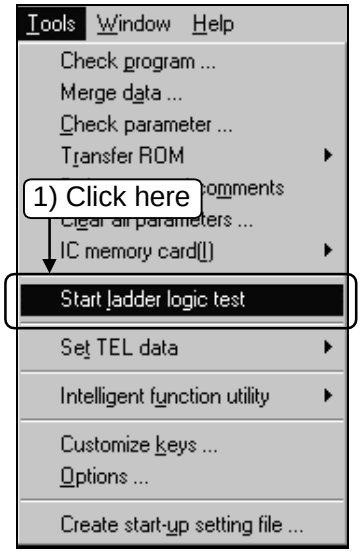

## ——Processing time of sequence program in Logic Test function——

The actual processing time of the sequence program depends on the performance of the personal computer and the operation environment of other applications.

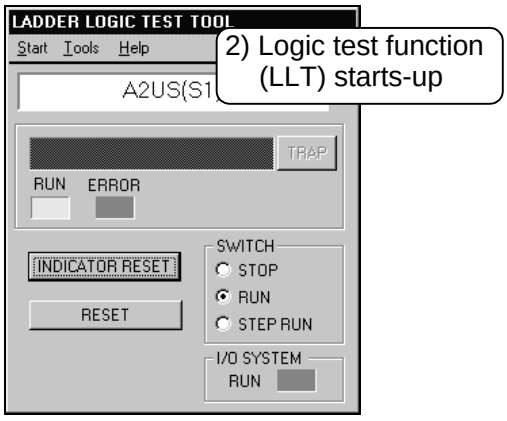
## 3.1 Learning operation procedures

This section explains debugging with the Logic Test function (LLT).

The following explanation assumes that GPPW and the Logic Test function are installed.




1) Confirm that the project is open, and click the [Tools]-[Start ladder logic test] menu.




2) The Logic Test function starts-up.

**Hint!**

- When the Logic Test function (LLT) starts-up, the parameter and program are written simultaneously (equivalent to PLC write).
- If QnACPU is used, program setting of the PLC parameter is required.

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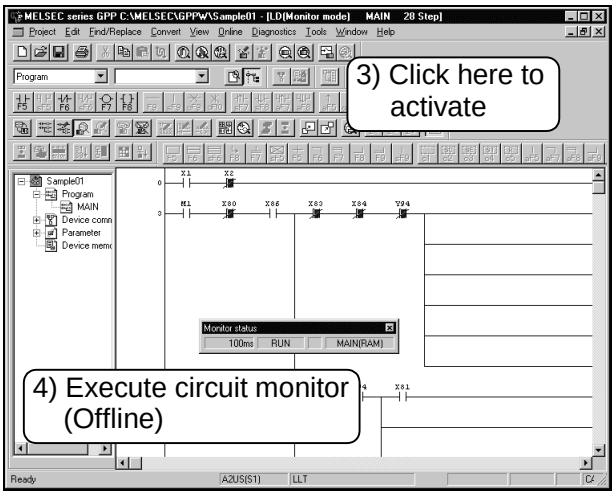
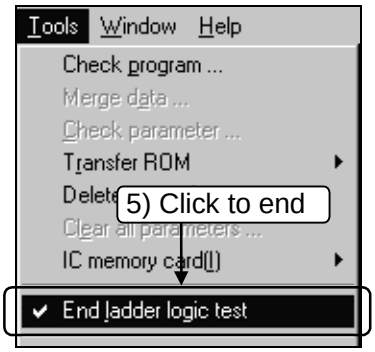
## *From previous page*




3) Click on the GPPW screen to activate the screen.

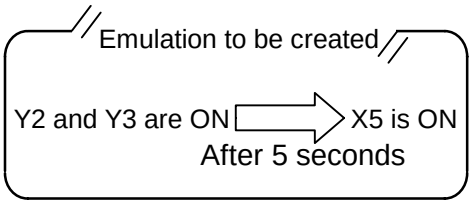
4) Circuit monitoring is executed while PLC is not connected (Offline).
Now offline debugging can be performed.



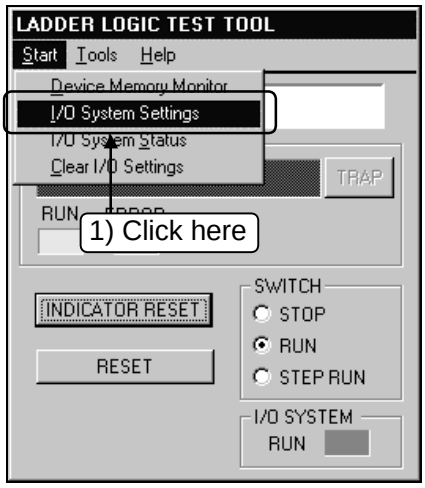

5) Click the [Tools]-[End ladder logic test] menu of GPPW to end the Logic Test function (LLT).

## 3.2 Creating emulation of I/O and special unit

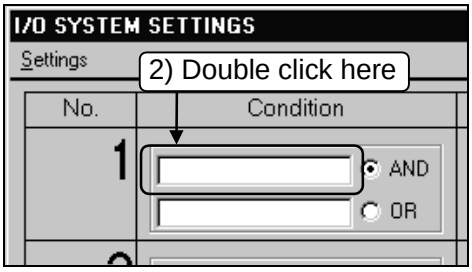
This section explains creating emulation of I/O and special unit such as "turning X0 ON when Y5 and Y7 are ON."



