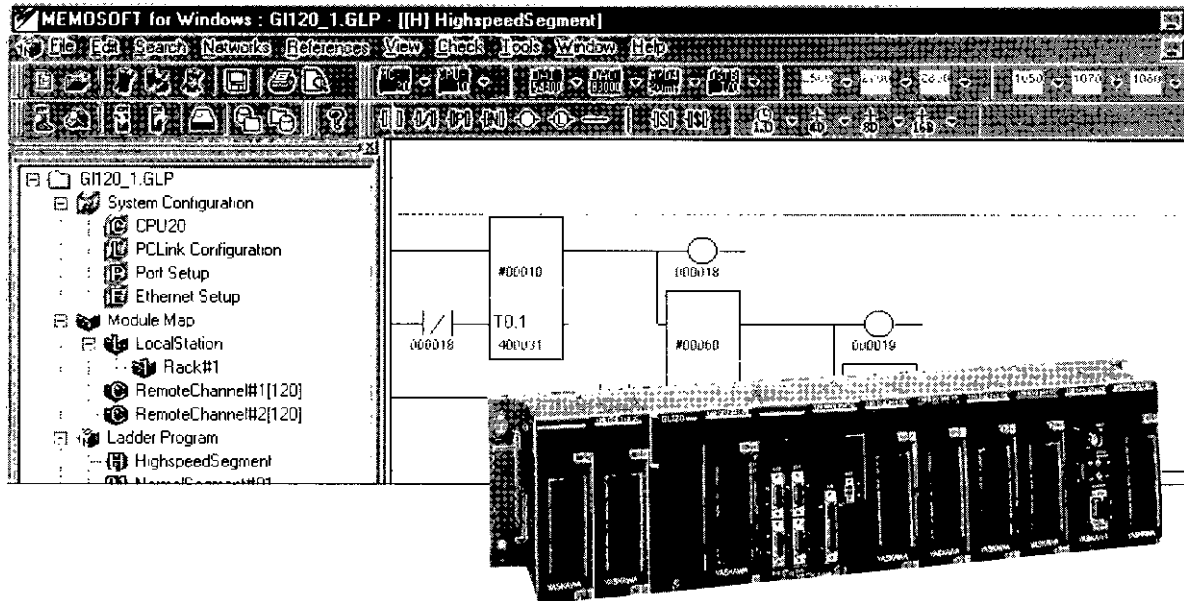


MEMOCON GL120, GL130 MEMOSOFT for Windows USER'S MANUAL



Manual Contents

This manual describes specifications and applications of MEMOSOFT for Windows.

Please read this manual carefully and be sure you understand the information provided before attempting to operate any associated electronic devices or machinery.

Visual Aids

The following aids are used to indicate certain types of information for easier reference.



Indicates references for additional information.



Indicates important information that should be memorized.



Indicates application examples.



Indicates supplemental information.



Indicates a summary of the important points of explanations.

Note

Indicates inputs, operations, and other information required for correct operation but that will not cause damage to the device.



Indicates definitions of terms used in the manual.

NOTICE

The following conventions are used to indicate precautions in this manual. Failure to heed precautions provided in this manual can result in injury to people or damage to the products.



WARNING Indicates precautions that, if not heeded, could possibly result in loss of life or serious injury.



Caution Indicates precautions that, if not heeded, could result in relatively serious or minor injury, damage to the product, or faulty operation.

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Introduction and Precautions

This chapter introduces general information, including basic information and precautions for the use of this manual and the product. **You must read this chapter before attempting to read the rest of the manual or using the product.**

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I.1 Overview

- This manual describes how to operate MEMOSOFT Programming Software for Windows. Read this manual carefully in order to use MEMOSOFT properly. Also, keep this manual in a safe place so that it can be used whenever necessary.
- Refer to the following manuals for related peripheral devices and modules.

Type of Module	Manual	Manual Number	Contents
CPU Modules	MEMOCON GL120, GL130 Hardware User's Manual	SIEZ-C825-20.1	Describes the following for GL120 and GL130: 1) System component devices 2) Functions 3) Specifications 4) Instruction 5) Wiring 6) External dimensions
	MEMOCON GL120, GL130 CPU10 Module User's Manual	SIEZ-C825-20.1-1	Describes the functions, specifications, usage, ROM operation, and other information for the CPU10 Module.
	MEMOCON GL120, GL130 CPU21 Module User's Manual	SIEZ-C825-20.1-2	Describes the functions, specifications, usage, ROM operation, and other information for the CPU21 Module.
	MEMOCON GL120, GL130 Software User's Manual, Vol. 1	SIEZ-C825-20.11	Describes the following for the GL120 and GL130: 1) Operating principles 2) I/O allocation 3) Overview of instructions 4) Instruction processing times
	MEMOCON GL120, GL130 Software User's Manual, Vol. 2	SIEZ-C825-20.12	Describes the programming instructions used to create ladder programs for the GL120 and GL130. The following instructions are described in other manuals. 1) Expansion Math Instructions: Software User's Manual, Vol. 3 2) Process Control Instructions: Software User's Manual, Vol. 4 3) Communications Instructions COM: COM Instructions User's Manual FBUS: PC Link Module User's Manual MSTR: MEMOBUS PLUS User's Manual 4) Motion Control (Ladder Motion) Instructions and Motion Language Motion Module MC20 Software User's Manual
	MEMOCON GL120, GL130 Software User's Manual, Vol. 3	SIEZ-C825-20.13	Describes the Expansion Math Instructions (e.g., floating point math instructions) for the GL120 and GL130.
	MEMOCON GL120, GL130 Software User's Manual, Vol. 4	SIEZ-C825-20.14	Describes the Program Control Instructions for the GL120 and GL130.
I/O Modules	MEMOCON GL120, GL130 120-Series I/O Modules User's Manual	SIEZ-C825-20.22	Describes the functions, specifications, and usage of the 120-Series Digital I/O Modules.

Type of Module	Manual	Manual Number	Contents
Special Modules	MEMOCON GL120, GL130 120-Series High-speed Counter Module User's Manual	SIEZ-C825-20.24	Describes the functions, specifications, and usage of the 120-Series High-speed Counter Module.
	MEMOCON GL120, GL130 Uniwire Interface Module User's Manual	SIEZ-C825-20.26	Describes the functions, specifications, and usage of the 120-Series Uniwire Interface Module.
	MEMOCON GL120, GL130 120-Series High-density Simple Counter Module with Pulse Catch Function	SIEZ-C825-20.28	Describes the functions, specifications, and usage of the 120-Series High-density Simple Counter Module with Pulse Catch Function.
	MEMOCON GL120, GL130 MECHATROLINK Distributed I/O Driver Module User's Manual	SIEZ-C825-20.29	Describes the functions, specifications, and usage of the MECHATROLINK Distributed I/O Driver Module.
Motion Modules	MEMOCON GL120, GL130 Motion Module MC10 User's Manual	SIEZ-C825-20.41	Describes the functions, specifications, and usage of the MC10 Motion Module (1 axis).
	MEMOCON GL120, GL130 Motion Module MC20 Hardware User's Manual	SIEZ-C825-20.51	Describes the functions, specifications, and usage of the MC20 Motion Module (4 axes).
	MEMOCON GL120, GL130 MC20 Motion Module Software User's Manual	SIEZ-C825-20.52	Describes the Motion Instructions and motion program language for the MC20 Motion Module (4 axes).
Communications and Communications Modules	MEMOCON GL120, GL130 PC Link Module User's Manual	SIEZ-C825-70.4	Describes the functions, specifications, and usage of the PC Link Module for the GL120 and GL130.
	MEMOCON GL120, GL130 MEMOBUS PLUS Basics User's Manual	SIEZ-C825-70.5	Describes the functions, specifications, and usage of the MEMOBUS PLUS.
	MEMOCON GL120, GL130 Coaxial Remote I/O System User's Manual	SIEZ-C825-70.8	Describes the functions, specifications, and usage of the Coaxial Remote I/O System for the GL120 and GL130.
	MEMOCON GL120, GL130 Coaxial Remote I/O System for 1000-Series and 2000-Series I/O User's Manual	SIEZ-C825-70.9	Describes the functions, specifications, and usage of the Coaxial Remote I/O System for 1000-Series and 2000-Series I/O used with the GL120 and GL130.
	MEMOCON GL120, GL130 M-NET Module User's Manual	SIEZ-C825-70.12	Describes the functions, specifications, and usage of the M-NET Module.
	MEMOCON GL120, GL130 MEMOBUS User's Manual	SIEZ-C825-70.13	Describes the functions, specifications, and usage of the MEMOBUS.
	MEMOCON GL120, GL130 COM Instructions User's Manual	SIEZ-C825-70.14	Describes the functions, specifications, and usage of the COM instructions. It also describes the specifications and usage of the MEMOBUS Module.
	MEMOCON GL120, GL130 YENET 1600-D Module User's Manual	SIEZ-C825-70.20	Describes the functions, specifications, and usage of the YENET 1600-D Module.
	MEMOCON GL120, GL130 Ethernet Interface Module User's Manual	SIEZ-C825-70.21	Describes the functions, specifications, and usage of the Ethernet Interface Module.
Other	MEMOCON GL120, GL130 MEMOSOFT (for DOS) User's Manual	SIEZ-C825-60.9	Describes the functions, specifications, and usage of the MEMOSOFT for DOS.

Type of Module	Manual	Manual Number	Contents
Other	MEMOCON GL120, GL130 Traceback Function for DOS User's Manual	SIEZ-C825-60.10-4	Describes the functions, specifications, and usage of the traceback function.

- Check thoroughly the conditions on the product such as the specifications and restrictions of the product before using it.

I.2 Precautions

This section outlines general precautions that apply to using this manual and the product. **You must read this section first before reading the remainder of the manual.**


I.2.1	Wiring Precautions	Intro-5
I.2.2	Applications Precautions	Intro-5
I.2.3	Safety Precautions	Intro-6

I.2.1 Wiring Precautions

- Insert the interface cables properly.

Insert the connectors of the various interface cables that are to be connected to the MEMOCON into the communication ports and attach them properly. Improper insertion of interface cables may cause operational errors in the MEMOCON.

I.2.2 Applications Precautions

 **Caution** Abide by the following precautions when applying MEMOSOFT to control the PLC.

- Operations such as RUN, STOP, forced output, and program change during operation must be carried out with care. Operational errors may damage the machine or cause accidents.
- When using a modem, turn the power supply OFF or ON carefully.

If the power supply of a slave machine is turned ON or OFF while the modem power supply is ON, the modem will output unnecessary signals to the twisted-pair cable for several tens of milliseconds. If any messages are being transmitted at this time, a transmission error will occur. To avoid problems, turn ON the power supply of a slave machine before turning ON the power supply of the modem and turn OFF the power supply of the modem before turning OFF the power supply of the slave machine. Alternatively, turn ON and OFF the power supplies of a slave machine and a modem simultaneously.

- Be sure not to use the single sweep function while the machine is operating.

Do not use the single sweep for testing purposes, once machinery, processes, or conveyor equipment has begun operating. On completion of decoding, the MEMOCON will stop after output has been sent. Subsequent decoding will not be executed, so all further input signals will be ignored resulting in the likelihood of severe damage to any machine connected to the MEMOCON.

I.2.3 Safety Precautions

- MEMOCON was not designed or manufactured for use in devices or systems that concern human lives. Users who intend to use the product described in this manual for special purposes such as devices or systems relating to transportation, medical space aviation, atomic power control, or underwater use must contact Yaskawa Electric Corporation beforehand.
- This product has been manufactured under strict quality control guidelines. However, if this product is to be installed in any location in which a failure of MEMOCON involves a life and death situation or in a facility where failure may cause a serious accident, safety devices **MUST** be installed to minimize the likelihood of any accident.
- Any illustrations, photographs, or examples used in this manual are provided as examples only and may not apply to all product to which this manual is applicable.
- The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual. A new version of the manual will be re-released under a revised document number when any changes are made.
- Contact your Yaskawa representative or a Yaskawa office listed on the back of this manual to order a new manual whenever this manual is damaged or lost. Please provide the document number listed on the front cover of this manual when ordering.
- Contact your Yaskawa representative or a Yaskawa office listed on the back of this manual to order new nameplates whenever a nameplate becomes worn or damaged.
- Yaskawa cannot make any quality guarantee for products which have been modified. Yaskawa assumes no responsibility for any injury or damage caused by a modified product.

I.3 Using this Manual

• Reader Levels

The chapters in this manual are designed for the following readers.

Chapter 1: All reader must read this chapter before starting MEMOSOFT.

Chapters 2 and 3: Beginning users of MEMOSOFT must read these chapters to familiarize themselves with basic operating procedures by trying the examples given.

Chapters 4 on: Read these chapters through once and then refer back to them when the information is needed in actual operation.

• Basic Abbreviations

In this manual, the following terms are described as follows, unless otherwise specified:

- **PLC = Programmable (Logic) Controller**
- **MC = MC20 Motion Module**
- **GL120, GL130 = MEMOCON GL120 and/or MEMOCON GL130 Programmable Controller**

• Technical Terms

The bold technical terms in this manual are briefly explained in the **Glossary** provided at the bottom of the page. An example is shown below.

• Software Restrictions

- The software may be used on only 1 computer. To use the MEMOSOFT software on any other computers, separate copies of the software must be purchased for each computer.



Glossary

The following types of terms are described.

- Specific sequence control terms required for explanation of functions.
- Terms that are specific to Programmable Controllers and electronic devices.

- The software may not be copied for any purposes at all except to create a backup.
- Place the floppy disks containing the software in a safe place.
- The software may not be reverse-compiled, reverse-assembled, or in any other way reverse-engineered.
- The software or any part thereof may not be give to, exchanged, loaned, or in any other way transferred to the possession of a third party.

Preparations

1

This chapter describes the preparations required for using MEMOSOFT.

1.1	Preparations Required for Using MEMOSOFT	1-2
1.1.1	What is MEMOSOFT?	1-2
1.1.2	System Requirements	1-3
1.1.3	System Software	1-3
1.1.4	Program Compatibility	1-3

1.1 Preparations Required for Using MEMOSOFT

This section describes the preparations and basic knowledge required before installing MEMOSOFT.

1.1.1	What is MEMOSOFT?	1-2
1.1.2	System Requirements	1-3
1.1.3	System Software	1-3
1.1.4	Program Compatibility	1-3

1.1.1 What is MEMOSOFT?

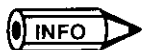
1) MEMOSOFT is a programming system that fully supports the MEMOCON GL120 and GL130 Programmable Controllers. MEMOSOFT provides the following functions.

- Online programming functions to edit programs in CPU Modules.
- Offline programming functions to edit the programs saved in storage devices.

2) MEMOSOFT is available in the following forms.

a) A Windows version that runs on Windows 95, 98, or NT 4.0.

Official name: MEMOSOFT for Windows
Model number: FMSGL-WDC



This manual describes MEMOSOFT for Windows.

b) A DOS version that runs on an IBM PC/AT or compatible.

Official name: MEMOSOFT for PC-AT
Model number: FMSGL-AT3

c) A P120 version that runs on a P120 Programming Panel.

Official name: MEMOSOFT for P120
Model number: FMSGL-PP3E

3) This manual describes MEMOSOFT for Windows.



1) MEMOSOFT for Windows is referred to as "MEMOSOFT" in this manual.

2) When necessary, the official names given below are used to distinguish between the different versions of MEMOSOFT.

MEMOSOFT for Windows
 MEMOSOFT for PC-AT
 MEMOSOFT for P120

1.1.2 System Requirements

The following items are required to install MEMOSOFT.

- Personal computer: IBM PC/AT or compatible
 - CPU: Pentium (133 MHz) or better
 - Main memory: 16 Mbytes
 - Hard disk: Free area of 50 Mbytes or more
 - Mouse: Required
 - Serial port: RS-232C port
 - Display: Resolution of 800 x 600 or better
 - CD-ROM drive: One
 - Floppy disk drive: One 3.5-inch
- OS: Windows NT 4.0, Windows 95, or Windows 98
- Printer: A printer compatible with the above OS



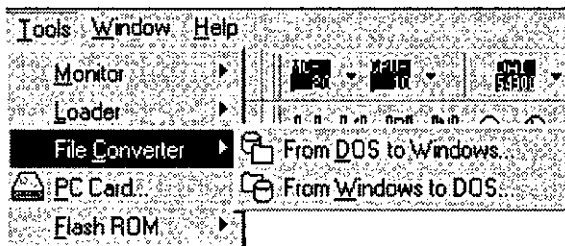
- 1) The free area required on the hard disk is required to operate MEMOSOFT after it is installed. It must be provided separately from the work area required by the OS.
- 2) The CD-ROM drive is required to install the MEMOSOFT program.

1.1.3 System Software

The system software of MEMOSOFT is stored on a CD-ROM disk. A CD-ROM drive is thus required for installation. This system software is activated from the hard disk after being installed. The system software cannot be run from the CD-ROM disk.

1.1.4 Program Compatibility

- 1) Ladder and motion programs created on MEMOSOFT for PC-AT cannot be used directly on MEMOSOFT for Windows. Also, ladder and motion programs created on MEMOSOFT for Windows cannot be used directly on MEMOSOFT for PC-AT.
- 2) A file conversion tool is supported on MEMOSOFT for Windows to provide program changeability. Convert the files by selecting **Tools – File Converter – From DOS to Windows** or **Tools – File Converter – From Windows to DOS** from MEMOSOFT for Windows menus.



This chapter describes how to install MEMOSOFT on your computer.

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2.1.3 Setup Preparations	2-3
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2.1.6 Installation Folder Selection	2-4
2.1.7 Program Folder Selection	2-5
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2.2 MEMOBUS PLUS Server Installation Procedure	2-8
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2.1 MEMOSOFT Installation Procedure

This section describes the procedure required to install MEMOSOFT for Windows.

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2.1.9	Completing the Setup	2-6
2.1.10	Folders Created during Installation	2-6

2.1.1 Overview

MEMOSOFT for Windows is supplied on a CD-ROM disk. There are two products provided on the CD-ROM disk: MEMOSOFT for Windows and the MEMOBUS PLUS Server.

The MEMOBUS PLUS Server must be installed to enable using MEMOBUS PLUS communications. Refer to *2.2 MEMOBUS PLUS Server Installation Procedure* for the installation procedure for MEMOBUS PLUS.

2.1.2 Starting MEMOSOFT Installation

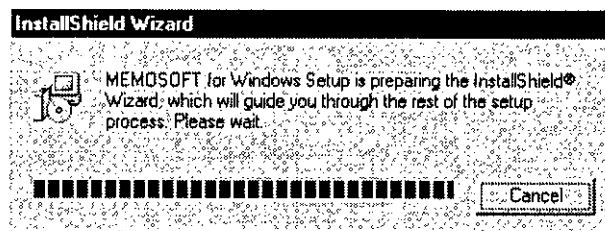
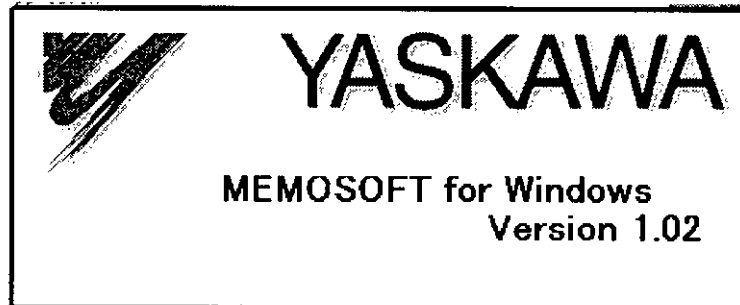
Use the following procedure to start the installation process.

- 1) Insert the CD-ROM disk into the disk drive.
- 2) Select the CD-ROM drive in Windows Explorer and display the list of file names on the disk.
- 3) Double-click the **setup.exe** file from the **MEMOSOFT for Windows** folder. The installer will start.

2

2.1.3 Setup Preparations

The following display will appear to indicate that setup preparations are under way. Preparations are being performed as long as this display is on the screen.



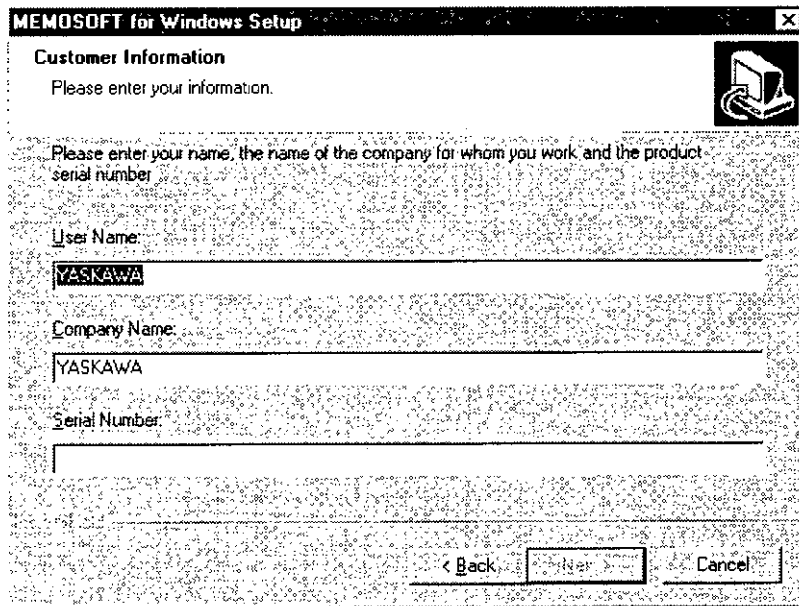
2.1.4 Starting the Setup

The following display will appear when setup preparation have been completed to indicate that installation can be started. Read the message and then click the **Next** Button. The installation can be canceled by clicking the Cancel Button.



2.1.5 Customer Registration

A dialog box will appear to enter customer information. Enter your name, your company's name, and the serial number, and then click the **Next** Button.

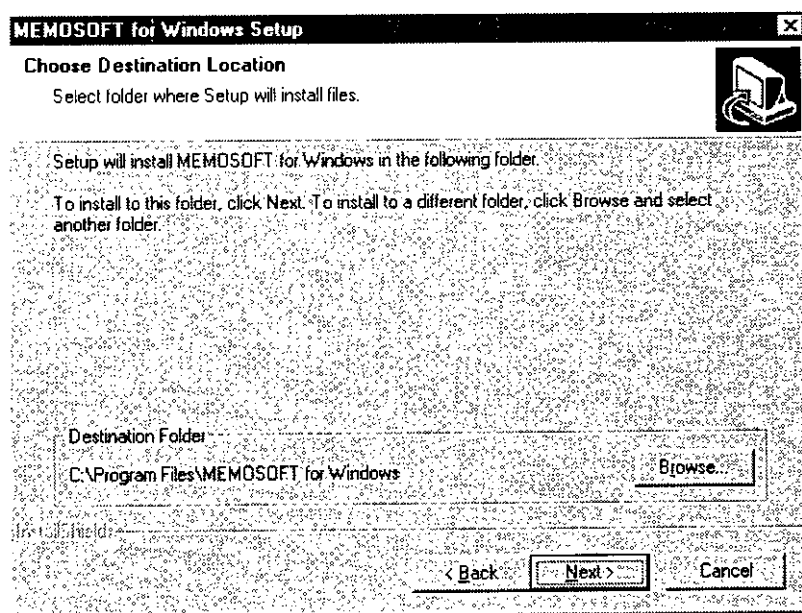


2.1.6 Installation Folder Selection

The folder in which to install the MEMOSOFT program will be displayed (default: C:\Program Files\MEMOSOFT for Windows). To change the installation folder, click the **Browse** Button. After setting the installation folder, click the **Next** Button.



We recommend that you use the default installation folder.

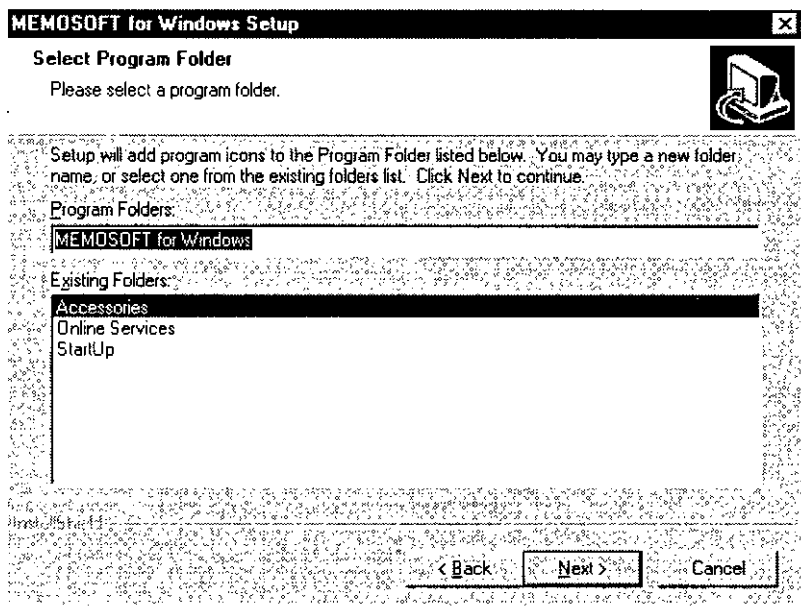


2.1.7 Program Folder Selection

The program folder in which to show MEMOSOFT will be displayed (default: MEMOSOFT for Windows). To change the program folder, select another folder from the ones listed on the screen. After setting the program folder, click the **Next** Button.



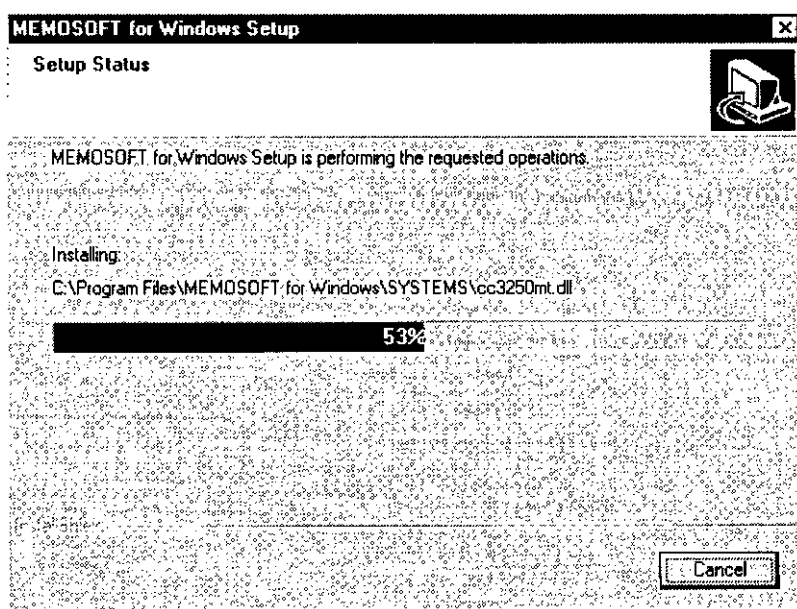
We recommend that you use the default installation folder.



2

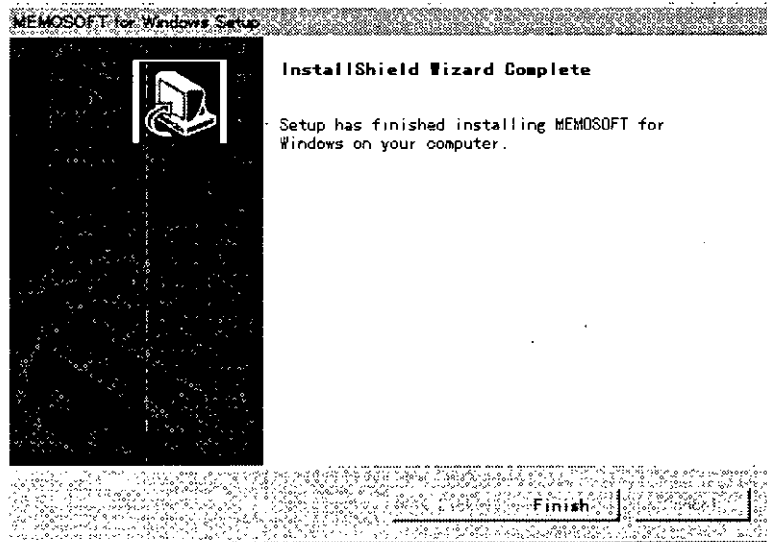
2.1.8 Copying Files

The Installer will start copying files and the status of the file copy operation will be displayed on the screen.

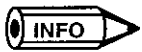


2.1.9 Completing the Setup

When the setup has been completed, a dialog box will be displayed to let you know.



2



After MEMOSOFT installation has been completed, select **MEMOSOFT for Windows – MEMOSOFT for Windows** from the Windows Start Button menu and be sure that MEMOSOFT starts properly.

2.1.10 Folders Created during Installation

1) The MEMOSOFT Installer will create the following folder.

- \MEMOSOFT for Windows\System
The files required for MEMOSOFT for Windows to run are copied to this folder.
- \MEMOSOFT for Windows\PROJECTS
By default, the project files handled by MEMOSOFT for Windows are created in this folder.

2) When MEMOSOFT for Windows is started, the following work folder is also created.

- \MEMOSOFT for Windows\System\TEMP
Project files that are being edited are copied to this folder as work files



Project file

A project file contains all of the information required by a PLC system. For MEMOSOFT for Windows, this includes the system configuration, ladder programs, reference data, motion programs, and other data. (With MEMOSOFT for PC-AT, each type of data is managed in a separate file.)

2.2 MEMOBUS PLUS Server Installation Procedure

This section describes the procedure required to install the MEMOBUS PLUS server.

2.2.1	Overview	2-8
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2.2.4	Starting the Setup	2-9
2.2.5	Program Folder Selection	2-10
2.2.6	Copying Files and Completing the Installation	2-11

2.2.1 Overview

MEMOSOFT for Windows is supplied on a CD-ROM disk. There are two products provided on the CD-ROM disk: MEMOSOFT for Windows and the MEMOBUS PLUS Server.

The MEMOBUS PLUS Server must be installed to enable using MEMOBUS PLUS communications. A MEMOBUS PLUS Network Adapter and MEMOBUS PLUS Driver must also be installed on the computer to use MEMOBUS PLUS communications.

Refer to 2.1 MEMOSOFT Installation Procedure for the installation procedure for MEMOSOFT.

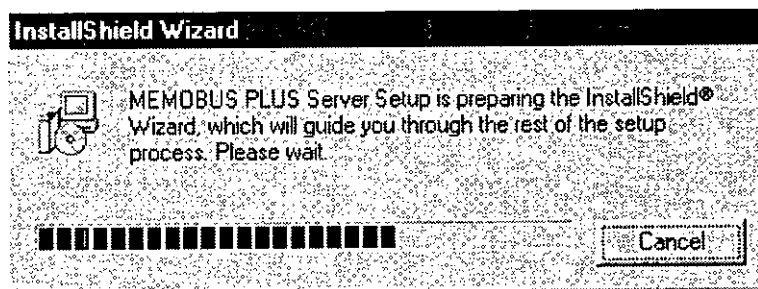
2.2.2 Starting MEMOBUS PLUS Server Installation

Use the following procedure to start the installation process.

- 1) Insert the CD-ROM disk into the disk drive.
- 2) Select the CD-ROM drive in Windows Explorer and display the list of file names on the disk.
- 3) Double-click the **setup.exe** file from the **MEMOBUS PLUS** folder. The installer will start.

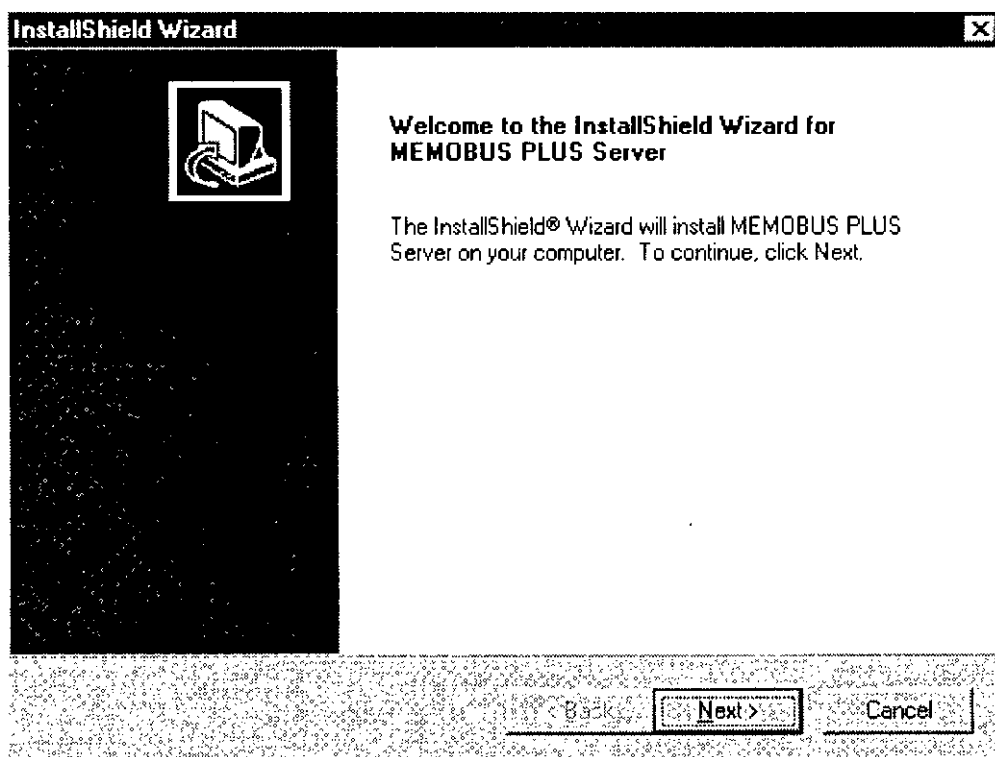
2.2.3 Setup Preparations

The following display will appear to indicate that setup preparations are under way. Preparations are being performed as long as this display is on the screen.

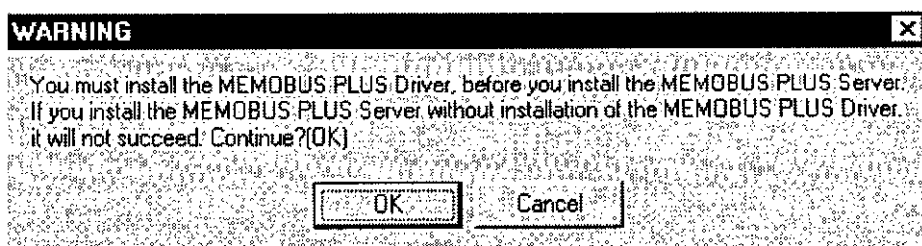


2.2.4 Starting the Setup

The following display will appear when setup preparation have been completed to indicate that installation can be started. Read the message and then click the **Next** Button. The installation can be canceled by clicking the **Cancel** Button.

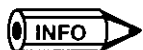


Note The MEMOBUS PLUS Driver must be installed before the MEMOBUS PLUS Server. Always install the MEMOBUS PLUS Driver first.

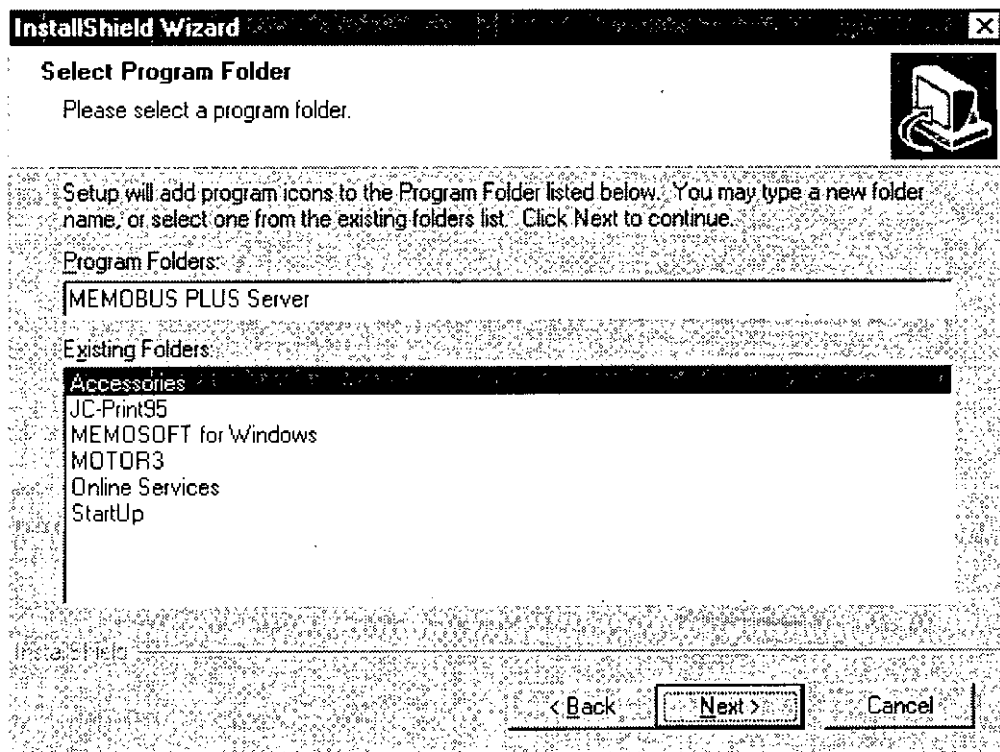


2.2.5 Program Folder Selection

Specify the program folder in which to store the application (default: MEMOBUS PLUS Server). To store in an existing folder, select a folder from the ones listed under **Existing Folders**. After setting the program folder, click the **Next** Button.



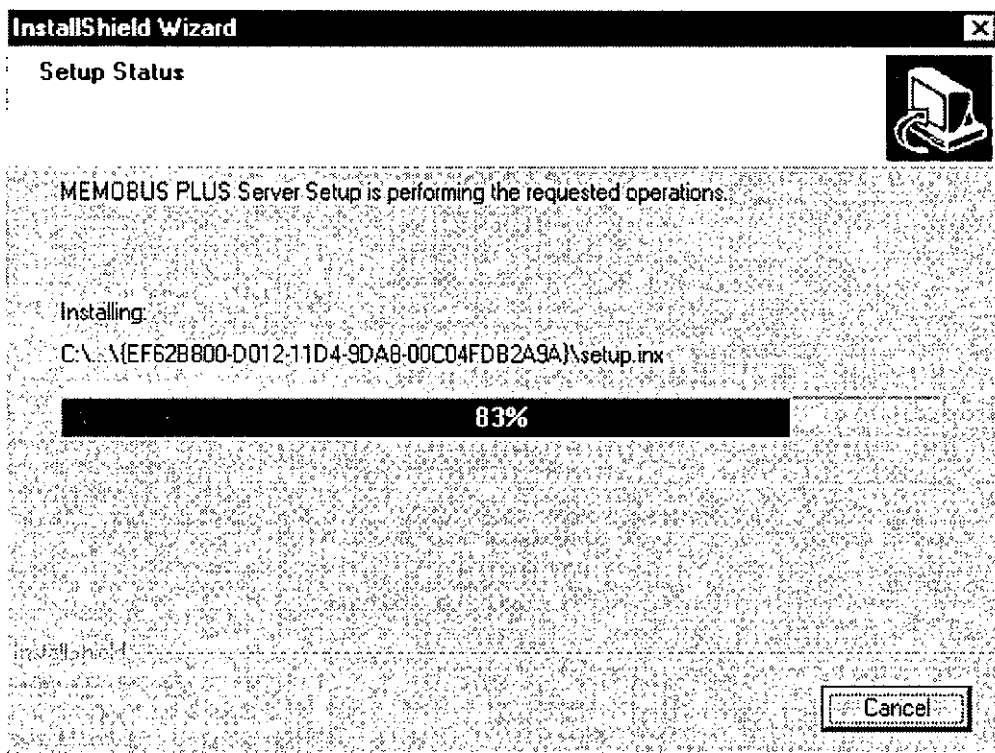
We recommend that you use the default installation folder.



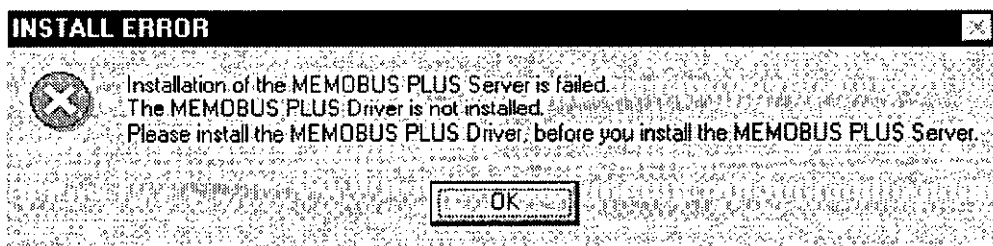
2

2.2.6 Copying Files and Completing the Installation

The Installer will start copying files and the status of the file copy operation will be displayed on the screen.



Note If the MEMOBUS PLUS Driver is not installed first, the following message will be displayed and the MEMOBUS PLUS Server will not be installed correctly.



2.3 Connecting to the PLC

This section describes the cables and procedure required to connect the personal computer running MEMOSOFT to a PLC.

1) The computer must be connected to a PLC to perform online function.

a) Using the MEMOBUS Protocol

The RS-232C port on your computer is connected to an RS-232C port on the PLC using a special cable. With the GL120, GL130 PLCs, you can connect to an RS-232C on the CPU Module, on a MEMOBUS Module, or on one of many other Modules.

b) Using the MEMOBUS PLUS Protocol

The MEMOBUS PLUS port on the MEMOBUS PLUS Network Adapter SA85 (JAMSC-120NOM21110) mounted in an expansion slot in your computer is connected to a MEMOBUS PLUS port on the GL120 or other port using a special cable. Refer to the following manual for details.

- MEMOCON GL120, GL130 MEMOBUS PLUS User's Manual (SIEZ-C825-70.5)

2) The following cables are provided. Use the one that is best for your application.

a) Using the MEMOBUS Protocol

Cable Length	Model Number
2.5 m	JZMSZ-120W0202-03
15.0 m	JZMSZ-120W0202-15

b) Using the MEMOBUS PLUS Protocol

Cable Length	Model Number
2.5 m	JZMSZ-120W0800-03
15.0 m	JZMSZ-120W0800-15

IMPORTANT

(1) Always turn OFF the power supply to both your computer and the PLC before connecting or disconnecting cables.

(2) After connecting a cable, always secure the connector with the lock screws.

Basic MEMOSOFT Operations

3

This chapter introduces the basic MEMOSOFT operations from start to finish to allow you to get accustomed to MEMOSOFT. Although the chapter is divided into different sections for offline and online operations, the example procedure continues through the entire chapter.

3.1	Offline Operations	3-2
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3.2.7	Displaying Reference Data	3-27
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3.1 Offline Operations

■ This section describes the most common offline procedures for MEMOSOFT.

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3.1.10	Exiting MEMOSOFT	3-17

3.1.1 Overall Procedure

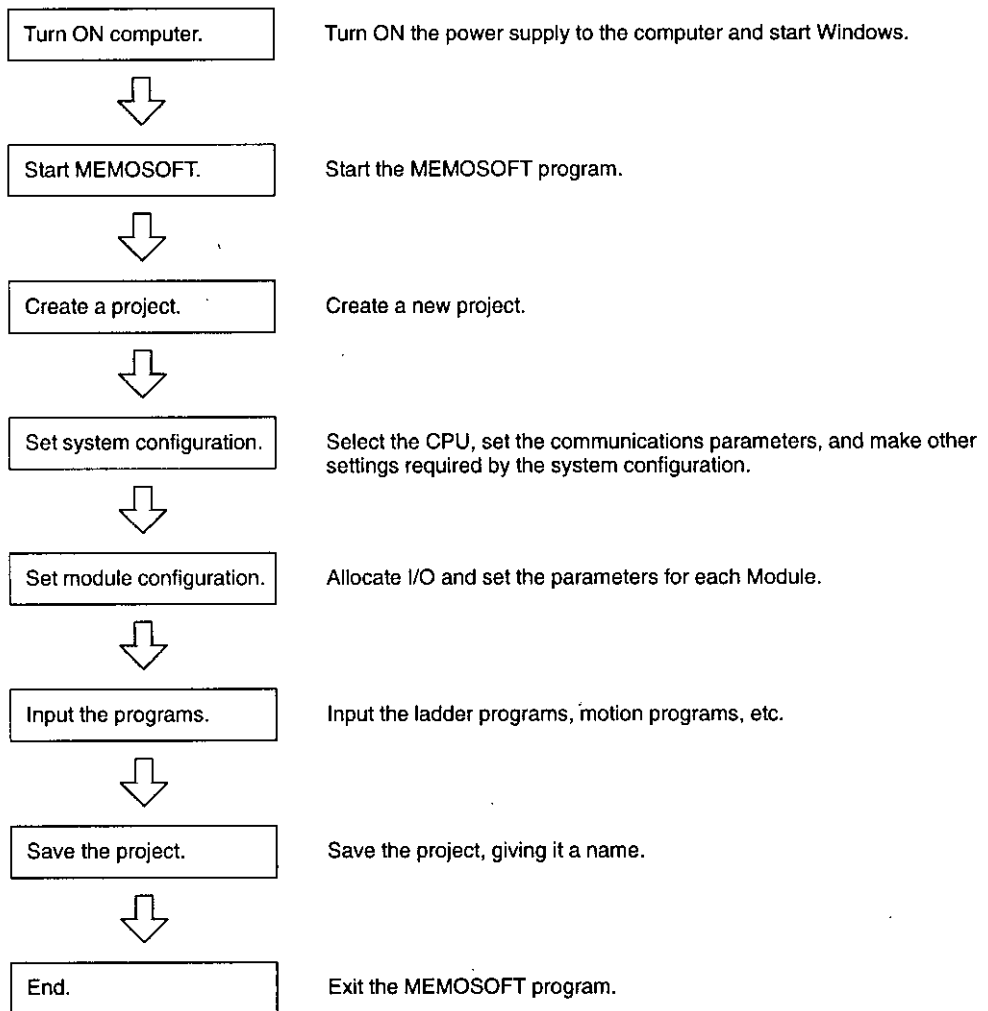
MEMOSOFT is used to create a project that contains all of the information required to operate the PLC. Once created, the project is written to PLC memory. A project consists of both programs and parameters.

This section describes the procedure to create a project on the computer without connecting to the PLC. The same type of procedure can be used to create a project directly in the PLC by first connecting to the PLC, but this section describes only the offline procedure.

3

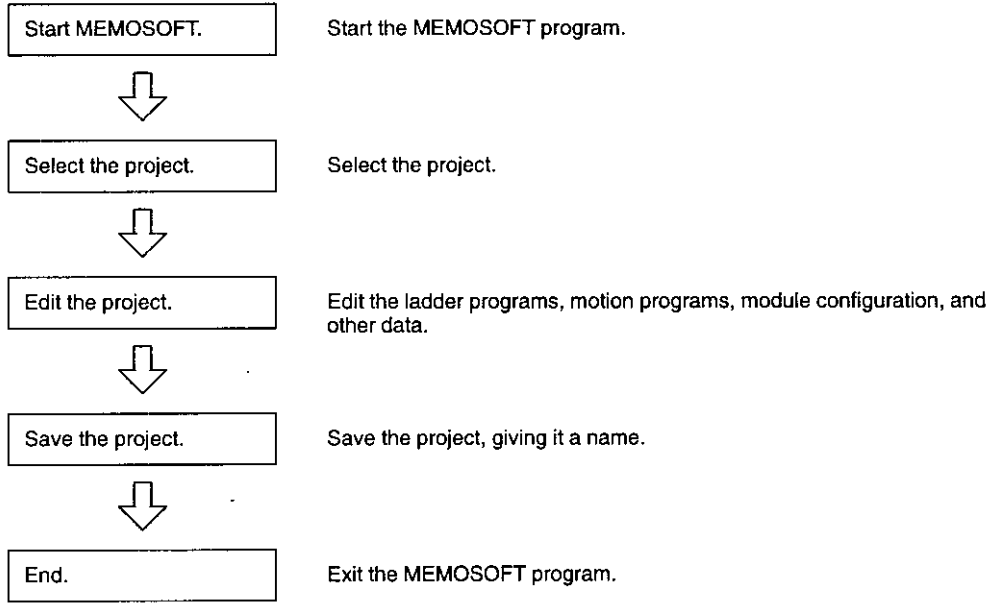
1. Creating a New Project

The overall procedure to create a new project is illustrated below. An example of using this procedure is given starting in the next section.



2. Editing an Existing Project

The following procedure is used to edit an existing project.



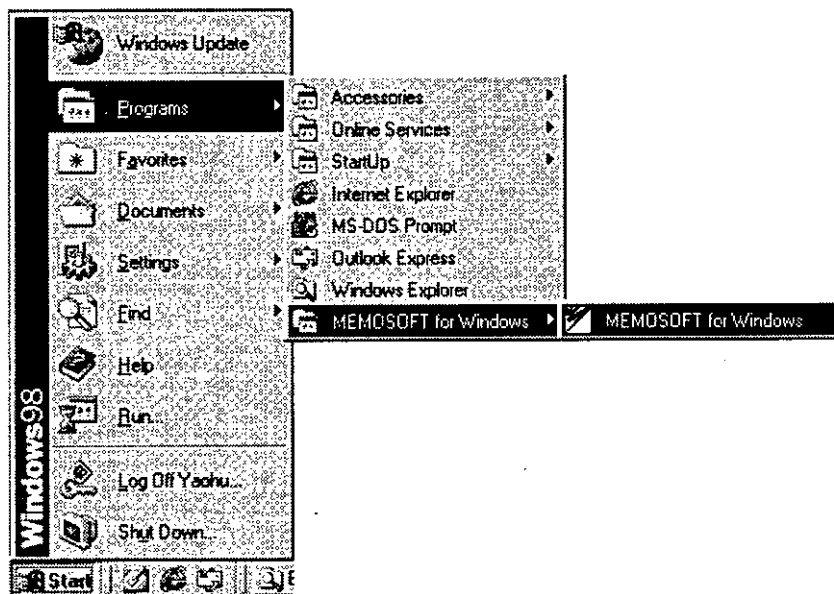
IMPORTANT

Refer to 1.1.4 Program Compatibility before editing a file created with MEMOSOFT for DOS.

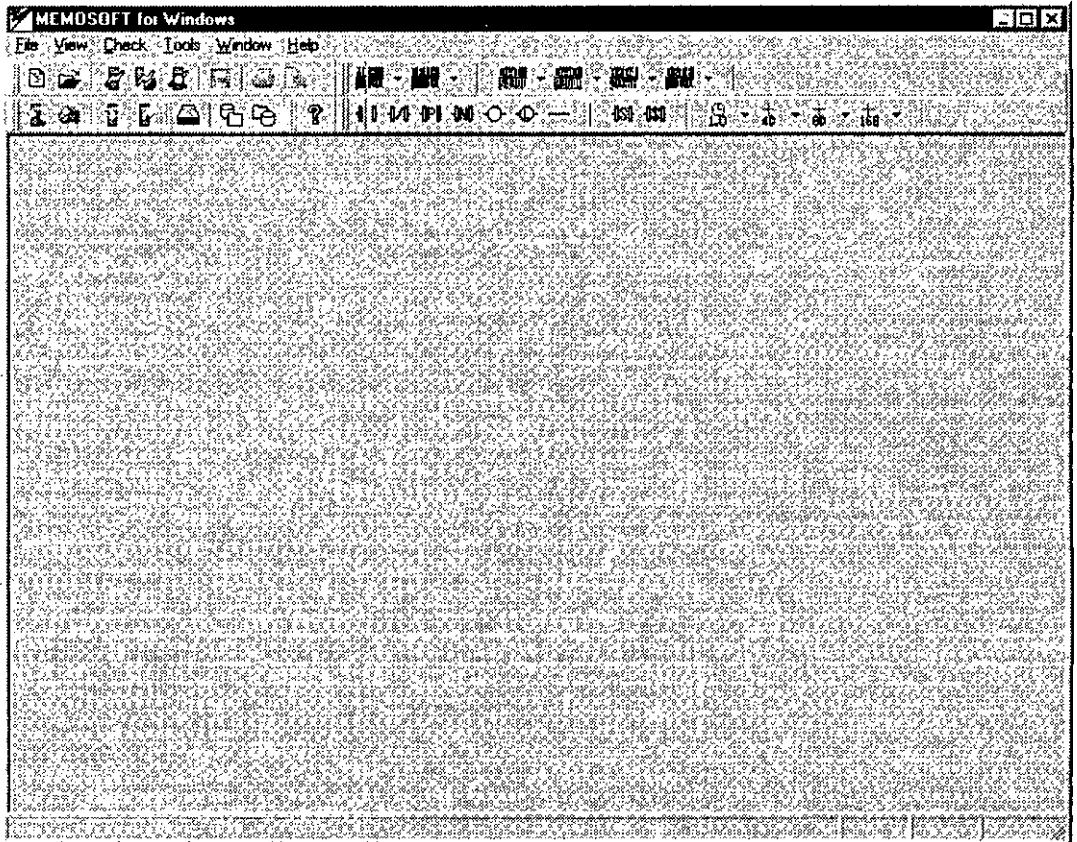
3.1.2 Starting MEMOSOFT

Use the following procedure to start the MEMOSOFT program.

Select **MEMOSOFT for Windows – MEMOSOFT for Windows** from the Windows Start Button.



MEMOSOFT will start.

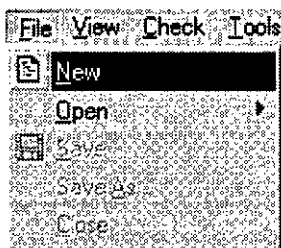


3

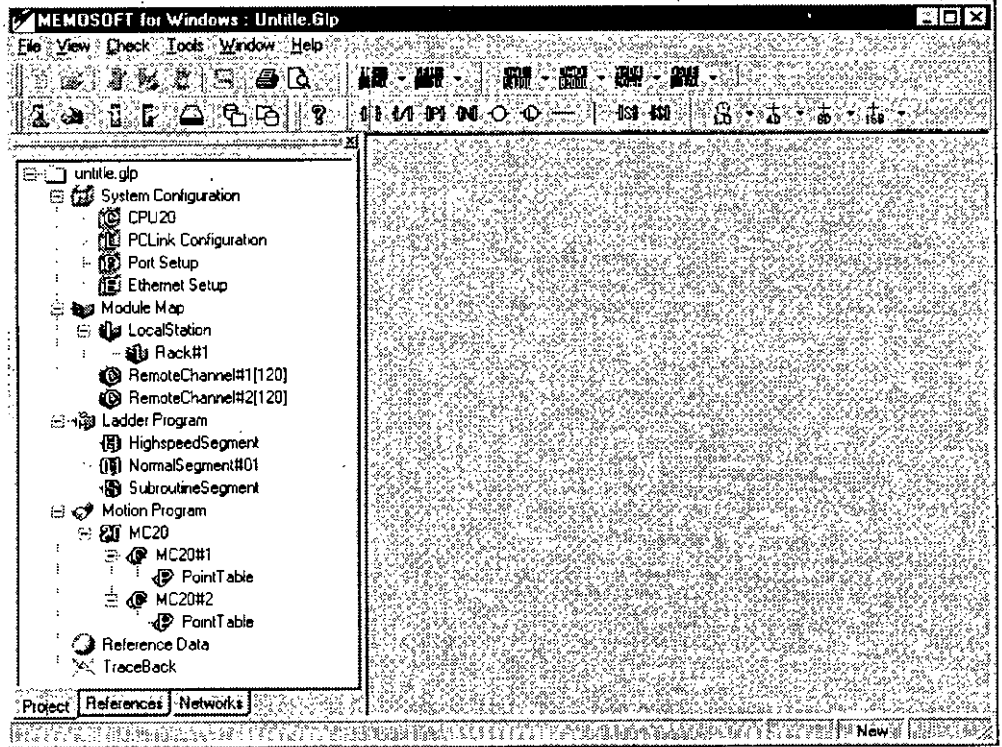
3.1.3 Creating a New Project

Use the following procedure to create a new project.

Select **File (F) – New (N)** from the menus.



A new project file will be created and a project window will be displayed.

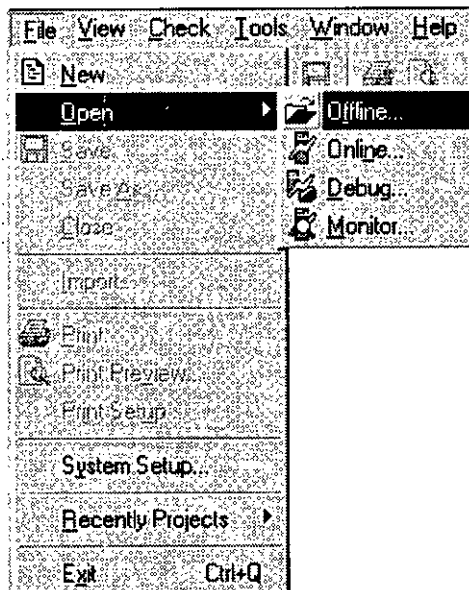


3

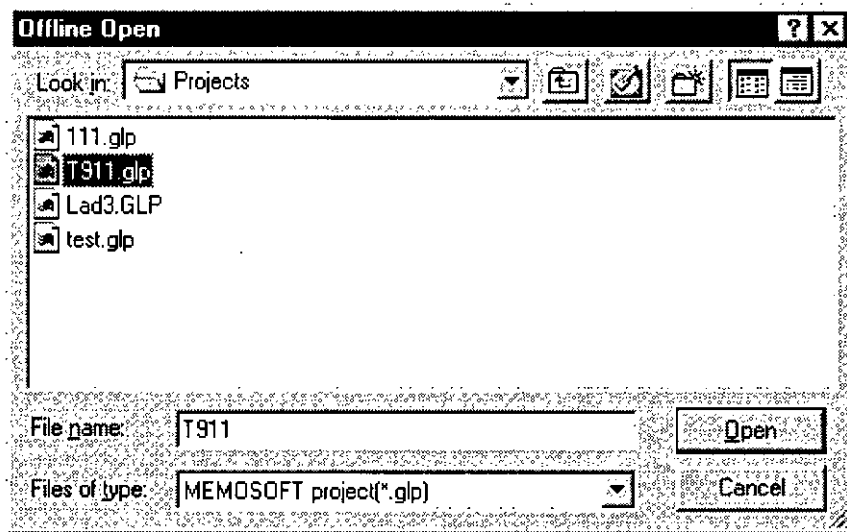
3.1.4 Opening an Existing Project

Use the following procedure to open an existing project.

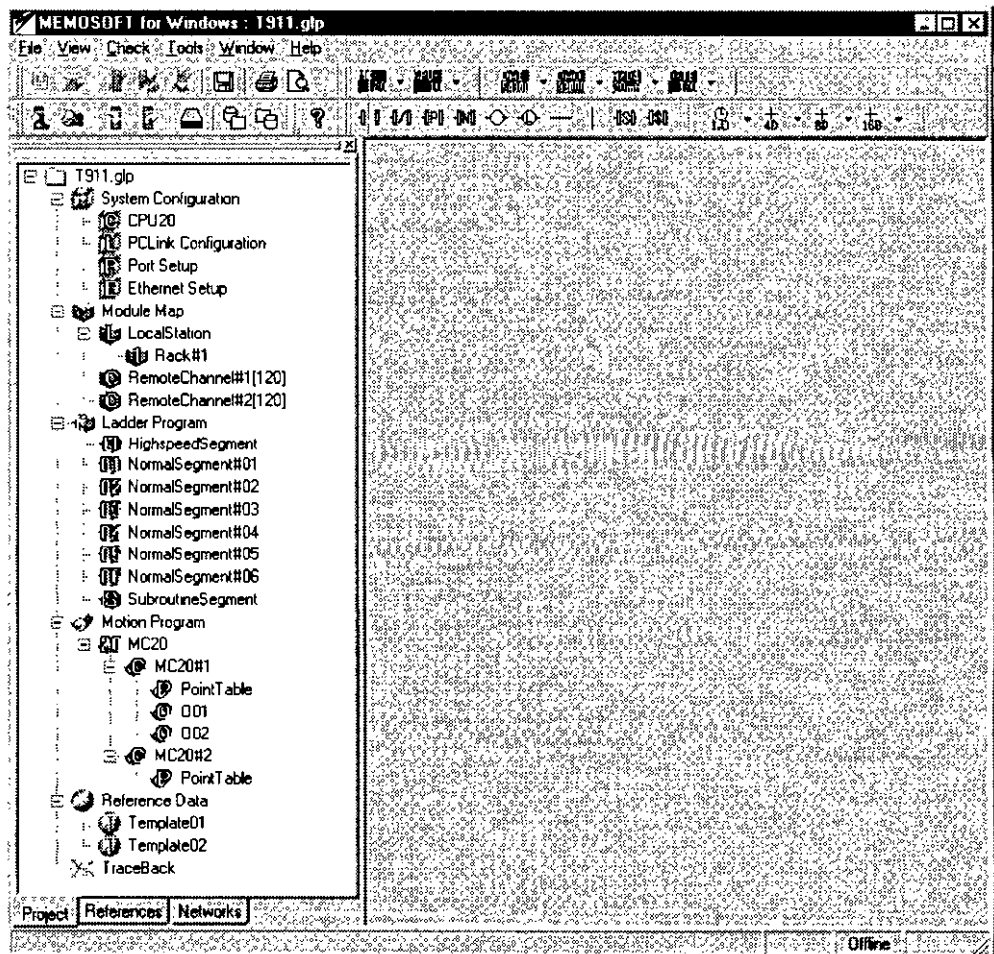
- 1) Select **File (F) – Open (O) – Offline (F)** from the menus.



- 2) Select the file to open and then click the **Open (O)** Button.



The specified project will be opened and a project window will be displayed.

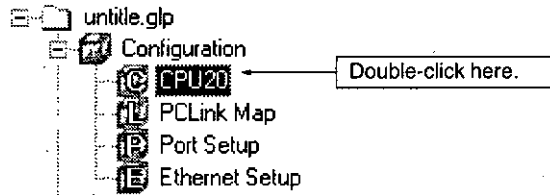


3.1.5 Setting the System Configuration

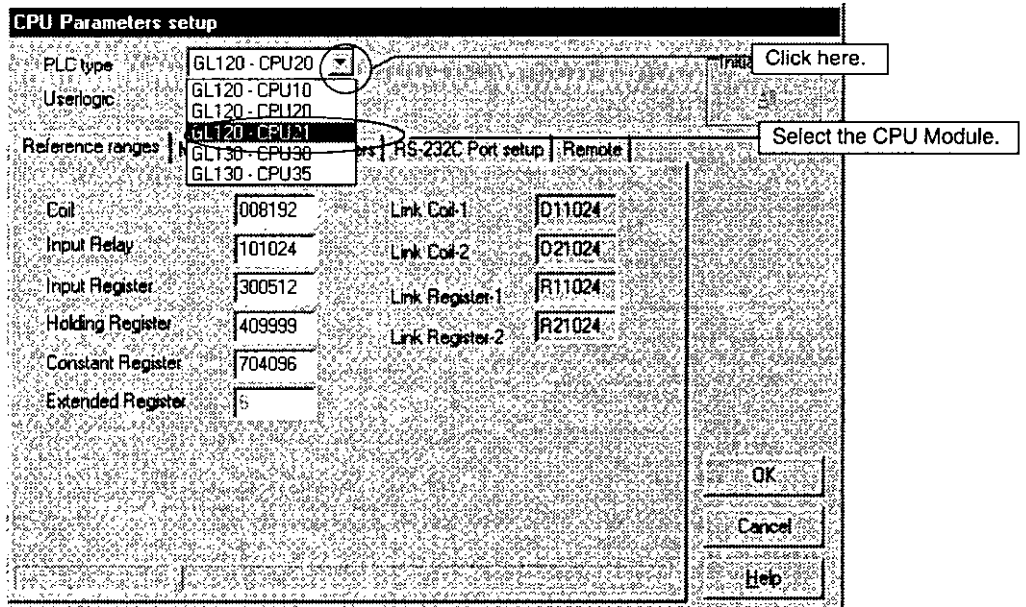
Before programming the PLC, the system configuration must be set, including selecting the CPU Module and setting communications parameters.

Use the following procedure to set the system configuration.

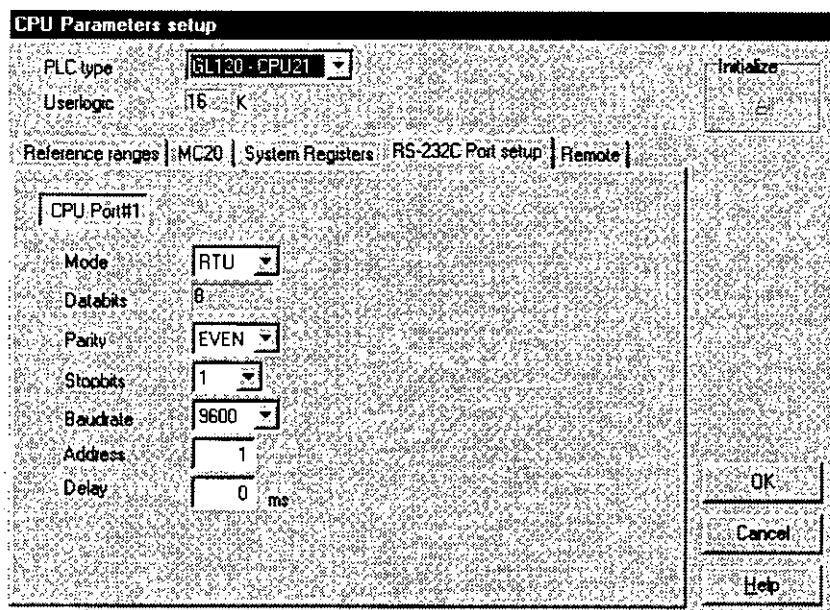
- 1) Double-click the CPU Node under the System Configuration Node.



- 2) A dialog box will appear to set the CPU parameters. Select the CPU Module of the PLC ("PLC type").



- 3) Click on the **RS-232C Port Setup** Tab and set the communications parameters.



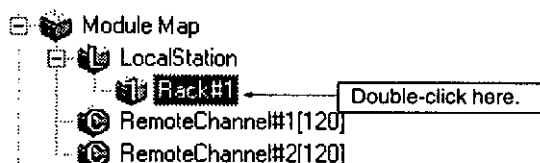
- 4) When all settings have been completed, click the **OK** Button.

This completes the basic system configuration settings.

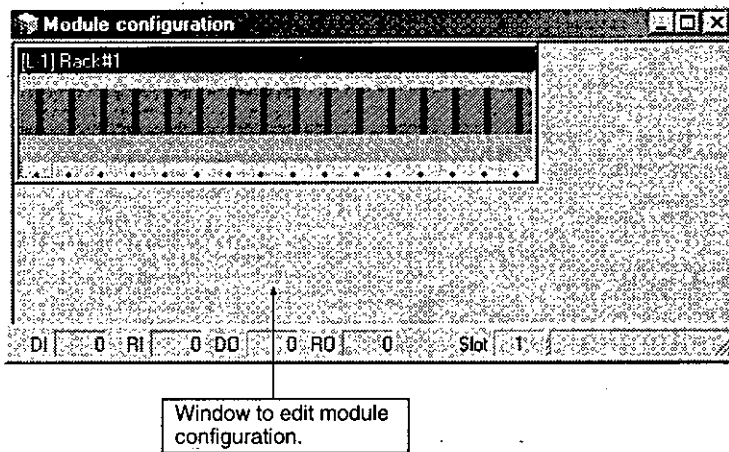
3.1.6 Setting the Module Configuration

The module configuration is set after completing the system configuration. The module configuration is set by graphically assembling Modules on Rack, in the same way as the actual Racks are assembled. The following example shows the procedure for a 100/200-VAC 16-point Output Module on Local Rack #1.

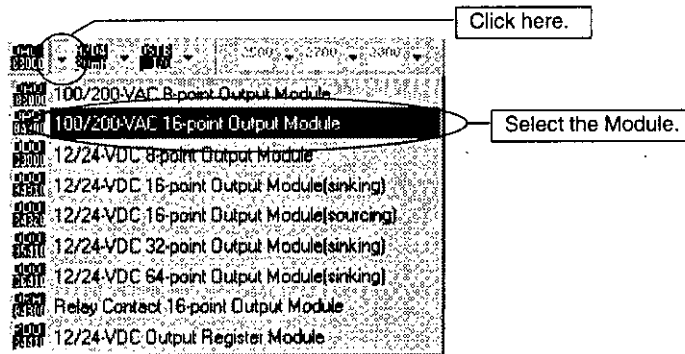
- 1) Double-click the node for Rack #1 under the Local Station Node.



A window will appear to allow you to edit the module configuration.

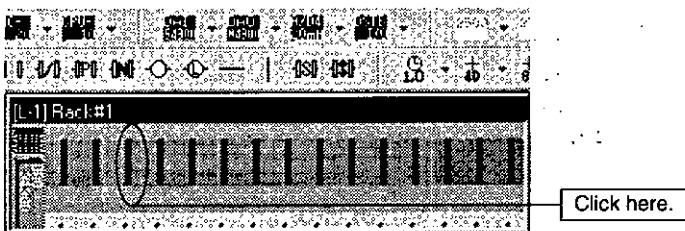


- 2) Click the drop-down arrow on the Module Palette and select the 100/200-VAC 16-point Output Module from the list.

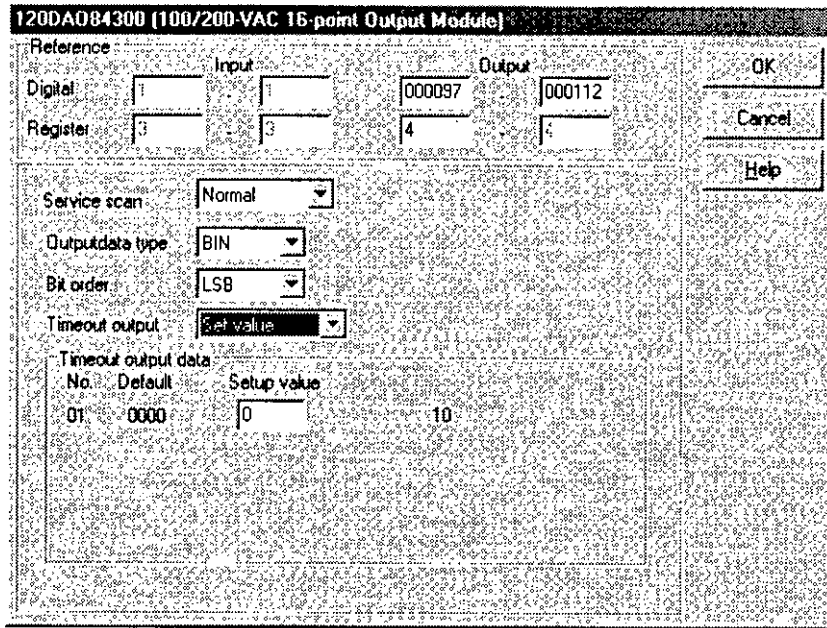


The Module Button will remain in a selected state.

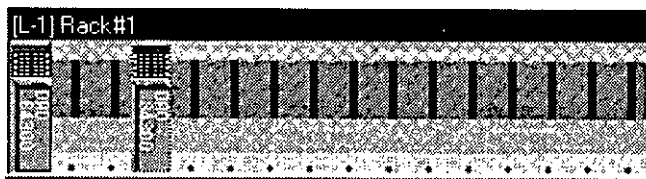
- 3) Click the slot to which the Module is to be allocated.



- 4) A Module Setting Window will be displayed. Set the reference allocations and parameters for the Module.



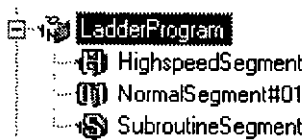
This completes setting the module configuration.



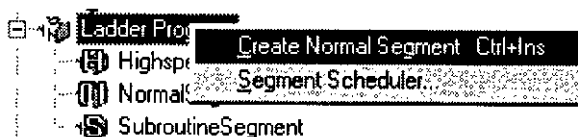
3.1.7 Creating Segments

A segment must be created to save a ladder program. Use the following procedure to create a segments.

- 1) Point at the Ladder Program Node.

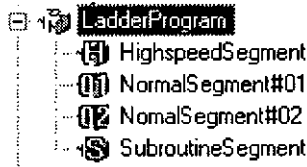


- 2) Click the right mouse button and select **Create Normal Segment** from the pop-up menu.



3.1.8 Entering the Ladder Program

The next normal segment will be created (here, normal segment #02).



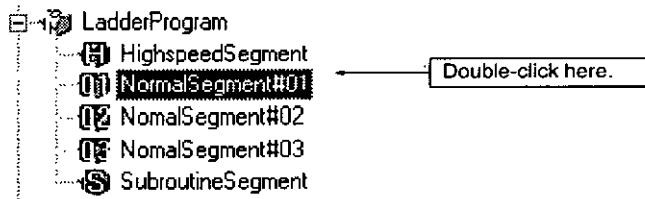
3.1.8 Entering the Ladder Program

1. Displaying the Ladder Programming Window

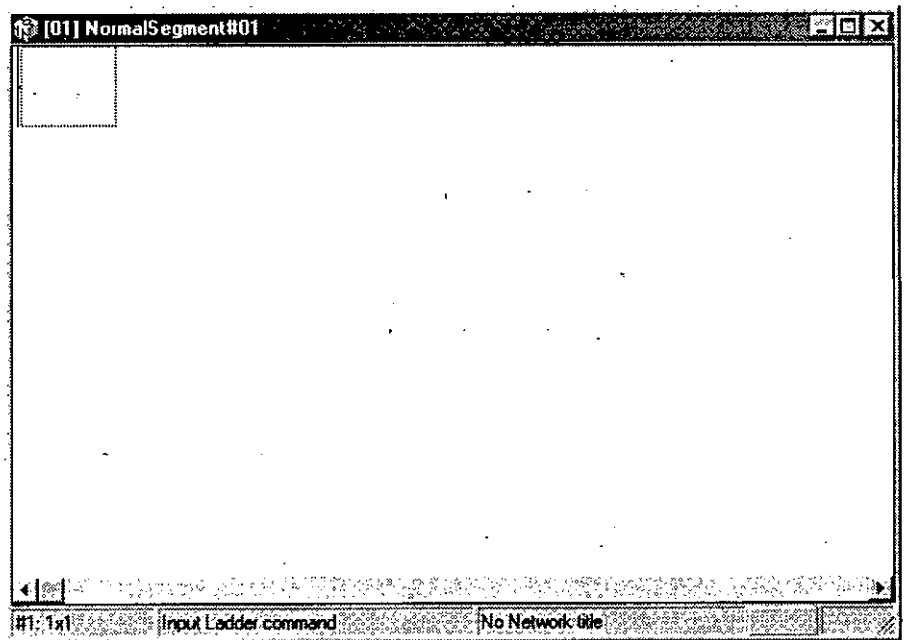
Use the following procedure to display the Ladder Programming Window. Here, the Ladder Programming Window for normal segment #01 is displayed.

Double-click the node for normal segment #01.

3



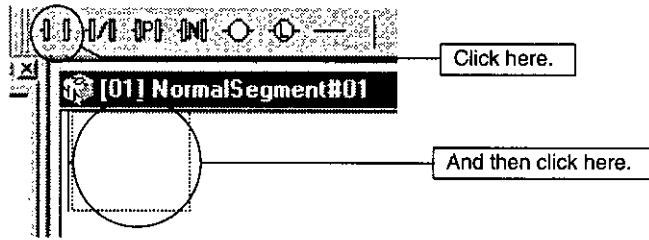
The Ladder Programming Window will be displayed.



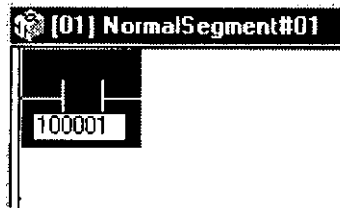
2. Entering Relays and Coils

Relays, coils, and other programming elements can be entered. The following example shows how to enter a relay.

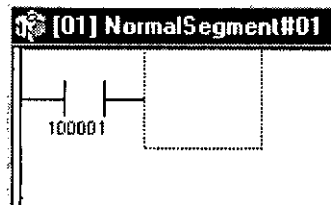
- 1) Click the Relay Button on the ladder palette. The button will remain in a selected state.
- 2) Click the location in the Ladder Programming Window in which to enter the relay.



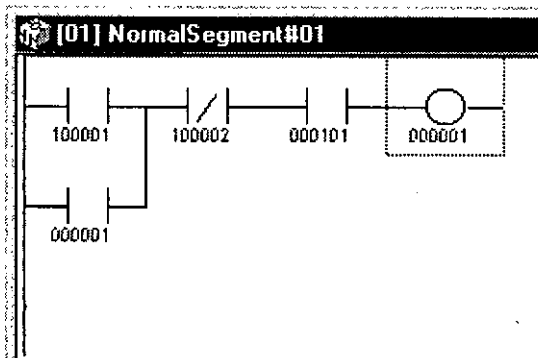
- 3) Enter the reference number.



The relay will appear on the screen.



- 4) Try and enter the rest of the elements to complete the following rungs.



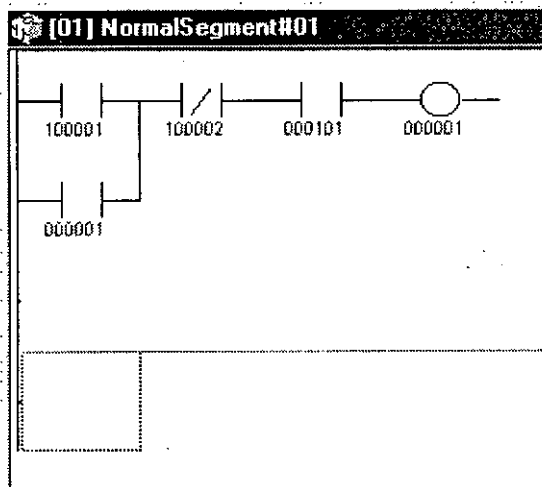
3. Creating Networks

The smallest unit of a user program is called a network. Networks are created using the following procedure. This example shows how to create a new network after the network created above with relays and a coil.

Select **Networks (N) –Insert Next (N)**.



A new network will be created and the cursor will move to it.

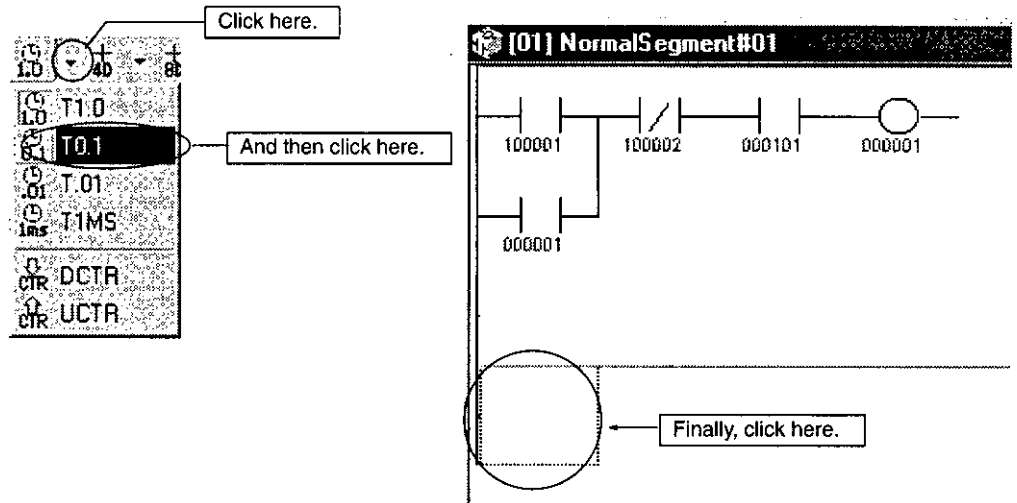


4. Entering Timer, Counter, and Other Instructions

The following procedure can be used to enter timer, counter, and other instructions. In this example, the 0.1-SECOND TIMER instruction is entered.

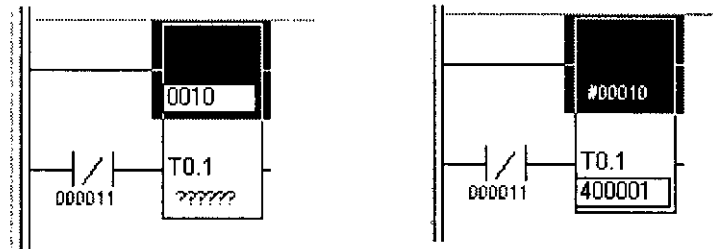
- 1) Click the timer/counter instruction button on the ladder palette to access the drop-down menu.
- 2) Select **T0.1**.

- 3) Click the location in the network for the instruction

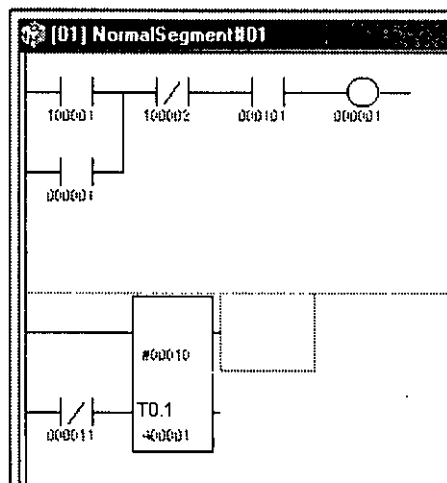


- 4) The instruction symbol will be displayed. Enter the constant and register number.

When the top element has been entered, the cursor will move to the bottom element. Here, 10 is entered for the top element and 400001 is entered for the bottom.

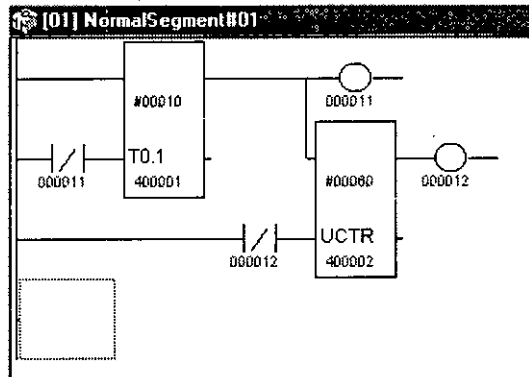


The 0.1-SECOND TIMER will appear on the screen.



3.1.9 Saving the Project

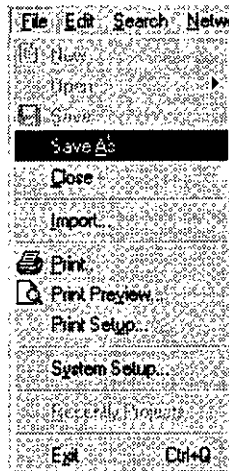
5) Try and enter the rest of the instruction to complete the following network.



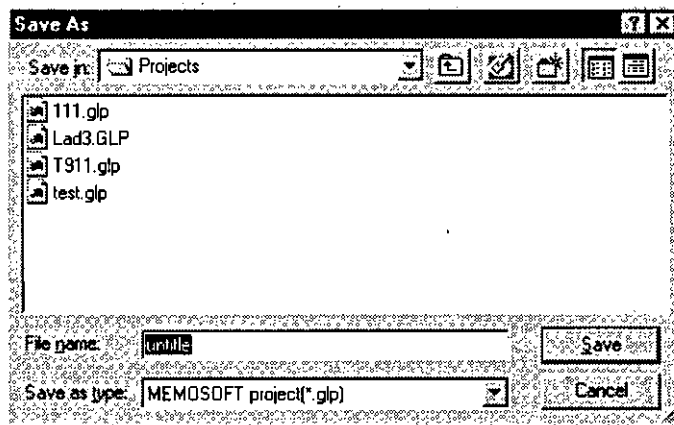
3.1.9 Saving the Project

Once the system configuration, module configuration, and program have been completed, the project must be saved to memory. Use the following procedure.

1) Select **File (F) – Save As (A)**.



- 2) Enter the file name and click the **Save (S)** Button.



This completes saving the project file.

3.1.10 Exiting MEMOSOFT

1. Exiting MEMOSOFT

Use the following procedure to exit MEMOSOFT.

Select **File (F) – Exit (X)**.



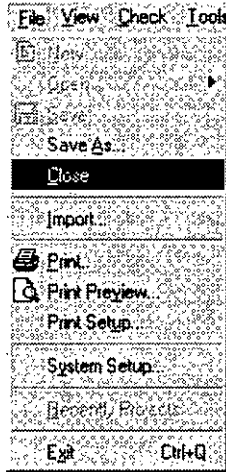
You can also click the Close Button in the upper right corner of the window to exit MEMOSOFT.



2. Closing a Project

You can close a project without exiting MEMOSOFT by using the following procedure.

Select **File (F) – Close (C)**.



The project will be closed.

3

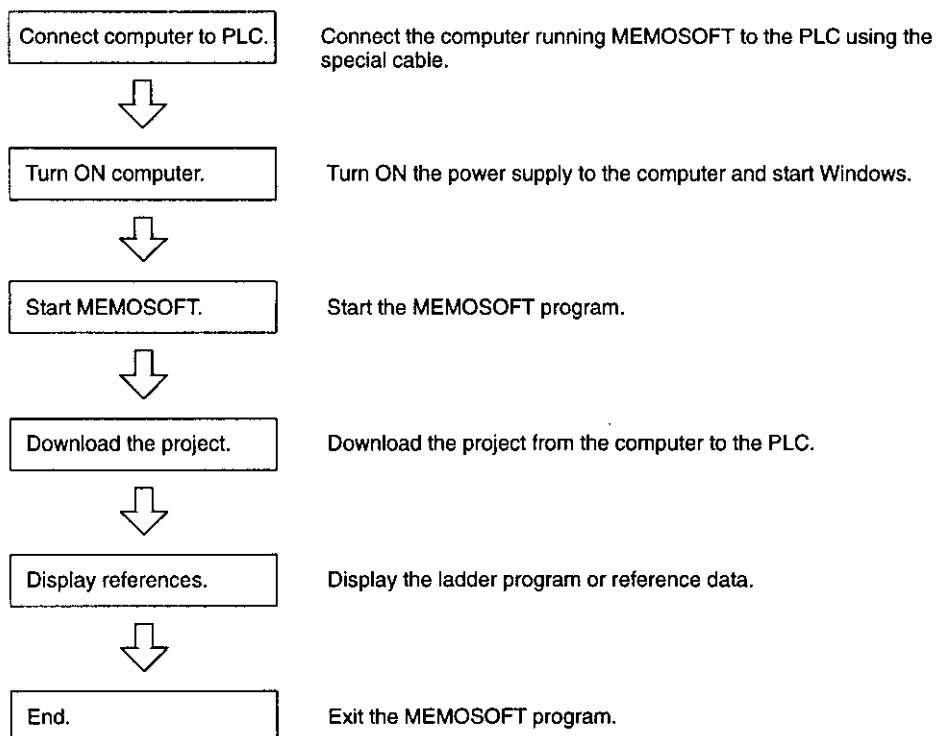
3.2 Online Operations

This section describes the operations required to connect the computer to the PLC, download the project created offline to the PLC, and then operate the PLC.

3.2.1	Overall Procedure	3-19
3.2.2	Connecting the Computer to the PLC	3-20
3.2.3	Downloading the Project	3-20
3.2.4	Starting and Stopping a PLC	3-23
3.2.5	Attaching to the PLC	3-25
3.2.6	Displaying the Ladder Program	3-26
3.2.7	Displaying Reference Data	3-27
3.2.8	Disabling References	3-28
3.2.9	Exiting MEMOSOFT	3-30

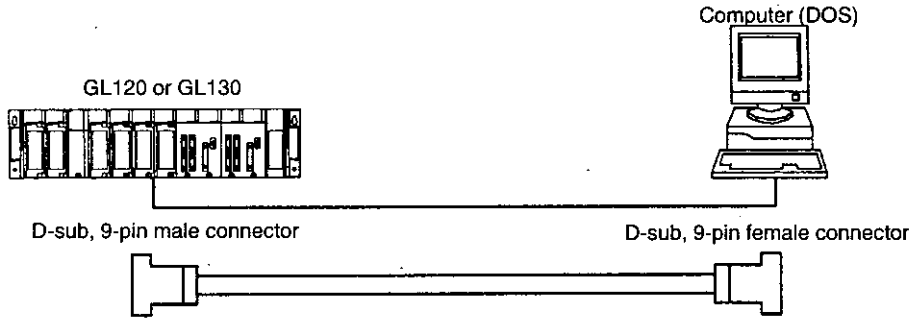
3.2.1 Overall Procedure

The overall procedure to transfer a project created on the computer to the PLC and then operate the PLC is illustrated below.



3.2.2 Connecting the Computer to the PLC

A special cable is required to connect the computer to the PLC. Obtain one of the following cables.



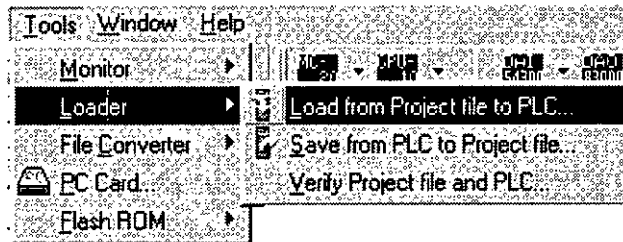
MEMOBUS Protocol Cables

Cable Length	Model Number
2.5 m	JZMSZ-120W0202-03
15.0 m	JZMSZ-120W0202-15

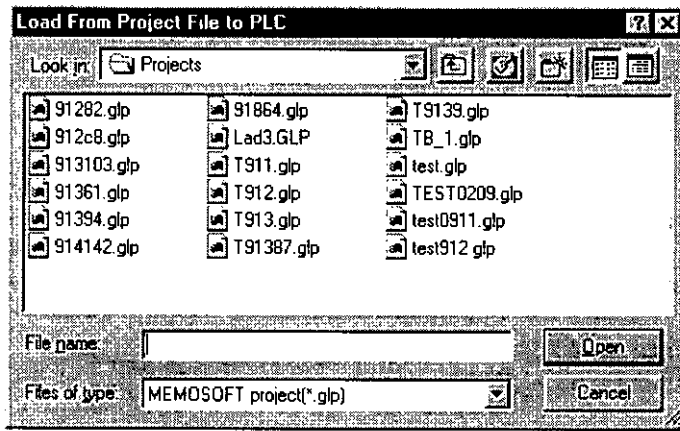
3.2.3 Downloading the Project

Use the following procedure to download the project from the computer to the PLC.

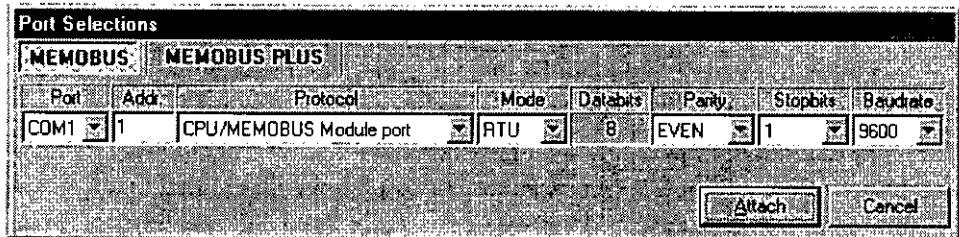
- 1) Select **Tools (T) – Loader (L) – Load from Project file to PLC** from the menus.



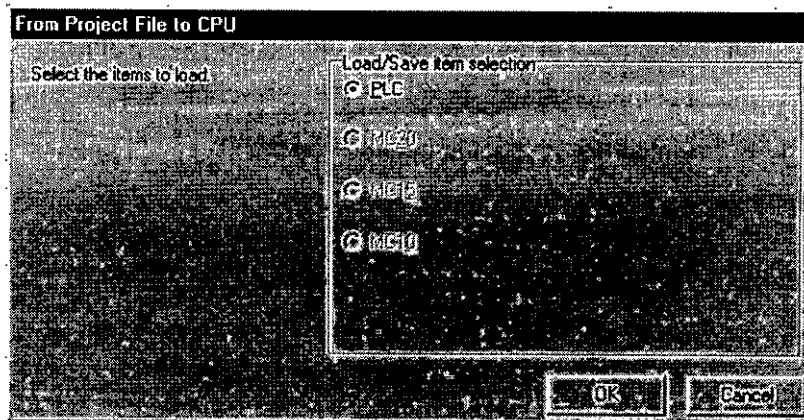
- 2) A window will appear for you to select the file to be downloaded to the PLC. Select the file to be downloaded and click the **Open** Button.



- 3) A dialog box will appear to select the port. Click the **Attach** Button.

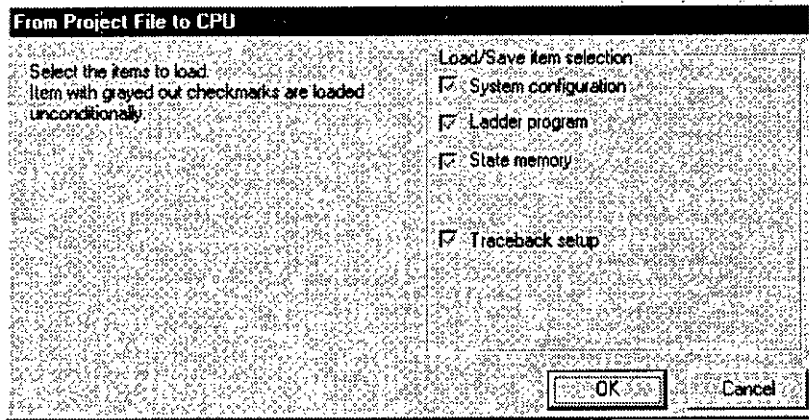


- 4) A dialog box will appear to select the destination with "PLC" already selected. Click the **OK** Button.

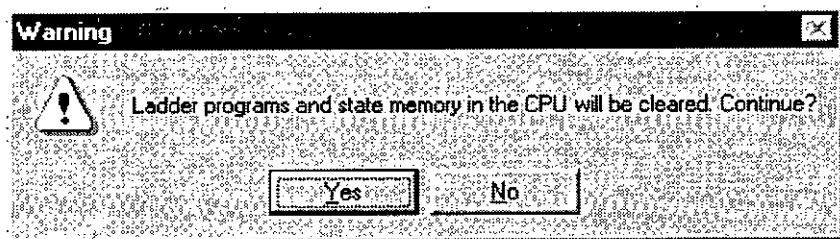


3.2.3 Downloading the Project , cont.

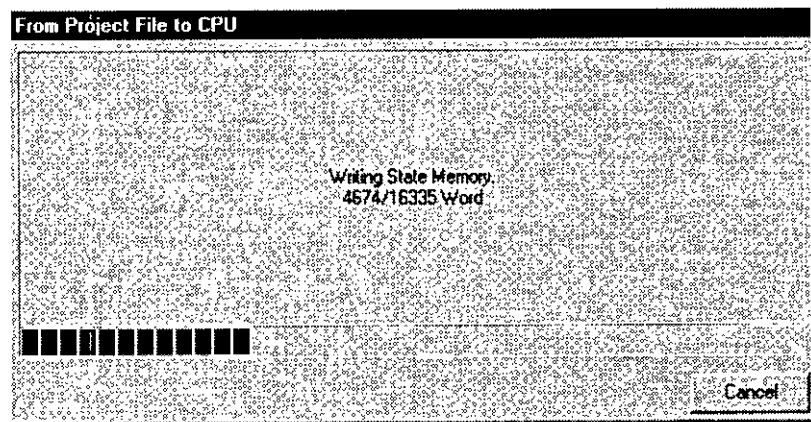
- 5) A dialog box will appear to select the data to download with "Ladder diagram" and "State memory" already selected. Click the **OK** Button.



