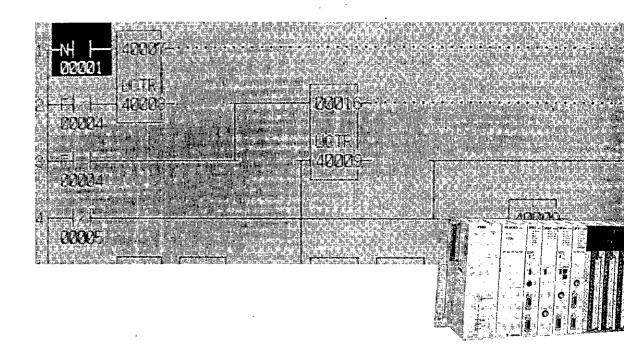
MEMOCON-SC GL40-, GL60-, GL70-SERIES MEMOCAD-PRO PROGRAM DEVELOPMENT SOFTWARE USER'S MANUAL





Manual Contents

This manual describes specifications and applications of the MEMOCAD-PRO Program Development Software for the MEMOCON-SC GL40-, GL60-, GL70-series Programmable Controllers.

Please read this manual carefully and be sure you understand the information provided before attempting to use the Software.

Visual Aids

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

Indicates references for additional information.

IMPORTANT

Indicates important information that should be memorized.

◆EXAMPLE

Indicates application examples.



Indicates supplemental information.

SUMMARY

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 software. You must read this chapter before attempting to read the rest of the manual or using the product.

I.1	Introduction	. Intro-2
I.2	Precautions	. Intro-?

I.1 Introduction

Thank you for purchasing the MEMOCAD-PRO Program Development Software to support the MEMOCON-SC GL40-, GL60-, GL70-series Programmable Controllers.

MEMOCAD-PRO is equipped with a wide range of functions. These include two edit modes: Offline and Online. Offline Edit Mode enables databases to be created and edited on a personal computer. Online Edit Mode, when the computer is connected to a Processor, enables programs in the CPU to be displayed on the screen of the computer so that editing can be conducted from the computer. Other functions include the Lister, which output lists of programs and data, and the Loader, which allows data to be loaded to the CPU or to be saved to files.

This manual explains how to conduct basic operations, using screen displays to provide examples for each function. The term Processor is used for the following models of CPU in this manual: GL40S1, GL40S2, GL40S3, GL60S, GL60S0, GL60S1, GL60S2, GL60S3, GL60H, GL70H, GL60HT and GL70HT.

To gain the best results from programming, it is recommended that you read this manual carefully and familiarize yourself with all the features and functions of MEMOCAD-PRO, practicing as many operations as possible.

Note The information contained in this manual is subject to change without notice.

Trademarks

- 1) MS-DOS is a registered trademark of Microsoft Corporation, USA.
- 2) ATOK is a registered trademark of Just System Co. Ltd., Japan.
- 3) PC-PR201 is a registered trademark of Japan Electric Co. Ltd., Japan.
- 4) ESC/P is a registered trademark of Epson Co. Ltd.

I.2 Precautions

Please read this manual carefully before using MEMOCAD-PRO and be sure that you understand fully the information provided in this manual, particularly the items described below.

User Registration

Version upgrades of MEMOCAD-PRO are provided for those users who have returned the User Registration Card. We recommend you complete the Registration Card provided and return it to us upon purchasing this product. Users who are not registered will not be notified of upgrades.

Creating and Editing a Database

• Do not create or edit a database on a floppy disk.

If you edit a database on a floppy disk, an error may be generated because there is not enough free space on the floppy disk. This may result in damage to the database. The size of the database fluctuates greatly during editing and could cause the floppy disk to fill up quickly. Always use a hard disk and check that there is enough free space available on the hard disk before editing.

Always make a backup copy of a database.

If a database is damaged or lost, it is difficult to rebuild the database from scratch. Always keep a backup of a database so that it can be restored with minimum effort.

• Do not reset your computer or turn OFF the power supply while editing a database.

Data can be lost unless correct methods are used to exit the Software. Never exit the MEMOCAD-PRO by resetting the computer or turning OFF the power supply.

Always make sure that there is enough free space available on the hard disk before editing.

While editing a database, an error may be generated because there is not enough free space. This may result in damage to the database. Always check that there is enough free space available on the hard disk before editing. (Copying networks and comments repeatedly can cause the database to more than double in size.)

Before Operation

This section provides information on the operating environment necessary for using the MEMOCAD-PRO Software, such as MS-DOS, computer specifications, and how to connect to a computer to a PLC. The contents of the MEMOCAD-PRO Software package, basic key functions, and the functions of each GL-series model are also described.

1.1	Operating Environment	1-2
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1.3	Using this Manual	1-7
1.4	List of Functions for each GL-series Processor	1-11

1.1.1 Computers

1.1 Operating Environment

This section explains the preliminary preparations and operating environment necessary for using MEMOCAD-PRO. Before attempting to use MEMOCAD-PRO, be sure that you understand the information contained in the following items.

Computers

See 1.1.1 Computers.

MS-DOS

See 1.1.2 MS-DOS.

CONFIG.SYS File

See 1.1.3 CONFIG.SYS File and 1.1.4 Creating a CONFIG.SYS File.

1.1.1 Computers

The necessary conditions for using MEMOCAD-PRO with a computer are explained below. The following conditions apply to IBM PC/AT and compatible computers.

Main Memory

640 kilobytes minimum

(A minimum of 500 kilobytes of memory is required just to run the MEMOCAD-PRO.)

Hard Disk

20 megabytes minimum free space

MEMOCAD-PRO System: Approx. 6 megabytes are used.

Memory for data:

From 1 to 10 megabytes are used.

If the number of programs is increased, more memory will be required.

Floppy Disk Drive

1 or more 3.5 inch 2HD or 5 inch 2HD drives

(When using a disk saved on the P150, a combined 3.5 inch 2HD/2DD drive is necessary.)

Be sure that the computer is started in MS-DOS.

For information on MS-DOS, see 1.1.2 MS-DOS.

Extended Memory

The MEMOCAD-PRO Software uses the user memory of the computer, and will not use extended memory. If user memory becomes less than 500 kilobytes due to the use of other applications, resulting in insufficient memory, then extended memory should be provided for other applications to ensure that the user memory remains at the minimum required level of 500 kilobytes.

Display

Both color and monochrome monitors can be used, but they cannot be used in high-resolution mode.

1.1.2 MS-DOS

MS-DOS (Disk Operating System) is required to operate this software on a computer. This is normally incorporated in the computer so that when the power is turned on, the system will start up in MS-DOS.

MS-DOS Ver. 3.1 or later is required.

Be sure that MS-DOS has been installed on the hard disk of the computer before installing or starting the MEMOCAD-PRO Software. The computer must be set up to start up in MS-DOS in order to use the MEMOCAD-PRO Software.

1.1.3 CONFIG.SYS File

The CONFIG.SYS file sets the environment for operating a computer. The following settings must be made in the CONFIG.SYS file to operate the MEMOCAD-PRO Software.

Buffers = 24 (24 minimum) Files = 24 (24 minimum)

1.1.4 Creating a CONFIG.SYS File

If there is no CONFIG.SYS file, make one using a text editor (software for creating text files and source files for programming). If a text editor is not available, you can make a CONFIG.SYS file using the MS-DOS EDLIN (Edit Line) command.

The following example shows how to make a CONFIG.SYS file using the MS-DOS EDLIN command.

1) Enter the command: EDLIN A:/CONFIG.SYS

If the file does not exist, the following message will appear.	If there is an existing file, the following message will appear.		
New file.	The file has been read.		

1.1.5 Preparations for Connection with GL-series PLCs

2) Entering file contents:

Inserting: Press line number>I, then press the Enter Key. Changing: Press line number>, then press the Enter Key.

(Enter the desired line number in place of <line number>.)

The line specified will appear. Enter text and press the Enter Key.

Example

1: *BUFFERS=25

After entering the text, press the Ctrl + C Keys or the Stop Key to exit input mode.

- 3) Deleting a line: Press line number>D, then press the Enter Key. (Enter the desired line number in place of number>.)
- 4) Viewing file contents: Press "L", then press the Enter Key. The contents of the file will appear.

1: BUFFERS=25 2: FILES=25 :

5) Exiting: Press "E", then press the Enter Key to exit EDLIN and return to MS-DOS.

1.1.5 Preparations for Connection with GL-series PLCs

Connection between a GL-series PLC and a computer is described below. This connection is necessary for the following:

- 1) Conducting online programming operations
- 2) Using the Loader

Ports

Computer: RS-232C port

GL Series: MEMOBUS port for the IOP Module or the COMM Module, located at the front of

either module.

Connect the two ports with a MEMOBUS Cable.

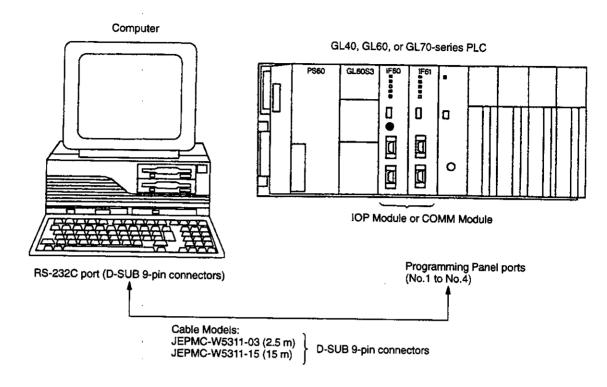


Figure 1.1 Connection Between a Processor and a Computer

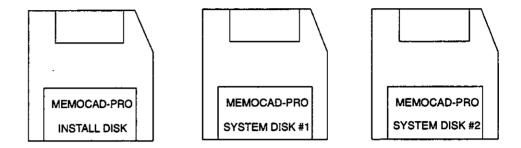
Note The power to the computer must be turned OFF when inserting or removing the Cables. Secure the connectors with screws so that the cables will not become loose or detached.