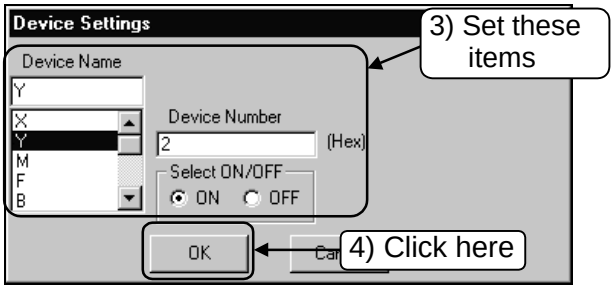

Operations for creating the emulation as shown on the left are explained.
(I/O system is set in setting No.1.)




1) Click the [Start]-[I/O system settings] menu of the Logic Test function (LLT).




2) Double click the upper text box of the setting No.1「Condition」.




3) Set the device name (Y), device number (2), and ON/OFF designation (ON).

4) Click the OK button.

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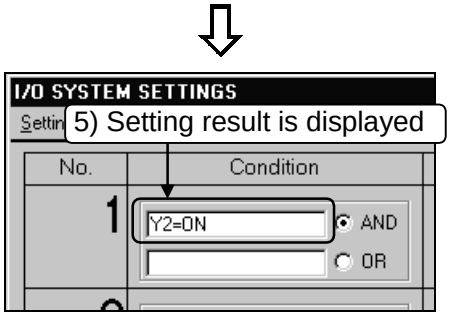
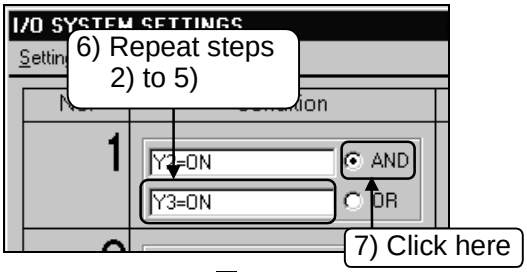



5) The setting result is displayed.

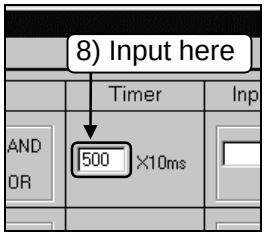
**Hint!**

Setting can also be done by inputting "Y2=ON".

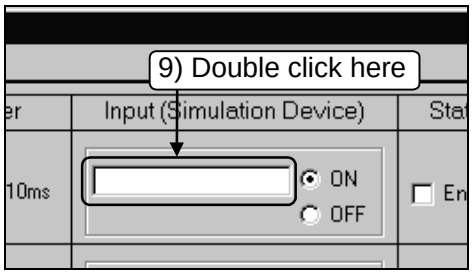



6) Repeat steps 2) to 5) for setting the lower text box.

7) Click the「AND」radio button.




8) Input "500" (5 sec) to the「Timer」text box.




9) Double click the「Input(Simulation Device」text box.

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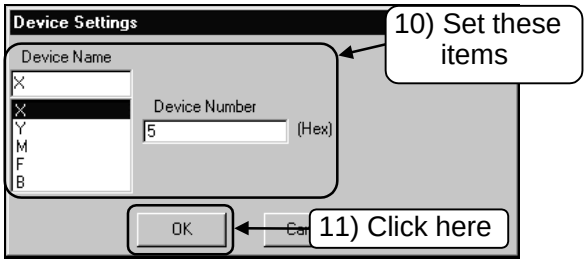
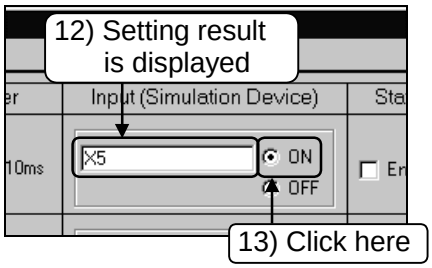



10) Set the device name (X) and the device number (5).

11) Click the OK button.

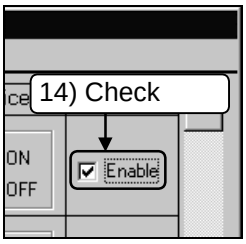



12) The setting result is displayed.

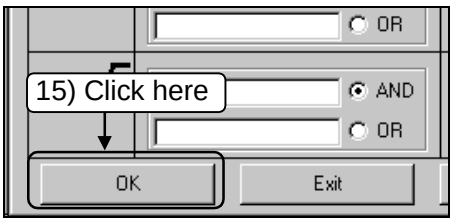
**Hint!**

Setting can also be done by inputting "X5".

13) Click the ⌈ON⌋ radio button.




14) Click the check to put a check mark to validate the setting.




15) Click the OK button at the lower-left of the screen.

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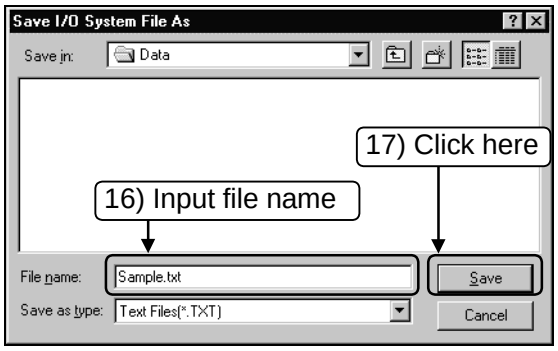
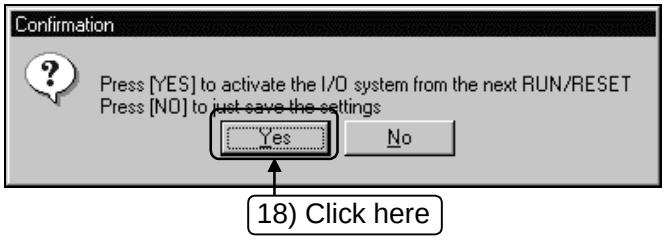
## *From previous page*




16) Input the file name to save the created emulation.
(Input "Sample.txt" here.)