- 6) The following confirmation message will appear. Click the **Yes (Y)** Button.

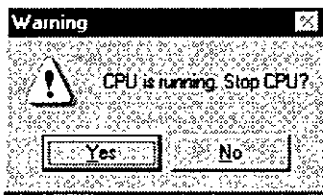


The project will be downloaded.

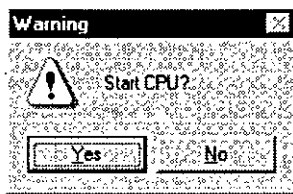




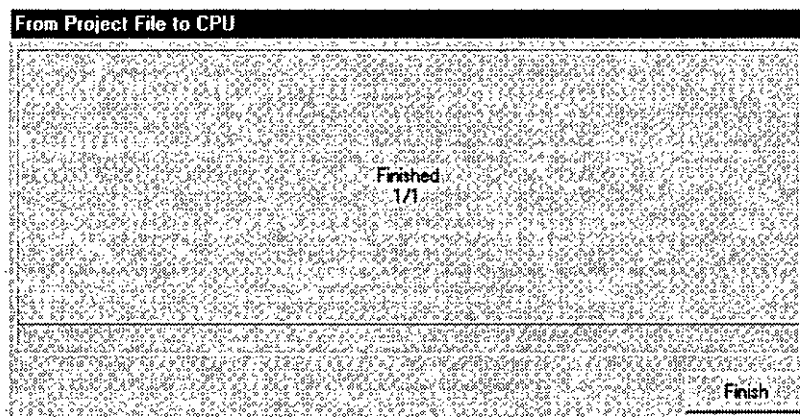
If the controller is operating, the following message will appear before the project is downloaded. Stop the controller to enable downloading the project.



- 7) The following message will appear after the project has been downloaded. Click the **No (N)** Button.



This completes downloading the project.



Check the following if you cannot download the project to the PLC.

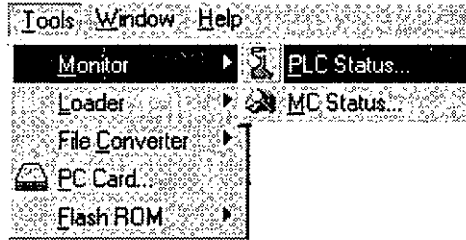
- 1) Check the communications parameters on the computer.
- 2) Check the cable connections.
- 3) Check the communications parameters on the PLC
The communications parameters for the GL120 or GL130 can be returned to their default settings using the DIP switch.

3.2.4 Starting and Stopping a PLC

- 1) A PLC can be started and stopped from the PLC Status Dialog Box. Refer to *18.1 Monitoring PC Status* for details on the PLC Status Dialog Box.

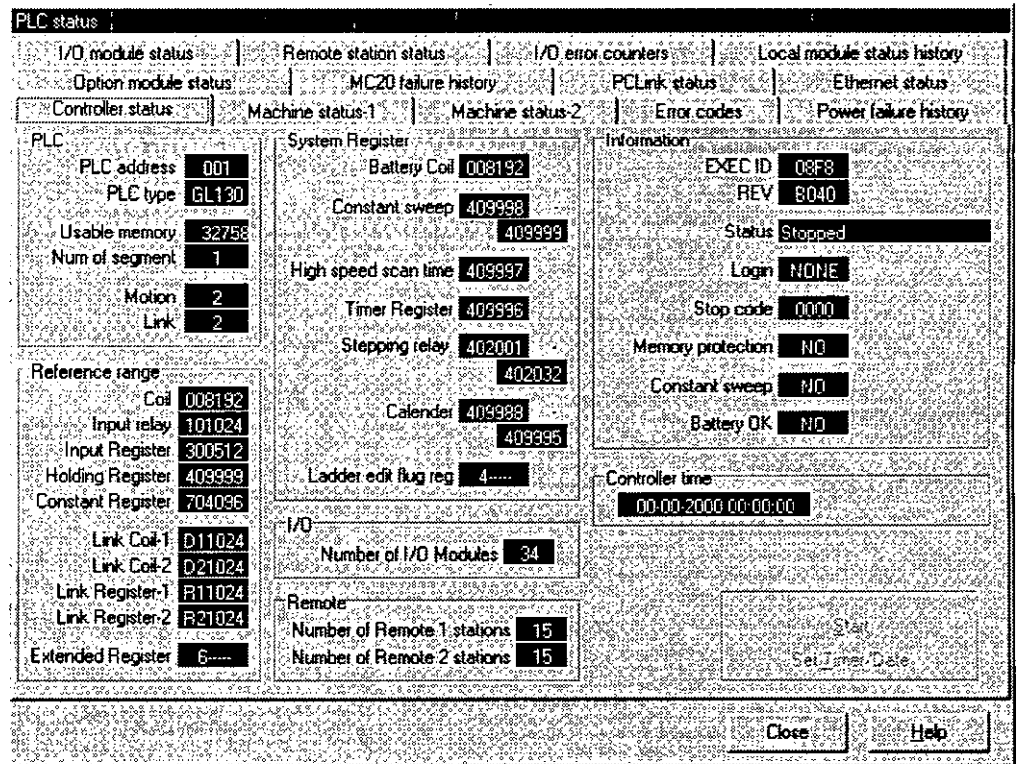
2) Use the following procedure to open the Monitor Dialog Box.

Select **Tools (T) – Monitor (M) –PLC Status** from the menu bar.



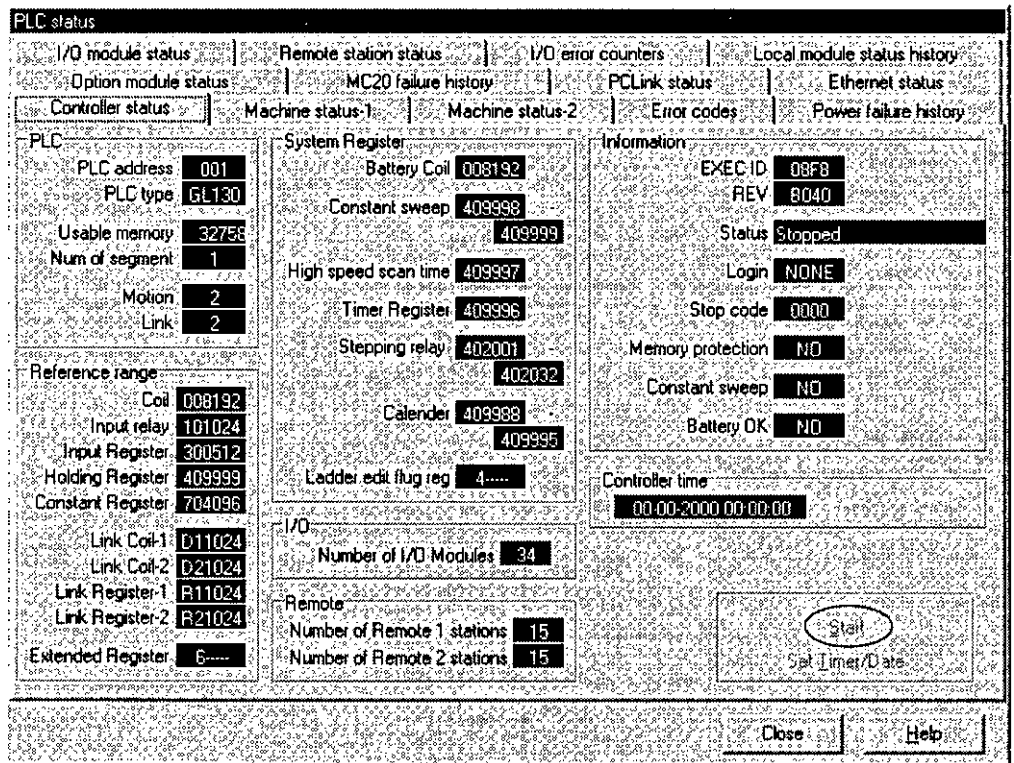
A dialog box to select the port will be displayed when the above command is executed offline. Check the communications parameters and attach the MEMOSOFT to the PLC.

The PLC Status Dialog Box will be displayed.



3) Use the following procedure to start and stop the PLC.

- a) Click the **Controller Status** Tab in the PLC Status Monitor Dialog Box.

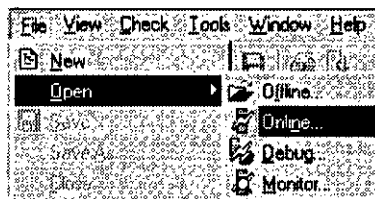


- b) Click the **Start** or the **Stop** Button.

The PLC will start or stop.

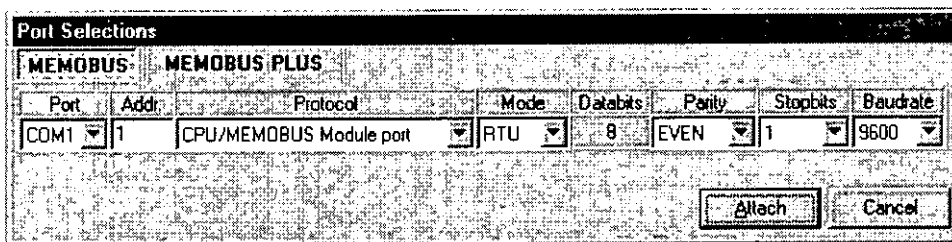
3.2.5 Attaching to the PLC

- 1) To edit the program inside a PLC, the MEMOSOFT must be attached to the PLC and the Online Mode must be entered.
- 2) Use the following procedure to attach to a PLC.
 - a) Select **File (F) – Open (O) – Online (N)** from the menu bar.



3.2.6 Displaying the Ladder Program

- b) The Port Selection Dialog Box will be displayed. Confirm the communications parameters and then click the **Attach** Button.



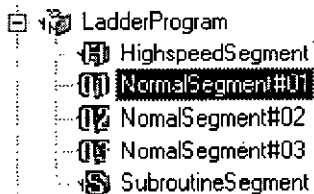
Online Mode will be entered.

3.2.6 Displaying the Ladder Program

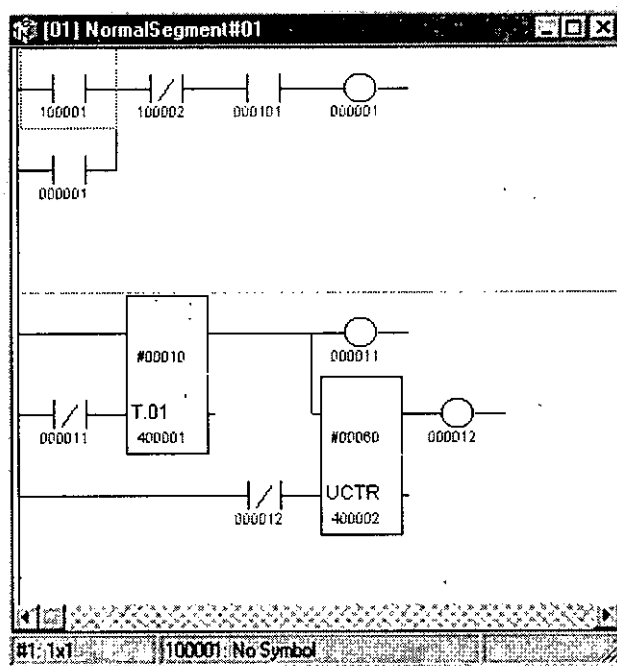
The ladder program can be displayed.

Double-click a Normal Segment Node.

3



The ladder program will be displayed.



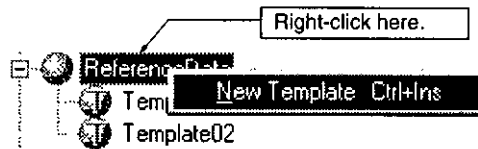


The ladder program can be added to or otherwise edited using the same procedures as those used offline.

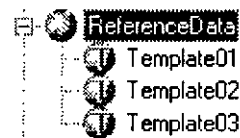
3.2.7 Displaying Reference Data

- 1) Use the following procedure to create a template for displaying reference data.

Point at the Reference Data Node, click the right mouse button, and select **New Template**.

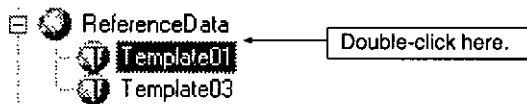


A new template will be added to the list.



- 2) The following procedure is used to display reference data from the previously input program. This will enable monitoring changes in the reference data.

- a) Double-click the reference data template.



- b) Enter the reference number for the 0.1-SECOND TIMER instruction and press the **Enter Key**.

Template01		
Ref No.	Data	Format
400001		

- c) The current value data and format of the reference number will be displayed. Confirm that the current value changes from 0 to 10 and then repeats as the program is solved.

Template01		
Ref No.	Data	Format
400001	5	Unsigned Word Num.

3.2.8 Disabling References

d) Enter the reference number of the UP COUNTER and press the **Enter** Key.

Template01		
Ref No.	Data	Format
400001	5	Unsigned Word Num.
400002		

e) The current value data and format of the reference number will be displayed. Confirm that the current value changes from 0 to 60 and then repeats as the program is solved.

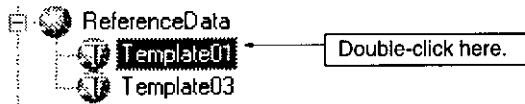
Template01		
Ref No.	Data	Format
400001	5	Unsigned Word Num.
400002	25	Unsigned Word Num.

3

3.2.8 Disabling References

References can be disabled to confirm the power flow across the power rails. Use the following procedure.

1) Double-click the reference data template.



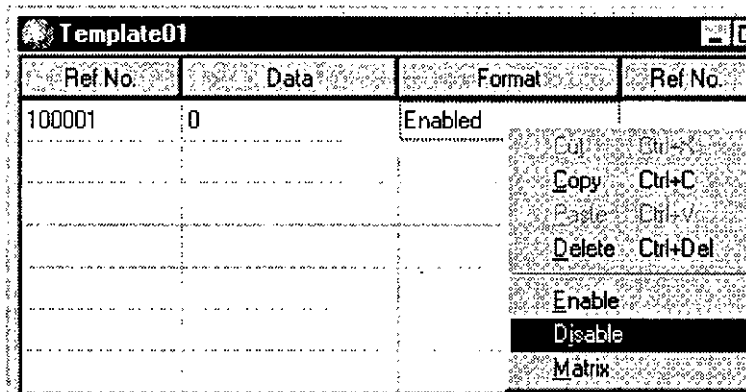
2) Enter the reference number of the reference to be disabled and press the **Enter** Key.

Template01		
Ref No.	Data	Format
100001		

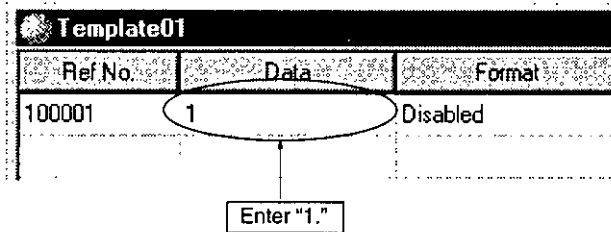
The current value data of the reference data will be displayed.

Template01		
Ref No.	Data	Format
100001	0	Enabled

- 3) Move the cursor to the format cell, right-click, and then disable the reference.

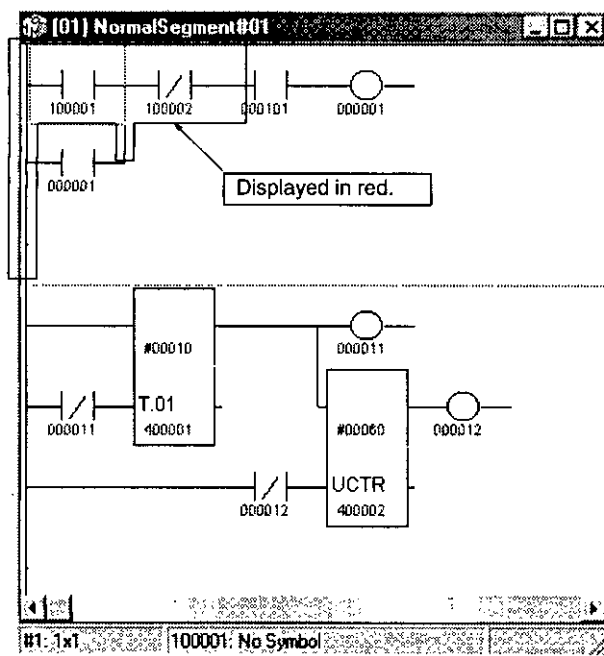


- 4) Change the current value data from 0 (OFF) to 1 (ON).



3

- 5) Confirm that the NO contact for 10001 is ON in the ladder program. The current status of the power flow will be displayed in red.

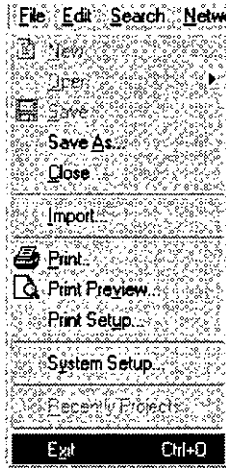


3.2.9 Exiting MEMOSOFT

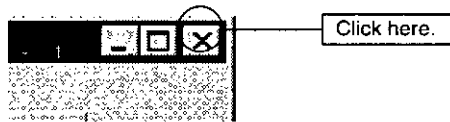
1. Exiting MEMOSOFT

Use the following procedure to exit MEMOSOFT.

Select **File (F) – Exit (X)**.



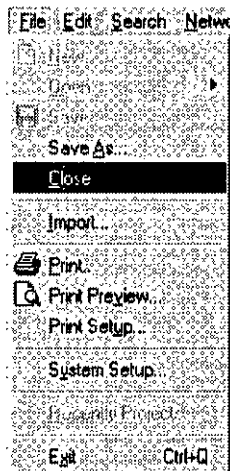
You can also click the Close Button in the upper right corner of the window to exit MEMOSOFT.



2. Closing a Project

You can close a project without exiting MEMOSOFT by using the following procedure.

Select **File (F) – Close (C)**.



The project will be closed.

MEMOSOFT Window Configurations

4

This chapter describes the main MEMOSOFT interfaces, including the configurations of the windows for the Project Manager, other managers, common menus, the tool bar, and palettes.

4.1	Main Windows	4-2
4.1.1	Starting MEMOSOFT	4-2
4.1.2	Exiting MEMOSOFT	4-3
4.1.3	Main Window Configuration	4-4
4.1.4	Project Manager	4-6
4.1.5	Reference Manager	4-7
4.1.6	Network Manager	4-9
4.2	Common Menu Commands	4-11
4.2.1	Common Menus	4-11
4.2.2	File Menu	4-11
4.2.3	View Menu	4-14
4.2.4	Check Menu	4-15
4.2.5	Tools Menu	4-16
4.2.6	Window Menu	4-18
4.2.7	Help Menu	4-19
4.3	Toolbars and Palettes	4-20
4.3.1	Standard Toolbar	4-20
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4.3.3	Help Toolbar	4-20
4.3.4	Module Palettes	4-21
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4.1 Main Windows

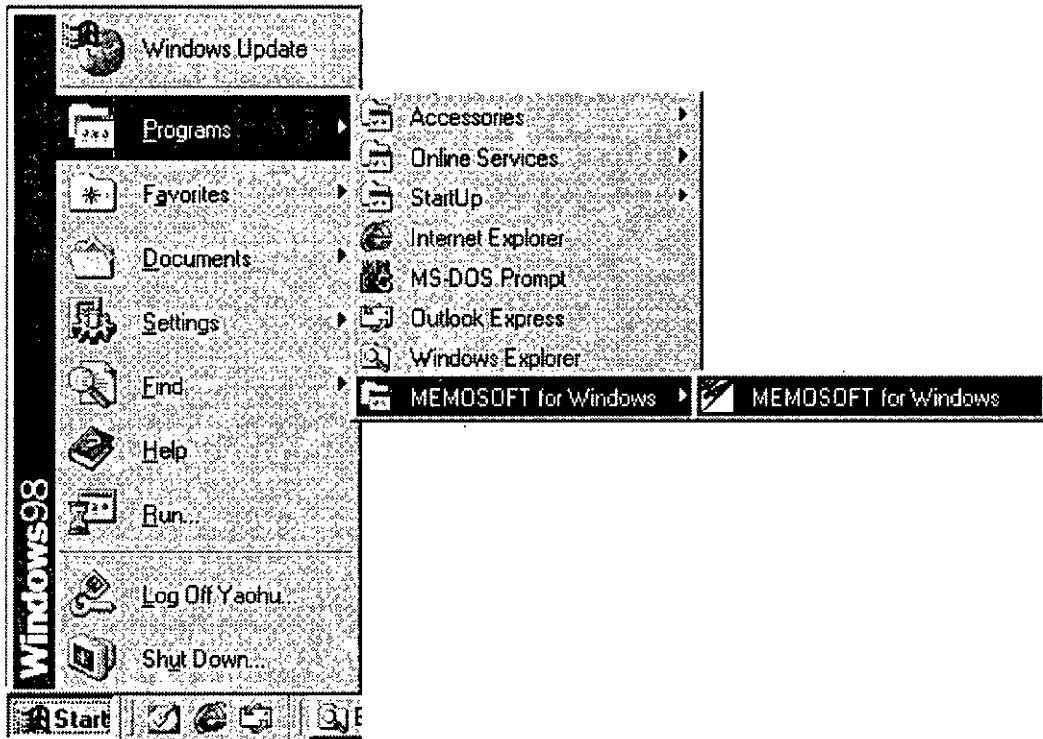
This section describes how to open and close the main window for MEMOSOFT for Windows and the basic configuration of the window.

4.1.1	Starting MEMOSOFT	4-2
4.1.2	Exiting MEMOSOFT	4-3
4.1.3	Main Window Configuration	4-4
4.1.4	Project Manager	4-6
4.1.5	Reference Manager	4-7
4.1.6	Network Manager	4-9

4.1.1 Starting MEMOSOFT

Use the following procedure to start the MEMOSOFT program.

Select **MEMOSOFT for Windows – MEMOSOFT for Windows** from the Windows Start Button.



MEMOSOFT will start.

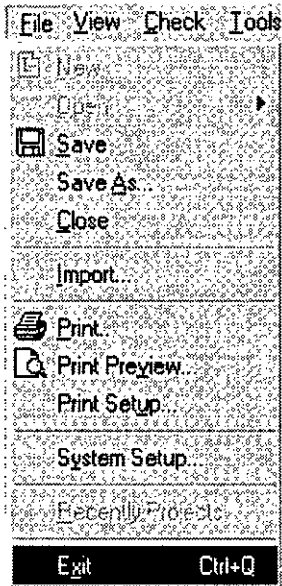


You can also start MEMOSOFT by using a shortcut on your desktop.

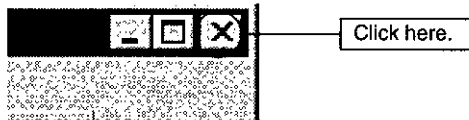
4.1.2 Exiting MEMOSOFT

Use the one of the following procedures to exit MEMOSOFT.

- Select **File (F) – Exit (X)** from the menu bar.

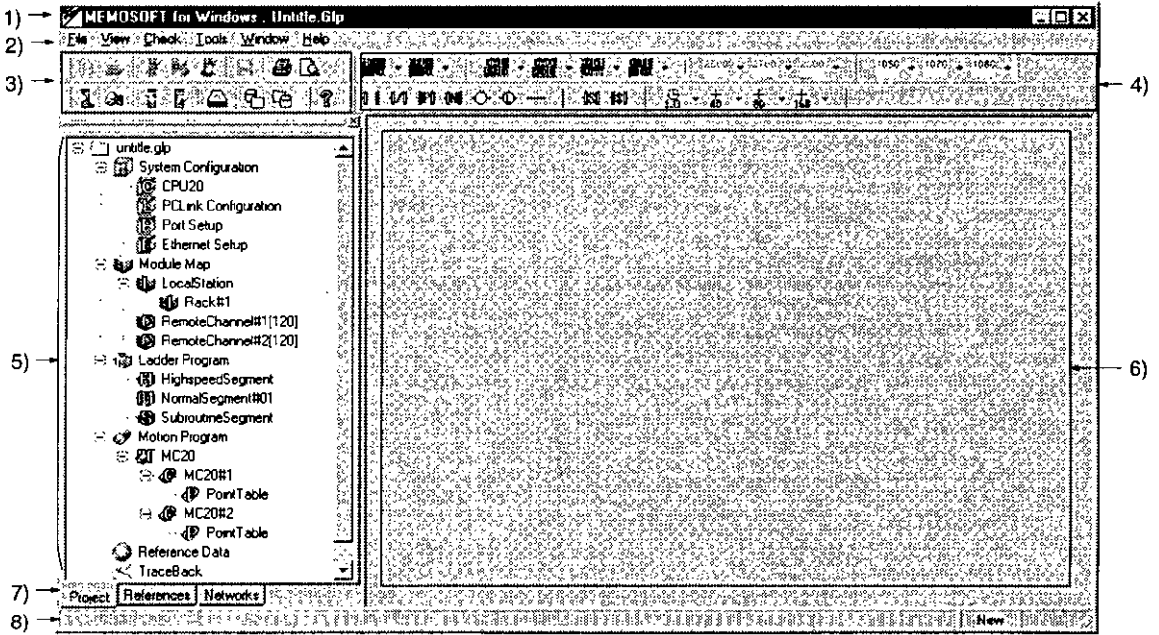


- Click the Close Button in the upper right corner of the window to exit MEMOSOFT.



4.1.3 Main Window Configuration

The main MEMOSOFT window is shown below. Refer to 3.1.3 *Creating a Project* for the procedure to display this window.



4

1) Title Bar

Displays the name of the project currently being edited.

2) Menu Bar

Displays menus organized into functional groups. Details functions can be selected on the pull-down menus. Additional functions and menus will appear as required by the current window.

3) Toolbar

The mostly commonly used functions on the menus are also provided here as icons to enable them to be accessed with a single click.

4) Palettes

There are two sets of palettes: The module palettes and the ladder palettes. The Modules that can be allocated and the most commonly use ladder elements are provided as icons. These palettes are used on the Module Configuration Window and the Ladder Programming Window. Buttons on the palettes will remain in a selected state when click. After clicking a button, click inside the window to enter the Module or element.

5) Manager Area

Displays the Project Manager, Reference Manager, or Network Manager.

6) Editing Window Area

Displays the following windows. Refer to the specified chapters for details.

- Dialog boxes to set the system configuration: *Chapter 5 Setting the System Configuration*
- Module Configuration Window: *Chapter 6 Setting the Module Configuration*
- Ladder Programming Window: *Chapter 8 Editing Ladder Programs*
- Reference data templates: *Chapter 10 Editing Reference Data*
- Motion Programming Window: *Chapter 11 Editing Motion Programs Offline*
- Point Table Window: *Chapter 13 Editing Point Tables*

7) Manager Tabs

Used to select the various managers.

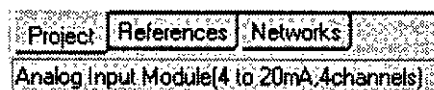
8) Status Bar

Displays the following status.

- The programming mode is displayed: Online, Offline, or Debug Mode (*New* is displayed when a new project file is being created.)
- *Modified* is displayed when a project file has been changed in any way.



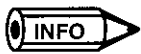
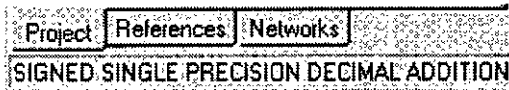
- When a Module has been selected with the mouse for the Module Configuration Window, information on the Module is displayed.



- Detailed information on toolbar functions is displayed when the cursor is moved in the toolbar.



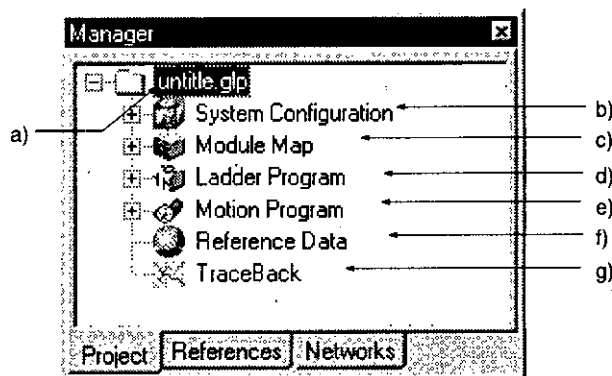
- Detailed information on palette functions is displayed when the cursor is moved in a module or ladder palette.



Displaying the manager area, toolbar, and palettes can be turned ON and OFF on the View (V) Menu on the menu bar. The location and size of these areas can also be changed in the window configuration.

4.1.4 Project Manager

- 1) The Project Manager will be displayed by default in the manager area when MEMOSOFT for Windows is started. The Project Manager displays the main MEMOSOFT functions in a directory tree. Most MEMOSOFT functions can be accessed through the Project Manager.
- 2) The structure of the Project Manager and the functions available from each node are described below.



a) Project Tree

The name of the project is given as the top level of the tree structure.

b) System Configuration Node

Used for basic system configuration settings and for settings for Communications Modules, such as Remote I/O Drivers, PLC Link Modules, MEMOBUS Modules, and

Ethernet Interface Modules. Refer to *Chapter 5 Setting the System Configuration* for details.

c) Module Map Node

Used for module configuration settings, I/O reference allocations, and Remote I/O Receiver Module settings. Refer to *Chapter 6 Setting the Module Configuration* for details.

d) Ladder Program Node

Use to edit the ladder program and to set the Segment Scheduler. Refer to *Chapter 8 Editing Ladder Programs* for details on the ladder programs and to *Chapter 7 Setting Segments* for details on the Segment Scheduler.

e) Motion Program Node

Used to edit the motion programs and point tables. Refer to *Chapter 11 Editing Motion Programs Offline* for details on motion programs and to *Chapter 13 Editing Point Tables* for details on point tables.

f) Reference Data Node

Use to edit or display reference data. Refer to *Chapter 10 Editing Reference Data* for details.

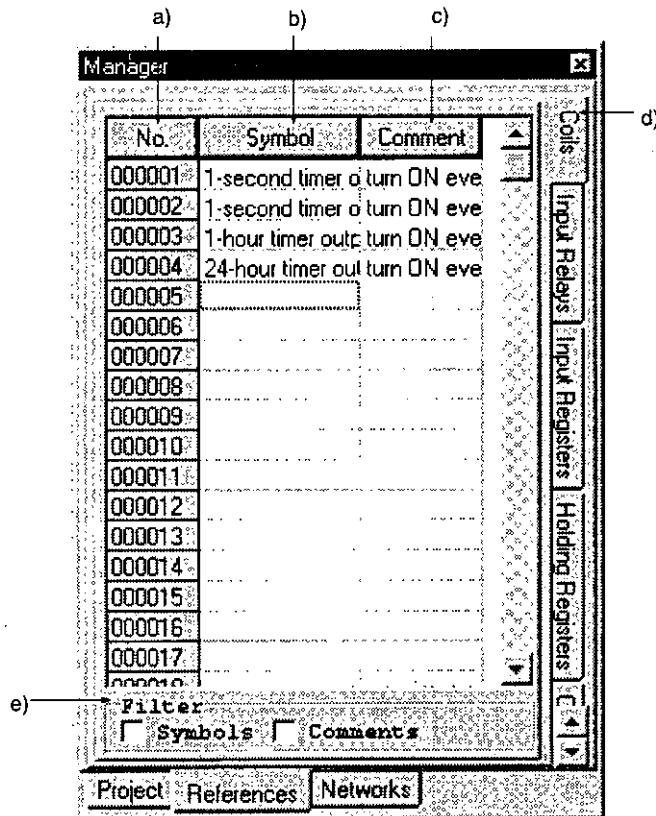
g) Traceback Node

Use to set tracebacks, create trace data, and display trace graphs. Refer to *Chapter 19 Traceback Operations* for details.

4.1.5 Reference Manager

- 1) The Reference Manager is used to edit reference symbols and reference comments. Reference data cannot be edited from the Reference Manager.

2) The structure of the Reference Manager is described below.



a) Reference Number Cells

Display the reference numbers.

b) Reference Symbol Cells

Used to enter reference symbols. Up to 32 characters can be entered for each symbol.

c) Reference Comment Cells

Used to enter reference comments. Up to 255 characters can be entered for each comment.

d) Tabs

Used to change the references being edited. You may have to scroll up or down to access the desired tab.

e) Filter

Used to filter the references that are displayed. If the symbol filter is selected, only references that have a symbol entered will be displayed. If the comment filter is se-

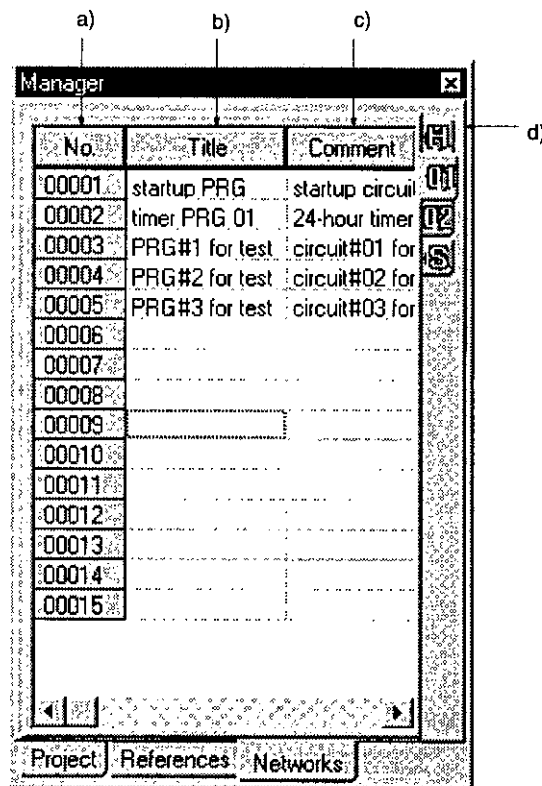
lected, only references that have a comment entered will be displayed. If both the symbol and comment filters are selected, only references that have both a symbol and a comment entered will be displayed.



Refer to *9.1 Editing Reference Symbols and Comments* for the editing procedures for the Reference Manager.

4.1.6 Network Manager

- 1) The Network Manager is used to edit network titles and network comments. The Ladder Programming Window cannot be started from the Network Manager.
- 2) The structure of the Network Manager is described below.



a) Network Number Cells

Display the network numbers.

b) Network Title Cells

Used to enter reference titles. Up to 32 characters can be entered for each symbol.

c) Network Comment Cells

Used to enter network comments. Up to 255 characters can be entered for each comment.

d) Tabs

Used to change the segment for which networks are being edited. You may have to scroll up or down to access the desired tab.



Refer to 9.2 *Editing Network Titles and Comments* for the editing procedures for the Network Manager.

4.2 Common Menu Commands

■ This section describes the menus and commands that are available in all of the windows.

4.2.1	Common Menus	4-11
4.2.2	File Menu	4-11
4.2.3	View Menu	4-14
4.2.4	Check Menu	4-15
4.2.5	Tools Menu	4-16
4.2.6	Window Menu	4-18
4.2.7	Help Menu	4-19

4.2.1 Common Menus

1) The following menus are displayed for all MEMOSOFT windows.

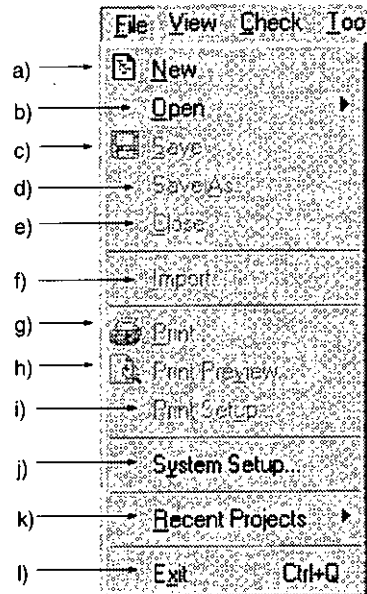
- File Menu
- View Menu
- Check Menu
- Tools Menu
- Window Menu
- Help Menu

2) Refer to the following sections for details.

4.2.2 File Menu

1) The File Menu contains commands for the following functions: Opening/closing projects, importing projects, printing projects, the system set to control MEMOSOFT operation, etc.

2) The File Menu is shown below.

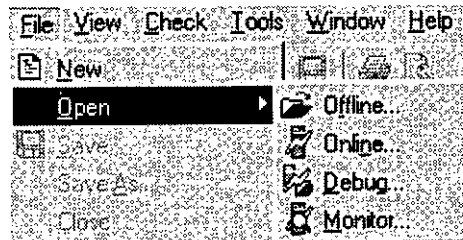


a) New

Creates a new project.

b) Open

Used to open an existing project. There are four possible selections on the Open Menu depending on the programming mode to be used.



- Offline
Used to open a project stored in the computer.
- Online
Used to connect to the CPU Module and directly open the project stored in it.
- Debug
Used to open both a project in the computer and the project stored in the CPU Module, compare the contents of the project to confirm they are the same, and then directly edit both projects.

- Monitor

Used to connect to the CPU Module and monitor the project stored in it.

IMPORTANT

The ladder program in the CPU Module and other CPU Module status cannot be changed if memory protection is turned ON for the CPU Module. Turn the key switch on the CPU Module from P.ON to P.OFF to enable editing CPU Module status.

c) Save

Overwrites the current project file.

d) Save As

Saves the current project in a new file.

e) Close

Closes the project.

f) Import

Imports ladder programs or motion programs from another project.

g) Print

Prints project data.

h) Print Preview

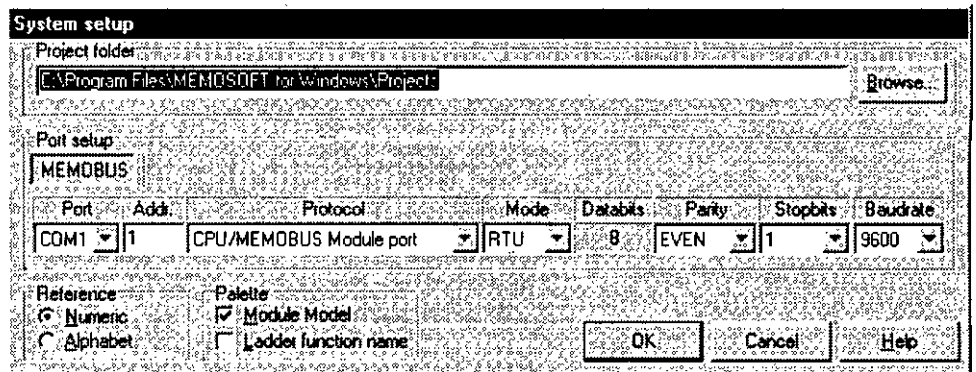
Displays the data that will be printed.

i) Print Setup

Used to set the items and ranges to be printed.

j) System Setup

Used to set the project folder, computer communications parameters, and MEMO-SOFT display elements. The System Setup Dialog Box is shown below.



k) Recent Projects

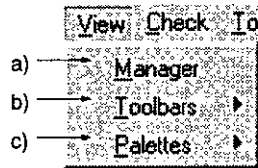
Displays the projects that have most recently been edited (5 maximum).

l) Exit

Exits the MEMOSOFT program.

4.2.3 View Menu

- 1) The View Menu is used to turn ON and OFF displays of the toolbar, palettes, etc.
- 2) The View Menu is shown below.

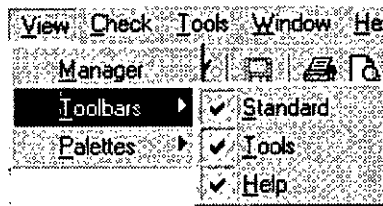


a) Manager

Turns ON/OFF the display of the manager window.

b) Toolbars

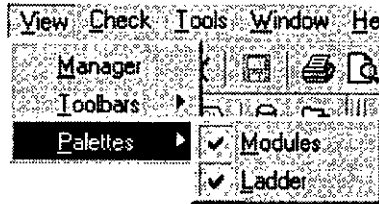
Turns ON/OFF the display of the following toolbars.



- Standard
Turns ON/OFF the display of the standard toolbar.
- Tools
Turns ON/OFF the display of the tools toolbar.
- Help
Turns ON/OFF the display of the help toolbar.

c) Palettes

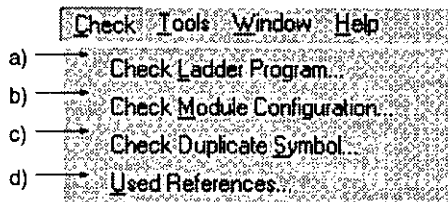
Turns ON/OFF the display of the following palettes.



- Modules
Turns ON/OFF the display of the module palettes.
- Ladder
Turns ON/OFF the display of the ladder palettes.

4.2.4 Check Menu

- 1) The Check Menu is used to check the overall ladder program, display reference usage tables, etc.
- 2) The Check Menu is shown below.



a) Check Ladder Program

Check the entire ladder program. The following items are checked.

- Duplicated coils
- Program size
- Reference ranges

b) Check Module Configuration

Checks for any inconsistencies in the Module settings. Warning messages will be displayed if any reference is used by more than one Module.

c) Check Duplicate Symbols

Searches for redundant-reference symbols.

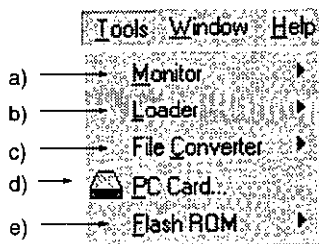
d) Used References

Displays the references that are currently being used.

4.2.5 Tools Menu

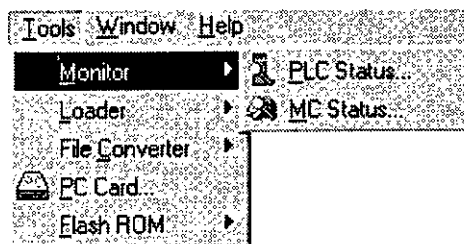
1) The Tools Menu provides functions that are not project-dependant.

2) The Tools Menu is shown below.



a) Monitor

The following monitoring operations can be executed.

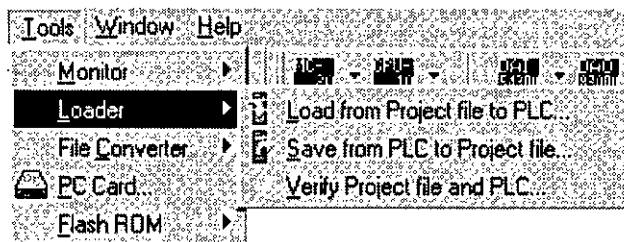


- PLC Status
MEMOSOFT attached to the CPU Module and displays the status.
- MC Status
MEMOSOFT attached to an MC20 Module and displays the status.

4

b) Loader

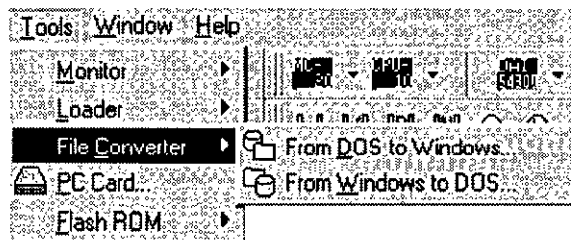
The following loader operations can be executed. Refer to Chapter 15 Loader for details.



- Load from Project File to PLC
Downloads a project created offline on the computer to the PLC.
- Save from PLC to Project File
Saves the project in the CPU Module to a file on the computer.
- Verify Project File and PLC
Compares projects of the same name between the computer and the PLC.

c) File Converter

The File Converter Menu is used to convert MEMOSOFT project files between DOS and Windows versions.



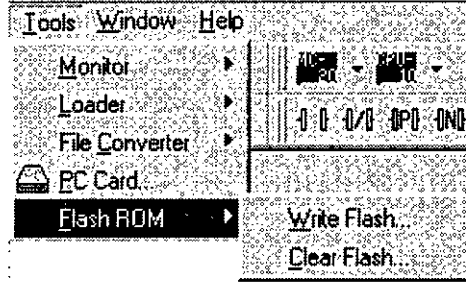
- From DOS to Windows
Converts a MEMOSOFT for MS-DOS file so that it can be used on Windows.
- From Windows to DOS
Converts a MEMOSOFT for Windows file so that it can be used on MS-DOS

d) PC Card

Read and writes data to a PC Card inserted in a CPU21 CPU Module.

e) Flash ROM

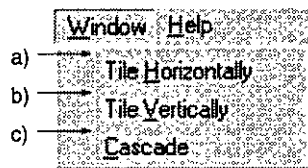
Read and writes data to flash ROM in a CPU10 CPU Module.



- Write Flash
Writes data to a CPU10 flash ROM. The following data is written.
 - System configuration
 - Ladder program
 - Holding register data
 - Disable table
- Clear Flash
Initialized the flash ROM in a CPU10 CPU Module.

4.2.6 Window Menu

- 1) The Window Menu sets the layout to display the editing windows.
- 2) The Window Menu is shown below.



a) Tile Vertically

Lines up the current editing windows vertically.

4

b) Tile Horizontally

Lines up the current editing windows horizontally.

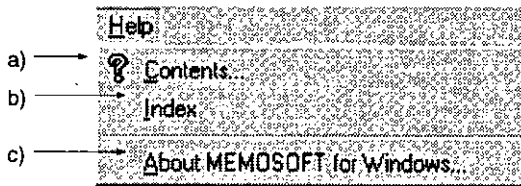
c) Cascade

Cascades the current editing windows.

4.2.7 Help Menu

1) The Help Menu is used to access help on MEMOSOFT for Windows.

2) The Help Menu is shown below.

**a) Contents**

Display the table of contents for MEMOSOFT help.

b) Index

Displays a keyword search function for MEMOSOFT help.

c) About MEMOSOFT for Windows

Displays version information on MEMOSOFT help.

4.3 Toolbars and Palettes

■ This section describes the specifications of the toolbars and palettes.

4.3.1	Standard Toolbar	4-20
4.3.2	Tools Toolbar	4-20
4.3.3	Help Toolbar	4-20
4.3.4	Module Palettes	4-21
4.3.5	Ladder Palettes	4-31

4.3.1 Standard Toolbar

- 1) The standard toolbar provides all of the commands displayed on the File Menu with icons. Click an icon to display the tool.
- 2) The standard toolbar is shown below.



4

4.3.2 Tools Toolbar

- 1) The tools toolbar provides all of the commands displayed on the Tool Menu with icons. Click an icon to display the tool.
- 2) The tool toolbar is shown below.



4.3.3 Help Toolbar

- 1) The help toolbar display the table of contents for help.
- 2) The help toolbar is shown below.



4.3.4 Module Palettes

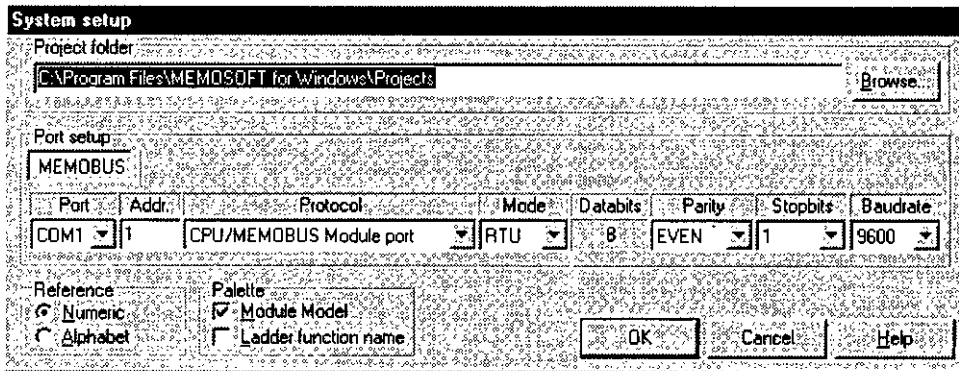
1) Outline

The module palettes are used to select the Modules to use on the Module Configuration Window. When clicked, any button will remain in a selected state. You can click the button again to deselect it.

The module palettes also provide drop-down menus. If a Module is selected from a pull-down menu, the button on the palette will change to one for the selected Module and will remain in a selected state.

Either Module model number or Module names can be selected for display on the pull-down menus. This setting can be made after selecting **File (F) – System Setup (F)** from the menus. The default is for Module names.

The System Setup Dialog Box is shown below.



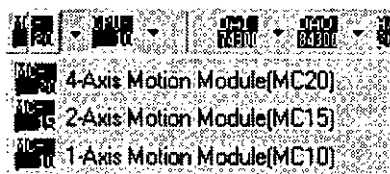
2) Module Palette Configuration

The module palettes are shown below.



a) Motion Module Palette

Select GL120/GL130 Motion Modules from the motion module palette. The module palette is shown below.

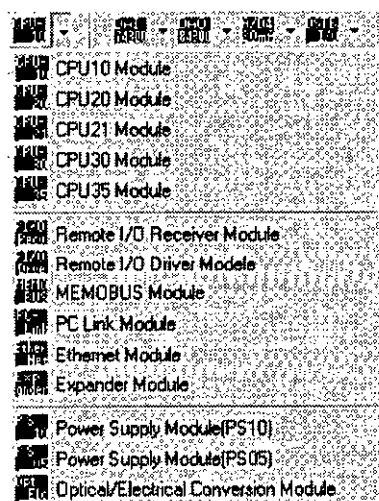


The Motion Modules are listed in the following table.

Name	Model Number
4-Axis Motion Module (MC20)	120MMB10400
2-Axis Motion Module (MC15)	120MMB20200
1-Axis Motion Module (MC10)	120MMB10100

b) Accent Module Palette

Select Modules that do not have I/O functions for the GL120/GL130 from the accent module palette. These Modules do not have any setting information. The accent module palette is shown below.

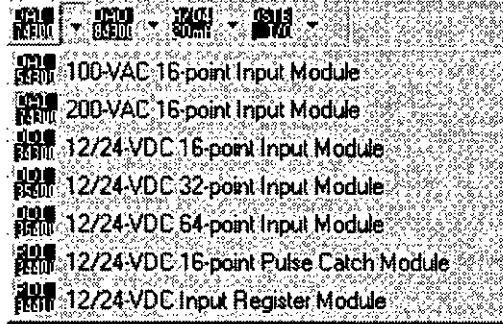


The Accent Modules are listed in the following table.

Name	Model Number
CPU10 Module	120CPU14200
CPU20 Module	120CPU34100
CPU21 Module	120CPU34110
CPU30 Module	120CPU54100
CPU35 Module	120CPU54110
Remote I/O Receiver Module	120CRR13100
Remote I/O Driver Module	120CRD131□0
MEMOBUS Module	120NOM2□100
PC Link Module	120NFB23100
Ethernet Module	120NET12100
Expander Module	120CBE37000
Power Supply Module (PS10)	120CPS□1300
Power Supply Module (PS05)	120CPS□1100
Optical-Electrical Conversion Module	120NAH935□□

c) 120-Series Input Module Palette

Select the 120-Series Input Modules from this palette. The 120-Series Input Module palette is shown below.

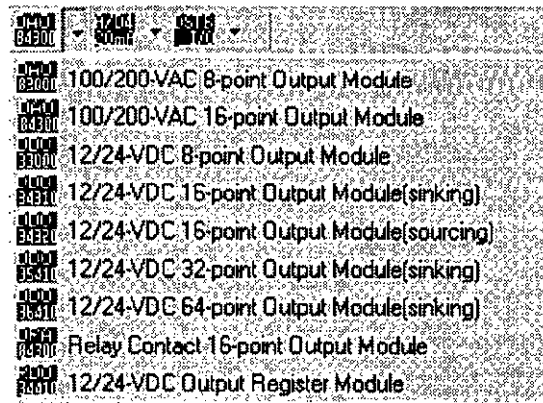


The 120-Series Input Modules are listed in the following table.

Name	Model Number
100-VAC 16-point Input Module	120DAI54300
200-VAC 16-point Input Module	120DAI74300
12/14-VDC 16-point Input Module	120DDI34300
12/24-VDC 32-point Input Module	120DDI35400
12/24-VDC 64-point Input Module	120DDI36400
12/24-VDC 16-point Pulse Catch Module	120RDI34400
Register Input Module	120RDI34410

d) 120-Series Output Module Palette

Select the 120-Series Output Modules from this palette. The 120-Series Output Module palette is shown below.

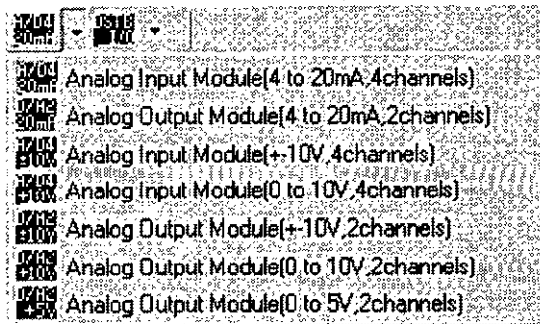


The 120-Series Output Modules are listed in the following table.

Name	Model Number
100/200-VAC 8-point Output Module	120DAO83000
100/200-VAC 16-point Output Module	120DAO84300
12/24-VDC 8-point Output Module	120DDO33000
12/24-VDC 16-point Output Module (sinking)	120DDO34310
12/24-VDC 16-point Output Module (sourcing)	120DDO34320
12/24-VDC 32-point Output Module (sinking)	120DDO35410
12/24-VDC 64-point Output Module (sinking)	112DDO36410
Relay Contact 16-point Output Module	120DRA84300
12/24-VDC Output Register Unit	120RDO34410

e) 120-Series Analog I/O Module Palette

Select the 120-Series Analog I/O Modules from this palette. The 120-Series Analog I/O Module palette is shown below.

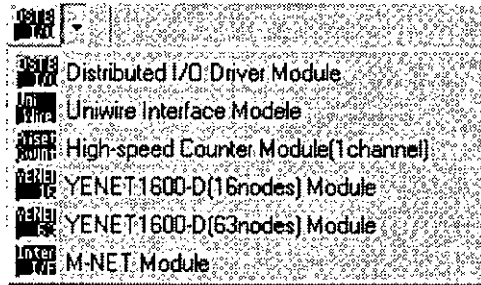


The 120-Series Analog I/O Modules are listed in the following table.

Name	Model Number
Analog Input Module (4 to 20 mA, 4 channels)	120ACI02000
Analog Output Module (4 to 20 mA, 2 channels)	120ACO01000
Analog Input Module (± 10 V, 4 channels)	120AVI02000
Analog Input Module (0 to 10 V, 4 channels)	120AVI02100
Analog Output Module (± 10 V, 2 channels)	120AVO01000
Analog Output Module (0 to 10 V, 2 channels)	120AVO01100
Analog Output Module (0 to 5 V, 2 channels)	120AVO01200

f) Special Module Palette

Select the 120-Series Special Modules from this palette. The 120-Series Special Module palette is shown below.

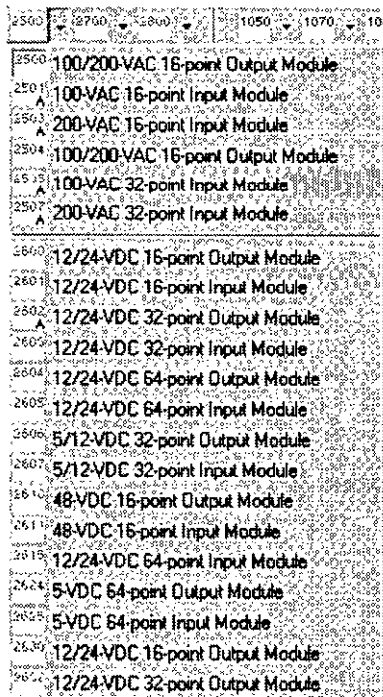


The 120-Series Special Modules are listed in the following table.

Name	Model Number
Distributed I/O Driver Module	120CRD21100
Uniwire Interface Module	120CRD21110
High-speed Counter Module (1 channel)	120EHC21110
YENET 1600-D 16-node Module	120NDN31100
YENET 1600-D 63-node Module	120NDN31110
M-NET Module	120NMN31000

g) 2000-Series I/O Module (25□ and 26□□) Palette

Select the 2000-Series I/O Modules (25□□ and 26□□) from this palette. The 2000-Series I/O Module palette is shown below.



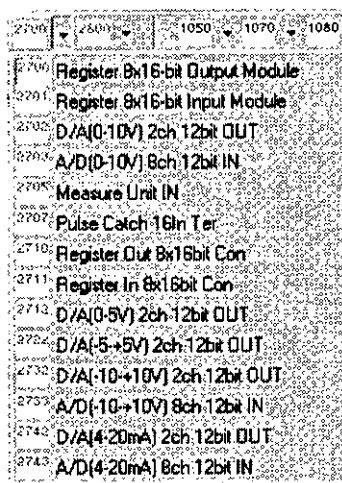
The 2000-Series I/O Modules (25□□ and 26□□) are listed in the following table.

Name	Model Number
100/200-VAC 16-point Output Module	B2500
100-VAC 16-point Input Module	B2501A
200-VAC 16-point Input Module	B2503A
100/200-VAC 16-point Output Module	B2504
100-VAC 32-point Input Module	B2505A
200-VAC 32-point Input Module	B2507A
12/24-VDC 16-point Output Module	B2600
12/24-VDC 16-point Input Module	B2601
12/24-VDC 32-point Output Module	B2602A
12/24-VDC 32-point Input Module	B2603
12/24-VDC 64-point Output Module	B2604
12/24-VDC 64-point Input Module	B2605
5/12-VDC 32-point Output Module	B2606
5/12-VDC 32-point Input Module	B2607
48-VDC 16-point Output Module	B2610
48-VDC 16-point Input Module	B2611
12/24-VDC 64-point Input Module	B2615
5-VDC 64-point Output Module	B2624
5-VDC 64-point Input Module	B2625
12/24-VDC 16-point Output Module	B2630
12/24-VDC 32-point Output Module	B2632

4

h) 2000-Series I/O Module (27□□) Palette

Select the 2000-Series I/O Modules (27□□) from this palette. The 2000-Series I/O Module palette is shown below.

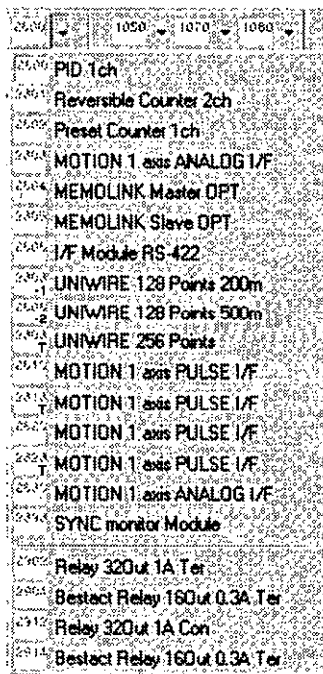


The 2000-Series I/O Modules (27□□) are listed in the following table.

Name	Model Number
Register 8 x 16-bit Output Module	B2700
Register 8 x 16-bit Input Module	B2701
D/A (0–10V) 2ch 16bit OUT: Analog Output Module	B2702
A/D (0–10V) 8ch 16bit IN: Analog Input Module	B2703
Measure Unit Input Module	B2705
Pulse Catch 16In Ter: Pulse Catch Module	B2707
Register Out 8 x 16-bit Con: Register Output Module	B2710
Register In 8 x 16-bit Con: Register Input Module	B2711
D/A (0–5V) 2ch 12bit OUT: Analog Output Module	B2712
D/A (±5V) 2ch 12bit OUT: Analog Output Module	B2722
D/A (±10V) 2ch 12bit OUT: Analog Output Module	B2732
A/D (±10V) 8ch 12bit IN: Analog Input Module	B2733
D/A (4–20mA) 2ch 12bit OUT: Analog Output Module	B2742
A/D (4–20mA) 8ch 12bit IN: Analog Input Module	B2743

i) 2000-Series I/O Module (28□□ and 29□□) Palette

Select the 2000-Series I/O Modules (28□□ and 29□□) from this palette. The 2000-Series I/O Module palette is shown below.



The 2000-Series I/O Modules (28□□ and 29□□) are listed in the following table.

Name	Model Number
PID Module, 1 channel	B2800
Reversible Counter Module, 2 channels	B2801
Preset Counter Module, 1 channel	B2802
1-Axis Motion Module, Analog Interface	B2803
MEMOLINK Master Module, Optical	B2804
MEMOLINK Slave Module, Optical	B2805
RS-422 Interface Module	B2806
Uniwire Module, 128 points, 200 m	B2808-1
Uniwire Module, 128 points, 500 m	B2808-2
Uniwire Module, 256 points	B2808T
1-Axis Motion Module, Pulse Interface	B2813
1-Axis Motion Module, Pulse Interface	B2813T
1-Axis Motion Module, Pulse Interface	B2823
1-Axis Motion Module, Pulse Interface	B2823T
1-Axis Motion Module, Analog Interface	B2833
SYNC Monitor Module	B2893
Relay 32 OUT 1 A Ter: Relay Contact 32-point Output Module	B2902
Bestact Relay 16 OUT 1 A Ter: Relay Contact 16-point Output Module	B2904
Relay 32 OUT 1 A Con: Relay Contact 32-point Output Module	B2912
Bestact Relay 16 OUT 1 A Ter: Relay Contact 16-point Output Module	B2914

j) 1000-Series I/O Module (105□ and 106□) Palette

Select the 1000-Series I/O Modules (105□ and 106□) from this palette. The 1000-Series I/O Module palette is shown below.

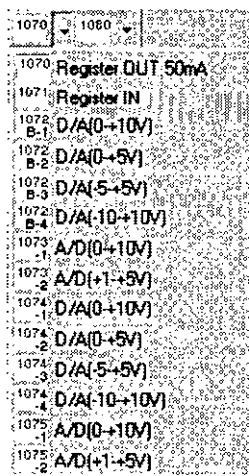
1050	100-VAC 16-point Output Module
1051	100-VAC 16-point Input Module
1052	5/12-VDC 16-point Output Module
1053	5/12-VDC 16-point Input Module
1054	200-VAC 16-point Output Module
1055	200-VAC 16-point Input Module
1056	48-VDC 16-point Output Module
1057	48-VDC 16-point Input Module
1058	24-VDC 16-point Output Module
1059	24-VDC 16-point Input Module
1060	24-VDC 64-point Output Module
1061	24-VDC 64-point Input Module
1062	24-VDC 32-point Output Module
1063	24-VDC 32-point Input Module
1064	24-VDC 32-point Output Module
1065	24-VDC 32-point Input Module
1066	24-VDC 32-point Output Module
1067	24-VDC 32-point Input Module

The 1000-Series I/O Modules (105□ and 106□) are listed in the following table.

Name	Module
100-VAC 16-point Output Unit	B1050
100-VAC 16-point Input Unit	B1051B
5/12-VDC 16-point Output Unit	B1052
5/12-VDC 16-point Input Unit	B1053
200-VAC 16-point Output Unit	B1054
200-VAC 16-point Input Unit	B1055
48-VDC 16-point Output Unit	B1056
48-VDC 16-point Input Unit	B1057
24-VDC 16-point Output Unit	B1058
24-VDC 16-point Input Unit	B1059C
24-VDC 64-point Output Unit	B1060
24-VDC 64-point Input Unit	B1061
24-VDC 32-point Output Unit	B1062
24-VDC 32-point Input Unit	B1063
24-VDC 32-point Output Unit	B1064
24-VDC 32-point Input Unit	B1065
24-VDC 32-point Output Unit	B1066
24-VDC 32-point Input Unit	B1067B

k) 1000-Series I/O Module (107□) Palette

Select the 1000-Series I/O Modules (107□) from this palette. The 1000-Series I/O Module palette is shown below.

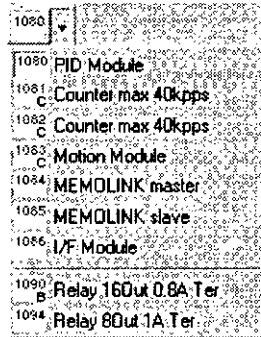


The 1000-Series I/O Modules (107□) are listed in the following table.

Name	Model Number
Register OUT 50 mA: Register Output Module	B1070
Register IN: Register Input Module	B1071
D/A(0→+10V): Analog Output Module	B1072B-1
D/A(0→+5V): Analog Output Module	B1072B-2
D/A(±5V): Analog Output Module	B1072B-3
D/A(±10V): Analog Output Module	B1072B-4
A/D (0→+10V): Analog Input Module	B1073-1
A/D (+1→+5V): Analog Input Module	B1073-2
D/A(0→+10V): Analog Output Module	B1074-1
D/A(0→+5V): Analog Output Module	B1074-2
D/A (±5V): Analog Output Module	B1074-3
D/A(±10V): Analog Output Module	B1074-4
A/D (0→+10V): Analog Input Module	B1075-1
A/D (+1→+5V): Analog Input Module	B1075-2

I) 1000-Series I/O Module (108□ and 109□) Palette

Select the 1000-Series I/O Modules (108□ and 109□) from this palette. The 1000-Series I/O Module palette is shown below.



The 1000-Series I/O Modules (108□ and 109□) are listed in the following table.

Name	Model Number
PID Module	B1080
Counter max 40kpps: Counter Module	B1081C
Counter max 40kpps: Counter Module	B1082C
Motion Module	B1083C
MEMOLINK Master Module	B1084
MEMOLINK Slave Module	B1085
Interface Module	B1086
Relay 16OUT 0.8A Ter: Relay Contact 16-point Output Module	B1090B
Relay 8OUT 1A Ter: Relay Contact 8-point Output Module	B1094

4.3.5 Ladder Palettes

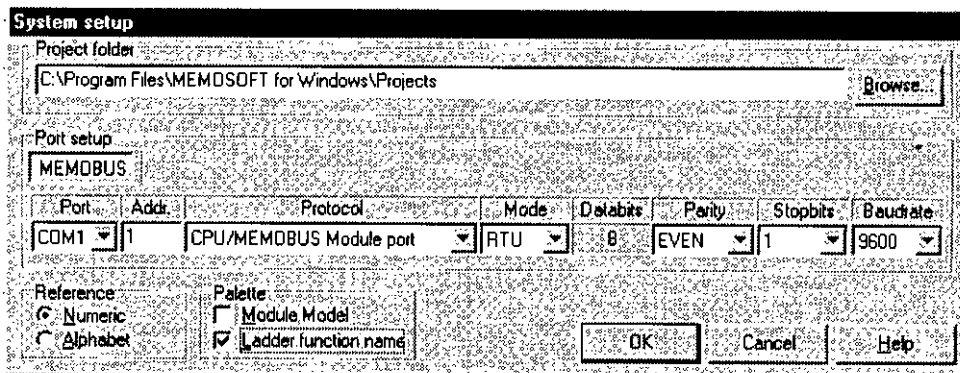
1) Outline

The ladder palettes are used to select the ladder instructions to use on the Ladder Programming Window. When clicked, any button will remain in a selected state. You can click the button again to deselect it.

The ladder palettes also provide drop-down menus. If an instruction is selected from a pull-down menu, the button on the palette will change to one for the selected instruction and will remain in a selected state.

Either ladder symbols or ladder function names can be selected for display on the pull-down menus. This setting can be made after selecting **File (F) – System Setup (F)** from the menus. The default is for ladder symbols.

The System Setup Dialog Box is shown below.



2) Ladder Palette Configuration

The ladder palettes are shown below.



a) Relay and Coil Instruction Palette

Select relays and coils from this palette.

b) Timer and Counter Instruction Palette

Select timer and counter instructions from this palette. The timer and counter instruction palette is shown below.

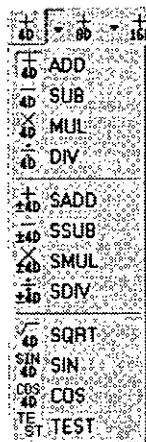


The timer and counter instructions are listed in the following table.

Symbol	Function Name
T1.0	1-SECOND TIMER
T0.1	0.1-SECOND TIMER
T.01	0.01-SECOND TIMER
T1MS	1-MS SECOND TIMER
UCTR	UP COUNTER
DCTR	DOWN COUNTER

c) Single-precision Decimal Math Instruction Palette

Select the single-precision decimal math instructions from this palette. The single-precision decimal math instruction palette is shown below.



The single-precision decimal math instructions are listed in the following table.

Symbol	Function Name
ADD	UNSIGNED SINGLE PRECISION DECIMAL ADDITION
SUB	UNSIGNED SINGLE PRECISION DECIMAL SUBTRACTION
MUL	UNSIGNED SINGLE PRECISION DECIMAL MULTIPLICATION
DIV	UNSIGNED SINGLE PRECISION DECIMAL DIVISION
SADD	SIGNED SINGLE PRECISION DECIMAL ADDITION
SSUB	SIGNED SINGLE PRECISION DECIMAL SUBTRACTION
SMUL	SIGNED SINGLE PRECISION DECIMAL MULTIPLICATION
SDIV	SIGNED SINGLE PRECISION DECIMAL DIVISION
SQRT	SINGLE PRECISION DECIMAL SQUARE ROOT
SIN	DECIMAL SINE
COS	DECIMAL COSINE
TEST	32-BIT COMPARE

d) Double-precision Decimal Math Instruction Palette

Select the double-precision decimal math instructions from this palette. The double-precision decimal math instruction palette is shown below.



The double-precision decimal math instructions are listed in the following table.

Symbol	Function Name
DADD	UNSIGNED DOUBLE PRECISION DECIMAL ADDITION
DSUB	UNSIGNED DOUBLE PRECISION DECIMAL SUBTRACTION
DMUL	UNSIGNED DOUBLE PRECISION DECIMAL MULTIPLICATION
DDIV	UNSIGNED DOUBLE PRECISION DECIMAL DIVISION
SDAD	SIGNED DOUBLE PRECISION DECIMAL ADDITION
SDSB	SIGNED DOUBLE PRECISION DECIMAL SUBTRACTION
DSQR	DOUBLE PRECISION DECIMAL SQUARE ROOT

e) Hexadecimal Arithmetic Instruction Palette

Select the hexadecimal arithmetic instructions from this palette. The hexadecimal arithmetic instruction palette is shown below.



The hexadecimal arithmetic instructions are listed in the following table.

Symbol	Function Name
AD16	16-BIT ADDITION
SU16	16-BIT SUBTRACTION
MU16	16-BIT MULTIPLICATION
DV16	16-BIT DIVISION
AD32	32-BIT ADDITION
SU32	32-BIT SUBTRACTION

f) Transfer Instruction Palette

Select the transfer instructions from this palette. The Transfer Instruction Palette is shown below.



The transfer instructions are listed in the following table.

Symbol	Function Code
R → T	REGISTER-TO-TABLE MOVE
T → R	TABLE-TO-REGISTER MOVE
T → T	TABLE-TO-TABLE MOVE
FIN	FIRST IN
FOUT	FIRST OUT
SRCH	TABLE SEARCH
TSET	TABLE SET
BLKM	BLOCK MOVE
BLKT	BLOCK-TO-TABLE MOVE
TBLK	TABLE-TO-BLOCK MOVE
IBKW	INDIRECT BLOCK WRITE
IBKR	INDIRECT BLOCK READ
DIBT	DESTINATION INDEXED BLOCK TRANSFER 1
DIBR	DESTINATION INDEXED BLOCK TRANSFER 2
SIBT	SOURCE INDEXED BLOCK TRANSFER 1
SIBR	SOURCE INDEXED BLOCK TRANSFER 2

g) Matrix and Bit Instruction Palette

Select the matrix and bit instructions from this palette. The matrix and bit instruction palette is shown below.

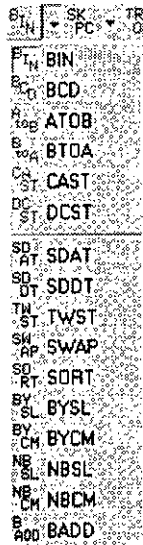


The matrix and bit instructions are listed in the following table.

Symbol	Function Name
AND	LOGICAL AND
OR	LOGICAL OR
XOR	LOGICAL EXCLUSIVE OR
COMP	LOGICAL COMPLEMENT
CMPR	LOGICAL COMPARE
MBIT	LOGICAL BIT MODIFY
SENS	LOGICAL SENSE
BROT	LOGICAL BIT ROTATE
MROT	LOGICAL MULTI-BIT ROTATE
BONT	LOGICAL BIT COUNT
NOBT	NORMALLY OPEN BIT
NCBT	NORMALLY CLOSED BIT
NBIT	NORMAL BIT
SBIT	SET BIT
RBIT	RESET BIT

h) Conversion Instruction Palette

Select the conversion instructions from this palette. The conversion instruction palette is shown below.



The conversion instructions are listed in the following table.

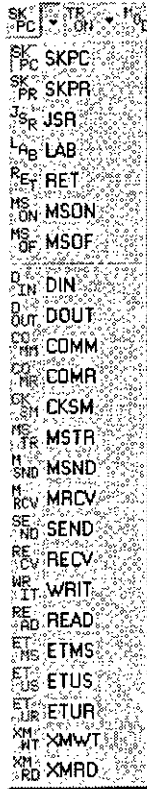
Symbol	Function Name
BIN	BCD-TO-BINARY CONVERSION
BCD	BINARY-TO-BCD CONVERSION
ATOB	ASCII-TO-BINARY CONVERSION
BTOA	BINARY-TO-ASCII CONVERSION
CAST	16-BIT CONVERSION
DCST	32-BIT CONVERSION
SDAT	SET WORD DATA
SDDT	SET DOUBLE WORD DATA
TWST	LOGICAL BYTE REARRANGEMENT
SWAP	SWAP
SORT	SORT
BYSL	BYTE SPLIT
BYCM	BYTE COMPOSITION
NBSL	NIBBLE SPLIT
NBCM	NIBBLE COMPOSITION
BADD	BLOCK ADD

i) Control Instruction Palette

The control instruction palette contains the following groups of instructions

- Program control instructions
- I/O control instructions
- Communications instructions
- Ethernet instructions
- Expansion memory access instructions

The control instruction palette is shown below.



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The control instructions are listed in the following table.

Symbol	Function Name
SKPC	SKIP CONSTANT
SKPR	SKIP REGISTER
JSR	SUBROUTINE JUMP
LAB	SUBROUTINE LABEL
RET	SUBROUTINE RETURN
MSON	MASTER CONTROL ON
MSOF	MASTER CONTROL OFF
DIN	DIRECT INPUT
DOUT	DIRECT OUTPUT
COMM	COMM INSTRUCTION
COMR	COMR INSTRUCTION
CKSM	CHECKSUM
MSTR	MEMOBUS PLUS COMMUNICATIONS
MSND	FBUS MEMOBUS MASTER
MRCV	FBUS MEMOBUS SLAVE
SEND	FBUS MESSAGE SEND
RECV	FBUS MESSAGE RECEIVE
WRIT	WRITE INSTRUCTION
READ	READ INSTRUCTION
ETMS	ETHERNET MASTER
ETUS	ETHERNET USER PROTOCOL MESSAGE SEND
ETUR	ETHERNET USER PROTOCOL MESSAGE RECEIVE
XMWT	EXPANSION MEMORY WRITE
XMRD	EXPANSION MEMORY READ

j) Special Instruction Palette

Select special instructions from this palette. The special instruction palette is shown below.



The special instructions are listed in the following table.

Symbol	Function Name
TRON	TRACEBACK
STAT	SYSTEM STATUS MONITORING
SCIF	SEQUENCE CONTROL INTERFACE
PID2	PID CONTROL

k) Motion Instruction Palette

Select the motion instructions from this palette. The motion instruction palette is shown below.



The motion instructions are listed in the following table.

Symbol	Function Name
MOD	MODE SET
SVN	SERVO ON
MVL	PROGRAM RUN
MVA	Independent Axis Operations (MVA)
MVB	Independent Axis Operations (MVB)
MVC	Independent Axis Operations (MVC)
MVD	Independent Axis Operations (MVD)
ZRN	HOME RETURN
JOG	JOG
STP	STEP
SMD	SINGLE BLOCK MODE
MLK	MACHINE LOCK MODE
MRS	MODULE RESET
RST	MACHINE RESET
ESP	EMERGENCY STOP NOTIFICATION
ARS	ALARM RESET
MON	MONITOR
POS	COORDINATE SETTING
PRM	PARAMETER SETTING
VAR	H VARIABLE SETTING
PTBL	POINT TABLE SETTING
ZST	HOME POSITION SETTING

1) Expansion Math Instruction Palette

Select the expansion math instructions from this palette. The expansion math instruction palette is shown below.



The expansion math instructions are shown in the following table.

Symbol	Function Name
LOG	DECIMAL LOGARITHM
ANLOG	DECIMAL ANTILOGARITHM
CNVIF	CONVERT INTEGER TO FLOATING POINT DECIMAL
ADDIF	INTEGER PLUS FLOATING POINT DECIMAL
SUBIF	INTEGER MINUS FLOATING POINT DECIMAL
MULIF	INTEGER TIMES FLOATING POINT DECIMAL
DIVIF	INTEGER DIVIDED BY FLOATING POINT DECIMAL
SUBFI	FLOATING POINT DECIMAL MINUS INTEGER
DIVFI	FLOATING POINT DECIMAL DIVIDED BY INTEGER
CMPIF	COMPARE INTEGER AND FLOATING POINT
CNVFI	CONVERT FLOATING POINT TO INTEGER
ADDFP	FLOATING POINT ADDITION
SUBFP	FLOATING POINT SUBTRACTION
MULFP	FLOATING POINT MULTIPLICATION
DIVFP	FLOATING POINT DIVISION
CMPFP	FLOATING POINT COMPARISON
SQRFP	FLOATING POINT SQUARE ROOT
CHSIN	FLOATING POINT CHANGE SIGN
PI	FLOATING POINT PI LOAD
SINE	FLOATING POINT RADIAN SINE
COSE	FLOATING POINT RADIAN COSINE
TAN	FLOATING POINT RADIAN TANGENT
ARSIN	FLOATING POINT RADIAN ARC SINE
ARCOS	FLOATING POINT RADIAN ARC COSINE
ARTAN	FLOATING POINT RADIAN ARC TANGENT
CNVRD	RADIANS TO DEGREES CONVERSION
CNVDR	DEGREES TO RADIANS CONVERSION
POW	FLOATING POINT INTEGER POWER
EXP	FLOATING POINT EXPONENTIAL FUNCTION
LNFP	FLOATING POINT NATURAL LOGARITHM
LOGFP	FLOATING POINT DECIMAL LOGARITHM
ERLOG	FLOATING POINT ERROR LOG READ

Setting the System Configuration

5

This chapter describes the settings for the CPU Module and communications parameter settings for Remote I/O, PLC Links, MEMOBUS, and Ethernet.

5.1	Setting the System Configuration	5-2
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5.1 Setting the System Configuration

This section outlines the settings made from the Project Manager and System Configuration Node.

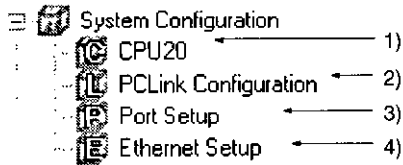
5.1.1	Outline	5-2
5.1.2	Configuration of the System Configuration Node	5-2

5.1.1 Outline

When a MEMOSOFT project is first created, the basic system configuration must be set, including the model of CPU Module and communications parameters. These settings are made from the System Configuration Node. Under the System Configuration Node, there are also nodes for setting communications parameters for PC Links, MEMOBUS, and Ethernet.

5.1.2 Configuration of the System Configuration Node

The System Configuration Node is shown below.



1) CPU Node

The CPU Node is used to edit basic system settings for the CPU Module, including the following.

- Setting the PLC type
- Setting CPU reference ranges
- Setting PC Link reference ranges
- Setting the number of MC20 Modules
- Changing system registers
- Setting communications parameters for the RS-232C ports

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- Allocating Remote I/O Driver Modules
- Allocating ASCII Modules

2) PC Link Configuration Node

The PC Link Configuration Node is used to allocate PC Link Modules and set parameters for them.

3) Port Setup Node

The Port Setup Node is used to make settings for MEMOBUS Modules.

4) Ethernet Setup Node

The Ethernet Setup Node is used to make settings for Ethernet Interface Modules.

5.2 Setting CPU Modules

This section describes basic setting procedures for the CPU Module

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5.2.1 Outline

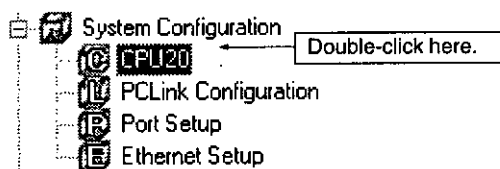
Basic CPU Module settings are made by opening the CPU Parameter Setup Dialog Box from the CPU Node. The basic CPU Module settings are made using the following tabs.

- Reference ranges
- MC20
- System registers
- RS-232C port setup
- Remote

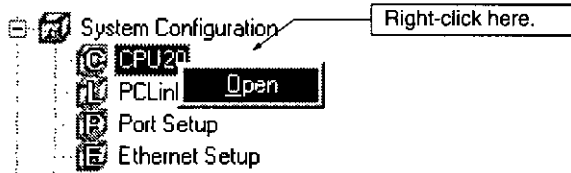
5.2.2 Opening the CPU Parameter Setup Dialog Box

Use one of the following steps to open the CPU Parameter Setup Dialog Box.

- Double-click the CPU Node.

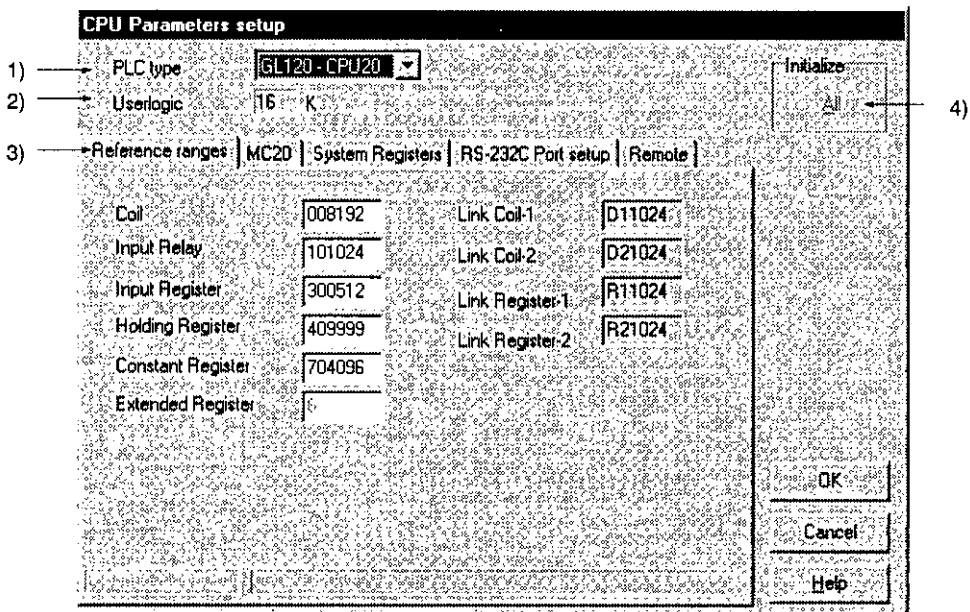


- Point at the CPU Node, click the right mouse button, and select **Open**.



5.2.3 Configuration of the CPU Parameter Setup Dialog Box

The configuration of the CPU Parameter Setup Dialog Box is shown below.



1) PLC Type

Sets the model of CPU Module being used.

2) User Logic

Indicates the size of ladder program that can be created in Kbytes. The size shown depends on the CPU Module that has been set and cannot be changed directly.

3) Tabs

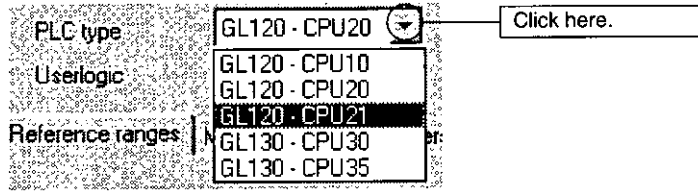
Select the groups of items to be set.

4) Initialize Button

Restores all settings in the CPU Parameter Setup Dialog Box to their default settings.

5.2.4 CPU Module (PLC Type)

Set the model of CPU Module being used by clicking the drop-down button on the PLC type box and selecting the model from the list of models that will appear.

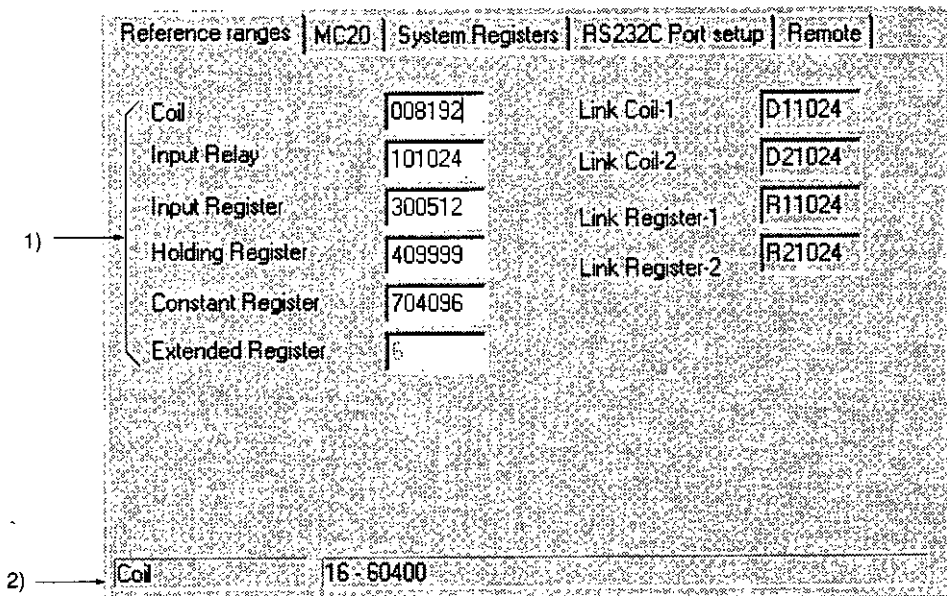


5.2.5 CPU Module Reference Ranges

- 1) The ranges of references that can be set will be initialized when the CPU Module is set. The ranges can be altered from the MEMOSOFT within the applicable ranges for the CPU Module to be used. For example, if more holding registers are required in programming, some of the constant registers can be changed to holding registers.

Normally, the default reference ranges are designed to enable programming, and the reference ranges should not be changed unless there is a specific reason for doing so.

- 2) The configuration of the Reference Range Tab is shown below.



1) References

Input the maximum reference number to use for each type of reference. It is not necessary to input the fixed leading character.

Examples for Holding Registers: Number: 4XXXXX, Letter: WXXXXX

Link references are set on the PC Link Allocation Dialog Box and cannot be set here. Refer to 5.3 Setting PC Link Modules for details.

2) Status Bar

Displays the name of the currently selected references and the input range.

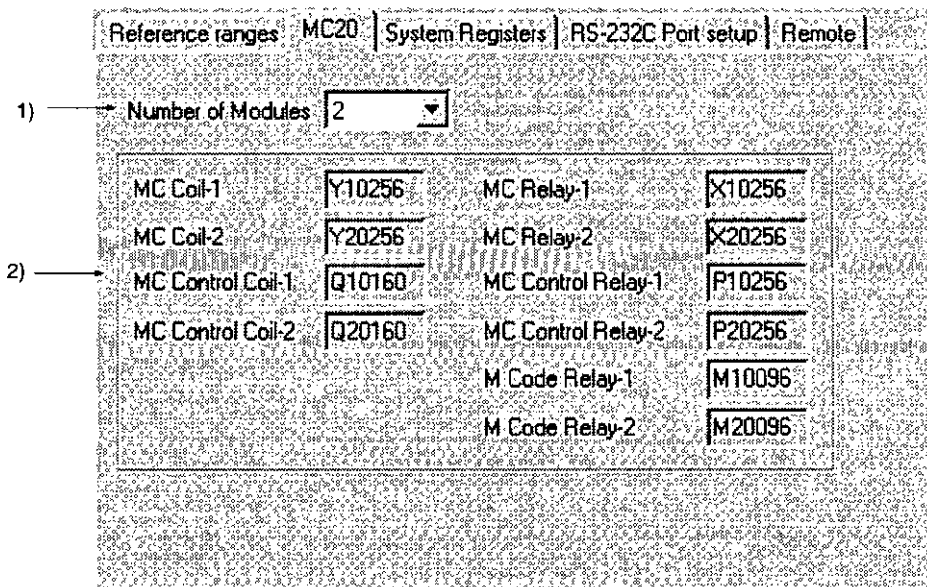


The ranges of references that can be set depends on the model of CPU Module. Refer to the following manuals for details.

- CPU 20, CPU30, or CPU35: MEMOCON GL120, GL130 Hardware User's Manual (SIEZ-C825-20.1)
- CPU10: MEMOCON GL120, GL130 CPU10 Module User's Manual (SIEZ-C825-20.1-1)
- CPU21: MEMOCON GL120, GL130 CPU21 Module User's Manual (SIEZ-C825-20.1-2)

5.2.6 Setting the Number of MC20 Modules

- 1) The number of MC20 Modules that can be used depends on the selected system. Here, the number of MC20 Modules can be set, but the reference ranges cannot be set.
- 2) The configuration of the MC20 Tab is shown below.



1) Number of Modules

Set the number of MC20 Modules to be mounted in the PLC.

2) References

Input the maximum reference number to use for each type of reference.

5.2.7 Setting System Registers

1) Specific references numbers are allocated to the battery coil, calender, and other system coils and registers by default. There is no need to change these allocations unless different reference numbers need to be used.

2) The configuration of the System Registers Tab is shown below.

	Reference ranges	MC20	System Registers	RS-232C Port setup	Remote
	Battery Coil		008192		
	Constant Sweep		409998	409999	
	High-Speed scan time		409997		
1) →	Timer Register		409996		
	Stepping Relay		402001	402032	
	Calender		409988	409995	
	MC Link Register1		409842	409914	
	MC Link Register2		409915	409987	
	Ladder Edit Flag Register				
2) →	[Coil Range]	8192		[Holding Register Range]	9999

1) References

Input the reference numbers for the system coils and registers.

2) Status Bar

The highest reference numbers for output coils and holding registers set on the Reference Ranges Tab are displayed.

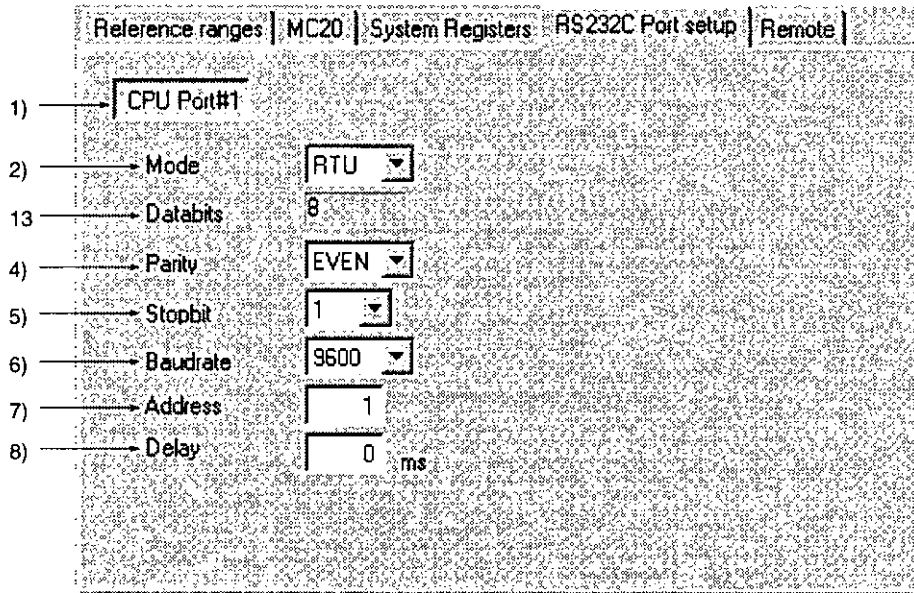


The high-speed scan time cannot be set for the CPU10 Module.

5

5.2.8 MEMOBUS Port Settings

- 1) The RS-232C Port Setup Tab is used to set the communications parameters for the MEMOBUS port on the CPU Module. The MEMOBUS port is an RS-232C port.
- 2) The configuration of the RS-232C Port Setup Tab is shown below.



1) CPU Port

Indicates the number of the MEMOBUS port. Port 2 can also be displayed with the CPU10 Module.

2) Mode

Sets the communications mode to either RTU or ASCII. The default is RTU.

3) Data Bits

Indicates the number of data bits. The number of data bits will be automatically set according to the communications mode. The default is for 8 bits.

4) Parity

Sets the parity to none, even, or odd. The default is even parity.

5) Stop Bits

Sets the number of stop bits to 1 or 2. The default is 1.

6) Baud Rate

Sets the baud rate in bps. The default is 9,600 bps.

7) Address

Sets a unique address used to identify the PLC. The setting range is 1 to 247. The default is 1.

8) Delay

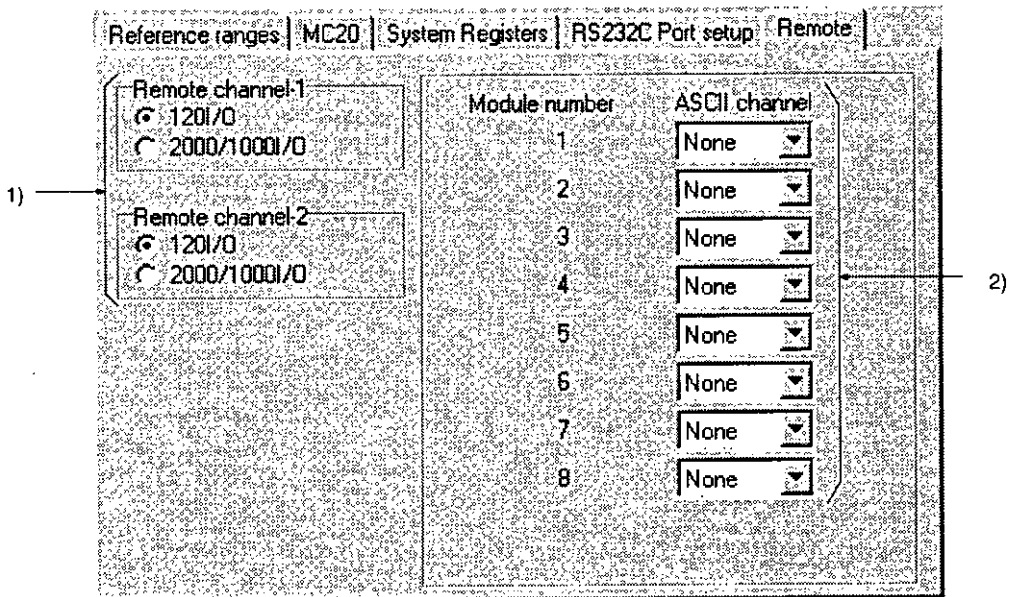
Sets a communications delay in multiples of 10 ms. The setting range is 0 to 200. The default is 0.