Contact your Yaskawa representative for purchasing the above Cables.

1.2 Package Contents

The contents of the MEMOCAD-PRO Software package are described below.

1) Floppy Disks (3 Disks)



Installation Disk

This disk contains the installation program to transfer the MEMOCAD-PRO System onto the hard disk.

• System Disk #1

This disk contains the execution file and data files for MEMOCAD-PRO. This disk and System Disk #2 contain the MEMOCAD-PRO System.

• System Disk #2

This disk contains the execution file and data files for MEMOCAD-PRO. This disk and System Disk #1 contain the MEMOCAD-PRO System.

2) User's Manual (this manual)

This manual explains the procedures for the MEMOCAD-PRO Software, including offline and online operations, motion editing, printing, and using the Loader.

3) User Registration Card

When you purchase the MEMOCAD-PRO, we recommend you complete this card and send it to us to register as a user. Information on upgrades and other products will be sent to registered users only.

1.3 Using this Manual

To help understand the information contained in this manual, the following two items are explained in more detail below.

- Basic Key Operations
 See 1.3.1 Basic Key Operations
- Reference Numbers
 See 1.3.2 List of Reference Numbers Used

1.3.1 Basic Key Operations

The basic key operations for MEMOCAD-PRO are shown below.

1) Items are normally selected by pressing the Function Keys.

Example 1: Selecting 2. Offline from the Main Menu

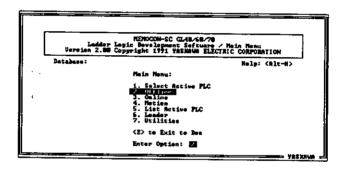


Figure 1.2

Operation

After the Main Menu is displayed, press F2. It is also possible to move the cursor to the item to be selected, then press the Enter Key.

Example 2: Selecting F 3 (Register)

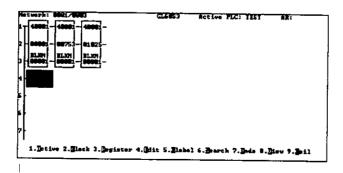


Figure 1.3

1.3.1 Basic Key Operations cont.

Operation

Press F3. It is also possible to press the letter displayed on the Menu in reverse video ("R" in this case).

2) If the display covers more than one page, use the Page Down Key to go to the next page and the Page Up Key to return to the previous page.

Example 1: Network Screen



Example 2: Screen Display Listing Used Coils

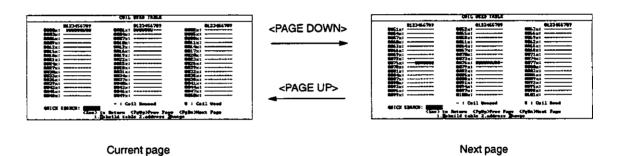


Figure 1.4

3) To exit the current operation or to return to the previous page, press the Esc Key.

Example

Press the Esc Key while editing the network, check that "Y" appears after the message, and press the Enter Key to exit network edit.

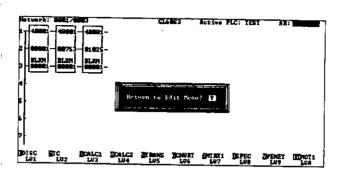


Figure 1.5

Menu level 0 indicates the first menu displayed during network editing. For details on menu levels, see *Appendix A List of Function Key Menus*.

If the Function Menu at the bottom of the screen is higher than menu level 0, press the Esc Key to return to menu level 0. It is possible to exit network editing only from menu level 0.

Note When exiting, a message will normally appear asking whether or not to save changes. If no message appears, some of the changes made may not be saved. To save the changes, press the Alt + E Keys.

4) Press the Enter Key to confirm any numeric values and characters that have been entered.

Example: Entering Reference Numbers

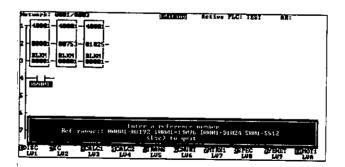


Figure 1.6

Enter the reference number in the number input field, as shown in *Figure 1.6*, and press the Enter Key to confirm the input.

1.3.2 List of Reference Numbers Used

1.3.2 List of Reference Numbers Used

In this manual, a variety of reference numbers are associated with ladder element numbers, network numbers, segment numbers, and so on. The following lists the types of reference numbers used in this manual.

N????: 2????: 30???: 3????:	Link coil Input relay M code relay N code relay Stepping relay Input register Constant register	R????: L?: S???: SN?:?: T???:	Time register Link register Network SFC step Action circuit network Transition Subroutine network Segment
4????:	Holding register	SEG?.	Segment

The permissible input range of numbers depends on which GL-series processor is selected or connected (online). The permissible range will be shown on the screen each time an input is made.

1.4 List of Functions for each GL-series Processor

The features and functions available differ according to the GL-series model used. When editing using the MEMOCAD-PRO Software, these differences and limitations change with the model selected or connected online. Refer to the table below for information on the differences between models.

Table 1.1 List of Functions For MEMOCON-SC Models

Features	MEMOCON-SC Series				
	GL60S, S0, S1	GL60S2, S3	GL60H, GL60HT	GL70H, GL70HT	GL40S1, S2, S3
64 kW program memory	_	_		Yes	_
Stepping relays	-	-	Yes	Yes	Yes
Set/reset for action circuits	–	_	Yes	Yes	_
Using of link coils and time register step relays using the action circuit, transition circuit, and subroutines	-	_	Yes	Yes	_
Transition comments			Yes	Yes	_
Motion programmer	_	_	Yes	Yes	Yes
Motion commands	-		Yes	Yes	Yes
M code and N code relays	_	_	Yes	Yes	Yes
YENET 3200 commands (MBUS, PEER, BROD, BOOK, POLL, DIAG, SND, RCV)	-	Yes	Yes	Yes	
Expansion registers		S3 only	Yes	Yes	
SFC editing	Yes	Yes	Yes	Yes	
Remote I/O	Yes	Yes	Yes	Yes	_
ASCII	S1 only	Yes	Yes	Yes	
PC Link	S1 only	Yes	Yes	Yes	Yes

2

Installation and Start Up

2

This chapter describes how to install the MEMOCAD-PRO Software on the hard disk of a computer and the procedures for starting up the software.

2.1	Installation on the Hard Disk	2-2
2.2	Starting and Exiting MEMOCAD-PRO	2-4

2.1.1 MEMOCAD-PRO Installation

2.1 Installation on the Hard Disk

This section explains how to install the MEMOCAD-PRO Software.

2.1.1 MEMOCAD-PRO Installation

Perform the following procedure to install the MEMOCAD-PRO System on a hard disk. Check that the computer has been started in MS-DOS. (The MEMOCAD-PRO System cannot be used if the computer does not have MS-DOS.)

Example

In this example, the following drives are used.

Hard disk:

C drive

Floppy disk:

A drive

- 1) Insert the Installation Disk in the floppy disk drive of the computer.
- 2) Change the current drive to the drive in which the disk was inserted.



Figure 2.1

3) Enter the install command and press the Enter Key.

An example of the install command with parameters is shown below.

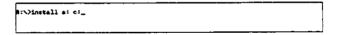
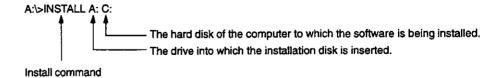


Figure 2.2



The Title Screen will appear.

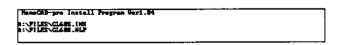


Figure 2.3

- 4) When ready, press the Enter Key.
- 5) After the following message is given, insert the next disk, and press the Enter Key.

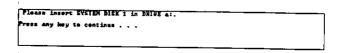


Figure 2.4

6) After the following message is given, insert the next disk, and press the Enter Key.

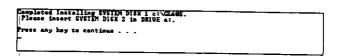


Figure 2.5

7) After installation has been completed, press the Enter Key.

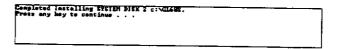


Figure 2.6

Note If the wrong key is entered or the wrong floppy disk is inserted during installation, press the Stop Key to cancel the process and start the operation from the beginning.

2.2 Starting and Exiting MEMOCAD-PRO

This section describes the procedures for starting and exiting MEMOCAD-PRO. Depending on the parameters specified during installation, an error message may be displayed on the screen when starting MEMOCAD-PRO. This section also describes action to be taken when this error message appears.

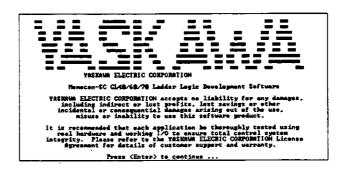


Figure 2.7 Start Screen

2.2.1 Starting MEMOCAD-PRO

This procedure assumes that the system is located in a sub-directory called GL60S on the hard disk (C drive) of a computer. The start command is GL.

- 1) Enter C:\>CD GL60S and press the Enter Key to move to the correct directory.
- 2) Enter C:\GL60S>GL and press the Enter Key to start the program.

The Start Screen will appear.

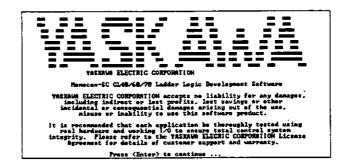


Figure 2.8

3) Press the Enter Key.

To exit and return to MS-DOS, press the Esc Key.

The Main Menu will appear.

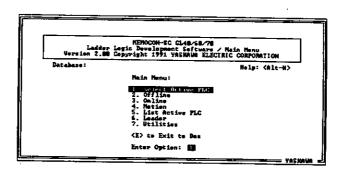


Figure 2.9

Instead of the Main Menu, the following error message may be displayed:

"File Not Found C:\GL60S\GL60S.TKB"

In this case, change the specified pathname, as outlined in 2.2.2 TKB File Specifications.

A batch file can be created to eliminate this process during startup.

If the parameter "/RA" is added to the start command, the program is automatically started with the database last used.