17) Click the Save button.

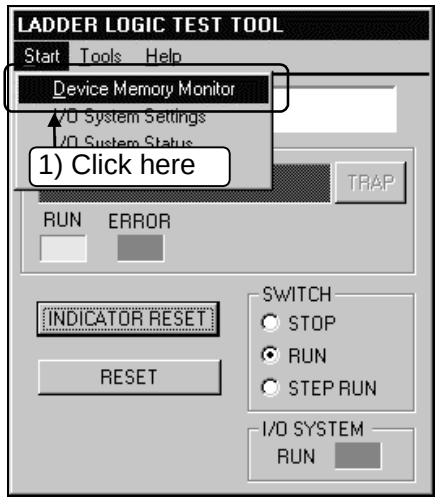



18) Click the Yes button.

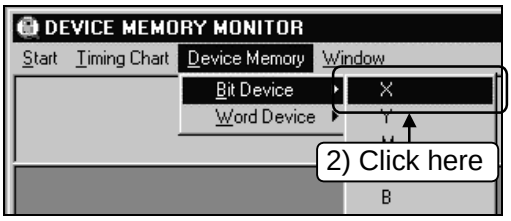
## 3.3 Monitoring device status

Operations such as monitoring devices, turning ON/OFF bit devices positively, and changing word device values are described.

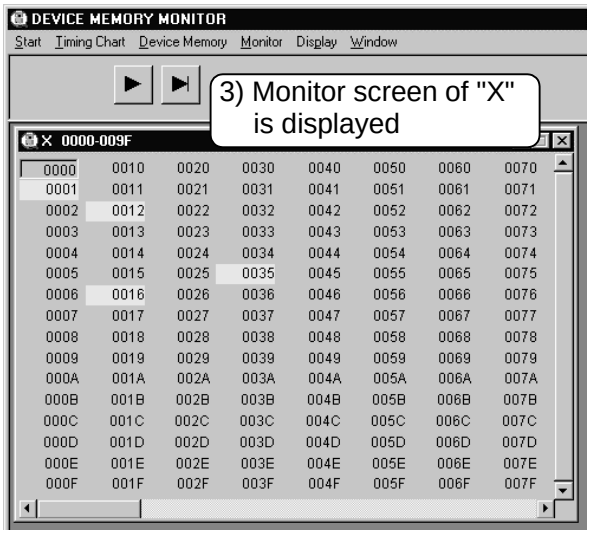
This section explains monitoring bit device "X" and word device "D".




1) Click the [Start]-[Device memory monitor] menu of the Logic Test function (LLT).




2) Click the [Device Memory]-[Bit Device]-[X] of the device memory monitor.




3) The status of the bit device "X" is displayed.

**Point**

Bit devices that are turned ON is displayed in yellow.

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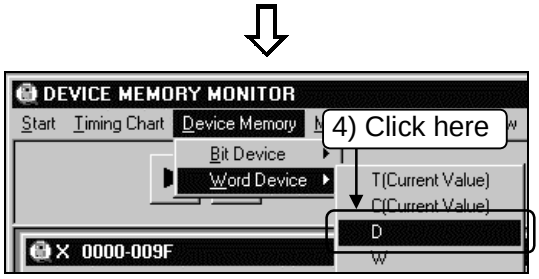
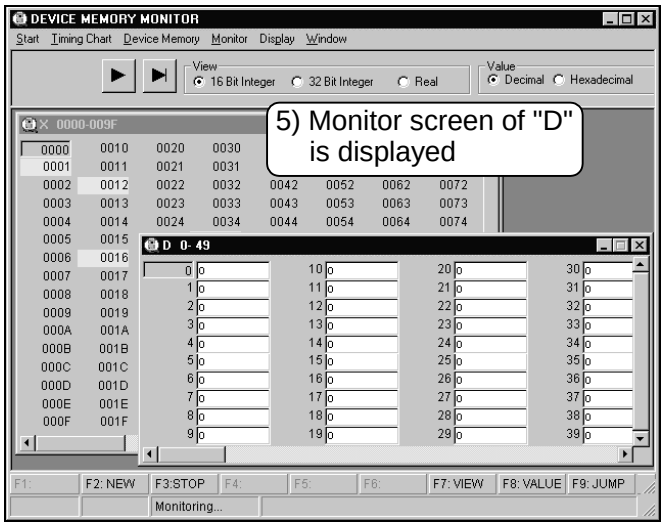



4) Click [Device Memory]-[Word Device]-[D] of the device memory monitor.



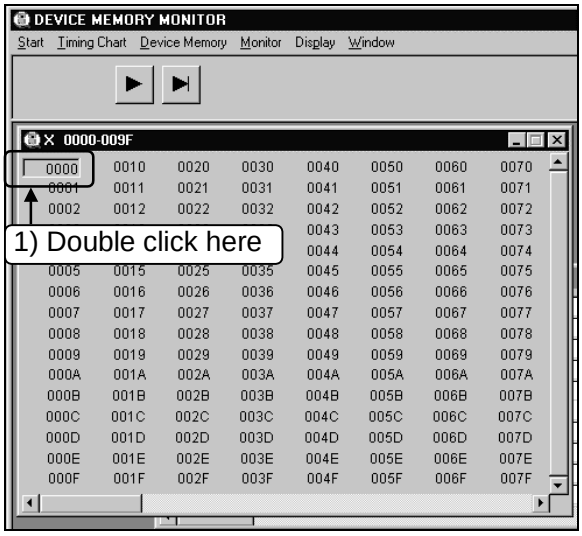

5) Status of word device "D" is displayed.