5.2.9 Setting the Remote I/O Driver Module

1) To use a Remote I/O System, the type of I/O Modules on the remote channel must be set. The channel numbers and I/O Module types are set on DIP switches on the Remote I/O Driver Module.

If ASCII Modules are used, they must be set for use either on remote channel 1 or on remote channel 2. The module numbers are set on rotary switches on the ASCII Modules.

2) The configuration of the Remote Tab is shown below.



1) Remote Channel I/O Types

Set the I/O type of the Modules connected to each remote channel.

2) ASCII Channels

Set the remote channel to which each ASCII Module is connected according to the module numbers.

5.3 Setting PC Link Modules

This section describes the setting procedures for PC Link Modules.

5.3.1	Outline	5-12
5.3.2	Opening the PC Link Configuration Dialog Box	5-12
5.3.3	Configuration of the PC Link Configuration Dialog Box	5-13
5.3.4	Allocating PC Links	5-15
5.3.5	Importing and Exporting with Text Files	5-16

5.3.1 Outline

1) PC Link Modules can be used to access reference data from other PLCs connected to the PC Link System. PC Links must be allocated to enable accessing reference data. To access PC Links, open the PC Link Allocation Setup Dialog Box from the PC Link Allocation Node.

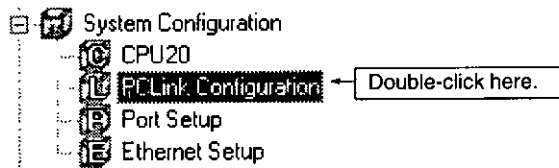
2) Refer to the following manual for details on PC Link Modules.

- MEMOCON GL120, GL130 PC Link Module User's Manual (SIEZ-C825-70.4)

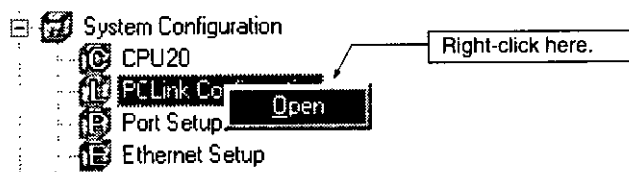
5.3.2 Opening the PC Link Configuration Dialog Box

Use one of the following steps to open the PC Link Allocation Dialog Box.

- Double-click the PC Link Configuration Node.

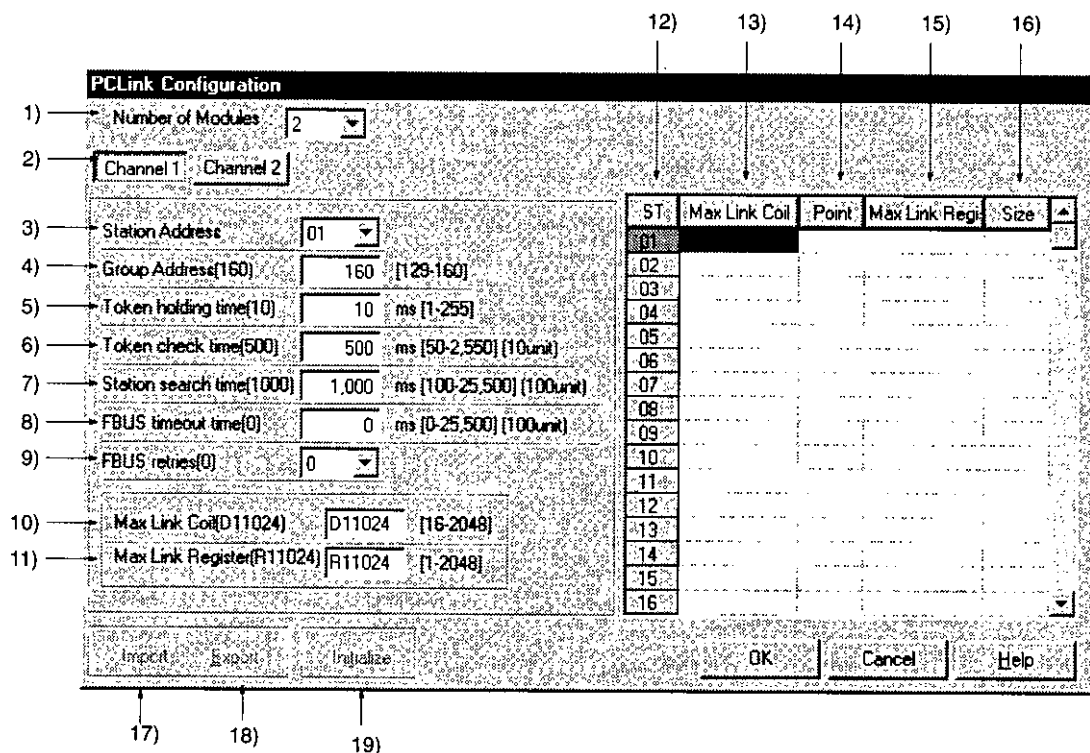


- Point at the PC Link Configuration Node, click the right mouse button, and select **Open**.



5.3.3 Configuration of the PC Link Configuration Dialog Box

The configuration of the PC Link Configuration Dialog Box is shown below.



1) Number of Modules

Sets the number of PC Link Modules used. The default is 2 Modules. Only "1" can be set for the CPU10 Module.

2) Channel

Sets the channel to be set. The button will remain in a selected state when clicked. The channel numbers are set on the DIP switch on the PC Link Module.

3) Station Address

Sets the station address for the write map. The station address is also set on the rotary switch on the PC Link Module.

4) Group Address

Sets a group address to enable sending data by groups. The default is 160.

5) Token Holding Time

Sets the time in ms that the station will hold the token. The default is 10 ms.

6) Token Check Time

Sets a monitoring time in ms to check if the station is operating properly. The default is 500 ms.

7) Station Search Time

Sets the time in ms to periodically check for new stations added to the system. The default is 1,000 ms.

8) FBUS Timeout Time

Sets the timeout time in ms to detect FBUS communications errors. The default is 0 ms.

9) FBUS Retries

Sets the number of retries for FBUS communications errors. The default is 0.

10) Max. Link Coil

Sets the highest reference number to be used for link coils. The setting changes depending on the selected channel.

11) Max. Link Register

Sets the highest reference number to be used for link registers. The setting changes depending on the selected channel.

12) Station Number

Indicates the station number of the PC Link Module. Station numbers in the write map are displayed in red.

13) Max. Link Coil

Sets the leading reference number for link coils.



Write map

The write map determines the link data that will be output to other stations on the PC Link System. Data will not be output to other stations unless a write map is set.

Read map

The read map determines the link data that will be read from other stations on the PC Link System. Data will not be read and the data will always be 0 or OFF from other stations unless a read map is set.

5

14) Points

Sets the number of link coils to allocate.

15) Max. Link Register

Sets the leading reference number for link registers.

16) Size

Sets the number of link registers to allocate.

17) Export Button

Saves the communications parameter settings and PC Link allocation data to a text file.

18) Import Button

Reads files saved with the Import Button 17).

19) Initialize Button

Returns all settings to their default values.

IMPORTANT

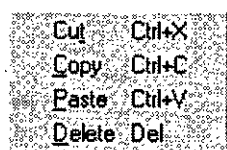
- (1) Link coils and link registers in the read map function the same as input relays and input registers, i.e., they cannot be written.
- (2) The maximum size of a write map for any one station is a total of 512 bytes for coils and registers. (Number of coils/8 + Number of registers x 2 ≤ 512)



- 1) Input only the rightmost four digits of reference numbers for link coils and link registers. Of those four digits, any leading zeros may be omitted. For example, to input link coil D10017, just input "17."
- 2) Set reference numbers for link coils using values of $16n + 1$, where $n = 0, 1, 2$, etc. Set the number of points as $16n$, where $n = 1, 2, 3$, etc. There are no restrictions for the reference numbers for link registers.

5.3.4 Allocating PC Links

- 1) PC Link allocations are made using items 12) to 16) on the PC Link Module Allocation Setup Dialog Box.
- 2) Allocation data for link references is allocated by rows. Rows can be selected by clicking and dragging. A pop-up menu will appear if the right mouse button is pressed on the selected rows. This pop-up menu is shown below.



- **Cut**
Clears the data from the selected rows and places it on the clipboard.
- **Copy**
Places a copy of the selected rows on the clipboard.
- **Paste**
Pastes the contents of the clipboard to the selected rows. Pasting is possible if data has been previously cut or copied.
- **Delete**
Delete the selected rows.

Note Pasting is not possible unless one or more rows has been selected. Click and drag to select one or more rows before pasting.

5.3.5 Importing and Exporting with Text Files

1) Text File Operations

a) Text file operations are accessed through the Import Button and Export Button on the PC Link Configuration Dialog Box. There are two text file operations.

- **Export**
Link communications parameters and allocation data can be saved to text files as ASCII data. The resulting file can be edited with a standard text editor, and then imported back into MEMOSOFT.

- **Import**
Text files containing ASCII data in the MEMOSOFT format can be imported. The imported data will overwrite the link communications parameters and allocation data.

b) Exporting allocation tables to text files enables using the data with other programs. The format of the exported text files is shown below.

```

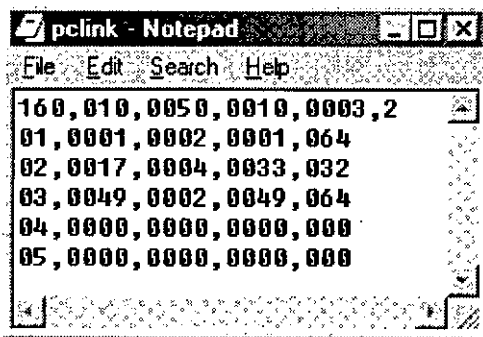
AAA, BBB, CCCC, DDDD, EEEE, F
01, GGGG, HHHH, IIII, JJJ
02, GGGG, HHHH, IIII, JJJ
03, GGGG, HHHH, IIII, JJJ
      |
      |
      |
32, GGGG, HHHH, IIII, JJJ

```

AAA:	Group address	GGGG:	Rightmost 4 digits of leading link coil reference number
BBB:	Token holding time	HHHH:	Number of points (x 8 bits)
CCCC:	Token check time (x 10 ms)	IIII:	Rightmost 4 digits of leading link register reference number
DDDD:	Station search time (x 100 ms)	JJJ:	Register size (x 8 bits)
EEEE:	FBUS timeout time (x 100 ms)		
F:	FBUS retries		



- c) Two points will be allocated for each 16 link coils. A size of two will be allocated for each link register. An example of a text file is shown below.



```
pmlink - Notepad
File Edit Search Help
160,010,0050,0010,0003,2
01,0001,0002,0001,064
02,0017,0004,0033,032
03,0049,0002,0049,064
04,0000,0000,0000,000
05,0000,0000,0000,000
```

2) Export

To save the data in a file, click the Export Button on the PC Link Allocation Dialog Box. A Dialog Box will appear to save the text file. Input the file name to save and click the Save Button.

3) Import

To import data from a file, click the Import Button on the PC Link Allocation Dialog Box. A dialog box will appear to import data from a file. Input the name of the file to import and click the Open Button.

5.4 Setting MEMOBUS Modules

This section describes the operations to set MEMOBUS Modules.

5.4.1	Outline	5-18
5.4.2	Opening the COMM Parameters Setup Dialog Box	5-18
5.4.3	Configuration of the COMM Parameters Setup Dialog Box	5-19

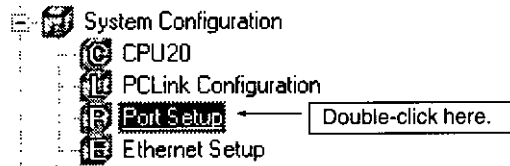
5.4.1 Outline

- 1) Port parameters must be set to enable RS-232C communications through a MEMOBUS Module. MEMOBUS port settings are made by opening the COMM Parameter Setup Dialog Box from a Port Setup Node.
- 2) Refer to the following Modules for details on MEMOBUS Modules.
 - MEMOCON GL120, GL130 COM Instructions User's Manual (SIEZ-C825-70.14)

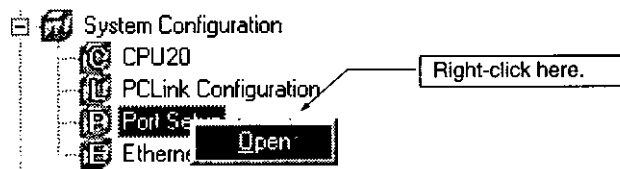
5.4.2 Opening the COMM Parameters Setup Dialog Box

Use one of the following steps to open the COMM Parameters Setup Dialog Box.

- Double-click the Port Setup Node.



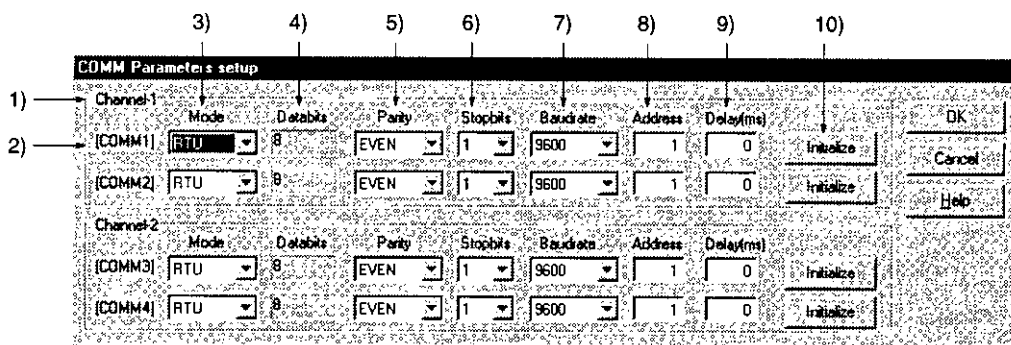
- Point at the Port Setup Node, click the right mouse button, and select **Open**.



5

5.4.3 Configuration of the COMM Parameters Setup Dialog Box

The configuration of the COMM Parameters Setup Dialog Box is shown below.



1) Module Number

Indicates the channel number (module number) set on the DIP switch on the MEMOBUS Module.

2) Port Number

Indicates the MEMOBUS port number. Communications parameters are set separately for each MEMOBUS port.

3) Mode

Set the communications mode to RTU or ASCII. The default is RTU.

4) Data Bits

Indicates the number of data bits. The number of data bits will be automatically set according to the communications mode. The default is for 8 bits.

5) Parity

Sets the parity to none, even, or odd. The default is even parity.

6) Stop Bits

Sets the number of stop bits to 1 or 2. The default is 1.

7) Baud Rate

Sets the baud rate in bps. The default is 9,600 bps.

8) Address

Sets a unique address used to identify the PLC. The default is 1.

9) Delay

Sets a communications delay in multiples of 10 ms. The default is 0.

10) Initialize Button

Returns all settings to their default values.

5.5 Setting Ethernet Interface Modules

■ This section describes the operations to set Ethernet Interface Modules.

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5.5.3	Configuration of the Ethernet Setup Dialog Box	5-22
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5.5.5	Remote Settings	5-25

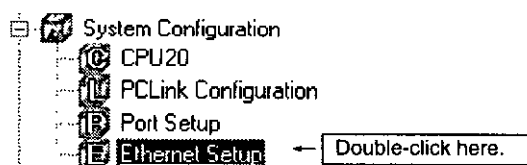
5.5.1 Outline

- 1) An Ethernet network can be constructed using Ethernet Interface Modules. Ethernet parameters are set by opening the Ethernet Setup Dialog Box from the Ethernet Setup Node.
- 2) Refer to the following manual for details on the Ethernet Interface Module.
 - MEMOCON GL120, GL130 Ethernet Interface Module User's Manual (SIEZ-C825-70.21)

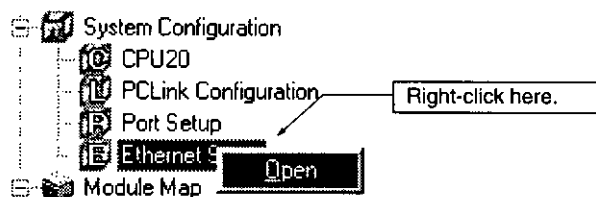
5.5.2 Opening the Ethernet Setup Dialog Box

Use one of the following steps to open the Ethernet Setup Dialog Box.

- Double-click the Ethernet Setup Node.

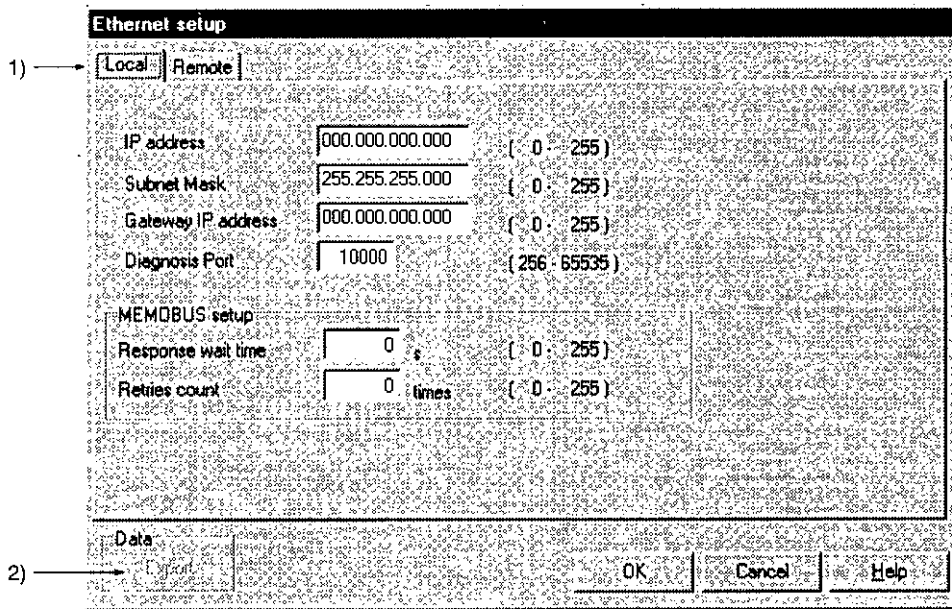


- Point at the Ethernet Setup Node, click the right mouse button, and select **Open**.



5.5.3 Configuration of the Ethernet Setup Dialog Box

The configuration of the Ethernet Setup Dialog Box is shown below.



1) Tabs

Select settings for either the local or remote nodes.

2) Export Button

Updates the parameters. The Export Button cannot be used offline.

5

5.5.4 Local Settings

The configuration of the local settings is shown below.

The screenshot shows the 'Ethernet setup' dialog box with the 'Local' tab selected. The settings are as follows:

Field	Value	Range
1) IP address	000.000.000.000	(0 - 255)
2) Subnet Mask	255.255.255.000	(0 - 255)
3) Gateway IP address	000.000.000.000	(0 - 255)
4) Diagnosis Port	10000	(256 - 65535)
MEMD9US setup		
5) Response wait time	0	(0 - 255)
6) Retries count	0 times	(0 - 255)

At the bottom of the dialog, there are buttons for 'Data', 'OK', 'Cancel', and 'Help'.

1) IP Address

The local IP address (Internet protocol). The default is 000.000.000.000.

2) Subnet Mask

The subnet mask for the local IP address. If you do not need to use the subnet mask, set it to 000.000.000.000. The default is 255.255.255.000.

3) Gateway IP Address

Sets the IP address of a gateway when communicating with another network connected through a gateway. If you are not using a gateway, set the gateway IP address to 000.000.000.000. The default is 000.000.000.000.

4) Diagnosis Port

The diagnosis port number. This port number is normally not used. A port number can be specified to connect a personal computer or workstation to enable monitoring the RAM and other status in the Ethernet Interface Module. A test tool running on the Ethernet network can be used to diagnosis the Ethernet Interface Module. The diagnosis port number specifies the port to be used for the test tool. The default is 10000.

5) Response Wait Time

Sets the time to wait for a response when a command is sent using the ETMS ladder instruction. If a response is not returned by the remote node within the specified time, the

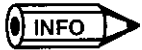
send operation will be retried for the number of times specified for the *Retry Count*, described below. The default is 0.

6) Retries

Set the number of times to retry the send operation when timeouts occur for the ETMS ladder instruction. If the send operation is retried the specified number of times and still there is no response, an error will be returned to the CPU Module that executed ETMS. The default is 0.

Note Observe the following precautions when changing parameters.

- 1) Do not create inconsistencies with other nodes when setting communications parameters, such as IP addresses and port numbers. All settings must be determined by the network administrator.
- 2) Parameters are updated when changing from the Ethernet Setup Dialog Box to another window. Even if parameters are changed on-screen and online, the actual parameters will not be changed and the previous parameters will be used until the window is changed. To change the parameters at any time, click the Export Button or switch to a different window.
- 3) If any of the local parameters are changed online, all communications for the local node will be interrupted. If parameters are changed for a remote node, only communications for that remote node will be interrupted, i.e., other communications for the local node will not be affected.



- 1) If the response wait time is set to 0, set the retry count to 0. A response wait time setting of 0 indicates an infinite wait.
- 2) Do not use IP addresses beginning with 127 (127.xxx.xxx.xxx). These addresses are used for testing.
- 3) Parameters will be checked for inconsistencies when any parameter is exported or changed. Errors will be displayed for any inconsistencies. Correct the parameter settings.

5.5.5 Remote Settings

The configuration of the remote settings is shown below.

	1)	2)	3)	4)	5)	6)	7)	8)
Ethernet setup								
Local Remote								
CNO	Local Port	Host IP Address	Host Port	Conn Type	Protocol	Code	Host MAC Address	
01	10010	192.168.001.002	2000	TCP	MEMOBUS	ASCII	00.34.56.78.9A.BC	
02	10011	000.000.000.000	0	TCP	MEMOBUS	RTU	00.00.00.00.00.00	
03								
04								
05	10012	192.168.001.003	2000	TCP	MEMOBUS	ASCII	34.56.78.9A.FF.EE	
06								
07								
08								
09								
10								
Initialize								
Data								
OK Cancel Help								

1) CNO: Connection Number

The Ethernet Interface Unit uses connection numbers to distinguish between different remote nodes when performing communications. Connection numbers can be set to between 1 and 19.

Connection numbers 1 to 15 are used for the ETMS, ETUS, and ETUR ladder instructions, as well as for slave communications. Connection numbers 16 to 19 are used for slave communications for special MEMOBUS commands.



Selecting Rows

Click in the CNO column to select a row. Then click the right mouse button to access the pop-up menu to edit the row. Only one row can be selected at a time.

2) Local Port

Set the local port number for each connection. Set the local port number to 0 if the connection is not used.

3) Host IP Address

Set the remote IP address for each connection. The default is 000.000.000.000.

4) Host Port

Set the port number for the remote node for each connection. The default is 0.

5) Connection Type

Set the protocol for the transport layer. Double-click the cell to select either TCP or UDP from the pull-down menu. The default is TCP.

6) Protocol

Set the host protocol, i.e., the application protocol, for each connection. Double-click the cell to select one of the following from the pull-down menu:

- MEMOBUS: MEMOBUS protocol
- MEMO-EX: MEMOBUS expansion protocol
- MELSEC: MELSEC protocol
- THROUGH: No protocol

The default is MEMOBUS.

7) Code

Set the code type for communications data according to the host protocol for each connection. Double-click the cell to select either RTU or ACSII from the pull-down menu. The default is RTU.

8) Host MAC Address

If the remote node does not support an address resolution protocol (ARP), set the MAC address (Ethernet address) of the remote node. Set the MAC address as a hexadecimal number. If the remote node has an ARP, set the MAC address to 00:00:00:00:00:00. The default is 00:00:00:00:00:00.

9) Initialize Button

Click the Initialize Button to set the remote node to the default settings.

Note A connection parameter consistency check is performed to ensure that the following restrictions are met. If the parameters are not consistent, you will not be able to set them.

- a) Local Port Number Duplication
The combination of the local port number and connection type must not be used by any other connection.
- b) System Port Duplication
If the connection type is TCP, the local port number must not be the same as the diagnosis port number.

- c) **Open Mode**
If the IP address a remote node is all zeros, the remote port number must be 0 and the host MAC address must be all zeros.

- d) **Remote Node Duplication**
The combination of the remote IP address, remote port number, and the connection type must not be used by any other connection unless the remote IP address and remote port number are all zeros.

- e) **Host MAC Address**
If the same host MAC address is set more than once, the remote IP address must be the same unless the host MAC address is all zeros.

- f) **Networks**
If a gateway is not used, the subnet-masked local IP address and the remote IP address must have the same network address.

Setting the Module Configuration

6

This chapter describes the operations required to set the module configuration, allocate I/O references, and set remote I/O.

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6.1 Module Configuration Window

This section describes the configuration of, opening/closing methods for, and other information on Module Configuration Window used to allocate Modules.

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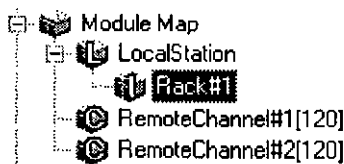
6.1.1 Outline

The Module Configuration Window provides an interface for allocating Modules based on images similar to actually mounting Modules on Racks. I/O references can be allocated and parameters set as required for each Module.

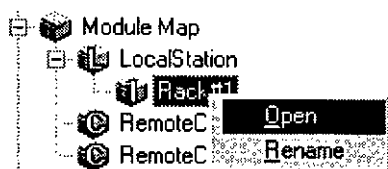
6.1.2 Opening the Module Configuration Window

There are two ways to open the Module Configuration Window, as shown below. The same method is used for both local and remote channels.

- Double-click a Rack Node under the Module Configuration Node in the Project Manager.

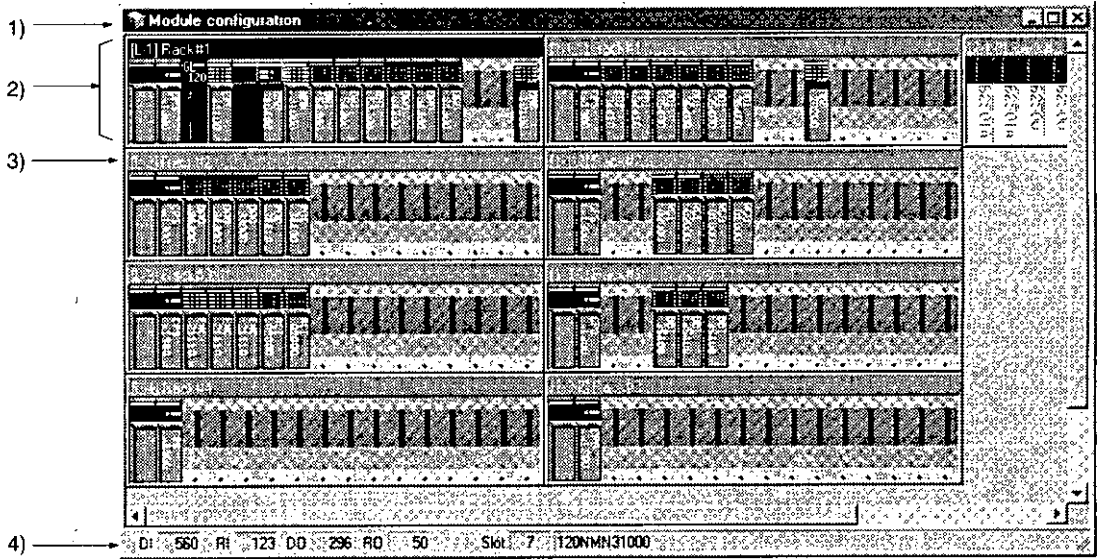


- Point at a Rack Node under the Module Configuration Node in the Project Manager, right click, and select **Open** from the pop-up menu.



6.1.3 Configuration of the Module Configuration Window

The configuration of the Module Configuration Window is shown below.



1) Module Configuration Window Title Bar

Indicates that the Module Configuration Window is being displayed.

2) Rack Window

Graphically represents an actual Rack to enable Modules to be allocated.

3) Rack Window Title Bar

Indicates the channel, station, rack number, and rack name.

4) Status Bar

Indicates the total numbers of input relays, output coils, input registers, and output registers that have been allocated, the slot position that has been selected, and the module model numbers.

6.1.4 Menu Bar Configuration

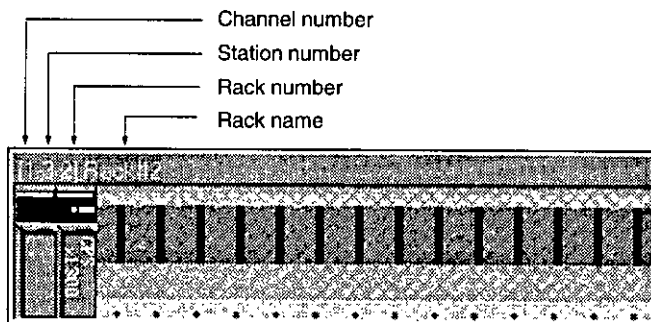
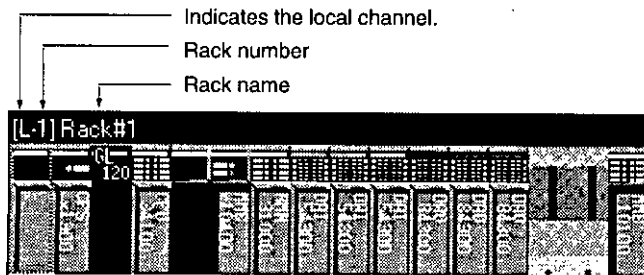
The following menus are provided on the menu bar when the Module Configuration Window is active.



Menu/Command	Function
Rack	
Add Rack	Adds a Rack.
Delete Rack	Deletes a Rack.
Edit	
Cut	Cuts the selected item and places a copy in the buffer.
Copy	Copies the selected item to the buffer.
Paste	Pastes the contents of the buffer.
Delete	Deletes the selected item.
Arrange	
Tile	Aligns the Racks horizontally or vertically on the display.
Cascade	Cascades the Racks on the display.

6.1.5 Title Bar Configuration

The configuration of the title bar in the Module Configuration Window is shown below.



6.1.6 Status Bar Configuration

- The rack number and rack name are displayed for Racks on the local channel.
- The channel number, station number, rack number, and rack name are displayed for Racks on a remote channel.

6.1.6 Status Bar Configuration

The configuration of the status bar in the Module Configuration Window is shown below.



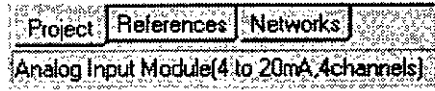
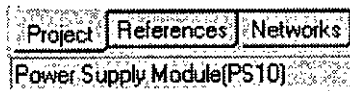
- The total numbers of input relays, input registers, output coils, and output registers that have been allocated are displayed. Input relays and output coils are displayed as the number of bits, input registers and output registers are displayed as the number of words.



- The slot position of the selected Module is displayed.



Information on the selected Module is displayed in the status bar of the Main Window.

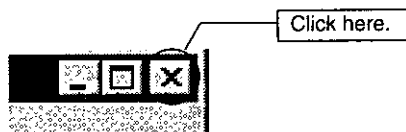


6


6.1.7 Closing the Module Configuration Window

Use the following procedure to close the Module Configuration Window.

Click on the **Close** Button in the upper right corner of the window.



6.2 Allocating Modules

 This section describes the operations required to allocate Modules.

6.2.1	Outline	6-7
6.2.2	Allocating I/O Modules	6-8
6.2.3	Allocating Motion Modules	6-9
6.2.4	Allocation Status Displays for Motion Modules	6-11
6.2.5	List of Modules	6-13

6.2.1 Outline

Modules are allocated by graphically mounting them onto Racks. As Modules are mounted, I/O references are allocated and parameters are set.



- 1) The operations described in this section can be used to allocate the following Modules. Modules with asterisks do not require I/O allocations or parameter settings.

- I/O Modules
- Special Function Modules
- Motion Modules
- YENET-1600D Modules
- M-NET Modules
- Distributed I/O Modules
- Power Supply Modules*
- Optical-Coaxial Conversion Modules*
- Expander Modules*
- CPU Modules*
- PC Link Modules*
- MEMOBUS Modules*

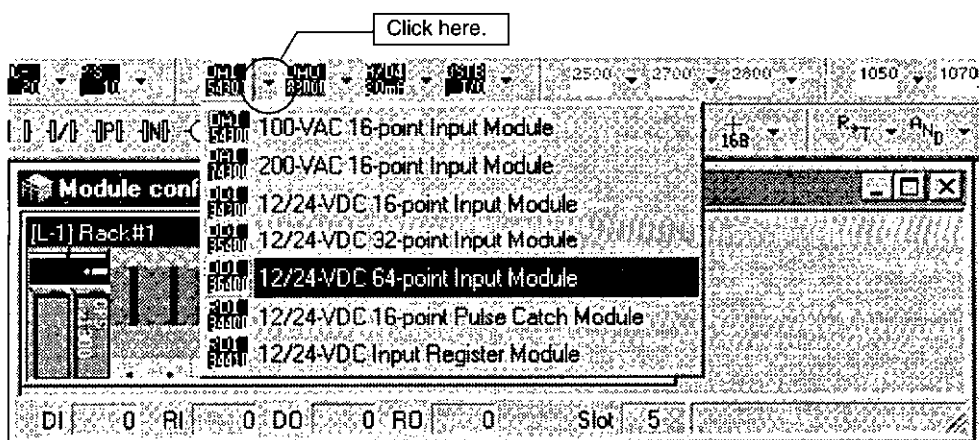
- Ethernet Interface Modules*

2) Refer to *Chapter 5 Setting the System Configuration* for actual Module allocation procedures.

6.2.2 Allocating I/O Modules

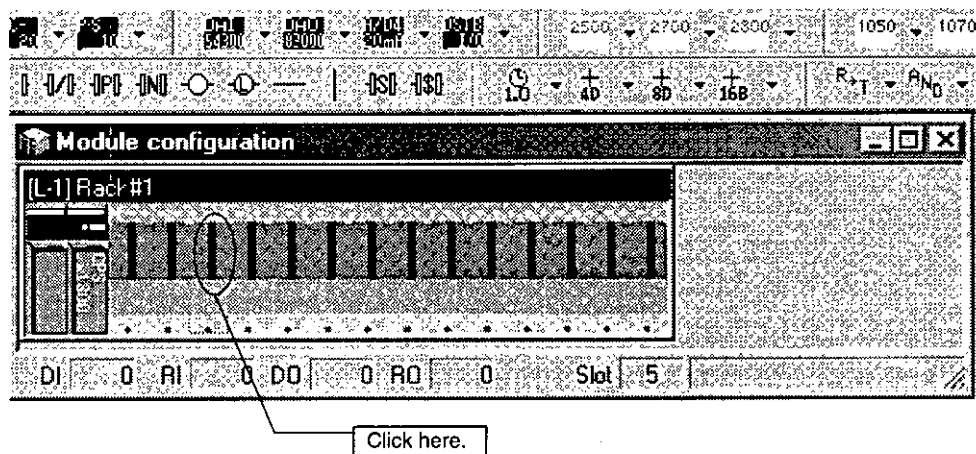
Use the following procedure to allocate an I/O Module. Here, an example is shown for a 12/24-V 64-point Input Module

- 1) Open the Module Configuration Window.
- 2) Click the **Module Palette Drop-down** Button and select the Module to be allocated from the drop-down menu.



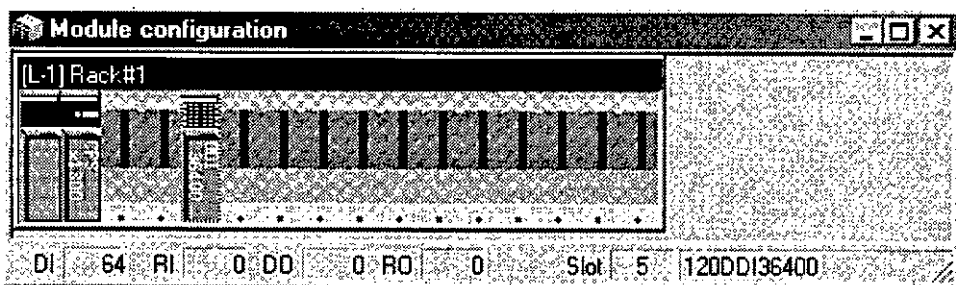
If the drop-down button is not displayed, click the module palette instead to access the drop-down menu.

- 3) The Module Palette Button will remain in a selected state. Click the slot where the Module is to be allocated.



- 4) A Module Setting Dialog Box will be displayed. Allocate the required references and set the required parameters, and then click the **OK** Button.

This completes allocating the Module.



The same procedures can be used to allocate I/O and set parameters for other I/O Modules (120-Series, 2000-Series, and 1000-Series I/O Modules), Special Function Modules, and Communications Modules.

6.2.3 Allocating Motion Modules

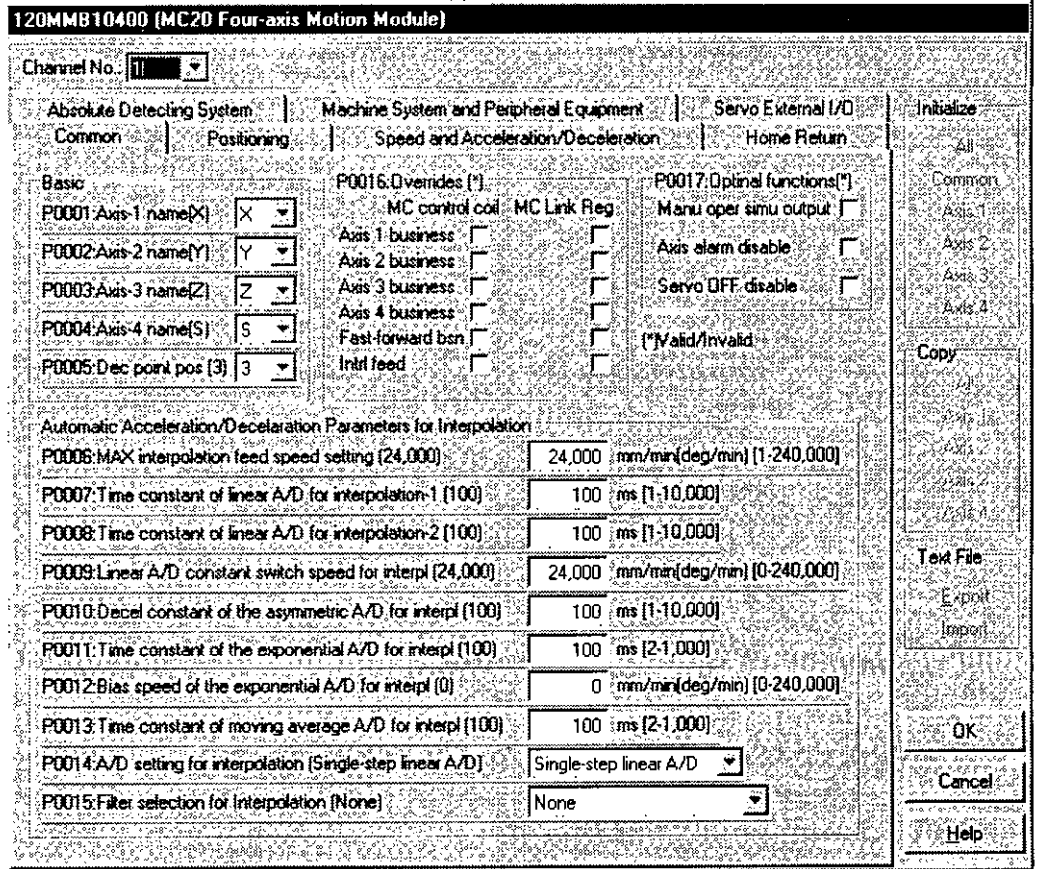
Use the following procedure to allocate Motion Modules. Here, the MC20 Module is used as an example.

Steps 1 through 4 are the same as the previous procedure. The following procedure assumes that these steps have been completed in advance.

Setting the Module Configuration

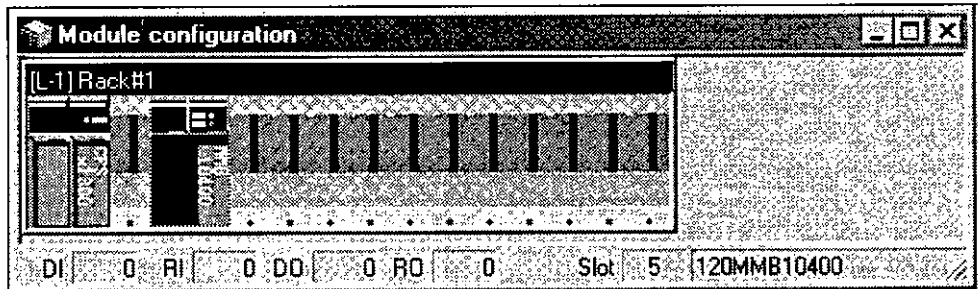
6.2.3 Allocating Motion Modules , cont.

A Module Setting Dialog Box will be displayed. Allocate the required references and set the required parameters, and then click the **OK** Button.



6

This completes allocating the Module.

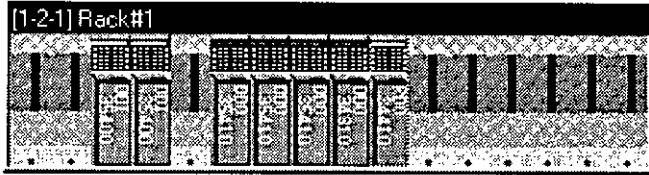


Note The same procedures can be used to allocate I/O and set parameters for other I/O Modules (120-Series, 2000-Series, and 1000-Series I/O Modules), Special Function Modules, and Communications Modules.

6.2.4 Allocation Status Displays for Motion Modules

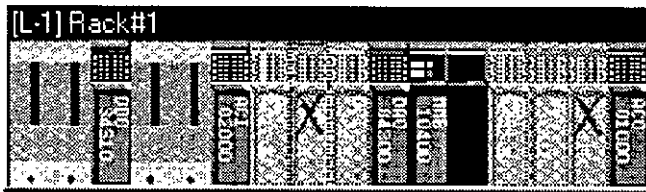
1) Offline

The offline allocation status is displayed as shown below.

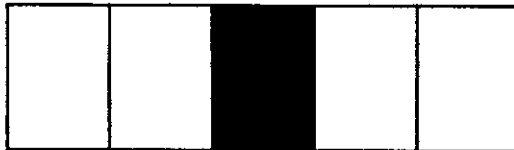


2) Online

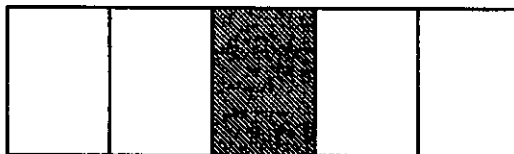
The online allocation status when the CPU Module is stopped is shown below.



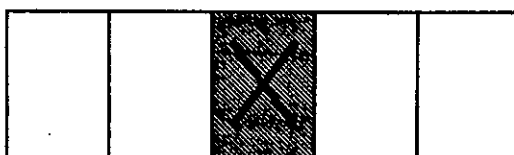
- a) The online display is the same as the offline display if a Module is mounted and I/O has been allocated. If the CPU Module is running, only Modules to which I/O has been allocated are displayed.



- b) If a Module is mounted but I/O has not been allocated, the Module will be grayed out.



- c) If a Module is not mounted by I/O has been allocated, the slot to which I/O has been allocated will be displayed with a red X over it.



Setting the Module Configuration

6.2.4 Allocation Status Displays for Motion Modules , cont.

- d) If a Module is mounted but I/O allocations for it are not correct, a yellow question mark will be displayed on the Module.



- 1) All 120-Series, 2000-Series, and 1000-Series I/O Modules will be displayed the same online and offline regardless of whether or not the Modules are actually mounted.
- 2) The displays for b) through d), above, are the same regardless of whether or not the CPU Module is running.

6.2.5 List of Modules

The allocation procedure described in this section can be used for the Modules listed in the following table.

Module Model Number	Module Name
Option Modules and Other Modules	
120 NAH935□□	Optical/Electrical Conversion Module
120 CPS□1300	Power Supply Module (PS10)
120 CPS□1100	Power Supply Module (PS05)
120 CBE37000	Expander Module
120 CPU 14200	CPU10 Module
120 CPU 34100	CPU20 Module
120 CPU 34110	CPU21 Module
130 CPU 54100	CPU30 Module
130 CPU 54110	CPU35 Module
120 CRR 13100	Remote I/O Receiver Module
120 CRD 131□0	Remote I/O Driver Module
120 NOM 2□100	MEMOBUS Module
120 NFB 23100	PC Link Module
120 NET 12100	Ethernet Module
GL120 I/O Modules	
120 ACI02000	Analog Input Module (4 to 20 mA, 4 channels)
120 ACO01000	Analog Output Module (4 to 20 mA, 2 channels)
120 AVI02000	Analog Input Module (+10 V, 4 channels)
120 AVI02100	Analog Input Module (0 to 10 V, 4 channels)
120 AVO01000	Analog Output Module (+10 V, 2 channels)
120 AVO01100	Analog Output Module (0 to 10 V, 2 channels)
120 AVO01200	Analog Output Module (0 to 5 V, 2 channels)
120 CRD21100	Distributed I/O Driver Module
120 CRD21110	Uniwire Interface Module
120 DAI54300	100-VAC 16-point Input Module
120 DAI74300	200-VAC 16-point Input Module
120 DAO83000	100/200-VAC 8-point Output Module
120 DAO84300	100/200-VAC 16-point Output Module
120 DDI34300	12/24-VDC 16-point Input Module
120 DDI35400	12/24-VDC 32-point Input Module
120 DDI36400	12/24-VDC 64-point Input Module
120 DDO33000	12/24-VDC 8-point Output Module
120 DDO34310	12/24-VDC 16-point Output Module (Sinking)
120 DDO34320	12/24-VDC 16-point Output Module (Sourcing)
120 DDO35410	12/24-VDC 32-point Output Module (Sinking)
120 DDO36410	12/24-VDC 64-point Output Module (Sinking)
120 DRA84300	Relay Contact 16-point Output Module
120 EHC21110	High-speed Counter Module (1 channel)
120 MMB10100	1-Axis Motion Module (MC10)
120 MMB10400	4-Axis Motion Module (MC20)
120 MMB20200	2-Axis Motion Module (MC15)

Module Model Number	Module Name
120 NDN31100	YENET 1600-D (16 nodes) Module
120 NDN31110	YENET 1600-D (63 nodes) Module
120 NMN31000	M-NET Module
120 RDI34400	12/24-VDC 16-point Pulse Catch Module
120 RDI34410	12/24-VDC Input Register Module
120 RDO34410	12/24-VDC Output Register Module
1000 I/O Modules	
B1050	100-VAC 16-point Output Module
B1051B	100-VAC 16-point Input Module
B1052	5/12-VDC 16-point Output Module
B1053	5/12-VDC 16-point Input Module
B1054	200-VAC 16-point Output Module
B1055	200-VAC 16-point Input Module
B1056	48-VDC 16-point Output Module
B1057	48-VDC 16-point Input Module
B1058	24-VDC 16-point Output Module
B1059C	24-VDC 16-point Input Module
B1060	24-VDC 64-point Output Module
B1061	24-VDC 64-point Input Module
B1062	24-VDC 32-point Output Module
B1063	24-VDC 32-point Input Module
B1064	24-VDC 32-point Output Module
B1065	24-VDC 32-point Input Module
B1066	24-VDC 32-point Output Module
B1067B	24-VDC 32-point Input Module
B1070	Register Out 50 mA
B1071	Register IN
B1072B-1	D/A (0 to +10 V)
B1072B-2	D/A (0 to +5 V)
B1072B-3	D/A (-5 to +5 V)
B1072B-4	D/A (-10 to +10V)
B1073-1	A/D (0 to +10 V)
B1073-2	A/D (+1 to +5 V)
B1074-1	D/A (0 to +10 V)
B1074-2	D/A (0 to +5 V)
B1074-3	D/A (-5 to +5 V)
B1074-4	D/A (-10 to +10 V)
B1075-1	A/D (0 to +10 V)
B1075-2	A/D (+1 to +5 V)
B1080	PID Module
B1081C	Counter max. 40 Kpps
B1082C	Counter max. 40 Kpps
B1083C	Motion Module
B1084	MEMOLINK master
B1085	MEMOLINK slave
B1086	I/F Module

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Module Model Number	Module Name
B1090B	Relay 16 Out 0.8 A Ter
B1094	Relay 8 Out 1 A Ter
2000 I/O	
B2500	100/200-VAC 16-point Output Module
B2501A	100-VAC 16-point Input Module
B2503A	200-VAC 16-point Input Module
B2504	100/200-VAC 16-point Output Module
B2505A	100-VAC 32-point Input Module
B2507A	200-VAC 32-point Input Module
B2600	12/24-VDC 16-point Output Module
B2601	12/24-VDC 16-point Input Module
B2602A	12/24-VDC 32-point Output Module
B2603	12/24-VDC 32-point Input Module
B2604	12/24-VDC 64-point Output Module
B2605	12/24-VDC 64-point Input Module
B2606	5/12-VDC 32-point Output Module
B2607	5/12-VDC 32-point Input Module
B2610	48-VDC 16-point Output Module
B2611	48-VDC 16-point Input Module
B2615	12/24-VDC 64-point Input Module
B2624	5-VDC 64-point Output Module
B2625	5-VDC 64-point Input Module
B2630	12/24-VDC 16-point Output Module
B2632	12/24-VDC 32-point Output Module
B2700	Register 8 x 16-bit Output Module
B2701	Register 8 x 16-bit Input Module
B2702	D/A (0 to 10V) 2 ch 12 bit OUT
B2703	A/D (0 to 10V) 8 ch 12 bit IN
B2705	Measure Unit IN
B2707	Pulse Catch 16 In Ter
B2710	Register Out 8 x 16 bit Con
B2711	Register In 8 x 16 bit Con
B2712	D/A (0 to 5V) 2 ch 12 bit OUT
B2722	D/A (-5 to +5V) 2 ch 12 bit OUT
B2732	D/A (-10 to +10V) 2 ch 12 bit OUT
B2733	A/D (-10 to +10V) 8 ch 12 bit IN
B2742	D/A (4-20mA) 2 ch 12 bit OUT
B2743	A/D (4-20mA) 8 ch 12 bit IN
B2800	PID 1 ch
B2801	Reversible Counter 2 ch
B2802	Preset Counter 1 ch
B2803	MOTION 1 axis ANALOG I/F
B2804	MEMOLINK Master OPT
B2805	MEMOLINK Slave OPT
B2806	I/F Module RS-422
B2808-1	UNIWIRE 128 Points 200m

Setting the Module Configuration

6.2.5 List of Modules , cont.

Module Model Number	Module Name
B2808-2	UNIWIRED 128 Points 500m
B2808T	UNIWIRED 256 Points
B2813	MOTION 1 axis PULSE I/F
B2813T	MOTION 1 axis PULSE I/F
B2823	MOTION 1 axis PULSE I/F
B2823T	MOTION 1 axis PULSE I/F
B2833	MOTION 1 axis ANALOG I/F
B2893	SYNC monitor
B2902	32 Out 1 A Ter
B2904	Bestact Relay 16 Out 0.3 A Ter
B2912	32 Out 1 A Con
B2914	Bestact Relay 16 Out 0.3 Ter

6.3 Editing Racks

This section describes operations required to edit Racks to allocate Modules.

6.3.1	Outline	6-17
6.3.2	Selecting Racks	6-17
6.3.3	Adding and Deleting Racks	6-18
6.3.4	Changing Rack Names	6-20
6.3.5	Reordering Racks	6-20
6.3.6	Arranging Racks	6-21

6.3.1 Outline

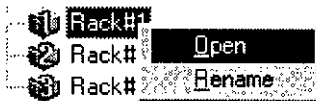
Modules are allocated to Racks in the Module Configuration Window using graphics of Mounting Bases. The following operations can be performed for Racks.

- Adding Racks
- Deleting Racks
- Arranging Racks
- Changing Rack Names
- Reordering Racks

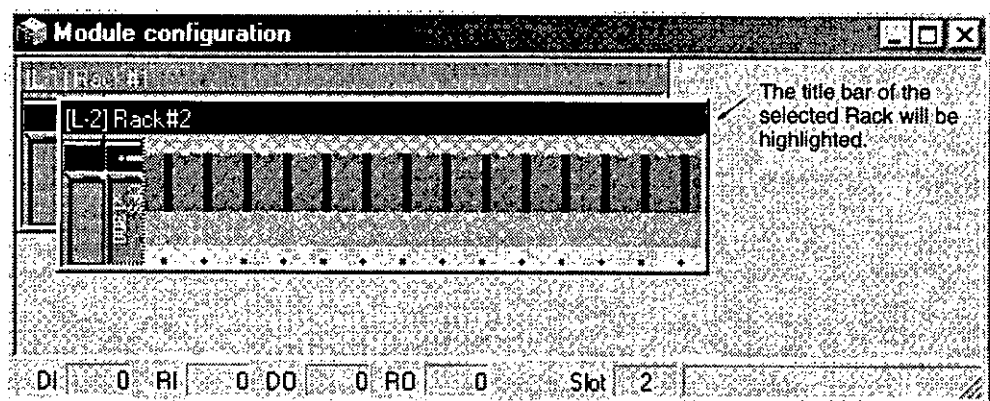
6.3.2 Selecting Racks

Use one of the following three operations to select a Racks.

- 1) Point at a Rack Node, click the right mouse button, and select **Open** from the pop-up menu.



- 2) Double-click a Rack Node.
- 3) Click a Rack in the Module Configuration Window.



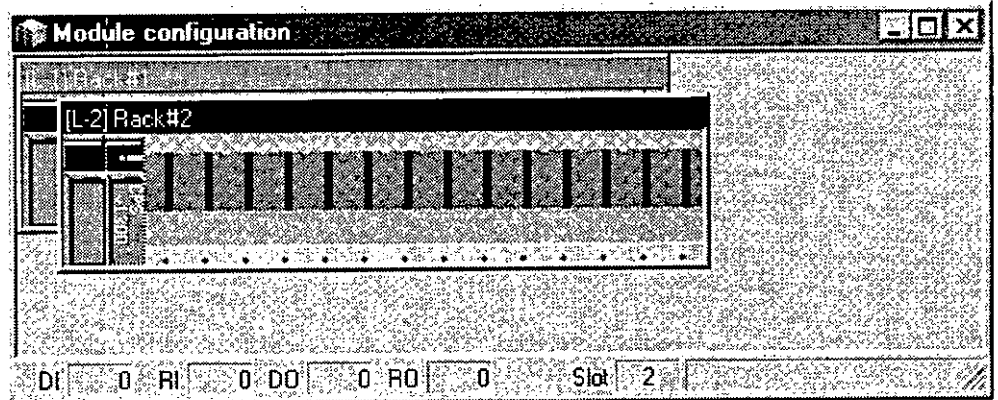
6.3.3 Adding and Deleting Racks

1) Adding a Rack

Use one of the two following procedures to add a Rack.

a) Using the Menu Bar

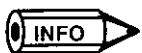
- (1) Click on the Module Configuration Window to select it.



- (2) Select **Rack (R) – Add Rack (A)** from the menu bar.



A Rack will be created.



When creating a Rack from the menu bar, check the station number of the selected Rack in advance. The Rack that is added will have the same station number as the selected Rack.

b) Using the Pop-up Menu

- (1) Point at a Station Node under the Module Configuration Node, and click the right mouse button.
- (2) Select **New Rack** from the pop-up menu.



A Rack will be created.

2) Deleting a Rack

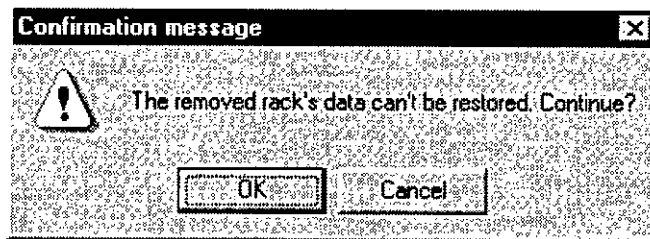
Use one of the following two procedures to delete a Rack.

a) Using the Menu Bar

- (1) Click on the Module Configuration Window to select it.
- (2) Select **Rack (R) – Delete Rack (D)** from the menu bar.



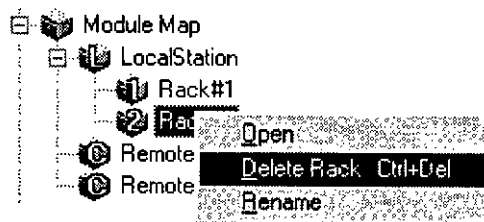
- (3) A confirmation message will be displayed. Click the **OK** Button.



The selected Rack will be deleted.

b) Using the Pop-up Menu

- (1) Point at a Rack Node under the Station Node, and click the right mouse button.
- (2) Select **Delete Rack** from the pop-up menu.



The selected Rack will be deleted.



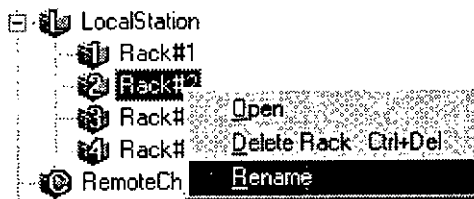
- 1) Up to four Racks can be created for each station.

- 2) Rack 1 cannot be deleted from any station.
- 3) A station must be created before creating Racks at remote stations. Refer to 6.4 *Setting Remote I/O* for the procedure to create Racks at remote stations.

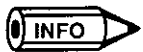
6.3.4 Changing Rack Names

Rack names are assigned numerically as “Rack #x” by default. The default names can be changed as required using the following procedure.

- 1) Point at the Rack Node, right click, and select **Rename** from the pop-up menu.



- 2) Input the new name.



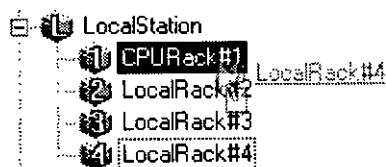
Rack names can be up to 100 characters long, but only the first 32 characters will be displayed.

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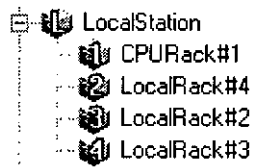
6.3.5 Reordering Racks

The Racks can be placed in any desired order using the following procedure.

- 1) Click the Rack Node to be moved.
- 2) Drag the Rack Node and drop it at the desired location. In the following example, local rack #4 is dropped at CPU Rack #1 to place it just before local rack #2.



3) This completes reordering the Racks. Change the names as required.

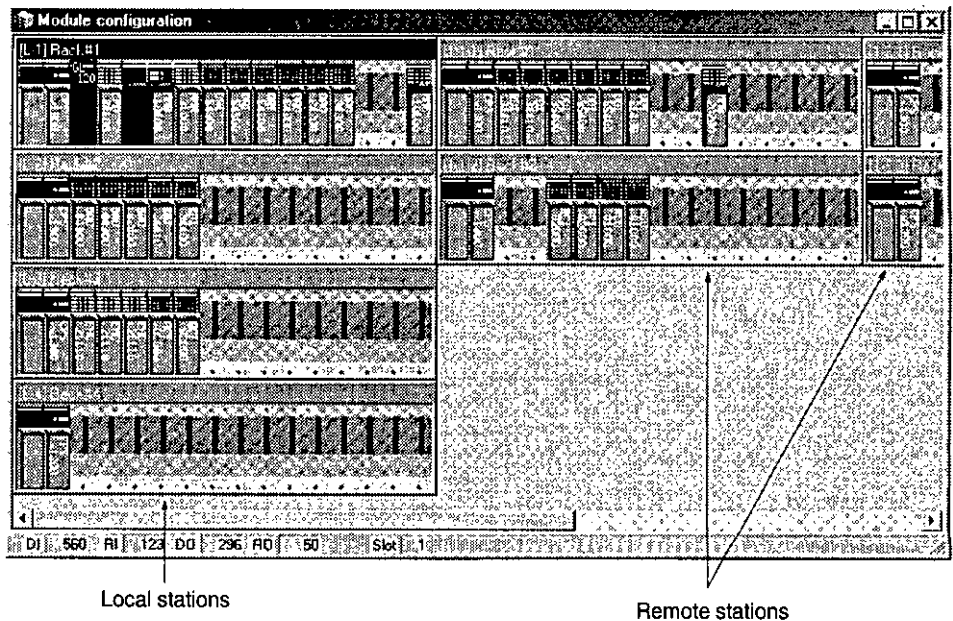


6.3.6 Arranging Racks

1) The positions at which Racks are displayed can be arranged as described below.

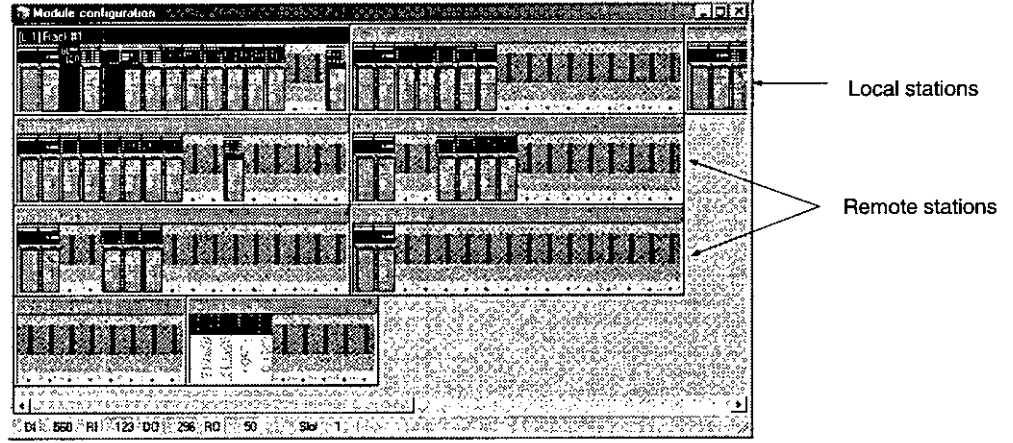
a) Arrange – Tile Vertically

Arranges Racks vertically by station.



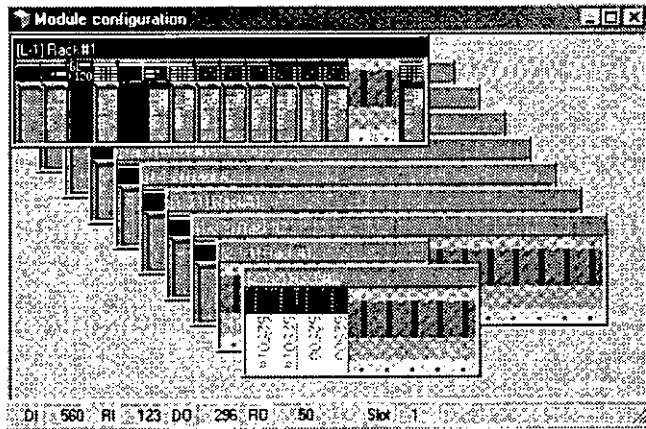
b) Arrange – Tile Horizontally

Arranges Racks horizontally by station.



c) Arrange – Cascade

Cascades the Racks.



6

2) Use the following procedure to arrange the Racks.

Select **Arrange (A)** from the menu bar, and then select the desired arrangement command from the pull-down menu.



The Racks will be arranged.

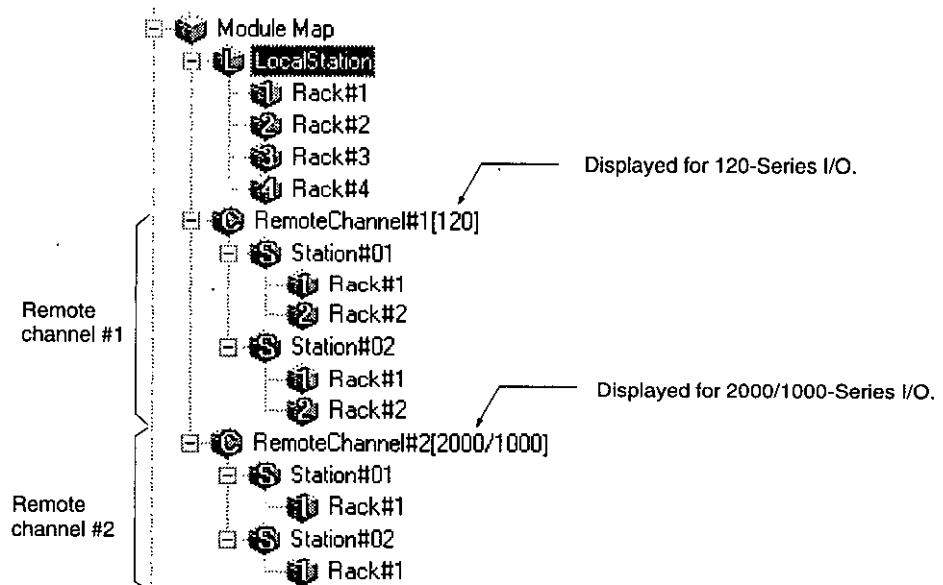
6.4 Setting Remote I/O

This section describes the operations required to set remote I/O.

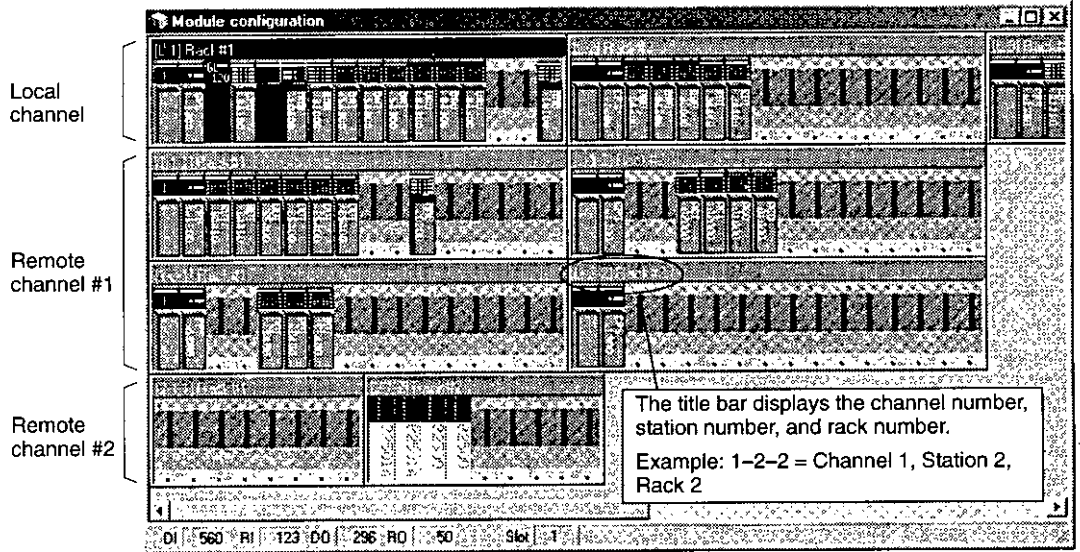
6.4.1	Outline	6-23
6.4.2	Remote I/O Setting Procedure	6-24
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6.4.4	Creating and Deleting Stations	6-25
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6.4.6	Setting Remote I/O Receiver Modules	6-28
6.4.7	Allocating 2000-Series and 1000-Series I/O Modules	6-29
6.4.8	Changing between 2000-Series and 1000-Series I/O Racks	6-30

6.4.1 Outline

- 1) Remote I/O can be set from the MEMOSOFT, including I/O models (120-Series, 2000-Series, or 1000-Series I/O), the number of stations, the number of Racks, Remote I/O Receiver Module parameters, etc.
- 2) The remote I/O configuration is shown below the Module Map Node in the Project Manager, as shown below.

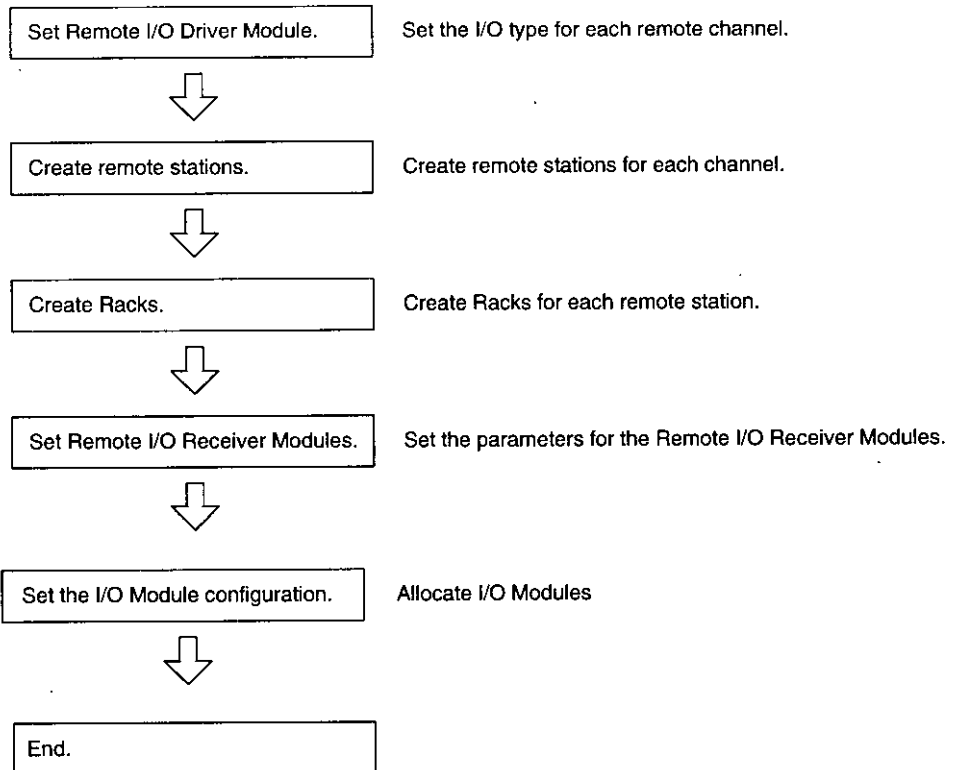


3) The remote I/O configuration is displayed in the Module Configuration Window as shown below.



6.4.2 Remote I/O Setting Procedure

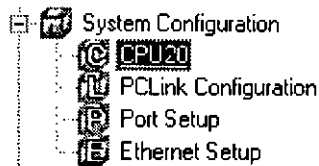
Use the following procedure to set remote I/O.



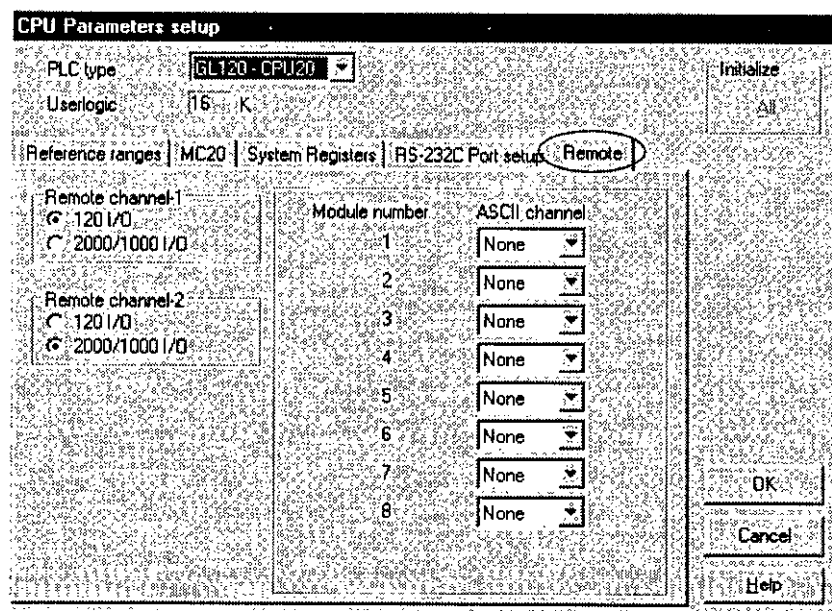
6

6.4.3 Setting the Remote I/O Driver Module

- 1) The Remote I/O Driver Module is set from the CPU Parameter Setup Dialog Box. Set either 120-Series I/O or 2000/1000-Series I/O for each channel.
- 2) Use the following procedure to set the Remote I/O Driver Module.
 - a) Double-click the CPU Node under the System Configuration Node.



- b) The CPU Parameter Setup Dialog Box will be displayed. Click the **Remote** Tab.



- c) Set the I/O Module type for each remote channel.



ASCII Modules are also set using this dialog box.

6.4.4 Creating and Deleting Stations

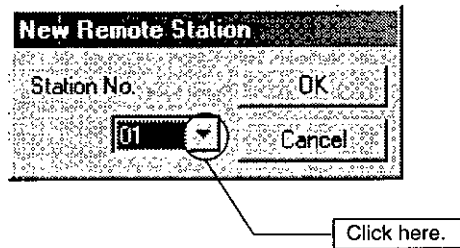
1) Creating Stations

Use the following procedure to create stations. Create one station at a time for each channel.

- a) Point at the Remote Channel Node under the Module Map Node and click the right mouse button.
- b) Select **New Station** from the pop-up menu.



- c) The following box will be displayed. Select the station number and click the **OK** Button.



A station with the specified number will be created.



6

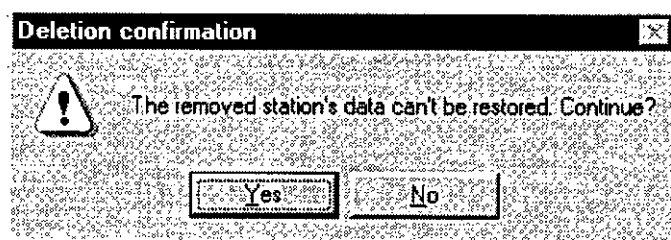
2) Deleting Stations

Use the following procedure to delete remote stations.

- a) Point at the Remote Station Node and click the right mouse button.
- b) Select **Delete Station** from the pop-up menu.



- c) A confirmation message will be displayed. Click the **Yes (Y)** Button.



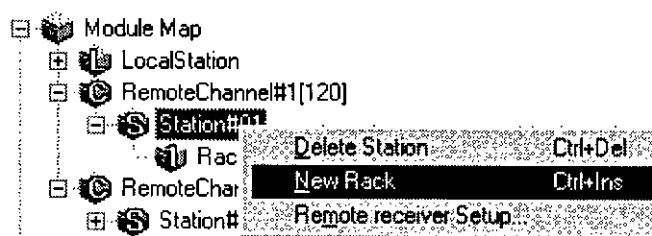
The station will be deleted.

6.4.5 Adding and Deleting Racks

1) Adding a Rack

Rack #1 will be automatically created when a station is created. Use the following procedure to add other Racks.

- Point at the Remote Station Node and click the right mouse button.
- Select **New Rack** from the pop-up menu.

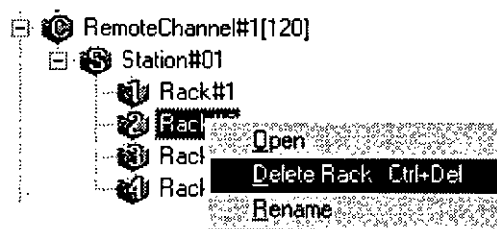


A Rack will be created.

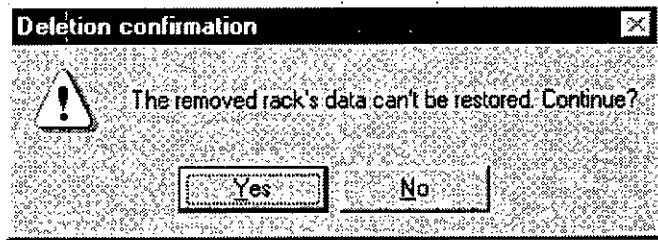
2) Deleting a Rack

Use the following procedure to delete a Rack.

- Point at the Rack Node to be deleted and click the right mouse button.
- Select **Delete Rack** from the pop-up menu.

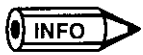


- c) A confirmation message will be displayed. Click the **Yes (Y)** Button.



The Rack will be deleted.

Note Rack #1 cannot be deleted.



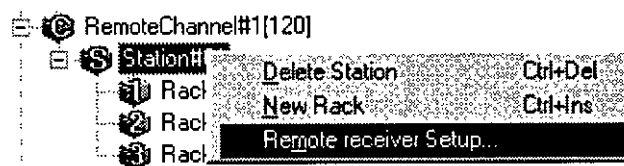
- 1) Racks can also be added and deleted using the menu bar commands when the Module Configuration Window is displayed. Click the location at which to added a Rack or click the Rack to be deleted in the Module Configuration Window before executing the command.



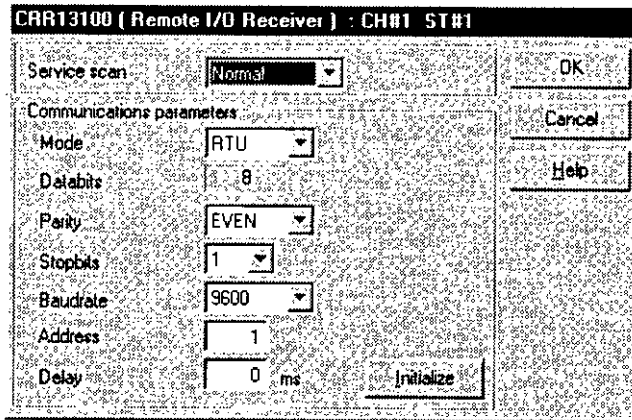
- 2) Numbers are assigned to Racks in the order in which they are created. The order or names of the Racks can be changed if desired. Refer to 6.3 *Editing Racks* for details.

6.4.6 Setting Remote I/O Receiver Modules

- 1) A Remote I/O Receiver Module is set from the Remote Station Node.
- 2) Use the following procedure to set a Remote I/O Receiver Module.
 - a) Point at the Remote Station Node, click the right mouse button, and select **Remote Receiver Setup** from the pop-up menu.



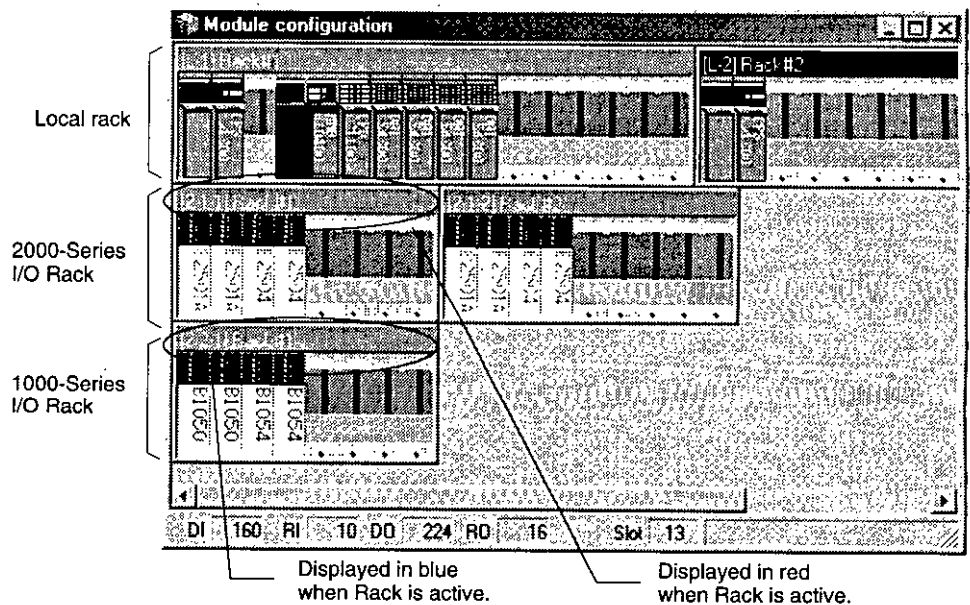
- b) The Remote I/O Receiver Module Setup Dialog Box will be displayed. Set the parameters and click the **OK** Button.



This completes setting the Remote I/O Receiver Module.

6.4.7 Allocating 2000-Series and 1000-Series I/O Modules

- 1) The 2000-Series and 1000-Series I/O Modules must be allocated to channels for which these Modules have been set as the Module type. Racks in channels set for 2000-Series and 1000-Series I/O Modules are displayed as shown below.



- Slots for 2000-Series and 1000-Series I/O are displayed as follows:

1000-Series I/O
Rack 1: 8 slots

6.4.8 Changing between 2000-Series and 1000-Series I/O Racks

Rack 2: 12 slots
Rack 3: 9 slots
Rack 4: 12 slots

2000-Series I/O
Rack 1: 8 slots
Rack 2: 9 slots
Rack 3: 9 slots
Rack 4: 9 slots

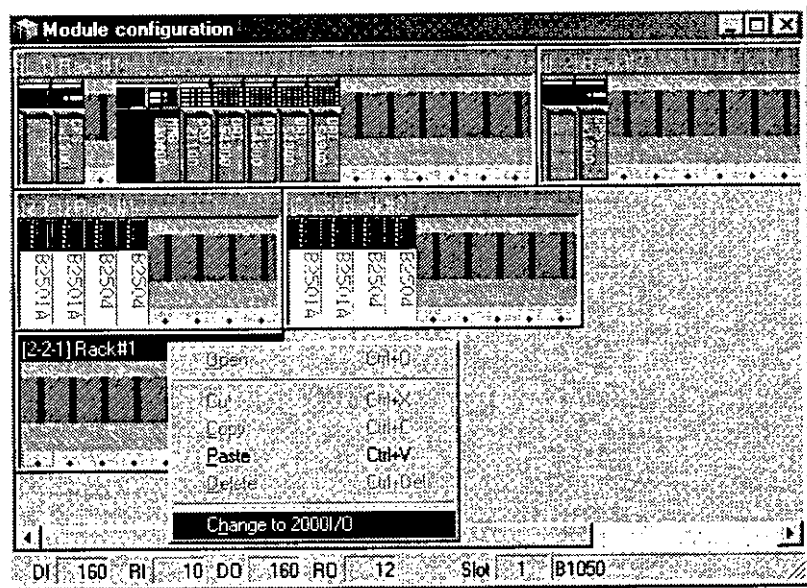
- The title bar of 2000-Series I/O Racks are displayed in red when active.
 - The title bar of 1000-Series I/O Racks are displayed in blue when active. By default, Racks are created as 2000-Series I/O Racks.
- 2) Allocation procedures are basically the same as those for 120-Series I/O Racks. Refer to 6.2.2 Allocating I/O Modules for details.

6.4.8 Changing between 2000-Series and 1000-Series I/O Racks

- 1) By default, Racks are created as 2000-Series I/O Racks for channels set for 2000-Series/1000-Series I/O. Stations must be changed to 1000-Series I/O to allocate 1000-Series I/O Modules.
- 2) Use the following procedure to change a station to between 2000-Series and 1000-Series I/O. The following example shows how to change a station from 1000-Series I/O to 2000-Series I/O.

Point at a station to be changed, click the right mouse button, and select **Change to 2000 I/O** from the pop-up menu.

6



The station will be converted to 2000-Series I/O and the title bar will change from blue to red.

Note Stations cannot be change between 2000-Series I/O and 1000-Series I/O if a Module is mounted to any of the Racks in the station. Remote all Modules from the Racks in the station before changing the I/O type.

6.5 Checking Module Configurations

■ This section describes how to check the module configuration after it has been set.

6.5.1	Outline	6-32
6.5.2	Checking the Module Configuration	6-32

6.5.1 Outline

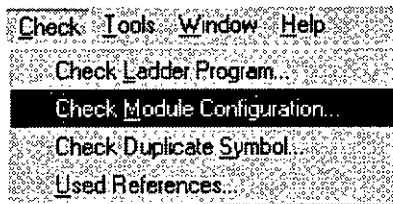
- 1) The MEMOSOFT provides a check function that will check for inconsistencies in the module allocations after Modules have been allocated.
- 2) The module configuration is checked for the following items.
 - Duplicate reference usage
 - Out-of-range references
 - Number of I/O points allocated on the local channel
 - CPU10, CPU20, and CPU21: 1,024 points max. (1 point = 1 bit)
 - CPU30 and CPU35: 4,096 points max. (1 point = 1 bit)
 - Number of I/O points allocated on remote channels
 - Number of I/O per station
 - (Digital input points / 8) + (Register input points × 2) ≤ 512 bytes
 - (Digital output points / 8) + (Register output points × 2) ≤ 512 bytes
 - Number of Option Modules

6

6.5.2 Checking the Module Configuration

- 1) The module configuration check function provides detailed information on inconsistencies in the module configuration, including the channel, station, Rack, slot, and Module where an inconsistency exists.
- 2) Use the following procedure to check the module configuration.

Select **Check (C) – Check Module Configuration (M)** from the menu bar.



The module configuration will be checked and the results will be displayed. The display may require a few seconds to appear.

Module check results						
Message	Reference	Channel	Station	Rack	Slot	Module
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	1	7	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	1	8	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	1	11	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	1	12	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	1	13	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	1	14	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100080	---	Local	2	2	120MMB20200
<Warning> Reference number is duplicated.	100001 - 100080	---	Local	2	3	120MMB10100
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	2	4	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	2	5	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100016	---	Local	2	6	120DAI54300
<Warning> Reference number is duplicated.	100001 - 100080	---	Local	2	12	120MMB10100
<Warning> Reference number is duplicated.	100001 - 100080	---	Local	2	13	120MMB10100
<Warning> Reference number is duplicated.	000001 - 000008	---	Local	1	9	120DA083000
<Warning> Reference number is duplicated.	000001 - 000008	---	Local	1	10	120DA083000
<Warning> Reference number is duplicated.	000001 - 000048	---	Local	2	2	120MMB20200
<Warning> Reference number is duplicated.	000001 - 000048	---	Local	2	3	120MMB10100
<Warning> Reference number is duplicated.	000001 - 000008	---	Local	2	7	120DA083000
<Warning> Reference number is duplicated.	000001 - 000048	---	Local	2	12	120MMB10100
<Warning> Reference number is duplicated.	000001 - 000048	---	Local	2	13	120MMB10100



- 1) Correct any inconsistencies found in the module configuration check. It is not necessary, however, to correct duplications occurring when the same reference is output to more than one Module.
- 2) If there are no inconsistencies in the module configuration, a message will appear saying so.

Setting Segments

7

This chapter describes creating and editing segments, which are used to input ladder programs. It also describes the Segment Scheduler, which sets the order and conditions for solving segments.

7.1	Setting Segments	7-2
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7.1.2	Creating and Deleting Segments	7-2
7.1.3	Moving Segments	7-3
7.1.4	Changing Segment Titles	7-4
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7.2.3	Setting a Constant Sweep	7-7
7.2.4	Setting the High-speed Scan	7-8
7.2.5	Controlling Solving Segments	7-9
7.2.6	Changing the Order of Segment Solving	7-11
7.2.7	Initialization	7-12
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7.1 Setting Segments

This section describes basic operations for the ladder program segments.

7.1.1	Outline	7-2
7.1.2	Creating and Deleting Segments	7-2
7.1.3	Moving Segments	7-3
7.1.4	Changing Segment Titles	7-4

7.1.1 Outline

The configuration of ladder program segments is displayed beneath the Ladder Program Node. Here, normal segments can be created, deleted, and moved. Basic operations are performed from the pop-up menu and normal segments are moved by dragging and dropping them.

Segment titles must be input for high-speed, normal, and subroutine segments.



The CPU10 Module does not support a high-speed segment.

7.1.2 Creating and Deleting Segments

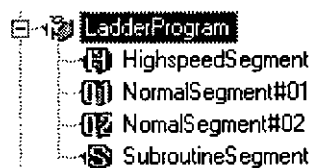
1) Creating Normal Segments

Use the following procedure to create normal segments. Up to 30 normal segments can be created.

Point at the Ladder Program Node, click the right mouse button, and select **New Normal Segment**.



The next normal segment (here, segment #02) will be created.





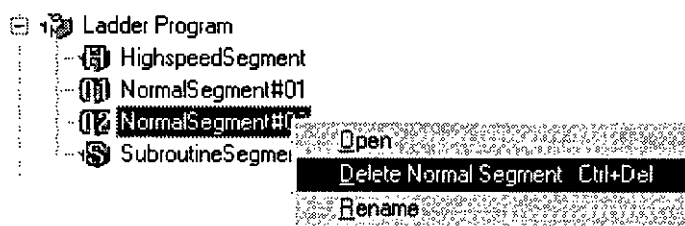
Normal segments cannot be created at the following times.

- When 30 normal segments have already been created.
- When the MEMOSOFT is attached to the CPU Module.

2) Deleting Normal Segments

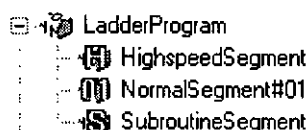
Use the following procedure to delete normal segments.

- Point at the normal segment to be deleted, click the right mouse button, and select **Delete Normal Segment**.



- A confirmation message will be displayed. Click the **Yes (Y)** Button.

The selected segment will be deleted (here, normal segment #02).

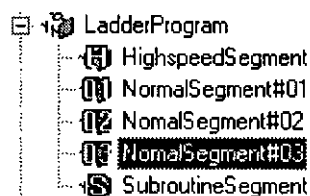


- The high-speed segment, normal segment #01, and subroutine segments cannot be deleted.
- Normal segments cannot be deleted when the MEMOSOFT is attached to the CPU Module.

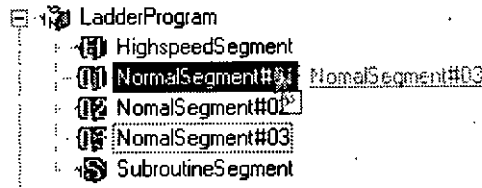
7.1.3 Moving Segments

Use the following procedure to move segments.

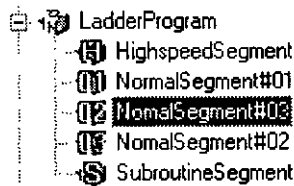
- Click the normal segment to be moved.



- 2) Drag the segment to the desired position and drop it. (Here, normal segment #03 is dropped on normal segment #01 to move it to the position just before normal segment #02.)



The selected normal segment will be moved.

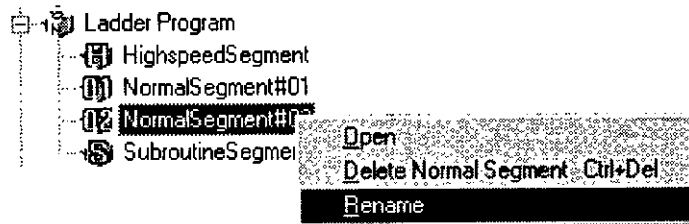


Normal segments cannot be moved to the high-speed or subroutine segment.

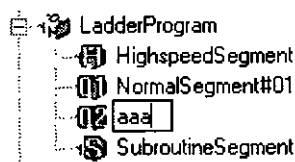
7.1.4 Changing Segment Titles

Use the following procedure to change segment titles.

- 1) Point at the normal segment for which the segment title is to be changed, click the right mouse button, and select **Rename** from the pop-up menu.



- 2) Input the new segment title.





You can also change the segment title by clicking the segment for 1 to 2 seconds with the left mouse button.

7.2 Segment Scheduler

■ The section describes the Segment Scheduler.

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7.2.8	Closing the Segment Scheduler	7-13

7.2.1 Outline

The Segment Scheduler is used to set the order and conditions for solving segments.

7.2.2 Opening the Segment Scheduler

Use the following procedure to open the Segment Scheduler.

Point at the Ladder Program Node, click the right mouse button, and select **Segment Scheduler**.



The Segment Scheduler Dialog Box will be displayed.

No.	Segment	Type	Ref. No.	Sense
1	L01 NormalSegment#01	Continuous		
2	Not set			
3	Not set			
4	Not set			
5	Not set			
6	Not set			
7	Not set			
8	Not set			
9	Not set			
10	Not set			

7.2.3 Setting a Constant Sweep

1) The constant sweep function is used to create a fixed scan time by setting a target value for the scan time. The target scan time is set larger than the actual scan time. It must be set in 10-ms increments between 10 and 200 ms. The constant sweep function uses the following two registers.

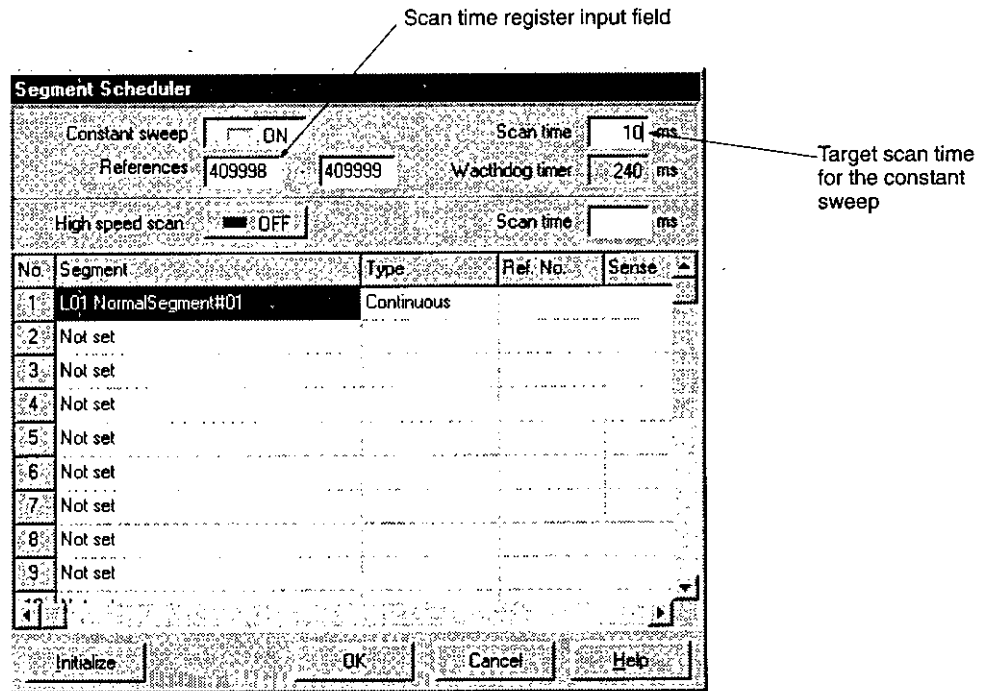
- 409998: Target value
- 409999: Time required for actual scan processing (in ms but updated every 10 ms)



The references that are used can be changed from the Segment Scheduler, or from the CPU Module setup under the System Configuration Node. Refer to 5.2 *Setting CPU Modules* for details.

2) Use the following procedure to set a constant sweep.

Click the **Constant Sweep** Button to turn it ON. This will enable inputting the scan time and the reference numbers for the constant sweep. The scan time must be set in 10-ms increments between 10 and 200 ms.



7.2.4 Setting the High-speed Scan

- 1) If the high-speed scan time is turned ON, the ladder program stored in the high-speed segment will be executed periodically at the interval specified by the high-speed scan time. The high-speed scan must be turned ON and the scan time must be set to use the high-speed segment.
- 2) Use the following procedure to set the high-speed scan.