2.2.2 TKB File Specifications

If MEMOCAD-PRO is installed on a drive other than C drive, the following error message will appear when the program is started.

"File Not Found C:\GL60S\GL60S.TKB"

In this case, use the following procedure to specify the correct pathname.

- 1) After the error message appears, press the Esc Key.
- 2) Select 7. Utilities from the Main Menu.

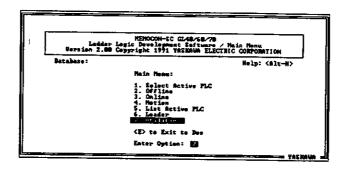


Figure 2.10

2.2.2 TKB File Specifications cont.

3) Select 1. Configuration from the Utility Menu.

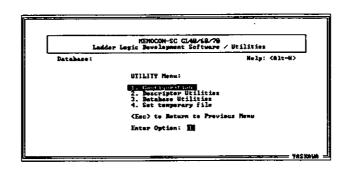


Figure 2.11

4) Select 3. Key/Mnemonic Assignments from the Configuration Options.

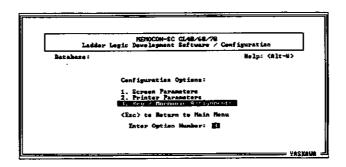


Figure 2.12

The Key/Mnemonic Assignments Screen will appear.

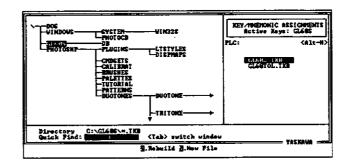


Figure 2.13

5) Press the Enter Key.

When the setting screen is displayed, GL60S.TKB will be the default setting, so pressing the Enter Key will set the correct pathname. If GL60S.TKB is not selected, select it and press the Enter Key.

The specified pathname is changed and the error message will no longer appear.

2.2.3 Exiting MEMOCAD-PRO

Exiting MEMOCAD-PRO

- 1) After completing operations, press the Esc Key to return to the Main Menu.
- 2) Press either the Esc Key or "E".

Move the cursor to <E> to Exit to Dos.

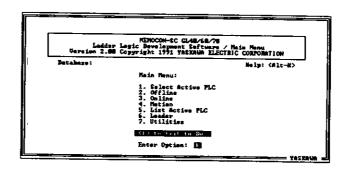


Figure 2.14

3) Press the Enter Key.

Databases

3

This chapter describes the contents of a database, and the procedures for selecting or creating a database, changing the selected drive or directory, and deleting unwanted directories. Temporary files, and methods for controlling the database including deleting, copying, and backing up databases are also described.

3.1	Selecting or Creating Databases	•••••	3-2
3.2	Database Management	•••••	3-16

3.1 Selecting or Creating Databases

The user files handled by MEMOCAD-PRO are called the database and are created on the hard disk of the computer. To operate MEMOCAD-PRO, particularly offline, the user files (database) must be selected as the target for operation. This section explains the procedures for selecting an existing database and for creating a new database.

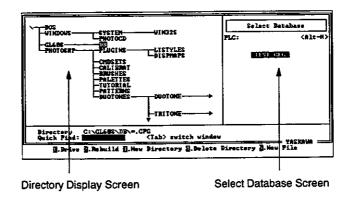


Figure 3.1

Note When a database has been selected, a temporary backup file of the data is created to protect the data. Make sure there is enough free space on the hard disk for this temporary backup file. The amount of free space required is double the actual size of the database.

3.1.1 About the Database

Programs and data are created as separate files in MEMOCAD-PRO. Together these programs and data are called the database, and MEMOCAD-PRO uses this database as its target for operations.

A database consists of the following files.

Example: The database is called "Test 1."

TEST 1.CFG: Configuration data

This file includes data related to the configuration of the Programmable Controller, such as device models and memory allocation, which is set in the database. To select a database, specify this file to represent the group of files comprising the database.

TEST 1.PR1: Ladder logic program data

TEST 1.PR2: The ladder logic program data is stored in these files.

TEST 1.PRD:

TEST 1.DT1: Data files

TEST 1.DTD: Relations between the ladder programs and other data is stored in

these files.

TEST 1.DS1: Signal descriptors

TEST 1.DS2:

TEST 1.DSD:

TEST 1.CMS: Short comment data

TEST 1.PGT: Page title data

TEST 1.CML: Long comment data

TEST 1.XR1: Cross reference data

TEST 1.XR2: This data is necessary to include cross references in lists to be

TEST 1.XR3: printed.

TEST 1.XRD:

TEST 1.BL1: Block file data

TEST 1.BL2: Networks can be made into blocks and the blocks can be stored.

TEST 1.BLD:

TEST 1.MS1: ASCII message data

TEST 1.MS2:

TEST 1.MSD:

TEST 1.REV: Description of amended data

When a new database is created, all the files listed above will automatically be created. These files are not normally used separately.

3.1.2 Creating a New Database

3.1.2 Creating a New Database

The following procedure is used to create a new database. Determine the following items before creating a database.

• Name of the database:

MS-DOS allows up to 8 characters.

• Location:

A drive and directory on the computer.

• Setting the target Processor:

The model of Processor and free space allocation

(Can be changed afterwards.)

• Summary:

The contents of target project and clients

(Can be omitted.)

1) Select 1. Select Active PLC from the Main Menu

This function can be selected from the Main Menu, as well as from other menus including the Edit Menu, Lister Menu, and Loader Menu.

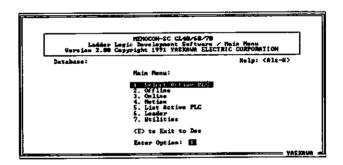


Figure 3.2

The Selection Database Screen will be displayed.

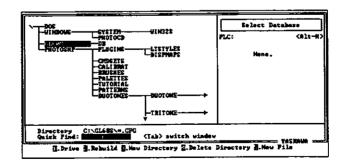


Figure 3.3

2) Press the Tab Key to move the cursor to the left window displaying the directory tree.

3) Move the cursor to the directory in which you want to create the database.

Make sure that databases are created on the hard disk. When creating or editing a database on a floppy disk there is a risk the disk will run out of free space, causing an error that may damage part of the database.

It is recommended to create separate directories for databases. For details on how to create a directory, refer to 3.1.5 Creating a Subdirectory for Each Database. For details on how to change the specified drive, refer to 3.1.4 Changing the Specified Drive.

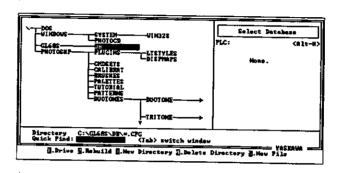


Figure 3.4

- 4) Press F5 to select New File.
- 5) Enter the file name in the input field.

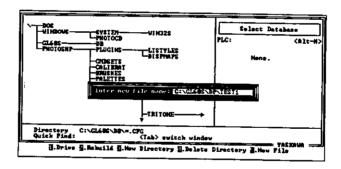


Figure 3.5

Press the Enter Key. The screen for selecting the model of Processor will be displayed.

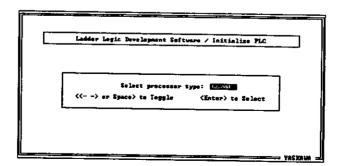


Figure 3.6

3.1.2 Creating a New Database cont.

6) Press the Space Key to select the appropriate model, then press the Enter Key.

The PLC Configuration Display will appear.

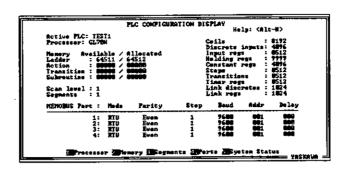


Figure 3.7

If Select Active PLC is selected from the Online Edit Menu, the PLC Configuration Display will not appear and the settings of the connected Processor will be used.

7) Specify settings if necessary.

On this screen, it is possible to set the model of the Processor (CPU), allocate memory, set the scan level, and set the number of segments (for two-level scanning). If no changes are necessary, press the Esc Key to use the default settings. For the procedures to set the above parameters, refer to 4.5.1 Processor Types and Configurations. The items set here can be changed at any time.

Press the Esc Key. A message will appear asking if you want to save changes.

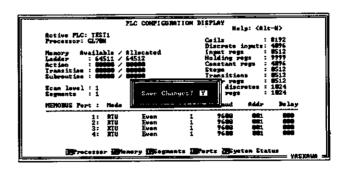


Figure 3.8

If there are no changes then this step is omitted.

8) Enter Y and press the Enter Key. This will create a temporary file and return to the Main Menu.

For details on temporary files, refer to 3.1.8 About Temporary Files.

3.1.3 Selecting a Database

When performing operations such as offline editing, listing, or loading, a database must be selected for the operation. Databases are normally created on the hard disk of a computer. If the database is on a floppy disk, copy it to the hard disk before selecting it.

The size of a large database can easily exceed one megabyte. When creating a database on a floppy disk there is the risk that the disk will run out of free space while editing. This may cause an error that may damage part of the database. Before editing a database on the hard disk, make sure that the hard disk has enough free space.

1) Select 1. Select Active PLC from the Main Menu.

This function can be selected from the Main Menu, as well as from other menus including the Edit Menu, Lister Menu, and Loader Menu. If attempting to edit without first creating (or selecting) a database, this function will be automatically selected.

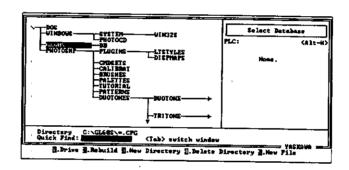


Figure 3.9

The Select Database Screen will be displayed.

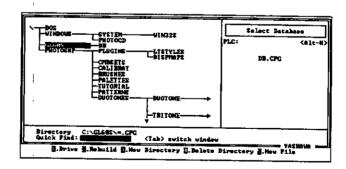


Figure 3.10

- 2) Press the Tab Key to move the cursor to the left window displaying the directory tree.
- 3) Move the cursor to the directory where the desired database is stored.