6) Confirm that monitoring is ON.

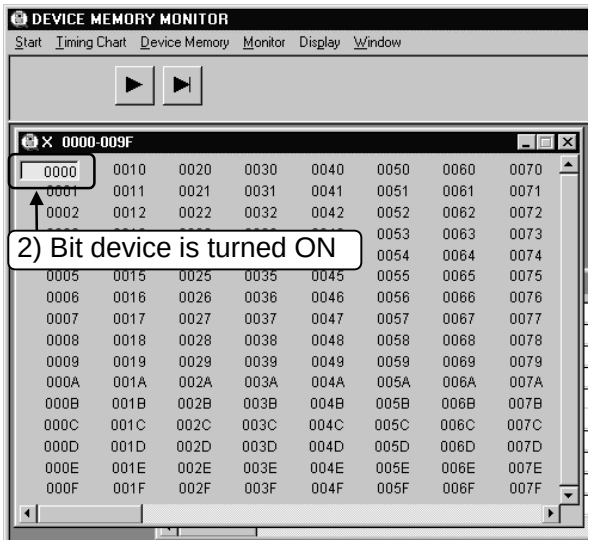
**Hint!**

If the monitoring is OFF, click the F3:START/STOP button to start monitoring.

## ——Turning ON/OFF bit device positively——

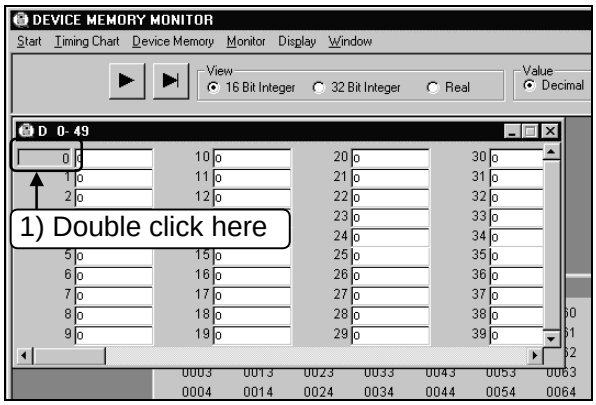



1) Double click the device No. to be turned ON/OFF positively.

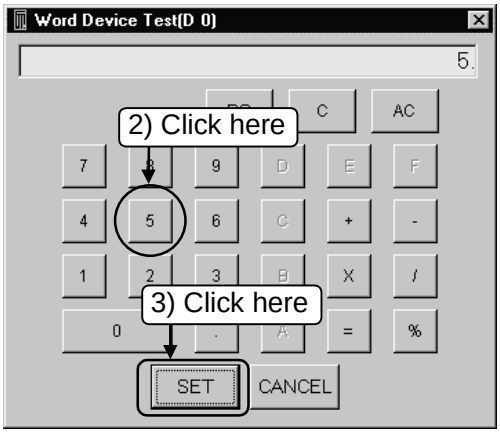



2) The designated bit device No. is turned ON and displayed in yellow.

## ―Changing device value of word device―

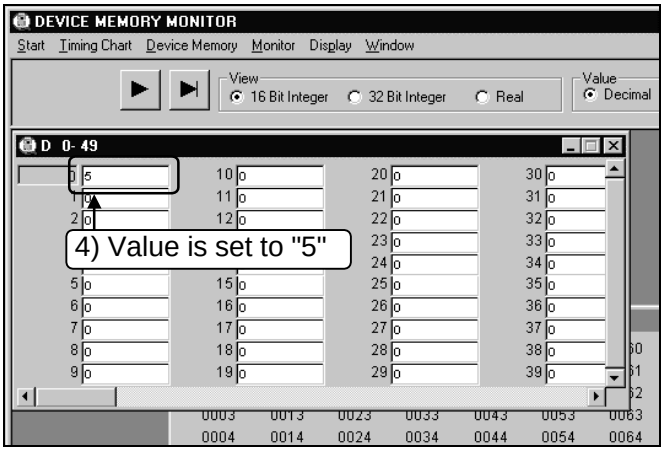



1) Double click the device number for changing device value.




2) Click the number and symbol buttons to set the device value. (Here, set the value to "5".)

3) Click the SET button.