Click the **High-speed Scan** Button to turn it ON. This will enable inputting the scan time for the high-speed scan. The scan time must be set in 1-ms increments between 4 and 100 ms.

Segment Scheduler

Constant sweep OFF Scan time ms

References 4 4 Watchdog timer 240 ms

High speed scan ON Scan time 20 ms

No.	Segment	Type	Ref. No.	Sense
1	L01 NormalSegment#01	Continuous		
2	Not set			
3	Not set			
4	Not set			
5	Not set			
6	Not set			
7	Not set			
8	Not set			
9	Not set			
10	Not set			

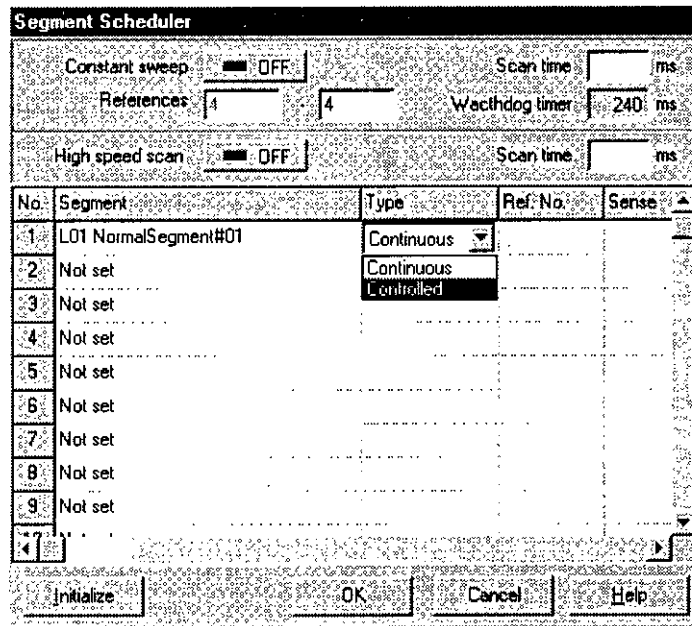
Initialize OK Cancel Help

High-speed scan time

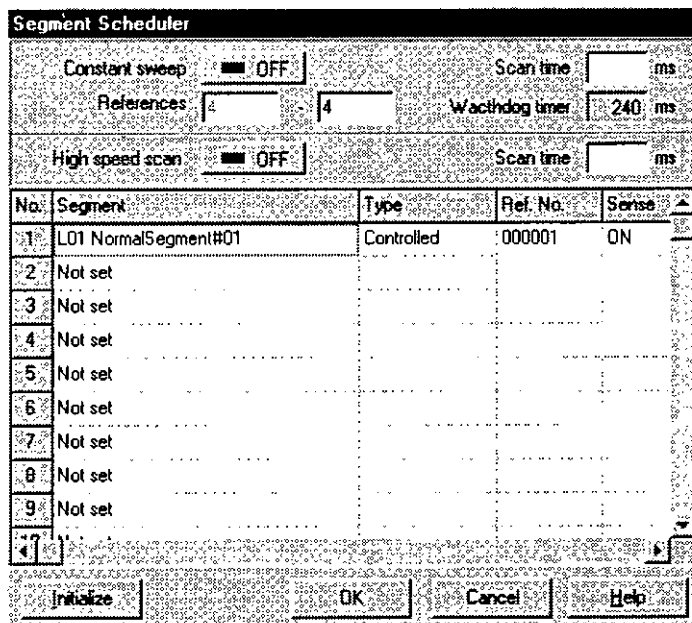
7.2.5 Controlling Solving Segments

- 1) A reference can be set so that a segment will be solved only in the normal scans in which the reference is ON or OFF.
- 2) Use the following procedure to set a reference as a condition to control segment solving.

- a) Double-click the *Type* cell for the segment to be controlled and select **Controlled** from the drop-down list.



- b) Set the reference number and sense. The reference number is set to output coil 000001 by default. To change the sense, double-click the *Sense* cell and select ON or OFF.



In the above example, normal segment #01 has been set to be solved only in scans in which output coil 000001 is ON.

7.2.6 Changing the Order of Segment Solving

- 1) The order in which segments are solved can be set as required. You can also set a segment so that it is solved more than once in a scan. By default, segments will be solved in the order they appear under the Ladder Program Node.
- 2) Use the following procedure to change the order in which segments are solved.

Double-click the segment at the location to be changed and select the segment to be set. (Here, the order is changed so that normal segment #06 is solved as both the 2nd and 6th segment.)

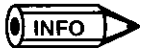
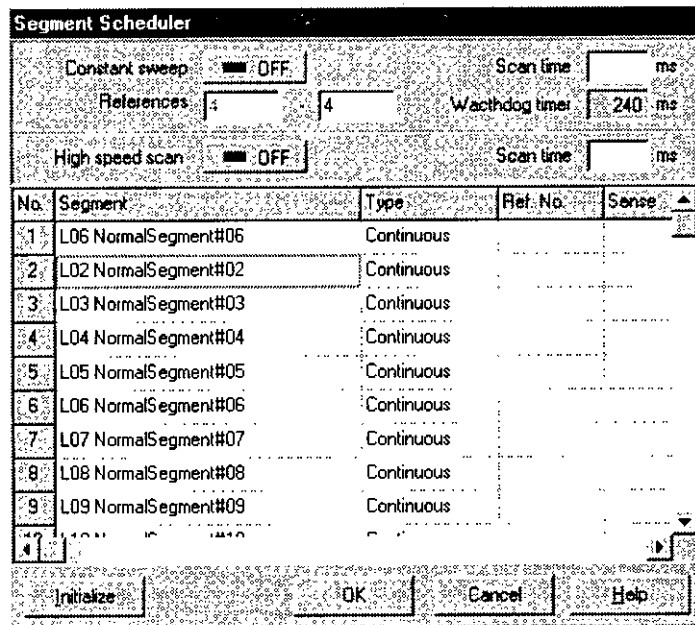
Segment Scheduler

Constant sweep OFF Scan time ms
 References 4 4 Watchdog timer 240 ms
 High speed scan OFF Scan time ms

No.	Segment	Type	Ref. No.	Sense
1	L01 NormalSegment#01	Continuous		
2	L01 NormalSegment#01	Continuous		
3	L02 NormalSegment#02	Continuous		
4	L03 NormalSegment#03	Continuous		
5	L04 NormalSegment#04	Continuous		
6	L05 NormalSegment#05	Continuous		
7	L06 NormalSegment#06	Continuous		
8	L07 NormalSegment#07	Continuous		
9	L08 NormalSegment#08	Continuous		
10	L09 NormalSegment#09	Continuous		

Initialize OK Cancel Help

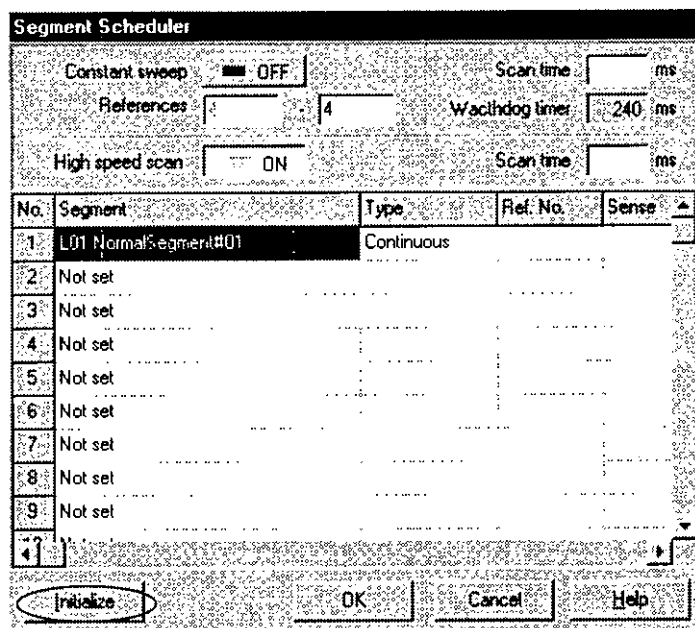
The selected segment will be set.



The order in which segments are solved can also be changed by dragging and dropping segments from the segment number column.

7.2.7 Initialization

Click the **Initialize** Button to initialize the settings displayed on the Segment Scheduler. All of the settings except the constant sweep and high-speed scan settings will be initialized.



7

7.2.8 Closing the Segment Scheduler

There are two ways to close the Segment Scheduler.

- 1) Click the **OK** Button. All settings that have been made will be made effective.

The screenshot shows the 'Segment Scheduler' dialog box. At the top, there are settings for 'Constant sweep' (OFF), 'References' (4), 'Scan time' (ms), 'Watchdog timer' (240 ms), and 'High speed scan' (ON). Below these is a table with columns 'No.', 'Segment', 'Type', 'Ref. No.', and 'Sense'. The table contains one row with 'L01 NormalSegment#01' and 'Continuous'. At the bottom, there are buttons for 'Initialize', 'OK', 'Cancel', and 'Help'. The 'OK' button is circled in red.

No.	Segment	Type	Ref. No.	Sense
1	L01 NormalSegment#01	Continuous		
2	Not set			
3	Not set			
4	Not set			
5	Not set			
6	Not set			
7	Not set			
8	Not set			
9	Not set			

- 2) Click the **Cancel** Button or the **Close** Button (in the upper right corner of the window). All settings that have been made will be discarded.

The screenshot shows the 'Segment Scheduler' dialog box, identical to the one above. In this version, the 'Cancel' button at the bottom is circled in red.

No.	Segment	Type	Ref. No.	Sense
1	L01 NormalSegment#01	Continuous		
2	Not set			
3	Not set			
4	Not set			
5	Not set			
6	Not set			
7	Not set			
8	Not set			
9	Not set			

This chapter describes the function required to create ladder programs, to check the ladder programs that have been created, and to set the sweep operations.

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8.1 Ladder Programming Window

This section describes the configuration of the Ladder Programming Window and the methods used to open and close it.

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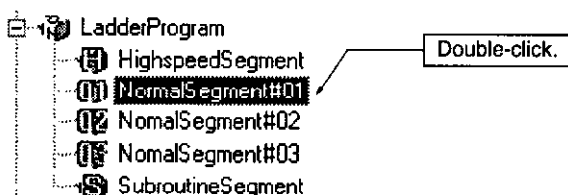
8.1.1 Outline

The Ladder Programming Window provides an interface to edit the ladder program in individual segments. In Online or Debug Mode, the PC sweep operations can be performed while the Ladder Programming Window is open.

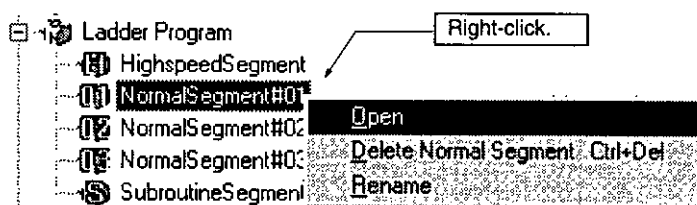
8.1.2 Opening the Ladder Programming Window

Use one of the following two operations to open the Ladder Programming Window.

- Double-click a Segment Node in the Project Manager.

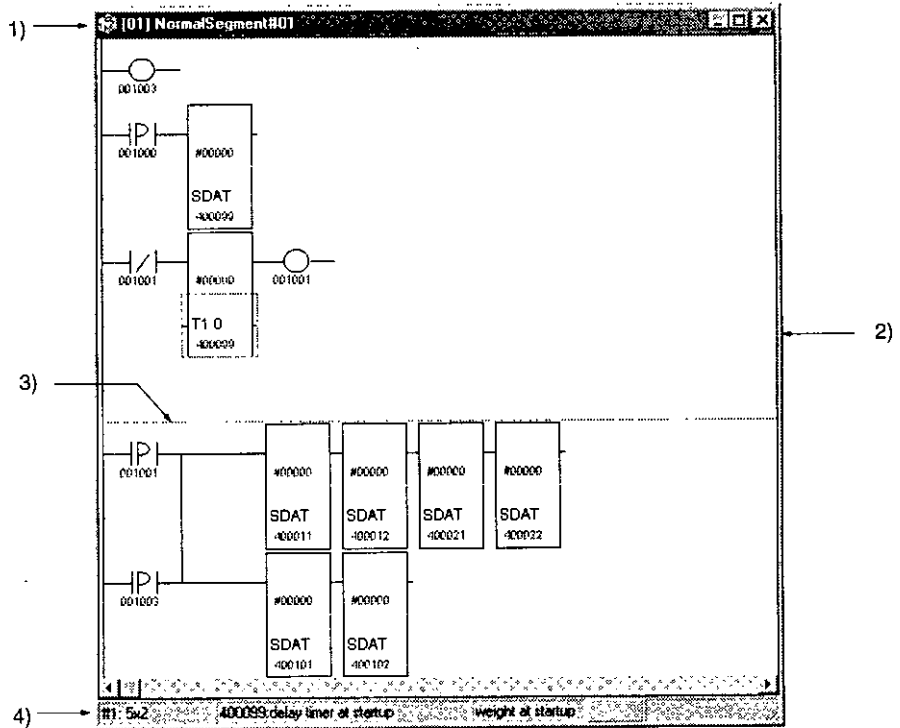


- Point at a Segment Node in the Project Manager, click the right mouse button, and select **Open** from the pop-up menu.



8.1.3 Configuration of the Ladder Programming Window

The configuration of the Ladder Programming Window is shown below.



1) Title Bar

Displays the type of segment, the segment number, and the segment title.

2) Ladder Programming Area

The area in which instructions can be input and edited.

3) Boundary between Networks

The boundary between adjacent networks. More than one network can be displayed in a single window.

4) Status Bar

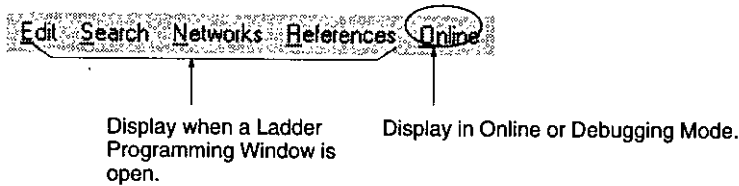
Displays the network number, cursor coordinates, information on references, and the network title.



- 1) When offline, a Ladder Programming Window can be opened simultaneously for each segment.
- 2) When online or debugging, only one Ladder Programming Window can be opened at a time.

8.1.4 Menu Bar Configuration

- 1) The following menus will be added to the menu bar when a Ladder Programming Window is open.



- 2) The portion of the menu bar displayed only for a Ladder Programming Window is described in the following table.

Menu/Command	Function
Edit	
Undo	Cancels the previous action and restores the previous condition.
Cut	Deletes the selected ladder element and stores it in the buffer.
Copy	Copies the selected ladder element and stores the copy in the buffer.
Paste	Pastes the ladder element in the buffer at the position of the cursor.
Delete	Deletes the selected ladder element.
Select All	Selects all ladder elements in the network containing the cursor.
Open Row	Inserts a blank line at the position of the cursor.
Open Column	Inserts a blank column at the position of the cursor.
Close Row	Deletes a blank line at the position of the cursor.
Close Column	Deletes a blank column at the position of the cursor.
Search	
Jump	Moves the cursor to the specified network.
Find	Searches for a specified ladder instruction or reference number.
Find Next	Searches for the next occurrence of the ladder instruction or reference number input for <i>Find</i> in the direction of increasing network numbers.
Find Previous	Searches for the next occurrence of the ladder instruction or reference number input for <i>Find</i> in the direction of decreasing network numbers.
Trace	Finds the coil corresponding to the contact at the cursor position.
Retrace	Reverses the result of the <i>Trace</i> operation.
View History	Displays the trace history.
Delete History	Deletes the trace history.

Menu/Command	Function
Networks	
Insert Before	Inserts a network before the selected network.
Insert Next	Inserts a network after the selected network.
Cut	Deletes the selected network and stores it in the buffer.
Copy	Copies the selected network and stores the copy in the buffer.
Paste	Pastes the network in the buffer at the position of the cursor.
Delete	Deletes the selected network.
References	
Numeric	Display reference numbers using numbers.
Alphabet	Display reference numbers using letters.
Symbols	Display reference numbers and symbols.
Comments	Display reference numbers and comments.
Online	
State Flow	Highlights the display of contacts that are ON regardless of the status of the power flow.
Power Flow	Highlights the display of the power rails to indicate the progression of the power flow.
Single Sweep	If executed with the CPU Module running, sets the scan to sweep the normal segments once.
High-speed Single Sweep	If executed with the CPU Module running, sweeps the scan to execute the high-speed segment once.
Execute Scan	Executes a scan for the single sweep or high-speed single sweep.



- 1) The Online Menu is not displayed in the menu bar in Offline Mode.
- 2) Cutting and copying are not possible if only part of ladder elements requiring more than one line is selected. For example, a timer instruction cannot be cut or copied if only the bottom line is selected.
- 3) Pasting is not possible if there are not sufficient room. For example, instructions requiring 2 elements, such as timer instructions, cannot be pasted at the 7th line.
- 4) Lines and columns can be deleted only if they are empty. They cannot be deleted is any ladder elements are left on them.

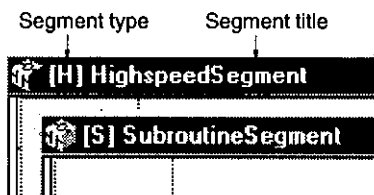
8.1.5 Title Bar Configuration

The configuration of the title bar of the Ladder Programming Window is shown below.

- 1) For normal segments, the segment number and segment title are displayed. By default, the segment title will be "N-Seg#xx," where xx is the segment number. The segment title can be changed.



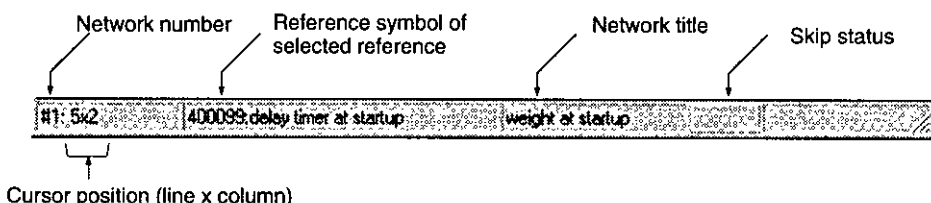
- 2) For the high-speed segment, the segment type is displayed as "H" and segment title is displayed as "High-speed Segment." The segment title can be changed.
- 3) For the subroutine segment, the segment type is displayed as "S" and segment title is displayed as "Subroutine Segment." The segment title can be changed.



8.1.6 Status Bar Configuration

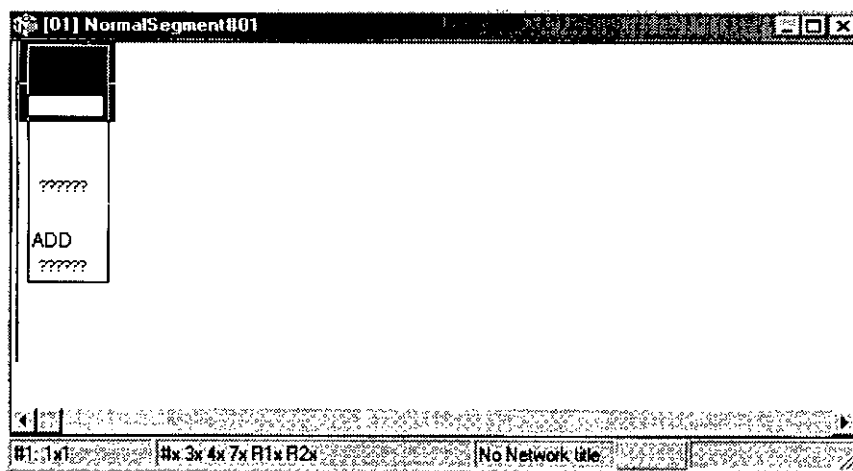
The configuration of the status bar of the Ladder Programming Window is shown below.

- 1) Information is displayed on the selected reference, network, and cursor position.



In Online or Debug Mode, "Skip" will be displayed as the skip status if the cursor is in a network that is being skipped. A skipped network is a network set to be skipped by the skip instructions (SKPC and SKPR) or the high-speed segment when the high-speed scan has been disabled.

- 2) If a ladder element is being input, the status bar will show a list of the references that can be input.

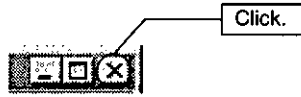


References that can be input

8.1.7 Closing the Ladder Programming Window

Use the following procedure to close the Ladder Programming Window

Click the **Close** Button in the upper right corner of the window.



8

8.2 Inputting Ladder Elements

■ This section describes the input operations for ladder elements.

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8.2.3	Inputting Mnemonics	8-13
8.2.4	Inputting with Shortcut Keys	8-15
8.2.5	Changing Reference Numbers	8-16
8.2.6	Deleting Elements	8-17
8.2.7	Changing Elements	8-18
8.2.8	Reference Numbers	8-21

8.2.1 Outline

Ladder elements can be input using any of the following three methods.

- Ladder palettes
- Mnemonics
- Shortcut keys

8.2.2 Inputting from the Palettes

- 1) MEMOSOFT provides pallets that can be used to input relays, coils, and programming instructions.
- 2) Use the following procedures to program using the palettes.

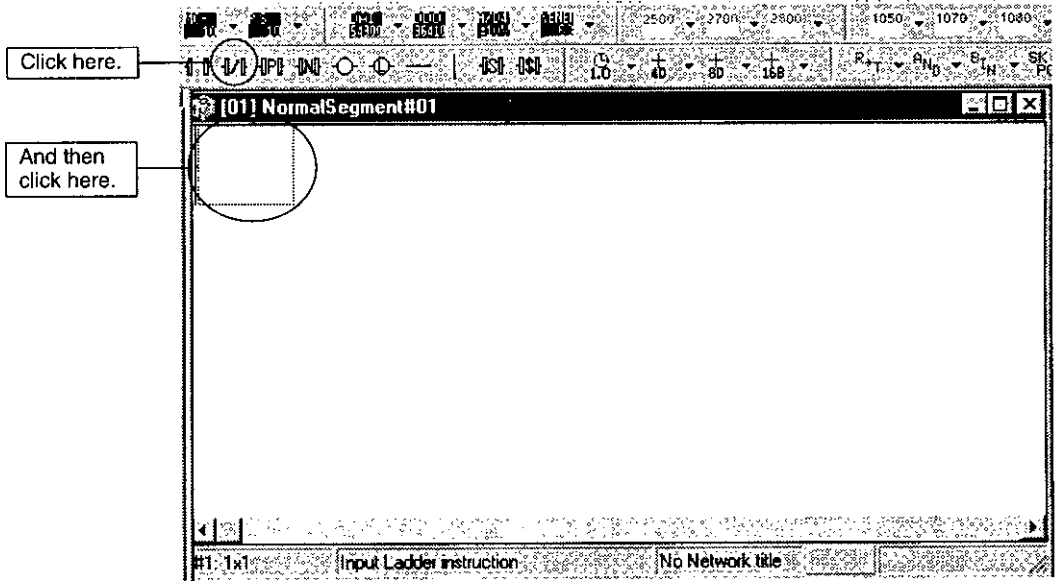
a) Inputting Relays and Coils

The following example shows how to input relays and coils, but horizontal and vertical shunts are input using the same method. Here, a N.C. contact is input.

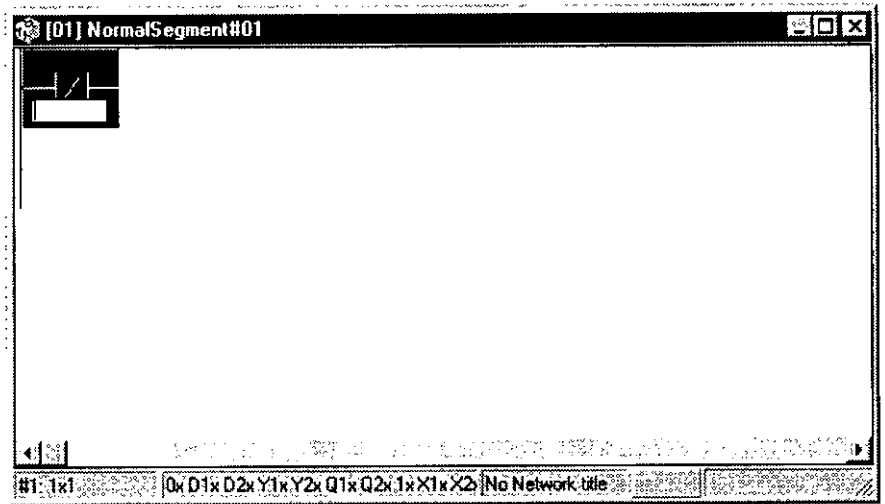
- (1) Open the Ladder Programming Window.
- (2) Click the **N.C. Contact** Button on the palette.

8

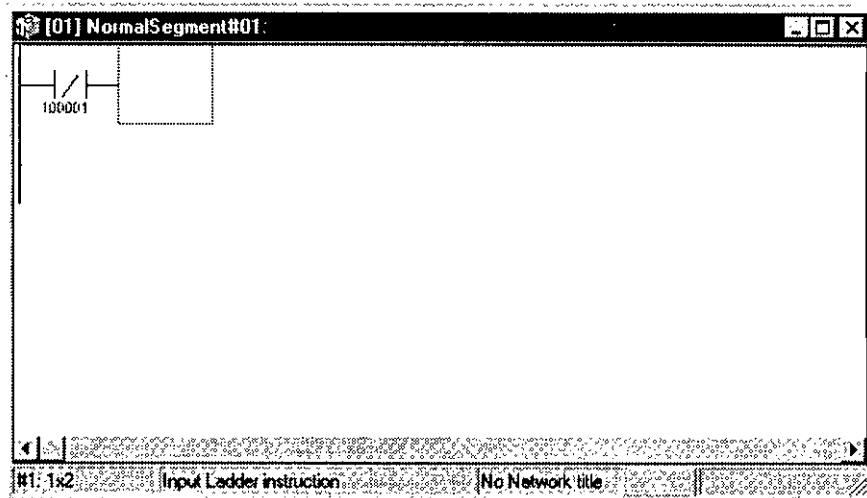
- (3) The N.C. Contact Button will remain selected. Click the position at which to input the N.C. contact.



- (4) The symbol for the contact will be displayed. Input the reference number.



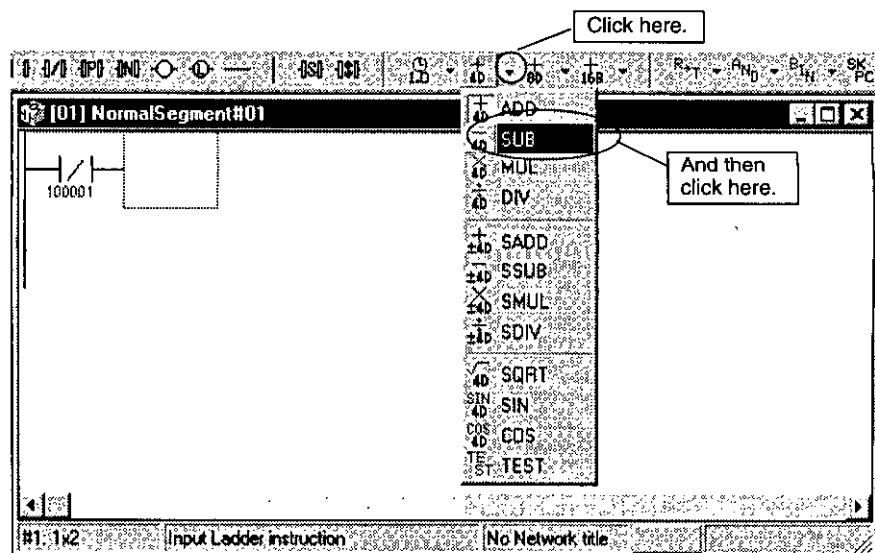
The element will be input.



b) Inputting Instructions

The operations described below are used to input instructions requiring more than one line, including timer and counter instructions. Here, a SUB instruction is input.

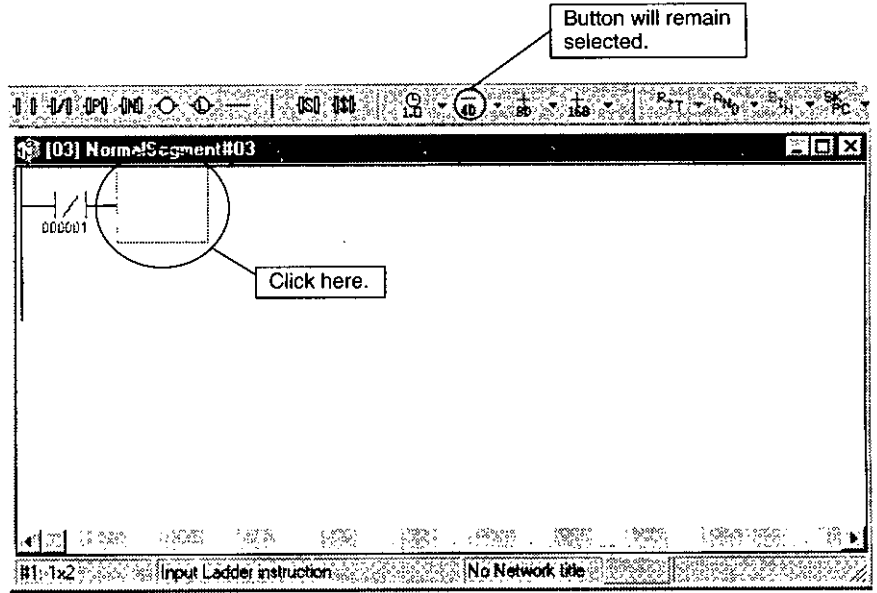
- (1) Open the Ladder Programming Window.
- (2) Click the down arrow on the ladder palette containing the desired instruction and click the SUB instruction.



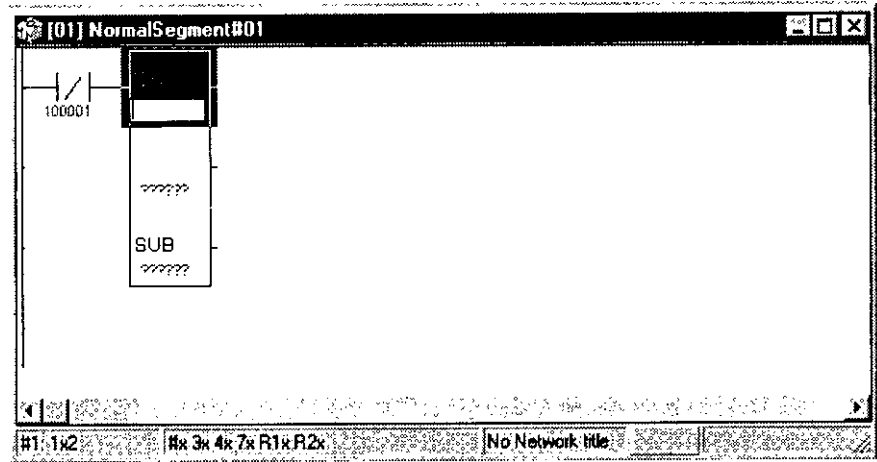
The Palette Button for SUB will remain selected.

8

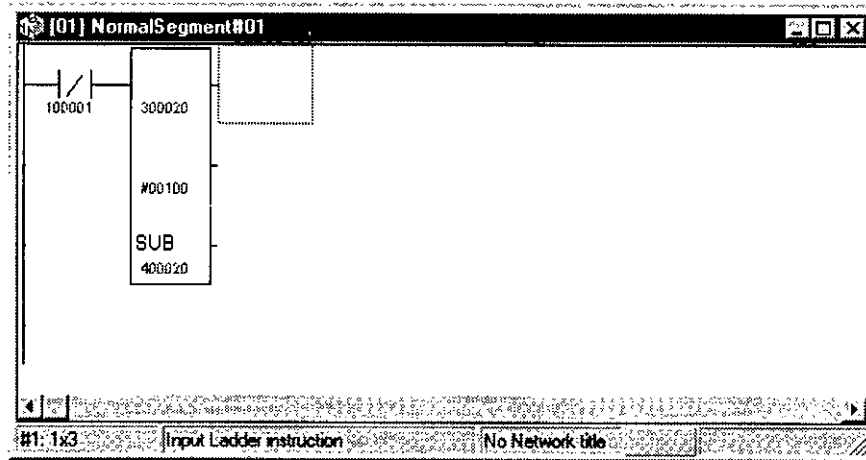
- (3) Click the position at which to input the SUB instruction.



- (4) The symbol for the instruction will be displayed. Input the reference numbers for each element.



The instruction will be input.



- Note**
- (1) The programming instructions that are displayed depend on the CPU Module set in the system configuration.
 - (2) Although constants are prefixed with “#,” it is not normally necessary to input “#.” The symbol will be automatically input when you input the constant, e.g., 60. If either a constant or a reference number can be input for the element, then you must input “#.” If it is omitted in this case, the number will be assumed to be a reference number unless “#” is input.

8.2.3 Inputting Mnemonics

- 1) This section describes inputting programming elements by using mnemonics. Mnemonics allow timers, counters, and other programming instruction symbols to be input directly from the keyboard.
- 2) Refer to the following manual for information on mnemonic symbols.

MEMOCON GL120, GL130 Software User's Manual, Vol. 1 (SIEZ-C825-20.11), 3-1-1 Programming Instructions



Mnemonics

Mnemonics are alphabetic representations of machine language in a form that can be understood. Each of the instructions for the GL120 and GL130 is assigned a mnemonic of up to 4 letters.

Example: UNSIGNED SINGLE PRECISION DECIMAL DIVISION = DIV
CHECKSUM = CKSM

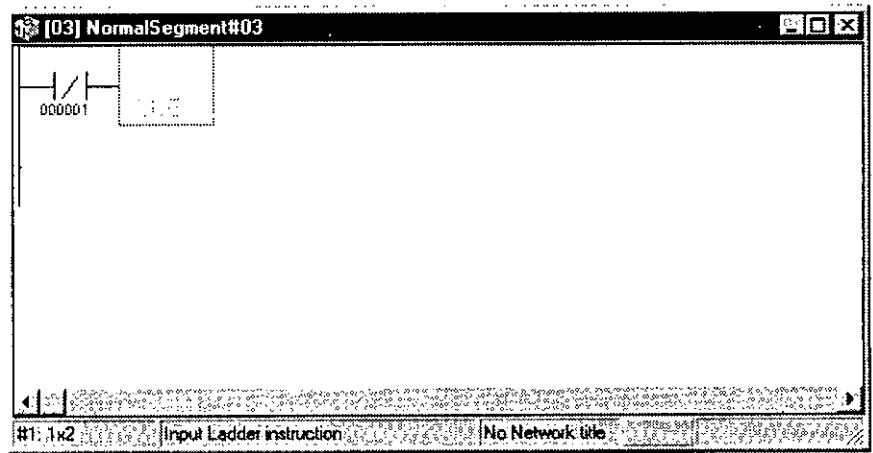
Note (1) Input the subfunction name for extended math instructions (EMTH), message instructions (FBUS), and motion instructions (MC). For example, input "LOG" for the EMTH LOG instruction.

(2) Mnemonics cannot be input in locations where instructions already exist.

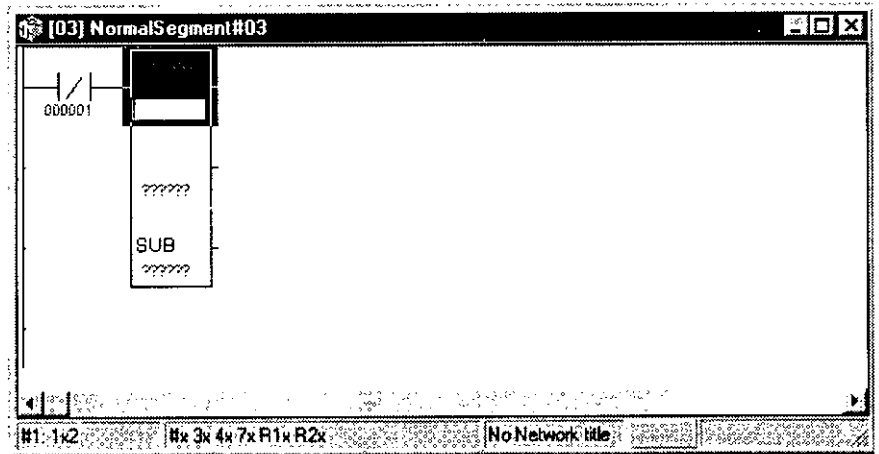
3) Use the following procedure to input instructions using mnemonics.

a) Open the Ladder Programming Window.

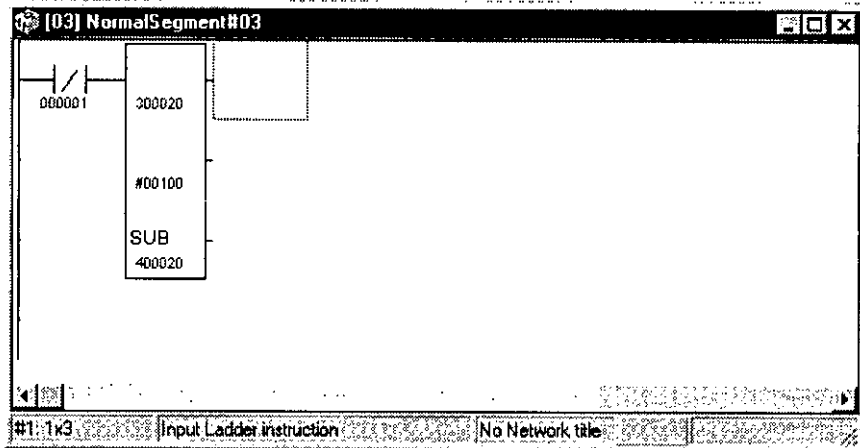
b) Input **SUB** and press the **Enter** Key.



c) The symbol for the instruction will be displayed. Input the reference numbers.



The element will be input.



- 1) Timers and counter instructions can also be input using their symbols. For example, the 0.1-SECOND TIMER Instruction can be input at the cursor by entering "T0.1."
- 2) Stepping switches can also be input using their symbols.
Example: STPA: Inputs a N.O. stepping switch contact
Example: STPB: Inputs a N.C. stepping switch contact

8.2.4 Inputting with Shortcut Keys

- 1) Shortcut keys can be used to input relays, coils, and other elements that are used frequently.
- 2) The shortcut keys for ladder instructions are shown below.

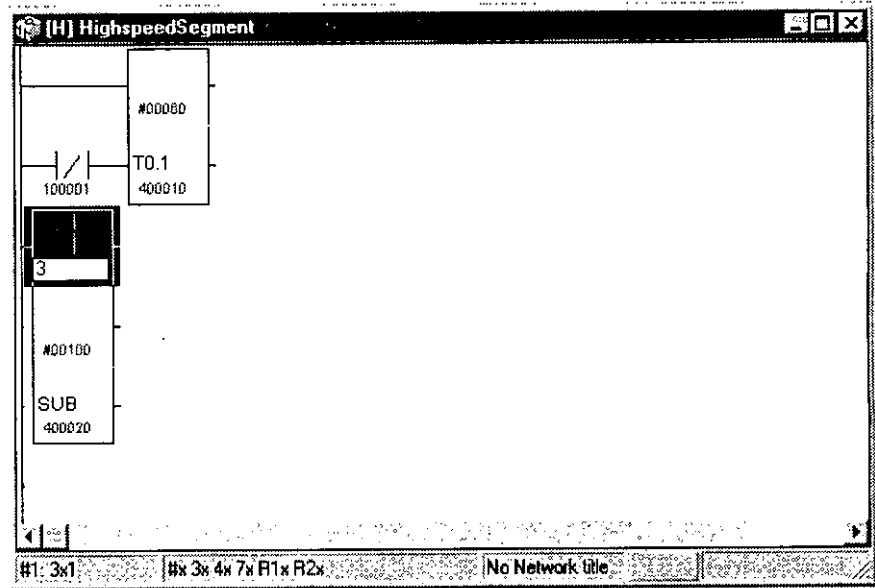
Key	Instruction
^ or "	N.O. contact
/	N.C. contact
Ctrl + P	Positive transitional contact
Ctrl + N	Negative transitional contact
* or [	Coil
Ctrl + L	Latched coil
=	Horizontal shunt
|	Vertical shunt

- 3) The following keys can be used to input the same or consecutive reference numbers.

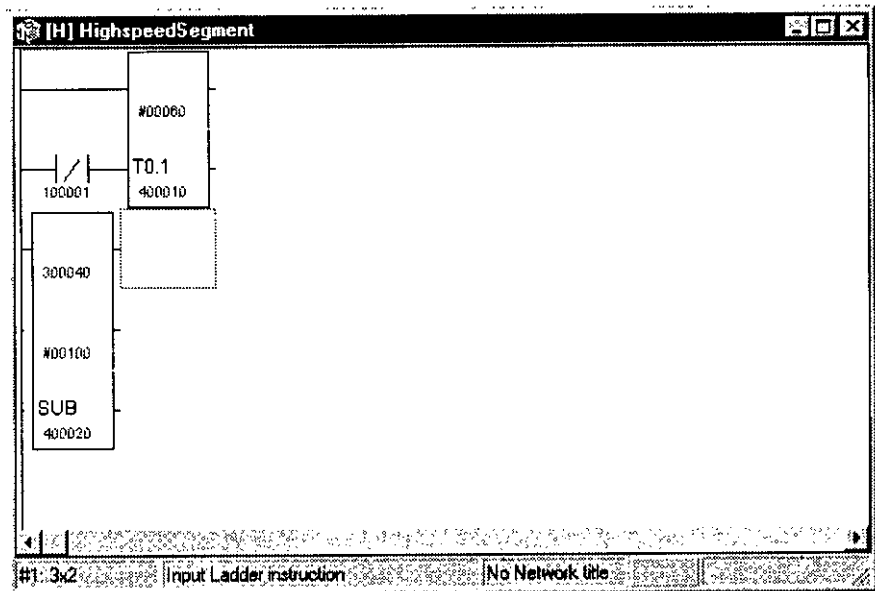
Key	Reference Number
(space)	The previously entered reference number
+	One higher than the previously entered reference number
-	One lower than the previously entered reference number

8.2.5 Changing Reference Numbers

- 1) Reference numbers can be changed by moving the cursor to the reference number and then inputting the new reference number.
- 2) Use the following procedure to change reference numbers.
 - a) Move the cursor to the element with the reference number to be changed.
 - b) Input the reference number. The reference number will start changing as soon as the first letter is entered.



-
-
- c) Finish inputting the reference number and press the **Enter** Key. The reference number will be changed.





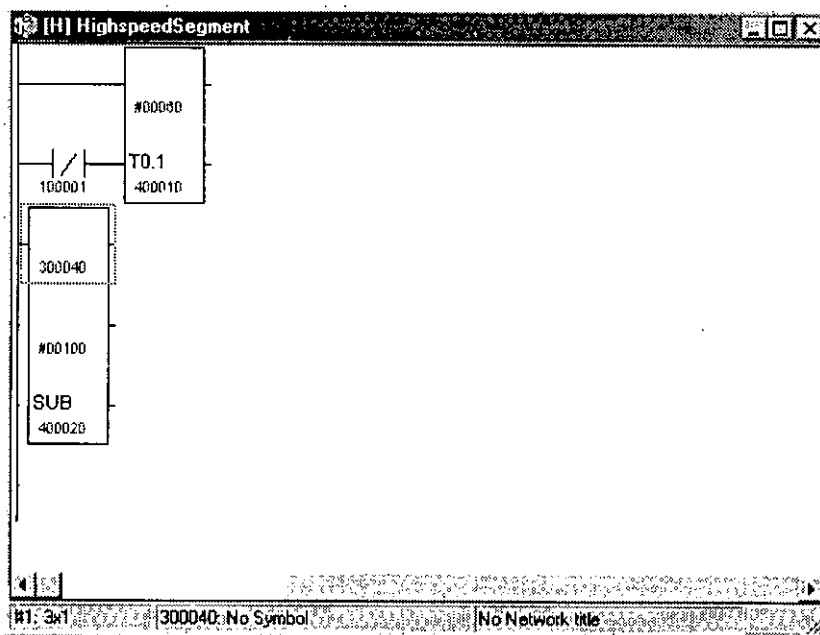
Changing a reference number can be canceled by pressing the Esc Key any time before pressing the Enter Key. The original reference number will be restored.



The + and – Keys can be used to quickly change reference numbers. Select a reference number and press the + Key to increment the value by one or press the – Key to decrement the value by one.

8.2.6 Deleting Elements

- 1) Elements can be deleted by selecting them and pressing the Ctrl + Delete Keys. If an instruction contains more than one element, the instruction can be deleted with the cursor located in either element.
- 2) Use the following procedure to delete elements.
 - a) Select the element to be deleted.



- b) Press the **Ctrl + Delete** Keys. The element will be deleted.

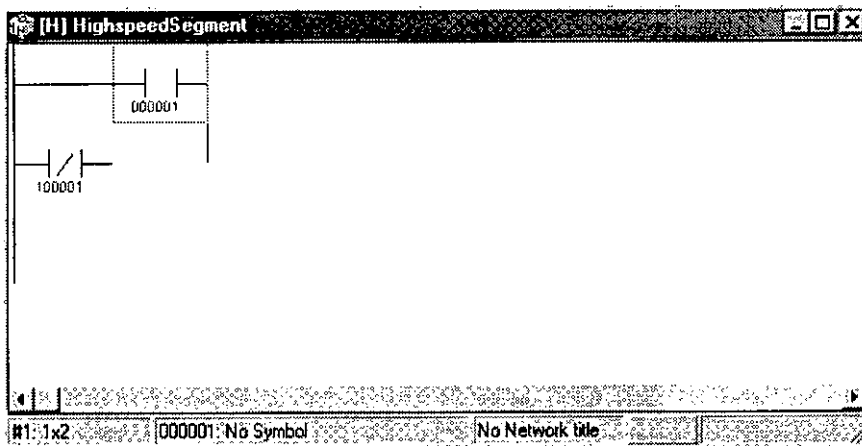
Note Deleting Vertical Shunts

To delete a vertical shunt that has been input with another instruction, all that is required is to repeat the input operation.

Use the following procedure to delete a vertical shunt.

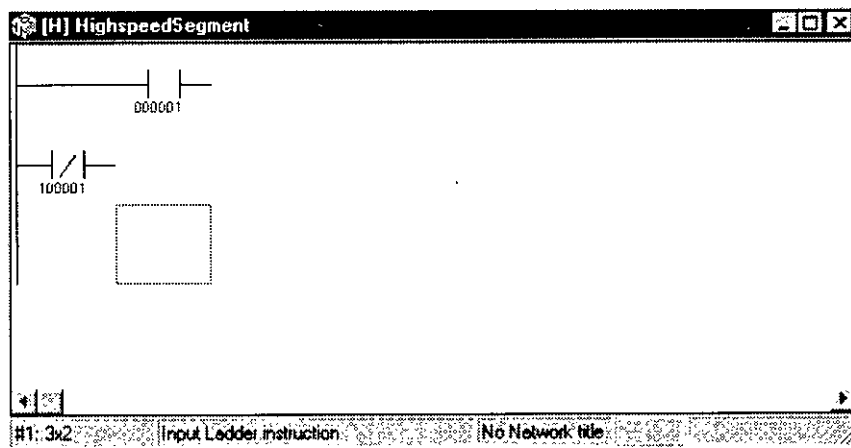
8

- (1) Move the cursor to the position of the vertical shunt to be deleted.



- (2) Repeat the input operation as follows: Select the vertical shunt from the ladder palette or input the | Key.

The vertical shunt will be deleted without deleting any other element.

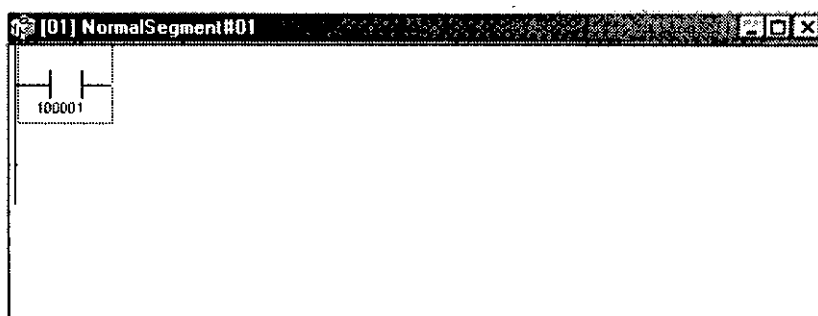


8.2.7 Changing Elements

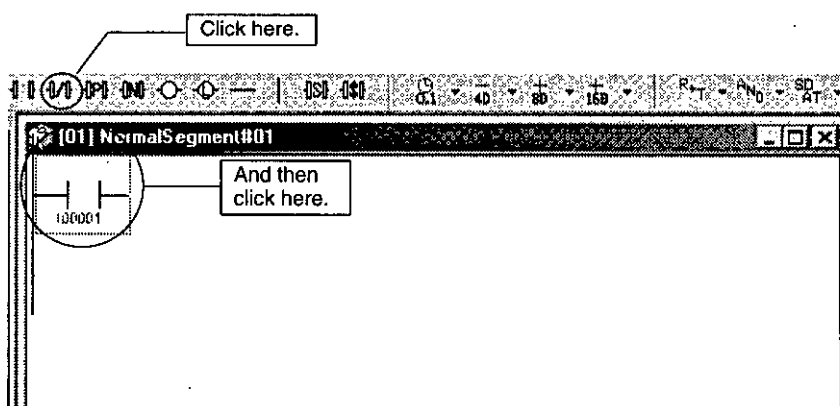
Similar instructions can be changed by moving the cursor to the instruction and inputting the new instruction. For example a N.O. contact can be changed to a N.C. contact or a subtraction instruction can be changed to an addition instruction. Even when an instruction is changed, the reference numbers will not be changed. Two examples are provided below.

1) Changing a N.O. Contact to a N.C. Contact

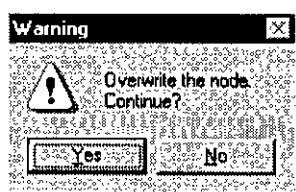
- a) Move the cursor to the N.O. contact to be changed.



- b) Select a N.C. contact from the ladder palette and click the N.O. contact in the program.



A confirmation message will be displayed.



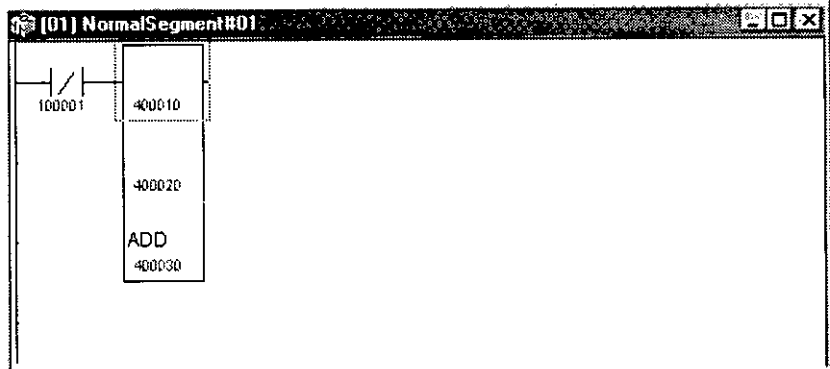
- c) Click the **Yes (Y)** Button. The contact will be changed from a N.O. contact to N.C.



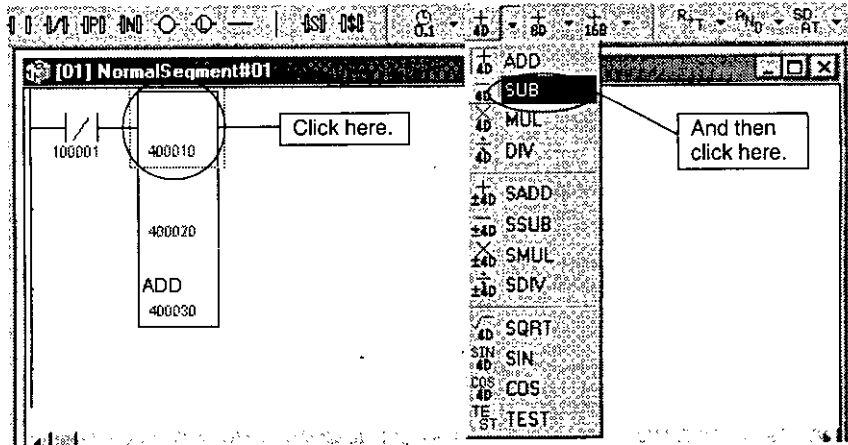
8

2) Changing an Addition Instruction to a Subtraction

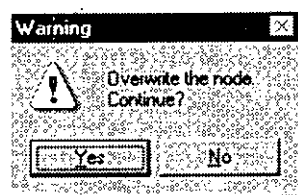
- a) Select the addition instruction to be changed with the cursor.



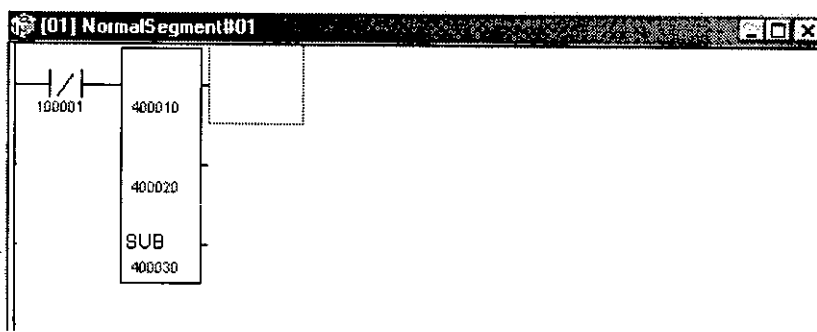
- b) Select the SUB instruction from the ladder palette and click the addition instruction in the program.



A confirmation message will be displayed.



- c) Click the **Yes (Y)** Button. The instruction will be changed from an addition instruction to a subtraction instruction.



If the reference numbers in the original instruction are unsuitable for the new instruction, they will be replaced with ??????. Reinput the reference number.

8.2.8 Reference Numbers

This section summaries information on inputting reference numbers.

1) Inputting Reference Numbers

It is not necessary to input all six digits of a reference number. For example, to input output coil 000125 it is necessary to input only 125. If letters are displayed, only the leading letter and the number need to be input. For example, to input W00011 (400011), it is necessary to input only W11.

2) Inputting Constants

With normal elements, it is not necessary to input the leading character “#” when inputting constants. For example, to input #00060, it is necessary to input only 60. The character “#” will be input automatically. If either a constant or an output coil can be input for an element, however, the “#” must be input. If it is not input, the number will be assumed to be for an output coil. When inputting a constant for an element like this, always input the “#” before the number.

3) Inputting Consecutive Reference Numbers

The following keys can be used to easily input the same or consecutive reference numbers.

Key	Reference Number
(space)	The previously entered reference number
+	One higher than the previously entered reference number
-	One lower than the previously entered reference number

4) The following are possible in Offline Mode.

a) Leaving Reference Numbers Blank

After inputting a relay or other element, the Enter Key can be pressed without inputting a reference number. The reference number will be input as ??????. This can be convenient when you need to input only the element. Before downloading the program to the PLC, however, all relays with ?????? must be replaced with actual references or an error will occur. Timer, math, and other instructions, will not cause errors even if ?????? remains for a reference number, but they should be replaced with actual reference numbers.

b) Duplicated Coils

No checks are made for duplicated coils when programming in Offline Mode. It is thus acceptable to have duplicated coils while programming, but all duplicated coils must be removed before the program is downloaded to a PLC or an error will occur. Before downloading to the PLC, check the program for duplicated coils with the automatic file check function.

Note Programs can be checked for reference numbers that have not been input and for duplicated coils using the ladder program check function in MEMOSOFT. Refer to *8.6 Checking Ladder Programs* for details.

8

8.3 Editing Ladder Elements

This section describes editing operations for ladder elements, such as copying and deleting.

8.3.1	Outline	8-23
8.3.2	Editing Ladder Elements	8-23
8.3.3	Offsetting References	8-25

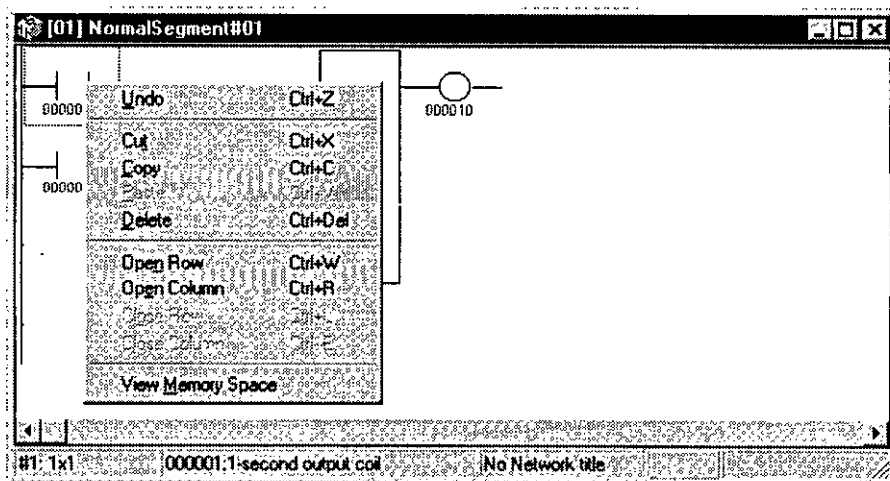
8.3.1 Outline

- 1) Ladder elements can be edited from the pop-up menu in the Ladder Programming Window or from the Edit Menu on the menu bar. This section describes editing ladder elements using the pop-up menu.
- 2) Only one Ladder Programming Window can be opened for each segment. The same network thus cannot be displayed in more than one window.

8.3.2 Editing Ladder Elements

1) Pop-up Menu

A pop-up menu will be displayed when the right mouse button is pressed in the Ladder Programming Window. The configuration of the pop-up menu is shown below.



• Cut

The cut function deletes the selected area of program data and store it in the data buffer. The data stored in the buffer by the cut function can be insert to another posi-

tion by using the paste function. The cut function can thus be used not only to delete data , but also to move it to another location.



- 1) To cut an instruction consisting of two or three elements, all of the elements must be selected to cut the instruction. An instruction cannot be cut or copied unless all of the elements in it are selected.
- 2) An area that includes parts of two networks cannot be copied. Refer to *8.4.3 Editing with the Network Manager* for information cutting entire networks.

- **Copy**

Stores the selected area of program data in the data buffer. The data stored in the buffer by the copy function can be inserted to another position by using the paste function.

- **Paste**

Inserts the program data stored in the data buffer by the cut or copy function to the position of the cursor.



- 1) The program data stored in the data buffer cannot be paste if it will exceed the area from the cursor to the end of the network.
- 2) Only one piece of program data can be stored in the data buffer. In other words, the paste function will always insert the data most recently stored in the data buffer by the cut or copy function.
- 3) Individual elements can also be deleted by selecting them one at a time and pressing Ctrl + Delete, but the data will not be stored in the data buffer for this operation.

- **Delete**

Deletes the program data in the selected area, but unlike the cut function, the data is not stored in the data buffer.

- **Open Row**

Inserts on blank line into a network. All elements below the point where the line is inserted will be moved down one line. A line thus cannot be inserted if there is no line below the insertion point. Lines also cannot be inserted where there are elements that occupy more than one line.

- **Open Column**

Inserts on blank column into a network. All elements to the right of the point where the column is inserted will be moved to the right one column and the rightmost column,

which must be blank, will be deleted. A column thus cannot be inserted if there is no column to the right of the insertion point.

- **Close Row**

Deletes one line. All elements below the line that was deleted will be moved up one line. Lines containing elements cannot be deleted.

- **Close Column**

Deletes one column. All elements to the right of the column that was deleted will be moved to the left one column. Columns containing elements cannot be deleted.

- **View Memory Space**

Shows the usage of the ladder program memory in the entire project.

8.3.3 Offsetting References

- 1) The specified range of reference numbers can be offset by a specified amount. This function can be used to change reference numbers when program data is copied. There is no offset function available for constants.

Note The reference offset function can be used only in Offline Mode.

- 2) Execute the reference offset function by selecting **Offset** from the pop-up menu in the Network Manager. The procedure for using the offset function is given later in this section.



- 1) Either negative or positive values can be used to offset references.
- 2) An error will occur if the range set in the system configuration is exceeded by the starting or last reference number.
- 3) References will not be offset if the conversion range is specified using two different types of reference, e.g., if 300001 is specified as the starting register and 401000 is specified as the last reference.

- 3) The configuration of the Reference Offset Dialog Box is shown below.

The screenshot shows the 'Reference Offset' dialog box with the following fields and options:

- 1) First Ref. No.: 300001
- 2) Last Ref. No.: (empty)
- 3) Offset: (empty)
- 4) Replace Ref. No.: 300001
- 5) Symbol/Comment: No change, Copy, Move
- 6) Register data: No change, Copy, Move

Buttons: OK, Cancel

8

a) First Reference Number

The first reference number in the range to be offset.

b) Last Reference Number

The last reference number in the range to be offset.

c) Offset

The number by which reference numbers are to be offset. Either a positive or negative number can be input.

d) Replace Reference Number

The resulting reference number for the starting reference number will be displayed automatically based on the starting reference number and the offset.

e) Symbol/Comment

Specifies whether to copy or move reference symbols or comments for the offset reference numbers.

f) Register Data

Specifies whether to copy or more register data for the offset reference numbers.

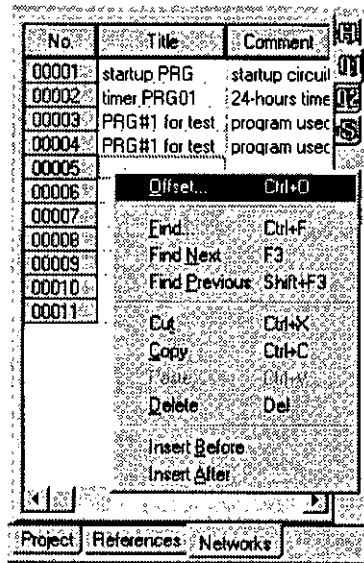
4) Use the following procedure to offset reference numbers.

a) Open the Network Manager.

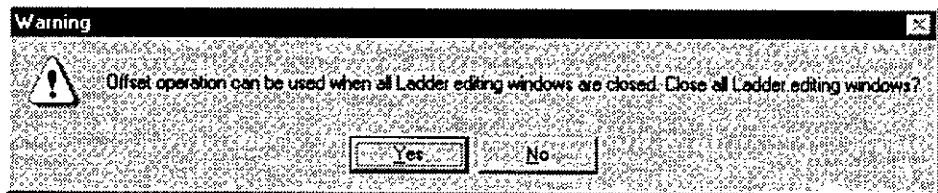
No.	Title	Comment
00001	startup PRG	startup circuit
00002	timer PRG01	24-hours time
00003	PRG#1 for test	program usec
00004	PRG#1 for test	program usec
00005		
00006		
00007		
00008		
00009		
00010		
00011		

Project References Networks

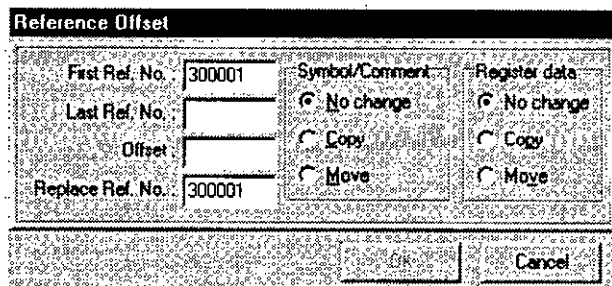
- b) Click the right mouse button and selected **Offset** from the pop-up menu.



- c) If an editing window is open, the following confirmation message will be displayed. Confirm the contents and then click the **Yes (Y)** Button.



The Reference Offset Dialog Box will be displayed.



- d) Enter the reference number range and the offset.
- e) Specify whether to copy or move symbols/comments and register data.
- f) Click the **OK** Button. The reference numbers will be offset.

8.4 Editing Networks

This section describes operations required to edit networks, including inserting, copying, and deleting networks.

8.4.1	Outline	8-28
8.4.2	Editing from the Ladder Programming Window	8-28
8.4.3	Editing with the Network Manager	8-29

8.4.1 Outline

- 1) Other than instructions, networks are the small programming unit. One or more networks are combined to create segments.
- 2) There are the following two ways to edit networks.
 - Networks can be edited from the Network Menu on the menu bar when it is necessary to check the ladder program while editing.
 - Networks can also be edited from the Network Manager to edit one or more networks at the same time.

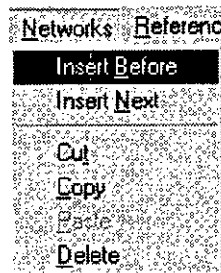
8.4.2 Editing from the Ladder Programming Window

1) Outline

Networks can be edited in the Ladder Programming Window by using the Network Menu on the menu bar when it is necessary to check the ladder program while editing.

2) Network Menu

The configuration of the network menu is shown below.



- **Insert Before**

Inserts an empty network before the network containing the cursor.

- **Insert Next**

Inserts an empty network after the network containing the cursor.

- **Cut**

Cuts the program data and comment data from the selected network and places them in the data buffer. The data that has been cut can be inserted at another position by using the paste network function. The cut network function can thus be used not only to delete data , but also to move it to another location.

- **Copy**

Stores the program data and comment data from the selected network in the data buffer. The data stored in the buffer by the copy network function can be inserted to another position by using the paste function.

- **Paste**

Inserts the program data and comment data stored in the data buffer by the cut network or copy network function to just before the network with the cursor. The number of each network after the position where the new network is inserted will be increased by one.



Only one piece of program data can be stored in the data buffer. In other words, the paste network function will always insert the data more recently stored in the data buffer by the cut network or copy network function.

- **Delete**

Deletes the program data and comment data from the selected network, but unlike the cut network function, the data is not stored in the data buffer.

8.4.3 Editing with the Network Manager

1) Outline

The Network Manager enables copying, pasting, and other operations on more than one network at a time. Reference offsets can also be set and searches can also be made from the Network Manager. The Network Manager manipulates networks by cells.

2) Pop-up Menu

Cells are selected by clicking and holding the left mouse button on one cell and then dragging to select. Lines are selected by clicking and holding the left mouse button on a network number cell and then dragging to select. A pop-up menu will appear if the right mouse button is pressed on a cell that has been selected. The configuration of the pop-up menu is shown below.

Offset	Ctrl+O
End	Ctrl+F
Find Next	F3
Find Previous	Shift+F3
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Insert Before	
Insert After	

• **Offset**

Converts reference numbers by adding a specified offset value to all reference numbers in a specified range. Refer to 8.3.3 *Offsetting References* for details.

Note The reference offset function can be used only in Offline Mode.

• **Find**

Searches for text strings in network titles or comments.

• **Find Next**

Searches for the next text string after a search operation has been performed.

• **Find Previous**

Searches for the previous text string after a search operation has been performed.

• **Cut**

Stores the selected cell data on the clipboard and cleared the data from the selected cells.

• **Copy**

Stores the selected cell data on the clipboard.

- **Paste**

Pastes the data on the clipboard to the selected cells. The paste function can be used after cutting or copying cell data.

- **Delete**

Deletes the selected cell data.

- **Insert Before**

Inserts a new network before the selected network.

- **Insert Next**

Inserts a new network after the selected network.

8.5 Searching Ladder Programs

This section describes operations required to move between networks and to search for elements, reference numbers, and other programming elements.

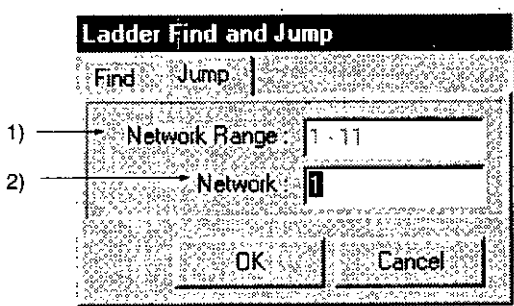
8.5.1	Outline	8-32
8.5.2	Moving between Networks	8-32
8.5.3	Searching for Elements and Reference Numbers	8-33
8.5.4	Tracing and Retracing	8-36
8.5.5	Viewing the History	8-38
8.5.6	Deleting the History	8-39

8.5.1 Outline

- 1) Ladder programs can be searched for network numbers, ladder elements, and references numbers. The coil corresponding to a contact can also be found using trace/retrace operations.
- 2) Ladder program searches are performed from the Search Menu on the menu bar.

8.5.2 Moving between Networks

- 1) The specified network can be jumped to by inputting the network number in the Ladder Search and Jump Dialog Box.
- 2) The configuration of the Ladder Find and Jump Dialog Box is shown below.



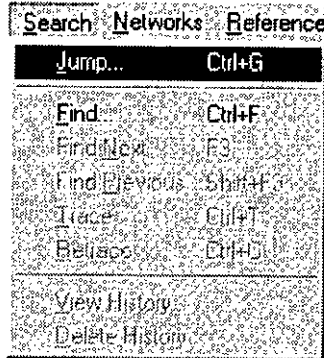
a) Network Range

Shows the range of networks within the segments.

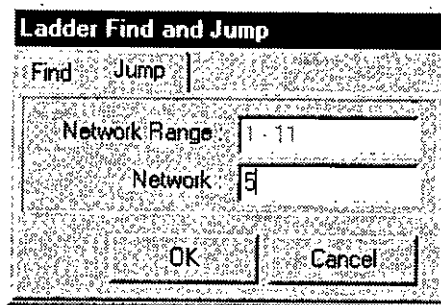
b) Network

Indicates the network to which to jump. The network number of the current network will be input as the default.

- 3) Use the following procedure to jump to a specified network.
 - a) Select **Search (S) – Jump (G)** from the menu bar.



- b) The Ladder Find and Jump Dialog Box will be displayed. Input the number of the network to which to jump and click the **OK** Button.



The specified network will be displayed.

8.5.3 Searching for Elements and Reference Numbers

- 1) Searches can be made in the program for constants, reference numbers, and element symbols. Searches are performed from the Search Menu on the menu bar. There are three ways to search depending on the start position and search direction.

a) Find

Searches for a constant, reference number, or element symbol input by the operator. The search will start from the network 1 in the current segment. If an occurrence is found, the cursor will move to it. A message will be displayed if no occurrence is found before the end of the program.

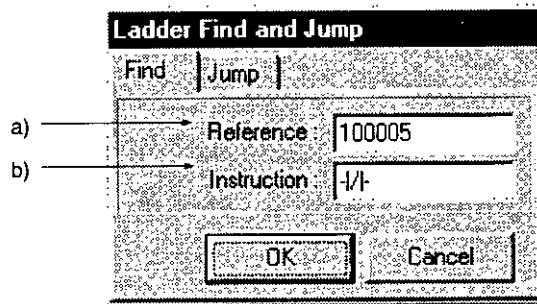
b) Find Next

Searches for the next occurrence of an item specified for the search operation in the direction of increasing network numbers. The search will start at the position of the cursor.

c) Find Previous

Searches for the next occurrence of an item specified for the search operation in the direction of decreasing network numbers. The search will start at the position of the cursor.

2) The configuration of the Ladder Find and Jump Dialog Box is shown below.



a) Reference

Input the reference for which to search.

b) Instruction

Input the instruction for which to search.

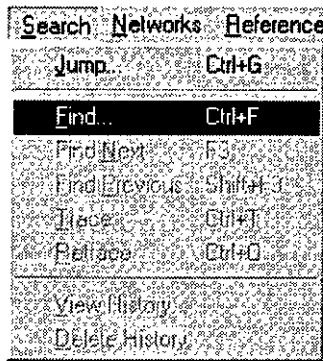


Instructions to be searched for can be input using shortcut keys or mnemonics. The shortcut keys and mnemonics for relays and coils are shown in the following table.

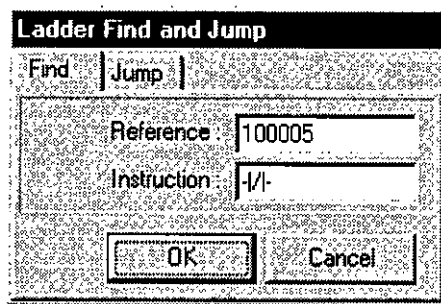
Instruction	Shortcut Key	Mnemonic
N.O. contact	^ " or '	NOC
N.C. contact	/	NCC
Positive transitional contact	Ctrl + P	PTC
Negative transitional contact	Ctrl + N	NTC
Coil	(or [	COIL
Latched coil	Ctrl + L	LCIL
Horizontal shunt	=	(None)
Vertical shunt	|	(None)

3) Use the following procedure to search for an element or reference number.

- a) Select **Search (S) – Find (F)** from the menu bar.



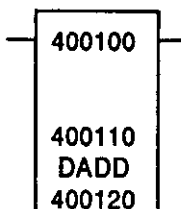
- b) The Ladder Find and Jump Dialog Box will be displayed. Input the reference number, constant, or instruction for which to search and click the **OK** Button.



The cursor will move to the first occurrence of the specified item in the segment.

Note When a ladder instruction uses more than one consecutive reference beginning with a specified reference, all of the references will be subject to the search. There are limits, however, for indexed block transfer instructions. Refer to the following examples for details.

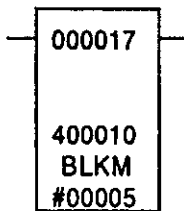
Example 1



In the above DADD instruction, the following reference numbers can be found by searching: Holding registers 400100, 400101, 400110, 400111, 400120, and 400121

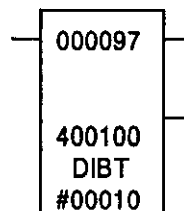
8

Example 2



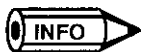
In the above BLK instruction, the following reference numbers can be found by searching: Coils 000017 to 000096 and holding registers 400010 to 400014.

Example 3



In the above DIBT instruction (an indexed block transfer instruction), the following reference numbers can be found by searching: Coils 000097 to 000256 and holding register 400100. The reference numbers of the registers where the data is stored cannot be found because they are accessed only by a pointer.

The following instructions use registers with reference numbers that cannot be found by searching: DIBT, DIBR, SIBT, and SIBR. Be careful when using these instructions.



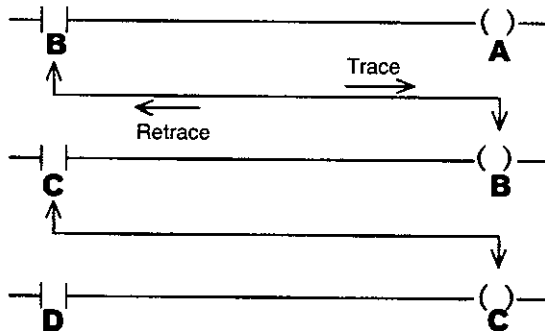
- 1) Searches can be made for both reference numbers and instruction symbols at the same time. Any element of the specified instruction that also contains the specified reference will be found. For example, specify both the reference number and symbol to find a N.C. contact for reference number 5. In this case, you will not find a N.O. contact for reference number 5.

- 2) The Find Next command and Find Previous command cannot be used until the Search command has been executed.

8.5.4 Tracing and Retracing

- 1) The coil corresponding to a contact can be found by selecting the contact on the screen and executing the Trace command. The contact can then be returned to by executing the

Retrace command. As shown in the following diagram, tracing and retracting can thus be used to search, in order, the circuits that are controlling contact status.

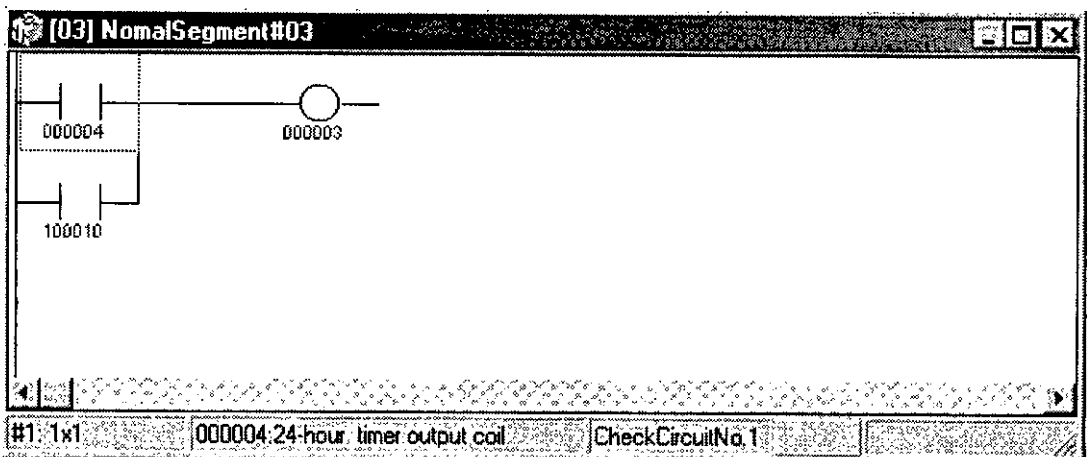


- 2) The Retrace command reverses the results of the Trace command. It can be executed more than once to return, in order, to the contacts from which the Trace command was executed.



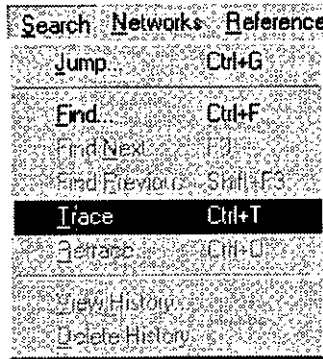
- 1) Although input relay references can also be used as contact, only coil references can be used for trace operations.
- 2) The history produced by the trace operation will be deleted as the retrace operation is executed. Refer to 8.5.5 *Viewing the History* and 8.5.6 *Deleting the History* for details on the history.
- 3) Use the following procedure to execute traces and retraces. Here, the trace operation is described as an example.

- a) Select the contact to be traced with the cursor.

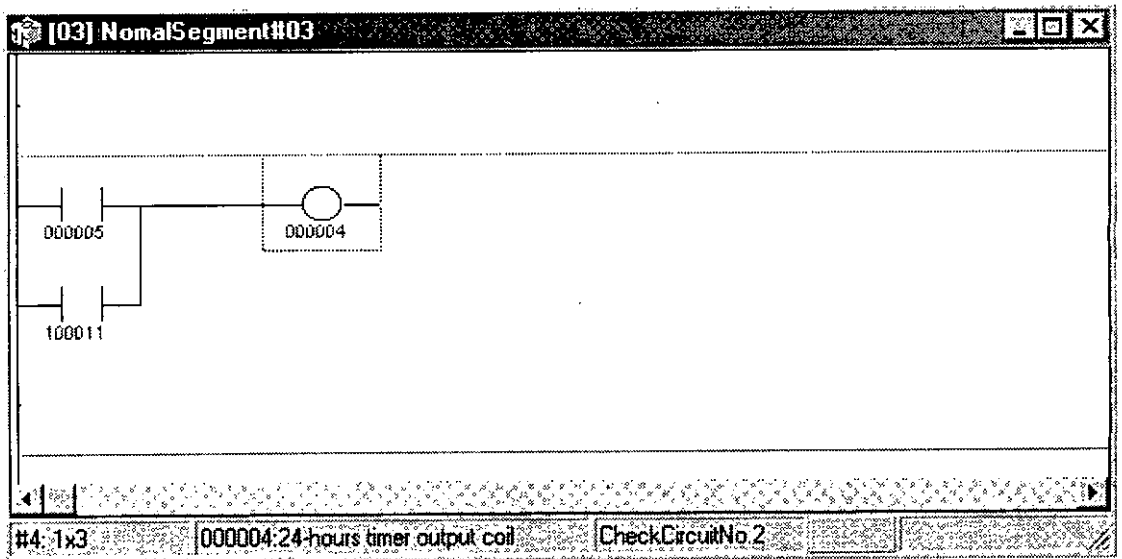


8

b) Select **Search (S) – Trace (T)** from the menu bar.



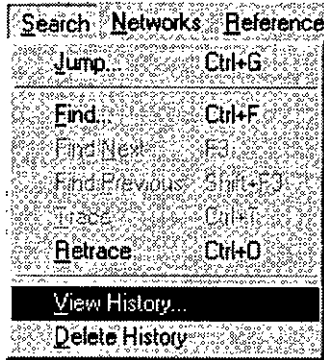
The cursor will move to the coil corresponding to the contact.



8.5.5 Viewing the History

- 1) A history is maintained of the results of search and trace operations. The history records up to the most recent 20 results and can be viewed by using the view history operation.
- 2) Use the following procedure to display the history for search and trace operations.

Select **Search (S) – View History (V)** from the menu bar.



The history will be displayed.

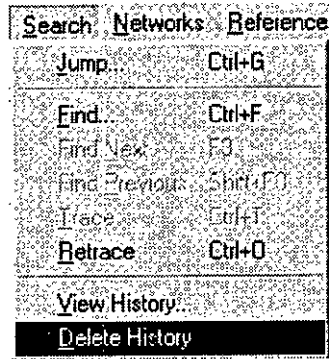
History						
No.	Network	Column	Row	Instruction	Operand	
1	1	1	1	||	000004	
2	1	1	1	||	000004	

OK

8.5.6 Deleting the History

- 1) The search/trace history can be deleted as required, e.g., before starting a new search operation, by using the delete history operation.
- 2) Use the following procedure to delete the search/trace history.

Select **Search (S) – Delete History (D)** from the menu bar.



The history will be deleted.

8.6 Checking Ladder Programs

This section describes the ladder program check and reference usage table display functions, which can be used after programming operations.

8.6.1	Outline	8-41
8.6.2	Checking Ladder Programs	8-41
8.6.3	Reference Usage Tables	8-43

8.6.1 Outline

It is necessary to check a program to be sure it had been written and input correctly after completing the programming operations. The MEMOSOFT provides the following two functions to check programs after editing.

- Ladder program check function
- Reference usage table display function

8.6.2 Checking Ladder Programs

- 1) The ladder program check function checks a ladder program for any illegal inputs. All ladder programs in the project will be checked. The results of the check will show the segment, network, line, and column where each illegal input is located.
- 2) The ladder program is checked for the following items.

- **Ladder Program Size**

The size of the program is checked to see if the capacity of the specified CPU Module has been exceeded.

- **Duplicated Coils**

The program is checked to see if any coils have been used more than once. If the same coils is used more than once, the location of the second and later coils is shown in the check results.

- **Missing Reference Numbers**

Instructions are checked to see if any reference numbers are missing. Missing reference numbers are displayed as ?????? in the program.

• **Instruction Applicability**

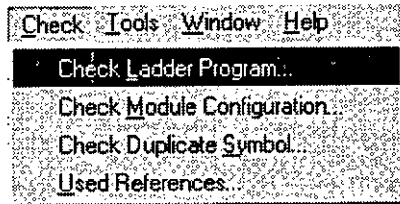
The program is checked for any instructions not supported by the specified CPU Modules. (The instructions that are supported depend on the CPU Module.)

• **Reference Ranges**

All reference numbers are checked to see if they exceed the specified ranges.

3) Use the following procedure to check the ladder programs.

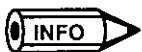
1) Select **Check (C) – Check Ladder Program (L)** from the menu bar.



2) A message will be displayed. Click the **OK** Button.

The results of the ladder program check will be displayed. (A few seconds may be required for the display to appear.)

Message	Segment	Network	Row	Column	Reference
Invalid Operand type.	H	2	2	1	??????
Invalid Operand type.	H	4	3	1	??????
Invalid Operand type.	L01	1	5	1	??????
Coil is written twice.	L01	1	1	5	000011
Invalid Operand type.	L02	2	1	4	??????
Invalid Operand type.	L03	1	1	1	??????
Coil is written twice.	L04	1	1	2	000012
Invalid Operand type.	S	6	1	1	??????



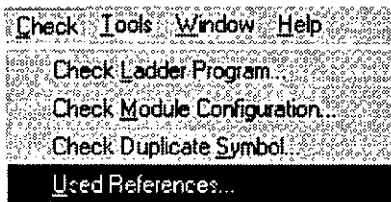
1) Correct all errors discovered in the program. The program cannot be transferred to a PLC unless all of the errors are corrected.

- 2) If the check does not discover any errors in the program, a message will appear saying so.

8.6.3 Reference Usage Tables

- 1) The reference usage table function displays I/O allocations and references used in the ladder program (based on searching the program). The tables provide detailed information on where each reference number is used, e.g., in I/O allocations, in the ladder program, or in both.
- 2) Use the following procedure to display the reference usage tables.

Select **Check (C) – Used References (U)** from the menu bar.



A reference usage table will be displayed.

Used Reference table

Address	Input Registers				Output Registers				Example
	Coils		Input Relays		Coils		Input Relays		
	0x	Y1x	Y2x	Q1x	Q2x	D1x	D2x		
000000		L	L	L	L				
000010	P	P	P						
000020									
000030									
000040									
000050									
000060									
000070									
000080									
000090									
000100									
000110									
000120									
000130									
000140									
000150									
000160									

The table includes 'Close' and 'Help' buttons at the bottom right.



The following table lists the symbols used in the reference tables and the meaning of each symbol.

Editing Ladder Programs

8.6.3 Reference Usage Tables , cont.

Symbol	Meaning
U	Used as a coil in both I/O allocations and the ladder program.
B	Used in both I/O allocations and the ladder program.
H	Used in only in I/O allocations.
P	Used as a coil and used only in the ladder program.
L	Used only in the ladder program.
-	Not used.
(blank)	Reference is out of range.

8

8.7 Changing the Display Mode

This section describes the display mode settings for displays for reference numbers and ladder program continuity.

8.7.1	Outline	8-45
8.7.2	Changing the Reference Display Mode	8-48
8.7.3	Changing the Ladder Status Display Mode	8-49

8.7.1 Outline

1) Display modes can be changed for reference numbers and ladder program continuity.

2) Reference Display Modes

a) References in ladder programs can be displayed in the following forms.

- Numbers (Numeric)
- Letters (Alphabet)
- Symbols
- Comments

b) Changing the display mode will not affect the input mode. For example, you can input reference numbers numerically and display them with letters.

c) The following table shows the number and letter displays for each type of reference.

Reference	Number Display	Letter Display
Coils	0xxxxx	Oxxxxx
Input relays	1xxxxx	Ixxxxx
Input registers	3xxxxx	Zxxxxx
Holding registers	4xxxxx	Wxxxxx
Constant registers	7xxxxx	Kxxxxx
Expansion registers	6xxxxx	Axxxxx

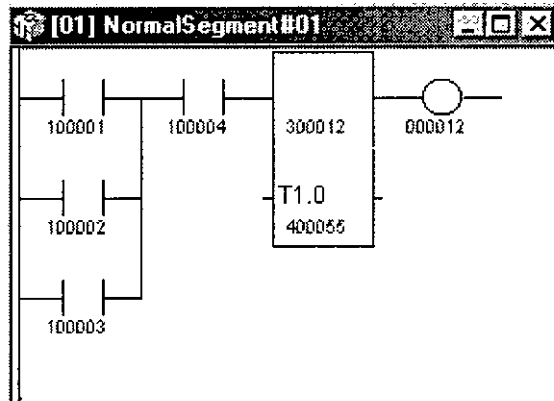
The default setting is for number displays. If, however, you remember the leading letters for the letter displays, you can use the following abbreviated input method even if the display mode is set for number display.

- Inputting Reference Numbers for Input Relays
 - Normal input: 100010
 - Short input: 110

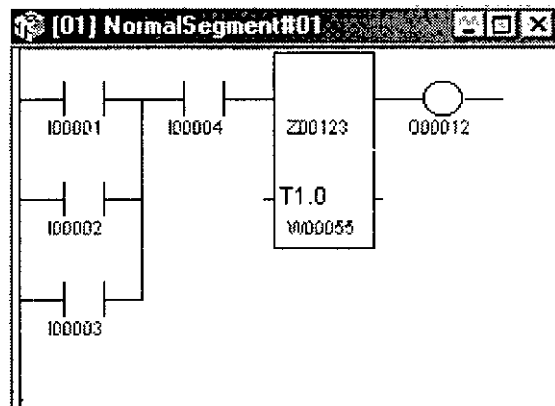
- Inputting Reference Numbers for Holding Registers
Normal input: 400001
Short input: W1

d) The display modes are illustrated below.

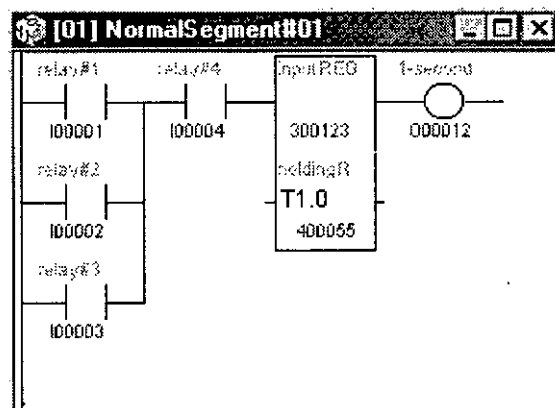
• Number Display (Numeric)



• Letter Display (Alphabet)

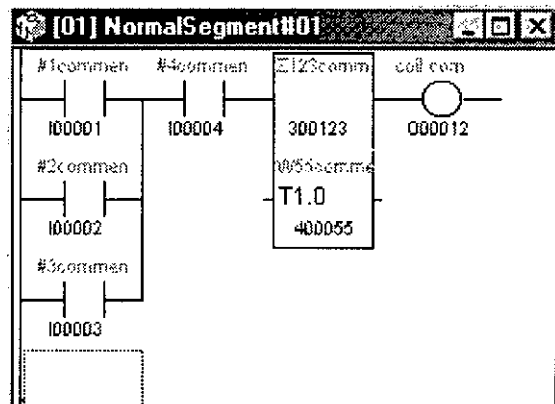


• Symbol Display



8

- **Comment Display**



3) Ladder Status Display Modes

- a) There are two types of ladder program status displays, which can be used for monitoring program execution.

- **Power Flow Display**

The default display mode, power flow displays emphasize the portion of the ladder diagram up to the point that power has flowed from the power rails.

- **Status Flow Display**

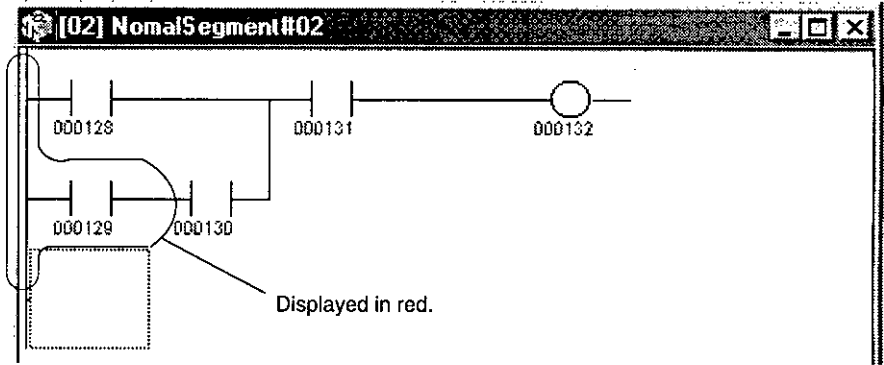
All ON contacts are displayed in red regardless of the status of the power flow. This display mode is convenient for trial operation.

- b) The difference in power flow display and status flow display is illustrated below for the status shown in the following table.

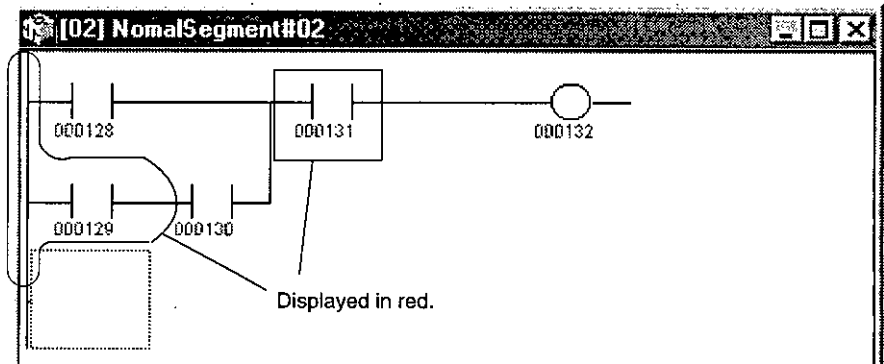
Reference	State
000128	OFF
000129	ON
000130	OFF
000131	ON

8

• Power Flow



• Status Flow

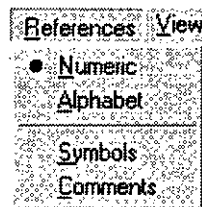


Although status flow displays are convenient for debugging, they increase the scan time more than power flow or no status displays. Do not use status flow displays whenever it is necessary to maintain the normal scan time.

8.7.2 Changing the Reference Display Mode

Use the following procedure to change the reference display mode. The default setting is for number display mode. The display mode can be set separately for each segment.

Select the desired mode from the **Reference (R)** menu on the menu bar.

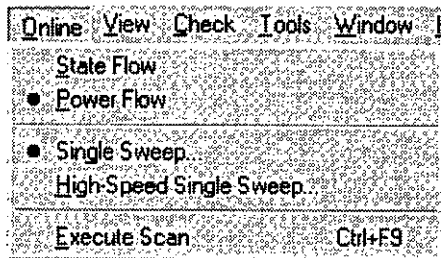


The display will change to the specified mode.

8.7.3 Changing the Ladder Status Display Mode

Use the following procedure to change the ladder status display mode. This procedure can be used in Online Mode only. Refer to 3.2.3 *Downloading the Project* for details on entering Online Mode.

Select the desired mode from the **Online (O)** Menu on the menu bar.



The display will change to the specified mode.

8.8 Sweep Operations

This section describes the PLC sweep operations, such as the single sweep and constant sweep operations.

8.8.1	Outline	8-50
8.8.2	Executing Sweep Operations	8-50

8.8.1 Outline

The GL120 and GL130 support three sweep functions. The constant sweep operation is performed from the Segment Scheduler. The single sweep and high-speed sweep operations are performed from the Online Menu on the menu bar. Sweep operations are not possible in Offline Mode. The Online Menu is displayed in Online Mode only. Refer to 3.2.3 *Downloading the Project* for details on entering Online Mode.

1) Constant Sweep

The constant sweep function is used to set a target time in order to enable a constant scan time. The target value must be longer than the actual scan time. It can be set in 10-ms increments between 10 and 200 ms. The constant sweep is enabled and disabled from the Segment Scheduler. Refer to 7.2.3 *Setting a Constant Sweep* for details.

2) Single Sweep

Single sweeps are used to debug the normal segments. If a single sweep is set, the normal segments will be executed once in each scan. I/O will be serviced and the program will be solved for one scan. The PLC must be running to use a single sweep.