3.1.4 Changing the Specified Drive

The names of the files in the selected directory will be displayed in the file window on the right.

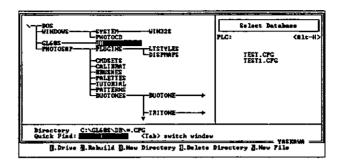


Figure 3.11

4) Press the Tab Key or the Enter Key to move the cursor to the right to the directory contents window.

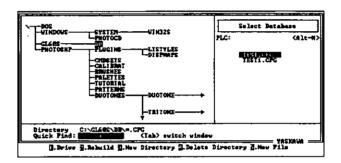


Figure 3.12

5) Move the cursor to the file name representing the database you wish to select and press the Enter Key.

The database will be displayed.

At this stage, a temporary file will be created. For details for temporary files, refer to 3.1.8 About Temporary Files.

3.1.4 Changing the Specified Drive

The following procedure explains how to change the drive when selecting or creating a database on a different drive to the one currently specified. 1) Display the Select Database Screen.

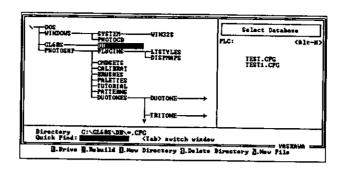


Figure 3.13

2) Press F1 (Drive).

The screen for selecting the drive will be displayed.

The drives that can be selected will be displayed.

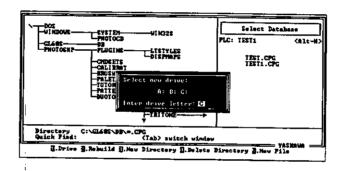


Figure 3.14

- 3) Enter the letter of the drive.
- 4) Press the Enter Key to change the displayed drive.
- Create or edit a database.

Note Although selecting a floppy disk may be possible, it is not recommended because there is a risk that the floppy disk may run out of free space during the process. This may cause an error that may damage part of the database. If a database is created on a floppy disk, copy it to the hard disk before proceeding.

3.1.5 Creating a Subdirectory for Each Database

A database consists of 20 or more files. The number of files will thus increase very quickly if there are a lot of databases. Creating a subdirectory for each database is therefore convenient for database management.

3.1.5 Creating a Subdirectory for Each Database cont.

The following example shows how to create a subdirectory named "DB" under the GL60S subdirectory containing the MEMOCAD System.

1) Display the Select Database Screen.

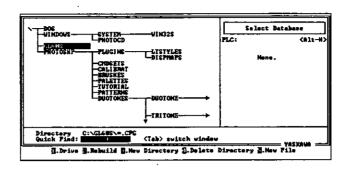


Figure 3.15

- 2) Press the Tab Key to move the cursor to the left window displaying the directory tree.
- 3) Move the cursor to the subdirectory under which a new directory is to be created.

The subdirectory will be created under the directory in which the cursor is located. In this example, the cursor is positioned on the GL60S directory.

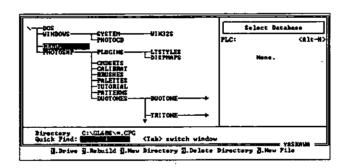


Figure 3.16

4) Press F3 (New Directory).

The directory name input field will be displayed.

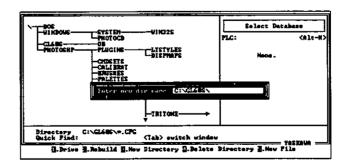


Figure 3.17

5) Enter a new directory name.

Press the Enter Key to create the subdirectory.

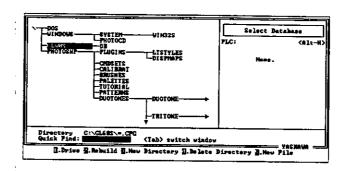


Figure 3.18

3.1.6 Deleting Unwanted Directories

The following procedure is used to delete a directory. Make sure there are no files contained in the directory to be deleted.

1) Display the Select Database Screen.

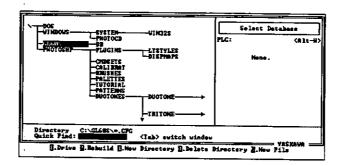


Figure 3.19

- 2) Press the Tab Key to move the cursor to the left window displaying the directory tree.
- 3) Move the cursor to the directory to be deleted.

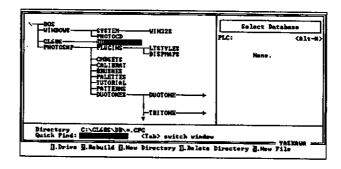


Figure 3.20

3.1.7 Correcting the Directory Configuration Display

4) Press F4 (Delete).

A confirmation message asking whether to delete the directory will appear.

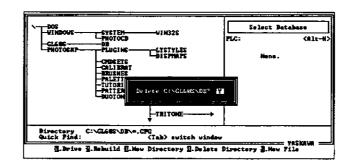


Figure 3.21

5) Enter Y and press the Enter Key.

The directory will be deleted.

This screen displays the database file names only. If other files, such as motion program files and parameter files, exist in a directory, they are not displayed. A directory containing such files cannot be deleted. A warning message will appear on the screen when the user attempts to delete this directory. If these files are not needed, exit MEMOCAD-PRO, return to MS-DOS and delete the files, then delete the directory.

3.1.7 Correcting the Directory Configuration Display

The directory configuration displayed on the Select Database Screen defaults to the previous configuration to save time searching for the current configuration.

If the current directory configuration is different from the previous one and the correct data is not displayed on the screen, the following procedure is used to correct the data.

1) Display the Select Database Screen.

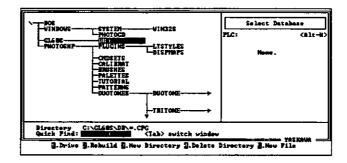


Figure 3.22

2) Press F2 (Rebuild).

The correct data will be displayed.

3.1.8 About Temporary Files

When a database is selected or created, a temporary file (@@@. XXX) will automatically be created as a backup in case of damage to the database. If the database is destroyed, change the name of this file and use it as the database. The temporary file will be created in the directory containing the MEMOCAD-PRO System.

1. Setting Modes

1) Select 7. Utilities from the Main Menu.

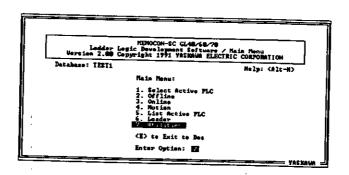


Figure 3.23

Move the cursor to 4. Set temporary file from the Utilities Menu, and press the Enter Key to display the Set Up Temporary File Screen.

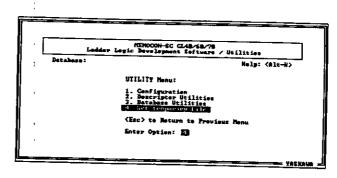


Figure 3.24

2) Press the Space Key to select the mode you want.

The preset mode becomes valid the next time MEMOCAD-PRO is started.

3.1.8 About Temporary Files cont.

2. When Selecting or Creating a Database

Select or create a new database.

Databases will automatically be copied to a temporary file when MEMOCAD-PRO has been started using GL60MENU\RA,\RR.

A screen will appear saying "Copying to Temporary File" and the database will be copied to the temporary file.

3. When Exiting MEMOCAD-PRO.

1) Exit MEMOCAD-PRO.

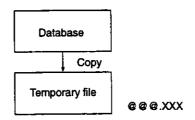
A message will appear if you want to save chages.

2) The default is "Y." Press the Enter Key. If "N" is entered and the Enter Key is pressed, the version of the temporary file prior to editing will be saved as the database and the edited version of the database will be discarded.

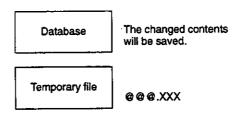
If a database is selected while another database is being edited, the screen will display "Save Changes?" If the Enter Key is pressed when "Y" is displayed, step b) will be performed followed by step a) to save the modified data. If "N" is entered and the Enter Key is pressed, step c), step b), and then step a) will be performed in order, and the modified data will not be saved.

The changed contents will be saved.

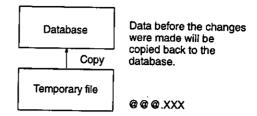
 a) When a database is selected or created, a temporary file for it will be automatically created.



b) When changes are saved, the saved contents and the temporary file both remain.



c) When changes are not saved, the changes are overwritten with the contents of the temporary file.



3.2.I Deleting a Database

3.2 Database Management

The following options are available to manage databases.

- Deleting a database
- · Copying a database
- Renaming a database
- Description of detailed information on a database
- Backing-up a database

3.2.1 Deleting a Database

The following procedure is used to delete the database currently selected.

1) Select 7. Utilities from the Main Menu.

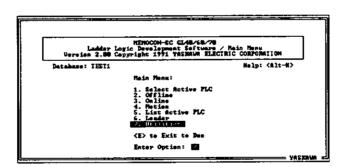


Figure 3.25

2) Select 3. Database Utilities from the Utilities Menu.

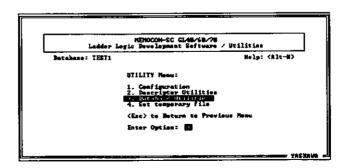


Figure 3.26

3) Select 2. Delete the Active PLC From Disk from the Database Utilities Menu.

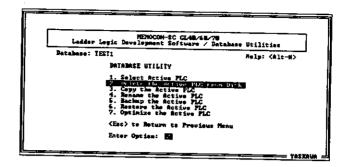


Figure 3.27

A confirmation message asking whether to delete the database will appear.

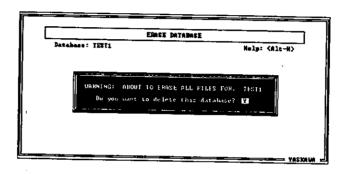


Figure 3.28

4) Enter "Y" after checking the contents, and press the Enter Key.

Always check the name of the database before executing.