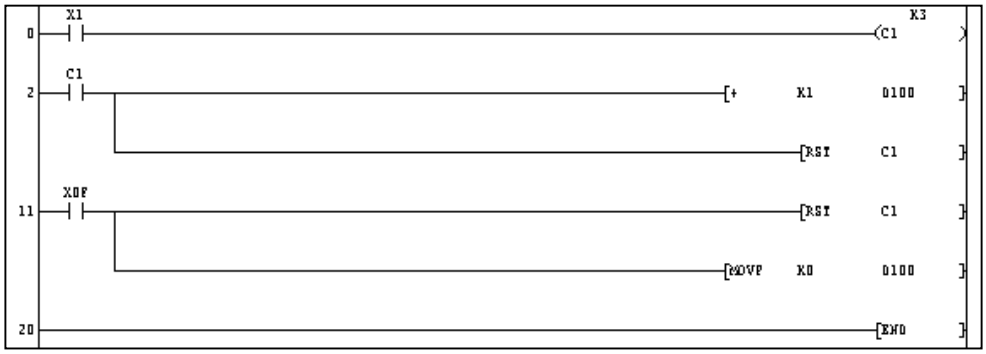


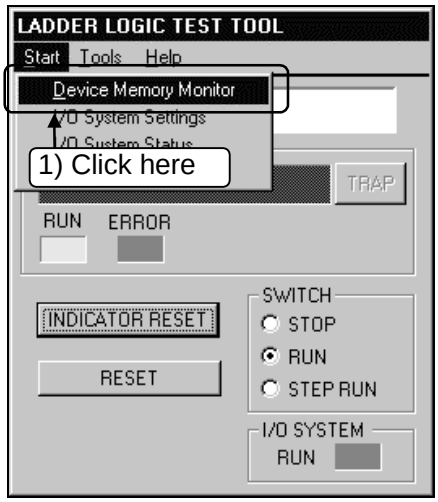

4) The device value is set to "5".

## 3.4 Using the timing chart for monitoring

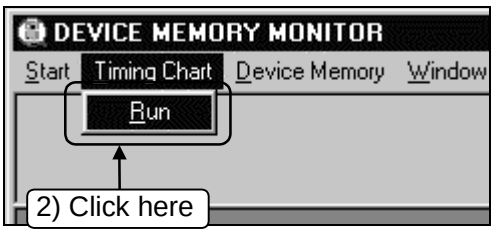
This section explains operations to indicate device changes per elapsed time during monitoring. Here, the following circuit is used as an example to perform operations to monitor the change timing of the value stored in "D100" when "X1" turns ON/OFF.

### Circuit example for timing chart




1) Click the [Start]-[Device Memory Monitor] menu of the logic test function (LLT).




2) Click the [Timing Chart]-[Run] menu of Device Memory Monitor.

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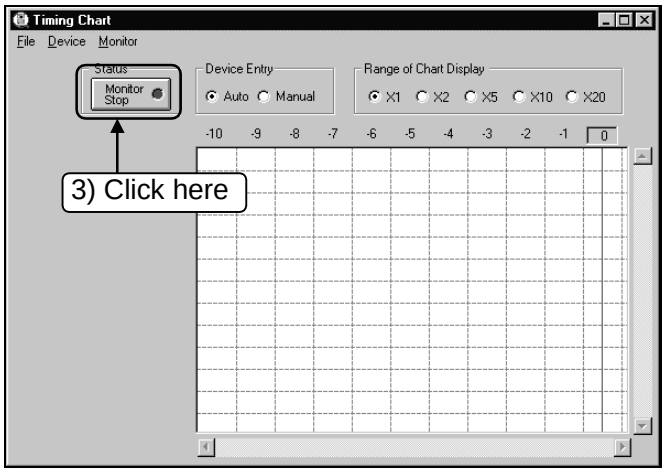
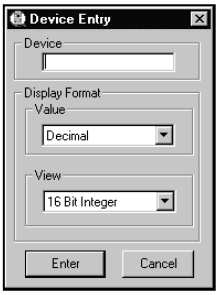
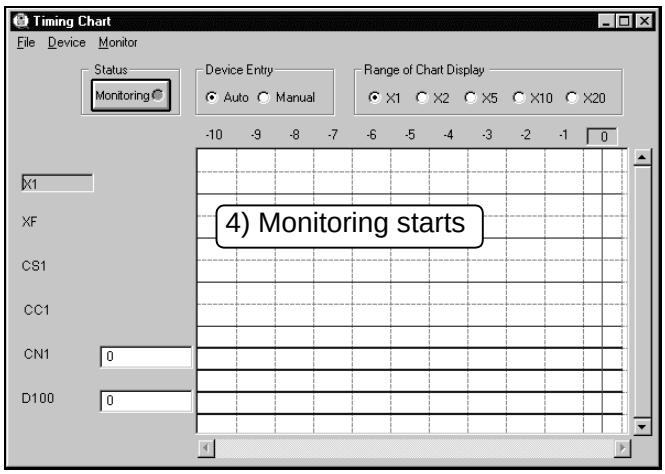



3) As the Timing Chart screen appears, click the [ Monitor Stop ] button.
If [Device Entry] is "Auto", the devices being displayed in the circuit are automatically entered.

**Point**

If you want to display the specified device, enter it "manually" from the [Device]-[Enter Device] menu.



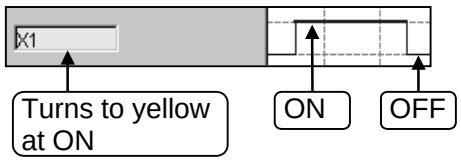




4) Status changes to [ Monitoring ] and the states per scan time are displayed.

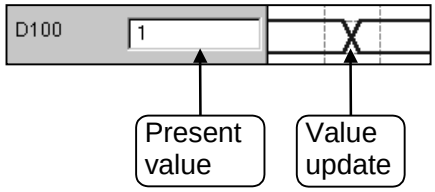
**Hint!**

The indications of bit devices differ from those of word devices.
Timing Chart provides the following indications.