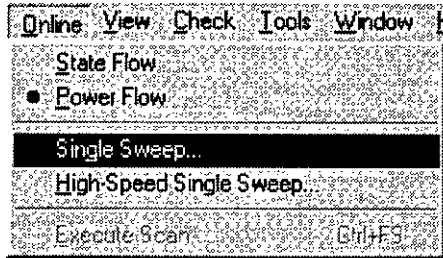
3) High-speed Sweep

High-speed sweeps are used to debug the high-speed segment. If a high-speed sweep is set, the high-speed segment will be executed once in each scan. I/O will be serviced and the program will be solved for one scan. The normal segments will not be executed. The high-speed scan must be enabled and the PLC must be running to use a single sweep. The high-speed scan can be enabled from the Segment Scheduler. Refer to 7.2.4 *Setting the High-speed Scan* for details.

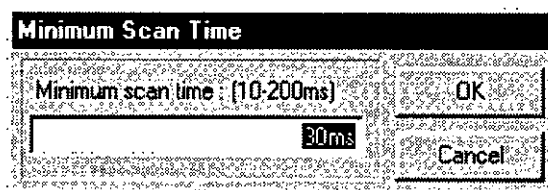
8.8.2 Executing Sweep Operations

Use the following procedure to execute sweep operations. A single sweep operation is used as an example.

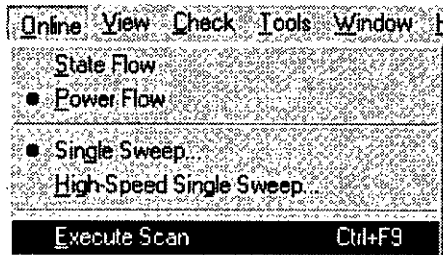
- 1) Select the desired sweep operation from the **Online (O)** Menu on the menu bar.



- 2) Input the minimum scan time.



- 3) The sweep operation will be enabled. Select **Online (O) – Execute Scan** from the menu bar. The sweep operation will be executed.



The number of scans that has been executed will be displayed in the lower right corner of the Ladder Programming Window.



Minimum Scan Time

The minimum scan time is a provisional setting of the time required to execute one scan. If timers are set in the ladder program, this setting will cause them to be counted out consecutively. Set the minimum scan time to a value close to the actual scan time. The setting can be made in increments of 10 ms.

Editing Symbols, Titles, and Comments

9

This chapter describes how to edit symbols, titles, and comments for references, segments, and networks. It also describes the check function for duplicated symbols.

9.1	Editing Reference Symbols and Comments . . .	9-2
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9.1.2	Inputting Reference Symbols and Comments	9-3
9.1.3	Editing Cells	9-5
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9.2.1	Outline	9-8
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9.1 Editing Reference Symbols and Comments

This section describes operations required to edit reference symbols and comments.

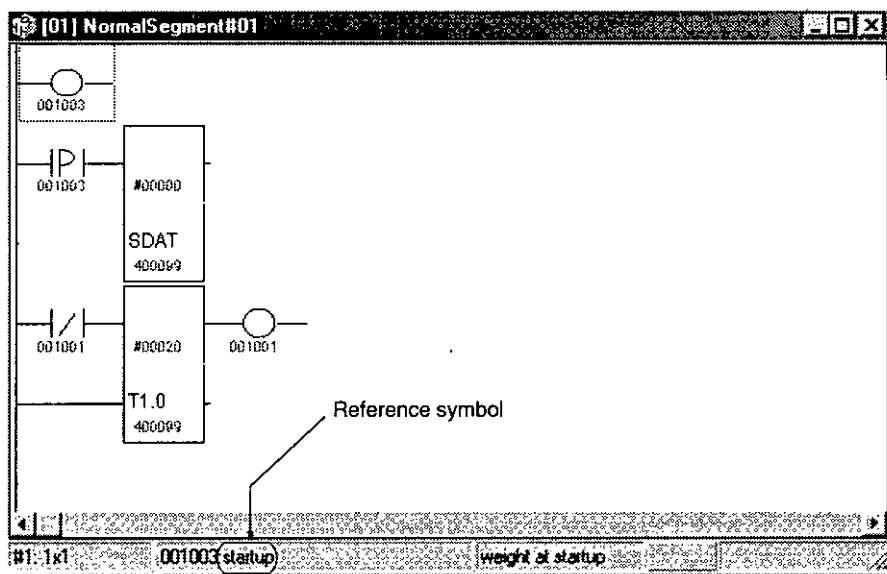
9.1.1	Outline	9-2
9.1.2	Inputting Reference Symbols and Comments	9-3
9.1.3	Editing Cells	9-5
9.1.4	Sorting	9-6
9.1.5	Searching	9-6

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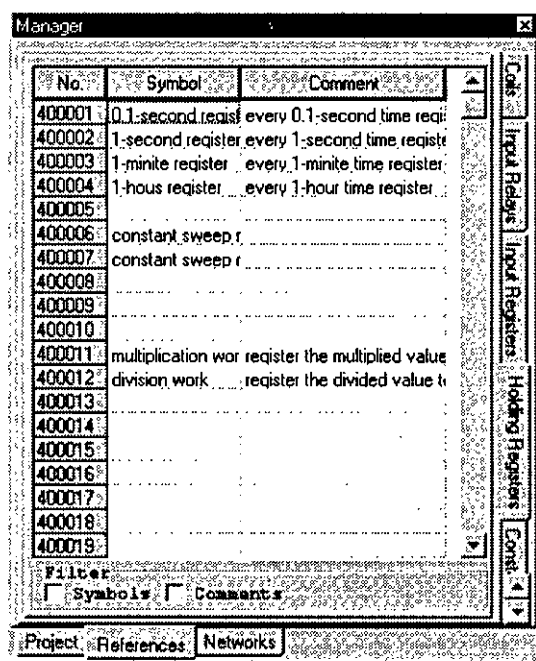
9.1.1 Outline

1) Reference symbols and comments are displayed as shown below.

a) Ladder Programming Window



b) Reference Manager

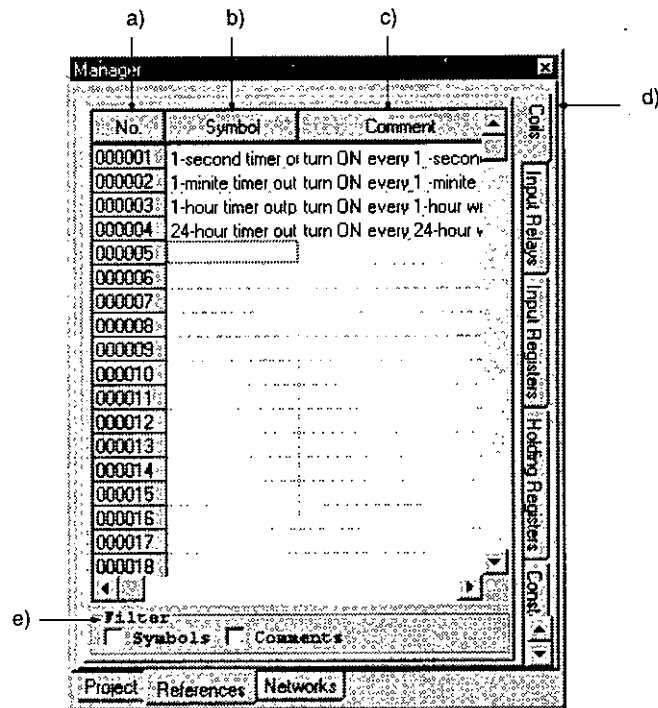


2) Reference symbols and comments are edited from the Reference Manager.

9.1.2 Inputting Reference Symbols and Comments

1) Reference symbols and comments are input into the cell of the Reference Manager. The tabs for the required references are selected in the Reference Manager, and symbols and comments are input.

2) The configuration of the Reference Manager is shown below.



a) Reference Number

Displays the reference number

b) Reference Symbol

Used to input the reference symbol. Reference symbols can contain up to 32 characters.

c) Reference Comment

Used to input the reference comment. Reference comments can contain up to 255 characters. If the data is converted to a file for the DOS version of MEMOSOFT, characters 197 on will be deleted.

d) Tabs

Used to select the type of references for which symbols and comments are to be edited. If necessary, use the scroll bar to move up and down to select the tab.

e) Filter

Used to restrict the display. If the symbol box is checked, only the cells for symbols will be displayed. If the comment box is checked, only the cells for comments will be dis-

played. If both the symbol and comment boxes are checked, the cells for both the symbols and comments will be displayed.



The keys in the following table can be used when editing symbols and comments.

Key	Function
Page Down	Displays the next page of reference symbols and comments.
Page Up	Displays the previous page of reference symbols and comments.
Ctrl + Home	Displays the first page of reference symbols and comments.
Ctrl + End	Displays the last page of reference symbols and comments.

9.1.3 Editing Cells

Reference symbols and comments can be edited one cell at a time. Cell can be selected by clicking and dragging. A pop-up menu will appear if the right mouse button is clicked on a selected cell. The configuration of the pop-up menu is shown below.

Find...	Ctrl+F
Find Next	F3
Find Previous	Shift+F3
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del

- **Find**

Searches reference symbol and comment text strings.

- **Find Next**

After a search has been performed, searches for the next occurrence downward beginning at the cursor.

- **Find Previous**

After a search has been performed, searches for the next occurrence upward beginning at the cursor.

- **Cut**

Clears the data from the selected cells and stores it on the clipboard.

• Copy

Places a copy of the data from the selected cells on the clipboard without affecting the data in the selected cells.

• Paste

Inserts the data on the clipboard to the selected cells. Pasting is possible after data has been cut or copied.

• Delete

Clears the data from the selected cells.

IMPORTANT

Duplicated Reference Symbols

- 1) If reference symbols are edited offline, duplication can occur. Before downloading the program to the CPU Module, be sure that there are no duplicated reference symbols. The program cannot be downloaded if the same symbol is assigned to more than one reference.
- 2) Reference symbol duplication can be checked for using the duplicated symbol check function of the MEMOSOFT. Refer to 9.4 Checking Reference Symbols for details.

9.1.4 Sorting

The references in the reference symbol, and comment table can be sorted by reference numbers, symbol, or comment by clicking the button at the top of each column. The references will be sorted in ascending and then descending order according to the button that is clicked.

No.	Symbol	Comment
000001	1-second timer o turn ON every 1-second	
000002	1-minute timer out turn ON every 1-minute w	
000003	1-hour timer out; turn ON every 1-hour wit	

9.1.5 Searching

The following dialog box will appear if the Search Command on the pop-up menu shown in 9.1.3 Editing Cells is selected. This dialog box enables searching symbol text strings, com-

ment text strings, or both. Input the text string, set the conditions, and click the **Find Next** Button to start the search.

The image shows a 'Find' dialog box with the following elements:

- Find what:** A text input field containing the word 'search'.
- Match case:** A checkbox that is currently unchecked.
- Search item:** A section containing two checked checkboxes: 'Symbol/Title' and 'Comment'.
- Origin:** A section containing two radio buttons: 'Entire scope' (unchecked) and 'From cursor' (checked).
- Direction:** A section containing two radio buttons: 'Forward' (unchecked) and 'Backward' (checked).
- Buttons:** 'Find Next' and 'Cancel' buttons are located on the right side of the dialog.

9.2 Editing Network Titles and Comments

This section describes the operations required to edit network titles and comments.

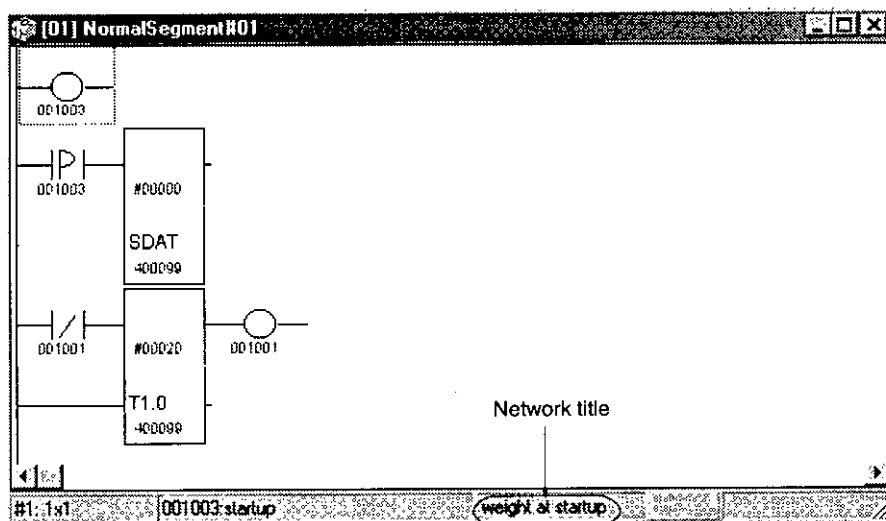
9.2.1	Outline	9-8
9.2.2	Inputting Network Titles and Comments	9-9
9.2.3	Editing Cells	9-10
9.2.4	Searching	9-12

9

9.2.1 Outline

1) Network titles and comments are displayed as shown below.

a) Ladder Programming Window



b) Network Manager

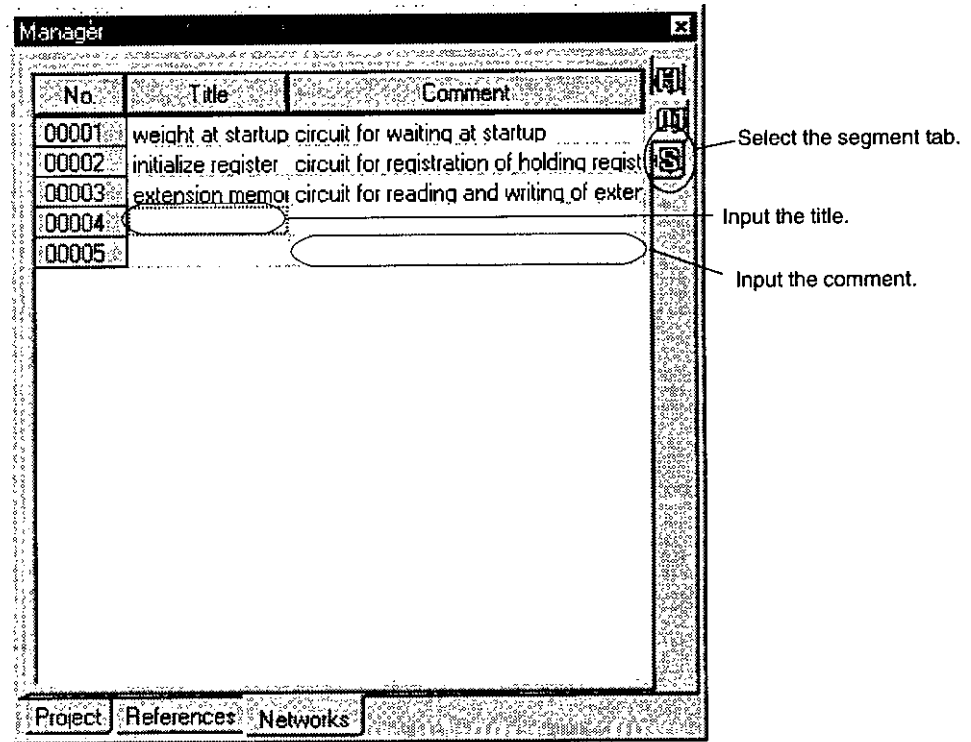
No.	Title	Comment
00001	weight at startup	circuit for waiting at startup
00002	initialize register	circuit for registration of holding regist
00003	extension memo	circuit for reading and writing of exter
00004		
00005		

- 2) Network titles and comments are edited from the Network Manager.

9.2.2 Inputting Network Titles and Comments

- 1) Network titles and comments are input into the cell of the Network Manager. The tabs for the required segment are selected in the Network Manager, and titles and comments are input.
- 2) The maximum number of characters that can be input for network titles and comments are as follows:
 - Network titles: 32 characters max.

- Network comments: 255 characters max.



9



With the DOS version of MEMOSOFT, up to 1,560 characters (78 characters x 20 lines) can be input for network comments. If a DOS file is converted for use with the Windows version of MEMOSOFT, characters 256 on will be deleted.



The keys in the following table can be used when editing titles and comments.

Key	Function
Ctrl + Home	Moves the cursor to the first line displayed in the window.
Ctrl + End	Moves the cursor to the last line displayed in the window.

9.2.3 Editing Cells

Network titles and comments can be edited one cell or one line (one network) at a time. Cell can be selected by clicking and dragging. Lines can be selected by clicking and dragging on the network number cells. A pop-up menu will appear if the right mouse button is clicked on a

selected cell. The pop-up menu is used to edit titles and comments by network. The configuration of the pop-up menu is shown below.

Offset...	Ctrl+O
Find...	Ctrl+F
Find Next	F3
Find Previous	Shift+F3
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Insert Before	
Insert After	

- **Offset**

Used to convert reference numbers by adding a specified offset to all the reference numbers in a specified range.

- **Find**

Searches network titles and comment text strings.

- **Find Next**

After a search has been performed, searches for the next occurrence downward beginning at the cursor.

- **Find Previous**

After a search has been performed, searches for the next occurrence upward beginning at the cursor.

- **Cut**

Clears the data from the selected cells and stores it on the clipboard.

- **Copy**

Places a copy of the data from the selected cells on the clipboard without affecting the data in the selected cells.

- **Paste**

Inserts the data on the clipboard to the selected cells. Pasting is possible after data has been cut or copied.

- **Delete**

Clears the data from the selected cells.

- **Insert Before**

Inserts a new network before the selected network.

- **Insert After**

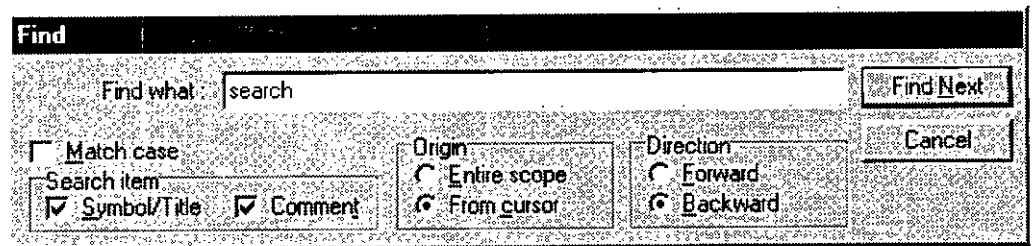
Inserts a new network after the selected network.



The cut, copy, paste, and delete operation will manipulate the network data as well as the title and comment data.

9.2.4 Searching

The following dialogbox will appear if the Search Command on the pop-up menu shown in 9.1.3 *Editing Cells* is selected. This dialogbox enables searching network title text strings, comment text strings, or both. Input the text string, set the conditions, and click the **Find Next** Button to start the search.



9.3 Editing Segment Titles

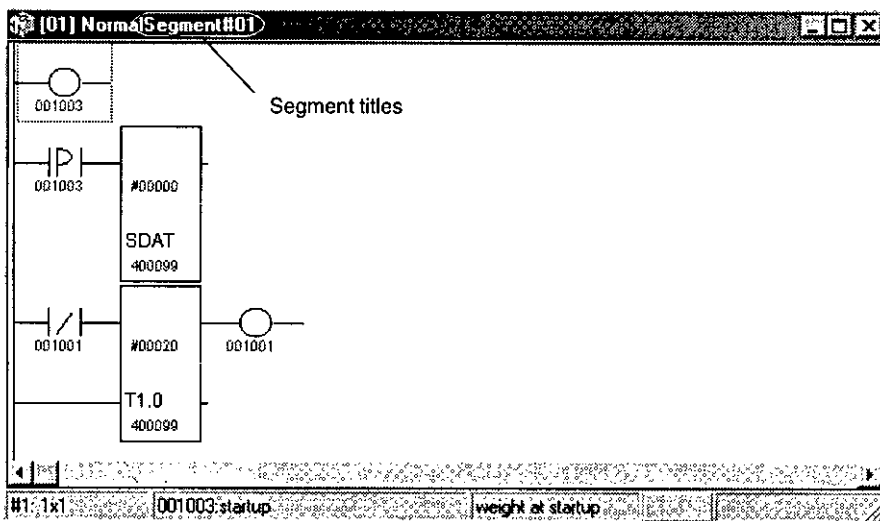
This section describes operations required to edit segment titles.

9.3.1	Outline	9-13
9.3.2	Inputting Segment Titles	9-13

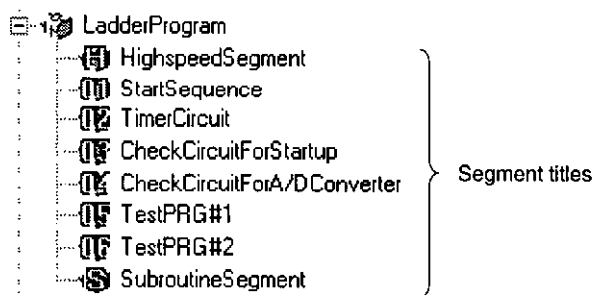
9.3.1 Outline

1) Segment titles are displayed as shown below.

a) Ladder Programming Window



b) Project Manager



2) Segment titles are edited from the Project Manager.

9.3.2 Inputting Segment Titles

- 1) Segment titles are input into the Segment Nodes in the Project Manager.
- 2) The following number of characters can be input into the segment title field.

- Segment titles: 32 characters max.

3) Use the following procedure to input segment titles.

- a) Point at the Segment Node, click the right mouse button, and select **Rename** from the pop-up menu.



- b) Input the segment title.

9.4 Checking Reference Symbols

This section describes the duplicated reference symbol check that can be executed after editing reference symbols.

9.4.1	Outline	9-15
9.4.2	Checking for Symbol Duplication	9-15

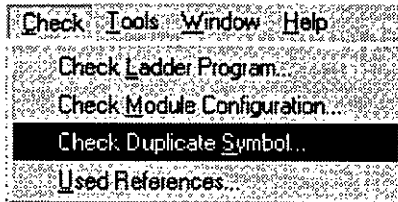
9.4.1 Outline

Reference symbols must be checked for duplication after they have been edited. To do this, the MEMOSOFT provides a duplicated reference symbol check function.

9.4.2 Checking for Symbol Duplication

- 1) The duplicated reference check function will check all references and will display the reference numbers with the same symbols.
- 2) Use the following procedure to check for symbol duplication.

Select **Check (C) – Check Duplicate Symbols** from the menu bar.



The results of the check will be displayed. (A few seconds may be required for the display to appear.)

Duplicate Symbol Results	
Symbol	Ref.No.
1-second timer output coil	000001
1-second timer output coil	000002
1-second timer output coil	000003
coil#01	D10001
coil#01	D10011
constant sweep register	400006
constant sweep register	400007
relay#01	100001
relay#01	100011

Close Help

9



If the check does not discover any duplication in the reference symbols, a message will appear saying so.

Editing Reference Data

10

This chapter describes the reference data display and editing methods, as well as other reference data operations.

10.1 Reference Data Templates	10-2
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10.1.3 Opening Reference Data Templates	10-3
10.1.4 Configuration of Reference Data Templates	10-4
10.1.5 Menu Bar Configuration	10-5
10.1.6 Status Bar Configuration	10-5
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10.2 Basic Operations for Reference Data	10-7
10.2.1 Displaying Reference Data	10-7
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10.5.1 Outline	10-18
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10.1 Reference Data Templates

This section describes the configuration of, opening/closing methods for, and other information on reference data templates.

10.1.1	Outline	10-2
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10.1.3	Opening Reference Data Templates	10-3
10.1.4	Configuration of Reference Data Templates	10-4
10.1.5	Menu Bar Configuration	10-5
10.1.6	Status Bar Configuration	10-5
10.1.7	Changing Templates Names	10-6
10.1.8	Closing a Template	10-6

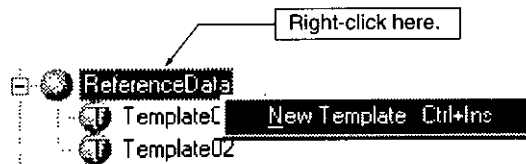
10.1.1 Outline

Reference data is displayed and edited in reference data templates displayed in MEMOSOFT. Reference data templates enable editing reference data and reference data display formats.

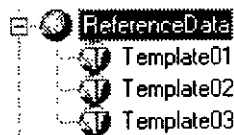
10.1.2 Creating and Deleting Templates

- 1) Use the following procedure to create templates.

Point at a Reference Data Node, click the right mouse button, and select **New Template**.

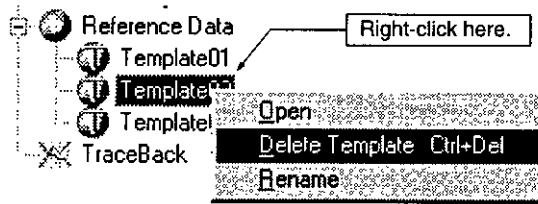


A new template will be added.

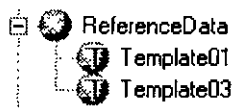


- 2) Use the following procedure to delete templates.

Point at the Template Node to be deleted, click the right mouse button, and select **Delete Template**.



The template will be deleted.



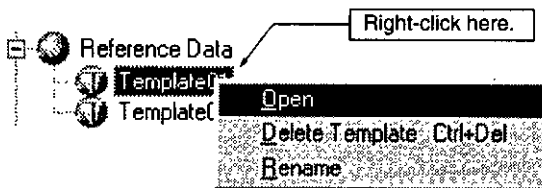
10.1.3 Opening Reference Data Templates

Use one of the following two procedures to open a reference data template.

- Double-click the Reference Data Template Node under the Project Manager.

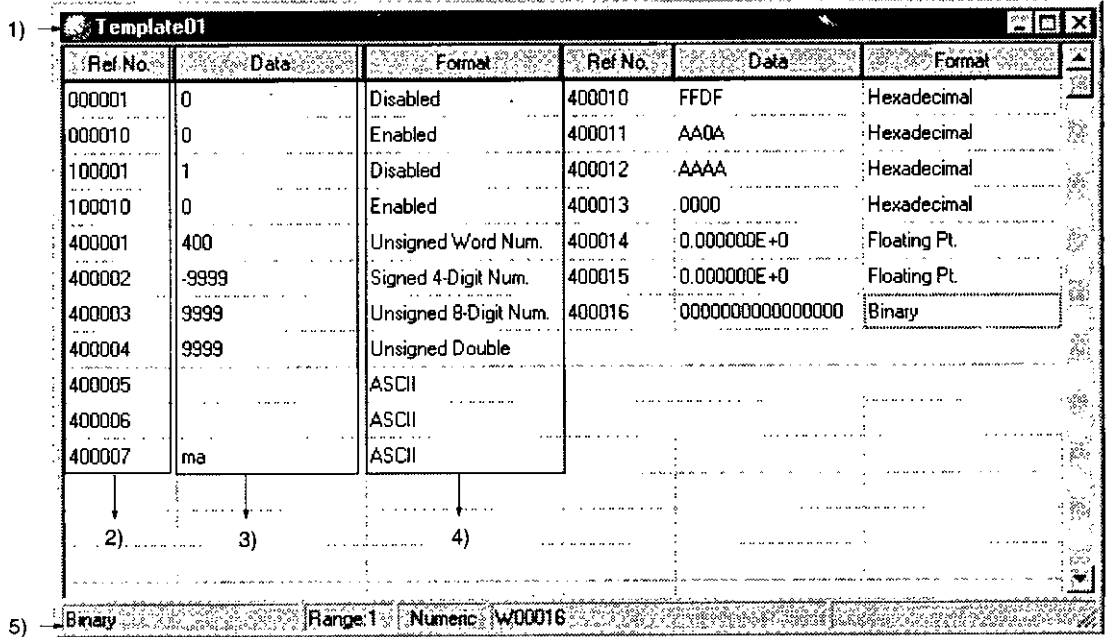


- Point at the Reference Data Template Node under the Project Manager, click the right mouse button, and select **Open**.



10.1.4 Configuration of Reference Data Templates

The configuration of a reference data template is shown below.



1) Title Bar

Displays the name of the template.

2) Reference Number

Used to input the number of the reference for which data is displayed.

3) Data

Used to display or input reference data.

4) Format

Use to set the display format for the reference data. For relays and coils, used to enable and disable the relay or coil or set a matrix.

5) Status Bar

Displays the display format, setting range, reference display mode (number/letter), symbol, comment, or other information. Refer to 10.1.6 Status Bar Configuration for details.

10.1.5 Menu Bar Configuration

The following menus will be displayed in the menu bar when a reference data template is selected.

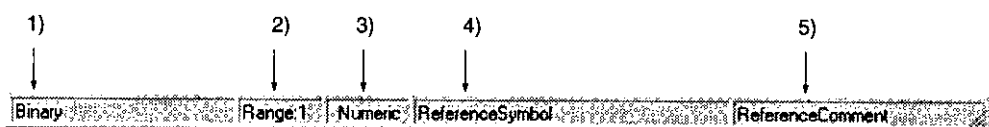
Edit Style DOS Transfer

Menu /Command	Function
Edit	
Cut	Cut the selected data and places it in the buffer.
Copy	Places a copy of the selected data in the buffer.
Paste	Inserts the contents of the buffer.
Delete	Deletes the selected data.
Simple ASCII	Displays the ASCII Input Dialog Box.
List Disable	Displays the Disabled List Dialog Box.
Enable All	Enables all coils that have been disabled.
Style	
Layout	Sets the number of display lines.
Reference	Sets the reference number display column to numeric, alphabet, or symbol.
Range	Sets a consecutive reference input range.
DOS Transfer	
Import DOS Template	Reads a template from a text file.
Export DOS Template	Writes a template to a text file.

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10.1.6 Status Bar Configuration

The configuration of the status bar for a reference data template is shown below.



1) Current Display Format

Displays the format of the currently selected reference.

2) Setting Range

Displays the input range for which reference data can be set simultaneously for consecutive references.

3) Reference Display Format

Displays the reference display format. The default is numeric. Use **Style (S) – Reference (R)** to switch the display format.

4) Reference Symbol

- Displays the reference symbol when the display mode is set to numeric or alphabet display.
- Displays the reference number when the display mode is set to symbol display. The symbol will be displayed as the reference number in the template.

5) Reference Comment

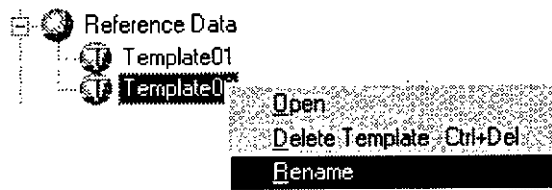
Displays the comment for the currently selected reference.

10

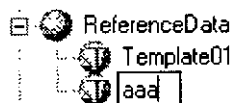
10.1.7 Changing Templates Names

Use the following procedure to change a template name.

- 1) Point at the Template Node for which the template name is to be changed, click the right mouse button, and select **Rename**.

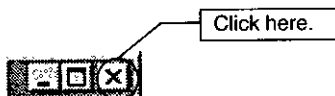


- 2) The name of the selected Template Node will be displayed in reverse video. Input the new name.



10.1.8 Closing a Template

To close a template, click on the **Close** Button in the upper right corner of the window.



10.2 Basic Operations for Reference Data

This section describes operations for reference data, including changing reference data display formats and disable operations.

10.2.1	Displaying Reference Data	10-7
10.2.2	Changing Reference Data	10-7
10.2.3	Enabling and Disabling	10-8
10.2.4	Changing the Data Display Format	10-9

10.2.1 Displaying Reference Data

Use the following procedure to display reference data.

- 1) Input the reference number of the register for which data is to be displayed into the reference number cell.

Ref.No.	Data	Format	Ref.No.
400001			

- 2) Press the **Enter** Key. The reference data and format will be displayed.

Ref.No.	Data	Format	Ref.No.
400001	400	Unsigned Word Num.	

10.2.2 Changing Reference Data

Use the following procedure to change reference data.

- 1) Double-click the data cell to be changed. The data will be displayed in reverse video.

Ref.No.	Data	Format	Ref.No.
400001	400	Unsigned Word Num.	

- 2) Input the new data.

Ref No.	Data	Format	Ref No.
400001	1000	Unsigned Word Num.	

10.2.3 Enabling and Disabling

Use to following procedure to enable or disable a relay or coil and to force the relay or coil ON and OFF.

- 1) Input the reference number of the input relay or output coil. "Enabled" will be displayed.

Ref No.	Data	Format	Ref No.
000001	0	Enabled	

- 2) Point at the format cell, click the right mouse button, and select **Disable** from the pop-up menu.

Ref No.	Data	Format	Ref No.
000001	0	Enabled	

- Cut Ctrl+X
- Copy Ctrl+C
- Paste Ctrl+V
- Delete Ctrl+Del
- Enable
- Disable**
- Matrix



"D" or "E" can be input from the keyboard into the format cell to select disable and enable.

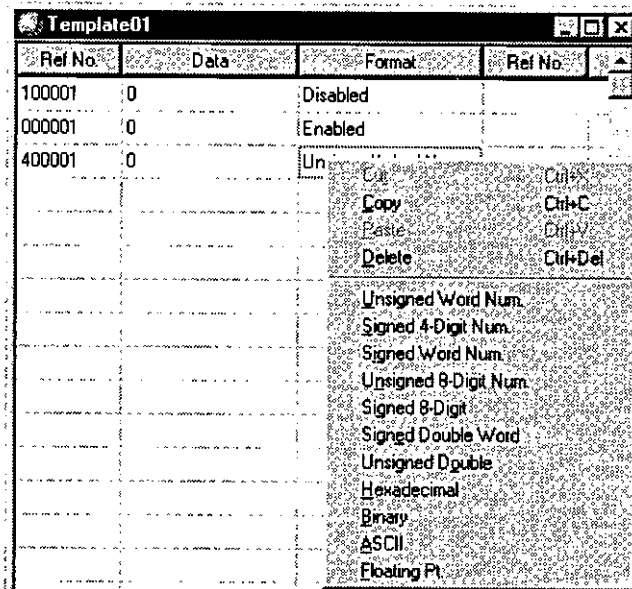
- 3) Change the data to 1 (ON) or 0 (OFF) as required.

Ref No.	Data	Format	Ref No.
000001	1	Disabled	

Note When disabling an input relay or output coil in Online or Debug Mode, be sure to enable it when you are finished. The program will not be solved normally if a relay or coil is left in disabled status.

10.2.4 Changing the Data Display Format

- 1) Click the right mouse button on a format cell for a register reference to access the following pop-up menu.



- 2) The reference data formats are explained below.

a) Unsigned Word Number

Displays register data in decimal between 0 and 65,535. Data used in signed math operations may not be displayed correctly. Use decimal display for math instructions like ADD and SUB.

b) Signed Four-digit Number

Displays signed data in signed decimal between -9,999 and 9,999. Data used in unsigned math operations or signed 2's complement math operation may not be displayed correctly. Use signed four-digit display for math instructions like SADD and SSUB.

c) Signed Word Number

Displays signed data stored as 2's complements in signed decimal between -32,768 and 32,767. Data used in unsigned math operations or traditional signed math opera-

tion may not be displayed correctly. Use signed word display for math instructions like AD16 and SU16.

d) Unsigned Eight-digit Number

Displays data stored in two consecutive registers in double-word decimal between 0 and 99,999,999. Data not stored as double-word data in the MEMOCON-SC format may not be displayed correctly. Use unsigned eight-digit display for math instructions like DADD and DSUB.

e) Signed Eight-digit Number

Displays data stored in two consecutive registers in double-word signed decimal between -99,999,999 and 99,999,999. Data not stored as double-word data in the MEMOCON-SC format may not be displayed correctly. Use signed eight-digit display for math instructions like SMUL.

f) Signed Double Word

Displays data stored in two consecutive registers in double-word signed 2's complement data between -2,147,483,648 and 2,147,483,647. Data not stored as signed double-word data may not be displayed correctly. Use signed double-word display for math instructions like AD32 and SU32.

g) Unsigned Double Word

Displays data stored in two consecutive registers in double-word decimal between 0 and 4,294,967,295. Data not stored as double-word decimal data may not be displayed correctly. Use unsigned double-word display for unsigned data for math instructions like AD32 and SU32.

h) Hexadecimal

Displays register data in hexadecimal from 0 to FFFF.

i) Binary

Displays register data in binary from 0 to 1111111111111111.

j) ASCII

Displays register data as ASCII characters.

k) Floating Point

(1) Displays data stored in two consecutive registers as floating-point decimal data. There are 7 significant figures with an exponent of between -38 and 38. For ex-

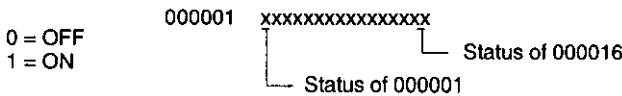
10

ample, 0.000123 would be displayed as 1.23E-04. Be sure to allow two registers for floating-point data.

- (2) Floating-point data will not be displayed correctly in any other format. This format is used only for the EMTH instruction.
- (3) Specify the floating-point data format for the register with the lower reference number.
- (4) The display will contain rounding error.
- (5) The following is an example of inputting floating-point data. The floating-point data is stored according to the IEEE754 format. Either of the following two input methods can be used.
 - Direct Input
Input the number directly. Only up to 16 digits can be input.
Example: 0.0000123
 - Input Using the Display Format
Input the number using the display format for floating-point decimal.
Example: 1.23E-5

l) Matrix

Displays the ON/OFF status of coils or input relays 16 bits at a time. The format is for display only and cannot be used to change the status of coils or relays. The display format is shown below.



Matrix displays show 16 bits at a time, so the leading bit for the display must be in the form $16n + 1$, where $n = 0, 1, 2, \dots$. If, for example, the display of coil 000020 is changed to a matrix display, the reference number will automatically change to 000017 and the display will show the status of 000017 to 000032.

10.3 Editing Reference Data

This section describes operations required to edit reference data.

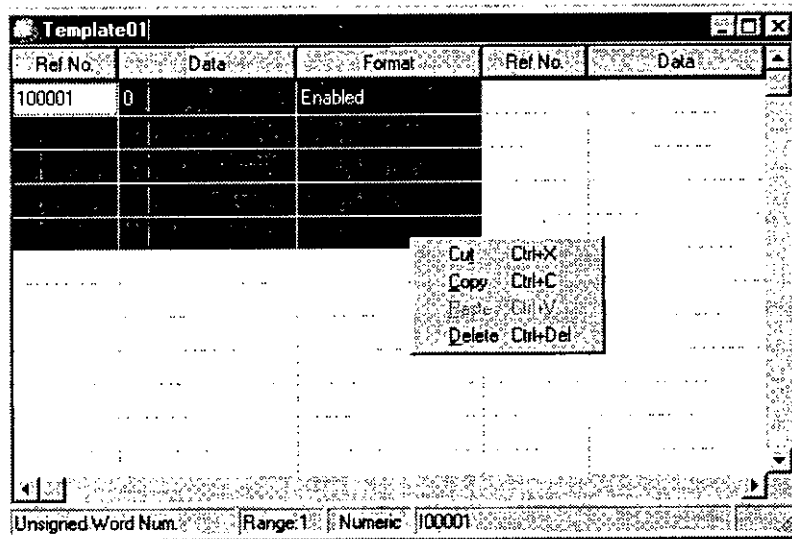
10.3.1	Outline	10-12
10.3.2	Editing Cells	10-12
10.3.3	Inputting ASCII	10-12
10.3.4	Disabled Lists	10-14
10.3.5	Enabling All Relays and Coils	10-14

10.3.1 Outline

A reference data template can be used to do such things as editing data, displaying lists of disabled relays and contacts, and enabling all disabled relays and contacts.

10.3.2 Editing Cells

Reference data can be edited by cells. Cells are selected by clicking and dragging. The following pop-up menu will appear if the right mouse button is clicked on a selected cell.

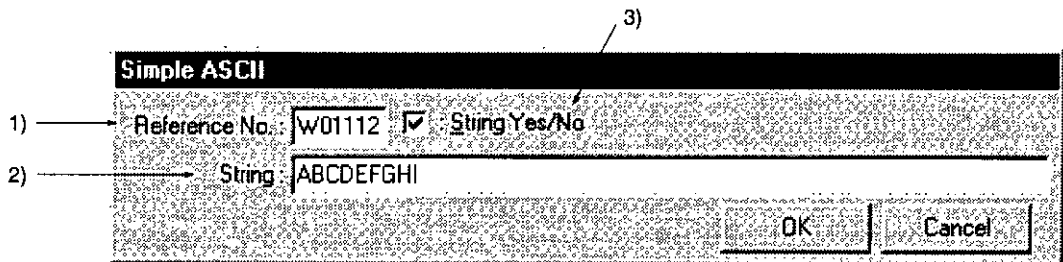


Editing is performed by selecting commands from the menu. Commands can also be selected from the main bar Edit Menu while cells are selected.

10.3.3 Inputting ASCII

- 1) The ASCII input function can be used to input up to 62 characters of ASCII data into consecutive registers beginning with a specified register.

- 2) ASCII characters are input from the Simple ASCII Dialog Box, which is accessed by selecting **Edit (E) – ASCII Input** from the menu.



a) Reference Number

The number of the leading reference to store ASCII characters.

b) String

Input up to 62 ASCII characters.

c) String Yes/No: Number of Characters Setting

Used to set whether or not to store the total number of characters in the leading reference. The number of characters will be stored if this setting is checked. The default is to store the number of characters.



- 1) A space (20 hexadecimal) will be stored in the lower-place portion of the last register if an odd number of ASCII characters is input.
- 2) The Enter Key is used to confirm the input. A return code (CR/LF) thus cannot be entered. To enter the return code, set the data format to hexadecimal and input 0D0A.

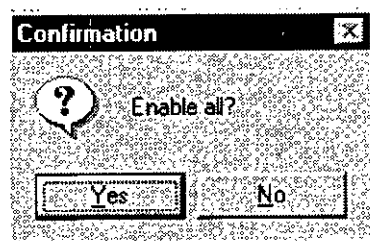
10.3.4 Disabled Lists

- 1) A disabled list will display all of the digital references that are currently disabled.
- 2) Select **Edit (E) – List Disable** from the menu to display the Disabled List Dialog Box. The configuration of the dialog box is shown below.

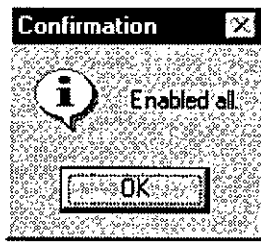
Disable List				
D11019	Y10052	Y20095	X10208	P10001
D11020	Y10053	Y20096	X10209	P10002
D20921	Y10054	Y20097	X10210	P10003
D20922	Y10055	Y20098	X20031	P10004
D20923	Y10056	Y20099	X20032	P10005
D20924	Y10057	Y20100	X20033	P10006
D20925	Y10058	X10201	X20034	P10007
D20926	Y10059	X10202	X20035	P10008
D20927	Y10060	X10203	X20036	P10009
D20928	Y20091	X10204	X20037	P10010
D20929	Y20092	X10205	X20038	P20001
D20930	Y20093	X10206	X20039	P20002
Y10051	Y20094	X10207	X20040	P20003

10.3.5 Enabling All Relays and Coils

- 1) The Enable All Command enables all input relays and output coils that have been disabled.
- 2) Use the following procedure to enable all relays and coils.
 - a) Select **Edit (E) – Enable All** from the menu. The following message will appear. Click the **Yes (Y)** Button.



b) The following message will appear. Click the **OK** Button.



10.4 Setting Template Styles

This section describes how to set the template display and reference input methods.

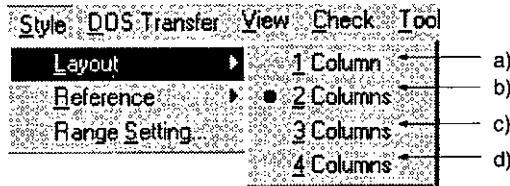
10.4.1	Outline	10-16
10.4.2	Setting the Layout	10-16
10.4.3	Changing the Display Mode	10-17
10.4.4	Setting Continuous Input Ranges	10-17

10.4.1 Outline

The layout and display of reference data templates can be changed if necessary. Global setting ranges can also be set for reference numbers.

10.4.2 Setting the Layout

- 1) The layout of a reference data template can be changed to from 1 to 4 columns.
- 2) Select **Style (S) – Layout (L)** and then a command to select the number of columns. The configuration of the menu is shown below.



a) 1 Column

Displays the reference data template using 1 column and 96 rows.

b) 2 Columns

Displays the reference data template using 2 columns and 48 rows.

c) 3 Columns

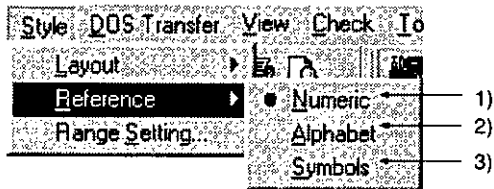
Displays the reference data template using 3 columns and 32 rows.

d) 4 Columns

Displays the reference data template using 4 columns and 24 rows.

10.4.3 Changing the Display Mode

- 1) Reference numbers can be displayed as numbers, letters, or symbols.
- 2) Select the **Style (S) – Reference (R)** from the menu to change the template display mode. The configuration of the menu is shown below.



a) Numeric (Numbers)

Displays reference numbers using numbers.

b) Alphabet (Letters)

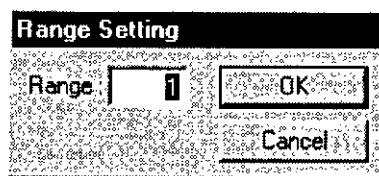
Displays reference numbers using letters.

c) Symbols

Displays reference numbers using symbols. Letters will be used to display any reference numbers for which symbols have not been set.

10.4.4 Setting Continuous Input Ranges

- 1) Consecutive reference numbers can be input at the same time by setting the number of consecutive references and then inputting the leading number. For example, if 10 is set and 400001 is input, the reference data for references 400001 to 400010 will be displayed.
- 2) The number of consecutive reference numbers to input is set in the Range Setting Dialog Box. The default is 1. Select **Style (S) – Range** from the menu to access the dialog box. The Range Dialog Box is shown below.



10.5 Data Compatibility with the DOS Version

■ This section describes how to read and write template files.

10.5.1 Outline	10-18
10.5.2 Importing Text Files	10-18
10.5.3 Exporting Text Files	10-19

10.5.1 Outline

- 1) Data created with templates can be saved in text files. The resulting text files can be used with the DOS version of MEMOSOFT.
- 2) The DOS Transfer Menu is used to enable compatibility between the MEMOSOFT versions. There are two operations that can be performed for text files of reference data templates.

• Importing DOS Templates

Text files of reference data templates created on the DOS version of MEMOSOFT can be imported into reference data templates open in the Windows version of MEMOSOFT. The contents of the open reference data template will be cleared and replaced by the data from the file.

• Exporting DOS Templates

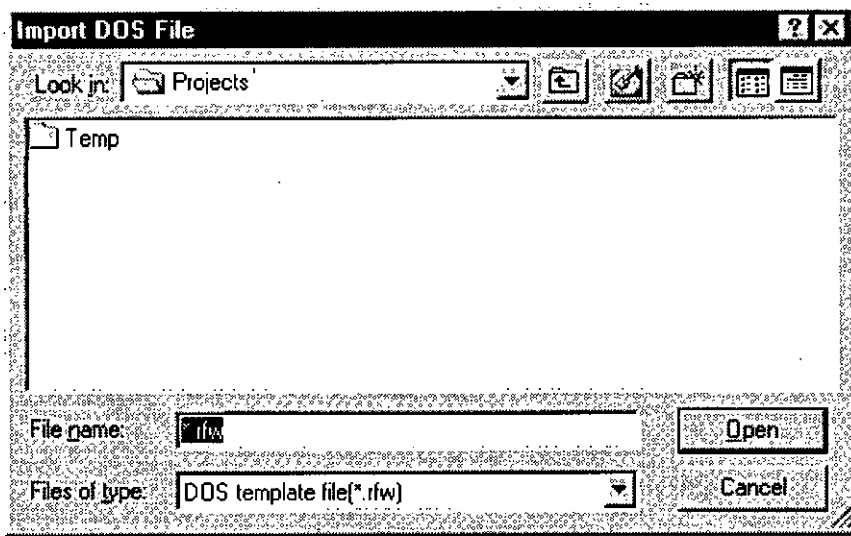
The contents of the currently open reference data template will be saved into a text file that can be imported into the DOS version of MEMOSOFT.

10.5.2 Importing Text Files

- 1) Select **DOS Transfer (D) – Import DOS Template (I)** from the menu.



- 2) The Text File Input Dialog Box will appear. Input the name of the file to read and click the **Open (O)** Button.



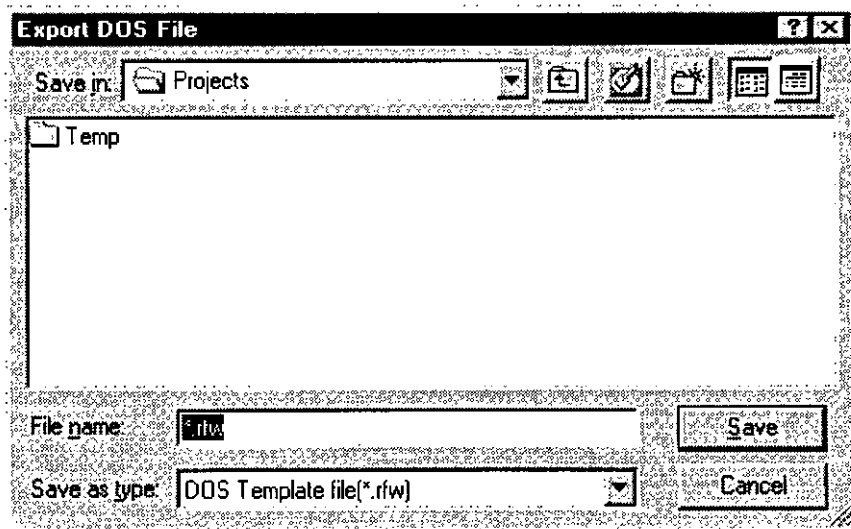
- 3) The contents of the DOS template will be displayed in the reference data template.

10.5.3 Exporting Text Files

- 1) Select **DOS Transfer (D) – Export DOS Template (E)** from the menu.



- 2) The Text File Export Dialog Box will appear. Input the file name and click the **Save (S)** Button.



The contents of the reference data template will be saved as a DOS template.

Note Only 88 references can be set in the DOS version of MEMOSOFT. Therefore, only 88 references will be saved in the DOS template and all other references will be deleted.

0

Editing Motion Programs Offline

11

This chapter describes the configuration of the Motion Program Window and basic editing operations.

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11.1.4	Configuration of the Motion Program Window	11-4
11.1.5	Menu Bar Configuration	11-5
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11.1 Motion Program Window

This section describes the configuration of and opening/closing methods for the Motion Program Window.

11.1.1	Outline	11-2
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11.1.3	Opening the Motion Program Window	11-3
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11.1.7	Status Bar Configuration	11-5
11.1.8	Closing the Motion Program Window	11-6

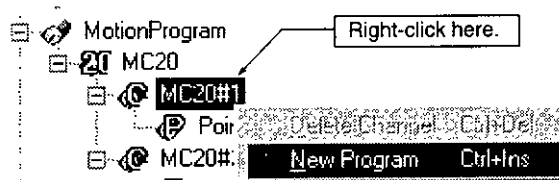
11.1.1 Outline

Motion Program Windows are used to edit the motion program for an O number. Motion programs are edited by line.

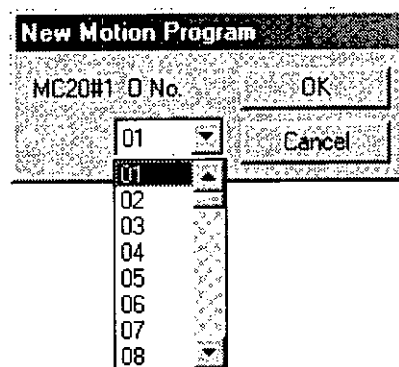
11.1.2 Creating a Motion Program

Use the following procedure to create a motion program.

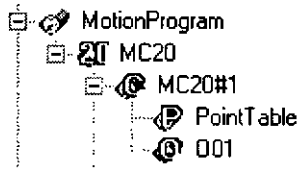
- 1) Point at the module for which the motion program is to be created, click the right mouse button, and select **New Program**.



- 2) A dialog box will appear to create the motion program. Select the O number in the O number box and click the **OK** Button.



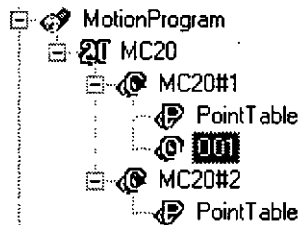
- 3) A motion program will be added for the selected O number.



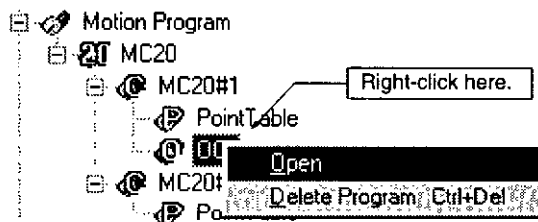
11.1.3 Opening the Motion Program Window

Use one of the following two procedures to open the Motion Program Window.

- Double-click the O Number Node under the Motion Node in the Project Manager.



- Point at the O Number Node under the Motion Program Node In the Project Manager, click the right mouse button, and select **Open**.



11.1.4 Configuration of the Motion Program Window

The configuration of the Motion Program Window is shown below.

No	N No	Program
0001		PROGRAM1 REGISTERING PARTS OF STATION1;
0002	N010	ABS:ABSOLUTE COORDINATES POSITION COMMAND;
0003	N020	#1=H1:POINT NUMBER(RACK NUMBER);
0004	N030	#10=Y#F400:TRAVEING AXIS OF STATION 1 (Y-AXIS)IMPORT POSITION DATA;
0005	N040	#11=Z#F400:VERTICAL AXIS OF STATION 1 (Z-AXIS)IMPORT POSITION DATA;
0006	N050	#12=X#F400:ARM AXIS OF STATION 1 (X-AXIS)IMPORT POSITION DATA;
0007	N060	#13=Y#F1:TRAVEING AXIS OF RACK (Y-AXIS)IMPORT POSITION DATA;
0008	N070	#14=Z#F1:VERTICAL AXIS OF RACK (Z-AXIS)IMPORT POSITION DATA;
0009	N080	#15=X#F1:ARM AXIS OF RACK (X-AXIS)IMPORT POSITION DATA;
0010	N090	10W#1==1:CHECK THE ARM NEUTRAL POSITION;
0011	N100	#16=#11-10000:VERTICAL AXIS OF STATION 1 (Z-AXIS)CALCULATE POSITION;
0012	N110	MOV Y#10 Z#16:POSITION FROM STANDRY POINT TO STATION 1;
0013	N120	MOV X#12:ARM POSITION TO PARTS IMPORT POINT;
0014	N130	INC MOV Z10: 10MM RISING VERTICAL AXIS;
0015	N140	ARS MOV X0: ARM POSITION TO NEUTRAL POINT;
0016	N150	10W #1 == 1 :CHECK THE ARM NEUTRAL POSITION;
0017	N160	MOV #F410: POSITIONING FROM RACK TO STANDRY POINT;
0018	N170	END: PROGRAM COMPLETED;
0019		:

11

11.1.5 Menu Bar Configuration

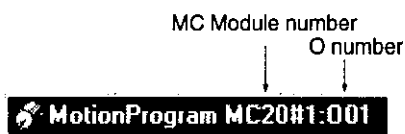
The following menus will appear on the menu bar with a Motion Program Window is selected.

Edit Search

Menu/Command	Function
Edit	
Cut	Cuts the data and places in the buffer.
Copy	Places a copy of the data in the buffer.
Paste	Inserts the contents of the buffer.
Delete	Deletes the data.
Insert Line	Inserts a line just before the cursor.
Delete Line	Deletes the line at the cursor.
Search	
Search	Searches for instructions and reference numbers.
Find Next	Finds the next occurrence of the text string input for a search operation in the direction of increasing line numbers.
Find Previous	Finds the next occurrence of the text string input for a search operation in the direction of decreasing line numbers.
Replace	Displays the Replacement Dialog Box to convert text strings.
N Number	Replaces only the number of steps with the specified N number.
Top Line	Moves the cursor to the top of the program.
Input Line	Moves the cursor to the specified line of the program.
Bottom Line	Moves the cursor to the bottom of the program.

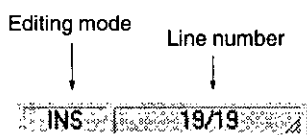
11.1.6 Title Bar Configuration

The title bar displays the MC Module number and the O number. The configuration of the title bar of the Motion Program Window is shown below.



11.1.7 Status Bar Configuration

The configuration of the status bar in the Motion Program Window is shown below.



1) Editing Mode

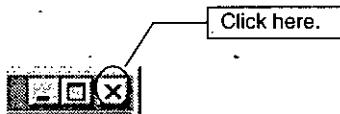
Displays either insert or overwrite as the editing mode.

2) Line Number


Displays the current line/total number of lines.

11.1.8 Closing the Motion Program Window

Click the **Close** Button in the upper right corner of the window to close the Motion Program Window.



11.2 Editing Motion Programs

 This section describes the basic editing operations for the Motion Program Window.

11.2.1	Outline	11-7
11.2.2	Basic Inputs	11-7
11.2.3	Editing Programs	11-8
11.2.4	Replacing N Numbers	11-10

11.2.1 Outline

Motion programs are edited by line. The following conditions must be met to input motion programs.

- If N is input at the beginning of the line, the N number will move to the N number input column.
- If there is no semicolon (;) in the program line, it will be added to the end of the line regardless.
- If 128 characters are entered on one line without a semicolon (;), the last character will be changed to a semicolon regardless.

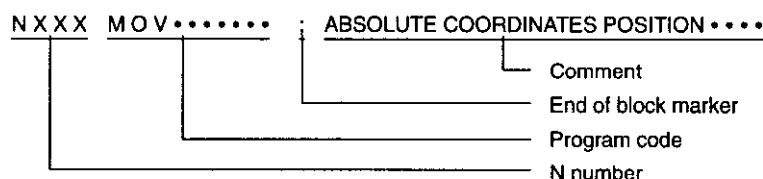


A maximum of 128 characters can be input on a line, including “;”, “OD (CR)”, “OA (LF)”, the N number, and any spaces on the program line.

11.2.2 Basic Inputs

1) Program Line Configuration

Each program line consists of up to four parts.



- 1) Press the Insert Key to switch between the Insert and Overwrite Edit Modes.
- 2) The Up and Down Cursor Keys can be used instead of the Enter Key when continuously inputting text.

2) Basic Key Inputs

The following keys can be used in edit programs.

Key	Function
Cursor Keys (Up, Down, Left, and Right)	Used to move the cursor when not inputting text. The Up and Down Cursor Keys can also be used to commit inputs and move the cursor to the next or previous line.
Enter Key	Used to commit the input and move the cursor to the next line.
Insert Key	Used to switch the editing mode between Insert and Overwrite Modes. The mode will alternate each time the key is pressed.
Delete Key	Deletes the contents of a selected cell. If the cursor is inside the cell, deletes one character at the cursor.
Ctrl + Insert	Opens an empty line at the position of the cursor.
Ctrl + Delete	Deletes the line with the cursor.
Ctrl + Home	Moves the cursor to the beginning of the N number.
Ctrl + End	Move the cursor to the end of the program.
Page Up	Moves the cursor to the top of the window.
Page Down	Moves the cursor to the bottom of the window.
Ctrl + Left Cursor Key	Moves the cursor to the N number column.
Ctrl + Right Cursor Key	Moves the cursor to the program code input column.

11.2.3 Editing Programs

1) Selecting Cells

Motion programs can be selected by clicking and dragging either the N numbers or program lines.

2) Selecting Lines

Programming lines can be selected by clicking and dragging in the No. column.

11

3) Pop-up Menu

A pop-up menu will appear if the right mouse button is pressed with the cursor on a selected cell or line. The configuration of the pop-up is shown below.

No.	N No.	Program
0001		PROGRAM1 REGISTERING PARTS OF STATION1;
0002	N010	ABS:ABSOLUTE COORDINATES POSITION COMMAND;
0003	N020	#1=#1:POINT NUMBER(RACK NUMBER);
0004	N030	#10=Y#F400:TRAVEING AXIS OF
0005	N040	#11=Z#F400:VERTICAL AXIS OF
0006	N050	#12=X#F400:ARM AXIS OF STA
0007	N060	#13=Y#F1:TRAVEING AXIS OF F
0008	N070	#14=Z#F1:VERTICAL AXIS OF R
0009	N080	#15=X#F1:ARM AXIS OF RACK C
0010	N090	10W#1==1:CHECK THE ARM NI
0011	N100	#16=#1-10000:VERTICAL AXIS OF STATION 1 Z-AXIS;CALCULATE POSITION;
0012	N110	MOV Y#10 Z#16:POSITION FROM STANDRY POINT TO STATION 1;
0013	N120	MOV X#12:ARM POSITION TO PARTS IMPORT POINT;
0014	N130	INC MOV Z10:10MM,RISING VERTICAL AXIS;
0015	N140	ARS MOV X0: ARM POSITION TO NEUTRAL POINT;
0016	N150	10W #1 == 1 :CHECK THE ARM NEUTRAL POSITION;
0017	N160	MOV #F410: POSITIONING FROM RACK TO STANDRY POINT;
0018	N170	END: PROGRAM COMPLETED;
0019		

INS 3/19

• Cut

Deletes the program data from the selected area and places it in the data buffer. Data placed in the buffer by the cut operation can be inserted at another location by using the paste operation. The cut operation can thus be used not only to delete program data, but also to move program data.

• Copy

Places a copy of the program data from the selected area in the data buffer. Data placed in the buffer by the copy operation can be inserted at another location by using the paste operation.

• Paste

Inserts program data placed in the data buffer by the cut or copy operation to the current location of the cursor.



Only one piece of program data can be stored in the data buffer. In other words, the paste function will always insert the data most recently stored in the data buffer by the cut or copy function.

• Delete

Deletes the program data in the selected area, but unlike the cut function, the data is not stored in the data buffer.

• Insert Line

Inserts one blank line into the program. All elements below the point where the line is inserted will be moved down one line. A line thus can be inserted even if there is no line below the insertion point.

• Delete Line

Deletes one line. All elements below the line that was deleted will be moved up one line.

11.2.4 Replacing N Numbers

1) Replaced N Numbers

N numbers can be replaced for a specified number of steps from a specified starting step. The N numbers in all the specified lines can be changed merely by specifying the starting number and the number of steps. N numbers in GOTO statements will also be changed.

Before Replacement

No.	N No.	Program
0001	N010	ABS;
0002	N020	WHIL F #10 < 100 D01;
0003	N025	PMV P1 C#10;
0004	N030	GSR P33;
0005	N040	IF #150 == 1 GOTO 100;
0006	N035	MOV X10 Y10;
0007	N050	#10 = #10 + 1;
0008	N060	DEND1;
0009	N100	MOV X0 Y0 Z0;
0010		

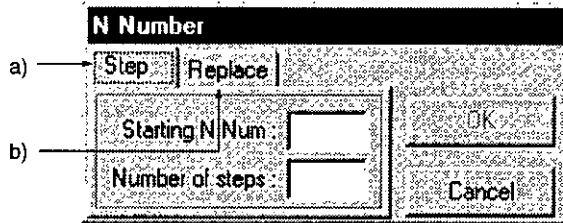
After Replacement (when a starting number of N100 and 10 steps are specified)

No.	N No.	Program
0001	N100	ABS;
0002	N110	WHIL F #10 < 100 D01;
0003	N120	PMV P1 C#10;
0004	N130	GSR P33;
0005	N140	IF #150 == 1 GOTO 180;
0006	N150	MOV X10 Y10;
0007	N160	#10 = #10 + 1;
0008	N170	DEND1;
0009	N180	MOV X0 Y0 Z0;
0010		

Note N numbers in GOTO statements will not be replaced if the specified N number does not exist in the program. If there are GOTO statement for which N numbers do not yet exist, be sure to correct them so that N number duplication does not occur.

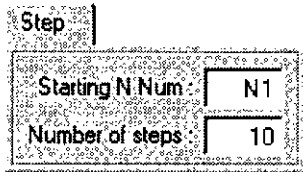
2) N Number Dialog Box

Select **Search (S) – N Number (A)** from the menu bar to access the N Number Dialog Box. The configuration of the N Number Dialog Box is shown below.



a) Step Tab

The Step Tab is used to allocate new N numbers to the program currently being edited at a specified interval. The configuration of the Step Tab is shown below.



- **Starting N Number**

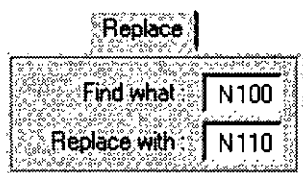
Input the starting N number for which N number are to be reallocated.

- **Number of Steps**

The interval for the N numbers to be allocated.

b) Replace Tab

The Replace Tab is used to replace an N number in the N number area. The configuration of the Replace Tab is shown below.



- **Find What**

Input the N number to replace.


- **Replace With**

Input the N number that will replace the original N number.



- 1) The Replace Tab is used only to replace lines to which N numbers have already been allocated. It will not allocated N numbers to lines without N numbers.
- 2) If the same N number is used for more than one line, an error message will be displayed and the replacement operation will not be performed.
- 3) Use the *Search (S) – Replace (R)* command from the menu bar to replace text in the program lines (including N numbers).

11.3 Searching Motion Programs

 This section describes operations required to search and replace text strings in motion programs.

11.3.1 Outline	11-13
11.3.2 Find	11-13
11.3.3 Replace	11-14
11.3.4 Go To	11-15

11.3.1 Outline

- 1) The find operation can be used to search for text strings in the currently displayed motion program. Motion program instructions, arguments (including N numbers), and comments can be found from the Motion Program Search Dialog Box.
- 2) The replace operation replaces a specified text string with another text string. Motion program instructions, arguments (including N numbers), and comments can be found from the Motion Program Replace Dialog Box.
- 3) The go to operation moves the cursor to a specified line number.

11.3.2 Find

1) Types of Searches

The following three types of searches can be performed depending on the starting point and direction for the search.

a) Find

Searches for text strings in the N numbers and program lines.

b) Find Next

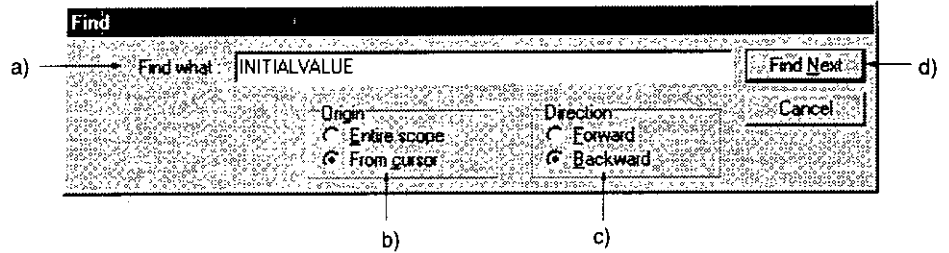
After a search operation has been performed, searches for the next occurrence of the search string starting from the cursor in the order of increasing line numbers.

c) Find Previous

After a search operation has been performed, searches for the next occurrence of the search string starting from the cursor in the order of decreasing line numbers.

2) Motion Program Search Dialog Box

Select **Search (S) – Find (F)** from the menu bar to access the Motion Program Search Dialog Box. The configuration of the Motion Program Search Dialog Box is shown below.



a) Find What Field

Input the text string for which to search.

b) Origin Setting

Set the starting point for the search.

c) Direction Setting

Set the search direction.

d) Find Next Button

Click the Find Next Button to search for the next occurrence after the cursor after a search has been made.

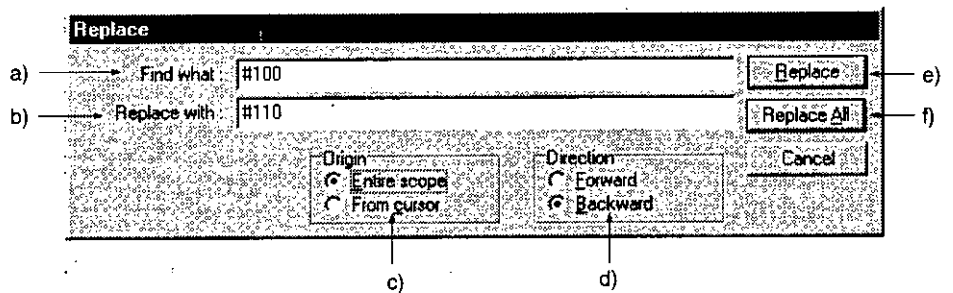
11.3.3 Replace

1) Replaced Data

The Replace Command replaces text strings in the motion program. It does not change N numbers assigned to program lines.

2) Motion Program Replace Dialog Box

Select **Search (S) – Replace (R)** from the menu bar to access Motion Program Replace Dialog Box. The configuration of the Motion Program Replace Dialog Box is shown below.



a) Find What Field

Input the text string for which to search.

b) Replace With Field

Input the text string to replace the search string.

c) Origin Setting

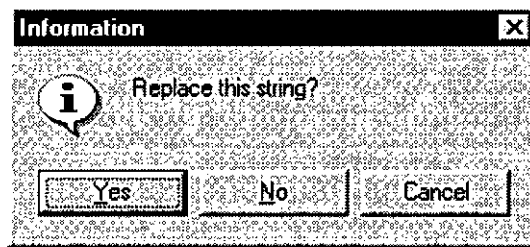
Set the starting point for the search.

d) Direction Setting

Set the search direction.

e) Replace Button

Replaces one occurrence at a time. A confirmation message will be displayed before each replacement.

**f) Replace All Button**

Replaces all occurrences of the search string at once without confirmation.



An error will occur if the replacement string is longer than the maximum number of characters for one line (128 characters).

11.3.4 Go To**1) Go To Commands**

The following three go to commands are supported.

a) Top Line

Moves the cursor to the first line in the current program. This command can also be executed by pressing the Ctrl + Home Keys.

b) Bottom Line

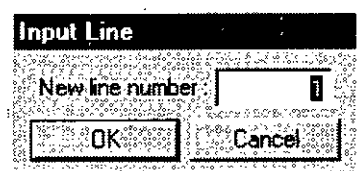
Moves the cursor to the last line in the current program. This command can also be executed by pressing the Ctrl + End Keys.

c) Input Line

Moves the cursor to the specified line in the current program.

2) Go To Line Number Dialog Box

Select **Search (S) – Input Line (I)** from the menu bar to access the Go To Line Number Dialog Box. The configuration of the Go To Line Number Dialog Box is shown below.



11

Editing Motion Programs Online

12

This chapter describes the online editing windows, position teaching operations, and I/O data display operations for motion programs.

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12.1 Motion Program Windows

■ This section describes the configuration of the Motion Program Window online.

12.1.1 Outline	12-2
12.1.2 Online Mode	12-2

12.1.1 Outline

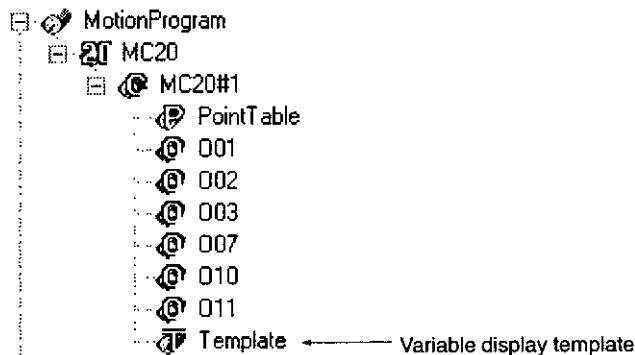
The configuration of the Motion Program Window is difference online and offline. The portions of the interface that are the same are described in *Chapter 11 Editing Motion Programs Offline*. This section describes the online configuration of the Motion Program Window.

12.1.2 Online Mode

This section describes the function for the Motion Program Window that can be used only online.

1) Configuration of Motion Program Nodes

A Motion Program Node has the following configuration online.

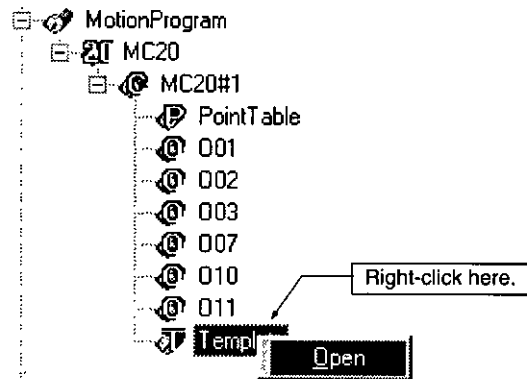


A variable display template will be added to the Motion Program Node online.

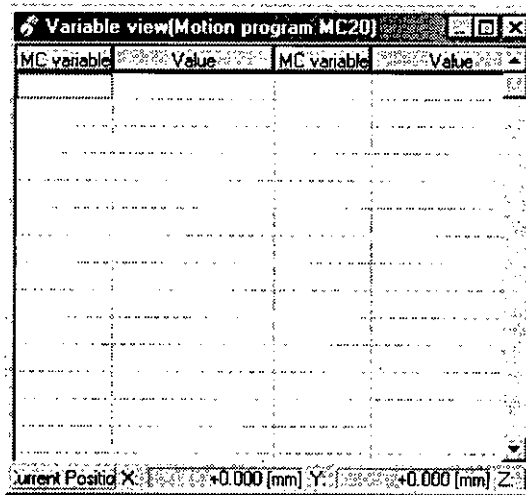
2) Variable Display Template

Use the following procedure to open the variable display template.

Select the template under the Motion Program Node, click the right mouse button, and select **Open**.

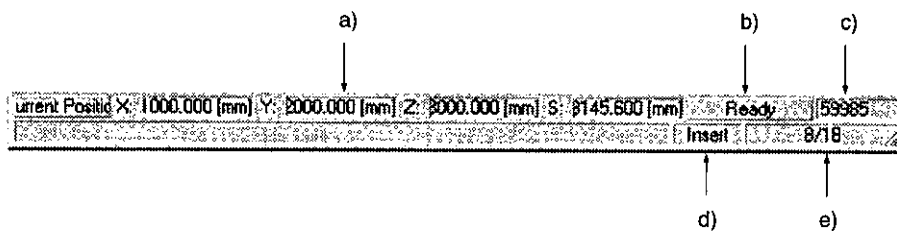


The variable display template will be opened.



3) Status Bar

The following information will be displayed in the status bar of the Motion Program Window online.



a) Position/Deviation

Displays the current positions or deviations for up to 4 axes. The default is to display the current positions.

b) Status

Displays the status of the motion program.

c) Available Memory

Displays the amount of memory still available. Up to 60 Kbytes of memory can be used.

d) Editing Mode

Displays insert or overwrite mode.

e) Line Number

Displays the line number of the cursor over the total number of lines.

4) Menu Bar

The following menus will appear on the menu bar with a Motion Program Window is selected.



Menu/Command	Function
Edit	
Cut	Cuts the data and places in the buffer.
Copy	Places a copy of the data in the buffer.
Paste	Inserts the contents of the buffer.
Delete	Deletes the data.
Insert Line	Inserts a line just before the cursor.
Delete Line	Deletes the line at the cursor.
Search	
Find	Searches for instructions and reference numbers.
Find Next	Finds the next occurrence of the text string input for a search operation in the direction of increasing line numbers.
Find Previous	Finds the next occurrence of the text string input for a search operation in the direction of decreasing line numbers.
Replace	Displays the Replacement Dialog Box to replace text strings.
N Number	Replaces only the number of steps with the specified N number.
Top Line	Moves the cursor to the top of the program.
Input Line	Moves the cursor to the specified line of the program.
Bottom Line	Moves the cursor to the bottom of the program.
MC Operation	
1 Block Execute	Executes the specified program line when the MC Module is in Online Edit Mode.
Hold and Resume	Holds and resumes the 1-block execution operation.
Abort	Cancels a 1-block execution operation.

12.2 MC Operations

This section describes the operations that can be performed on an MC Module from the Motion Program Window.

12.2.1	Outline	12-5
12.2.2	One-block Execution	12-5
12.2.3	Pausing Execution	12-6
12.2.4	Canceling Execution	12-6
12.2.5	Changing the Current Position Display Mode	12-7

12.2.1 Outline

An MC20 motion program can be executed one line at a time from the Motion Program Window. The results of execution can be confirmed immediately to enable more efficient debugging.



The 1-block execution operation is possible only when the MC20 Module has been changed to Online Edit Mode from the ladder program.

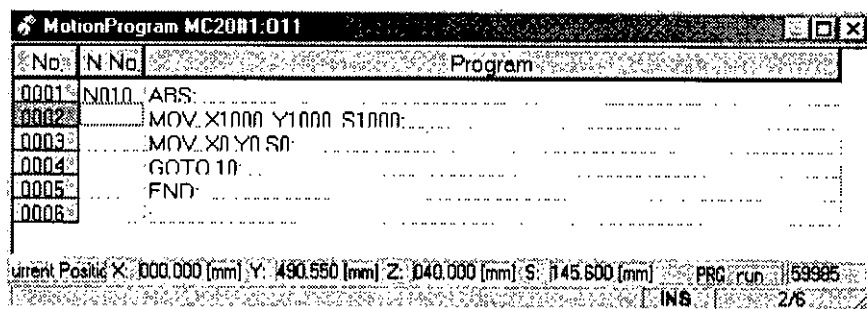
12.2.2 One-block Execution

- 1) The 1 Block Execution Command executes the line with the cursor.
- 2) Use the following procedure to executed the motion program one line at a time.

Move the cursor to the line to be executed and select **MC Operation (O) – 1 Block Execute (E)** from the menu.



The number of the program line being executed will be displayed in red and *PRG run* and the current position will be displayed in the status bar. These will disappear when execution has been completed.



12.2.3 Pausing Execution



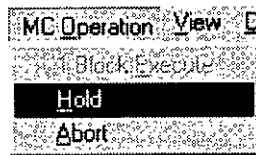
The 1-block execution operation executes one line of a motion program displayed on the screen. The motion program must be displayed before executing the operation.

12.2.3 Pausing Execution

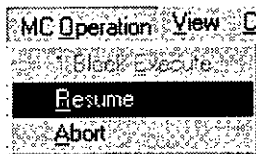
1) The Hold Command can be used to pause 1-block execution operation. It is effective only while execution is in progress. Execution will stop as soon as the Hold Command is executed, and can then be continued by selecting the Resume Command from the menu.

2) Use the following procedure to pause execution.

a) Select **MC Operation (O) – Hold (H)** from the menu bar.



b) Execution will be paused. Select **MC Operation (O) – Resume (R)** to continue execution.

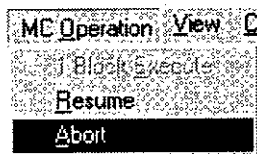


12.2.4 Canceling Execution

1) The Abort Command can be used to cancel 1-block execution. It must be selected while 1-block execution is in progress. Execution will be canceled as soon as the Abort Command is selected from the menu.

2) Use the following procedure to cancel execution.

Select **MC Operation (O) – Abort (A)** from the menu bar.

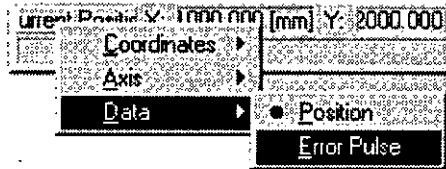


Execution will be canceled.

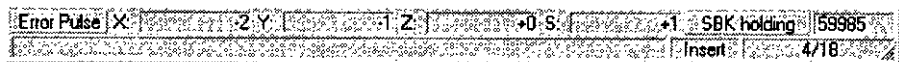
12.2.5 Changing the Current Position Display Mode

- 1) Either the current position or current deviations can be displayed in the status bar. The current positions will be displayed when the Motion Program Window is opened.
- 2) Use the following procedure to change the current position display mode.

Click the right mouse button on the status bar and select **Data (D) – Error Pulse (E)**.



The current position displays will change to deviation displays.



12.3 Teaching Positions

This section describes the teaching operation that can be performed from the Motion Program Window.

12.3.1	Outline	12-8
12.3.2	Changing the Coordinate Display Mode	12-8
12.3.3	Teaching the Current Positions	12-8
12.3.4	Teaching Arc Center Coordinates	12-9

12.3.1 Outline

The current position teaching operations enables writing positions into the program after first adjusting the current position by jogging or other operations. Teaching helps reduce the need to change the program according to current position displays.

12.3.2 Changing the Coordinate Display Mode

- 1) The coordinate display mode can be set to either current position coordinates or arc center coordinates.
- 2) Use the following procedure to change the coordinate display mode.

Click the right mouse button on the status bar and select **Coordinates (C) – Position (P)** or **Coordinates (C) – Circular (C)** from the pop-up menu.



The display will change to the specified mode.

12.3.3 Teaching the Current Positions

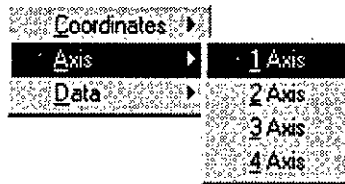
- 1) The coordinate display must be changed to display current positions before the current positions can be taught.
- 2) Use the following procedure to teach current positions. The following example shows how to teach the position for axis 1.

- a) Adjust the axis to the desired position and place the cursor on the line where the position is to be taught.

No.	N.No.	Program
0001		PROGRAM001.101;
0002		
0003		MOV X100, Y200;
0004	N001	INC MVS X50, F1000;
0005		INC MVS Y50, F1000;
0006		MCW PXY X120, Y100, I50, J50, F100;
0007		
0008		GSR P2;
0009		INC MVS X50, F1000;
0010		INC MVS Y50, F1000;

Current Pos: X: +39.687 [mm] Y: +67.939 [mm] Z: +0.000 [mm] S: +0.000 [mm] Alarm: 51989
INS 11/18

- b) Click the right mouse button on the status bar and select **Axis (A) – 1 Axis (1)** from the pop-up menu.



The axis 1 data at the cursor position (here, the X axis) will change to the value displayed as the current position.

No.	N.No.	Program
0001		PROGRAM001.101;
0002		
0003		MOV X100, Y200;
0004	N001	INC MVS X50, F1000;
0005		INC MVS Y50, F1000;
0006		MCW PXY X120, Y100, I50, J50, F100;
0007		
0008		GSR P2;
0009		INC MVS X50, F1000;
0010		INC MVS Y50, F1000;

Current Pos: X: +39.687 [mm] Y: +67.939 [mm] Z: +0.000 [mm] S: +0.000 [mm] Alarm: 51989
INS 6/18

The same basic procedure can be used for axis 2 to 4.



An error will occur if teaching is attempted for an axis not contained in the line with the cursor.

12.3.4 Teaching Arc Center Coordinates

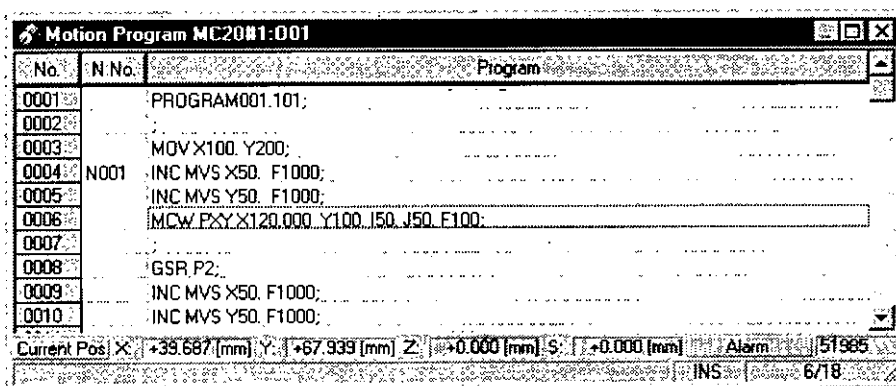
- 1) The coordinate display must be changed to display arc center coordinates before an arc center can be taught.

- 2) Use the following procedure to teach arc center coordinates. The following example shows how to teach the arc center for axis 2.

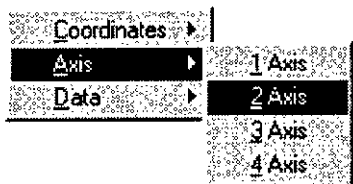
 - a) Click the right mouse button on the status bar and select **Coordinates – Circular** from the pop-up menu.



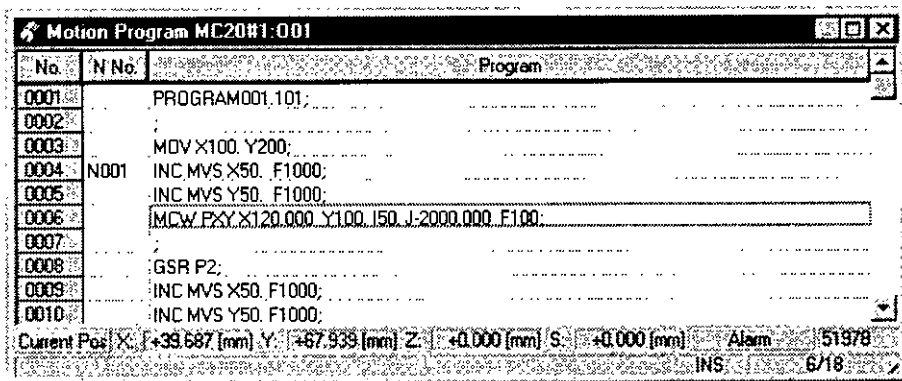
- b) Adjust the axis to the desired position and place the cursor on the line where the position is to be taught.



- c) Click the right mouse button on the status bar and select **Axis (A) – 2 Axis (2)** from the pop-up menu.



The axis 2 data at the cursor position (here, the J axis) will change to the value displayed as the current position.



The same basic procedure can be used for the other axes.



An error will occur if teaching is attempted for an axis not contained in the line with the cursor.

12.4 Displaying Variables

This section describes operations required to display and change data for I/O and other MC Module variables.

12.4.1 Outline	12-12
12.4.2 Configuration of Variable Templates	12-13
12.4.3 Displaying References	12-13
12.4.4 Changing Data	12-15
12.4.5 Clearing Variable Displays	12-15

12.4.1 Outline

An MC variable template displays data from inside the Motion Module. The following variables can be used in an display variable.

Displayed Variable	Display Range	Setting Range	Read/Write
Input variables (#I□□□)	#11 to #1256	0/1	Read only
Output variables (#O□□□)	#01 to #0256	0/1	Read/write
Link input variables (#□□□□)	#1101 to #1116	-99999999 to 99999999	Read only
Link output variables (#□□□□)	#1201 to #1216	-99999999 to 99999999	Read/write
Common variables (#□□□)	#1 to #199	-99999999 to 99999999	Read/write
System variables (#□□□□)	#1001 to #1018	-99999999 to 99999999	Read only
H variables (H□)	H1 to H8	-99999999 to 99999999	Read/write

12

12.4.2 Configuration of Variable Templates

The configuration of a variable template is shown below.

MC variable	Value	MC variable	Value
#001	100	#1001	999996
#030	600	#1002	999986
#120	0	#1009	999996
#199	11917	#1010	999986
#1001	0		
#1256	0	#1101	0
#0001	1	#1102	0
#0256	1	#1215	0
		#1216	0
#H1	400		
#H8	1000		

3) → Current Position X: +999.996 [mm] Y: +999.986 [mm] Z: +0.002 [mm] S: n

1) MC Variable

Input the MC Module variable.

2) Value

Input the value for the variable.

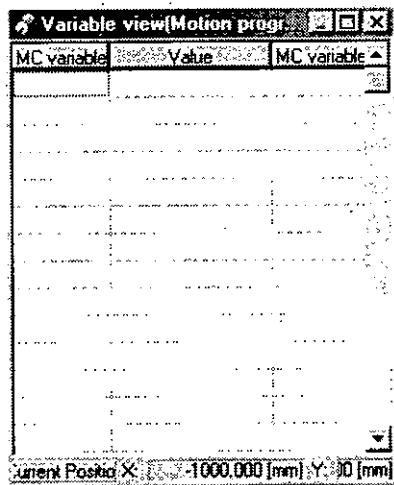
3) Status Bar

Displays the current axis positions.

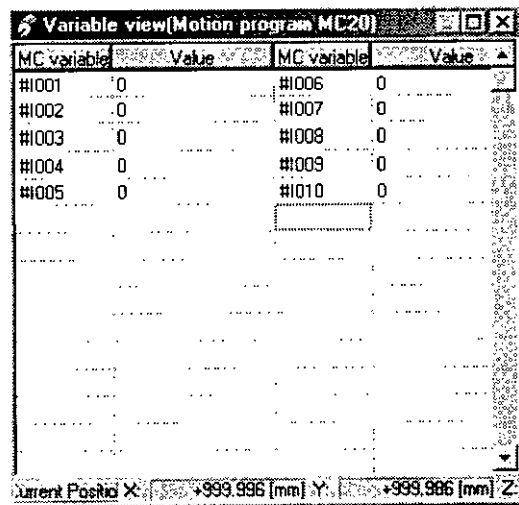
12.4.3 Displaying References

I/O and other MC Module variable data can be displayed. Use the following procedure to display the references.

- 1) Move the cursor to the position on the variable template at which data is to be displayed.



- 2) Input the reference number of the data to be display. The data will be displayed.



12

12.4.4 Changing Data

The values of outputs and other MC Module variable can be changed. Use the following procedure to change the data.

- 1) Move the cursor to the position of the value to be changed.

MC variable	Value	MC variable	Value
#0001	0	#0004	0
#0002	0	#0005	0
#0003	0	#0006	0

Current Positio X: +999.996 [mm] Y: +999.996 [mm] Z:

- 2) Input the new value.

MC variable	Value	MC variable	Value
#0001	0	#0004	0
#0002	0	#0005	0
#0003	0	#0006	0

Current Positio X: +999.996 [mm] Y: +999.996 [mm] Z:



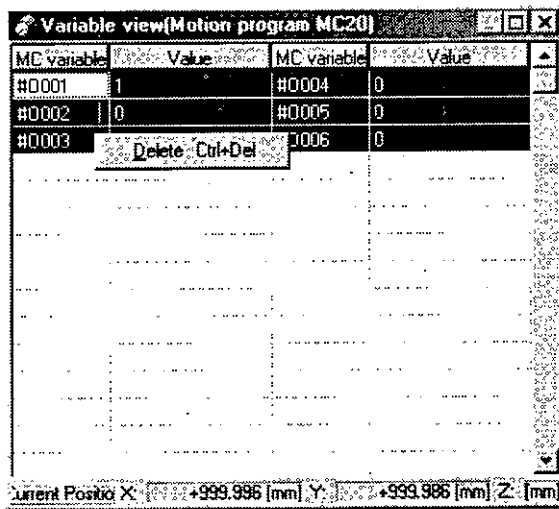
The following variables can be changed: Output variables, link output variables, common variables, and H variables. Input the value directly for all variable except output variables. Refer to the user manual for the MC Module for details.

12.4.5 Clearing Variable Displays

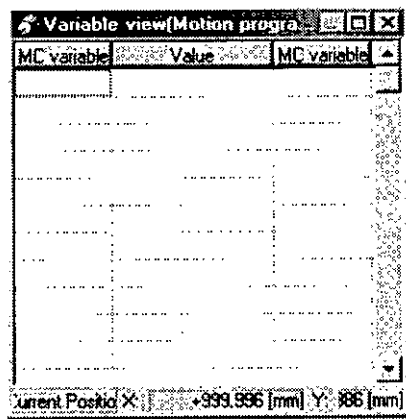
The clear operation will clear all of the reference numbers and data currently displayed. Use the following procedure to clear the variable display.

12.4.5 Clearing Variable Displays , cont.

Select all cells, click the right mouse button on the variable table, and select **Delete** from the pop-up menu.



The variable template will be cleared.



2

12.5 Initializing the MC20

This section describes the operation required to initialize an MC20 Module.

12.5.1 Outline	12-17
12.5.2 Initializing the MC20	12-17

12.5.1 Outline

The parameters, point table, and motion program in the MC20 can be initialized individually or all together online.

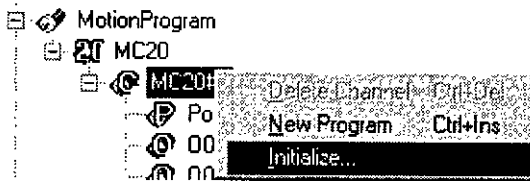


Set the MC20 Module to Edit Mode before initializing all items or before initializing the motion program.

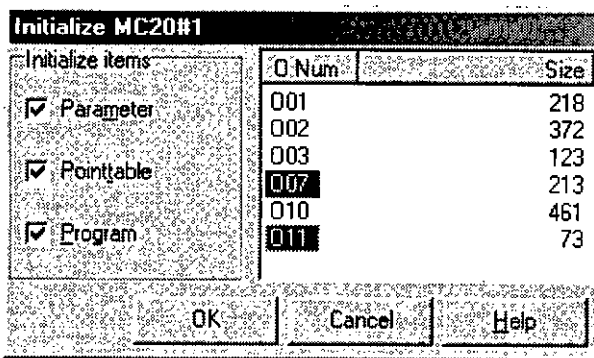
12.5.2 Initializing the MC20

Use the following procedure to initialize the MC20.

- 1) Point at the MC20 Channel Node in the Program Manager, click the right mouse button, and select **Initialize**.



- 2) The MC20 Initialize Dialog Box will appear.
- 3) Check the items to be initialized. To select more than one O number at the same time, hold down the Ctrl Key while selecting.



- 4) Click the **OK** Button. The selected data will be initialized.

This chapter describes operations required to edit point tables, writing point tables to text files, and other point table operations.

13.1	Point Table Window	13-2
13.1.1	Outline	13-2
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13.1.4	Menu Bar Configuration	13-4
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13.2	Editing Point Tables	13-5
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13.3	Importing and Exporting Text Files	13-7
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13.3.2	Text File Format	13-7
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13.1 Point Table Window

This section describes the configuration of a point table, how to open and close a point table, and other point table operations.

13.1.1	Outline	13-2
13.1.2	Opening the Point Table Window	13-2
13.1.3	Configuration of a Point Table Window	13-3
13.1.4	Menu Bar Configuration	13-4
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13.1.6	Closing a Point Table Window	13-4

13.1.1 Outline

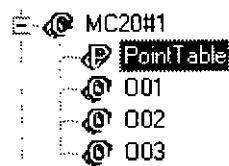
Point Table Windows are used to edit point tables for MC20 and MC15 Modules. For the MC20, data for up to 500 points can be input for each axis. For the MC15, data for up to 4,000 points can be input for each axis.

13.1.2 Opening the Point Table Window

Use one of the following two procedures to open a Point Table Window.

- Double-click the Point Table Node in the Project Manager.

MC20

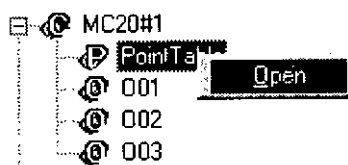


MC15

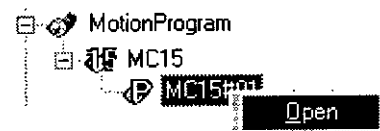


- Point at the Point Table Node in the Project Manager, click the right mouse button, and select **Open**.

MC20



MC15



13.1.3 Configuration of a Point Table Window

The configuration of a Point Table Window is shown below. The illustration shows an example for an MC20 point table.