3.2.2 Copying a Database

The following procedure is used to copy the database currently selected to the specified drive or directory.

1) Select 7. Utilities from the Main Menu.

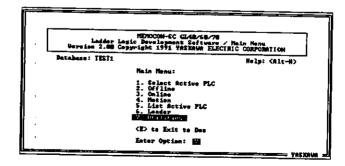


Figure 3.29

3.2.2 Copying a Database cont.

2) Select 3. Database Utilities from the Utilities Menu.

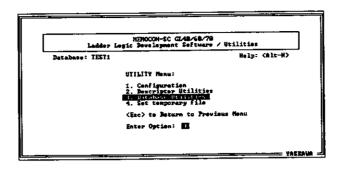


Figure 3.30

3) Select 3. Copy the Active PLC from the Database Utilities Menu.

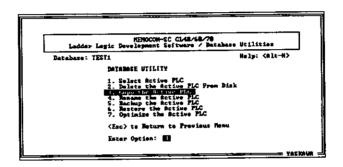


Figure 3.31

4) Move the cursor to the destination file or directory and press the Enter Key.

The procedure for specifying the destination drive and directory is the same as 3.1.3 Selecting a Database. When changing the name of the database before copying it, press F5 (New File) to enter a new name.

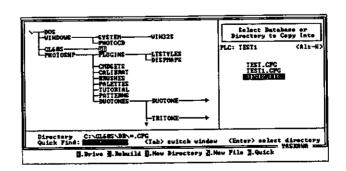


Figure 3.32

A confirmation message asking whether to proceed with the copy will appear.

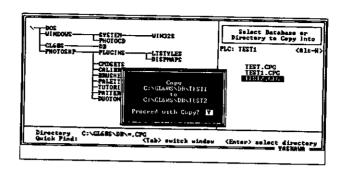


Figure 3.33

5) Check the name of the database before executing.

The copy cannot be executed if the new database has the same file name as the source file. Specify another file name for the new database and press the Enter Key.

3.2.3 Renaming a Database

The following procedure is used to rename the database currently selected.

1) Select 7. Utilities from the Main Menu.

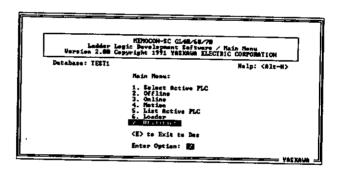


Figure 3.34

2) Select 3. Database Utilities from the Utilities Menu.

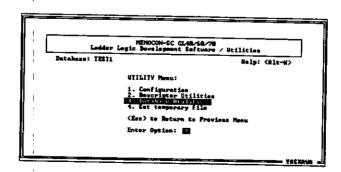


Figure 3.35

3.2.4 Specifying Details of a Database

3) Select 4. Rename the Active PLC from the Database Utilities Menu.

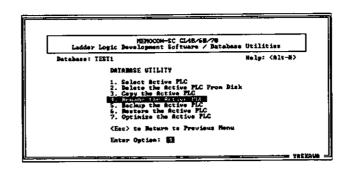


Figure 3.36

4) Enter a new database name in the input field.

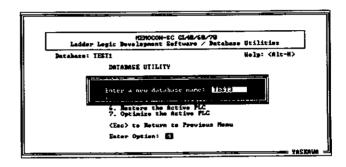


Figure 3.37

5) Press the Enter Key.

3.2.4 Specifying Details of a Database

The following procedure is used to specify details of a new database, such as its purposes and its author. This description can be printed together with ladder lists and other types of data.

The contents of this description are described below.

Page Header:

Enter the title of the database using up to 40 characters. This can be printed on the top of each page of the ladder list.

Project:
 Enter the project name (if any) related to this database.

 PLC Model: Enter the model of Processor.

- Description:
 Enter the purpose and the function of the project.
- Prepared by: Enter the name of the project engineer or programmer.
- Client:
 Enter the name of client company, plant, or facility.
- 1) Select 2. Offline from the Main Menu.

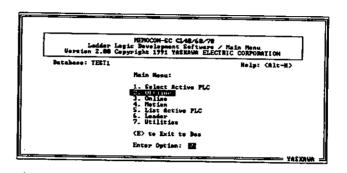


Figure 3.38

2) Select 5. Database Details from the Offline Edit Menu.

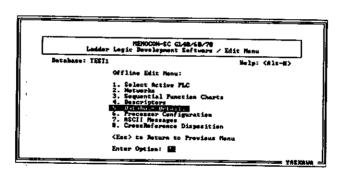


Figure 3.39

3) Enter the page heading in the input field and press the Enter Key.

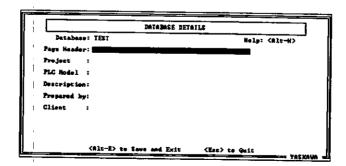


Figure 3.40

3.2.5 Backing Up a Database

- 4) When the Enter Key is pressed, the cursor will move to the next item.
- 5) After a detailed description of each item has been completed, press the Alt + E Keys to save and return to the previous screen

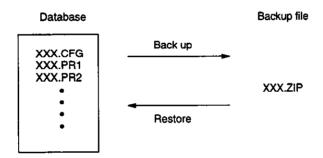
If you do not want to save the details entered, press the Esc Key. A confirmation message will appear asking whether to save the data. Enter "N" and press the Enter Key.

The data created here is documentation data intended for printing, therefore the contents will not affect the programs.

3.2.5 Backing Up a Database

A database can be destroyed by various kinds of accidents. It is recommended to make backups as often as possible.

Back up methods for MEMOCAD-PRO



XXX.ZIP file is an archive file which contains a group of 20 or more compressed data files. Although the amount of compression depends on the contents of the program, files are normally reduced to less than half of their actual size.

To return the XXX.ZIP file to the database form, a restoring operation must be executed.

1. Creating Backup Files

The following procedure is used to create and name a backup of the database currently selected in a specified drive or directory. When a database is backed up, a file named XXX.ZIP (XXX is the name of the file) will be created. The XXX.ZIP file is a compressed version of the database file, which is smaller in size than the actual database, making it easier to store. The amount of compression ranges from 10% to 50%.

1) Select 7. Utilities from the Main Menu.

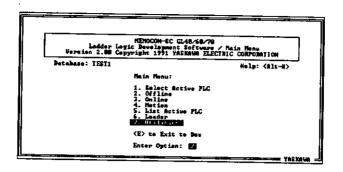


Figure 3.41

2) Select 3. Database Utilities from the Utilities Menu.

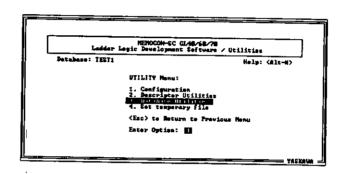


Figure 3.42

3) Select 5. Backup the Active PLC from the Database Utilities Menu.

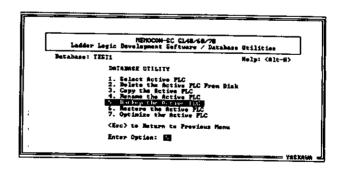


Figure 3.43

3.2.5 Backing Up a Database cont.

The screen for selecting the backup destination will be displayed.

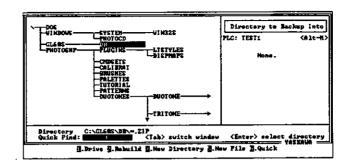


Figure 3.44

4) Press F5 (New File).

If you want to create a backup on another drive or in another directory, specify the following before pressing F5.

• Drive: Press F1 (Drive)

 Directory: Press the Tab Key to move the cursor to the left window displaying the directory tree.

5) Enter the name of the backup file in the input field.

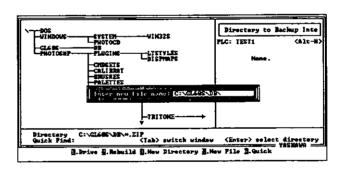


Figure 3.45

6) Press the Enter Key.

A confirmation message asking whether to proceed with the backup will appear.

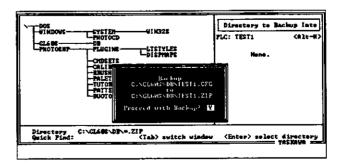


Figure 3.46

Make sure the back up source and destination have been specified correctly. If an existing ZIP file is selected without entering a new file name, the existing ZIP file will be overwritten. The backup file created here cannot be used as a database unless it is restored.

7) Check the message contents, then press the Enter Key.

"Backup complete" will be displayed.

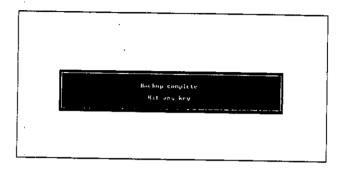


Figure 3.47

8) Press the Enter Key.

The file XXX.ZIP will be created.

2. Restoring Backup Files

The following procedure is used to restore a backup file (XXX.ZIP). The term "restore" used here means to return the compressed file created in the backup process to the original database file format.

1) Select 7. Utilities from the Main Menu.

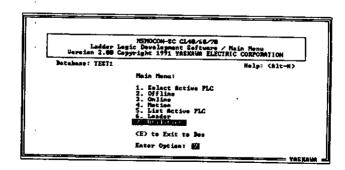


Figure 3.48

3.2.5 Backing Up a Database cont.

2) Select 3. Database Utilities from the Utilities Menu.

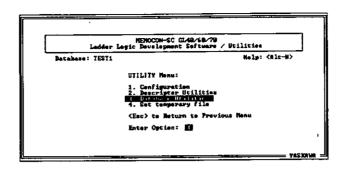


Figure 3.49

3) Select 6. Restore the Active PLC from the Database Utilities Menu.

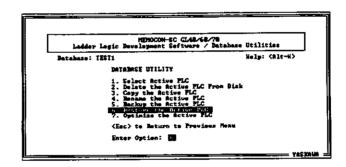


Figure 3.50

The screen for selecting the source file to be restored will be displayed.