Bit device




Word device

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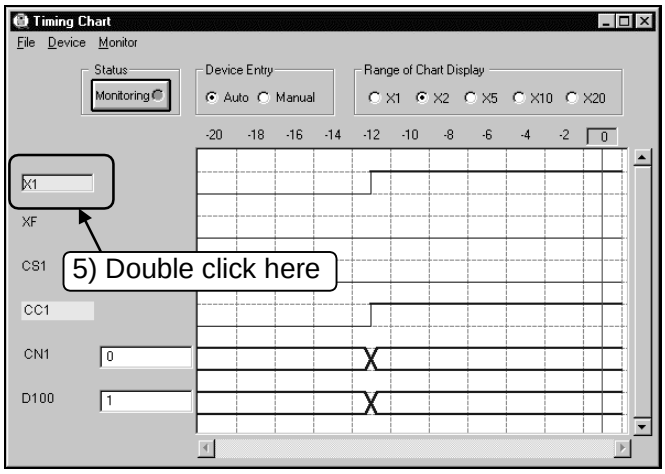
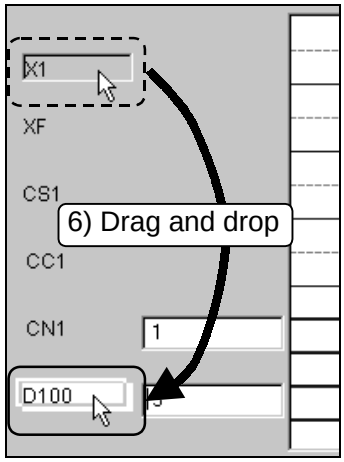



5) Double-clicking "X1" forces it to turn ON/OFF.
Turning "X1" ON three times turns "C1" ON and stores 1 into "D100".

**Point**

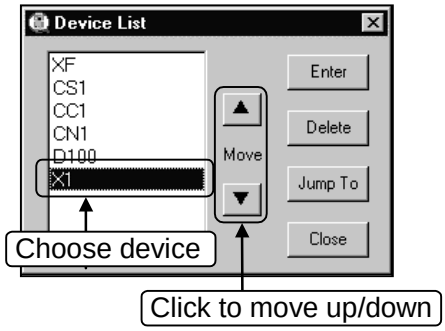
To change the present value of a word device, enter a new value into the text box on the left side of the device name.




6) To change the device display order, drag and drop the device to the exchange position.

**Hint!**

The device display order can also be changed on the Device List screen of the [Device]-[List Device] menu.
To change the order on the Device List screen, choose the device and click ▲/▼.

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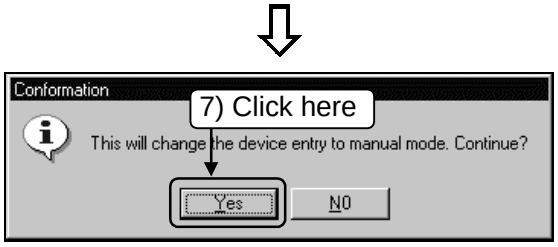
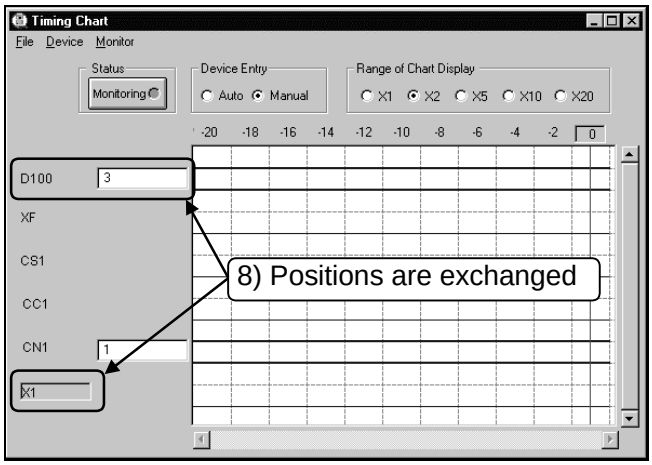
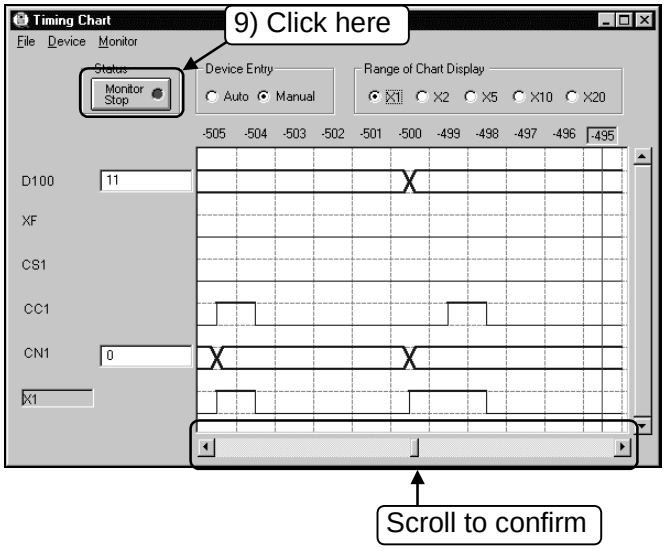



7) As [Device Entry] switches to "Manual", click the OK button.



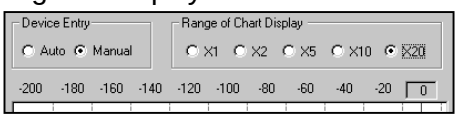

8) [Device Entry] switches to "Manual" and the device display order changes.




9) Click the Monitoring button to stop Timing Chart.
With the scroll bar at the bottom of the screen, you can confirm up to 1000 device states.

**Point**

In "Range of Chart Display", you can change the display unit between 1 and 20.