1) →

Point No.	Axis1	Axis2	Axis3	Axis4
001	0	0	0	0
002	0	0	0	0
003	0	0	0	0
004	0	0	0	0
005	0	0	0	0
006	0	0	0	0
007	0	0	0	0
008	0	0	0	0
009	0	0	0	0
010	0	0	0	0
011	0	0	0	0
012	0	0	0	0
013	0	0	0	0
014	0	0	0	0
015	0	0	0	0
...

2) {

3) ←

4) ←

Point Table MC20#1

1/500

1) Title Bar

Displays the Module for which the point table is being edited.

2) Point Number

Displays the point number within the point table.

3) Editing Area

Used to input point table data.

4) Status Bar

Displays the point number at the position of the cursor.

13.1.4 Menu Bar Configuration

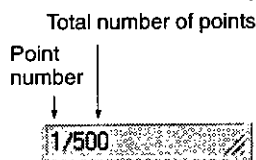
The following menus will appear on the menu bar when a Point Table Window is selected.



Menu /Command	Function
Edit	
Cut	Cut the selected data and places it in the buffer.
Copy	Places a copy of the selected data in the buffer.
Paste	Inserts the contents of the buffer.
Delete	Deletes the selected data.
Move	
Top Line	Moves the cursor to the top line.
Input Line	Moves the cursor to the specified line.
Bottom Line	Moves the cursor to the bottom line.
DOS Transfer	
Import Text File	Reads a point table from a text file.
Export Text File	Writes the point table to a text file.

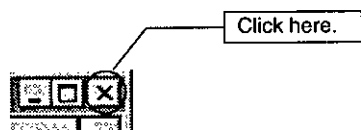
13.1.5 Status Bar Configuration

The configuration of the status bar of a Point Table Window is shown below. Position information will be displayed for the current position of the cursor.



13.1.6 Closing a Point Table Window

To close a Point Table Window, click on the **Close** Button in the upper right corner of the window.



13.2 Editing Point Tables

■ This section describes basic operations required to edit data in Point Table Windows.

13.2.1 Outline	13-5
13.2.2 Editing Point Tables	13-5
13.2.3 Go To	13-6

13.2.1 Outline

Data can be input into any cells of the point table.

13.2.2 Editing Point Tables

1) Selecting Cells

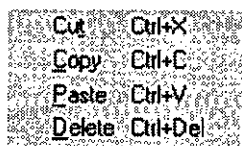
Point tables can be selected by clicking and dragging cells.

2) Selecting Lines

Lines in point table can be selected by clicking and dragging in the *Point No.* column.

3) Pop-up Menu

A pop-up menu will appear if the right mouse button is pressed with the cursor on a selected cell or line. The configuration of the pop-up is shown below.



- **Cut**

Deletes the data from the selected cells and places it on the clipboard. Data will be cleared from the selected cells.

- **Copy**

Places a copy of the program data from the selected area on the clipboard.

- Paste

Inserts data placed in the data buffer by the cut or copy operation to the current location of the cursor.

- Delete

Deletes the data from the selected cells.



- 1) Data will be pasted as a block with the cursor position as the upper left corner.
- 2) An error will occur if there is not sufficient space to paste all of the data on the clipboard. For example, pasting is not possible in the column for axis 3 if 4 axes of data is on the clipboard.

13.2.3 Go To

1) Go To Commands

The following three go to commands are supported.

a) Top Line

Moves the cursor to the first line in the point table. This command can also be executed by pressing the Ctrl + Home Keys.

b) Bottom Line

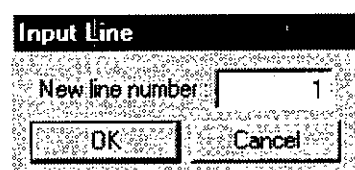
Moves the cursor to the last line in the point table. This command can also be executed by pressing the Ctrl + End Keys.

c) Input Line

Moves the cursor to the specified line in the point table.

2) Input Line Dialog Box

Select **Move (M) – Input Line (J)** from the menu bar to access the Input Line Dialog Box. The configuration of the Go To Line Number Dialog Box is shown below.



13.3 Importing and Exporting Text Files

■ This section describes the operations to import and export point tables as text files.

13.3.1 Outline	13-7
13.3.2 Text File Format	13-7
13.3.3 Importing and Exporting Text Files	13-8

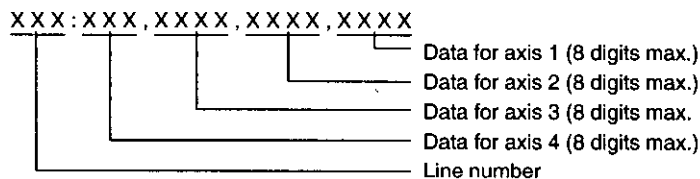
13.3.1 Outline

Data created for point tables can be saved in text files. The resulting text files can be used with the DOS version of MEMOSOFT.

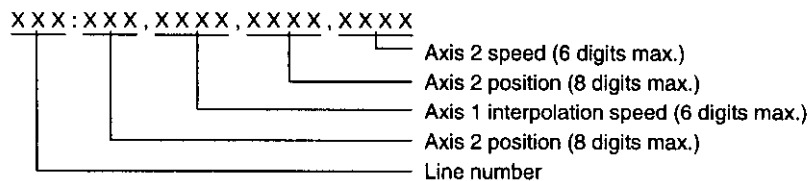
13.3.2 Text File Format

- 1) Point table data created with the MEMOSOFT can be saved in text files. These text files can be edited with a standard text editor. Also, point table files created with a standard text editor can be imported into the MEMOSOFT. The format of the files is shown below.

a) MC20 Point Table Data



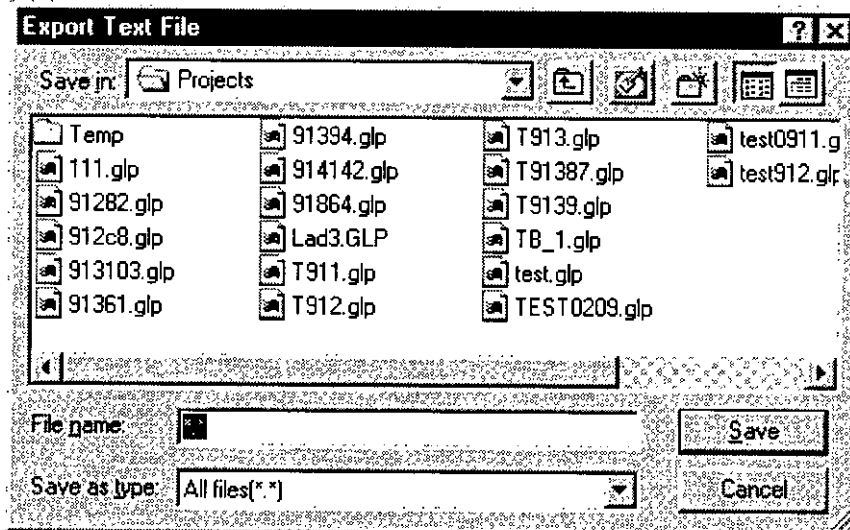
b) MC15 Point Table Data



Note When creating point table data as text files, be sure the format for the MC20 or MC15 has been input correctly. The MEMOSOFT will not import text files unless the format is correct.

2) Exporting Text Files

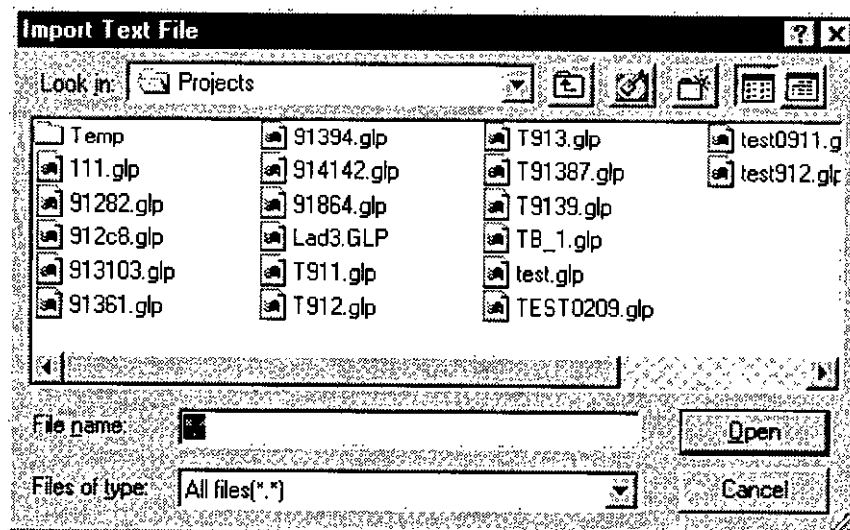
Select **DOS Transfer (M) – Export Text File (W)** from the menu to access the Export Dialog Box, input the file name, and click the **Save** Button.



The contents of the point table will be saved in the specified file.

3) Importing Text Files

Select **DOS Transfer (M) – Import Text File (R)** from the menu to access the Import Dialog Box, input the file name, and click the **Open** Button.



The contents of the text file will be imported to the Point Table Window.



The text files that are exported and imported will have a file name extension of .TBL.

This chapter describes importing functions that can be used to reference existing project data, merge programs, etc.

14.1	Importing Projects	14-2
14.1.1	Importing Data	14-2
14.1.2	Imported Data	14-2
14.2	Import Operations	14-3
14.2.1	Outline	14-3
14.2.2	Opening the Import Window	14-3
14.2.3	Ladder Programs	14-5
14.2.4	Motion Programs	14-6
14.2.5	Reference Data Templates	14-6
14.2.6	Symbols and Comments	14-7
14.3	Checking after Importing	14-9

14.1 Importing Projects

■ This section outlines the importing operations.

14.1.1 Importing Data	14-2
14.1.2 Imported Data	14-2

14.1.1 Importing Data

- 1) Previously created data can be imported into the project that is currently open so that the data can be reused to save time in creating new projects. The functions used to achieve this are called the import functions.

- 2) The import functions are accessed from the File (F) – Import (I) command on the menu bar.

14.1.2 Imported Data

The following data can be imported.

• **Ladder Programs**

Ladder programs can be imported by segment.

• **Motion Programs**

Motion programs can be imported by O number. Point tables can also be imported.

• **Reference Data Templates**

An entire reference data template can be imported.

• **Symbols and Comments**

Reference symbols and comments, as well as network titles and comments, can be imported.

14.2 Import Operations

■ This section describes the import operation for each type of data.

14.2.1	Outline	14-3
14.2.2	Opening the Import Window	14-3
14.2.3	Ladder Programs	14-5
14.2.4	Motion Programs	14-6
14.2.5	Reference Data Templates	14-6
14.2.6	Symbols and Comments	14-7

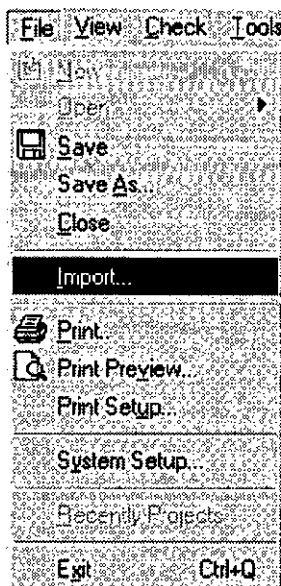
14.2.1 Outline

- 1) The File (F) – Import (I) on the menu bar is used to access the import operations.
- 2) Although data is generally imported offline, symbols and comments can be imported in Online or Debug Mode.
- 3) All editing windows must be closed to import the data. All editing windows will be closed when an import command is executed.

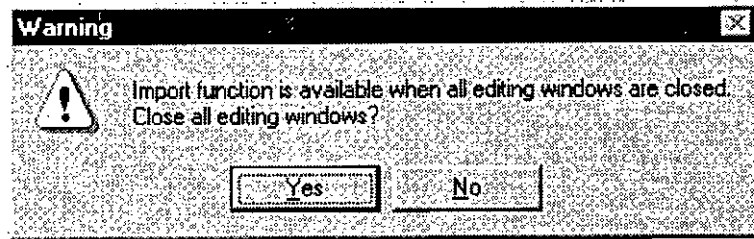
14.2.2 Opening the Import Window

Use the following procedure to open the Import Window.

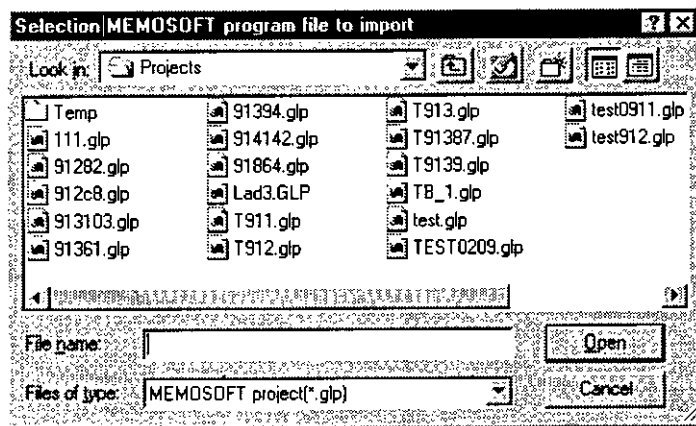
- 1) Select **File (F) – Import (I)** from the menu bar.



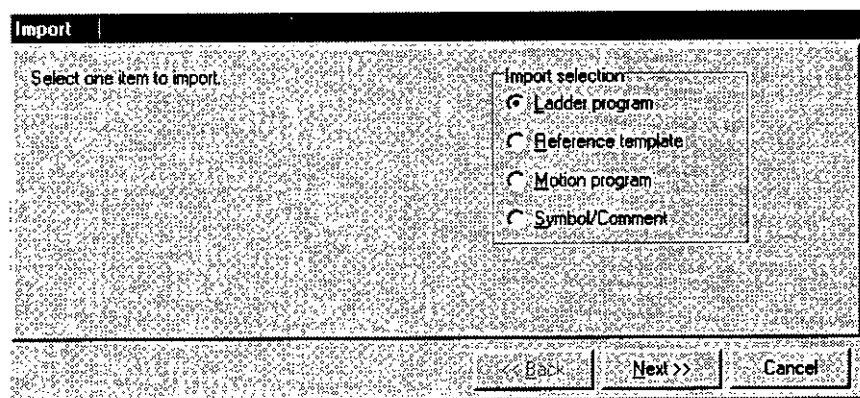
- 2) The following message will be displayed if any editing windows are open. Click the **Yes** Button.



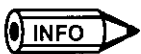
- 3) A dialogbox will be displayed to select a project. Select the project and click the **Open** Button.



- 4) A dialog box will be displayed to select the data to import. Select the data and click the **Next** Button.



- 5) Selection dialog boxes will be displayed for each type of data selected for importation. Refer to the next section for details.



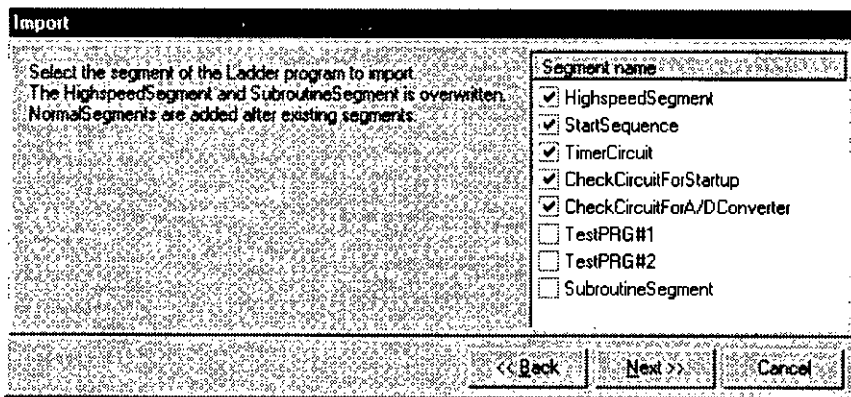
Only symbols and comments can be imported in Online or Debug Mode. Any symbols and comments imported in Online Mode are used only while the project is open and will be dis-

carded when the project is closed. Symbols and comments imported in Debug Mode are stored in the project on the hard disk, just as they are in Offline Mode.

14.2.3 Ladder Programs

Use the following procedure to import ladder diagrams.

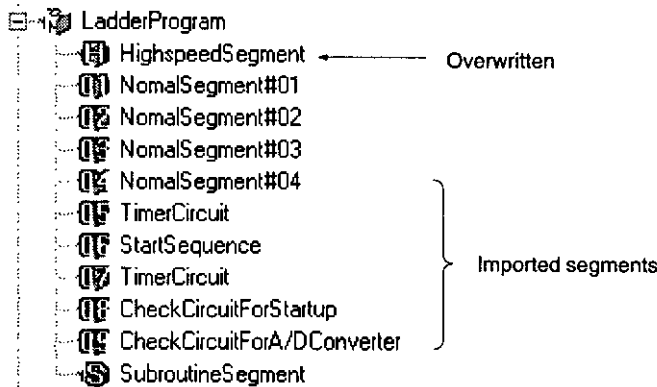
- 1) Select ladder programs on the Import Selection Dialog Box. The following dialog box will be displayed.



- 2) Add checkmarks to the segments to be imported and click the **Next** Button. Any number of segments can be selected.
- 3) A confirmation message will be displayed. Click the **Yes** Button.

The selected segments will be imported.

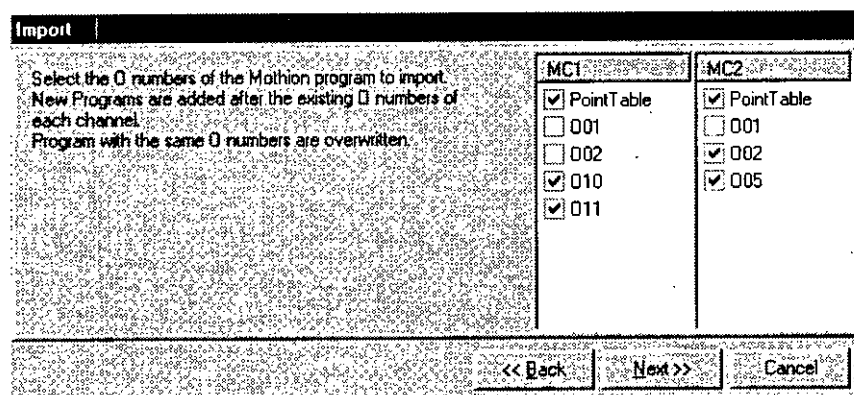
Note If imported, the high-speed segment and subroutine segment will overwrite the previous ones. Normal segments will be added to the project after the existing segments. The following illustration shows the results of importing with the above selections.



14.2.4 Motion Programs

Use the following procedure to import motion programs.

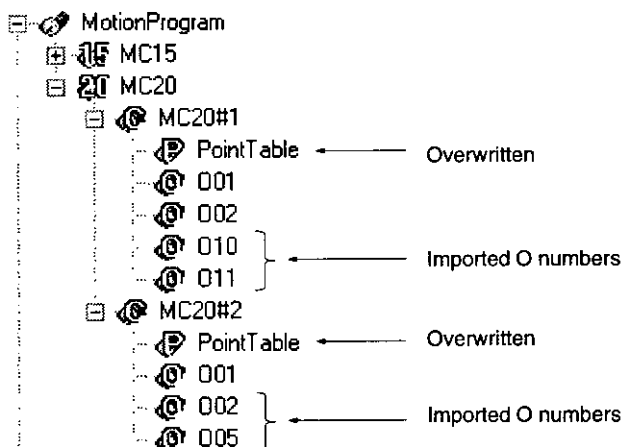
- 1) Select motion programs on the Import Selection Dialog Box. The following dialog box will be displayed.



- 2) Add checkmarks to the O numbers and point tables to be imported and click the **Next** Button. Any number of O numbers can be selected.
- 3) A confirmation message will be displayed. Click the **Yes** Button.

The selected motion programs will be imported.

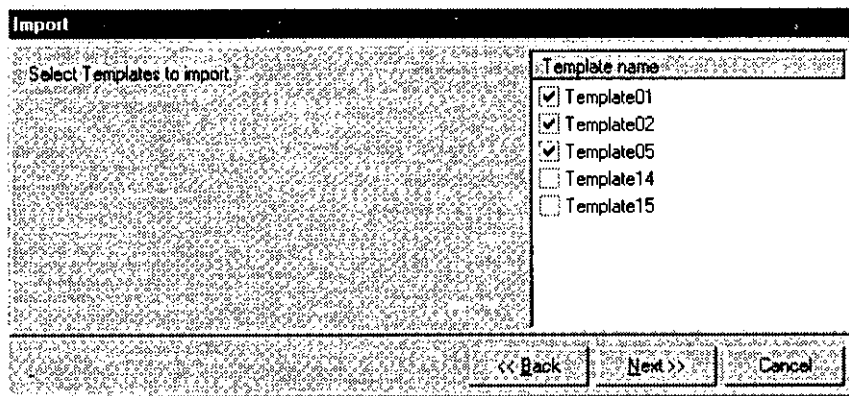
Note If imported, programs with the same O number will overwrite the previous ones. Other O numbers will be added to the project after the existing O numbers. The following illustration shows the results of importing with the above selections.



14.2.5 Reference Data Templates

Use the following procedure to reference data templates.

- 1) Select reference data templates on the Import Selection Dialog Box. The following dialog box will be displayed.



- 2) Add checkmarks to the templates to be imported and click the **Next** Button.

- 3) A confirmation message will be displayed. Click the **Yes** Button.

The selected templates will be imported.

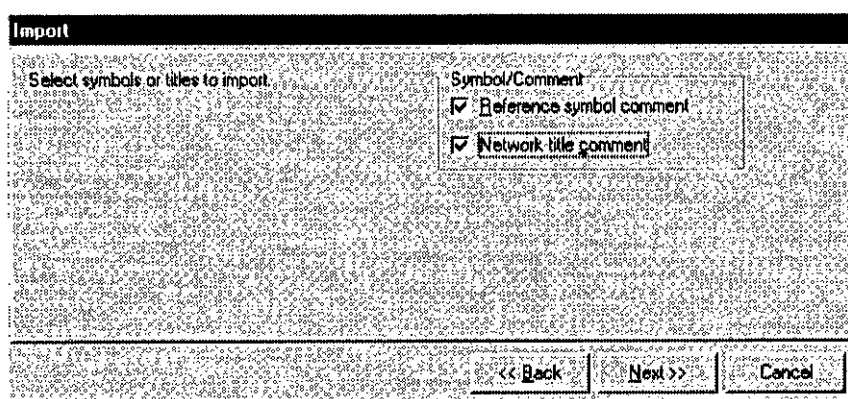
Note Templates with the same name will not overwrite the previous ones. All templates will be added to the project after the existing templates. The following illustration shows the results of importing with the above selections.



14.2.6 Symbols and Comments

Use the following procedure to import symbols and comments.

- 1) Select symbols and comments on the Import Selection Dialog Box. The following dialog box will be displayed.



- 2) Add checkmarks to the symbols and comments to be imported and click the **Next** Button.
- 3) A confirmation message will be displayed. Click the **Yes** Button.

The selected symbols and comments will be imported.

14.3 Checking after Importing

■ This section describes the check functions that can be used after importing data.

- 1) A check must be made after importing ladder programs or comments and symbols to be sure that the data is not duplicated.
- 2) The following errors are checked by the ladder program check function. Refer to 8.6 *Checking Ladder Programs* for details.
 - Ladder program size
 - Coil duplication
 - Missing reference numbers
 - Illegal instructions for the CPU Module
 - Out-of-range reference numbers
- 3) The duplicate symbol check function can be used to check for duplicated reference symbols. Refer to 9.4 *Checking Reference Symbols* for details.



- 1) Programs can be imported offline even if the capacity of the CPU Module is exceeded. Oversized programs, however, cannot be downloaded to the CPU Module and an error will occur if an attempted is made to do so. Always check the size of the program.
- 2) There are no restrictions on program size when importing or inputting programs to enable more freedom in input operations.

This chapter describes the operation required to upload, download, and verify files between the PLC or an MC Unit and the personal computer running MEMOSOFT.

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15.1.2	Manipulated Files	15-2
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15.3.3	Uploading from the PLC	15-12
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15.4	Verifying Project Files and PLC Data	15-15
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15.4.4	Verifying MC20 Data	15-18
15.4.5	Verifying MC15 Data	15-19
15.4.6	Verifying MC10 Data	15-20

15.1 Overview of Loader

■ This section outlines the loader operations.

15.1.1 Outline	15-2
15.1.2 Manipulated Files	15-2

15.1.1 Outline

- 1) The following operations are possible with the loader.
 - Downloading project files created on the MEMOSOFT to a CPU Module or MC Module
 - Uploading data from a CPU Module or MC Module to a project file on the computer
 - Comparing project files on the computer with data in a CPU Module or MC Module to verify the contents
- 2) Loader operations are performed from the Tool (T) – Loader (L) command on the menu bar.

15.1.2 Manipulated Files

The following data can be manipulated.

- System configurations
- Ladder programs
- State memory (coil ON/OFF status and reference data)
- Ethernet parameters
- Traceback settings
- Motion parameters
- Motion programs
- Point tables

15

15.2 Downloading Project Files to the PLC

This section describes the methods used to download project files created on the computer to a CPU Module or MC Module.

15.2.1	Outline	15-3
15.2.2	Starting a Download	15-3
15.2.3	Downloading to the PLC	15-5
15.2.4	Downloading to MC20 Modules	15-6
15.2.5	Downloading to MC15 Modules	15-7
15.2.6	Downloading to MC10 Modules	15-8

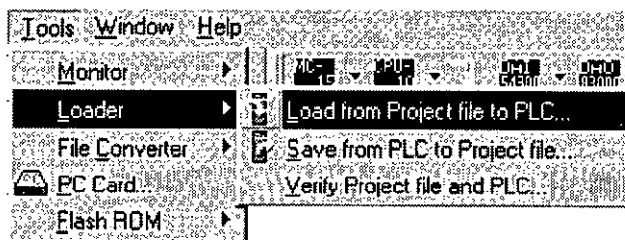
15.2.1 Outline

Data in project files created offline can be downloaded to a CPU Module or MC Module.

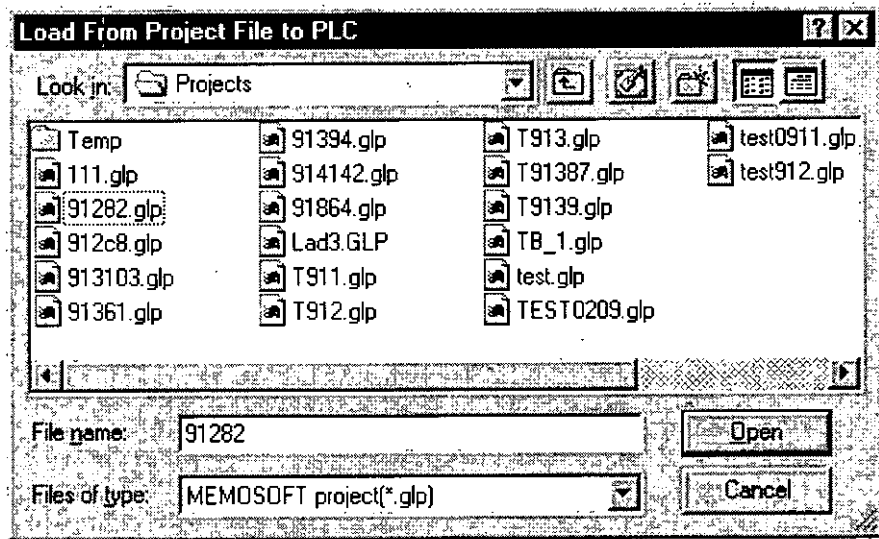
15.2.2 Starting a Download

Use the following procedure to start a download.

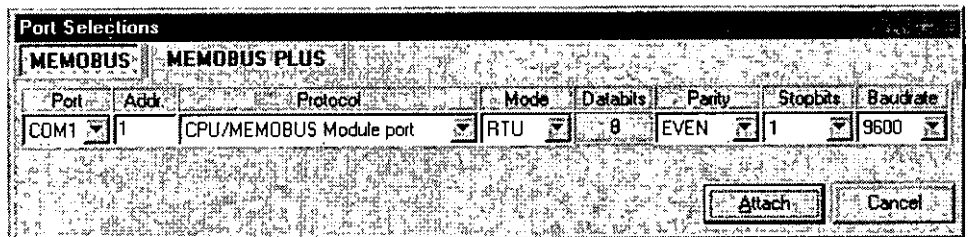
- 1) Select **Tools (T) – Loader (L) – Loading from Project File to PLC (L)** from the menu bar.



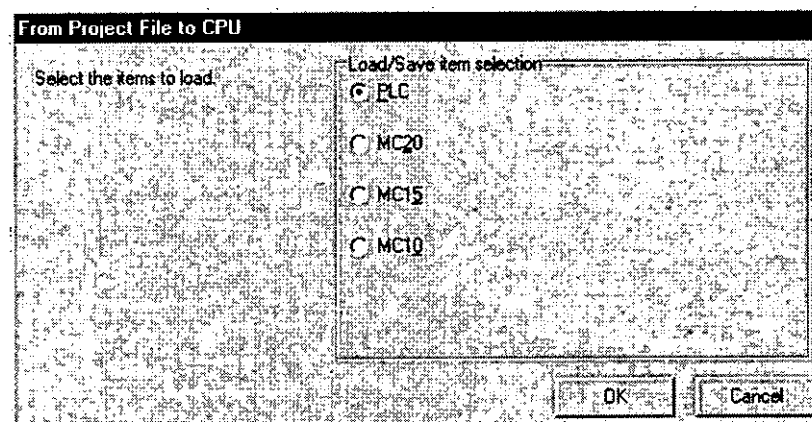
- 2) A dialog box will appear to download from a project file to the PLC. Select the project file to download from and click the **Open** Button.



- 3) A dialog box will appear to select a port. Select a port and click the **Attach** Button.



- 4) A dialog box will appear to select the destination of the download. Select the designation and click the **OK** Button.



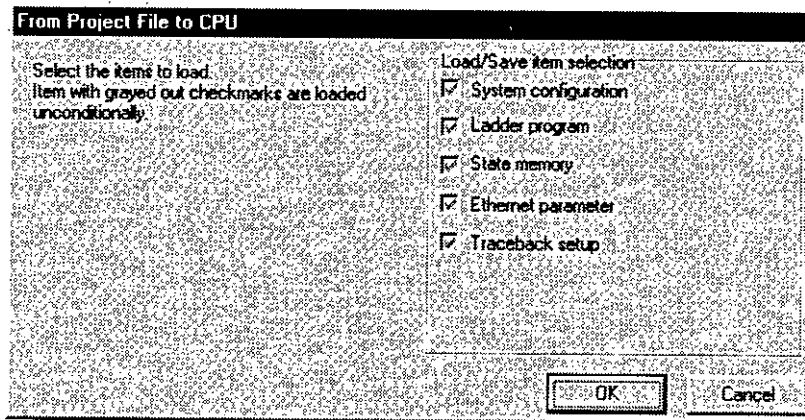
- 5) A dialog box will appear to select more specific data for the download. Refer to the following section for the procedures for specific downloads.



- 1) Only one destination can be selected at a time.
- 2) MC Modules that are not allocated in the project file cannot be selected.

15.2.3 Downloading to the PLC

- 1) The system configuration and traceback settings are always downloaded to the PLC. Ethernet parameters are also downloaded as long as Ethernet has been specified. Ladder programs and state memory can be optionally selected for downloading as required.
- 2) Use the following procedure to download to the PLC.
 - a) Select the PLC as the destination of the download. The following dialog box will appear.



- b) Place checkmarks by the items to be downloaded and click the **OK** Button.
- c) If the PLC is running, a confirmation message will be displayed. Stop the PLC.
- d) A confirmation message will appear warning that PLC memory will be cleared. Click the **Yes** Button.

The specified data will be downloaded.

- e) A message will appear after the download has been completed asking whether or not to start the PLC. Click the **Yes** Button to start the PLC.

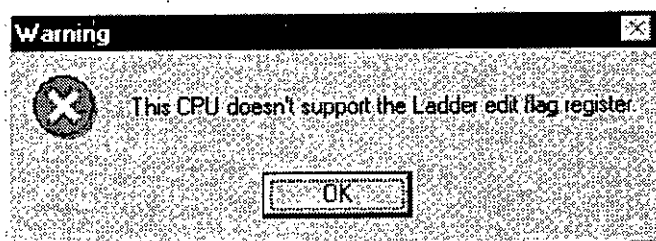
Note If there are any errors in the program, such as duplicated coils or reference symbols, an error will occur during the download operation. Use the ladder program and duplicated reference symbol check functions to debug these errors. Refer to 8.6.2 *Checking Ladder Programs* and 9.4.2 *Checking for Symbol Duplication* for details.



CPU Module Support for Expansion Functions

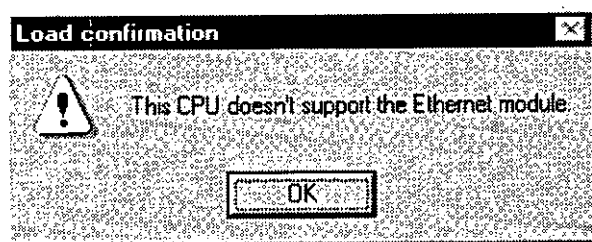
• CPU Modules Not Supporting Ladder Change Flag Registers

The following message will be displayed if the project file being downloaded contains ladder change flag registers and these are not supported by the CPU Module to which the data is being downloaded.



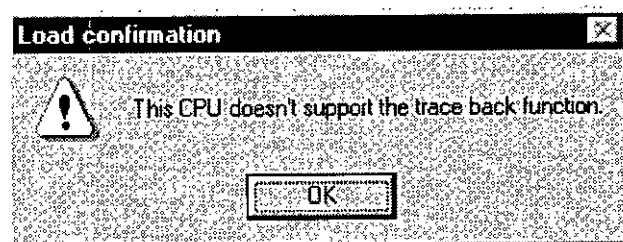
• CPU Modules Not Supporting Ethernet

The following message will be displayed if the project file being downloaded contains Ethernet settings and these are not supported by the CPU Module to which the data is being downloaded.



• CPU Modules Not Supporting the Traceback Function

The following message will be displayed if the project file being downloaded contains traceback settings and these are not supported by the CPU Module to which the data is being downloaded.



15

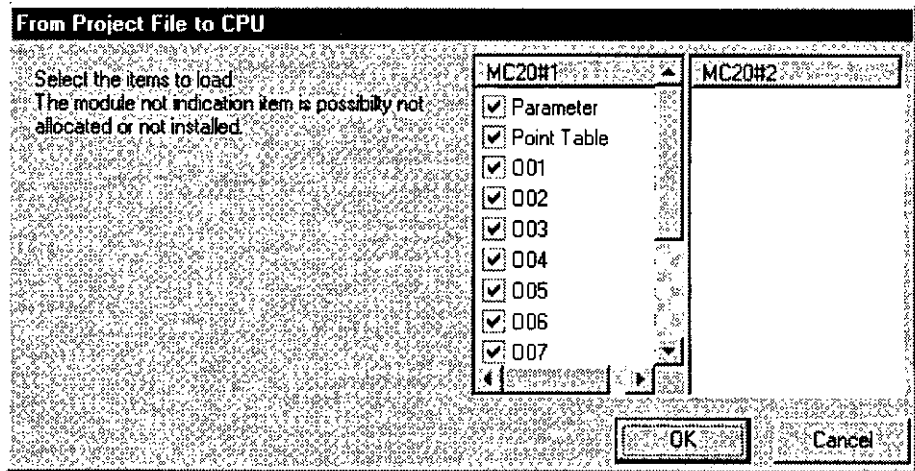
15.2.4 Downloading to MC20 Modules

- 1) The data to be downloaded to an MC20 Module can be selected from among parameters, point tables, and motion programs.

Note The MC Module must be in Edit Mode to download data to it. If the MC Module is in Manual Mode or any other mode, switch to Edit Mode before downloading. Downloading to MC Module is possible even if the CPU Module is running.

2) Use the following procedure to download to an MC20 Module.

a) Select the MC20 as the destination of the download. The following dialog box will appear.



b) Place checkmarks by the items to be downloaded and click the **OK** Button.

The specified data will be downloaded.



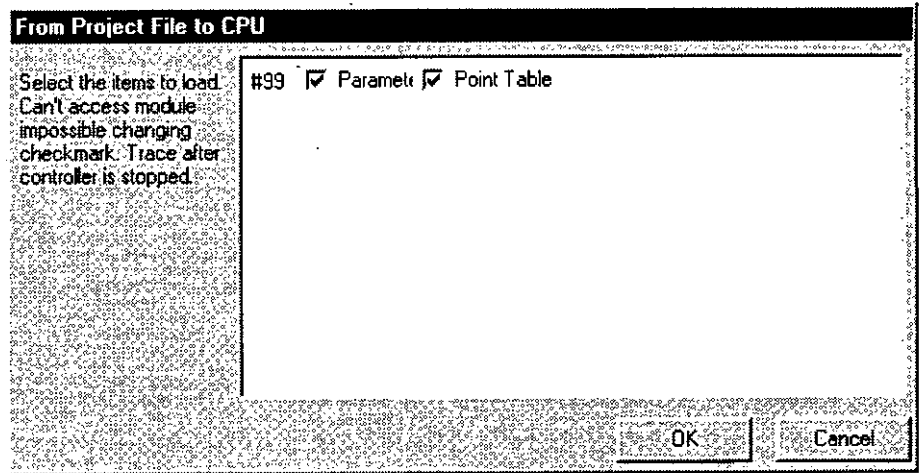
The data that can be selected for downloading depends on the Modules that are mounted and the allocations in the project. Downloading will not be possible if there are inconsistencies.

15.2.5 Downloading to MC15 Modules

1) The data to be downloaded to an MC15 Module can be selected between parameters and point tables.

2) Use the following procedure to download to an MC15 Module.

- a) Select the MC15 as the destination of the download. The following dialog box will appear.



- b) Place checkmarks by the items to be downloaded and click the **OK** Button.

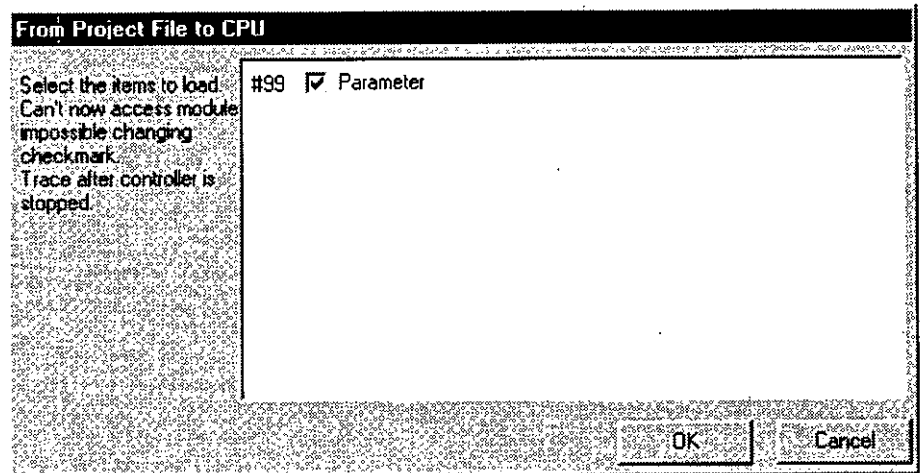
The specified data will be downloaded.



The data that can be selected for downloading depends on the Modules that are mounted and the allocations in the project. Downloading will not be possible if there are inconsistencies.

15.2.6 Downloading to MC10 Modules

- 1) Parameters be downloaded to an MC10 Module.
- 2) Use the following procedure to download to an MC10 Module.
 - a) Select the MC10 as the destination of the download. The following dialog box will appear.



15

- b) Place a checkmark by the parameters selection and click the **OK** Button.

The specified data will be downloaded.



The data that can be selected for downloading depends on the Modules that are mounted and the allocations in the project. Downloading will not be possible if there are inconsistencies.

15.3 Uploading Data from PLCs

This section describes how to upload data from a CPU Module or MC Module to the computer and save it in a project.

15.3.1	Outline	15-10
15.3.2	Starting an Upload	15-10
15.3.3	Uploading from the PLC	15-12
15.3.4	Uploading from an MC20	15-12
15.3.5	Uploading from an MC15	15-13
15.3.6	Uploading from an MC10	15-14

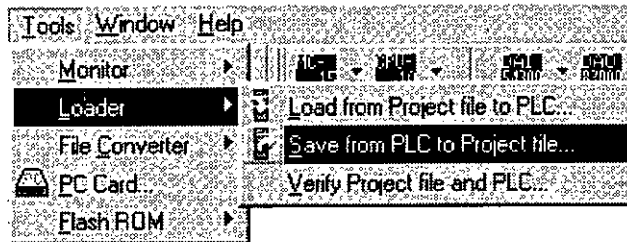
15.3.1 Outline

The data in a CPU Module or MC Module can be uploaded and saved at the computer. Uploading is possible even when the PLC is running.

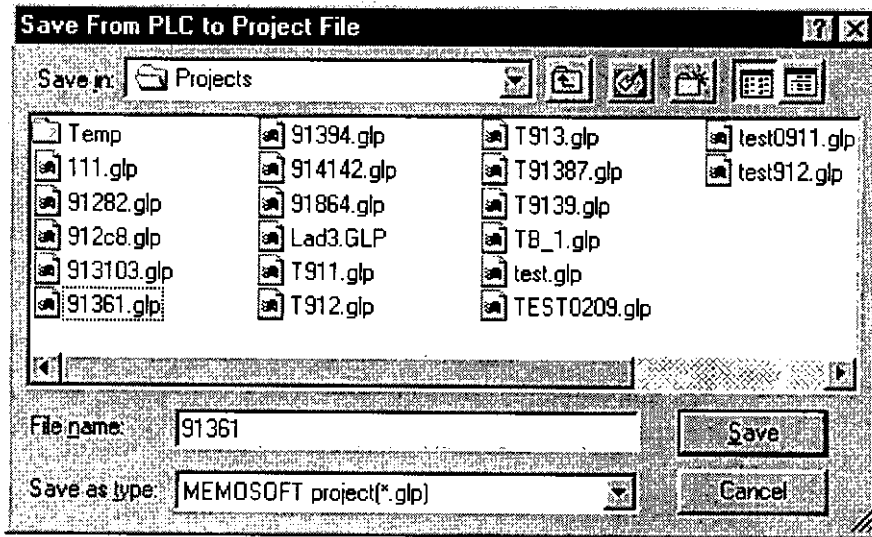
15.3.2 Starting an Upload

Use the following procedure to start an upload.

- 1) Select **Tools (T) – Loader (L) – Save from PLC to Project File (S)** from the menu bar.

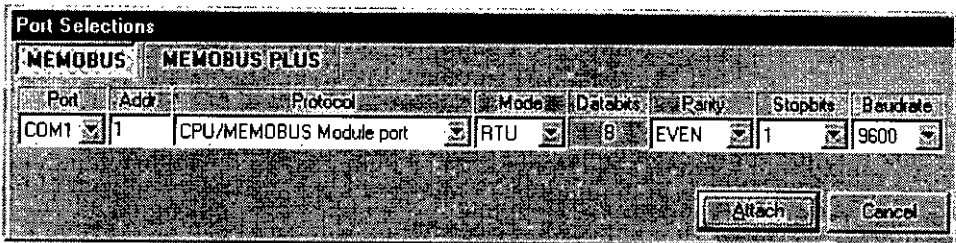


- 2) A dialog box will appear to upload from a PLC to the project file. Select the project file to upload to and click the **Save** Button.

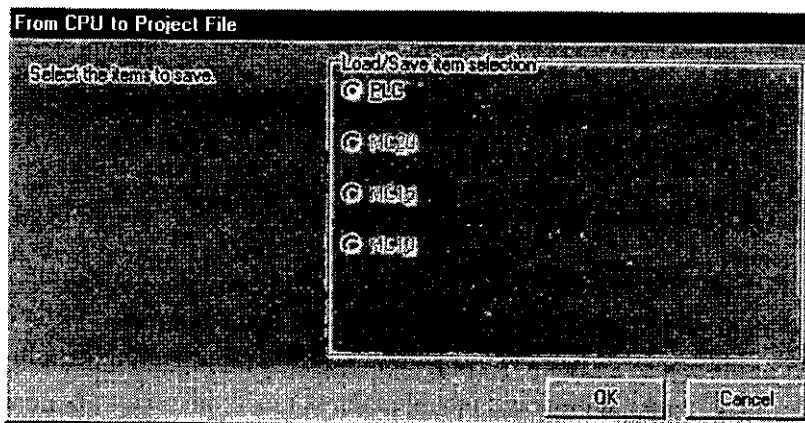


Input the file name to upload to a new project file.

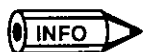
- 3) A dialog box will appear to select a port. Select a port and click the **Attach** Button.



- 4) A dialog box will appear to select the source of the upload. Select the source and click the **OK** Button.



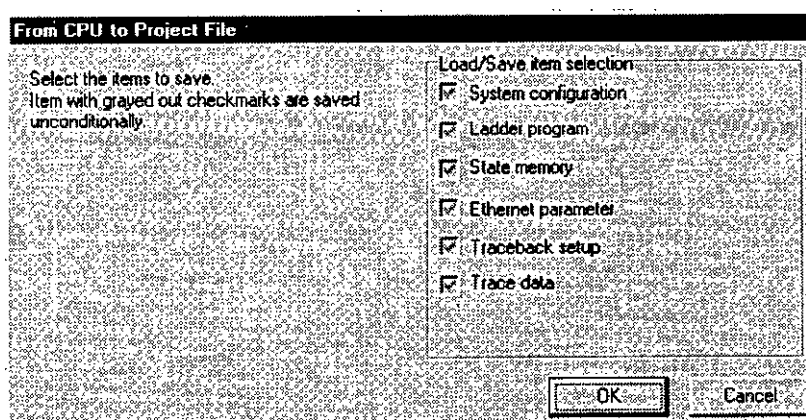
- 5) A dialog box will appear to select more specific data for the upload. Refer to the following section for the procedures for specific uploads.



- 1) Only one source can be selected at a time.
- 2) MC Modules that are not allocated in the project file cannot be selected. MC Module data can thus be uploaded only after PLC data has been saved and a project file has been created.

15.3.3 Uploading from the PLC

- 1) The system configuration and traceback settings are always uploaded from the PLC. Ladder programs and state memory can be optionally selected for uploading as required. Ethernet parameters are automatically uploaded when Ethernet is specified.
- 2) Use the following procedure to upload from the PLC.
 - a) Select the PLC as the source of the download. The following dialog box will appear.

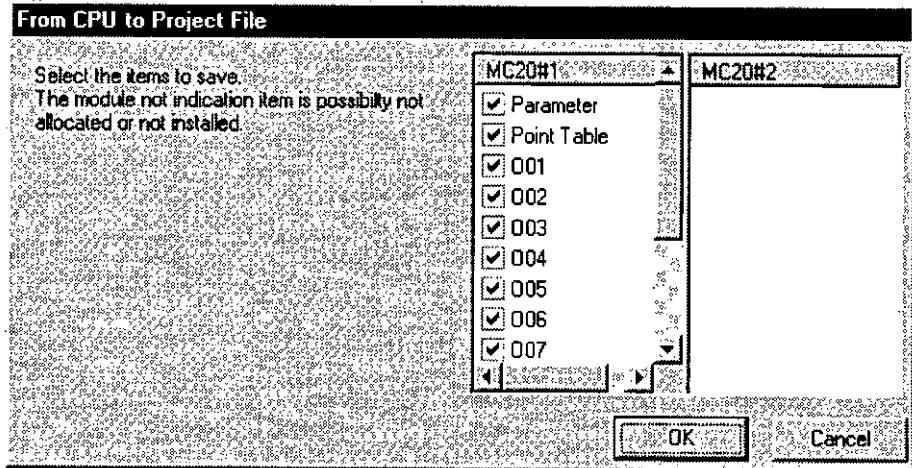


- b) Place checkmarks by the items to upload and click the **OK** Button.
- c) If an existing project file was specified, a confirmation message will appear asking if the file should be overwritten. Click the **Yes** Button.

15.3.4 Uploading from an MC20

- 1) The data to be uploaded from an MC20 Module can be selected from among parameters, point tables, and motion programs (by O number).
- 2) Use the following procedure to upload from an MC20 Module.

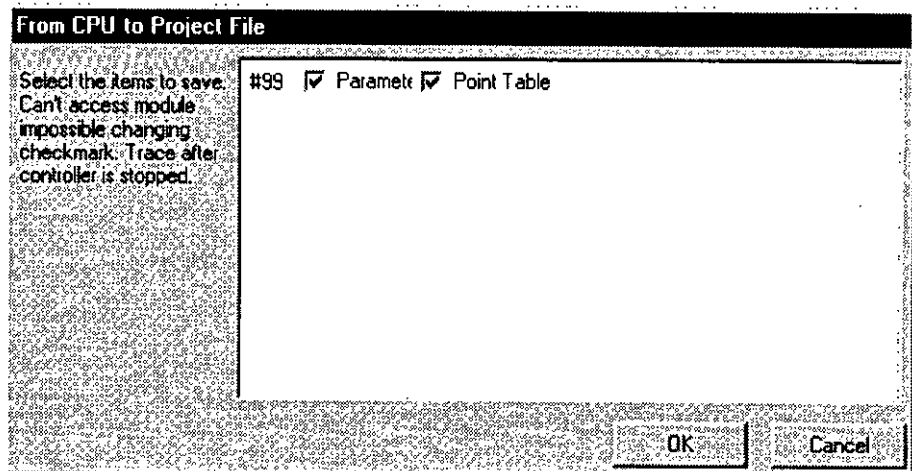
- a) Select the MC20 as the source of the download. The following dialog box will appear.



- b) Place checkmarks by the items to upload and click the **OK** Button.
- c) If an existing project file was specified, a confirmation message will appear asking if the file should be overwritten. Click the **Yes** Button.

15.3.5 Uploading from an MC15

- 1) The data to be uploaded from an MC15 Module can be selected between parameters and point tables.
- 2) Use the following procedure to upload from an MC15 Module.
 - a) Select the MC15 as the source of the download. The following dialog box will appear.

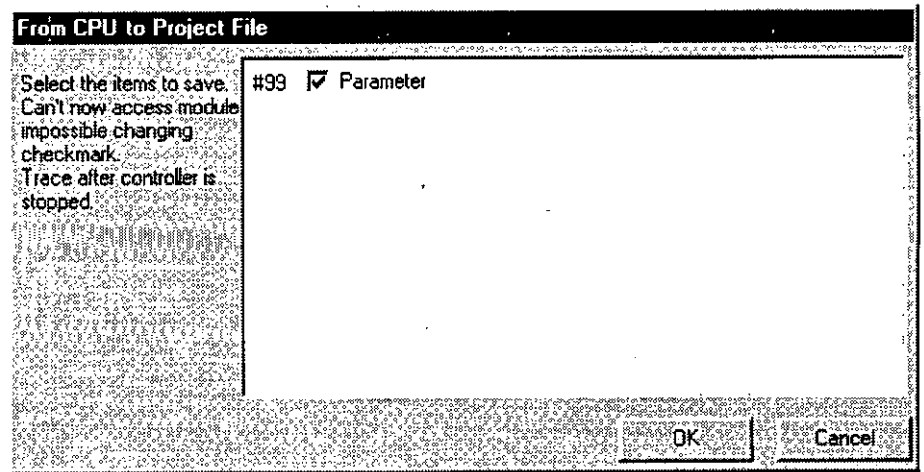


15

- b) Place checkmarks by the items to upload and click the **OK** Button.
- c) If an existing project file was specified, a confirmation message will appear asking if the file should be overwritten. Click the **Yes** Button.

15.3.6 Uploading from an MC10

- 1) Parameters can be uploaded from an MC10 Module.
- 2) Use the following procedure to upload from an MC10 Module.
 - a) Select the MC10 as the source of the download. The following dialog box will appear.



- b) Place checkmarks by the items to upload and click the **OK** Button.
- c) If an existing project file was specified, a confirmation message will appear asking if the file should be overwritten. Click the **Yes** Button.

15.4 Verifying Project Files and PLC Data

This section describes the operations required to compare the data in a project file with the data in a CPU Module or MC Module to verify that the contents is the same.

15.4.1 Outline	15-15
15.4.2 Starting Data Verification	15-16
15.4.3 Verifying PLC Data	15-18
15.4.4 Verifying MC20 Data	15-18
15.4.5 Verifying MC15 Data	15-19
15.4.6 Verifying MC10 Data	15-20

15.4.1 Outline

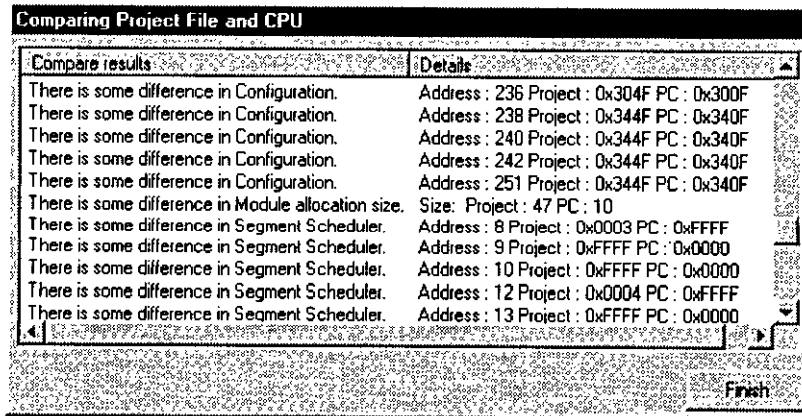
After uploading or downloading project data, the data at the PLC and the data in the project file can be compared to ensure that they are the same.



Verification Result Displays

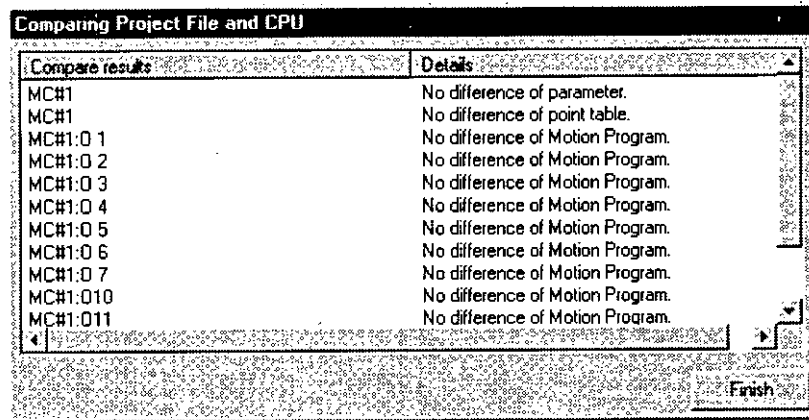
• CPU Module Data

A display like the following one will appear when CPU Module data is compared.



• MC Data

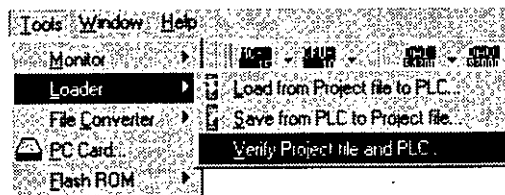
A display like the following one will appear when MC Module data is compared.



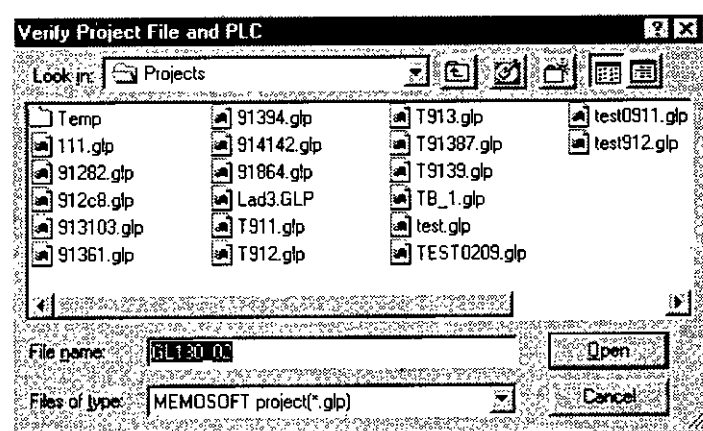
15.4.2 Starting Data Verification

Use the following procedure to start verification.

- 1) Select **Tools (T) – Loader (L) – Verify Project File and PLC (V)** from the menu bar.

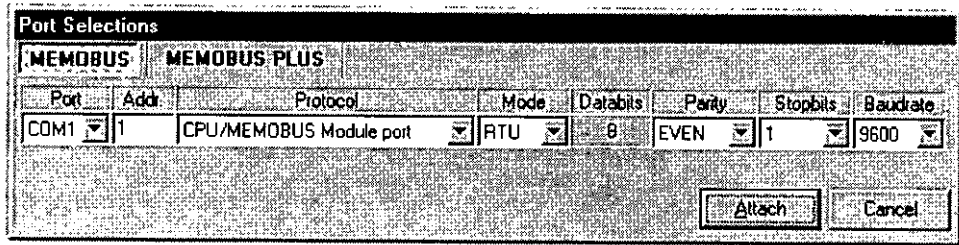


- 2) A dialog box will appear to compare PLC data to project file contents. Select the project file to compare with the PLC data and click the **Open** Button.

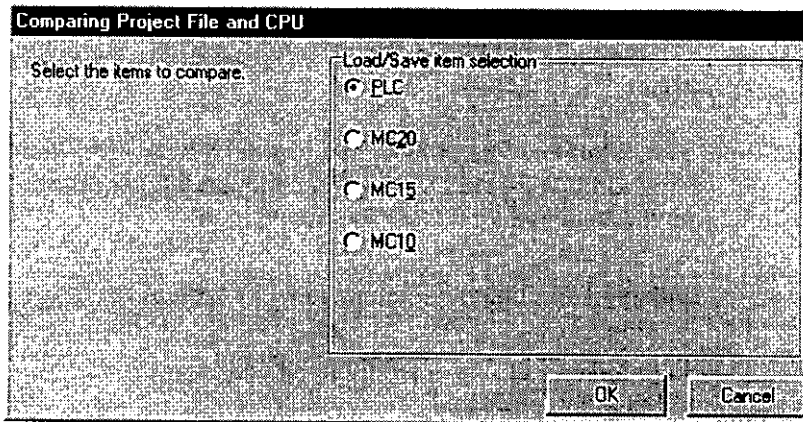


15

- 3) A dialog box will appear to select a port. Select a port and click the **Attach** Button.



- 4) A dialog box will appear to select the data to verify. Select the data and click the **OK** Button.



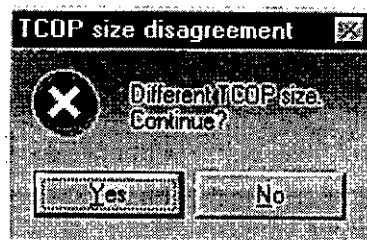
- 5) A dialog box will appear to select more specific data to verify. Refer to the following section for the procedures for specific procedures.



- 1) Only one type of data can be verified at a time.
- 2) MC Module data cannot be selected unless the MC Module has been allocated in the project file.
- 3) The following messages may be displayed if the project file in the computer and the data in the CPU Module are not the same.

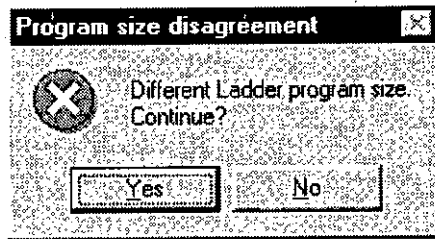
• TCOP Size Mismatch

The following message will appear if the sizes of the I/O allocations are not the same between the project file and the CPU Module data.



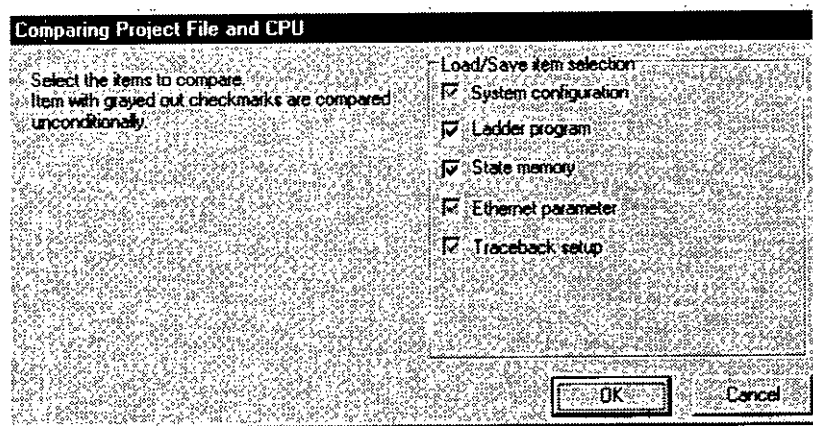
• **Ladder Program Size Mismatch**

The following message will appear if the sizes of the ladder program are not the same between the project file and the CPU Module data.



15.4.3 Verifying PLC Data

- 1) The system configuration, Ethernet parameters (if an Ethernet Module is included), and traceback settings are always verified. Ladder programs and state memory can be optionally selected for verification as required.
- 2) Use the following procedure to verify PLC data.
 - a) Select the PLC as the data to be verified. The following dialog box will appear.



- b) Place checkmarks by the items to be verified and click the **OK** Button.

The items will be verified and the results will be displayed.

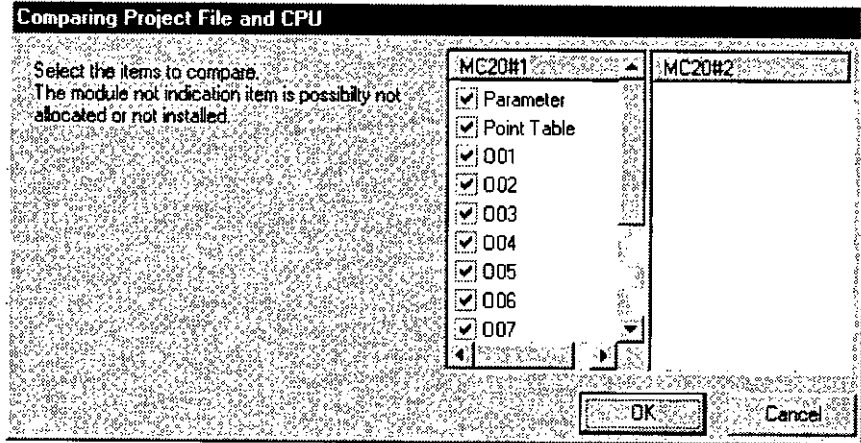
15.4.4 Verifying MC20 Data

- 1) The data to be verified for an MC20 Module can be selected from among parameters, point tables, and motion programs.

15

2) Use the following procedure to verify MC20 data.

a) Select the MC20 as the data to verify. The following dialog box will appear.



b) Place checkmarks by the items to be verified and click the **OK** Button.

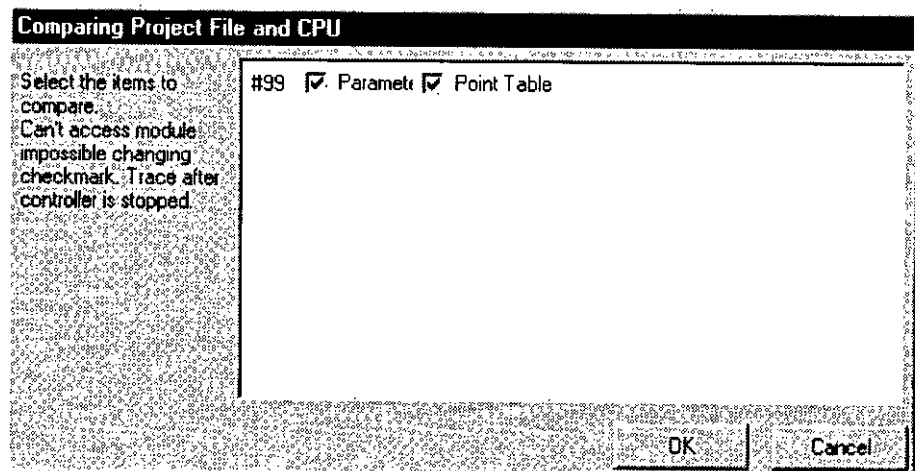
The items will be verified and the results will be displayed.

15.4.5 Verifying MC15 Data

1) The data to be verified for an MC15 Module can be selected from between parameters and point tables.

2) Use the following procedure to verify MC15 data.

a) Select the MC15 as the data to verify. The following dialog box will appear.

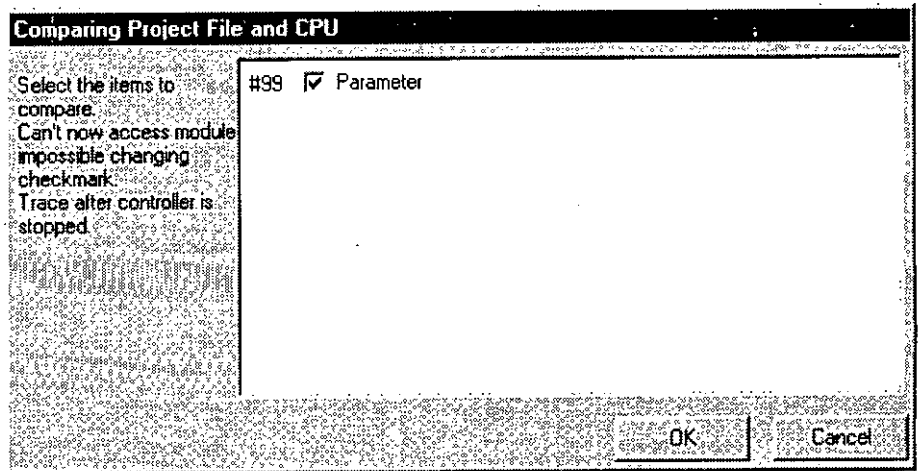


- b) Place checkmarks by the items to be verified and click the **OK** Button.

The items will be compared and the results will be displayed.

15.4.6 Verifying MC10 Data

- 1) Parameters can be verified for an MC10 Module.
- 2) Use the following procedure to verify MC10 data.
 - a) Select the MC10 as the data to verify. The following dialog box will appear.



- b) Place checkmarks by the items to be verified and click the **OK** Button.

The items will be compared and the results will be displayed.

This chapter describes MEMOSOFT operations to manipulate a PC Card in a CPU21 Module.

16.1	PC Card Dialog Box	16-2
16.1.1	Outline	16-2
16.1.2	Opening the PC Card Dialog Box	16-3
16.1.3	Closing the PC Card Dialog Box	16-5
16.2	Entry File Registrations	16-6
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16.1 PC Card Dialog Box

This section describes the opening methods for and the configuration of the PC Card Dialog Box used to control the CPU 21 Module configuration.

16.1.1 Outline	16-2
16.1.2 Opening the PC Card Dialog Box	16-3
16.1.3 Closing the PC Card Dialog Box	16-5

16.1.1 Outline

1) With the CPU21 Module, ROM operation is possible using data stored on a PC Card inserted into the CPU Module. Data is written to and read from the PC Card from the MEMOSOFT.

2) The following data is stored on the PC Card.

a) ROM Operation Files

- System configuration
- Ladder program
- Holding register data

b) Extended Memory File

- Extended memory data

c) Status Files

- System status



Entry file

A file containing the basic data used by the CPU21. The entry file is created and altered from the MEMOSOFT. The entry file is saved in the PC Card.

ROM operation

A control method in which the CPU Module reads the ladder program when power is turned ON. With the CPU21, the ladder program is read from the PC Card.

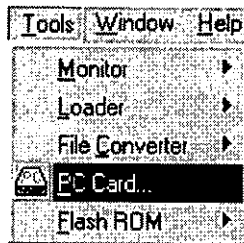
- Stop/start history
- PC Link status
- MC20 error status history
- Ladder status

Note Data in the PC Card can be read or written only when the CPU Module is stopped.

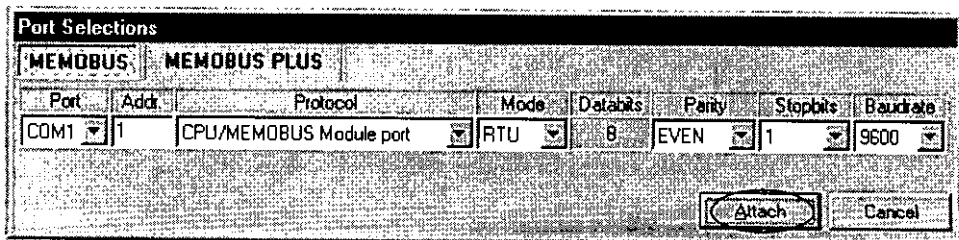
16.1.2 Opening the PC Card Dialog Box

Use the following procedure to open the PC Card Dialog Box.

- 1) Select **Tools (T) – PC Card (P)** from the menu.



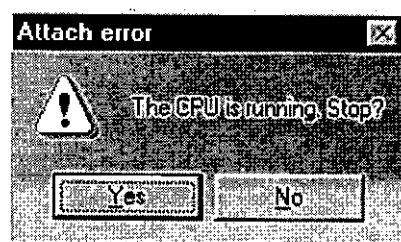
- 2) If the CPU Module is not attached, a dialog box will be display to select the communications port. Click the **Attach** Button.



Click here.

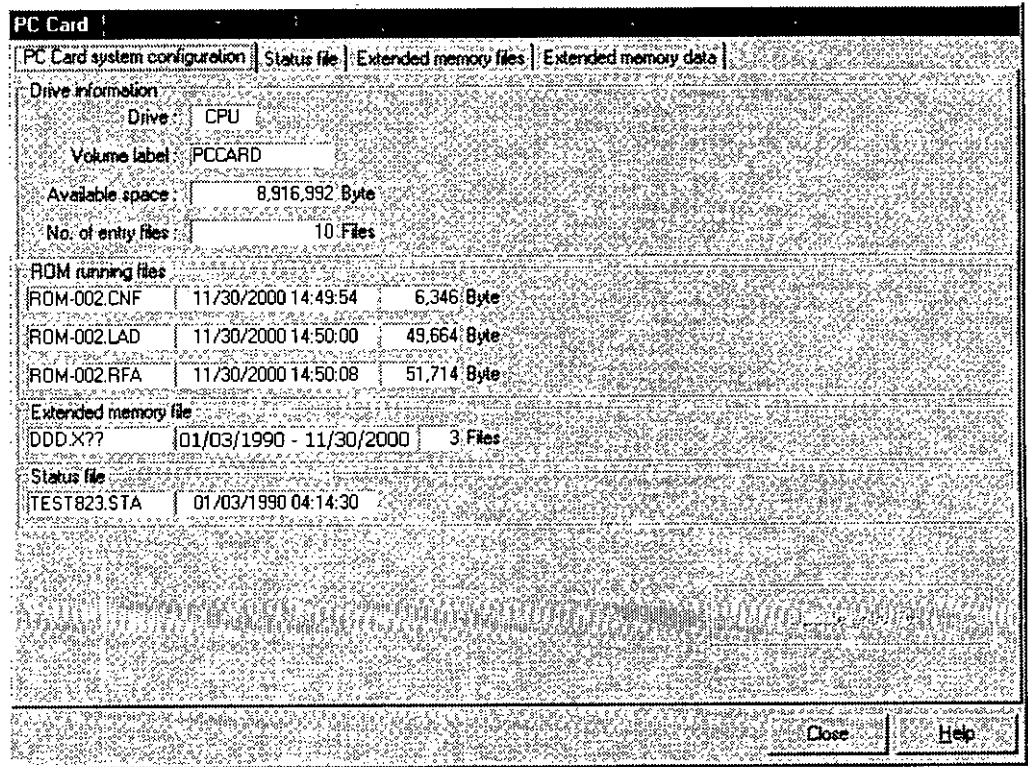


- 1) The following message will be displayed if the CPU Module is running. If the No Button is clicked, the PC Card Dialog Box will not be displayed and the previous display status will return.

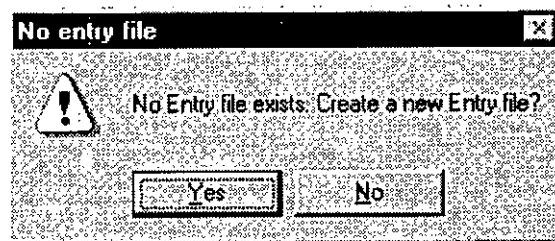


- 2) The dialog box to select the communications port will not be displayed if the MEMOSOFT is already attached to the CPU Module.

The PC Card Dialog Box will be displayed.



- 1) The following message will be displayed before the PC Card Dialog Box the first time it is displayed. Click the **Yes** Button to create the entry file.



- 2) The number of tabs displayed in the PC Card Dialog Box will depend on which files are actually present, i.e., the ROM operation files, extended memory files, and status file.

16.1.3 Closing the PC Card Dialog Box

To close the PC Card Dialog Box, click the **Close** Button.

PC Card		
PC Card system configuration		
Status file | Extended memory files | Extended memory data		
Drive information		
Drive:	CPU	
Volume label:	PCCARD	
Available space:	8,916,992 Byte	
No. of entry files:	10 Files	
ROM running files		
ROM-002.CNF	11/30/2000 14:49:54	6,346 Byte
ROM-002.LAD	11/30/2000 14:50:00	49,664 Byte
ROM-002.RFA	11/30/2000 14:50:08	51,714 Byte
Extended memory file		
DDD.X??	01/03/1990 - 11/30/2000	3 Files
Status file		
TEST823.STA	01/03/1990 04:14:30	
<input type="button" value="Close"/> <input type="button" value="Help"/>		

16.2 Entry File Registrations

This section describes operations required for the PC Card System Configuration Tab Page.

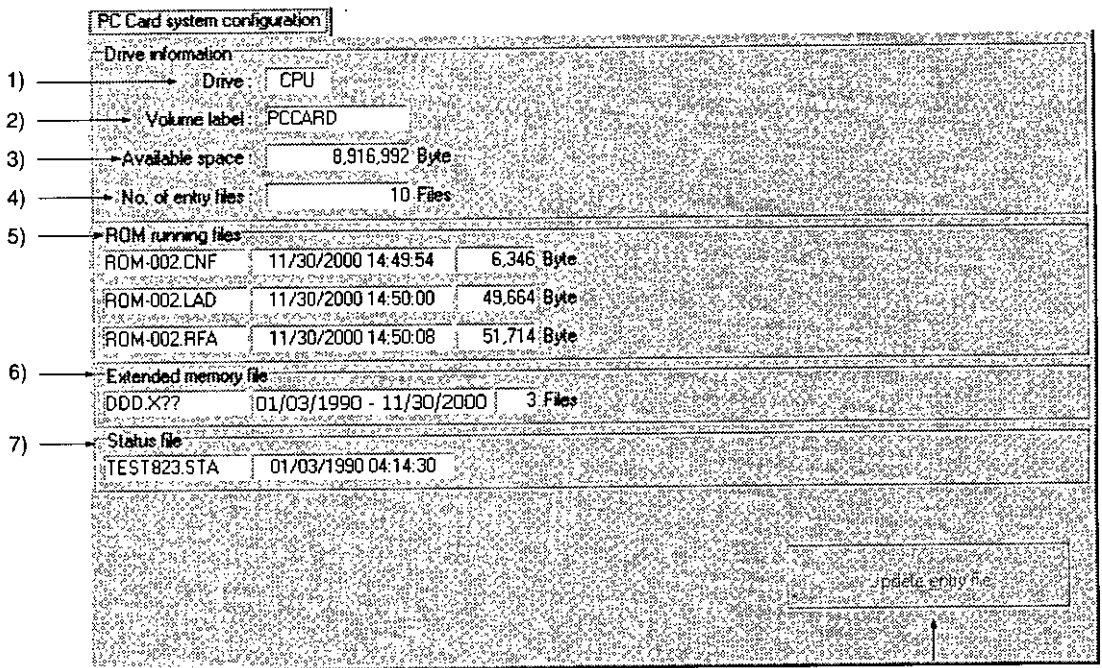
16.2.1 Outline	16-6
16.2.2 Configuration of the PC Card System Configuration Tab Page	16-6
16.2.3 Registering ROM Operation Files	16-7
16.2.4 Registering Extended Memory Files	16-9
16.2.5 Registering the Status File	16-10

16.2.1 Outline

The PC Card System Configuration Tab Page displays the information in the PC Card and is used to edit the system configuration.

16.2.2 Configuration of the PC Card System Configuration Tab Page

The configuration of the PC Card System Configuration Tab Page is shown below.



1) Drive

Displays the drive. CPU will always be displayed.

2) Volume Label

Displays the volume label of the drive.

3) Available Space

Displays the amount of space left in the PC Card in bytes.

4) Number of Entry Files

Displays the number of files in the route directory.

5) ROM Running Files

Displays the information in the ROM operation files registered in the entry file. In ROM Operation Mode, the CPU21 Module will load the ladder program saved in this file when power is turned ON before starting operation.

6) Extended Memory Files

Displays the information in the extended memory file registered in the entry file. The display provides, in order, the file name, file create date, file update date, and number of files. The oldest and newest dates are shown for both the create and update dates. The extended memory files consist of a group of files with the same names, but different extensions. The file extensions consist of the letter x followed by a two-digit number between 00 and 99 (making a possible maximum total of 100 files). The CPU21 Module accesses these files through extended memory access instructions.

7) Status File

Displays the information in the status file registered in the entry file. System status is automatically written to the status file when the CPU21 Module stops as the result of an error.

8) Update Entry File Button

Registers the files displayed on the PC Card System Configuration Tab Page into the entry file.

16.2.3 Registering ROM Operation Files

1) There are three ROM operation files

- **System Configuration File**

The file extension is .CNF.

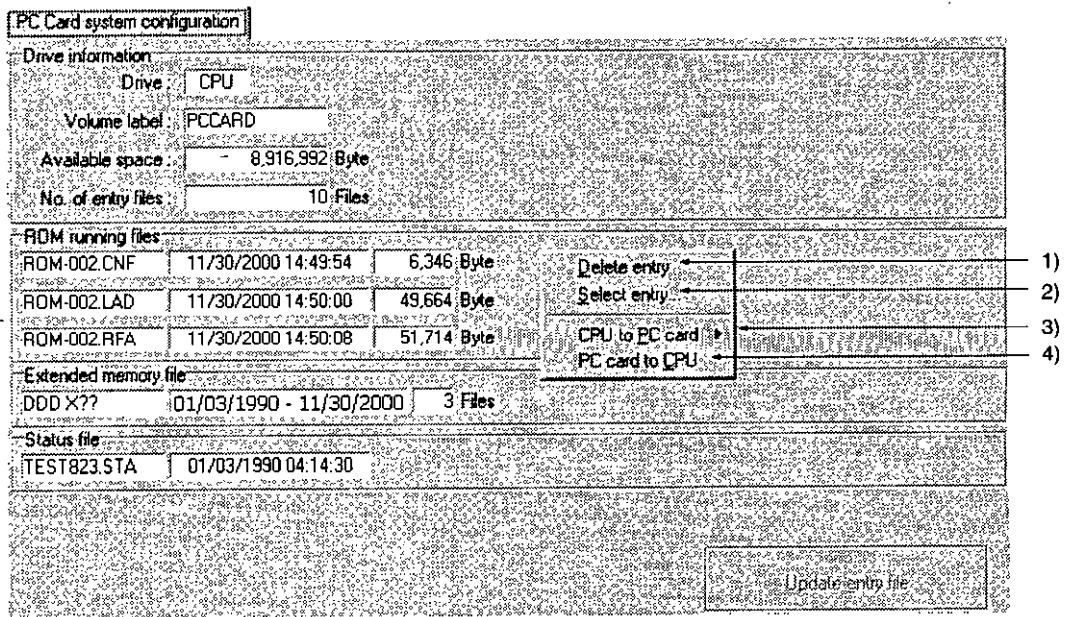
• Ladder Program File

The file extension is .LAD.

• Holding Register File

The file extension is .RFA.

- 2) The ROM operation files must be created and registered in advance to enable ROM operation. ROM operation files are registered from the pop-up menu that appears when the right mouse button is clicked in the ROM operation file display area in the ROM Card System Configuration Tab Page. This pop-up menu is shown below.



a) Delete Entry

Removes the currently selected ROM operation file from the entry file.

b) Select Entry

Registers one of the current ROM operation files into the entry file.

c) CPU to PC Card

Saves a ROM operation file from the CPU Module to the PC Card. There are two ways to save a file.

• Select Program

Overwrites a file already in the PC Card.

- **Create File**

Creates a new ROM operation file in the PC Card.

- d) **PC Card to CPU**

Loads a ROM operation file from the PC Card to the CPU Module.

Note Caution is necessary when using ROM operation because the program in the CPU21 Module will be deleted. ROM operation is automatically executed if ROM operation files are set in the entry file and the GL120 or GL130 is restarted with pin 4 on the DIP switch on the front of the CPU21 Module turned ON.

16.2.4 Registering Extended Memory Files

- 1) Extended memory files contain extended memory attribute data. The following file extensions are used.

*****.x**
 └── Number between 00 and 99

- 2) The CPU21 Module can access extended memory files only if they are registered in the entry file. Extended memory files are registered from the pop-up menu that appears when the right mouse button is clicked in the extended memory file display area in the ROM Card System Configuration Tab Page. This pop-up menu is shown below.

PC Card system configuration

Drive information			
Drive :	CPU		
Volume label :	PCCARD		
Available space :	8,916,992 Byte		
No. of entry files :	10 Files		
ROM running files			
ROM-002.CNF	11/30/2000 14:49:54	6,346 Byte	
ROM-002.LAD	11/30/2000 14:50:00	49,664 Byte	
ROM-002.RFA	11/30/2000 14:50:08	51,714 Byte	
Extended memory file			
DDD.X??	01/03/1990 - 11/30/2000	3 Files	Delete entry → 1) Select entry → 2) New file → 3)
Status file			
TEST823.STA	01/03/1990 04:14:30		
Update entry file			

- a) **Delete Entry**

Removes the currently selected extended memory file from the entry file.

b) Select Entry

Registers one of the current extended memory files into the entry file.

c) New File

Creates a new extended memory file in the PC Card.

- Note**
- (1) Extended memory file attributes must be set and the file created before extended memory can be accessed.
 - (2) To set attributes for extended memory files, select the desired attributes and then execute the attribute specification process. Attributes will not be valid if they are merely specified.
 - (3) The file attributes specified here are accessed by the extended memory access instruction from the ladder program. The MEMOSOFT PC Card Expansion File Window can be used to edit or delete any of the files, regardless of the attributes that have been set. Refer to 16.4 *Editing Extended Memory* for details on editing extended memory.

16.2.5 Registering the Status File

- 1) The status file is used by the PCU Module to save status data when the CPU Module stops as a result of an error. The status file has the following file extension.

*****.STA

- 2) The status file must be registered in the entry file in advance for status data to be recorded when the CPU Module stops for an error. The status file is registered from the pop-up menu that appears when the right mouse button is clicked in the status file display area in the ROM Card System Configuration Tab Page. This pop-up menu is shown below.

The screenshot shows the 'PC Card system configuration' window. It is divided into several sections:

- Drive information:** Drive: CPU, Volume label: PCCARD, Available space: 8,916,992 Byte, No. of entry files: 10 Files.
- ROM running files:** A table with columns for filename, date/time, and size.

ROM-002.CNF	11/30/2000 14:49:54	6,346 Byte
ROM-002.LAD	11/30/2000 14:50:00	49,664 Byte
ROM-002.RFA	11/30/2000 14:50:08	51,714 Byte
- Extended memory file:** DDD.X??, 01/03/1990 - 11/30/2000, 3 Files.
- Status file:** TEST823.STA, 01/03/1990 04:14:30. A context menu is open over this entry with options: Delete entry (1), Select entry (2), New file (3), and Update entry file.

a) Delete Entry

Removes the currently selected status file from the entry file.

b) Select Entry

Registers one of the current status files into the entry file.

c) New File

Creates a new status file in the PC Card.

Note An error message will be displayed if there is insufficient memory to create any of the following files or the status file does not exist when an existing file is selected. Press the Enter Key to delete the message and repeat the operation.

- ROM operation file
- Extended memory file
- Status file

16.3 Displaying System Status

■ This section describes operations used on the Status File Display Tab Page.

16.3.1 Outline	16-12
16.3.2 Status File Contents	16-12
16.3.3 Displaying System Status	16-13

16.3.1 Outline

If a status file is registered in the entry file in advance, system status will be saved to the file whenever the CPU Module stops as the result of an error. Analyzing the system status data will facilitate finding the cause of the error.

16.3.2 Status File Contents

The status file saved in the PC Card contains the following status information.

• **System Information**

Contains status information on the Option Modules and local I/O Modules when the CPU Module stopped.

• **Stop Status History**

Contains the 20 most recent records of CPU Module stop statuses, error codes, and stop times since the status file was created.

• **MC Error Status History**

Contains the 10 most recent records each for MC1 and MC2 Motion Modules when the status file was created including the error codes and stop times.

• **PC Link Status**

Contains the PC Link status for up to 32 stations for PC Link Modules on channels 1 and 2.

• **Configuration Table**

Contains the system configuration in binary form.



- 1) The status file is automatically written to by the CPU Module when an error causes it to stop. The contents cannot be changed from the MEMOSOFT.
- 2) Refer to the relevant user's manual for details on displayed status. Refer to the following manuals.
 - MEMOCON GL120, GL130 Software User's Manual, Vol. 2 (SIEZ-C825-20.12)
 - MEMOCON GL120, GL130 MC20 Motion Module Software User's Manual (SIEZ-C825-20.52)
 - MEMOCON GL120, GL130 PC Link Module User's Manual (SIEZ-C825-70.4)

16.3.3 Displaying System Status

Click the **Status File Indication Tab** to display the system status. The configuration of the Status File Indication Tab Page is shown below.

The screenshot shows a software interface with a 'Status file' tab selected. Below the tab are several buttons: 'System information', 'Stop status history', 'MC20 error status history', 'PCLink status', and 'Configurable'. The 'System information' button is highlighted with a callout '1)'. The main display area is divided into two sections. The top section shows system error codes: CPU firmware revision (0000), TCCP error code (0000), System error code (0000), DEAD error code (0000), and EOL address (0000). The bottom section is a table with columns for 'Option module', 'Channel1', and 'Channel2'. It lists various modules and their status/revision: Remote I/O driver status (0000, 0000), MC20 status (0000, 0000), PCLink status (0000, 0000), MEMOBUS status (0000, 0000), Remote I/O driver revision (0000, 0000), MC20 main revision (0000, 0000), MC20 sub revision (0000, 0000), PCLink revision (0000, 0000), and MEMOBUS revision (0000, 0000). A callout '2)' points to this table. To the right of this table is a 'Local I/O module status history' table with columns for 'Time ago', 'Location', and 'Status'. It lists 20 entries from '1 Time ago' to '20 Time ago', all with '0000' in the Location and Status columns.

1) Status Information Button

Click the button to change the status information that is being displayed.

2) Status Information Display Area

Displays the status information.



Status can be displayed only when a status file has been registered in the entry file.

16.4 Editing Extended Memory

This section describes operations on the Extended Memory File Tab Page and the Extended Memory Data Tab Page.

16.4.1 Outline	16-14
16.4.2 Extended Memory File Tab Page	16-14
16.4.3 Extended Memory Data Tab Page	16-18

16.4.1 Outline

Use the following procedure to edit the extended memory.

- 1) Select one of the 100 files with the file name registered in the entry file and extensions from x00 to x99.
- 2) Specify the attribute for the selected file. The attribute can be set to either of the following:
 - Read/write file
 - Read-only file
- 3) Edit the data in the selected file.

16.4.2 Extended Memory File Tab Page

1) Extended Memory File Tab Page

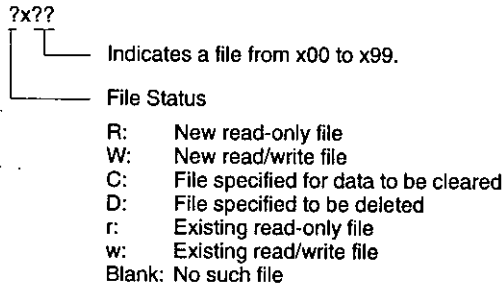
Extended memory data can be edited by block on the Extended Memory File Tab Page. The configuration of the Extended Memory File Tab Page is shown below.

w X00	X20	X40	X60	X80
w X01	X21	X41	X61	X81
w X02	X22	X42	X62	X82
X03	X23	X43	X63	X83
X04	X24	X44	X64	X84
X05	X25	X45	X65	X85
X06	X26	X46	X66	X86
X07	X27	X47	X67	X87
X08	X28	X48	X68	X88
X09	X29	X49	X69	X89
X10	X30	X50	X70	X90
X11	X31	X51	X71	X91
X12	X32	X52	X72	X92
X13	X33	X53	X73	X93
X14	X34	X54	X74	X94
X15	X35	X55	X75	X95
X16	X36	X56	X76	X96
X17	X37	X57	X77	X97
X18	X38	X58	X78	X98
X19	X39	X59	X79	X99

Legend
 r : Read only file R : New read only file
 w : Read/write file W : New read/write file Action

2) Extended Memory File Status Display

The status of the extended memory file is displayed as follows:



3) Creating Read/Write Files

Read/write files can be read or written. Use the following procedure to create read/write files.

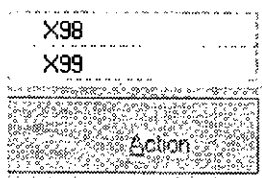
- a) Select the extensions for which read/write files are to be created, click the right mouse button, and select **Create read/write file** from the pop-up menu.

w X00	X20	X40
w X01	X21	X41
w X02	X22	X42
X03	X23	Create read/write file Ctrl+W
X04	X24	Create read-only file Ctrl+R
X05	X25	Delete file Del
X06	X26	Clear file Ctrl+Del
X07	X27	
X08	X28	Appointment cancellation Ctrl+Z

The read/write files will be created and "W" will be displayed by the file extension.

w X00	w X20
w X01	w X21
w X02	w X22
w X03	w X23

- b) Click the **Action** Button.



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4) Creating Read-only Files

Read-only files can be read, but they cannot be written. Use the following procedure to create read-only files.

- a) Select the extensions for which read-only files are to be created, click the right mouse button, and select **Create read-only file** from the pop-up menu.

w X00	X20	X40
w X01	X21	X41
w X02	X22	X42
X03	X23	Create read/write file Ctrl+W
X04	X24	Create read only file Ctrl+R
X05	X25	Delete file Del
X06	X26	Clear file Ctrl+Del
X07	X27	
X08	X28	Appointment cancellation Ctrl+Z

The read-only files will be created and "R" will be displayed by the file extension.

w R X00	R X20
w R X01	R X21
w R X02	R X22
R X03	R X23

- b) Click the **Action** Button.



5) Deleting Files

Either read/write or read-only files can be deleted. Use the following procedure to delete files.

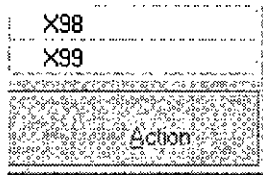
- a) Select the files to be deleted, click the right mouse button, and select **Delete file** from the pop-up menu.

w X00	X20	X40
w X01	X21	X41
w X02	X22	X42
X03	X23	Create read/write file Ctrl+W
X04	X24	Create read only file Ctrl+R
X05	X25	Delete file Del
X06	X26	Clear file Ctrl+Del
X07	X27	
X08	X28	Appointment cancellation Ctrl+Z

The files will be deleted and "D" will be displayed by the file extension.

w D X00	X20
w D X01	X21
w D X02	X22
X03	X23

- b) Click the **Action** Button.



6) Clearing Files

Either read/write or read-only files can be cleared. Use the following procedure to clear files.

- a) Select the files to be cleared, click the right mouse button, and select **Clear file** from the pop-up menu.

w X00	X20	X40
w X01	X21	X41
w X02	X22	X42
X03	X23	Create read/write file Ctrl+W
X04	X24	Create read only file Ctrl+R
X05	X25	Delete file Del
X06	X26	Clear file Ctrl+Del
X07	X27	
X08	X28	Appointment cancellation Ctrl+Z

The files will be cleared and "C" will be displayed by the file extension.

w|C X00	X20
w|C X01	X21
w|C X02	X22
|X03	X23

b) Click the **Action** Button.



16.4.3 Extended Memory Data Tab Page

1) Configuration of the Extended Memory Data Tab Page

Extended memory data can be edited by register on the Extended Memory Data Tab Page. The configuration Extended Memory Data Tab Page of the is shown below.

e)
d)

Extended memory data

Address	Data	Type	Data	Type	Data	Type	Data	Type
A0001	0	UW	0	UW	0	UW	0	UW
A0005	0	UW	0	UW	0	UW	0	UW
A0009	0	UW	0	UW	0	UW	0	UW
A0013	0	UW	0	UW	0	UW	0	UW
A0017	0	UW	0	UW	0	UW	0	UW
A0021	0	UW	0	UW	0	UW	0	UW
A0025	0	UW	0	UW	0	UW	0	UW
A0029	0	UW	0	UW	0	UW	0	UW
A0033	0	UW	0	UW	0	UW	0	UW
A0037	0	UW	0	UW	0	UW	0	UW
A0041	0	UW	0	UW	0	UW	0	UW
A0045	0	UW	0	UW	0	UW	0	UW
A0049	0	UW	0	UW	0	UW	0	UW
A0053	0	UW	0	UW	0	UW	0	UW
A0057	0	UW	0	UW	0	UW	0	UW
A0061	0	UW	0	UW	0	UW	0	UW
A0065	0	UW	0	UW	0	UW	0	UW
A0069	0	UW	0	UW	0	UW	0	UW
A0073	0	UW	0	UW	0	UW	0	UW
A0077	0	UW	0	UW	0	UW	0	UW

File: AAAAAAAAA.X00 Block: 000 Import Export

c) b) a) f) g)

a) Block Number

Displays the selected or displayed memory block number.

b) Extended Memory File Name

Displays the selected or displayed extended memory file name.

c) Register Number

Displays the register number of the register data displayed in the left column.

d) Register Data

Displays the data for each register. Data is displayed for four registers on each line, 80 registers on each display screen.

e) Display Format

Indicates the display format for the register data in the same way as that used for normal reference data.

f) Export

Saves extended memory file data from the PLC to the PC Card. Refer to *4) Loading Data from the PLC to the PC Card* and *5) Saving Data from the PC Card to the PLC* for details.

g) Import

Loads extended memory file data from the PC Card to the PLC. Refer to *4) Loading Data from the PLC to the PC Card* and *5) Saving Data from the PC Card to the PLC* for details.

2) Editing Extended Memory Data

An example of editing extended memory data is shown below.

a) Move the cursor to the register for which the data is to be edited.

Address	Data	Type
A00001	0	UW
A00005	0	UW
A00009	0	UW

- b) Enter the data and presss the Enter Key.

Address	Data
A00001	1000
A00005	0
A00009	0

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Load the appropriate file and block before editing the data.

3) Changing the Display Format

The format of the displayed data can be changed just like it is for normal reference data. Use the following procedure to change the display format.

- a) Move the cursor to the register for which the format is to be changed.

Address	Data
A00001	1000
A00005	0
A00009	0

- b) Click the right mouse button and select the format from the pop-up menu. Here, *XW: Hexadecimal* is selected.