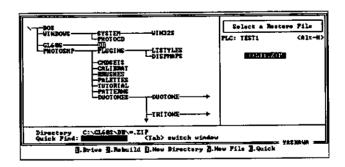


Figure 3.51

4) Move the cursor to the ZIP file to be restored and press the Enter Key.

If the ZIP file is on another drive or in another directory, specify this before carrying out restoration of the file.

Drive: Select F1 (Drive)

Directory: Press the Tab Key to move the cursor to the left window displaying the di-

rectory tree.

The screen for selecting the restore destination will be displayed.

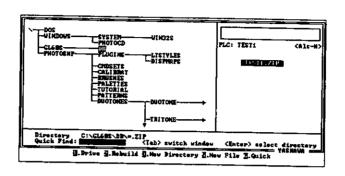


Figure 3.52

5) Select the destination directory for the restore file and press the Enter Key.

Pressing the Enter Key without changing anything here will restore the file in the directory where the current database is selected. If you want to restore the file on another drive or directory, specify that drive or directory and press the Enter Key.

A confirmation message asking whether to proceed will appear.

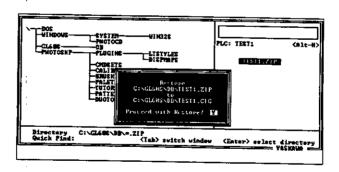


Figure 3.53

6) Check the name of the database before executing.

When restoring a file, the name for the file output cannot be specified. For example, if a backup file of a database named "TEST" is to be restored, the database restored is always named "TEST." If a database file with the same name already exists in the directory, this file will be overwritten. It is recommended to take precautions so that this does not happen.

3.2.5 Backing Up a Database cont.

"Restore complete" will be displayed.



Figure 3.54

7) Press the Enter Key.

4

Offline Editing

4

This chapter describes the procedures and functions available for editing networks, editing subroutines, SFC editing, editing comments, editing ASCII, and setting the system configuration.

4.1	Editing Networks	4-2
4.2	Editing Subroutines	4-81
4.3	SFC Editing	4-84
4.4	Editing Comments	4-137
4.5	Setting the System Configuration	4-166
4.6	Editing for ASCII Modules	4-195

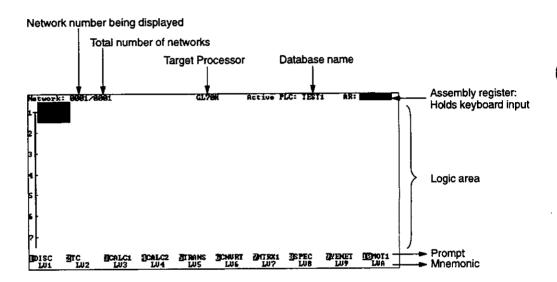
4.1.1 Network Screen Configuration

4.1 Editing Networks

Network editing is used to input and edit ladder elements, to monitor and edit the status of all references, and to copy, move, and find networks.

4.1.1 Network Screen Configuration

The following shows the configuration of the Network Screen.



4.1.2 Displaying Networks

The following procedures can be used to jump quickly to and display a network from what might be several thousands of networks for some programs.

- Jump to network display after starting MEMOCAD-PRO or to next or previous network: Refer to 1. Displaying Networks on page 4-3.
- Jump to any network:
 Refer to 2. Displaying Specified Networks on page 4-4.
- Mark any network, and jump to that network: Refer to 3. Jumping to Marks on page 4-5.

1. <u>Displaying Networks</u>

The following procedure is used to display the Network Screen.

1) Select 2. Offline from the Main Menu.

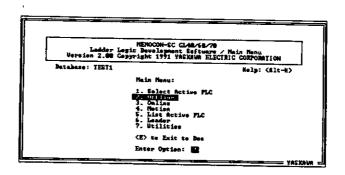


Figure 4.1

2) Select 2. Networks from the Offline Edit Menu.

A database is required for edit a network offline. The Select Database Screen will thus appear automatically if a database is not yet selected. Refer to 3.1.3 Selecting a Database, and either select or create a database.

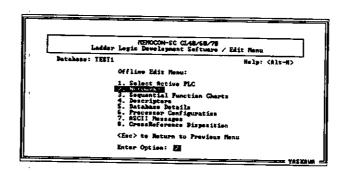


Figure 4.2

The Network Screen will appear.

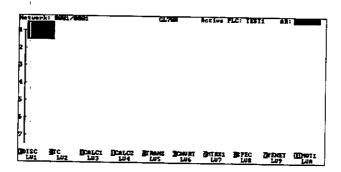


Figure 4.3

4.1.2 Displaying Networks cont.

• Display next network: Press the Page Down Key.

• Display previous network: Press the Page Up Key.

• Display last network: Press the Ctrl + End Keys.

Display first network: Press the Ctrl + Home Keys.

When displaying the last network is specified, the cursor will actually jump to a blank network after the last network.

2. Displaying Specified Networks

The following describes two methods used to display a specified network.

A. Using AR:

AR: (Assembly Register:) will appear on the upper right side of the screen.

Enter the network number (Lxx) at AR: and press the Enter Key.

AR: cannot be entered while the Command Submenu (Figure 4.4) is displayed in the label area at the bottom of the screen. Press the Esc Key to exit the Command Submenu if it is displayed, and then enter AR:

B. Using the MOVE Command

The MOVE command can be used to move to screens other than the Network Screen. The following procedure is used to specify a screen.

Lxxx: Move to network number xxx.

SNxxx:nnn: Move to network number nnn of step number xxx.

Txxx: Move to transition number xxx. Sxxx: Move to step number xxx.

Gxxx:nnn: Move to network number nnn of subroutine number xxx.

SEGx: Move to the first network of segment number x.

1) Press the Slash Key to display the Command Submenu.



Figure 4.4

2) Press F8 (View).

An alternative method is to enter "V" from the Command Submenu.

The View Submenu will appear.



Figure 4.5

3) Press F6 (Goto).

An alternative method is to enter "G" from the View Submenu.

The input window will appear to enter the address.

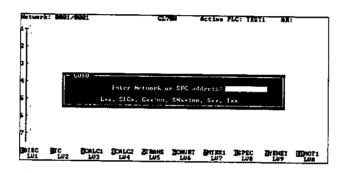


Figure 4.6

4) Enter the network or the SFC address (Lxx, SNxx) that will be displayed and press the Enter Key.

The specified network or SFC will appear.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key, or press the Alt + V Keys, to display the View Submenu.
- b) Enter "GOTO" at AR: and press the Enter Key, or press the Alt + N Keys, to display the input window.

3. Jumping to Marks

Any cursor position marked during network editing can be stored in memory. If an oftenused position is marked, that position can be brought up instantly even while editing another network. 4.1.2 Disputying Networks cont.

1) Press the Slash Key to display the Command Submenu.



Figure 4.7

2) Press F8 (View).

An alternative method is to enter "V" from the Command Submenu.

The View Submenu will appear.



Figure 4.8

- 3) Move the cursor to the position that will be marked.
- 4) Press F3 (Mark).

An alternative method is to enter "M" from the View Submenu.

The cursor position will be marked.

Although the mark will not appear on screen, the position of the mark will appear on the bottom left side of the screen.

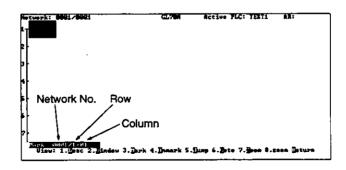


Figure 4.9

5) Press F4 (Unmark) to cancel the mark.

An alternative method is to enter "U" from the View Submenu.

6) Press F5 (Jump) to jump to the mark even if the cursor is in another network.

An alternative method is to enter "J" from the View Submenu.

7) Press F5 (Jump) again to return to the original position.

It is not possible to return to the original position if the cursor is not at the marked position. The original position is the position of the cursor prior to jumping to the mark, and it will appear on the left side of the mark position on the lower left side of the screen following a jump.

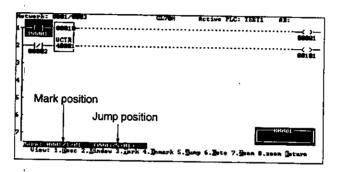


Figure 4.10

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key, or press the Alt + V Keys to display the View Submenu.
- b) Enter "M" at AR: and press the Enter Key, or press the Alt + M Keys, to mark the cursor position.
- c) Enter "UMK" at AR: and press the Enter Key to cancel the mark.
- d) Enter "J" at AR: and press the Enter Key, or press the Alt + J Keys to jump to the mark.

4.1.3 Exiting from Network Editing

The following procedure is used to exit from network editing.

1) Press the Esc Key.

4.1.4 Moving the Cursor on a Network

A confirmation message asking whether to exit will appear.

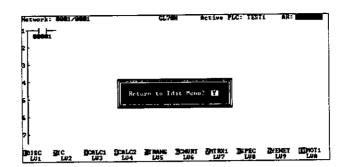


Figure 4.11

If the Function Menu at the bottom of the screen is not at level 0 (initial menu), the Function Menu will shift closer to level 0 without a message. Press the Esc Key at level 0 to exit.

2) Press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to continue editing.

A message will appear asking whether to optimize the database.

Multiple network editing generates excess sections in data files that make the file much larger than is needed. This is why the database is optimized when network editing is completed. It may take some time to optimize the database, depending on the number of networks and the editing work involved. Press the Esc Key to cancel optimization. When this is done, optimization will be continued the next time you exit network editing.

If optimization will take too long, we recommend saving the database to a P150 disk using the loading function, and then loading the data into the database to rebuild the data. (Refer to 9.8 Converting P150 Disk Data.)

3) Return to the Offline Edit Menu.

4.1.4 Moving the Cursor on a Network

The following procedure is used to move the cursor on the Network Screen.