MEMO

# Appendix

Appendix

**Appendix**

# Appendix

## App. 1 Short cut key list

| Short cut key | Tool button | Function | | |
|---|---|---|---|---|
| Alt + F4 | — | Close | | |
| Ctrl + F6 | — | Next window | | |
| Ctrl + N |  | Project | New project | |
| Ctrl + O |  | | Open project | |
| Ctrl + S |  | | Overwrite project | |
| Ctrl + P |  | | Print | |
| Ctrl + Z |  | Edit | Undo | |
| Ctrl + X |  | | Cut | |
| Ctrl + C |  | | Copy | |
| Ctrl + V |  | | Paste | |
| Ctrl + A | — | | Select all | |
| Shift + Ins | — | | Insert row | |
| Shift + Del | — | | Delete row | |
| Shift + F2 |  | | Read mode | |
| Ctrl + Ins | — | | Insert column | |
| Ctrl + Del | — | | Delete column | |
| F2 |  | | Write mode | |
| GPPA GPPQ: F5 |  | | Circuit symbol | Open contact |
| MEDOC: 1 |  | | | |
| GPPA: Shift + F5 |  | | | Close contact |
| GPPQ: F6 |  | | | |
| MEDOC: 2 |  | | | |

| | **Description** |
|---|---|
| | Close the active window. |
| | Open the next window. |
| | Create a new project. |
| | Open an existing project file. |
| | Overwrite the project file. |
| | Print the project. |
| | Undo the previous operation. |
| | Move the selected data to the clipboard. |
| | Copy the selected data to the clipboard. |
| | Paste the data on the clipboard to the cursor position. |
| | Select all items. |
| | Insert a row to the cursor position. |
| | Delete a row at the cursor position. |
| | Set to read mode. |
| | Insert a column to the cursor position. |
| | Delete a column at the cursor position. |
| | Set to write mode. |
| | Write an open contact to the cursor position. |
| | Write a close contact to the cursor position. |

# Appendix

| Short cut key | | Tool button | | | Function | |
|---|---|---|---|---|---|---|
| GPPA | F6 |  | Edit | Circuit symbol | Open branch | |
| GPPQ | Shift + F5 |  | | | | |
| MEDOC | 3 |  | | | | |
| GPPA GPPQ | Shift + F6 |  | | | Close branch | |
| MEDOC | 4 |  | | | | |
| GPPA GPPQ | F7 |  | | | Coil | |
| MEDOC | 7 |  | | | | |
| GPPA GPPQ | F8 |  | | | Application instruction | |
| MEDOC | 8 |  | | | | |
| GPPA GPPQ | F9 |  | | | Horizontal line | |
| MEDOC | 6 |  | | | | |
| GPPA | F10 |  | | | Vertical line | |
| GPPQ | Shift + F9 |  | | | | |
| MEDOC | 5 |  | | | | |
| GPPA GPPQ | Ctrl + F9 |  | | | Delete horizontal line | |
| MEDOC | 9 |  | | | | |
| GPPA GPPQ | Ctrl + F10 |  | | | Delete vertical line | |
| MEDOC | 0 |  | | | | |
| | Shift + F7 |  | | | Rising pulse | |
| | Shift + F8 |  | | | Falling pulse | |
| | Alt + F7 |  | | | Rising pulse open branch | |
| | Alt + F8 |  | | | Falling pulse close branch | |
| | Alt + F5 |  | | | Convert operation results to rising pulse | |
| Ctrl + Alt | + F5 |  | | | Convert operation results to falling pulse | |

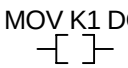
| | **Description** |
|---|---|
| | Write an open branch to the cursor position. |
| | Write a close branch to the cursor position. |
| | Write a coil (OUT) to the cursor position. |
| | Write an application instruction to the cursor position. |
| | Write a horizontal line to the cursor position. |
| | Write a vertical line to the cursor position. |
| | Delete a horizontal line at the cursor position. |
| | Delete a vertical line at the cursor position. |
| | Write a rising pulse to the cursor position. |
| | Write a trailing pulse to the cursor position. |
| | Write a rising pulse open branch to the cursor position. |
| | Write a trailing pulse close branch to the cursor position. |
| | Write a convert operation results to rising pulse to the cursor position. |
| | Write a convert operation results to falling pulse to the cursor position. |

# Appendix

| Short cut key | Tool button | Function | | | |
|---|---|---|---|---|---|
| Ctrl + Alt + F10 |  | Edit | Circuit symbol | Invert operation results | |
| GPPA: Alt + F10 |  | Edit | Circuit symbol | Write horizontal rule | |
| GPPQ MEDOC: F10 |  | Edit | Circuit symbol | Write horizontal rule | |
| Alt + F9 |  | Edit | Circuit symbol | Delete horizontal rule | |
| F4 |  | Convert | | Convert | |
| Ctrl + Alt + F4 |  | Convert | | Convert (all program being edited) | |
| Shift + F4 | — | Convert | | Convert (write during run) | |
| Ctrl + F5 | — | Display | | Display comment | |
| Ctrl + F7 | — | Display | | Display statement | |
| Ctrl + F8 | — | Display | | Display note | |
| Ctrl + Alt + F6 | — | Display | | Display system name | |
| Alt + 0 |  | Display | | Project data list | |
| F3 |  | Online | Monitor | Monitor | |
| Ctrl + F3 | — | Online | Monitor | Monitor (all windows) | |
| Shift + F3 |  | Online | Monitor | Monitor (write mode) | |
| F3 |  | Online | Monitor | Monitor start | |
| Alt + F3 |  | Online | Monitor | Monitor stop | |
| Ctrl + Alt + F3 | — | Online | Monitor | Monitor stop (all windows) | |
| Alt + 1 |  | Online | Debug | Device test | |
| Alt + 2 |  | Online | Debug | Skip | |
| Alt + 3 |  | Online | Debug | Partial operation | |
| Alt + 4 |  | Online | Debug | Execute step | |
| Alt + 6 | — | Online | | Remove operation | |
| Alt + F1 |  | Online | | Switch circuit/list | |