Address	Data	Type	Data
A00001	1000	UW: Unsigned Word Num.	
A00005	0	SF: Signed 4-Digit Num.	
A00009	0	SW: Signed Word Num.	
A00013	0	UE: Unsigned 8-Digit Num.	
A00017	0	SE: Signed 8-Digit Num.	
A00021	0	SD: Signed Double Word	
A00025	0	UD: Unsigned Double	
A00029	0	XW: Hexadecimal	
A00033	0	BI: Binary	
A00037	0	AS: ASCII	
A00041	0	FL: Floating Pt.	
A00045	0		
A00049	0	Clear	

- c) The display format of the register data will change (here, to hexadecimal).

Address	Data
A00001	03E8
A00005	0
A00009	0

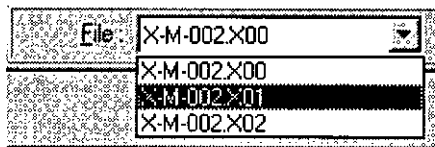


- 1) The register data will be cleared if *Clear* is selected from the pop-up menu.
- 2) Refer to the following manual for details on changing display formats.
 - MEMOCON GL120, GL130 MEMOSOFT for DOS User's Manual (SIEZ-C825-60.10)

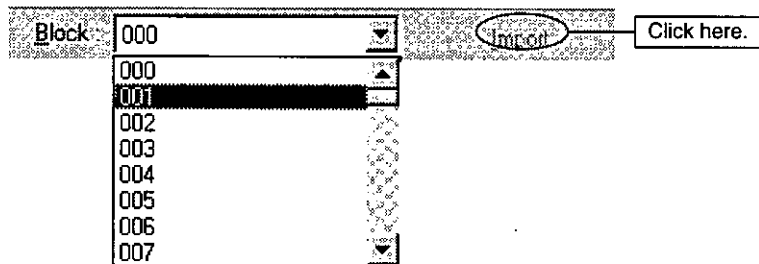
4) Loading Data from the PLC to the PC Card

An example of loading data from the CPU Module to the PC Card is given below.

- a) Select the file from which to load data.



- b) Select the block of data to load and then click the **Import** Button.

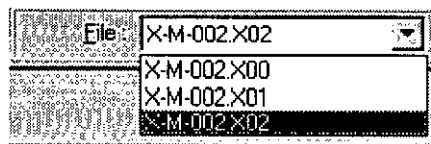


The specified file data will be loaded.

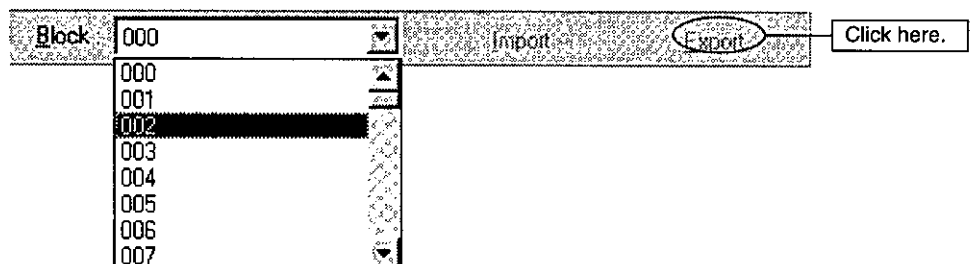
5) Saving Data from the PC Card to the PLC

An example of saving data from the PC Card to the CPU Module is given below.

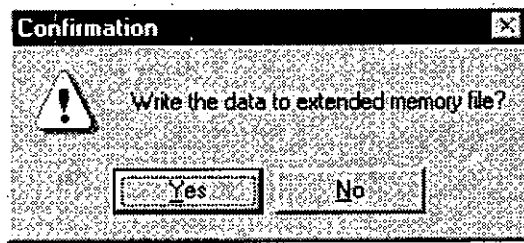
- c) Select the file into which data is to be saved.



- b) Select the block of data to save and click the **Export** Button.



- c) A confirmation message will be displayed. Click the **Yes** Button.



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The specified data will be saved in the CPU Module.

With the CPU10 Module, the flash ROM built into the Module can be used for ROM operation. ROM operation is possible with any CPU10 Module with a version of B01 or later.

17.1 ROM Operation	17-2
17.1.1 Outline	17-2
17.1.2 Data Transferred from ROM	17-2
17.2 Writing Data to Flash ROM	17-4
17.2.1 Writing Data to Flash ROM	17-4
17.2.2 Clearing Flash ROM	17-6
17.2.3 ROM Operation	17-7

17.1 ROM Operation

■ This section outlines the ROM operation for the CPU10 Module.

17.1.1 Outline	17-2
17.1.2 Data Transferred from ROM	17-2

17.1.1 Outline

- 1) The flash ROM in the CPU10 Module can be used to enable ROM operation. When power is turned ON under ROM operation, the ladder program, register contents, and other data stored in flash ROM is loaded into RAM before starting operation. The flash ROM will retain its contents even when power is turned OFF, protecting the ladder program, register contents, and other data. The ROM used for ROM operation is a standard feature of the CPU10 Module, enabling ROM operation without using optional components such as ROM packs or PC cards.

a) Writing Data to the Flash ROM

To enable ROM operation, the ladder program and other data in RAM must be written to the flash ROM. The ladder program and other data are written to the flash ROM from the MEMOSOFT.

b) Starting ROM Operation

ROM operation will be started when the input power supply to the CPU Rack is turned ON when the following conditions have been met.

- Flash ROM has been written successfully from the MEMOSOFT.
- Pin 6 on the DIP switch on the CPU10 Module is ON.

When ROM operation starts, the ladder program and other data written to flash ROM via the MEMOSOFT is transferred to RAM.

IMPORTANT

ROM operation is possible with a CPU10 Module with a version of B01 or later.

17.1.2 Data Transferred from ROM

The following seven different types of data can be written to the flash ROM.

- System configuration

- I/O allocations
- Coil application tables
- Traceback condition tables
- Ladder program
- Holding register data
- Disable tables



ROM operation will transfer the above seven types of data from the flash ROM to RAM when the input power supply to the CPU Rack is turned ON. To enable ROM operation, the data in RAM must first be written to the flash ROM using the MEMOSOFT flash ROM write operation.

17.2 Writing Data to Flash ROM

This section describes the operation to write data from the RAM in the CPU10 Module (including the ladder program and other data) to the flash ROM and how to clear data from the flash ROM.

17.2.1	Writing Data to Flash ROM	17-4
17.2.2	Clearing Flash ROM	17-6
17.2.3	ROM Operation	17-7

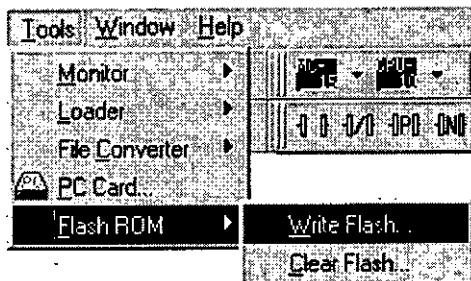
17.2.1 Writing Data to Flash ROM

- 1) The *Write Flash* Command writes part of the data in the RAM of the CPU Module to the flash ROM in the CPU Module.

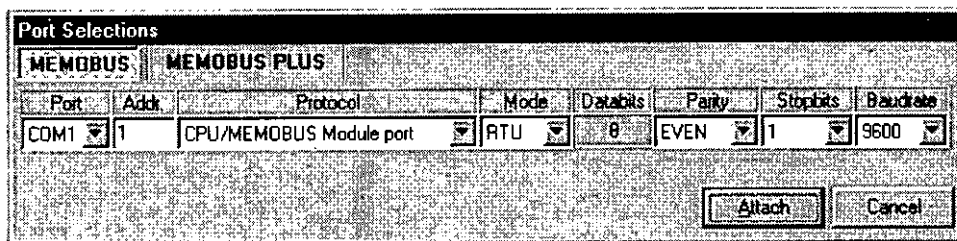
Note The CPU10 Module must be stopped to write data to the flash ROM.

- 2) Use the following procedure to write data to the flash ROM.

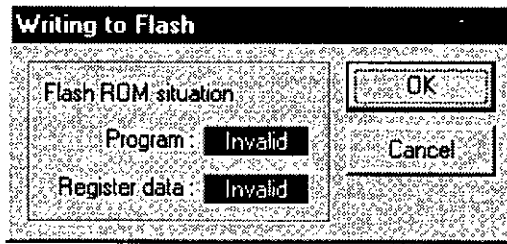
- a) Select *Tools (T) – Flash ROM (F) – Write Flash (W)* from the menu bar.



- b) If the CPU Module is not attached, a dialog box will be display to select the communications port. Click the **Attach** Button.

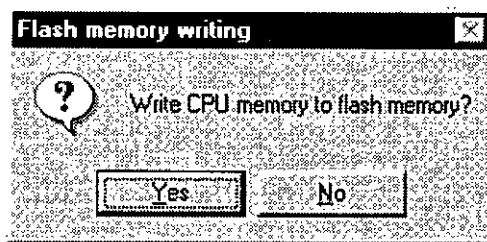


- c) A dialog box will appear to confirm the status of ROM. Check the status and click the **OK** Button.

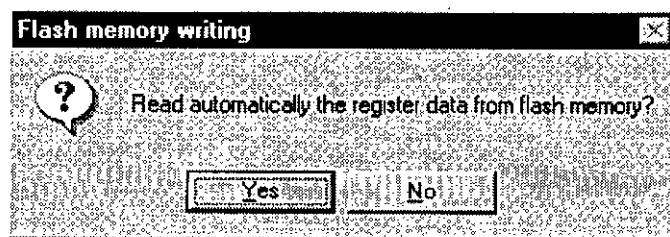


The status of flash ROM will be displayed in the above dialog box. The display will show whether or not the ladder program and holding register data have been written to the flash ROM.

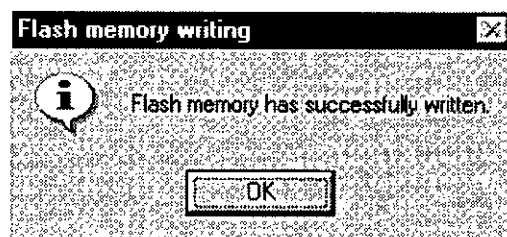
- d) A write confirmation message will be display. Confirm the message and click the **Yes** Button.



- e) A message will appear asking whether or not holding register data should be loaded from flash ROM when power is turned ON. Click either the **Yes** or the **No** Button.



- f) A message will appear when the data has been written. Click the **OK** Button.



This completes writing data to the flash ROM.

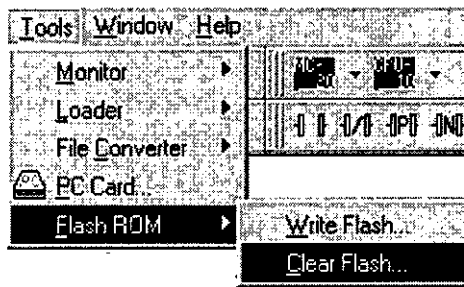
17.2.2 Clearing Flash ROM

1) The *Clear Flash* Command clears the data from the flash ROM in the CPU Module.

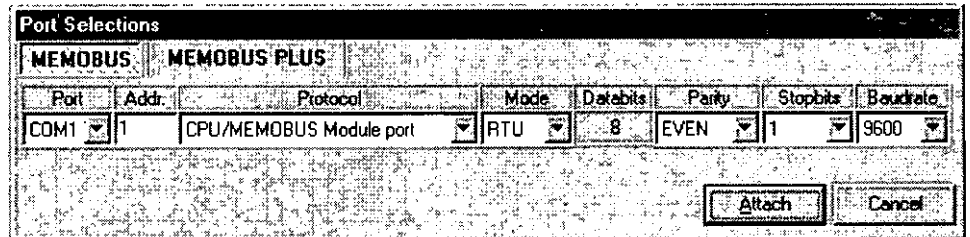
Note The CPU10 Module must be stopped to clear data from the flash ROM.

2) Use the following procedure to clear data from the flash ROM.

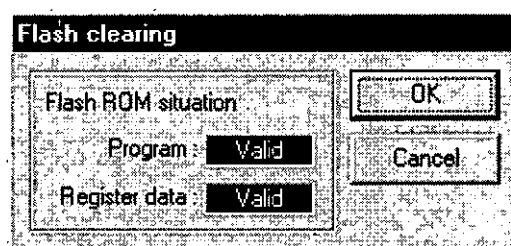
a) Select **Tools (T) – Flash ROM (F) – Clear Flash (C)** from the menu bar.



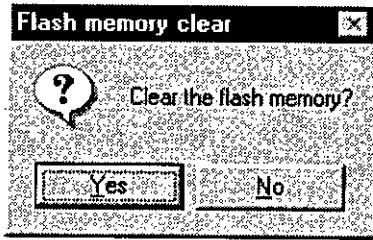
b) If the CPU Module is not attached, a dialog box will be display to select the communications port. Click the **Attach** Button.



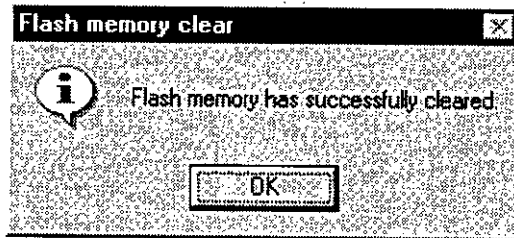
c) A dialog box will appear to confirm the status of ROM. The display will show whether or not the ladder program and holding register data have been written to the flash ROM. Check the status and click the **OK** Button.



d) A clear confirmation message will be display. Click the **Yes** Button.



e) A message will appear when the data has been cleared. Click the **OK** Button.



This completes clearing data from the flash ROM.

17.2.3 ROM Operation

1) The following tables outlines the operation performed by the CPU10 Module according to the data written to flash ROM in the previous section.

Table 17.1 ROM Operation

Flash ROM Operation		DIP Switch Setting at Power-ON		Data Transferred from Flash ROM to RAM			CPU Module Operation at Power-ON
Writing to Flash ROM	Registers Read (Other than Inputs)	Pin 5	Pin 6	Ladder Program	System Configuration	Holding Registers	
Completed normally	Yes	ON	ON	Yes	Yes	Yes	Data transferred and CPU Module starts.
		OFF	ON	Yes	Yes	Yes	Data transferred and CPU Module stops.
	No	ON	ON	Yes	Yes	---	Data transferred and CPU Module starts.
		OFF	ON	Yes	Yes	---	Data transferred and CPU Module stops.
Error Not executed. Flash ROM cleared normally.	NA	NA	ON	---	---	---	CPU Module starts in STOP status with stop code 0400 Hex (ROM operation error).
NA	NA	ON	OFF	---	---	---	CPU started.
		OFF	OFF	---	---	---	Power OFF status

ROM Operation

17.2.3 ROM Operation , cont.

2) ROM operation will be different from normal RAM operation for the following data status when power is turned ON.

Table 17.2 Data Status at Startup

Flash ROM Operation		DIP Switch Pin 6	Data Status			
Writing to Flash ROM	Registers Read (Other than Inputs)		Holding Registers	Latch Coils	Disable Table	Output Coil and Input Relay Log
NA	NA	OFF	Status retained.	Status retained.	Retained.	Updated.
Error Not executed. Flash ROM cleared normally.	NA	ON	Status retained.	Status retained.	Retained.	Updated.
Completed normally.	No	ON	Status retained.	Status retained.	Retained.	Updated.
	Yes	ON	ROM data	ROM data	ROM data	Cleared

Note ROM operation for the CPU10 Module assumes that the ladder program before CPU Rack power is turned OFF and the ladder program transferred when power is turned ON are the same. If the data before power is turned OFF and the data after power is turned ON are different and register data is not read for ROM operation, the system configuration may not agree with the contents of the registers.

This chapter describes the monitoring functions for the PLC status and MC status.

18.1	Monitoring PLC Status	18-2
18.1.1	Outline	18-2
18.1.2	Opening the Monitor Dialog Box	18-2
18.1.3	Starting and Stopping the PLC	18-4
18.1.4	Setting the PLC Calendar	18-4
18.1.5	Controller Status	18-6
18.1.6	Machine Status 1	18-6
18.1.7	Machine Status 2	18-7
18.1.8	Error Codes	18-7
18.1.9	Power Failure History	18-8
18.1.10	I/O Module Status	18-8
18.1.11	Remote Station Status	18-9
18.1.12	I/O Error Counter	18-9
18.1.13	Local Module Status History	18-10
18.1.14	Option Module Status	18-10
18.1.15	MC20 Failure History	18-11
18.1.16	PC Link Status	18-11
18.1.17	Ethernet Status	18-12
18.2	Monitoring MC Status	18-13
18.2.1	Outline	18-13
18.2.2	Opening the Monitor Dialog Box	18-13
18.2.3	Monitoring Current Positions	18-14
18.2.4	Monitoring I/O	18-16
18.2.5	Monitoring Status Information	18-17
18.2.6	Monitoring Program	18-18
18.2.7	Monitoring Other Information	18-18
18.2.8	Resetting Alarms	18-19

18.1 Monitoring PLC Status

This section describes operations required to start and stop the PLC and to display PLC status.

18.1.1	Outline	18-2
18.1.2	Opening the Monitor Dialog Box	18-2
18.1.3	Starting and Stopping the PLC	18-4
18.1.4	Setting the PLC Calendar	18-4
18.1.5	Controller Status	18-6
18.1.6	Machine Status 1	18-6
18.1.7	Machine Status 2	18-7
18.1.8	Error Codes	18-7
18.1.9	Power Failure History	18-8
18.1.10	I/O Module Status	18-8
18.1.11	Remote Station Status	18-9
18.1.12	I/O Error Counter	18-9
18.1.13	Local Module Status History	18-10
18.1.14	Option Module Status	18-10
18.1.15	MC20 Failure History	18-11
18.1.16	PC Link Status	18-11
18.1.17	Ethernet Status	18-12

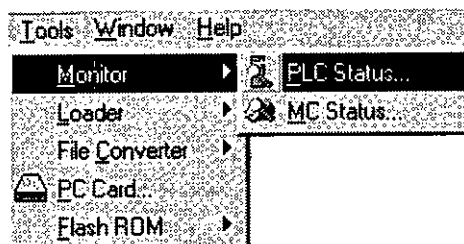
18.1.1 Outline

- 1) The PLC ladder program change history, error history, and other PLC status can be displayed. The PLC status can be displayed either online or offline.
- 2) Operations such as starting and stopping the PLC and setting the PLC calendar can be performed from the PLC Status Dialog Box.
- 3) PLC status is monitored by using the *Tool (T) – Monitor (M) – PLC Status* Command on the menu bar.

18.1.2 Opening the Monitor Dialog Box

Use the following procedure to open the Monitor Dialog Box.

Select *Tools (T) – Monitor (M) – PLC Status* from the menu bar.





A dialog box to select the port will be displayed when the above command is executed offline. Check the communications parameters and attach the MEMOSOFT to the PLC.

The PLC Status Dialog Box will be displayed.

PLC status					
I/O module status	Remote station status	I/O error counters	Local module status history		
Option module status	MC20 failure history	PCLink status	Ethernet status		
Controller status	Machine status-1	Machine status-2	Error codes	Power failure history	
PLC PLC address: 001 PLC type: GL130 Usable memory: 40953 Num of segment: 1 Motion: 1 Link: 2		System Register Battery Coil: 008192 Constant sweep: 409999 High speed scan time: 4..... Timer Register: 409996 Stepping relay: 402001 Calendar: 409986 Ladder edit flag reg: 4.....		Information EXEC ID: 08F9 REV: 4090 Status: Running Login: NONE Stop code: 0000 Memory protection: N/A Constant sweep: NO Battery OK: YES	
Reference range Coil: 008192 Input relay: 101024 Input Register: 300512 Holding Register: 409999 Constant Register: 704096 Link Coil-1: 011024 Link Coil-2: 021024 Link Register-1: R11024 Link Register-2: R21024 Extended Register: 6.....		I/O Number of I/O Modules: 24		Remote Number of Remote 1 stations: 15 Number of Remote 2 stations: 15	
		Controller time 30-11-2000 16:17:18		Stop Set timer/Date	
				Close	Help

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18.1.3 Starting and Stopping the PLC

Use the following procedure to start and stop the PLC.

- 1) Click the **Controller Status** Tab in the PLC Status Dialog Box.

The screenshot shows the 'PLC status' dialog box with the 'Controller status' tab selected. The dialog is divided into several sections:

- PLC:**
 - PLC address: 001
 - PLC type: GL130
 - Usable memory: 40952
 - Num of segment: 1
 - Motion: 1
 - Link: 2
- Reference range:**
 - Coil: 008192
 - Input relay: 101024
 - Input Register: 300512
 - Holding Register: 409999
 - Constant Register: 704096
 - Link Coil-1: D11024
 - Link Coil-2: D21024
 - Link Register-1: R11024
 - Link Register-2: R21024
 - Extended Register: 6
- System Register:**
 - Battery Coil: 008192
 - Constant sweep: 409998
 - High speed scan time: 4
 - Timer Register: 409996
 - Stepping relay: 402001
 - Calendar: 409998
 - Ladder edit flag reg: 4
- Information:**
 - EXEC ID: 08F9
 - REV: A090
 - Status: Running
 - Login: NONE
 - Stop code: 0000
 - Memory protection: NO
 - Constant sweep: NO
 - Battery OK: YES
 - Controller time: 30-11-2000 16:17:18
- I/O:**
 - Number of I/O Modules: 34
- Remote:**
 - Number of Remote 1 stations: 15
 - Number of Remote 2 stations: 15

At the bottom right, there is a 'Stop' button with a circular icon and the text 'Set Time/Date'. At the very bottom, there are 'Close' and 'Help' buttons.

- 2) Click the **Start** or the **Stop** Button.

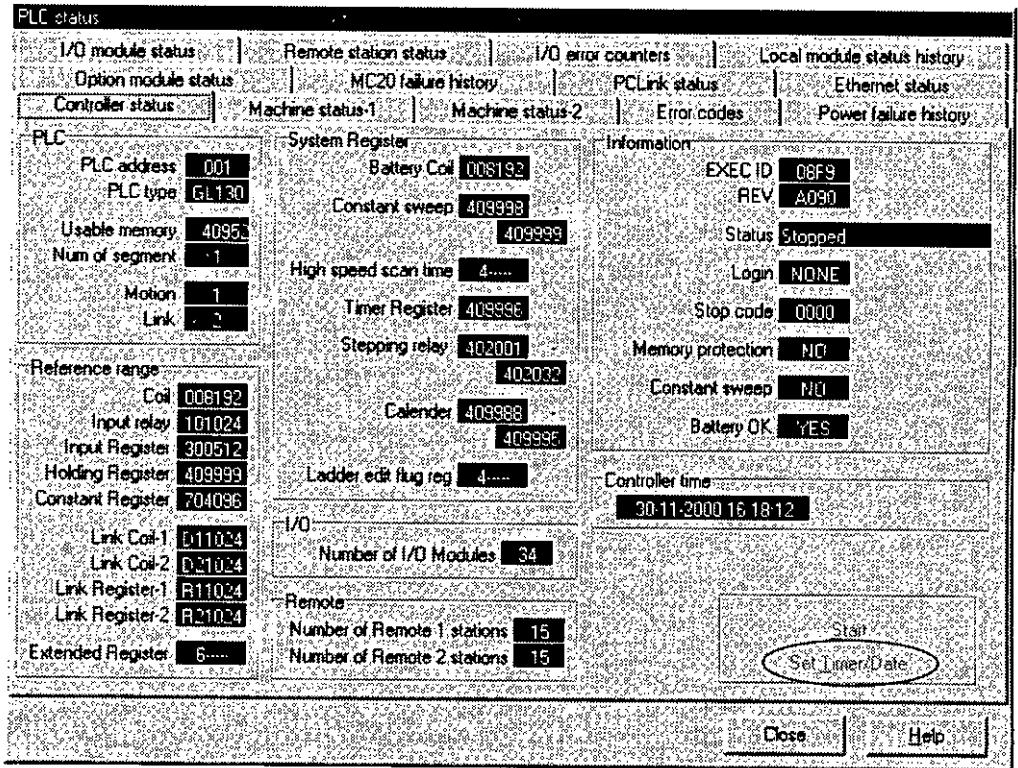
The PLC will start or stop.

18.1.4 Setting the PLC Calendar

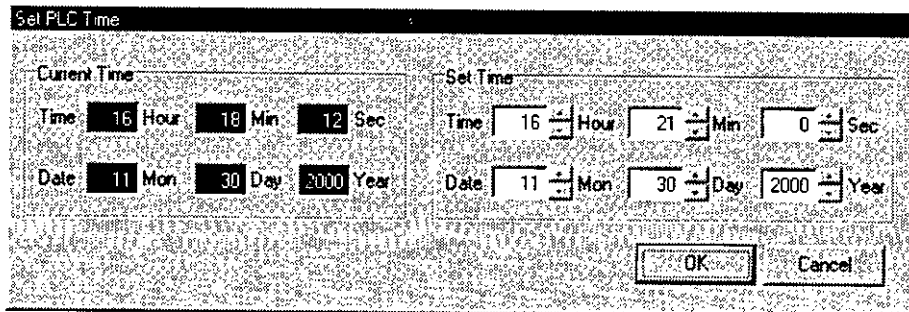
Use the following procedure to set the PLC calendar. Start the PLC first.

- 1) Start the PLC.
- 2) Click the **Controller Status** Tab in the PLC Status Dialog Box.

- Click the **Set Timer/Date** Button.



- A dialog box to set the calendar will be displayed. Set the date and time.



18.1.5 Controller Status

The following information will be displayed when the Controller Status Tab is clicked in the PLC Status Dialog Box.

Controller status	
PLC	System Register
PLC address: 001	Battery Coil: 008192
PLC type: 6L130	Constant sweep: 409998
Usable memory: 40999	High speed scan time: 4.....
Num of segment: 1	Timer Register: 409996
Motion: 1	Stepping relay: 402001
Link: 2	Calendar: 409998
	Ladder edit flag reg: 4.....
Reference range	I/O
Coil: 008192	Number of I/O Modules: 34
Input relay: 101024	
Input Register: 300512	Remote
Holding Register: 409999	Number of Remote 1 stations: 15
Constant Register: 704095	Number of Remote 2 stations: 15
Link Coil-1: 011024	
Link Coil-2: 021024	
Link Register-1: R11034	
Link Register-2: R21034	
Extended Register: 5.....	
	Information
	EXEC ID: 08F9
	REV: A030
	Status: Stopped
	Login: NONE
	Stop code: 0000
	Memory protection: NO
	Constant sweep: NO
	Battery OK: YES
	Controller time
	30-11-2000 16:18:12
	Start
	Set Target Date

18.1.6 Machine Status 1

The following information will be displayed when the Machine Status 1 Tab is clicked in the PLC Status Dialog Box.

Machine status 1		Machine status 2	
	Hex: 00E3		Hex: 0007
1 = High speed scan single sweep mode	BIT15= 0	1 = High speed scanning	BIT15= 0
-- BIT 14 - 11 Not used --		1 = Start command running	BIT14= 0
1 = Constant sweep mode	BIT10= 0	1 = Constant sweep time over	BIT13= 0
1 = Single sweep mode	BIT09= 0	1 = Load requesting	BIT12= 0
0 = 24 bit system	BIT08= 0	-- BIT 11 - 04 Not used --	
1 = AC power ON	BIT07= 1	Number of single sweep	03-00= 0
1 = Run light OFF	BIT06= 1		
0 = Memory protect ON	BIT05= 1		
0 = Battery OK	BIT04= 0		
-- BIT 03 - 00 Not used --			

18.1.7 Machine Status 2

The following information will be displayed when the Machine Status 2 Tab is clicked in the PLC Status Dialog Box. Stop status will also be displayed.

Machine status 2

Stop status		Hex		Machine status 4	
0000				Number of segments (1-32)	
1 = Controller stop	BIT15=	1		7FE8	
1 = TCOB memory error	BIT14=	0		Hex	
1 = Load request	BIT13=	0		Power flow flag	
-- BIT 12 Not used --				Dec	
1 = Segment scheduler error	BIT11=	0		Power flow inactive =0	
-- BIT 10 Not used --				State flow =1	
1 = Power down check sum error	BIT09=	0		Power flow active =2	
1 = EDL error	BIT08=	0			
1 = Watch dog timer error	BIT07=	0			
-- BIT 06 - 05 Not used --					
1 = Remote I/O error	BIT04=	0			
1 = Node type error	BIT03=	0			
1 = User logic check sum error	BIT02=	0			
-- BIT 01 Not used --					
1 = System configuration error	BIT00=	0			

18.1.8 Error Codes

The following information will be displayed when the Error Code Tab is clicked in the PLC Status Dialog Box. The CPU failure history will also be displayed. Up to three error codes and 20 CPU failure history records will be displayed.

Error codes

Error codes		Hex	
TCOB error code	0000		
System error code	0000		
DEAD error code (previous)	0004		

CPU failure history	Date	Week	Time	Error code	Stop status (Hex)
1.	08.25.2000	Fri	16:24:41	08B9	0200
2.	12.25.1999	Sat	16:21:08	08B9	0200
3.	12.23.1999	Thu	16:17:14	08B9	0200
4.	12.16.1999	Thu	15:42:49	08B9	0200
5.	12.16.1999	Thu	15:41:31	08B9	0200
6.	10.13.1999	Wed	15:38:29	08B9	0200
7.	10.13.1999	Wed	15:36:48	08B9	0200
8.	09.24.1999	Fri	15:34:19	08B9	0200
9.	09.24.1999	Fri	15:32:42	08B9	0200
10.	09.14.1999	Tue	15:29:57	08B9	0200
11.	09.14.1999	Tue	15:28:15	08B9	0200
12.	08.11.1999	Wed	15:25:12	08B9	0200
13.	08.11.1999	Wed	15:22:50	08B9	0200
14.	07.06.1999	Tue	15:19:33	08B9	0200
15.	07.06.1999	Tue	15:17:36	08B9	0200
16.	07.03.1999	Sat	15:14:32	08B9	0200

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18.1.9 Power Failure History

The following information will be displayed when the Power Failure History Tab is clicked in the PLC Status Dialog Box. Up to five records will be displayed.

Power failure history			
	Date	Week	Time
1.	11 30 2000	Thu	14:35:25
2.	11 28 2000	Tue	10:39:55
3.	11 28 2000	Tue	10:35:40
4.	11 13 2000	Mon	14:45:12
5.	11 13 2000	Mon	14:38:06

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18.1.10 I/O Module Status

The following information will be displayed when the I/O Module Status Tab is clicked in the PLC Status Dialog Box.

I/O module status																	
Station	Rack	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Local	#1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel ...	#1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel ...	#1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel ...	#1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel ...	#1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

1: Normal 0: Error or None

18.1.11 Remote Station Status

The following information will be displayed when the Remote Station Status Tab is clicked in the PLC Status Dialog Box.

Remote station status																
Station	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	0
Remote Channel1-ST#1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel1-ST#15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel2-ST#1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel2-ST#2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel2-ST#3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel2-ST#4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Remote Channel2-ST#5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BIT00 : 0->Normal BIT08 : ASIC error BIT15 : Communication error/No mapped station
 BIT03 : I/O Service time out BIT13 : Output data length error/No output data
 BIT07 : TCDP request BIT14 : TCDP map data error

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18.1.12 I/O Error Counter

The following information will be displayed when the I/O Error Counter Tab is clicked in the PLC Status Dialog Box.

I/O error counters			
Station	New error counter	Error counter	Bus error counter
Local	0000	0000	0000
Remote Channel1-ST#1	0000	0000	0000
Remote Channel1-ST#2	0000	0000	0000
Remote Channel1-ST#3	0000	0000	0000
Remote Channel1-ST#4	0000	0000	0000
Remote Channel1-ST#5	0000	0000	0000
Remote Channel1-ST#6	0000	0000	0000
Remote Channel1-ST#7	0000	0000	0000
Remote Channel1-ST#8	0000	0000	0000
Remote Channel1-ST#9	0000	0000	0000
Remote Channel1-ST#10	0000	0000	0000
Remote Channel1-ST#11	0000	0000	0000
Remote Channel1-ST#12	0000	0000	0000
Remote Channel1-ST#13	0000	0000	0000
Remote Channel1-ST#14	0000	0000	0000
Remote Channel1-ST#15	0000	0000	0000
Remote Channel2-ST#1	0000	0000	0000
Remote Channel2-ST#2	0000	0000	0000
Remote Channel2-ST#3	0000	0000	0000
Remote Channel2-ST#4	0000	0000	0000
Remote Channel2-ST#5	0000	0000	0000
Remote Channel2-ST#6	0000	0000	0000

8000 Hex = Normal

18.1.13 Local Module Status History

The following information will be displayed when the Local Module Status History Tab is clicked in the PLC Status Dialog Box. Up to 20 records will be displayed.

Local module status history						
	Date	Week	Time	Status(Hex)	Rack	Slot
1	02.27.1990	Tue	00:32:44	0000		01:07
2	02.27.1990	Tue	00:32:44	0000		01:08
3	02.27.1990	Tue	00:32:44	0000		01:07
4	02.27.1990	Tue	00:32:44	0000		01:07
5	02.27.1990	Tue	00:32:44	0000		01:08
6	02.27.1990	Tue	00:32:44	0000		01:07
7	02.27.1990	Tue	00:32:44	0000		01:07
8	02.27.1990	Tue	00:32:44	0000		01:08
9	02.27.1990	Tue	00:32:44	0000		01:07
10	02.27.1990	Tue	00:32:44	0000		01:07
11	02.27.1990	Tue	00:32:44	0000		01:08
12	02.27.1990	Tue	00:32:44	0000		01:07
13	02.27.1990	Tue	00:32:44	0000		01:07
14	02.27.1990	Tue	00:32:44	0000		01:08
15	02.27.1990	Tue	00:32:44	0000		01:07
16	02.27.1990	Tue	00:32:44	0000		01:07
17	02.27.1990	Tue	00:32:44	0000		01:08
18	02.27.1990	Tue	00:32:44	0000		01:07
19	02.27.1990	Tue	00:32:44	0000		01:07
20	02.27.1990	Tue	00:32:44	0000		01:08

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18.1.14 Option Module Status

The following information will be displayed when the Option Module Status Tab is clicked in the PLC Status Dialog Box. Option Module revisions will also be displayed.

Option module status			
	Installed	Revision	Status (Hex)
REMOTE-1	NO	0000	0000
REMOTE-2	NO	0000	0000
MC20-1	NO	0000	0000
MC20-2	NO	0000	0000
PCLINK-1	NO	0000	0000
PCLINK-2	NO	0000	0000
MEMOBUS-1	NO	0000	0000
MEMOBUS-2	NO	0000	0000
Ethernet	NO	0000	0000

18.1.15 MC20 Failure History

The following information will be displayed when the MC20 Failure History Tab is clicked in the PLC Status Dialog Box. Up to ten records will be displayed for each MC Module.

MC20 failure history					
MC20-1		MC20-2			
	Date	Week	Time	Status (Hex)	
1.	00 00 0000	Sun	00 00 00	0000	
2.	00 00 0000	Sun	00 00 00	0000	
3.	00 00 0000	Sun	00 00 00	0000	
4.	00 00 0000	Sun	00 00 00	0000	
5.	00 00 0000	Sun	00 00 00	0000	
6.	00 00 0000	Sun	00 00 00	0000	
7.	00 00 0000	Sun	00 00 00	0000	
8.	00 00 0000	Sun	00 00 00	0000	
9.	00 00 0000	Sun	00 00 00	0000	
10.	00 00 0000	Sun	00 00 00	0000	

18.1.16 PC Link Status

The following information will be displayed when the PC Link Status Tab is clicked in the PLC Status Dialog Box.

PCLink status						
PCLINK-1		PCLINK-2				
Station	Link coil	Point	Link Register	Size	Status (Hex)	PLC type
1.	0	0000	0	0	0000	.....
2.	0	0000	0	0	0000	.....
3.	0	0000	0	0	0000	.....
4.	0	0000	0	0	0000	.....
5.	0	0000	0	0	0000	.....
6.	0	0000	0	0	0000	.....
7.	0	0000	0	0	0000	.....
8.	0	0000	0	0	0000	.....
9.	0	0000	0	0	0000	.....
10.	0	0000	0	0	0000	.....
11.	0	0000	0	0	0000	.....
12.	0	0000	0	0	0000	.....
13.	0	0000	0	0	0000	.....
14.	0	0000	0	0	0000	.....
15.	0	0000	0	0	0000	.....
16.	0	0000	0	0	0000	.....
17.	0	0000	0	0	0000	.....
18.	0	0000	0	0	0000	.....
19.	0	0000	0	0	0000	.....
20.	0	0000	0	0	0000	.....

18.1.17 Ethernet Status

The following information will be displayed when the Ethernet Status Tab is clicked in the PLC Status Dialog Box.

Ethernet status							
Local							
IP address:	192.183.004.001	Subnet mask:	255.255.255.000				
Diag Port number:	10000	Gateway IP address:	192.183.004.002				
MAC address:	00.20.B5.22.10.FF			Puting Collision: 0			
CNO	Comm status (Hex)	Error status (Hex)	Send counter	Recept counter	Error counter	Response time(ms)	C
1.	0002	0000	38230	38230	0	0	
2.	0002	0000	38230	38230	0	0	
3.	0002	0000	38230	38230	0	0	
4.	0002	0000	38230	38230	0	0	
5.	0002	0000	38229	38229	0	0	
6.	0002	0000	38376	38376	0	0	

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18.2 Monitoring MC Status

This section describes operations required to display MC Module status and reset alarms.

18.2.1	Outline	18-13
18.2.2	Opening the Monitor Dialog Box.	18-13
18.2.3	Monitoring Current Positions	18-14
18.2.4	Monitoring I/O	18-16
18.2.5	Monitoring Status Information	18-17
18.2.6	Monitoring Program	18-18
18.2.7	Monitoring Other Information	18-18
18.2.8	Resetting Alarms	18-19

18.2.1 Outline

- 1) The current position of each axis, I/O data, status information, and the current program can be displayed for a Motion Module. The MC status can be displayed either online or offline.



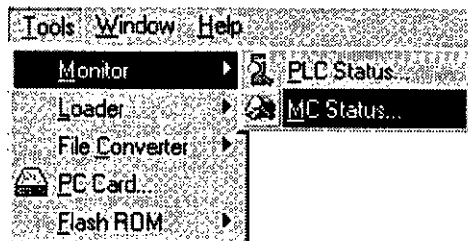
Status displays are not supported for the MC15 and MC10 Modules.

- 2) MC status is monitored by using the *Tool (T) – Monitor (M) – MC Status* Command on the menu bar.

18.2.2 Opening the Monitor Dialog Box.

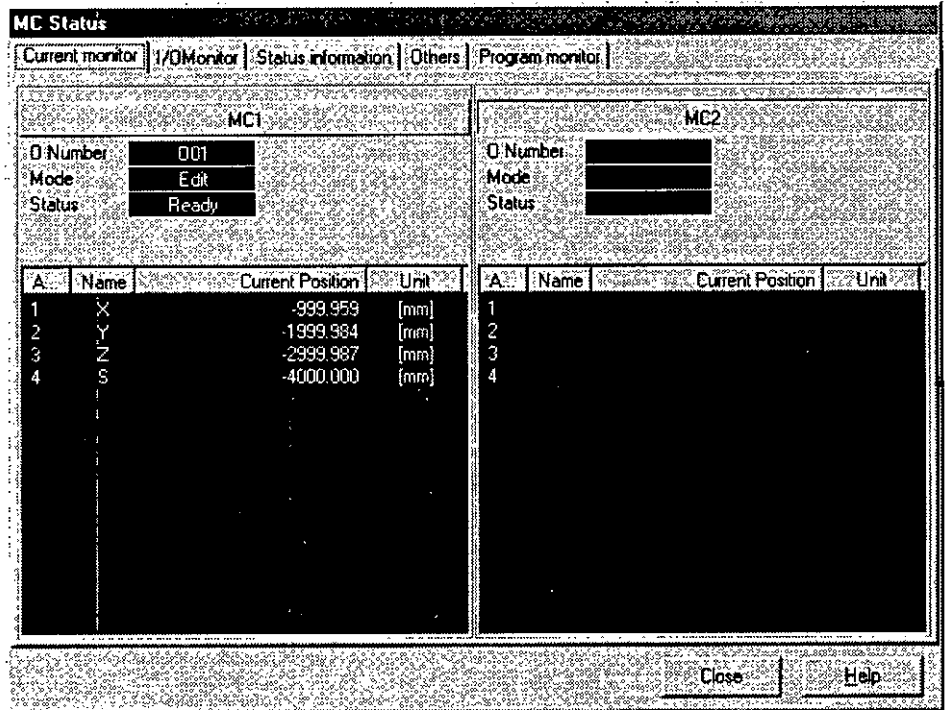
Use the following procedure to open the Monitor Dialog Box.

Select *Tools (T) – Monitor (M) – MC Status* from the menu bar.



A dialog box to select the port will be displayed when the above command is executed offline. Check the communications parameters and attach the MEMOSOFT to the PLC.

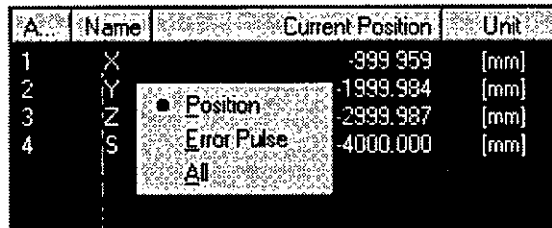
The MC Status Dialog Box will be displayed.



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18.2.3 Monitoring Current Positions

- 1) The current positions or current errors can be monitored if MC Modules have been allocated. This operation is not supported for the MC15 or MC10 Module.
- 2) Current positions are monitored on the Current Monitor Tab Page of the MC Status Dialog Box. The current positions can be monitored in the following three forms. Click the right mouse button on the Current Monitor Tab Page and select the desired form from the pop-up menu to change the form.



a) The current positions will be displayed if *Positions* is selected.

Current monitor							
MC1				MC2			
O Number		001		O Number			
Mode		Online Edit		Mode			
Status		Ready		Status			
A	Name	Current Position	Unit	A	Name	Current Position	Unit
1	X	-999.959	[mm]	1			
2	Y	-1999.984	[mm]	2			
3	Z	-2999.987	[mm]	3			
4	S	-4000.000	[mm]	4			

b) The error for the positioning command will be displayed if *Error Pulses* is selected.

Current monitor							
MC1				MC2			
O Number		001		O Number			
Mode		Online Edit		Mode			
Status		Ready		Status			
A	Name	Error Pulse		A	Name	Current Position	Unit
1	X	+0		1			
2	Y	+0		2			
3	Z	+0		3			
4	S	+0		4			

c) Coordinates will be displayed if All is selected.

MC1				MC2			
ID Number		001		ID Number			
Mode		Online Edit		Mode			
Status		Ready		Status			
Coordinates	Name	Current Po.	Unit	A.	Name	Current Position	Unit
Machine coordinates	X	-999.959	[mm]	1			
	Y	-1999.984	[mm]	2			
	Z	-2999.987	[mm]	3			
	S	-4000.000	[mm]	4			
coordinates	X	-999.959	[mm]				
	Y	-1999.984	[mm]				
	Z	-2999.987	[mm]				
	S	-4000.000	[mm]				
Work coordinates ...	X	+0.000	[mm]				
	Y	+0.000	[mm]				
	Z	+0.000	[mm]				
	S	+0.000	[mm]				
Work coordinates ...	X	-999.959	[mm]				
	Y	-1999.984	[mm]				

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Refer to the following information for the meaning of coordinate displays.

- MEMOCON GL120, GL130 MC20 Motion Module Software User's Manual (SIEZ-C825-20.52)

18.2.4 Monitoring I/O

- I/O signal status can be monitored for axes connected to any MC Modules that have been allocated. This operation is not supported for the MC15 or MC10 Module.

- The following information is displayed when the I/O Monitor Tab is clicked on the MC Status Dialog Box.

MC1					MC2				
O Number	001				O Number				
Mode	Online Edit				Mode				
Status	Ready				Status				
Axis Num(Name)	1(X)	2(Y)	3(Z)	4(S)	Axis Num(Name)	1(I)	2(I)	3(I)	4(I)
Overtravel +	0	0	0	0	Overtravel +				
Overtravel -	0	0	0	0	Overtravel -				
Slowdown dog	1	1	1	1	Slowdown dog				
Home pos signal	1	1	1	1	Home pos signal				
Encoder A phase	0	0	1	1	Encoder A phase				
Encoder B phase	0	0	0	0	Encoder B phase				
Encoder C phase	0	0	0	0	Encoder C phase				
Ext inp signal	1	1	1	1	Ext inp signal				
Servo alarm	0	0	0	0	Servo alarm				
Enc line damage	0	0	0	0	Enc line damage				
Brake signal	0	0	0	0	Brake signal				
Servo ON signal	0	0	0	0	Servo ON signal				
Pos set signal	0	0	0	0	Pos set signal				

18.2.5 Monitoring Status Information

- MC Module status can be monitored for any MC Modules that have been allocated. This operation is not supported for the MC15 or MC10 Module.
- The following information is displayed when the Status Information Tab is clicked on the MC Status Dialog Box.

MC1				MC2			
O Number	001	1(X)	Stopping	O Number		1(I)	
Mode	Online Edit	2(Y)	Stopping	Mode		2(I)	
		3(Z)	Stopping			3(I)	
		4(S)	Stopping			4(I)	
Home return	0			Home return			
Program running	0			Program running			
Program hold	0			Program hold			
Hold by single block	0			Hold by single block			
Program finished	0			Program finished			
Waiting M code finish	0			Waiting M code finish			
Machine Lock active	0			Machine Lock active			
MC unit Ready	1			MC unit Ready			
Alarm No.	000			Alarm No.			
Trace main program	001		0004	Trace main program			
Trace sub1:program	O Num 000	B Num	0000	Trace sub1:program	O Num	B Num	
Trace sub2:program	O Num 000	B Num	0000	Trace sub2:program	O Num	B Num	
Trace sub3:program	O Num 000	B Num	0000	Trace sub3:program	O Num	B Num	
Trace sub4:program	O Num 000	B Num	0000	Trace sub4:program	O Num	B Num	

18.2.6 Monitoring Program

- 1) Motion program execution status can be monitored for any MC Modules that have been allocated.
- 2) The following data can be monitored.
 - The block currently being executed
 - I/O data
 - Current positions
- 3) The following information is displayed when the Program Monitor Tab is clicked on the MC Status Dialog Box. The MC program line that is currently being executed will be displayed in reverse video.

MC1		MC2	
002	N num	Program	
0001		:PROGRAM2	
0002		:	
0003	N001	ABS:	
0004		MOV X100. Y200.:	
0005	N002	INC MUS X50. F1000.:	
0006		INC MUS Y120. F600:	
0007		:	
0008	N005	ABS:	
0009		MOV X100. Y200. Z-200. S600:	
0010		INC MUS X50. F1000.:	
0011		INC MUS Y120. F600:	
0012		:	
0013	N007	ABS:	
0014		MOV X100. Y200. Z-400. S0:	
0015		INC MUS X50. F1000.:	
0016		INC MUS Y120. F600:	
0017		:	
0018	N009	ABS:	
0019		MOV X100. Y200. Z-1000. S600:	
0020		TMP MIC VER C1000	

18.2.7 Monitoring Other Information

- 1) The following information can be monitored for any MC Modules that have been allocated.
 - Alarm logs
 - ROM versions
 - MC program memory usage

This operation is not supported for the MC15 or MC10 Module.

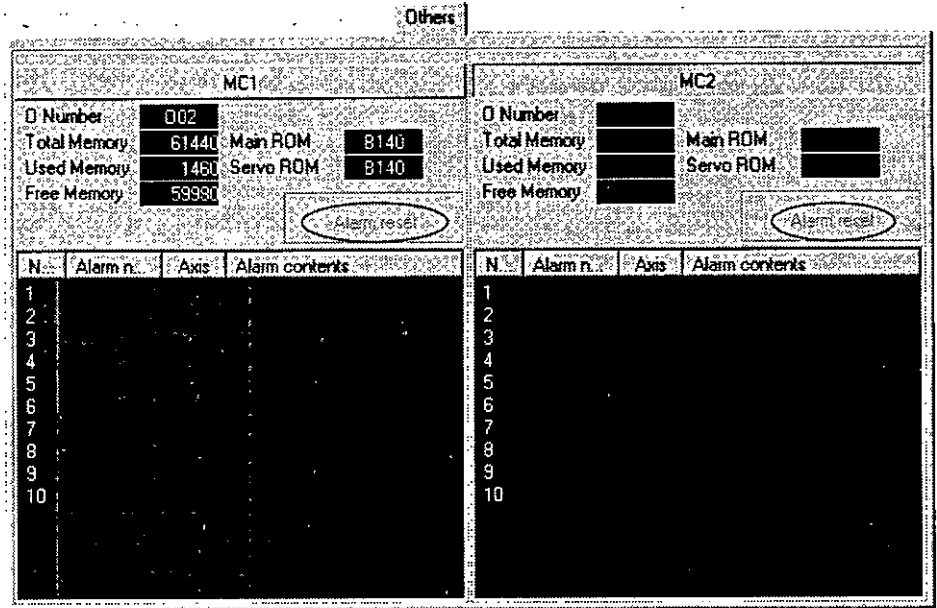
- The following information is displayed when the Others Tab is clicked on the MC Status Dialog Box.

Others																																																																																											
MC1		MC2																																																																																									
D Number	002	D Number																																																																																									
Total Memory	61440	Main ROM	B140																																																																																								
Used Memory	1460	Servo ROM	B140																																																																																								
Free Memory	59980																																																																																										
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18.2.8 Resetting Alarms

- The operation to reset alarms will reset alarm status in the MC20 Module and clear the alarm history.
- Use the following procedure to reset alarms.

a) Click the **Others** Tab in the MC Status Dialog Box.



b) Click the **Alarm Reset** Button for the Module for which alarms are to be reset (MC1 or MC2).

c) A confirmation message will be displayed. Click the **Yes** Button.

The alarm history will be cleared.



Alarms can also be reset using the ARS (ALARM RESET) ladder motion instruction. Refer to the following manual for details.

- MEMOCON GL120, GL130 MC20 Motion Module Software User's Manual (SIEZ-C825-20.52)

Traceback Operations

19

This chapter describes operations required to set and execute traces and to display data generated by traces.

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19.1 Traceback Dialog Box

This section describes the configuration of the Traceback Dialog Box and the methods to open and close it.

19.1.1	Outline	19-3
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19.1.1 Outline

The traceback function includes three displays: The Traceback Setup Dialog Box, the Graph Tab Page in the Traceback Data Display Window, and the List Tab Page in the Traceback Data Display Window.

1) Traceback Setup Dialog Box

Used to set the sampling method for trace data, to set the trigger conditions, to start and stop traces for the PLC, etc. The traced data can be displayed in graph or list displays.

2) Graph Tab Page

Displays the data traced for the specified references in a line graph. A trace must first be performed from the Traceback Dialog Box or from the ladder program to generate the trace data before display is possible.

3) List Tab Page

Displays the data traced for the specified references numerically. Trace data must be generated before display is possible, just as it is for the Graph Tab Page.



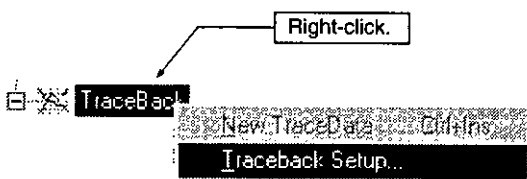
Refer to the following manual for details on the traceback operation.

- MEMOCON GL120, GL130 Traceback Function for DOS User's Manual (SIEZ-C825-60.10-4)

19.1.2 Opening the Traceback Setup Dialog Box

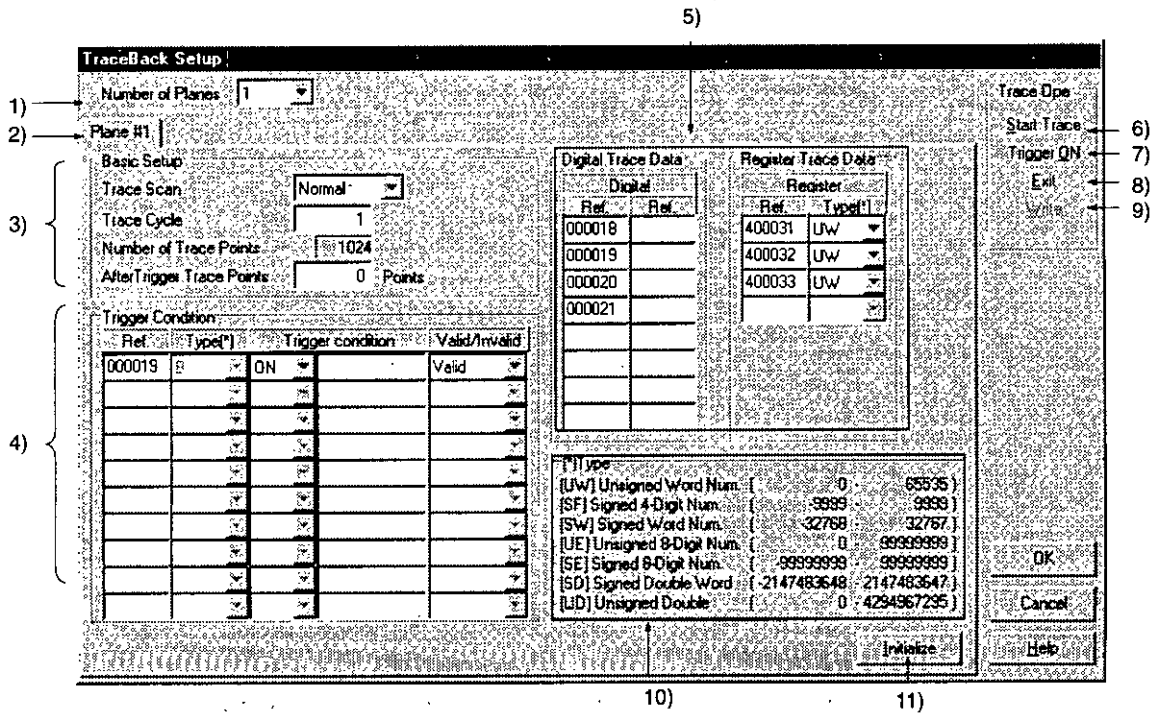
Use the following procedure to open the Traceback Setup Dialog Box.

Point at the Traceback Node in the Project Manager, click the right mouse button, and select **Traceback Setup** from the pop-up menu.



19.1.3 Configuration of the Traceback Setup Dialog Box

The configuration of the Traceback Setup Dialog Box is shown below.



1) Number of Planes

Sets the number of planes to use. The default is one plane.

2) Plane Tabs

One tab is displayed for each of the planes set above.

3) Basic Setup

Sets the trace scan, trace cycle, number of trace points (“trace point value”), and the after-trigger trace points.

4) Trigger Condition

Sets the trigger condition for the plane.

5) Trace Data

Sets the references for which data is to be collected.

6) Start Trace Button

Starts tracing the set data.

7) Trigger ON Button

Turns ON the trigger during tracing to manually set the trigger point.

8) Exit Button

Force-ends a trace.

9) Write Button

Writes the traceback settings that have been edited to the PLC.

10) Type Information

Provides information on register reference types and setting ranges.

11) Initialize Button

Initializes the trace settings for the plane.



The execution status of the trace is displayed in the plane tab.

19.1.4 Closing the Traceback Setup Dialog Box

Use one of the following two methods to close the Traceback Setup Dialog Box.

1) OK Button

Click the **OK** Button to save the trace settings and close the dialog box.

2) Cancel Button

Click the **Cancel** Button to close the dialog box without saving the trace settings.

19.2 Traceback Settings

This section describes operations required to make the basic settings for tracing, such as the trigger condition.

19.2.1	Outline	19-6
19.2.2	Setting the Number of Planes	19-6
19.2.3	Basic Setup	19-7
19.2.4	Setting the Trigger Condition	19-8
19.2.5	Setting Trace Data	19-10
19.2.6	Initializing Settings	19-11

19.2.1 Outline

The Traceback Setup Dialog Box is used to set the sampling method for trace data, to set the trigger conditions, to execute the trace in the PLC, to stop a trace, and to otherwise control tracing. The resulting trace data can be displayed in either graph or list form.

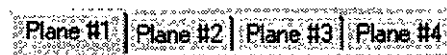
19.2.2 Setting the Number of Planes

- 1) Set the number of planes to enable setting separate trigger conditions and references for each plane. The maximum number of trace points will be limited by the number of planes that is set.
- 2) Use the following procedure to set the number of planes.

Select the number of planes to be set from the pull-down list in the *Plane Value Box* in the Traceback Setup Dialog Box.



Plane tabs will be displayed for the number of planes that was set.



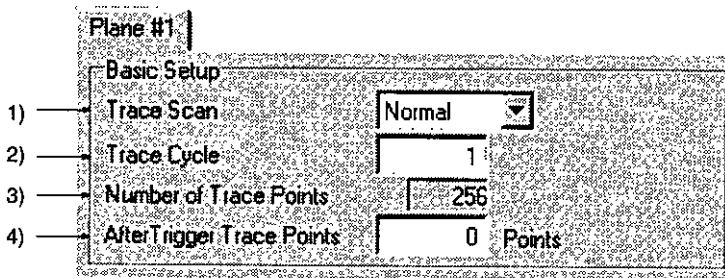
Note The trace data and settings will be affected as follows when the number of planes is changed.

Trace data: Discarded

Settings: If the number of planes is increased, the settings for previous planes will be retained. If the number of planes is decreased, the setting for the planes that remain will be retained. For example, if the number of planes is reduced from 4 to 2, the settings for planes 1 and 2 will be retained.

19.2.3 Basic Setup

The basic settings are made in the Basic Setup Area of the Traceback Setup Dialog Box. The Basic Setup Area is shown below.



1) Trace Scan

Sets the scan type for the current plane. Select the normal or high-speed scan from the pull-down list. The default is for the normal scan.

2) Trace Cycle

Sets the trace cycle for the current plane as a number of scans. The default is one scan.

3) Number of Trace Points: Trace Point Value

The number of trace points is automatically determined by the number of planes. The relationship between the number of planes and the number of trace points is shown in the following table.

Number of Planes	Number of Data Words	Number of Trace Points
1	1	4096
	2	2048
	3	1365
	4	1024
2	1	2048
	2	1024
	3	682
	4	512
4	1	1024
	2	512
	3	341
	4	256



- 1) Each point set for digital data is treated as 1 word.
- 2) Each register is treated as 1 word. If 1-register data is set, up to 4 registers can be set. If 2-register data is set, only two pairs of registers can be set.
- 3) A word contains 16 bits.

4) After Trigger Trace Points

Sets the number of points of trace data to collect after the trigger condition has been met before ending the trace. The setting range is from 0 to 1 less than the number of trace points. The default is 0 points.

19.2.4 Setting the Trigger Condition

- 1) The trigger condition is set separately for each plane. The trigger condition is set in the Trigger Condition Area in the Trace Setup Dialog Box. Up to 10 references can be set for the trigger condition. The trigger condition is satisfied when all of the conditions set to *Valid* have been met.
- 2) The configuration of the Trigger Condition Area is shown below. Trigger condition settings are difference for digital references and register references.

Trigger Condition				
1)	2)	3)	4)	5)
Ref.	Type(*)	Trigger condition	Trigger condition	Valid/Invalid
000019	B	ON		Valid
400001	UW	<	65535	Valid
400002	UE	<=	999999999	Valid

a) Digital References

(1) Reference

The reference being set as a condition.

(2) Type

"B" is automatically set for digital references.

(3) Operator

Set to *ON* or *OFF*.

(4) Value

Do not set for digital references.

(5) Valid/Invalid

Set to *Valid* or *Invalid*. The default is *Valid*.

b) Register References**(1) Reference**

The reference being set as a condition.

(2) Type

Select the type from the pull-down list in the Type Box. Refer to the Type Area for information on the type settings. The Type Area is shown below.

[*]Type		
[UW] Unsigned Word Num.	{ 0	65535 }
[SF] Signed 4-Digit Num.	{ -9999	9999 }
[SW] Signed Word Num.	{ -32768	32767 }
[UE] Unsigned 8-Digit Num.	{ 0	99999999 }
[SE] Signed 8-Digit Num.	{ -99999999	99999999 }
[SD] Signed Double Word	{ -2147483648	2147483647 }
[UD] Unsigned Double	{ 0	4294967295 }



Only the following three types can be set for the highest value for a register reference number. UW (unsigned word), SF (signed four-digit), and SW (signed word).

(3) Operator

Select the operator from the pull-down list.

(4) Value

Input any required value.

(5) Valid/Invalid

Set to *Valid* or *Invalid*. The default is *Valid*.

19.2.5 Setting Trace Data

1) Set the references for which data is to be traced. The maximum number of references that can be set is as follows:

- **Digital References**

Up to 16 digital references can be set.

- **Register References**

Up to 4 register references can be set. If digital references are also set, then a maximum of 3 references can be made valid.

2) Set the trace data in the Digital Trace Data and Register Trace Data Areas. The Trace Data Areas are shown below.

Digital Trace Data		Register Trace Data	
Digital		Register	
Ref	Ref	Ref	Type
000018		400031	UW
000019		400032	UW
000020		400033	UW
000021			

a) Reference

Input the references for which data is to be traced.

b) Type

Select the type from the pull-down list in the Type Box. Refer to the Type Area for information on the type settings. The Type Area is shown below.

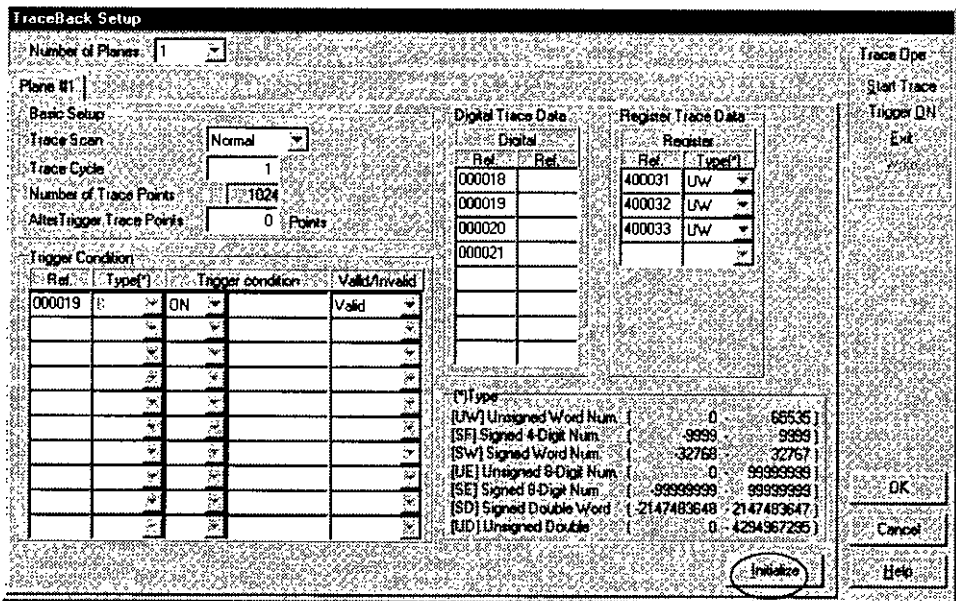
[*] Type		
[UW] Unsigned Word Num	{	0 - 65535 }
[SF] Signed 4-Digit Num	{	9999 - 9999 }
[SW] Signed Word Num	{	32768 - 32767 }
[UE] Unsigned 8-Digit Num	{	0 - 99999999 }
[SE] Signed 8-Digit Num	{	99999999 - 99999999 }
[SD] Signed Double Word	{	-2147483648 - 2147483647 }
[UD] Unsigned Double	{	0 - 4294967295 }

- Note**
- (1) Each point set for digital data is treated as 1 word.
 - (2) Each register is treated as 1 word. If 1-register data is set, up to 4 registers can be set. If 2-register data is set, only two pairs of registers can be set.

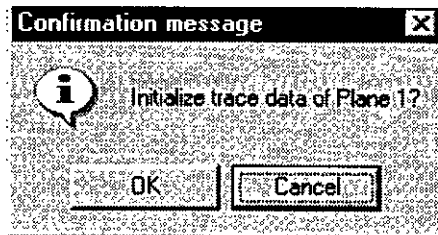
19.2.6 Initializing Settings

Use the following procedure to initialize the traceback settings in the current plane.

- 1) Click the **Initialize** Button in the Traceback Setup Dialog Box.



- 2) The following message will be displayed. Click the **OK** Button.



The settings in the plane will be initialized.

19.3 Trace Operations

This section describes the procedure to perform trace operations.

19.3.1	Outline	19-12
19.3.2	Starting a Trace	19-12
19.3.3	Creating Trace Data	19-13
19.3.4	Turning ON the Trigger	19-14
19.3.5	Writing Settings	19-15
19.3.6	Stopping a Trace	19-16

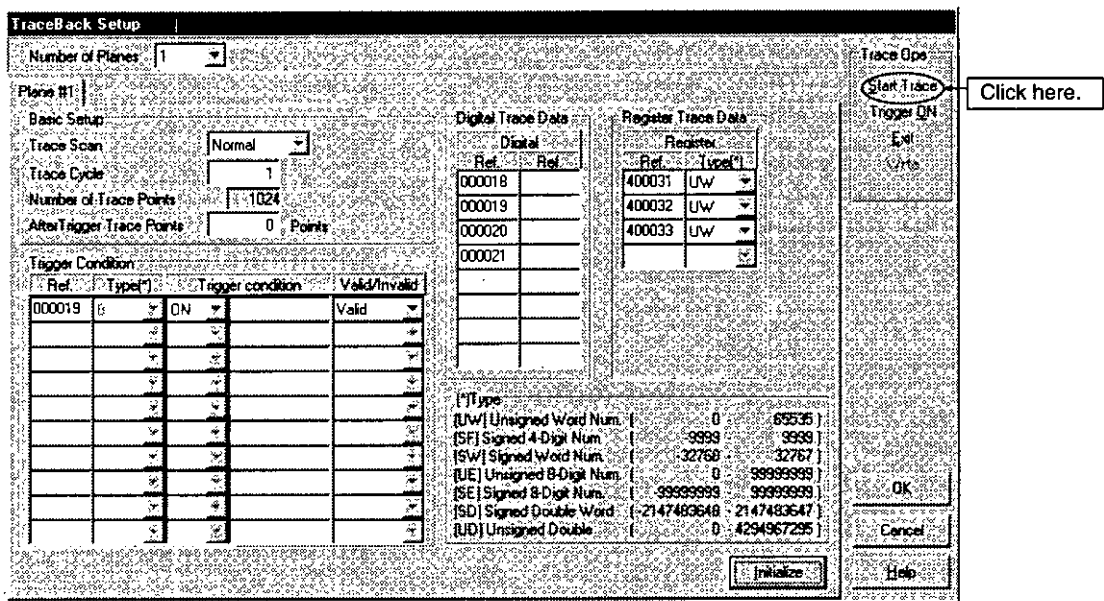
19.3.1 Outline

Trace operations can be performed only when the CPU is running and only in Online Mode.

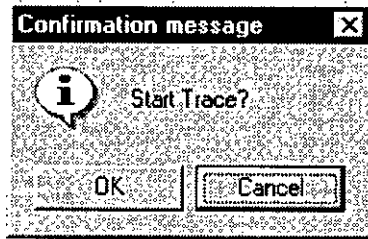
19.3.2 Starting a Trace

A trace can be started for the current plane. Use the following procedure to start a trace.

- 1) Click the **Start Trace** Button in the Trace Operation Area in the Traceback Setup Dialog Box.



- 2) The following message will be displayed. Click the **OK** Button.



The trace will start and the plane tab will indicate that the trace is being executed.

When the trace ends, the plane tab will return to its normal condition.

The trace data will be created in the CPU Module:

19.3.3 Creating Trace Data

- 1) Traced data will be stored in the CPU Module immediately after a trace. To access this data, an operation is required to create usable trace data. Trace data is handled differently depending on the operating mode, as described below.

- Offline Mode: Trace data cannot be created.
- Online Mode: Trace data is created but it will be lost when Online Mode is left.
- Debug Mode: Trace data is created and can later be used in Offline Mode.



- 1) A node like the one shown below will be displayed under the Traceback Node after traceback data is created. The name of the traceback data will by default consist of the time and date the data was created and the plane number.



- 2) Trace data can be created separately for each plane.

- 2) Use the following procedure to create

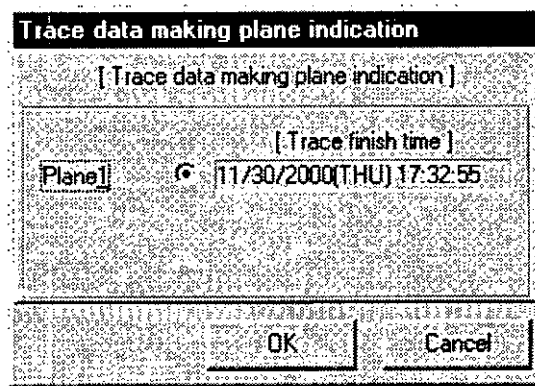
- a) Point at the Traceback Node, click the right mouse button, and select **New Trace Data** from the pop-up menu.



- b) New trace data will be created. Click the right mouse button and select **Open** or double-click the new Trace Data Node.



- c) A dialog box to specify the plane for which trace data is to be created will be displayed. Select the plan for which to create trace data and click the **OK** Button. The planes that are displayed will depend on the number of planes in the traceback settings.



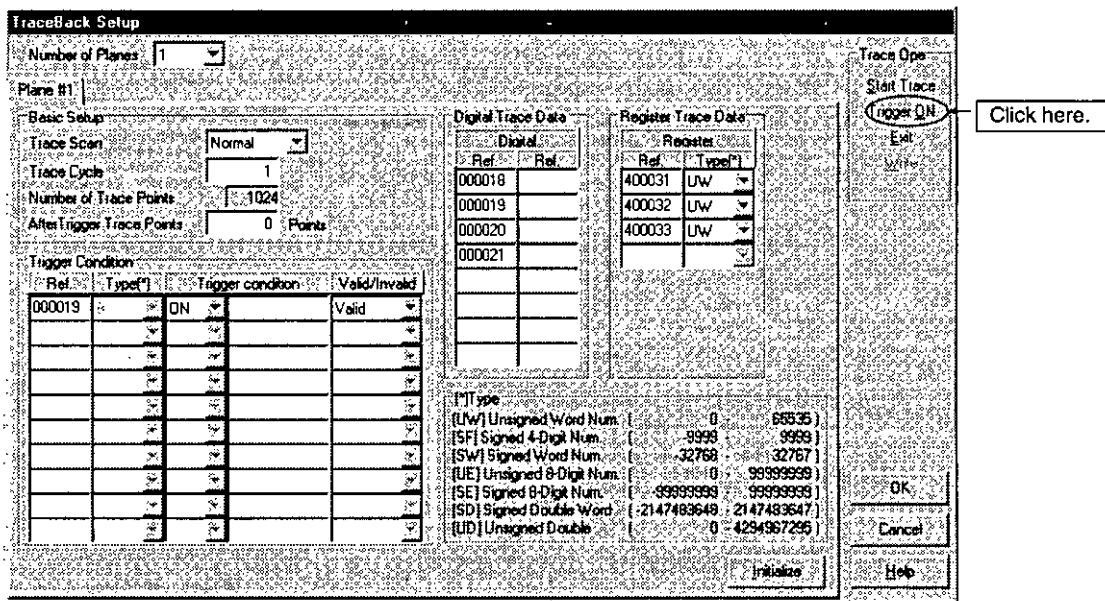
The trace data will be created.

19.3.4 Turning ON the Trigger

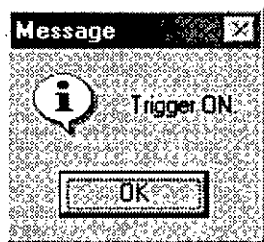
The trigger can be turned ON during a trace to manually set the trigger point. Use the following procedure to turn ON the trigger.

- 1) Start the trace. Refer to 19.3.2 Starting a Trace.

- 2) Click the **Trigger ON** Button in the Trace Operation Area in the Traceback Setup Dialog Box.



- 3) The following message will be displayed. Click the **OK** Button.

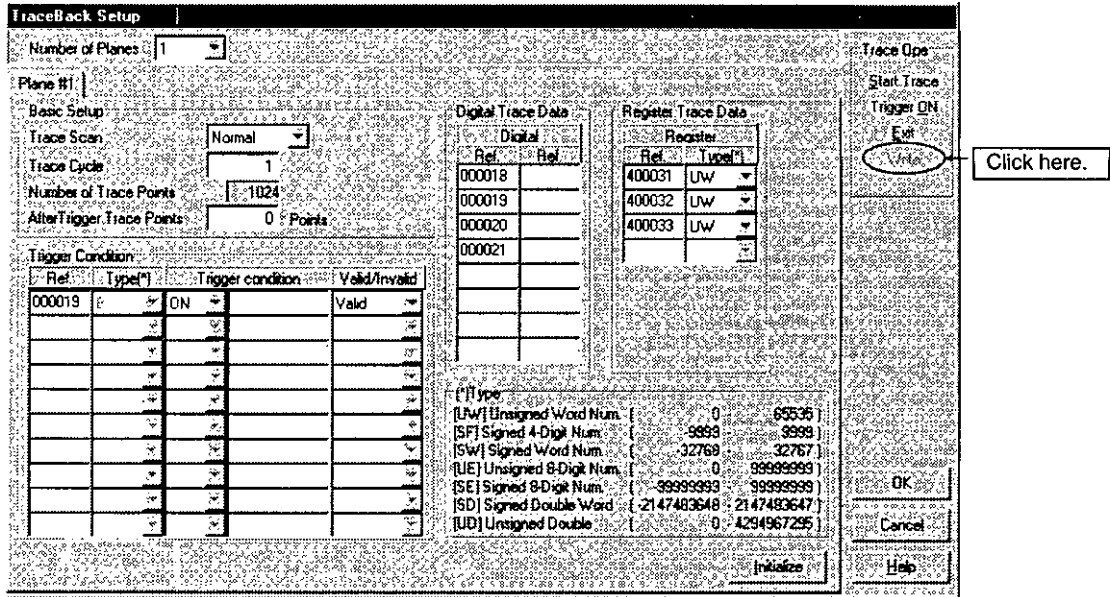


The trigger point will be set.

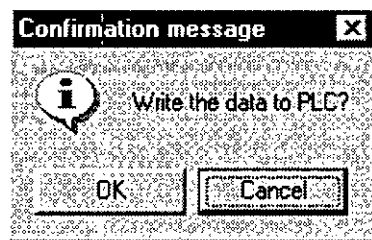
19.3.5 Writing Settings

The current traceback setting can be written to the PLC. Use the following procedure to write the settings.

1) Click the **Write** Button in the Trace Operation Area in the Traceback Setup Dialog Box.



2) The following message will be displayed. Click the **OK** Button.

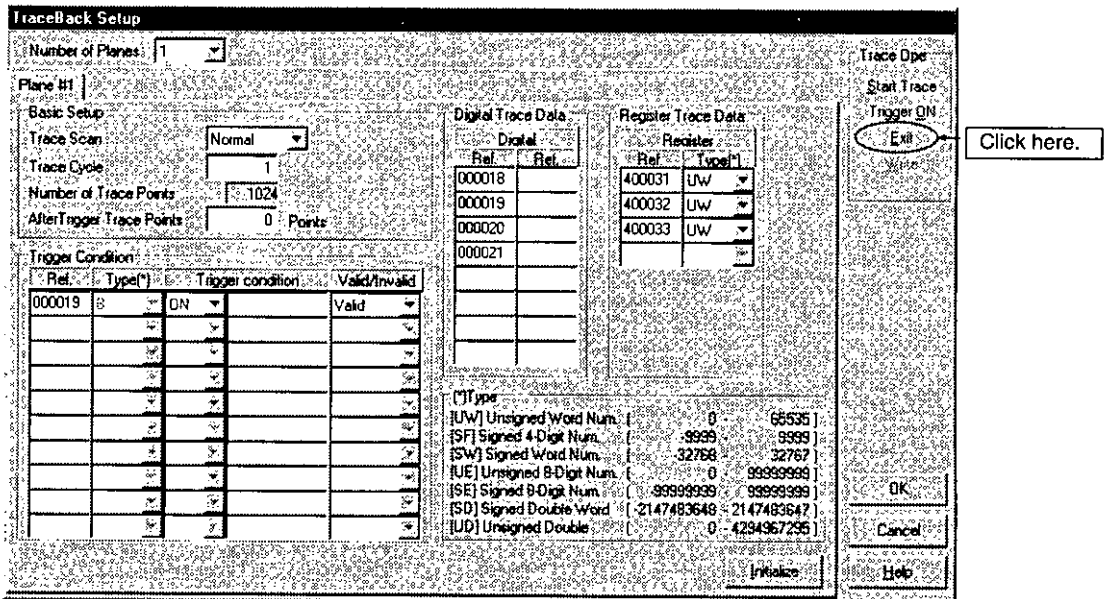


The settings will be written to the PLC.

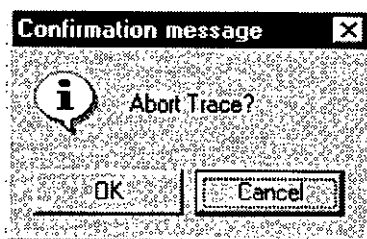
19.3.6 Stopping a Trace

A trace can be stopped during execution. Use the following procedure to stop a trace.

- 1) Click the **Exit** Button in the Trace Operation Area in the Traceback Setup Dialog Box.



- 2) The following message will be displayed. Click the **OK** Button.



The trace will be stopped.

19.4 Displaying a Graph of Trace Data

This section describes operations required to display trace data in graph form.

19.4.1	Outline	19-18
19.4.2	Opening the Graph Display Tab Page	19-18
19.4.3	Configuration of the Graph Display Tab Page	19-20
19.4.4	Changing the Displayed References	19-22
19.4.5	Printing Trace Data	19-23
19.4.6	Closing the Graph Display Tab Page	19-24

19.4.1 Outline

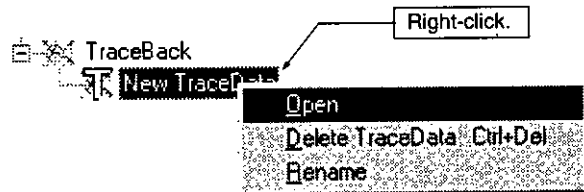
The data collected by the trace operation can be displayed in a broken-line graph to show changes in digital signals and register contents.

19

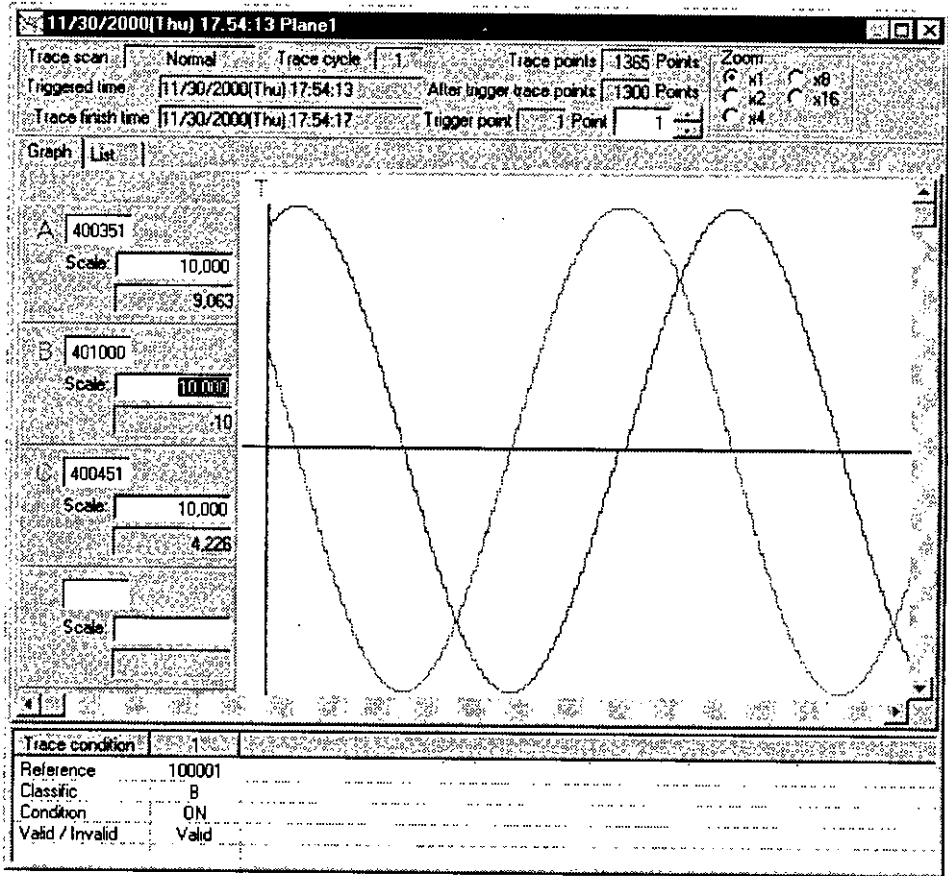
19.4.2 Opening the Graph Display Tab Page

Use the following procedure to open the Graph Display Tab Page.

Point at a Trace Data Node under the Traceback Node, click the right mouse button, and select **Open**.



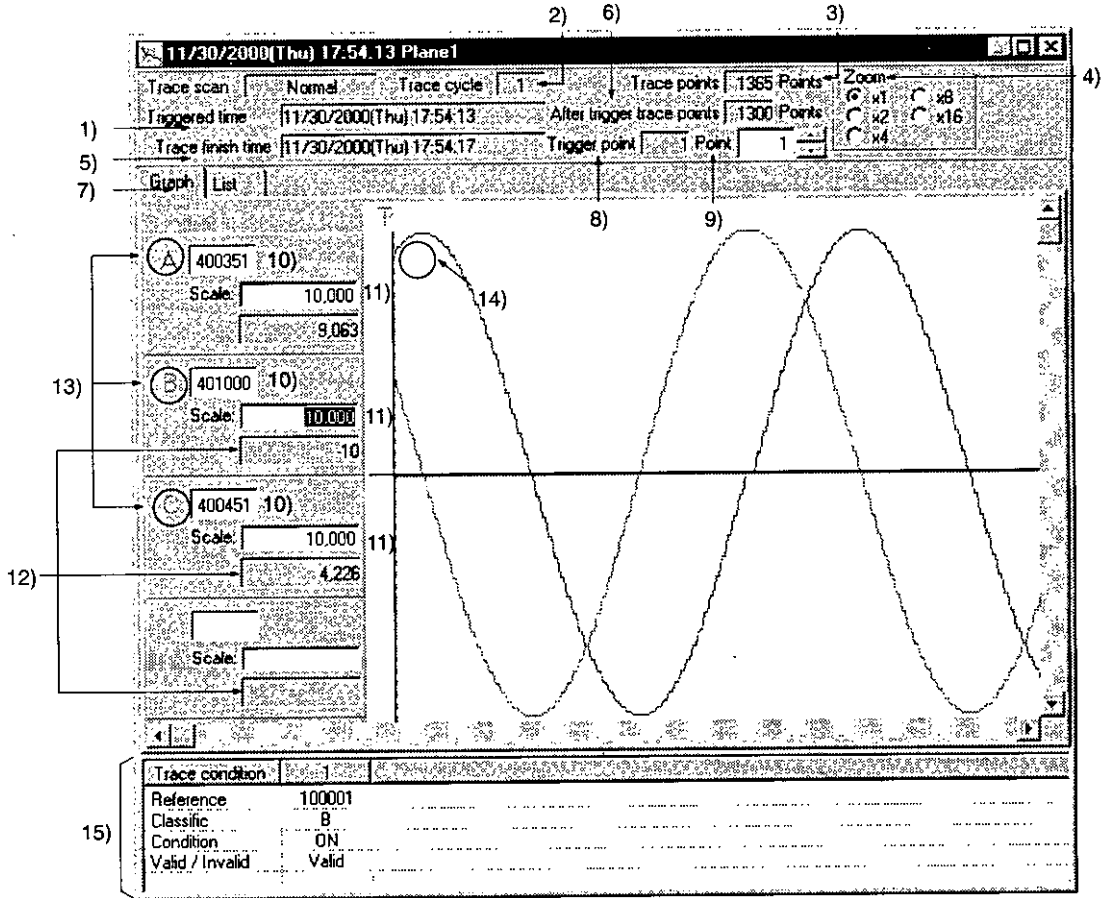
The Graph Display Tab Page will be displayed.



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19.4.3 Configuration of the Graph Display Tab Page

The configuration of the Graph Display Tab Page is shown below.



1) Trace Scan

Displays the scan type in which the trace was performed.

2) Trace Cycle

Displays the trace cycle set in the Basic Setup Area in the Traceback Dialog Box.

3) Number of Trace Points: Trace Point

Automatically set according to the number of planes.

4) Zoom

Sets the numbers of points displayed on the horizontal axis. The number of points displayed on each screen will be as follows:

- x1: 256 points
- x2: 128 points
- x4: 64 points
- x8: 32 points
- x16: 16 points

5) Trigger Time

Displays the time when the trigger condition was met.

6) After Trigger Trace Points

Displays the number of points traced after the trigger condition was met.

7) Trace Finish Time

Displays the time the trace ended.

8) Trace Trigger Point

Display the point where the trigger condition was met.

9) Point

Displays the point with the P line.

10) References

Display the reference numbers displayed in the graph.

11) Scale

The scale at which the trace data graph is drawn for a scale value of 100%.

12) Value

Displays the value of the trace data at the P line.

13) Trend Graph Guides

Display A to D for the reference numbers in the corresponding graph lines.

14) P Line

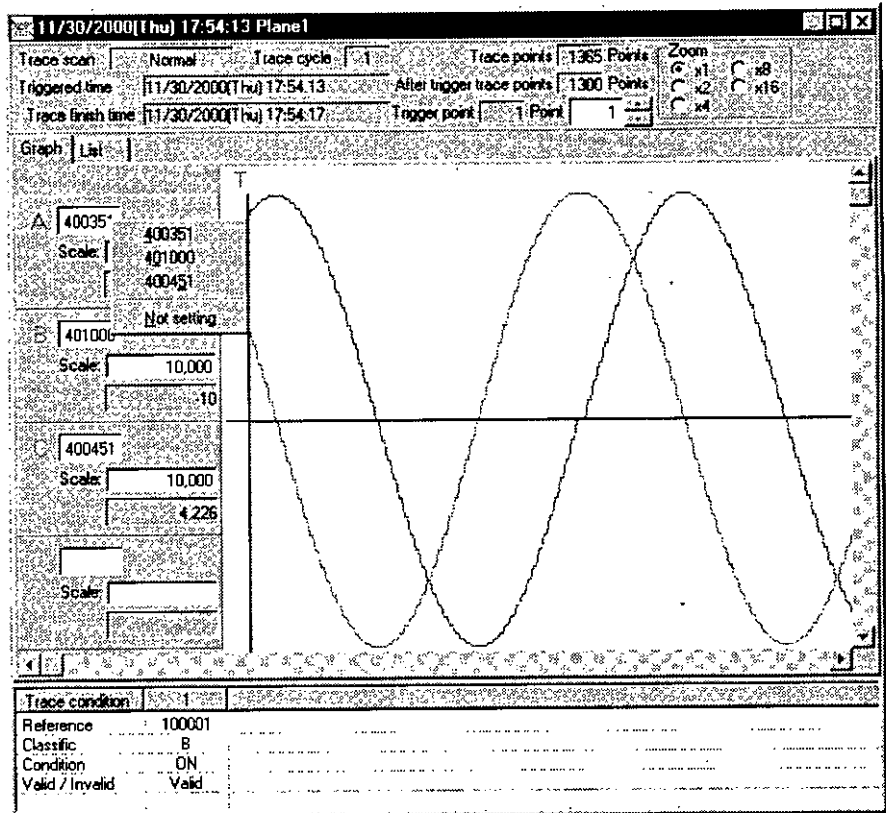
Indicates the point displayed for trace data for each reference number.

15) Trace Condition

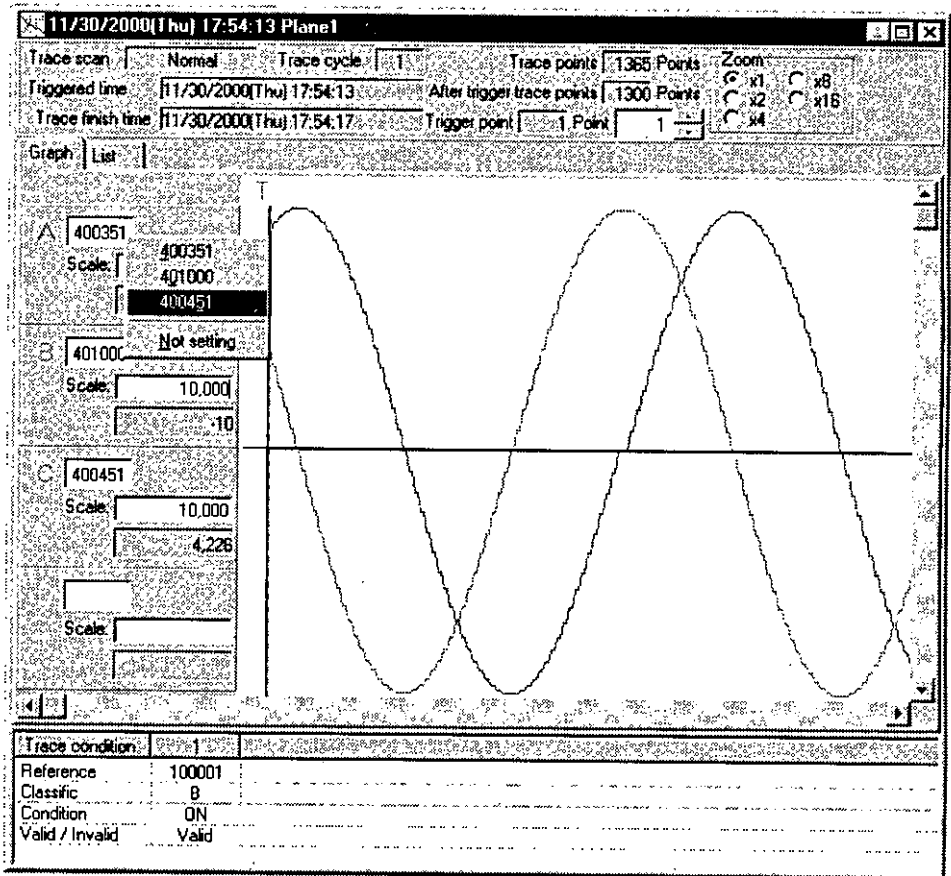
Displays the trace condition.

19.4.4 Changing the Displayed References

- 1) The reference numbers displayed in the trace data graph can be changed. A reference number can be changed to any reference number set in the Traceback Setup Dialog Box.
- 2) Use the following procedure to change a displayed reference number.
 - a) Point at the reference number to be changed in the Graph Display Tab Page and click the right mouse button.



- b) Select the reference number to be displayed.

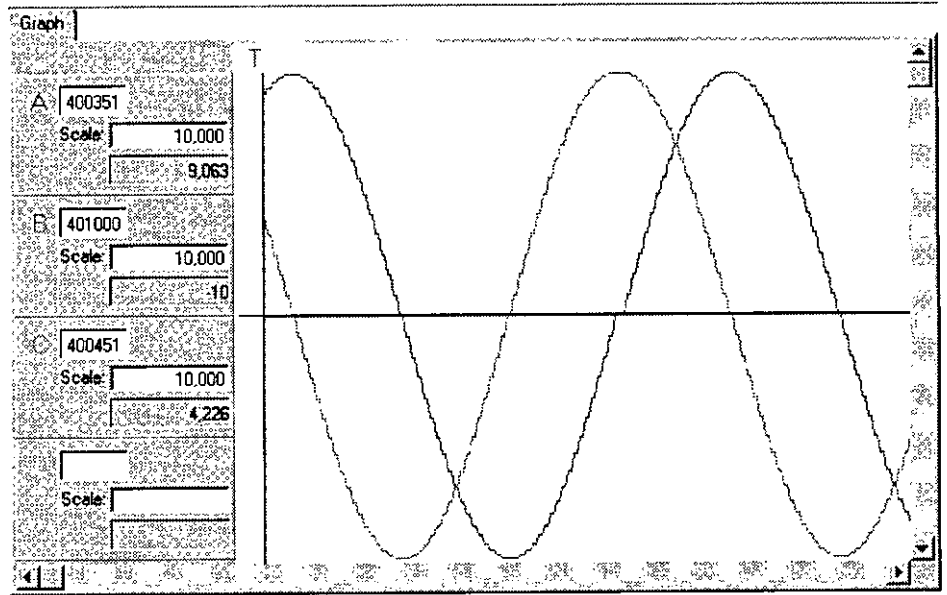


The trace data for the selected reference number will be displayed.

19.4.5 Printing Trace Data

Use the following procedure to print trace data.

Click the right mouse button in the Graph Display Tab Page away from the Trace Conditions Display Area and select **Print**.



19

The trace data will be printed.



The trace data will be printed just as it is displayed on the screen. The data to be printed can thus be changed by adjusting the display size.

19.4.6 Closing the Graph Display Tab Page

Click the **Close** Button in upper right corner of the window to close the Graph Display Tab Page.



19.5 Displaying a List of Trace Data

■ This section describes operations required to display trace data in list form.

19.5.1	Outline	19-25
19.5.2	Opening the List Display Tab Page	19-25
19.5.3	Configuration of the List Display Tab Page	19-28
19.5.4	Closing the List Display Tab Page	19-30

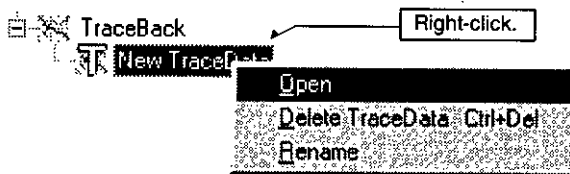
19.5.1 Outline

The data collected by the trace operation can be displayed in list to shown changes in digital signals and register contents numerically.

19.5.2 Opening the List Display Tab Page

Use the following procedure to open the List Display Tab Page.

- 1) Point at a Trace Data Node under the Traceback Node, click the right mouse button, and select **Open**.



2) The Graph Display Tab Page will be displayed. Click the **List** Tab.

Click here.

The screenshot shows a software window titled "11/30/2000(Thu) 17:54:13 Plane1". The interface includes a top control bar with settings for "Trace scan" (Normal), "Trace cycle" (1), "Trace points" (1365 Points), and "Zoom" (x1, x8, x16, x4). Below this, it shows "Triggered time" (11/30/2000(Thu) 17:54:13), "After trigger trace points" (1300 Points), "Trace finish time" (11/30/2000(Thu) 17:54:17), and "Trigger point" (1 Point). A "Graph" tab is active, with a sub-tab "List" circled. The main area contains a list of traces and a waveform plot. The list includes:

- A: 400351, Scale: 10,000, Value: 9.063
- B: 401000, Scale: 10,000, Value: -10
- C: 400451, Scale: 10,000, Value: 4.226

The waveform plot shows three overlapping sinusoidal waves. At the bottom, a "Trace condition" table is visible:

Trace condition	100001
Reference	B
Classic	ON
Condition	Valid

19

The List Display Tab Page will be displayed.