Moving the Cursor

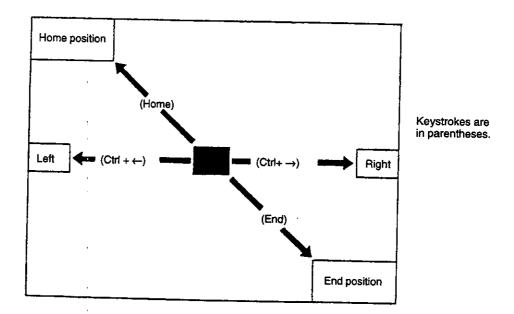
Moving up, down, left or right:

Press the Up, Down, Left or Right Cursor Key.

Moving to the upper left (Home Position): Press the Home Key. Moving to the lower right (End Position): Press the End Key.

Moving to the left edge: Moving to the right edge:

Press the Ctrl + Left Cursor Keys. Press the Ctrl + Right Cursor Keys.



4.1.5 Entering Elements Using Function Keys

Display the Element Menu in the label area at the bottom of the screen, and select the function from the menu using a function key (F1 through F10). All ladder elements are assigned to function keys.

Refer to Appendix A List of Function Key Menus for more details on elements that will be displayed.

F1 (DISC): Discrete I/O F2 (TC): Timer, counter

F3 (CALC1): Calculation function 1
F4 (CALC2): Calculation function 2
F5 (TRANS): Type of data transfer

F6 (CNVRT): Type of data conversion

F7 (MTRX1): Matrix

F8 (SPEC): Skip, subroutine, stepping switch, ASCII instruction, COMM instruction, EX-

PANSION REGISTER instruction

F9 (YENET): YENET

F10 (MOT1): MOTION instruction

To display the next menu, press the Shift Key while a function key menu is being displayed.

Example: Entering 00001

1) Move the cursor to where the element will be entered.

4.1.6 Entering Elements Using Mnemonics

2) Press F1 (DISC).

The discrete I/O function keys will appear.

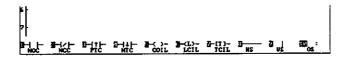


Figure 4.12

3) Press F1 (NOC).

The element will be entered, and an input field will appear.

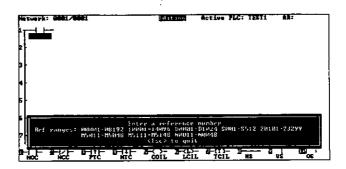


Figure 4.13

4) Enter 00001 and press the Enter Key.

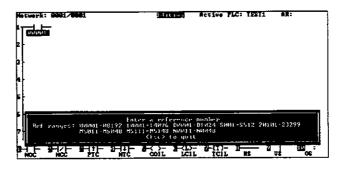


Figure 4.14

Press the Esc Key to return to the previous menu.

4.1.6 Entering Elements Using Mnemonics

Each element has a unique mnemonic. Enter the mnemonic at AR: to input the element.

Mnemonics are displayed with the Element Menu.

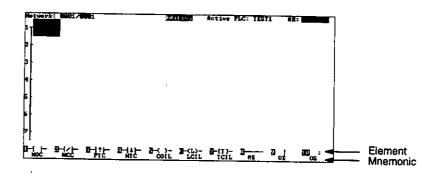


Figure 4.15

- 1) Move the cursor to where the element will be entered.
- 2) Enter the mnemonic of the element at AR:. (Example: NOC for NO contact)

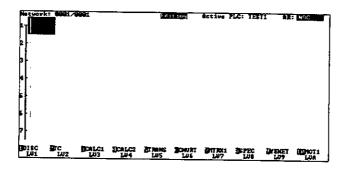


Figure 4.16

3) Press the Enter Key.

The element will be entered, and an input field for the address will appear.

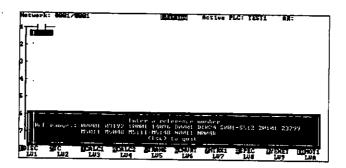


Figure 4.17

4.1.7 Entering Horizontal and Vertical Shorts

4) Enter the address and press the Enter Key.

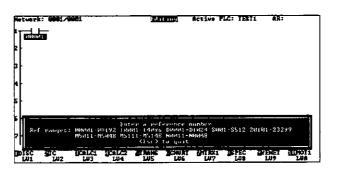
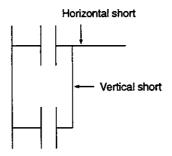


Figure 4.18

4.1.7 Entering Horizontal and Vertical Shorts

The following procedure is used to enter horizontal and vertical shorts.



1) Move the cursor to where the horizontal or vertical short will be entered.

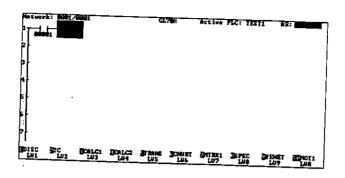


Figure 4.19 Horizontal Short

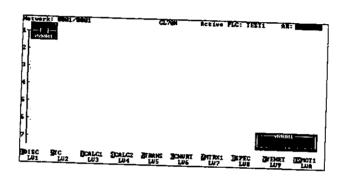


Figure 4.20 Vertical Short

2) Press F1 or F2 to display the Ladder Element Function Menu.

An alternative method is to press a function key between F3 and F10 to display the Ladder Element Function Menu, and then press F8 (–) or F9 (I) while holding down the Shift Key.

3) Press F8 (-) or F9 (I).

The horizontal or vertical short will be entered.

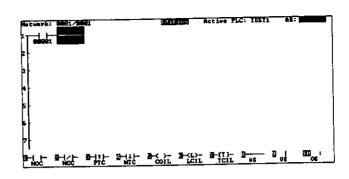


Figure 4.21 Horizontal Short

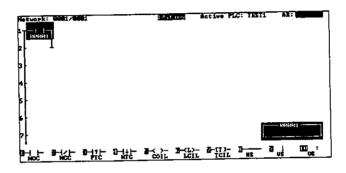


Figure 4.22 Vertical Short

Refer to A. Deleting an Element on page 4-24 or B. Deleting Vertical Shorts and Elements on page 4-25 for more details on deleting horizontal shorts, or C. Deleting a Vertical Short on page 4-26 or B. Deleting Vertical Shorts and Elements on page 4-25 for more details on deleting vertical shorts.

Shortcuts

Enter "HS" or "VS" at AR: and press the Enter Key to enter the horizontal or vertical short directly.

4.1.8 Changing Elements

The following procedure is used to change ladder elements that have already been input.

Example: Changing the ADD Instruction to TIMER (T0.1).

1) Move the cursor to the element (ADD) that will be changed.

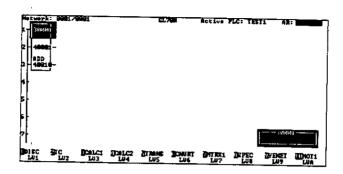


Figure 4.23

2) Press F2 (TC).

The timer/counter function keys will appear.

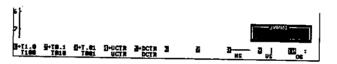


Figure 4.24

3) Press F2 (T0.1).

The element (TIMER) will be input, and the input field will appear.

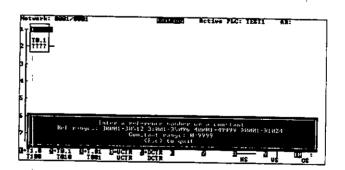


Figure 4.25

Press the Esc Key at this point to cancel the change. The original element (ADD) will appear.

4.1.9 Changing Reference Numbers

4) Enter the address and press the Enter Key.

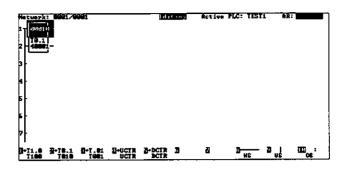


Figure 4.26

4.1.9 Changing Reference Numbers

The following procedure is used to change the reference number of ladder elements.

1) Move the cursor to the element with the reference number that will be changed.

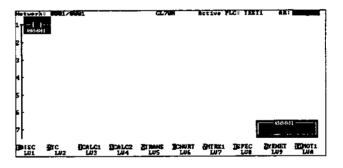


Figure 4.27

2) Press the Enter Key.

If a reference number is already entered at AR:, that value will be entered at the address at the cursor position when the Enter Key is pressed. If nothing is entered when the Enter Key is pressed, a range of addresses that can be entered will appear, and a message will appear asking for the address at the cursor position. Enter the address and press the Enter Key. The reference number can also be changed by selecting Cell from the Edit Submenu. Here again, a message will appear asking for the address at the cursor position.

A range of addresses that can be entered will appear, and a message will appear asking for the address.

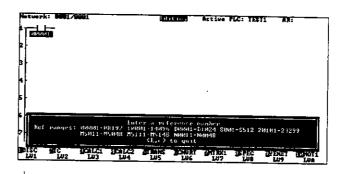


Figure 4.28

3) Enter the new address and press the Enter Key.

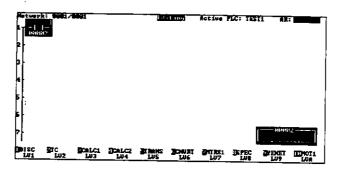


Figure 4.29

4.1.10 Inserting

The following procedure is used to insert blank rows, columns, and networks.

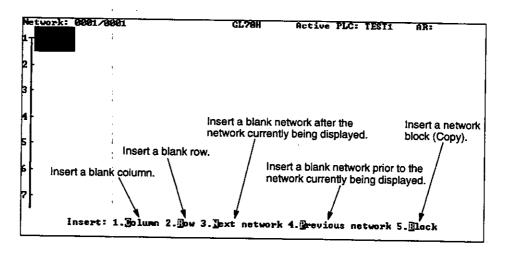


Figure 4.30 Insert Menu

4

1. Inserting a Row

The following procedure is used to insert a blank row in a network.

1) Move the cursor to where the row will be inserted.

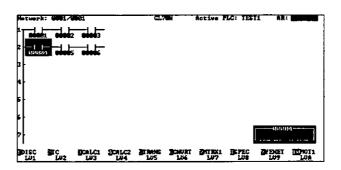


Figure 4.31

2) Press the Slash Key to display the Command Submenu.