| | **Description** |
|---|---|
| | Write the reversed operation result to the cursor position. |
| | Write a ruled line. |
| | Delete a ruled line. |
| | Convert program. |
| | Convert all programs being edited in batch. |
| | Convert program and write to the running CPU. |
| | Switch ON/OFF the comment display. |
| | Switch ON/OFF the statement display. |
| | Switch ON/OFF the note display. |
| | Switch ON/OFF the system name display. |
| | Switch ON/OFF the project data list display. |
| | Execute circuit monitoring. |
| | Execute circuit monitoring for all open programs. |
| | Set to write mode during circuit monitoring. |
| | Start (restart) circuit monitoring. |
| | Stop circuit monitoring. |
| | Stop circuit monitoring for all open programs. |
| | Turn ON/OFF devices positively or change the present values. |
| | Skip the sequence program in the designated range. |
| | Execute part of sequence program. |
| | Run PLC CPU step by step. |
| | Carry out remote operation. |
| | Switch between circuit screen and list screen. |

## App. 2 Circuit creation list

| Example | List expression | Tool button | Function | |
|---|---|---|---|---|
|  | "LD X1" | F5 +"X1" | F5 +"X1" | |
|  | "LDI X1" | F6 +"X1" | F6 +"X1" | |
|  | "OR X1" | sF5 +"X1" | Shift + F5 +"X1" | |
|  | "ORI X1" | sF6 +"X1" | Shift + F6 +"X1" | |
|  | "OUT Y1" | F7 +"Y1" | F7 +"Y1" | |
|  | "MOV K1 D0" | F8 +"MOV K1 D0" | F8 +"MOV K1 DO" | |
|  | — | F9 +Number of lines | F9 +Number of lines | |
|  | — | sF9 +Number of lines | Shift + F9 +Number of lines | |
|  | — | cF9 +Number of lines | Ctrl + F9 +Number of lines | |
|  | — | cF10 +Number of lines | Ctrl + F10 +Number of lines | |
|  | "ANDP X1" | sF7 +"X1" | Shift + F7 +"X1" | |
|  | "ANDF X1" | sF8 +"X1" | Shift + F8 +"X1" | |
|  | "ORP X1" | aF7 +"X1" | Alt + F7 +"X1" | |
|  | "ORF X1" | aF8 +"X1" | Alt + F8 +"X1" | |
|  | "MEP" | aF5 | Alt + F5 | |
|  | "MEF" | caF5 | Ctrl + Alt + F5 | |
|  | "INV" | caF10 | Ctrl + Alt + F10 | |
|  | — | F10 +Drag | F10 +Drag | |
|  | — | aF9 +Drag | Alt + F9 +Drag | |

*1 After inputting instructions, press the Enter key or click the OK button.

*2 This table shows operations for keys customized for GPPQ.

| | **Menu** |
|---|---|
| | [Edit]-[Ladder symbol]-[Open conact]+"X1" |
| | [Edit]-[Ladder symbol]-[Close contact]+"X1" |
| | [Edit]-[Ladder symbol]-[Open branch]+"X1" |
| | [Edit]-[Ladder symbol]-[Close branch]+"X1" |
| | [Edit]-[Ladder symbol]-[Coil]+"Y1" |
| | [Edit]-[Ladder symbol]-[Application instruction]+"MOV K1 DO" |
| | [Edit]-[Ladder symbol]-[Horizontal line]+Number of lines |
| | [Edit]-[Ladder symbol]-[Vertical line]+Number of lines |
| | [Edit]-[Ladder symbol]-[Delete horizontal line]+Number of lines |
| | [Edit]-[Ladder symbol]-[Delete vertical line]+Number of lines |
| | [Edit]-[Ladder symbol]-[Rising pulse]+"X1" |
| | [Edit]-[Ladder symbol]-[Falling pulse]+"X1" |
| | [Edit]-[Ladder symbol]-[Rising pulse open branch]+"X1" |
| | [Edit]-[Ladder symbol]-[Falling pulse close branch]+"X1" |
| | [Edit]-[Ladder symbol]-[Convert operation results to rising pulse] |
| | [Edit]-[Ladder symbol]-[Convert operation results to falling pulse] |
| | [Edit]-[Ladder symbol]-[Invert operation results]+"X1" |
| | [Edit]-[Draw line]+Drag |
| | [Edit]-[Delete line]+Drag |

## <A>



## <C>



## <D>



## <E>

## <G>



## <I>



## <L>



## <M>



## <N>



## <O>



## <P>

## <R>



## <S>



## <T>



## <U>



## <W>

# GPP Function software for Windows SW4D5C-GPPW-E(V), Ladder Logic Test Function software for Windows SW4D5C-LLT-E(V) Starting GPPW

| | |
|---|---|
| MODEL | SW4D5C-GPPW-E-HOW |
| MODEL CODE | 13J966 |
| IB(NA)-0800057 -A(9909)MEE | |

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100-0005 TELEX : J24532 CABLE MELCO TOKYO
NAGOYA WORKS : 1-14 , YADA-MINAMI 5 , HIGASHI-KU, NAGOYA , JAPAN