11/30/2000(Thu) 17:54:13 Plane1

Trace scan: Normal Trace cycle: 1 Trace points: 1365 Points Zoom: x1 x8
 Triggered time: 11/30/2000(Thu) 17:54:13 After trigger trace points: 1300 Points x2 x16
 Trace finish time: 11/30/2000(Thu) 17:54:17 Trigger point: 1 Point 14 x4

Graph: List

Point	400351	401000	400451
0001	9,063	-10	4,226
0002	9,396	-9	3,420
0003	9,396	-8	3,420
0004	9,659	-7	2,588
0005	9,659	-6	2,588
0006	9,848	-5	1,736
0007	9,848	-4	1,736
0008	9,961	-3	871
0009	9,961	-2	871
0010	9,999	-1	0
0011	9,999	0	0
0012	9,961	1	-871
0013	9,961	2	-871
0014	9,848	3	-1,736
0015	9,848	4	-1,736
0016	9,659	5	-2,588
0017	9,659	6	-2,588
0018	9,396	7	-3,420
0019	9,396	8	-3,420
0020	9,063	9	-4,226

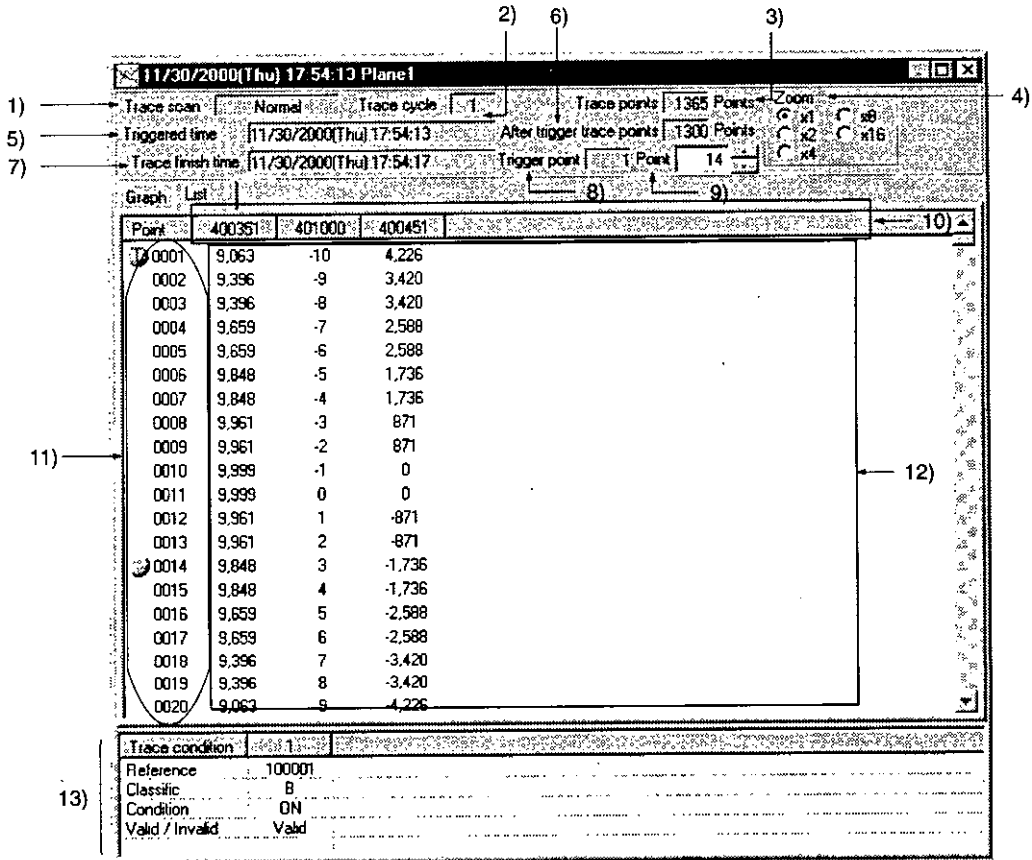
Trace condition: 1

Reference: 100001
 Classific: B
 Condition: ON
 Valid / Invalid: Valid

19

19.5.3 Configuration of the List Display Tab Page

The configuration of the List Display Tab Page is shown below.



1) Trace Scan

Displays the scan type in which the trace was performed.

2) Trace Cycle

Displays the trace cycle set in the Basic Setup Area in the Traceback Dialog Box.

3) Number of Trace Points: Trace Point

Automatically set according to the number of planes.

4) Zoom

Sets the numbers of points displayed on the horizontal axis. The number of points displayed on each screen will be as follows:

- x1: 256 points

- x2: 128 points
- x4: 64 points
- x8: 32 points
- x16: 16 points

5) Triggered Time

Displays the time when the trigger condition was met.

6) After Trigger Trace Points

Displays the number of points traced after the trigger condition was met.

7) Trace Finish Time

Displays the time the trace ended.

8) Trigger Point

Display the point where the trigger condition was met.

9) Point

Displays the point specified in the trace data. A "P" is displayed on the screen as well.

10) References

Display the reference numbers displayed in the list.

11) Points

Displays the value of the trace data at the P line.

12) Trace Data

Displays the trace data for each reference corresponding to a point.

13) Trace Condition

Displays the trace condition.

19.5.4 Closing the List Display Tab Page

Click the **Close** Button in upper right corner of the window to close the List Display Tab Page.



19.6 Managing Trace Data

This section describes how to change the name of or delete trace data.

19.6.1 Trace Data	19-31
19.6.2 Deleting Trace Data	19-31
19.6.3 Changing Trace Data Names	19-31

19.6.1 Trace Data

Trace data nodes, such as the one shown below, are created when traces are performed. The name of the trace data is given in the following form.



- 1) The data the trace data was created.
- 2) The time the trace data was created.
- 3) The number of the planes specified in the Traceback Dialog Box.

19.6.2 Deleting Trace Data

To delete trace data, point at the Trace Data Node, click the right mouse button, and select **Delete Trace Data**.



19.6.3 Changing Trace Data Names

To delete trace data, point at the Trace Data Node, click the right mouse button, and select **Rename**.



This chapter describes operations required to setup and print the contents of MEMOSOFT programs. Printing samples are also provided.

20.1	Printing Functions	20-2
20.1.1	Outline	20-2
20.1.2	Items that Can Be Printed	20-2
20.2	Setting Up Printing	20-4
20.2.1	Outline	20-4
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20.1 Printing Functions

This section outlines the printing function provided by the Windows version of MEMOSOFT.

20.1.1 Outline	20-2
20.1.2 Items that Can Be Printed	20-2

20.1.1 Outline

Required items can be printed out when a project file is selected. Items not set in the project file (e.g., MC20) will not be displayed on the setting tabs. With the Windows version of MEMOSOFT, consecutive network numbers are meaningless across different segments. Both the segment number and the network number within the segment are printed for all network numbers.

20.1.2 Items that Can Be Printed

The following items can be printed.

1) System Configuration

- PLC setup
- I/O allocations
- Link allocations
- ASCII allocations
- Ethernet allocations
- Segment Scheduler contents
- Port parameters
- Segment lists

2) Ladder Programs

- Ladder programs
- Network lists

20

3) Motion Modules

a) MC20

- Parameters
- Point tables
- Motion programs

b) MC15

- Parameters
- Point tables

c) MC10

- Parameters

4) References

- Reference data
- Reference usage tables
- Disable lists
- Cross-reference lists



Refer to *19.4.5 Printing Trace Data* to print trace data.

20.2 Setting Up Printing

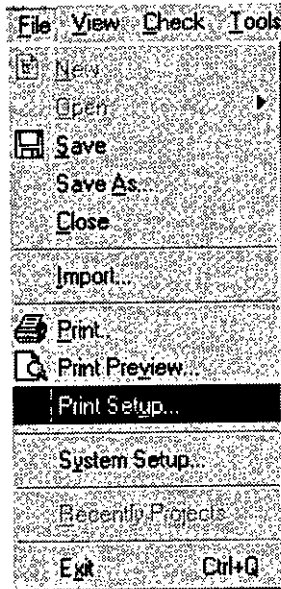
■ This section describes the Print Dialog Box.

20.2.1	Outline	20-4
20.2.2	Basic Setup	20-5
20.2.3	System Configuration	20-7
20.2.4	Ladder Programs	20-8
20.2.5	Networks	20-10
20.2.6	MC 20 Module	20-11
20.2.7	MC15 Module	20-13
20.2.8	MC10 Module	20-14
20.2.9	References	20-16

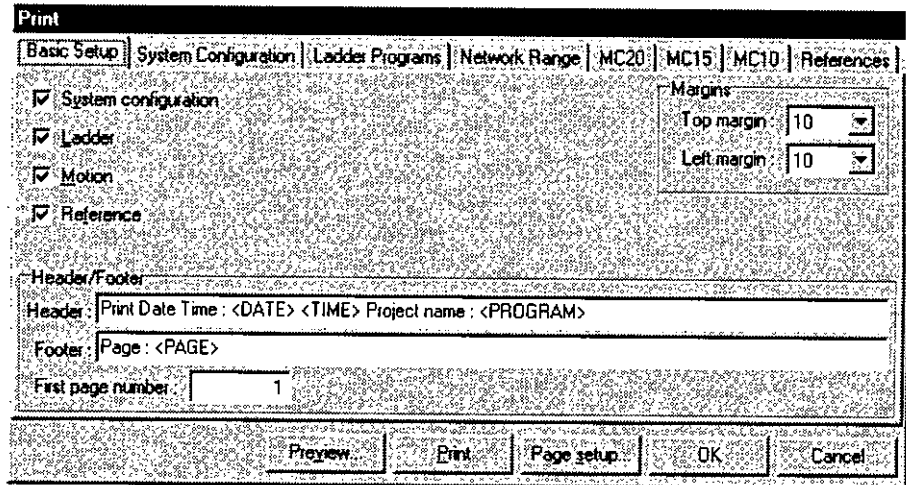
20.2.1 Outline

- 1) The Print Dialog Box is used to set the data to be printed from a project.
- 2) Use the following procedure to open the Print Dialog Box.

Select **File – Print Setup** from the menu bar.

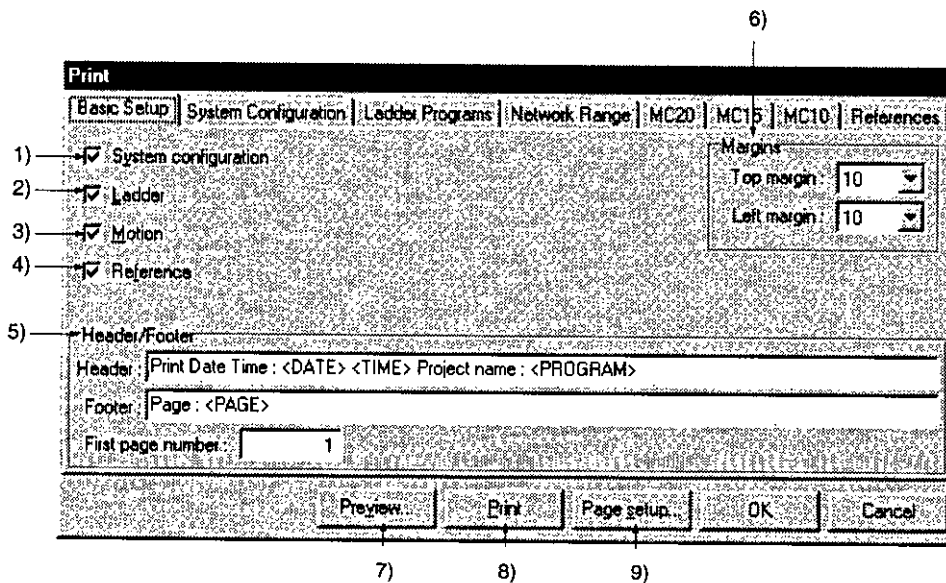


The Print Dialog Box will be displayed.



20.2.2 Basic Setup

The configuration of the Basic Setup Tab Page is shown below.



1) System Configuration

System configuration information will be printed if *System Configuration* is selected. The System Configuration Tab will not be displayed unless *System Configuration* is selected. More detailed settings can be performed on the System Configuration Tab Page. *System Configuration* is selected by default. Refer to [20.2.3 System Configuration](#) for details.

2) Ladder

Ladder program information will be printed if *Ladder Program* is selected. The Ladder Program Tab and the Networks Tab will not be displayed unless *Ladder Program* is se-

lected. More detailed settings can be performed on the Ladder Program and Networks Tab Pages. *Ladder Program* is selected by default. Refer to 20.2.4 *Ladder Program* and 20.2.5 *Networks* for details.

3) Motion

Motion Module information will be printed if *Motion Modules* is selected. The MC20, MC15, and MC10 Tabs will not be displayed unless *Motion Modules* is selected. More detailed settings can be performed on the MC20, MC15, and MC10 Tab Pages. *Motion Modules* is selected by default. Refer to 20.2.6 *MC20 Module*, 20.2.7 *MC15 Module*, and 20.2.8 *MC10 Module* for details.

4) Reference

Information on references will be printed if *References* is selected. The References Tab will not be displayed unless *References* is selected. More detailed settings can be performed on the References Tab Page. *References* is selected by default. Refer to 20.2.9 *References* for details.

5) Header and Footer

Set the information to be printed as the header and footer. By default, the header will contain the printing data and project name and the footer will contain the page number (starting from 1).

6) Margins

Set the top and left margins in millimeters. The defaults are both 10 mm.

7) Preview Button

Displays a preview of the printed pages.

8) Print Button

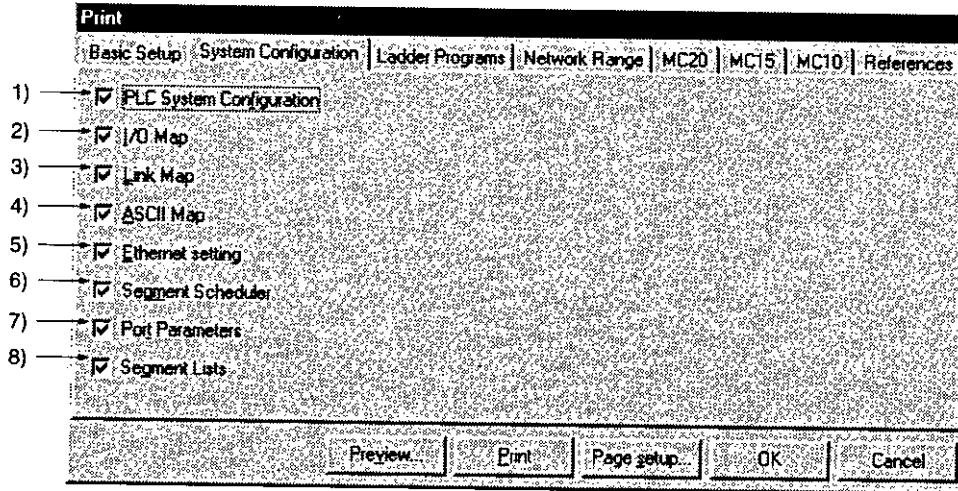
Executes the print.

9) Page Setup Button

Used to set the printer, paper size, and paper orientation.

20.2.3 System Configuration

The configuration of the System Configuration Tab Page is shown below.



1) PLC System Configuration

Select to print information on the PLC system configuration. This item is printed by default.

2) I/O Map

Select to print information on the I/O allocations. This item is printed by default.

3) Link Map

Select to print information on the PC Link allocations. This item is printed by default.

4) ASCII Map

Select to print information on the ASCII allocations. This item is printed by default.

5) Ethernet Settings

Select to print information on the Ethernet allocations. This item is printed by default.

6) Segment Scheduler

Select to print information from the Segment Scheduler. This item is printed by default.

7) Port Parameters

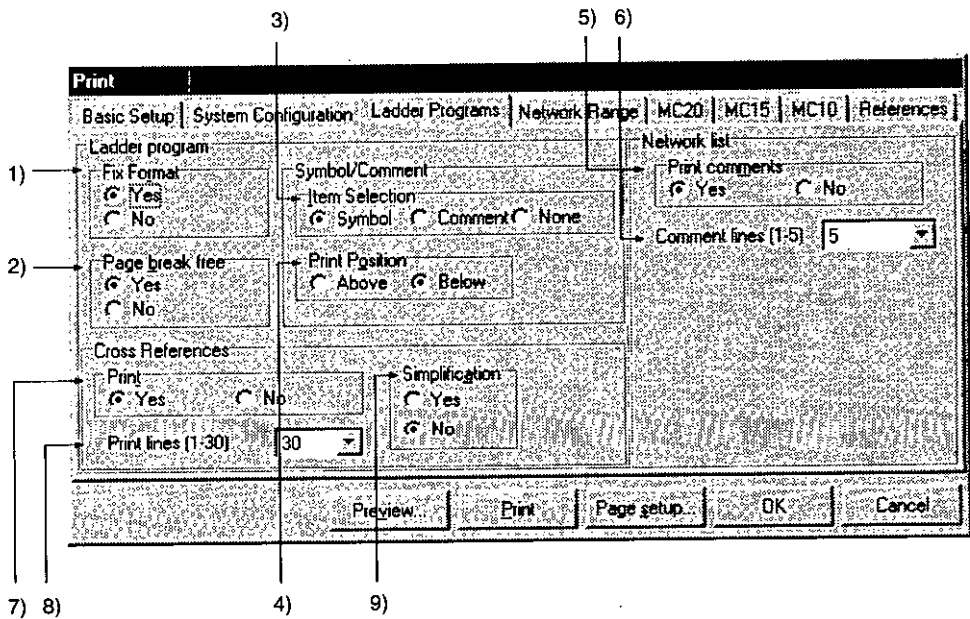
Select to print information on the port parameters. This item is printed by default.

8) Segment Lists

Select to print information on the segment list. This item is printed by default.

20.2.4 Ladder Programs

The configuration of the Ladder Program Tab Page is shown below.



1) Fix Format

Sets whether fixed lines are to be used to print the ladder diagram. If the format is fixed, the maximum size will be used for printing even if there are no elements. If the format is not fixed, lines without elements will not be printed. The default is to fix the format.

2) Page Break Free

Sets whether to allow page breaks within a network. If page breaks are allowed, one network may be printed on different pages. If page breaks are not allowed, the network will be printed on a new page so that no network will be printed on more than one page. The default is to allow page breaks.

3) Symbol/Comment Item Selection

Sets whether to print symbols and comments for reference numbers used as elements. Symbols or comments will be printed if they are selected. Otherwise, they will not be printed. The default is to print symbols.

4) Symbol/Comment Print Selection

Sets where to print symbols and comments if they are selected: Above the element or below. The default is to print them below the element.

5) Network List, Print Comments

Sets whether or not to print a network list. The default is to print the network list.

6) Network List, Comment Lines

Sets the maximum number of lines to print for a network comment. The setting range is from 1 to 5 lines and the default is 5 lines.

7) Cross Reference Print Selection

Sets whether or not to print cross-references with ladder programs. If printing is selected, information on the position of any network using a coil will be printed next to the coil. The default is to print cross-references.

8) Cross Reference Print Lines

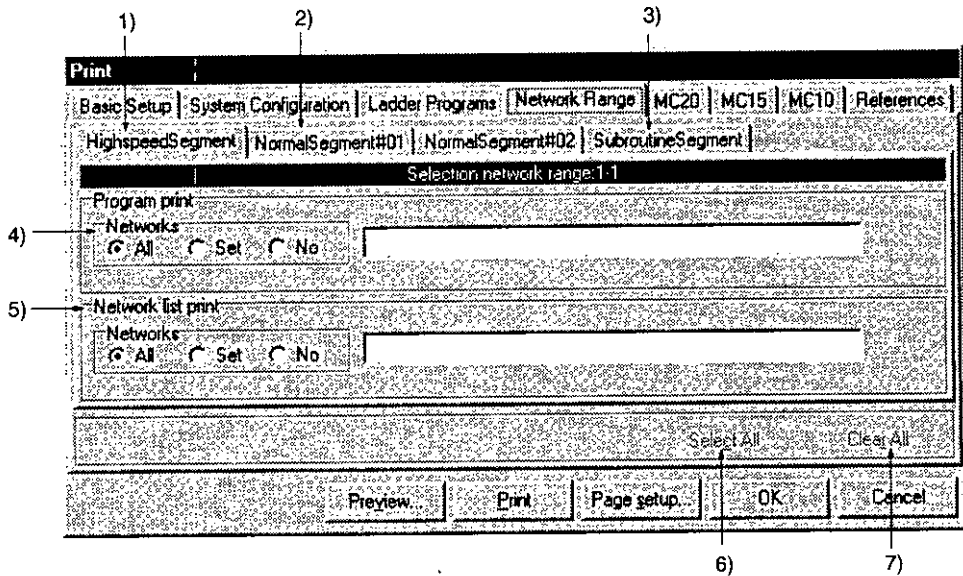
Sets the maximum number of lines to print for a cross-references. The setting range is from 1 to 30 lines and the default is 30 lines. The actual number of lines printed, however, will depend on the settings for fixing the format, the paper size, and the margins.

9) Cross Reference Simplification

Sets handling of coil reference numbers when more than one of the same coil reference number appears in the same network. If simplification is selected, the network number will be printed only once. If it is not selected, the network number will be printed the number of times it is used. The default is to not simplify cross-references.

20.2.5 Networks

The configuration of the Networks Tab Page is shown below.



1) High-speed Segment

Sets network specifications for the high-speed segment. The network title will be displayed on the tab.

2) Normal Segment

Sets network specifications for a normal segment. There will be a tab for each normal network displayed in the Project Manager. The network title will be displayed on the tab.

3) Subroutine Segment

Sets network specifications for the subroutine segment. The network title will be displayed on the tab.

4) Program Print (Same for All Segments)

Sets the range of networks to print for the program. All networks, specified networks, or no networks can be specified for printing.

5) Network List Print (Same for All Segments)

Sets the range to print for the network list. All networks, specified networks, or no networks can be specified for printing.

6) Select All Button

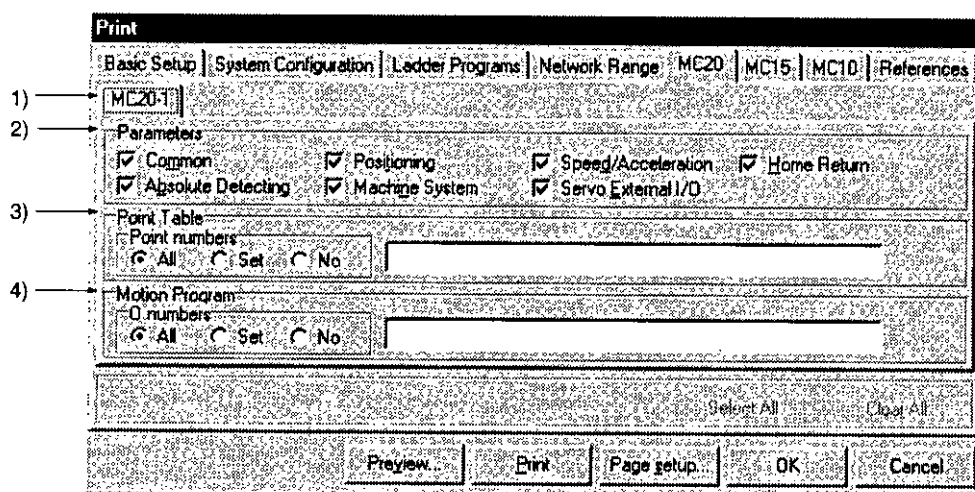
Sets all items on the tab to be printed.

7) Clear All Button

Sets all items on the tab not to be printed.

20.2.6 MC 20 Module

The configuration of the MC20 Tab Page is shown below.

**1) Channel Tabs**

Select the MC20 channels. A tab will be displayed for each channel that is being used.

2) Parameters

The following parameters can be set for printing.

• Common

Select to print the common parameters. These parameters are printed by default.

• Positioning

Select to print the positioning parameters. These parameters are printed by default.

• Speed/Acceleration

Select to print the speed/acceleration parameters. These parameters are printed by default.

• **Home Return**

Select to print the home return parameters. These parameters are printed by default.

• **Absolute Detecting**

Select to print the absolute detection parameters. These parameters are printed by default.

• **Machine System**

Select to print the machine system parameters. These parameters are printed by default.

• **Servo External I/O**

Select to print the servo external I/O parameters. These parameters are printed by default.

3) Point Table

All, setup point numbers, or no point numbers can be specified for printing. The setting range for specified point numbers is 1 to 500.



Setting Point Numbers

Use the following inputs to specify point numbers.

- 100, 300, 500: The point numbers given in the list will be specified.
- 1-100: All point numbers in the range will be specified.
- 1, 10-20, 500: Point numbers 1, 10 to 20, and 500 will be specified.

4) Motion Program

All, setup O numbers, or no O numbers can be specified for printing. The setting range for specified O numbers is 1 to 99.



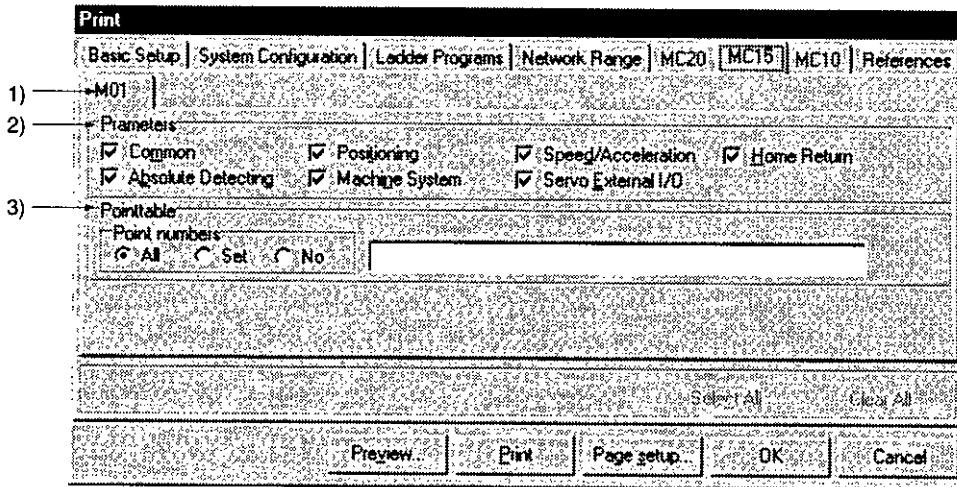
Setting O Numbers

Use the following inputs to specify O numbers.

- 1, 3, 5: The O numbers given in the list will be specified.
- 1-10: All O numbers in the range will be specified.
- 1, 10-20, 99: O numbers 1, 10 to 20, and 99 will be specified.

20.2.7 MC15 Module

The configuration of the MC15 Tab Page is shown below.



1) Module Number Tabs

Select the Module numbers. A tab will be displayed for each Module that is being used.

2) Parameters

The following parameters can be set for printing.

- **Common**

Select to print the common parameters. These parameters are printed by default.

- **Positioning**

Select to print the positioning parameters. These parameters are printed by default.

- **Speed/Acceleration**

Select to print the speed/acceleration parameters. These parameters are printed by default.

- **Home Return**

Select to print the home return parameters. These parameters are printed by default.

- **Absolute Detecting**

Select to print the absolute detection parameters. These parameters are printed by default.

• Machine System

Select to print the machine system parameters. These parameters are printed by default.

• Servo External I/O

Select to print the servo external I/O parameters. These parameters are printed by default.

3) Point Table

All, setup point numbers, or no point numbers can be specified for printing. The setting range for specified point numbers is 1 to 4,000.



Setting Point Numbers

Use the following inputs to specify point numbers.

100, 300, 1000: The point numbers given in the list will be specified.

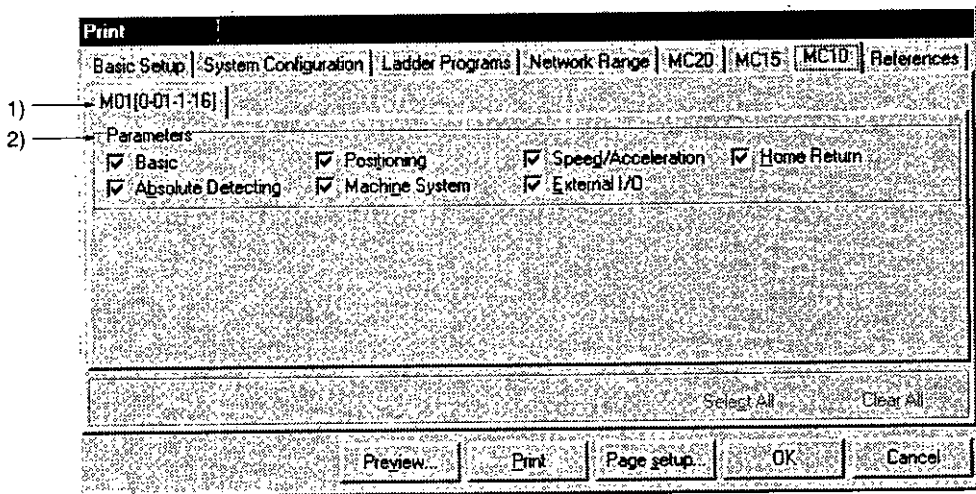
1-1000: All point numbers in the range will be specified.

1, 10-20, 4000: Point numbers 1, 10 to 20, and 4,000 will be specified.

20

20.2.8 MC10 Module

The configuration of the MC10 Tab Page is shown below.



1) Allocation Tabs

Select the allocated location of the MC10 Module. A tab will be displayed for each Module that is allocated.

2) Parameters

The following parameters can be set for printing.

- **Basic**

Select to print the basic parameters. These parameters are printed by default.

- **Positioning**

Select to print the positioning parameters. These parameters are printed by default.

- **Speed/Acceleration**

Select to print the speed/acceleration parameters. These parameters are printed by default.

- **Home Return**

Select to print the home return parameters. These parameters are printed by default.

- **Absolute Detecting**

Select to print the absolute detection parameters. These parameters are printed by default.

- **Machine System**

Select to print the machine system parameters. These parameters are printed by default.

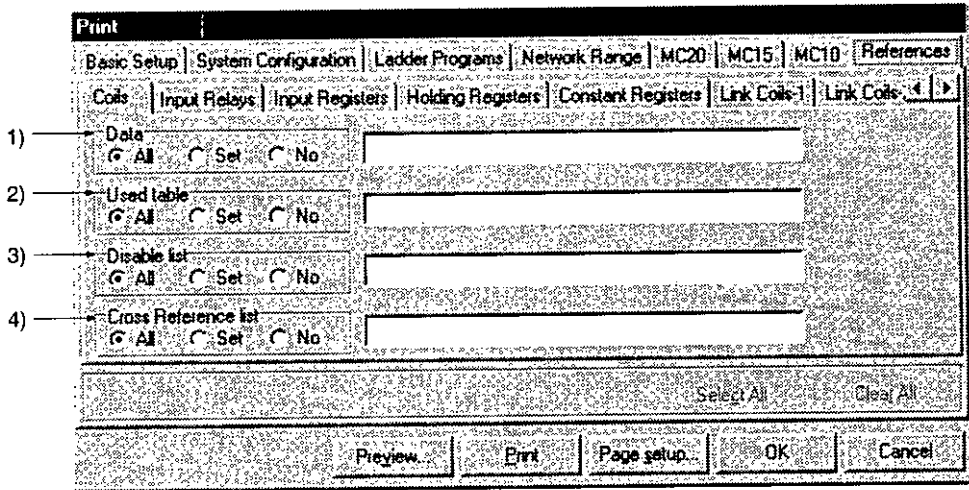
- **External I/O**

Select to print the external I/O parameters. These parameters are printed by default.

Note With the DOS version of MEMOSOFT, MC10 Modules are saved by Module number. With the Windows version of MEMOSOFT, however, the slot where the MC10 Module is mounted must be specified. Always check the Module numbers and slot locations of all MC10 Modules in files converted from the DOS version of MEMOSOFT whenever there is more than one MC10 Module.

20.2.9 References

The configuration of the References Tab Page is shown below.



1) Data

Sets the range of references to print. All references, specified references, or no reference can be specified for printing. For specified references, set the types and ranges of references to print. The following references can be printed.

- Coils
- Input relays
- Input registers
- Holding registers
- Constant registers
- Expansion registers
- MC coils
- MC control coils
- MC relays
- MC control relays
- M code relays
- Link coils
- Link registers

2) Reference Usage Table: Used Table

Sets the range of references to print in reference usage tables. All references, specified references, or no reference can be specified for printing. For specified references, set the types and ranges of references to print. The following references can be printed in reference usage tables.

- Coils
- Input relays
- Input registers
- Holding registers
- Constant registers
- Expansion registers
- MC coils
- MC control coils
- MC relays
- MC control relays
- M code relays
- Link coils
- Link registers

3) Disable List

Sets the range of references to print in disable lists. All references, specified references, or no reference can be specified for printing. For specified references, set the types and ranges of references to print. The following references can be printed in disable lists.

- Coils
- Input relays
- MC coils
- MC control coils
- MC relays
- MC control relays
- M code relays
- Link coils

4) Cross Reference List

Sets the range of references to print in cross-reference lists. All references, specified references, or no reference can be specified for printing. For specified references, set the types and ranges of references to print. The following references can be printed in cross-reference lists.

- Coils
- Input relays
- Input registers
- Holding registers
- Constant registers
- Expansion registers
- MC coils
- MC control coils
- MC relays
- MC control relays
- M code relays
- Link coils
- Link registers

IMPORTANT

Printing Formats



Cross-reference Lists

Cross-reference lists provide the reference symbol, reference comment, network numbers in which the reference is used, I/O allocations, and other information in list form. The following items are printed in cross-reference lists.

Symbols/Comments

All symbols and comments set for the references are printed.

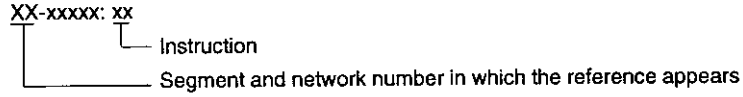
- Symbols: 32 characters maximum
- Comments: 255 characters maximum

Reference Usage

The following four types of information on reference usage are printed.

- Segments and network numbers where the references are used
- Ladder instructions in which the references are used
- System register name
- Locations where I/O is allocated (channel, station, rack, and slot numbers)

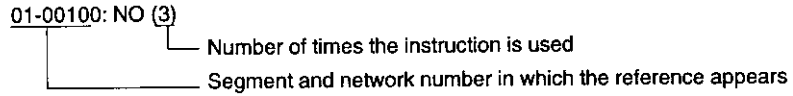
1) Network numbers and instructions are printed in the following form.



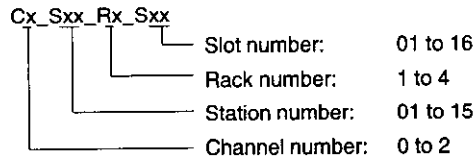
- The following abbreviations are used for instructions.
 NO: NO contact PT: Positive transition contact CO: Coil
 NC: NC contact NT: Negative transition contact CL: Latch coil

- Other instructions are printed using their mnemonics.
- If the same instruction is used more than once in the same network, the number of times it is used will be provided after the instruction name.

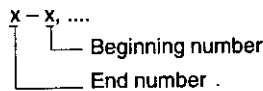
Example



2) References for which I/O has been allocated will be printed as shown below to indicate the location of the allocation.



Ranges are specified for printing in the following form.



An example of specifying printing ranges for coils is shown below.

Coils	Input Relays	Input Registers	Holding Registers	Constant Registers	Link Coils-1	Link Coils-2
Data	<input type="radio"/> All <input checked="" type="radio"/> Set <input type="radio"/> No	1-100				
Used table	<input type="radio"/> All <input checked="" type="radio"/> Set <input type="radio"/> No	100-200				
Disable list	<input type="radio"/> All <input checked="" type="radio"/> Set <input type="radio"/> No	1,2,3				
Cross Reference list	<input type="radio"/> All <input checked="" type="radio"/> Set <input type="radio"/> No	1000-2000,3000-4000				

20.3 Printing

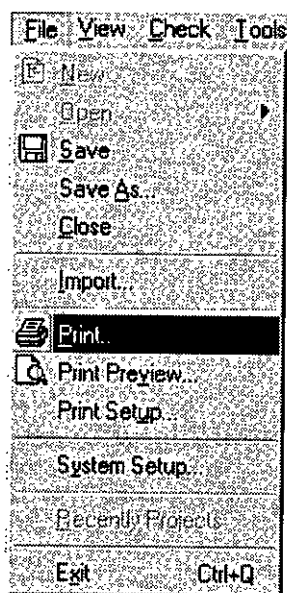
■ This section shows how to start printing and provides samples of printouts.

20.3.1 Printing	20-19
20.3.2 Printing Samples	20-19

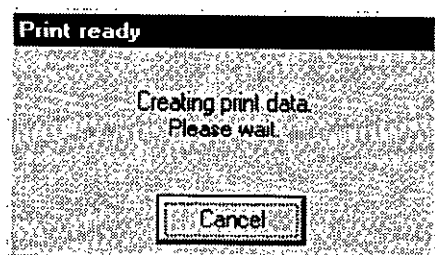
20.3.1 Printing

Use the following procedure to print.

Select **File (F) – Print (P)** from the menu bar.



The Printing Preparations Dialog Box will be displayed and printing will start.



20.3.2 Printing Samples

1) System Configuration

The following items will be printed if *System Configuration* is selected from the Print Dialog Box.

- PLC System Configuration
- I/O Map
- Link Map
- ASCII Map
- Ethernet Settings
- Segment Scheduler
- Port Parameters
- Segment List

a) PLC System Configuration

A sample PLC system configuration printout is shown below.

PLC System Configuration					
PLC :				System Register :	
PLC Type	GL120 CPU20	MC Coil -1	Y1- ---	Battery Coil	008192
User Logic	32 K	MC Coil -2	Y2- ---	Constant Sweep	409998 -
State RAM	32 K	MC Control Coil -1	Q1- ---		409999
Normal Segment	30	MC Control Coil -2	Q2- ---	HighSpeed scan time	409997
Motion	0module	MC Relay -1	X1- ---	Timer Register	409996
Link	1module	MC Relay -2	X2- ---	Stepping Relay	409901 -
I/O :		MC Control Relay -1	P1- ---		409932
I/O module	80	MC Control Relay -2	P2- ---	Calender	409988 -
Channel 1 station	1	Mcode Relay -1	M1- ---		409995
Channel 2 station	2	Mcode Relay -2	M2- ---		
Reference range :		Link Coil -1	D11024	MC Link Register1	4- ----
Coil	008192	Link Coil -2	D2- ---		4- ----
Input Relay	101024	Link Register -1	R12048	MC Link Register2	4- ----
Input Reg.	300512	Link Register -2	R2- ---		4- ----
Holding Reg.	409999	Extended Reg.	6- ----	Ladder Edit Flag Register	4- ----
Constant Reg.	704096				

b) I/O Map

Sample I/O map printouts are shown below.

- 120-Series I/O Modules

Allocation information for 120-Series I/O Modules is printed as shown below.

I/O ALLOCATIONS						
Channel : 2	STATION : 2	RACK : 1/4				
I/Otype : GL120I/O	SERV. : Normal	Rack Title : Rack#1				
Input Relay : 528	Out Relay : 416	Input Reg : 125	Out Reg : 14			
SLOT	MODULE TYPE	INPUT	OUTPUT	INPUT REG.	OUTPUT REG.	DETAIL
101						
102						
103	120DAI74300	100369-100384				AC 200V 16In
104	120DAI74300	100385-100400				AC 200V 16 In
105	120DAI74300	100401-100416				AC 200V 16In
106						
107						
108						
109						
110						
111						
112						
113						
114						
115						
116						

- 1000-Series and 2000-Series I/O Modules

Allocation information for 1000-Series and 2000-Series I/O Modules is printed as shown below. The following printout is for 2000-Series I/O Modules.

I/O ALLOCATIONS						
CHANNEL : 2	STATION : 2	RACK : 1/4				
I/Otype : 2000I/O	SERV. : Normal	Rack Title : Rack#1				
Input Relay : 528	Output Relay : 416	Input Reg. : 125	Output Reg. : 14			
SLOT	MODULE TYPE	INPUT	OUTPUT	INPUT REG.	OUTPUT REG.	DETAIL
201	B2500		000353-000368			AC 100/200V 16Out
202	B2500		000369-000384			AC 100/200V 16Out
203	B2500		000385-000400			AC 100/200V 16Out
204	B2500		000401-000416			AC 100/200V 16Out
205	B2503A	100449-100464				AC 200V 16In
206	B2503A	100465-100480				AC 200V 16In
207	B2503A	100481-100496				AC 200V 16In
208	B2503A	100497-100512				AC 200V 16In
209	B2503A	100513-100528				AC 200V 16In
210						
211						
212						
213						
214						
215						
216						

c) Link Map

A sample printout of PC Link allocations is shown below.

LINK ALLOCATIONS				
CH :1		STATION:1	5	
GROUP ADDRESS :129		TOKEN HOLD TIME:065 ms	TOKEN CHK TIME: 2550 ms	
STATION SRCH: 25500 ms		FBUS TIMEOUT: 25500 ms	FBUS RETRY: 3	
ST#	L-COIL	POINT	L-REGISTER	SIZE
1	D10001	0016	R10001	001
2	D10017	0032	R10002	001
3	D10049	0016	R10003	001
4	D10065	0016	R10004	001
5	D10081	0016	R10005	001
6	D10097	0016	R10006	001
7	D10113	0016	R10007	001
8	D10129	0016	R10008	001
.
.
.
.
.
16	D10321	0032		
17	D10353	0016	R10046	128
18	D10369	0032	R10174	007
19	D10401	0128	R10181	019
20			R10200	020
21	D10529	0016	R10220	030
22	D10545	0032	R10250	050
23	D10577	0256	R10300	001
24	D10633	0016	R10301	001
.
.
.
.
.
32	D11009	0016	R10309	001

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d) ASCII Map

A sample printout of ASCII allocations is shown below.

ASCII ALLOCATIONS	
Module No.	Channel
1	1
2	2
3	2
4	1
5	2
6	2
7	1
8	1

e) Ethernet Settings

Sample printouts of Ethernet settings are shown below.

• Local Communications Parameters

Ethernet Setup		
Local Communications Parameters		
Local Setup		
IP Address	:	003.004.001.002 (0 - 255)
Subnet Mask	:	007.008.005.006 (0 - 255)
Gateway Address	:	011.012.009.160 (0 - 255)
Diagnosis Port	:	256 (256 - 65535)
MEMOBUS Setup		
Response wait time	:	14 s (0 - 255)
Retry Count	:	15 times (0 - 255)

• Remote Communications Parameters

Ethernet Setup							
Host Communications Parameters							
CNO	Local Port	Host IP Address	Host Port	Conn. Type	Appl. Prot.	Code	Host MAC Address
1	258	005.006.003.004	1800	TCP	MEMO - EX	RTU	0a : 09 : 0c : 0b : 0e : 0d
2	4370	021.022.019.020	5912	UDP	MEMOBUS	ASCII	1a : 19 : 1c : 1b : 1e : 1d
3	8482	037.038.035.036	10024	TCP	MELSEC	RTU	2a : 29 : 2c : 2b : 2e : 2d
4	12594	053.054.051.052	14136	TCP	THROUGH	RTU	3a : 39 : 3c : 3b : 3e : 3d
5	16706	069.070.067.068	18248	TCP	MEMOBUS	RTU	4a : 49 : 4c : 4b : 4e : 4d
6	61938	245.246.243.244	63480	UDP	THROUGH	ASCII	5a : f9 : fc : fb : fe : fd
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
19	11983	245.246.243.200	29983	UDP	THROUGH	ASCII	2a : f9 : fc : fb : fe : fd

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f) Segment Scheduler

A sample printout of Segment Scheduler information is shown below.

SEGMENT SCHEDULER & CONSTANT SWEEP						
CONSTANT SWEEP: ON MIN.SCAN TIME: 200 ms REF: 409998 - 409999						
WATCHDOG TIMER: 240ms						
HIGH-SPEED SCAN: ON SCAN TIME: 100 ms						
SCHEDULE NO	TYPE	REF NO	SENSE	L SPEED	SEG	TITLE
1	CONTINUOUS				1	TT-9 Tank Circuit
2	CONTINUOUS				2	TT-10 Tank Circuit INV.
3	CONTINUOUS				3	TT-11 Tank Circuit
4	CONTINUOUS				4	TT-12 Tank Circuit
5	CONTINUOUS				5	TT-13 Tank Circuit
6	CONTINUOUS				6	TT-14 Tank Circuit
7	CONTINUOUS				7	TT-15 Tank Circuit
8	CONTINUOUS				8	TT-16 Tank Circuit
9	CONTINUOUS				9	TT-17 Tank Circuit
10	CONTINUOUS				10	TT-18 Tank Circuit
11	CONTINUOUS				11	TT-19 Tank Circuit
12	CONTINUOUS				12	TT-20 Tank Circuit
13	CONTINUOUS				13	TT-31 Tank Circuit
14	CONTINUOUS				14	SG-13 Sandmill Circuit
15	CONTINUOUS				15	SG-14 Sandmill Circuit
16	CONTINUOUS				16	SG-15 Sandmill Circuit
17	CONTINUOUS				17	SG-16 Sandmill Circuit
18	CONTINUOUS				18	SG-17 Sandmill Circuit
19	CONTINUOUS				19	SG-18 Sandmill Circuit
20	CONTINUOUS				20	SG-19 Sandmill Circuit
21	CONTINUOUS				21	SG-20 Sandmill Circuit
22	CONTINUOUS				22	SG-21 Sandmill Circuit
23	CONTINUOUS				23	SG-28 Sandmill Circuit
24	CONTINUOUS				24	A/DConvert CHK
25	CONTINUOUS				25	Paint Filler Pump
26	CONTINUOUS				26	Normal Segment#26
27	CONTINUOUS				27	Normal Segment#27
28	CONTINUOUS				28	Normal Segment#28
29	CONTINUOUS				29	Normal Segment#29
30	CONTINUOUS				30	Normal Segment#30

h) Segment Lists

A sample printout of a segment list is shown below.

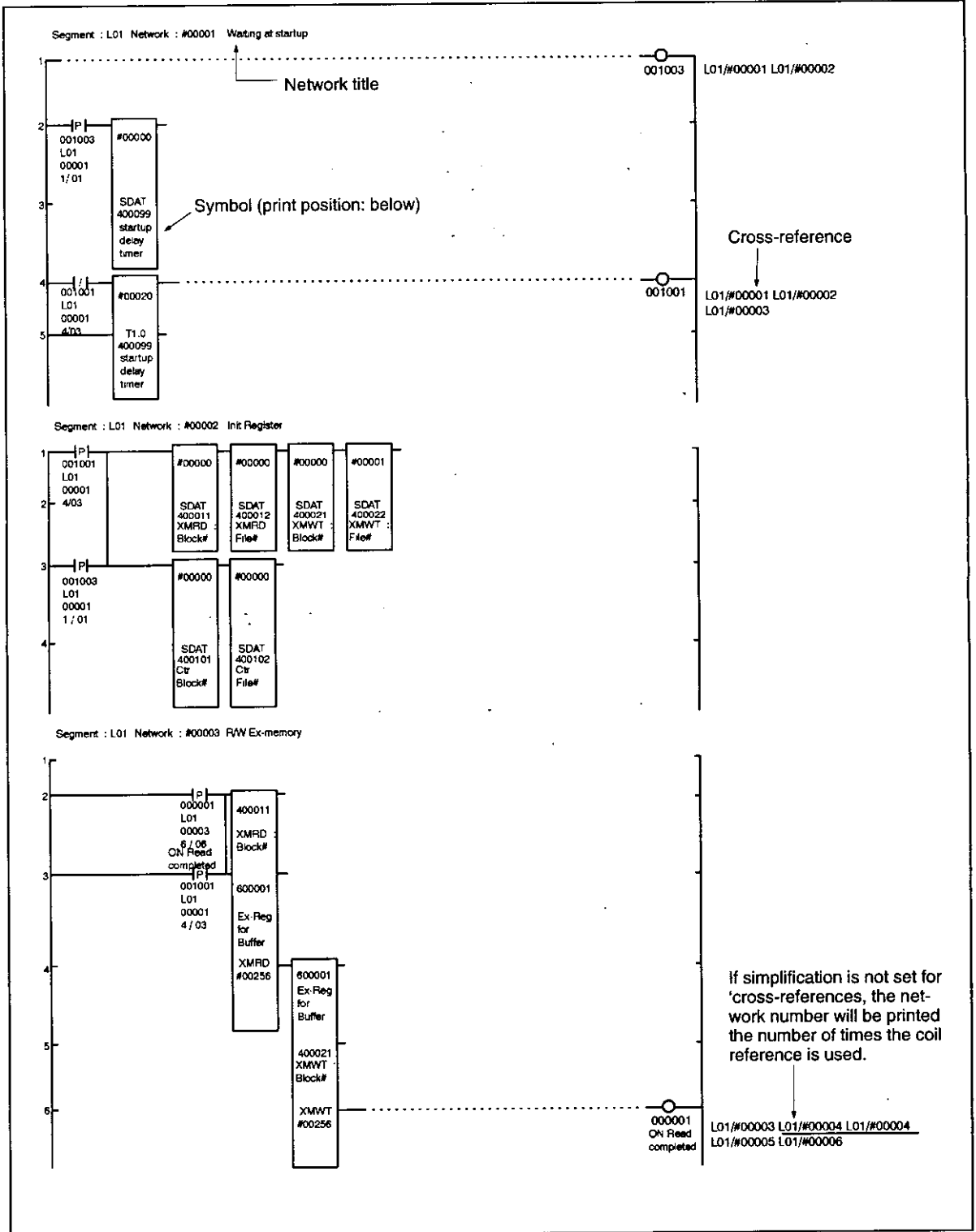
SEGMENT STATUS DISPLAY		
Segment	Title	Network
H	Schedule Flicker	4
L01	TT-9 Tank Circuit	26
L02	TT-10 Tank Circuit	25
L03	TT-11 Tank Circuit	25
L04	SG-13 Sandmill Circuit	77
L05	SG-14 Sandmill Circuit	58
L06	A/D Convert CHK	2
⋮	⋮	⋮
⋮	⋮	⋮
⋮	⋮	⋮
⋮	⋮	⋮
⋮	⋮	⋮
S	Subroutine Segment	1

2) Network

The following items will be printed if *Networks* is selected from the Print Dialog Box.

- Ladder programming networks
Symbols, comments, and cross-reference can also be printed.
- Network lists

a) Ladder Programming Networks



20

a) Motion Programs

A sample printout for an MC20 motion program is shown below. This sample is for O number 10 of MC20-1.

MC20 MOTION PROGRAM		
MODULE:MC1		O No.:10
Line No.	N No.	
1		ROLL6.110;
2		;
3	N001	GOTO 010;
4	N010	IOW #01=0 #|1==0;
5	N011	#02=0;
6	N012	#03=0;
7	N020	IOW #01=0 #|1==1;
8	N021	IOW #01=0 #|1=0;
9		;X AXIS
10		#1=X#E101-X#E100;
11		#2=X#E102-X#E101;
12		#3=X#E103-X#E102;
13		;

b) Motion Parameters

• **MC20 Motion Parameters**

A sample printout for an MC20 motion parameters is shown below. This sample is for the home return parameters of MC20-1.

MC20 Motion Parameters				
Module :MCX 1		Type :Homing		
No.	Name	Value	Units	Setting Range
P2301	Home return mode	Triple-Step		
P2302	Home return direction	Positive		
P2303	Home position returning feed speed	10,000	mm/min(deg/min)	1-240,000
P2304	Home position returning approach speed	1,000	mm/min(deg/min)	1-240,000
P2305	Home position returning creep speed	500	mm/min(deg/min)	1-240,000
P2306	Home position returning final travelling	0	Directive unit	0-99,999,999
P2307	Home position output width	100	Pulse	0-32,767
P2308	Home position pulse polarity selection	Positive		
P2310	Deceleration limit switch inversion	Disabled		

• MC15 Motion Parameters

A sample printout for an MC15 motion parameters is shown below. This sample is for the machine system and external I/O parameters of Module number 1.

MC15 Motion Parameters				
Module :01		Type:Machine		
No.	Name	Value	Units	Setting range
P2501	Number of encoder pulse	2,048	Pulse	1-32,768
P2502	Encoder pulse signal selection	AB-phase 4 times		
P2503	Command resolution	10,000	Directiveunit	1-1,500,000
P2504	Gear ratio(Motor)	1	Rotation	1-10,000,000
P2505	Gear ratio(Machine)	1	Rotation	1-10,000,000
P2506	Mode setting	00000008	Hexadecimal	
P2507	Backrash compensation	0	Pulse	0-32767
P2508	Stored stroke limit(+)	99,999,999	Directiveunit	0- +99,999,999
P2509	Stored stroke limit(-)	-99,999,999	Directiveunit	0- +99,999,999
P2510	Function selection 1	00000000	Hexadecimal	
P2511	Motor speed limit	4,500	r/min	0-10,000
P2512	Number of motor pulse	2,048	Pulse	1-200,000
P2513	Type of pulse output	CW		

• MC10 Motion Parameters

A sample printout for an MC10 motion parameters is shown below. This sample is for the speed/acceleration parameters.

MC10 Motion Parameters				
Module position :000-1-16		Type :Accel/Speed		
No.	Name	Value	Units	Setting Range
P201	Maximum	24,000	mm/min(deg/min)	1-240,000
P202	Traverse speed [JOG,STP]	24,000	mm/min(deg/min)	1-240,000
P203	Accel time	100	ms	1-10,000
P204	Decel time	100	ms	1-10,000
P205	S curve ACC/DEC time C	100	ms	2-1,000
P206	MOV ACCEL/DECEL set	1-step		
P207	JOG ACCEL/DECEL set	1-step		
P208	ZRN ACCEL/DECEL set	1-step		

c) Point Tables

• MC20 Point Table

A sample printout of an MC20 point table is shown below for MC20-1.

MC20 Point Table				
Module :MCX				
No.	Axis 1 (X)	Axis 2 (Y)	Axis 3 (Z)	Axis 4 (S)
1	0	0	0	0
2	10	20	0	0
3	100	150	120	100
4	550	250	600	200
5	1000	2000	1500	800
⋮	⋮	⋮	⋮	⋮
500	0	0	0	0

• MC15 Point Table

A sample printout of an MC15 point table is shown below for module number 1.

MC15 Point Table				
Module :01				
No.	No.1 Axis position	No.1 Interporation access	No.2 Axis position	No.2 Axis accel
1	0	0	0	0
2	10	20	0	0
3	100	150	120	100
4	550	250	600	200
5	1000	2000	1500	800
⋮	⋮	⋮	⋮	⋮
4000	0	0	0	0

• Register References

A sample printout of register references is shown below for holding registers.

Reference data :4x [Holding Register] References											
Decimal	Hexadecimal	ASC	Decimal	Hexadecimal	ASC	Decimal	Hexadecimal	ASC	Decimal	Hexadecimal	ASC
400001 =	00127	007F	400002 =	00000	0000	400003 =	00000	0000	400004 =	00000	0000
400005 =	05555	1563	400006 =	00000	0000	400007 =	00000	0000	400008 =	22351	574F
400009 =	21067	524B RK	400010 =	24398	5F4E _N	400011 =	28465	6F31 o1	400012 =	22351	574F WO
400013 =	21067	524B RK	400014 =	24398	5F4E _N	400015 =	28466	6F32 o2	400016 =	22351	574F WO
400017 =	21067	524B RK	400018 =	24398	5F4E _N	400019 =	28467	6F33 o2	400020 =	00000	0000 WO
	:			:			:			:	
	:			:			:			:	
	:			:			:			:	
	:			:			:			:	
	:			:			:			:	
	:			:			:			:	

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b) Reference Usage Tables

A sample printout is shown below for reference usage for holding registers.

Reference Used Table :4x [Holding Register] References			
400000	H H H H ?	- - - -	400010 -
402010	- - - - -	- - - - -	402020 - - - - -
409910	- - - - -	- - - - -	409920 - - - - -
409940	- - - - -	- - - - -	409950 - - - - -
409970	- - - - -	- - - - -	409980 - - - - -
			402000 - - - - -
			402030 - - - - -
			409930 - - - - -
			409960 - - - - -
			409990 | | | | | - - - -
409998	-	409999	Constant sweep
409997	-		High-speed scan time
409996	-		Timer Register
402001	-	402032	Stepping relay
409988	-	409995	Time/Date register
409842	-	409914	MC link register1
U/u:	Used in IO Allocation and program (Coil)		B/b: Used in IO Allocation and program
P/p:	Used in program (Coil)		L/l: Used in program
Capital letter:	Documented		Small letter: Undocumented
Blank:	Out of Range		H/h: Used in Allocation
			? : Symbol/Comment only
			- : Not used

c) Disable List

A sample printout is shown below for a disable list. The disable status for the specified range of reference numbers is printed according to reference type.

Disabled Reference :1x [Input Relay] References				
Selection Range : 1 - 65535				
100001	100003	100005	100007	100008

d) Cross-reference List

A sample printout is shown below for cross-references. The sample is for page 1 of holding registers.

No	Symbols/Comments	Cross Reference List :4x [Holding Register] Reference Use Information
40001	Digital SW#1	03-00010 T1,0(2) 03-00011:T1,0(2) 03-00012 T1,0(2) 03-00013 T1,0(2) 03-00014:T1,0(2) 11-00006 AD16(2),SU16(2), MU16(2) 13-00001 AD16(2),SU16(2),MU16(2) 13-00002:AD16(2), SU16(2),MU16(2) 13-00003:AD16(2),SU16(2),MU16(2) 13-00004:AD16(2),SU16(2),MU16(2) 13-00005:AD16(2),SU16(2), MU16(2) 13-00006:R->T,SKPR,CMPR,S1BT,ETMS,DMUL,ETUS 13-00007 R->T,SKPR,CMPR,S1BT,ETMS,DMUL,ETUS 13-00008:R->T,SKPR, CMPR,S1BT,ETMS,DMUL,ETUS 13-00009:R->T,SKPR,CMPR,S1BT,ETMS,DMUL, ETUS 13-00010:R->T,SKPR,CMPR,S1BT,ETMS,DMUL,ETUS 13-00011:NBSL, MYL 13-00012:NBSL,MYL 13-00013:NBSL,MYL 13-00014:NBSL,MYL 13-00015 NBSL,MYL 13-00016:NBSL,MYL 13-00017:NBSL,MYL 13-00018 NBSL,MYL 13-00019:SCIF,SRCH 13-00020:SCIF,SRCH 13-00021:SCIF,SRCH 13-00022:SCIF,SRCH 13-00023:SCIF,SRCH 13-00024:SCIF,SRCH 13-00025:SCIF,SRCH 13-00026:SCIF,SRCH 13-00027 DIN,FIN 13-00028:DIN,FIN 13-00029:DIN,FIN 13-00030:DIN, FIN 13-00031:DIN,FIN 13-00032:DIN,FIN 13-00033:DIN,FIN 13-00034 DIN,FIN 14-00001:DIN,FIN 14-00002:DIN,FIN 14-00003:DIN, FIN 14-00004:DIN,FIN 14-00005:DIN,FIN 14-00006:DIN,FIN 14-00007:DIN,FIN 14-00008:DIN,FIN 14-00009:DIN,FIN 14-00010:DIN, FIN 14-00011:IBKR,MSTR,IBKW 14-00012:IBKR,MSTR,IBKW 14-00013 IBKR,MSTR,IBKW 14-00014:IBKR,MSTR,IBKW 14-00015:IBKR, MSTR,IBKW 14-00016:IBKR,MSTR,IBKW 14-00017:IBKR,MSTR,IBKW 14-00018 IBKR,MSTR,IBKW 14-00019:IBKR,MSTR,IBKW 14-00020:IBKR, MSTR,IBKW



Refer to 20.2.9 References for the printing format for cross references.

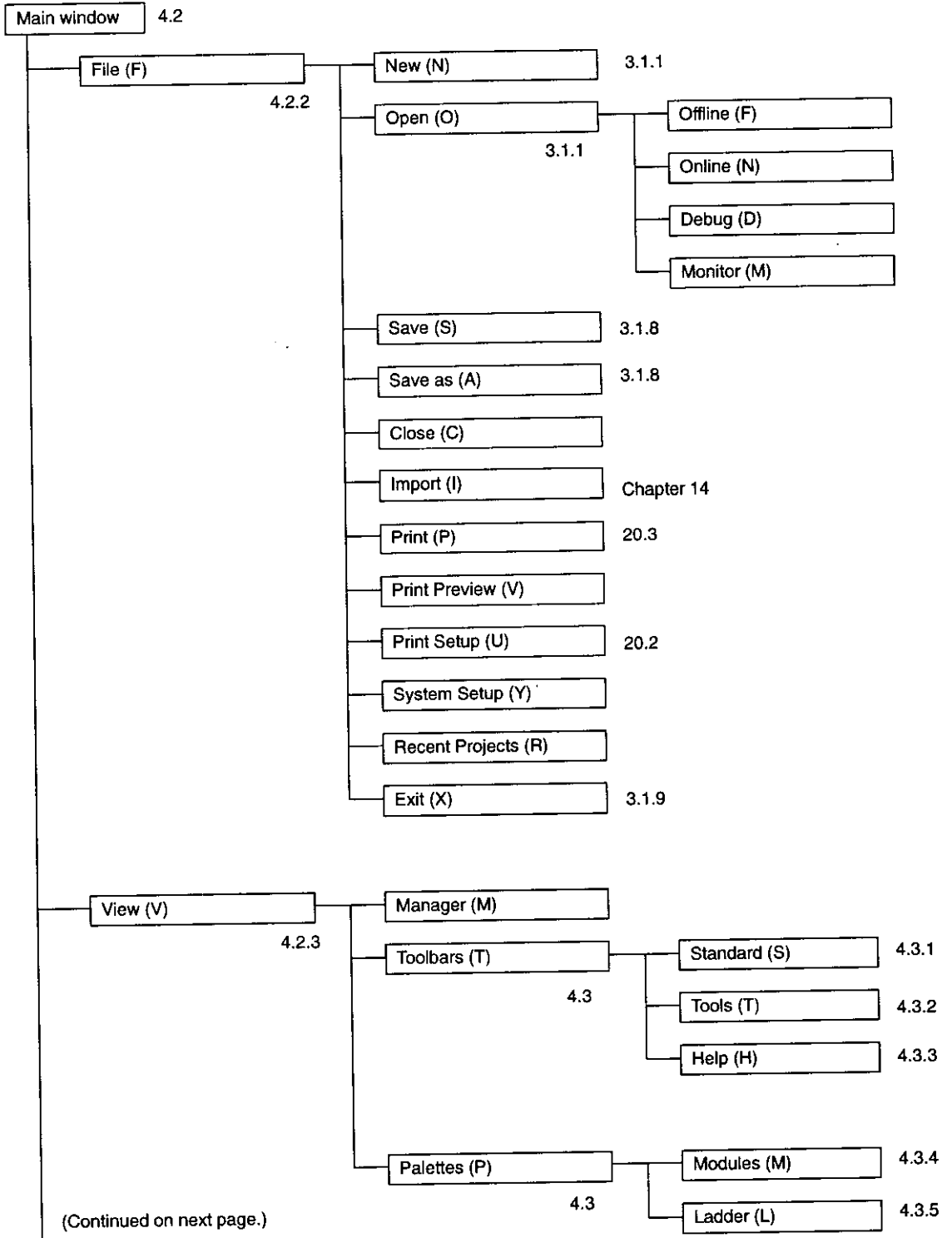
Appendix **A**

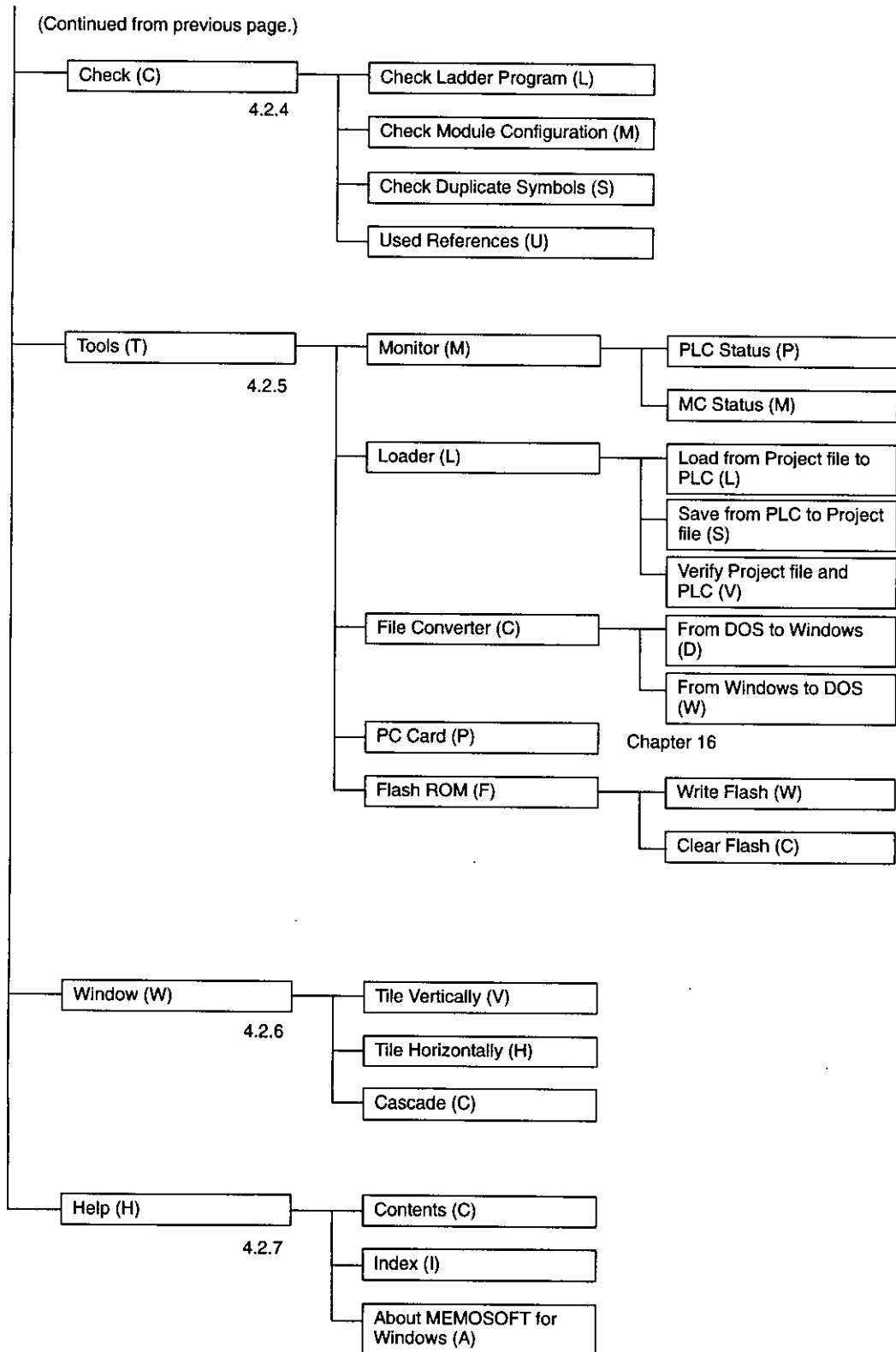
Menu Structure

A

A.1 Main Window Menus

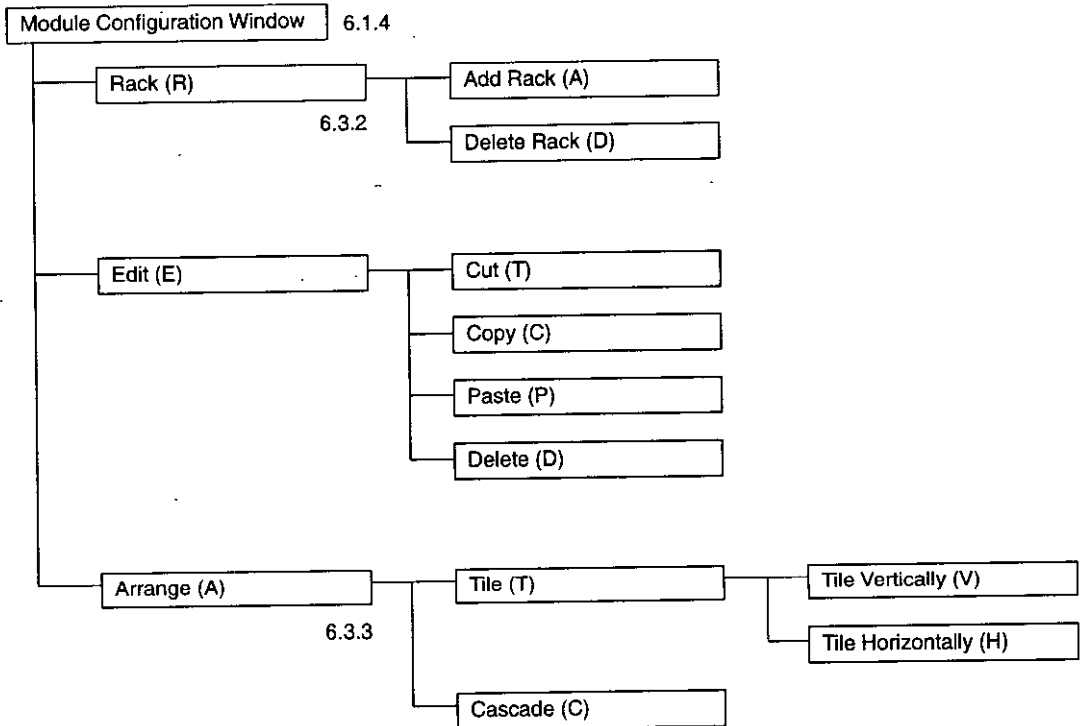
The following menus are the standard menus for the Windows version of MEMOSOFT. They are displayed when a project is opened.





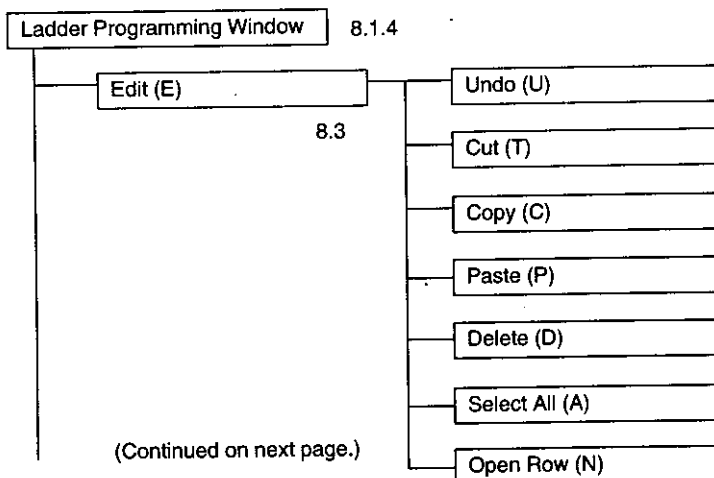
A.2 Module Configuration Window Menus

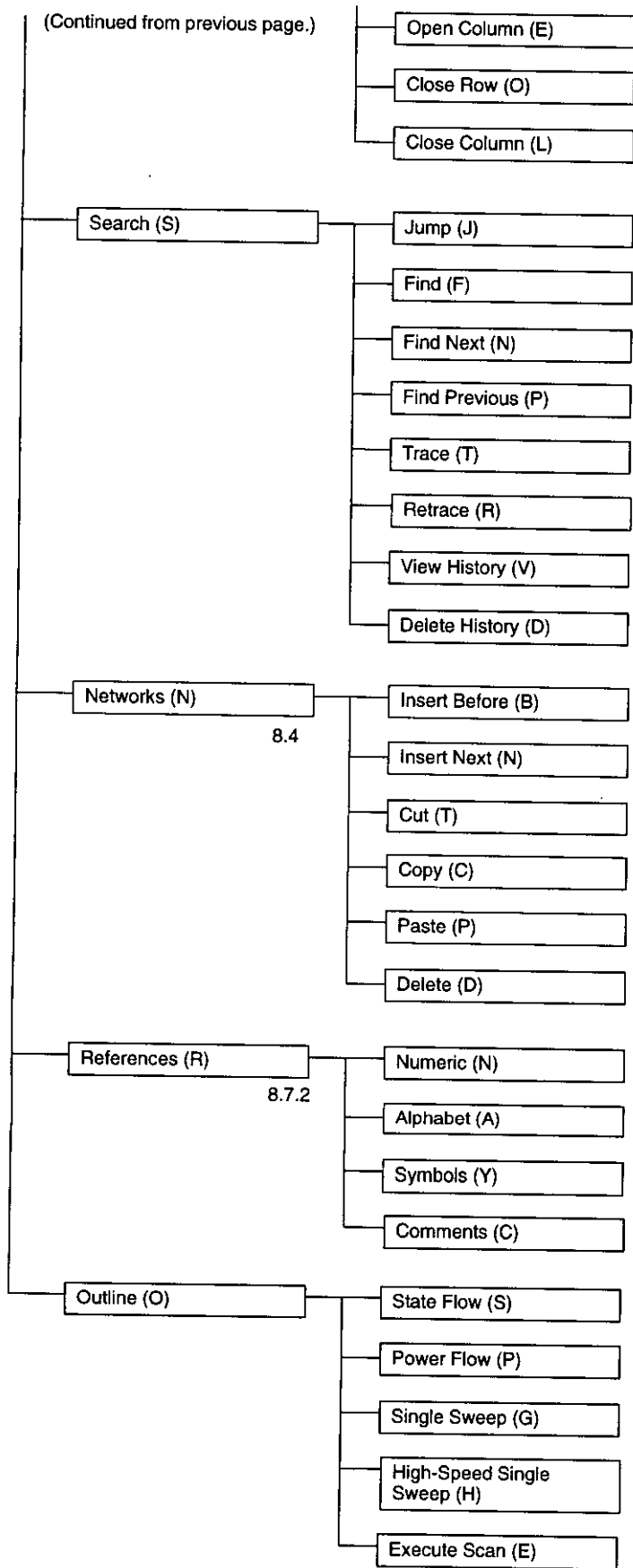
The following menus are added to the menu bar when the Model Configuration Window is displayed.



A.3 Ladder Programming Window Menus

The following menus are added to the menu bar when the Ladder Programming Window is displayed.

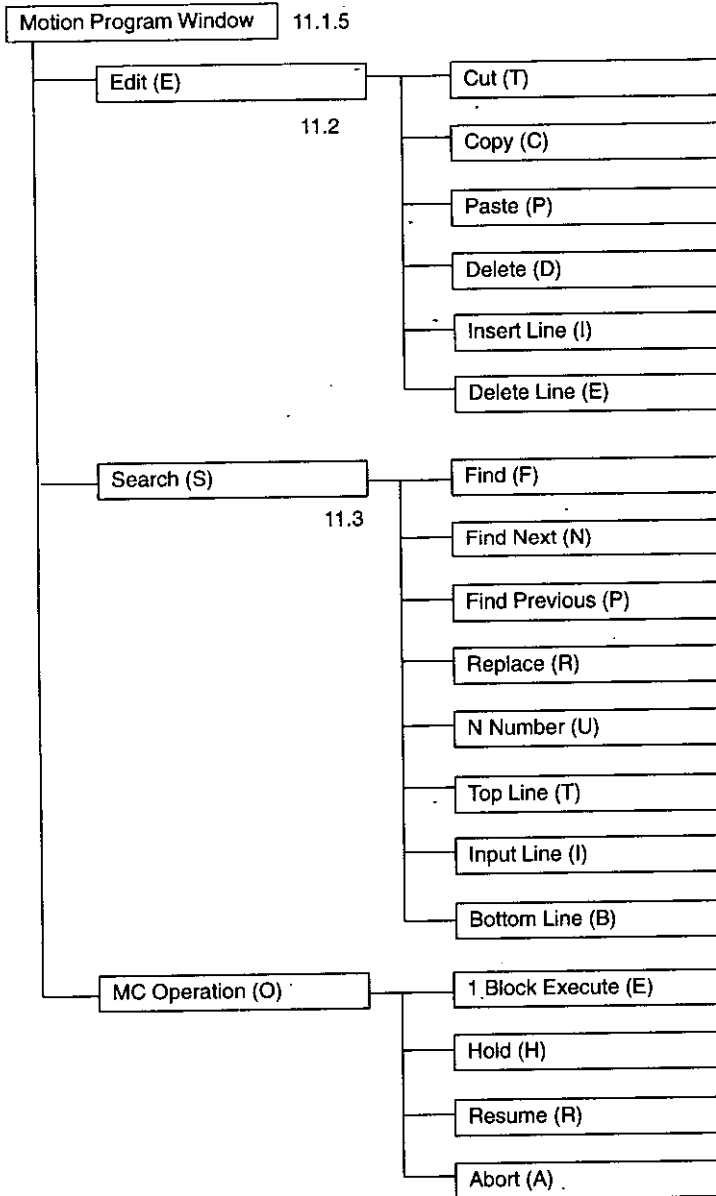




A

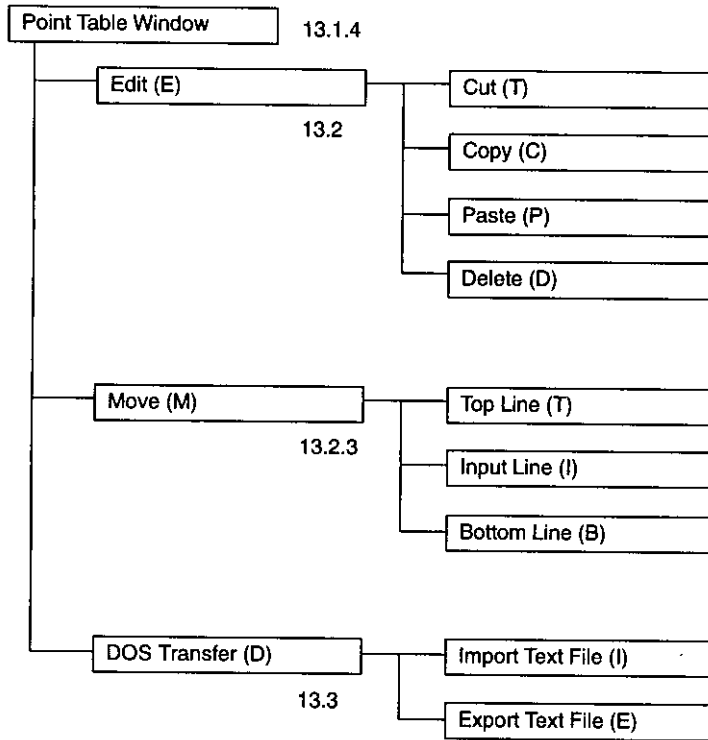
A.4 Motion Program Window Menus

The following menus are added to the menu bar when the Motion Program Window is displayed.



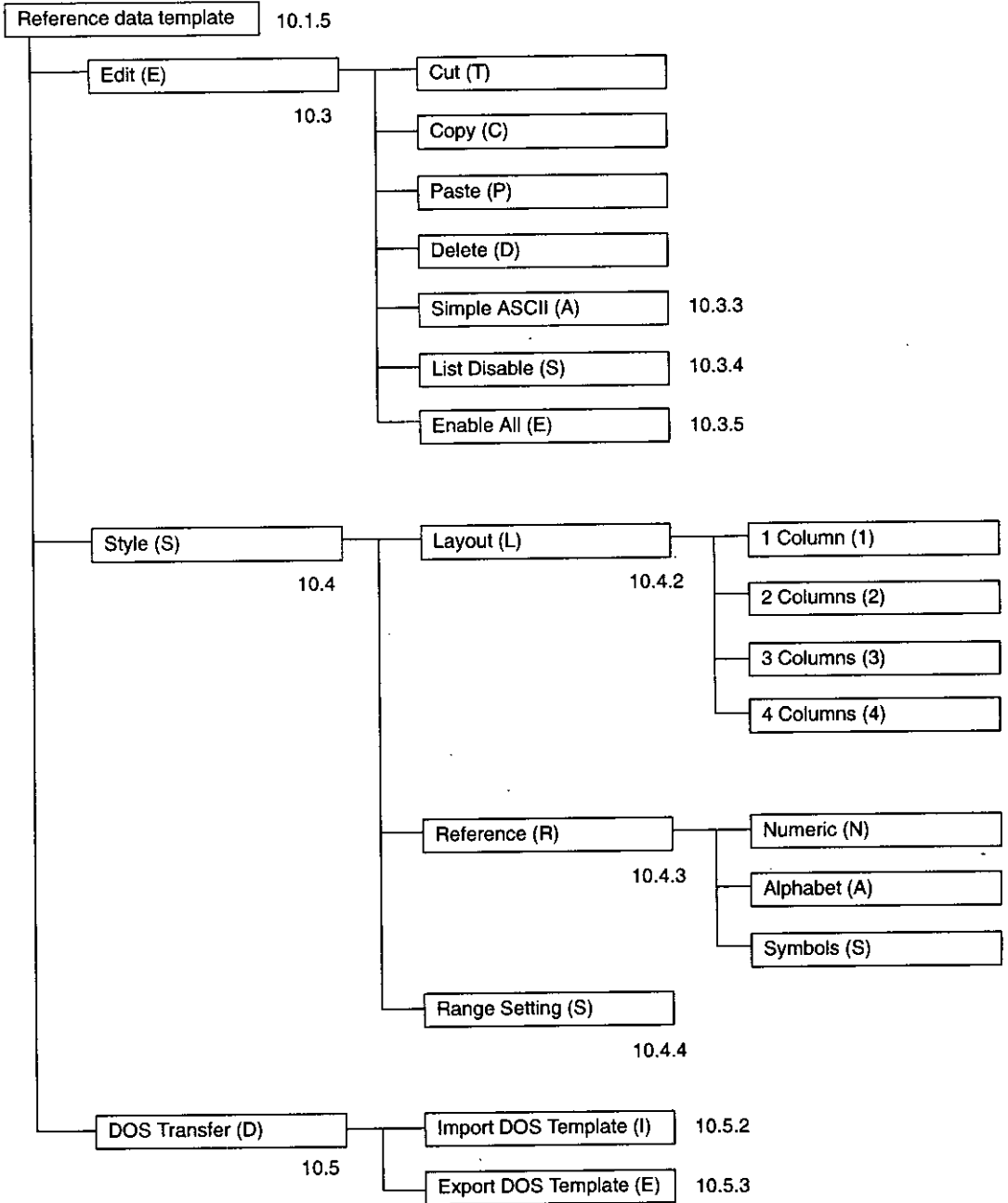
A.5 Point Table Window Menus

The following menus are added to the menu bar when the Point Table Window is displayed.



A.6 Reference Data Editing Menus

The following menus are added to the menu bar when reference data templates are displayed.



Appendix **B**

Shortcut Key Tables

B

B.1 Outline

The following example shows the notation used in representing shortcut keys and menu commands keys.

Example: Alt + F + N: Press these keys in order: Alt, F, and then N.



Menu commands and shortcut keys can also be checked using the *Help (H) – Index (I)* menu commands from MEMOSOFT.

B.2 Main Window Menus

Menus/Commands		Menu Command	Shortcut Key	
File	New	Alt + F + N		
	Open	Offline	Alt + F + O + F	
		Online	Alt + F + O + N	
		Debug	Alt + F + O + D	
		Monitor	Alt + F + O + M	
	Save	Alt + F + S		
	Save as	Alt + F + A		
	Close	Alt + F + C		
	Import	Alt + F + I		
	Print	Alt + F + P		
	Print Preview	Alt + F + V		
	Print Setup	Alt + F + U		
	System Setup	Alt + F + Y		
	Recent Projects	Alt + F + R		
Exit	Alt + F + X	Ctrl + Q		
View	Manager	Alt + V + M		
	Toolbars	Standard	Alt + V + T + S	
		Tools	Alt + V + T + T	
		Help	Alt + V + T + H	
	Palettes	Modules	Alt + V + P + M	
		Ladder	Alt + V + P + L	
Refresh		F5		
Check	Check Ladder Program	Alt + C + L		
	Check Module Configuration	Alt + C + M		
	Check Duplicate Symbols	Alt + C + S		
	Used References	Alt + C + U		

Menus/Commands		Menu Command	Shortcut Key
Tools	Monitor	PLC Status	Alt + T + M + P
		MC Status	Alt + T + M + M
	Loader	Load from Project file to PLC	Alt + T + L + L
		Save from PLC to Project file	Alt + T + L + S
		Verify Project File and PLC	Alt + T + L + V
	File Converter	From DOS to Windows	Alt + T + C + D
		From Windows to DOS	Alt + T + C + W
	PC Card		Alt + T + P
Flash ROM	Write Flash	Alt + T + F + W	
	Clear Flash	Alt + T + F + C	
Window	Tile Vertically		Alt + W + V
	Tile Horizontally		Alt + W + H
	Cascade		Alt + W + C
Help	Contents		Alt + H + C
	Index		Alt + H + I
	About MEMOSOFT for Windows		Alt + H + A

B.3 Module Configuration Window Menus

Menus/Commands		Menu Command	Shortcut Key
File			
Rack	Add Rack		Alt + R + A
	Delete Rack		Alt + R + D
Edit	Cut		Alt + E + T Ctrl + X
	Copy		Alt + E + C Ctrl + C
	Paste		Alt + E + P Ctrl + V
	Delete		Alt + E + D Ctrl + Del
Arrange	Tile	Tile Horizontally	Alt + A + T + H
		Tile Vertically	Alt + A + T + V
	Cascade		Alt + A + C
View			
Check			
Tools			
Window			
Help			

B.4 Ladder Programming Window Menus

Menus/Commands		Menu Command	Shortcut Key
File			
Edit	Undo	Alt + E + U	Ctrl + Z
	Cut	Alt + E + T	Ctrl + X
	Copy	Alt + E + C	Ctrl + C
	Paste	Alt + E + P	Ctrl + V
	Delete	Alt + E + D	Ctrl + Del
	Select All	Alt + E + A	Ctrl + A
	Open Row	Alt + E + N	Ctrl + W
	Open Column	Alt + E + E	Ctrl + R
	Close Row	Alt + E + O	Ctrl + U
	Close Column	Alt + E + L	Ctrl + E
Search	Jump	Alt + S + J	Ctrl + G
	Find	Alt + S + F	Ctrl +
	Find Next	Alt + S + N	F3
	Find Previous	Alt + S + P	Shift + F3
	Trace	Alt + S + T	Ctrl + T
	Retrace	Alt + S + R	Ctrl + O
	View History	Alt + S + V	
	Delete History	Alt + S + D	
Networks	Insert Before	Alt + N + B	
	Insert Next	Alt + N + N	
	Cut	Alt + N + T	
	Copy	Alt + N + C	
	Paste	Alt + N + P	
	Delete	Alt + N + D	
References	Numeric	Alt + R + N	
	Alphabet	Alt + R + A	
	Symbols	Alt + R + S	
	Comments	Alt + R + C	
Online	State Flow	Alt + O + S	
	Power Flow	Alt + O + P	
	Single Sweep	Alt + O + G	
	High-speed Single Sweep	Alt + O + H	
	Execute Scan	Alt + O + E	Ctrl + F9
View			
Check			
Tools			
Window			
Help			

B.5 Motion Program Window Menus

Menus/Commands		Menu Command	Shortcut Key
File			
Edit	Cut	Alt + E + T	Ctrl + X
	Copy	Alt + E + C	Ctrl + C
	Paste	Alt + E + P	Ctrl + V
	Delete	Alt + E + D	Ctrl + Del
	Insert Line	Alt + E + I	Shift + Ins
	Delete Line	Alt + E + E	Shift + Del
Search	Find	Alt + S + F	Ctrl + F
	Find Next	Alt + S + N	F3
	Find Previous	Alt + S + P	Shift + F3
	Replace	Alt + S + R	
	N Number	Alt + S + U	
	Top Line	Alt + S + T	
	Input Line	Alt + S + I	
	Bottom Line	Alt + S + B	
MC Operation	1 Block Execute	Alt + O + E	
	Hold	Alt + O + H	
	Resume	Alt + O + R	
	Abort	Alt + O + A	
View			
Check			
Tools			
Window			
Help			

B.6 Point Table Window Menus

Menus/Commands		Menu Command	Shortcut Key
File			
Edit	Cut	Alt + E + T	Ctrl + X
	Copy	Alt + E + C	Ctrl + C
	Paste	Alt + E + P	Ctrl + V
	Delete	Alt + E + D	Ctrl + Del
Move	Top Line	Alt + M + T	
	Input Line	Alt + M + I	
	Bottom Line	Alt + M + B	
DOS Transfer	Import Text File	Alt + D + I	
	Export Text File	Alt + D + E	
View			
Check			
Tools			
Window			
Help			

B.7 Reference Data Editing Menus

Menus/Commands		Menu Command	Shortcut Key	
File				
Edit	Cut		Alt + E + T	Ctrl + X
	Copy		Alt + E + C	Ctrl + C
	Paste		Alt + E + P	Ctrl + V
	Delete		Alt + E + D	Ctrl + Del
	Simple ASCII		Alt + E + A	
	List Disable		Alt + E + S	
	Enable All		Alt + E + E	
Style	Layout	1 Column	Alt + S + L + 1	
		2 Columns	Alt + S + L + 2	
		3 Columns	Alt + S + L + 3	
		4 Columns	Alt + S + L + 4	
	Reference	Numeric	Alt + S + R + N	
		Alphabet	Alt + S + R + A	
		Symbol	Alt + S + R + S	
Range Setting		Alt + S + S		
DOS Transfer	Import DOS Template		Alt + D + I	
	Export DOS Template		Alt + D + E	
View				
Check				
Tools				
Window				
Help				

Appendix **C**

Differences from the DOS Version of MEMOSOFT

C

Differences from the DOS Version of MEMOSOFT

Function	Windows Version	DOS Version
Files	All data is managed in one project file.	Data is managed in separate files: *.CFG, *.PRG, etc.
Network	Segments without networks are not allowed in the CPU. An empty network is automatically created in any segment without a network when attaching MEMOSOFT to the PLC.	Segments without networks are allowed in the CPU.
System Configuration	There is no setting for the number of I/O Modules.	The number of I/O Modules is set.
Communications Parameters	Communications parameters are set separately for the CPU, MEMOBUS, and remote stations. For remote stations, parameter settings and printing is possible only if a Module has been allocated.	The communications parameters are set on one window for the CPU, MEMOBUS, and all remote stations.
Editing Reference Data	Templates are created and reference data is edited in a template. Offline, one editing window can be opened for each template (10 max.). In Online and Debug Modes, only one window can be opened.	Reference data is edited on the reference data editing window.
Displaying Traceback Data	Trace data is created and then the resulting data is displayed. Up to 10 data display windows can be opened. Tracebacks are possible in Debug Mode.	Data is displayed on the Trace Data Display window Tracebacks are not possible in Debug Mode.
Reference Symbols and Comments	Symbols: 32 characters max. Comments: 255 characters max.	Symbols: 32 characters max. Comments: 196 characters max.
Network Titles and Comments	Titles: 32 characters max. Comments: 255 characters max.	Titles: 32 characters max. Comments: 1,560 characters max.
Segment Titles and Comments	Titles: 32 characters max. Comments: None	Titles: 32 characters max. Comments: 1,560 characters max.
Program Names Display While Editing	New: Untitle.glp Online: Selected project name Offline: Untitle.glp Debug: Selected project name	New: Newly input program name Online: Selected program name Offline: Not displayed Debug: Selected program name
Reusing Symbols, Titles, and Comments in Other Programs	References: Importable Networks: Importable Segments: Not importable	References: Via text file read/write Networks: Not possible unless the network merge function is used to merge symbols, titles, and comments along with networks.
Reusing Ladder Programs in Other Programs	Ladder programs can be imported by segment.	Ladder programs can be saved and merged by network.
Reusing Motion Programs in Other Programs	Motion programs can be imported.	Text files and be read and written to enable importing.
Network Editing Displays	Offline, one editing window can be opened for each segment. In Online and Debug Modes, only one window can be opened.	Networks are edited on one window only.
Moving to Networks to Edit Ladder Programs	Networks can be jumped to by inputting the network number. Jumping to other segments is not possible.	Networks can be jumped to by inputting the network number. Jumping to other segments is possible. Jumping is also possible from network lists.

Function	Windows Version	DOS Version
Reusing Reference Data in Other Programs	Reference data can be imported. Reading and writing DOS text files is also possible.	Text files can be read and written to enable reusing reference data.
Backing Up and Restoring Programs	Programs can be backed up and restored using Windows Explorer functionality.	Programs can be backed up and restored using program management functions or as entire applications.

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Appendix **D**

Troubleshooting

D

Troubleshooting

Operation and Symptom	Cause and Countermeasure
<p>Operation: Attaching to the PLC</p> <p>Symptom: "Please wait" is displayed followed by "Time out error" and communications are not possible.</p>	<p>Cause: The communications parameters are not set correctly.</p> <p>Countermeasure: Correct the communications parameter settings.</p>
<p>Operation: Attaching to the PLC</p> <p>Symptom: "Please wait" is displayed and communications are not possible.</p>	<p>Cause 1: The communications parameters are not set correctly.</p> <p>Countermeasure 1: Correct the communications parameter settings.</p> <p>Cause 2: The communications process is in an illegal state. (This problem may occur when restarting MEMOSOFT after it was forced to end for some reason.)</p> <p>Countermeasure 2: Perform the following procedure.</p> <ol style="list-style-type: none"> 1) End MEMOSOFT. 2) Force the communications process to end by pressing the Ctrl + Alt + Del Keys, displaying the <i>Close Program Window</i>, and ending the communications process (Memobusserver or Mbplusserver). 3) Restart MEMOSOFT.
<p>Operation: Attaching to the PLC</p> <p>Symptom: "Com port connection un-establishment" is displayed and communications are not possible.</p>	<p>Cause: The COM port settings in the computer system settings (registry) are not correct.</p> <p>Countermeasure: Correct the COM port settings on the computer. Refer to the use documentation provided with the computer for details.</p>
<p>Operation: Attaching to the PLC</p> <p>Symptom: A port that can be connected is not displayed in the window to set communications parameters. Communications are not possible because a communications port cannot be selected.</p>	<p>Cause: The COM port settings in the computer system settings (registry) specify not using the COM ports.</p> <p>Countermeasure: Correct the COM port settings on the computer to use the COM port. Refer to the use documentation provided with the computer for details.</p>
<p>Operation: Loading data from a project file to the PLC</p> <p>Symptom: "Invalid node type" is displayed and loading is canceled.</p>	<p>Cause: The ladder program contents are not correct (e.g., have been corrupted).</p> <p>Countermeasure: Check the ladder program.</p>

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