Figure 4.32

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.33

4) Press F4 (Insert).

An alternative method is to enter "I" from the Edit Submenu.

The Insert Submenu will appear.



Figure 4.34

5) Press F2 (Row).

An alternative method is to enter "R" from the Insert Submenu.

A row will be inserted.

A row cannot be inserted where an element crosses two rows or when there is no room to insert a row below the insertion position.

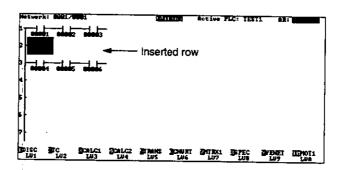


Figure 4.35

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IR" at AR: and press the Enter Key to insert a row.

2. Inserting a Column

The following procedure is used to insert a blank column in a network.

1) Move the cursor to where the column will be inserted.

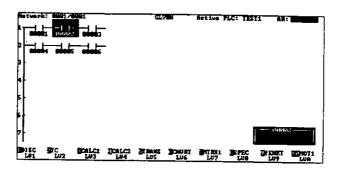


Figure 4.36

2) Press the Slash Key to display the Command Submenu.

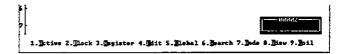


Figure 4.37

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.

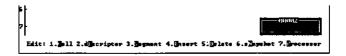


Figure 4.38

4) Press F4 (Insert).

An alternative method is to enter "I" from the Edit Submenu.

The Insert Submenu will appear.



Figure 4.39

5) Press F1 (Column).

An alternative method is to enter "C" from the Insert Submenu.

A column will be inserted.

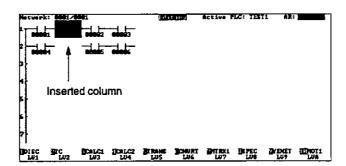


Figure 4.40

A column cannot be inserted if there is no room to the right of the insertion position.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IC" at AR: and press the Enter Key to insert a column directly.

3. Inserting a Network

The following procedure is used to insert a blank network.

- 1) Move the cursor to where the network will be inserted.
- 2) Press the Slash Key to display the Command Submenu.

```
1. Detive 2. Mack 3. Segister 4. Mait 5. Mahal 6. Bearch 7. Dete 8. Dieu 9. Pail
```

Figure 4.41

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.42

4) Press F4 (Insert).

An alternative method is to enter "I" from the Edit Submenu.

The Insert Submenu will appear.

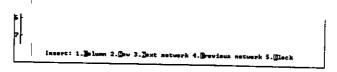


Figure 4.43

4

5) Press F3 (Next Network) or F4 (Previous Network).

An alternative method is to enter "N" or "P" from the Insert Submenu.

A network will be inserted immediately before or after the network currently being displayed.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "INN" or "IPN" at AR: and press the Enter Key to insert a network immediately before or after the currently displayed network.

4. Inserting a Network Block

The following procedure is used to copy and insert a block of networks.

- 1) Display the network that will be inserted.
- 2) Press the Slash Key to display the Command Submenu.

```
1. Trive 2. Block 3. Segister 4. Mit 5. Blabal 6. Bearch 7. Indo 8. Biss 9. 2011
```

Figure 4.44

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.45

4) Press F4 (Insert).

An alternative method is to enter "I" from the Edit Submenu.

The Insert Submenu will appear.



Figure 4.46

5) Press F5 (Block).

F5 (Block) cannot be used if a network block does not exist. Refer to 1. Defining Blocks on page 4-58 for more details on the procedure for creating a network block.

An alternative method is to enter "B" from the Insert Submenu.

A network block will be copied immediately before the network currently being displayed.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.

4.1.11 Deleting

The following procedure is used to delete elements, cells, blank rows, blank columns, and networks.

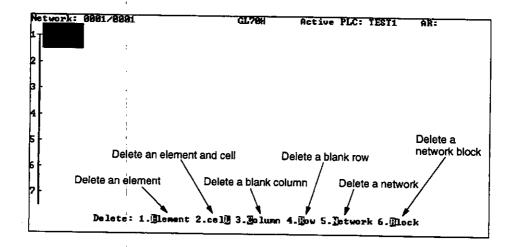


Figure 4.47 Delete Menu

4

1. Deleting an Element

The following procedure is used to delete an element from a network.

A. Deleting an Element

- 1) Move the cursor to the element that will be deleted.
- 2) Press the Slash Key to display the Command Submenu.



Figure 4.48

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.49

4) Press F5 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.



Figure 4.50

5) Press F1 (Element).

An alternative method is to enter "E" from the Delete Submenu, or press the Shift Key to switch to Function Menus from the Ladder Element Menu for a function key between F1 and F10, and then press F7 (Delete).

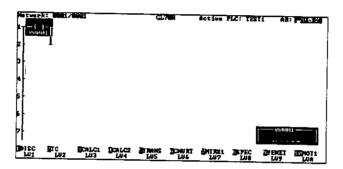
The element will be deleted.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DE" at AR: and press the Enter Key to delete the element.

B. Deleting Vertical Shorts and Elements

1) Move the cursor to element (with the vertical short) that will be deleted.



2) Press the Slash Key to display the Command Submenu.



Figure 4.51

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.52

4) Press F5 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.

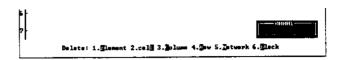


Figure 4.53

5) Press F2 (Cell).

An alternative method is to enter "L" from the Delete Submenu.

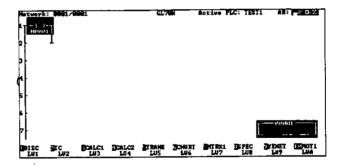
The element and vertical short will be deleted.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DEL" at AR: and press the Enter Key to delete the element and vertical short.

C. Deleting a Vertical Short

1) Move the cursor to the vertical short that will be deleted.



2) Press F1 or F2 to display the Ladder Element Function Menu.

An alternative method is to press a function key between F3 and F10 to display the Ladder Element Function Menu, and then press F10 (:) while holding down the Shift Key.

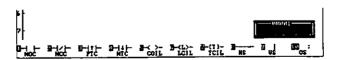


Figure 4.54

3) Press F10 (:).

The vertical short at the cursor position will be deleted.

Shortcuts

Enter "OS" at AR: and press the Enter Key to delete the vertical short at the cursor position.

2. Deleting a Row

The following procedure is used to delete a blank row from a network.

- 1) Move the cursor to the row that will be deleted.
- 2) Press the Slash Key to display the Command Submenu.

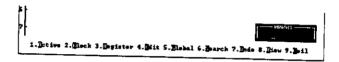


Figure 4.55

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.56

4) Press F5 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.

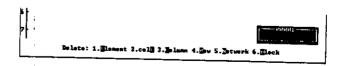


Figure 4.57

4

5) Press F4 (Row).

An alternative method is to enter "R" from the Delete Submenu.

The row will be deleted.

A row cannot be deleted if there is an element in the row.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DC" at AR: and press the Enter Key to delete the row.

3. Deleting a Column

The following procedure is used to delete a blank column from a network.

- 1) Move the cursor to the column that will be deleted.
- 2) Press the Slash Key to display the Command Submenu.



Figure 4.58

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.59

4) Press F5 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.



Figure 4.60

5) Press F3 (Column).

An alternative method is to enter "C" from the Delete Submenu.

The column will be deleted.

A column cannot be deleted if there is an element in the column.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DR" at AR: and press the Enter Key to delete the column.

4. Deleting a Network

The following procedure is used to delete a network that is being displayed.

- 1) Move the cursor to the network that will be deleted.
- 2) Press the Slash Key to display the Command Submenu.



Figure 4.61

3) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.62

4) Press F5 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.



Figure 4.63

5) Press F5 (Network).

An alternative method is to enter "N" from the Delete Submenu.

A confirmation message asking whether to delete the network will appear.

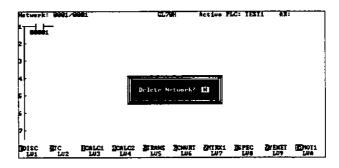


Figure 4.64

6) Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the network. "N" is initially entered so the deletion can be canceled in case the Enter Key is pressed by mistake.

Shortcuts

a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.

- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DN" at AR: and press the Enter Key to delete the network.

5. Deleting a Block of Networks

The following procedure is used to delete a block of networks.

1) Press the Slash Key to display the Command Submenu.

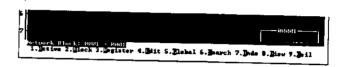


Figure 4.65

2) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.

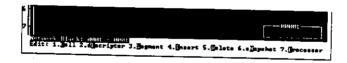


Figure 4.66

3) Press F5 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.



Figure 4.67

4) Press F6 (Block).

F6 (Block) cannot be used if a block of networks does not exist.

4.1.12 Undoing the Last Change

An alternative method is to enter "B" from the Delete Submenu.

A confirmation message asking whether to delete the block will appear.

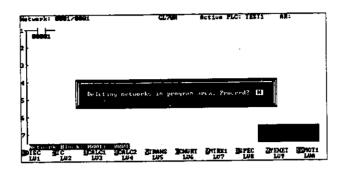


Figure 4.68

5) Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the block of networks. "N" is initially entered so the deletion can be canceled in case the Enter Key is pressed by mistake.

The block of networks will be deleted.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.

4.1.12 Undoing the Last Change

The following procedure is used to undo the last change.

1) Press the Slash Key to display the Command Submenu.

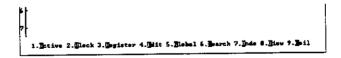


Figure 4.69

2) Press F7 (Undo).

An alternative method is to enter "U" from the Command Submenu.

The Undo/Redo Submenu will appear.



Figure 4.70

3) Press F1 (Undo Last Change).

An alternative method is to enter "U" from the Undo/Redo Submenu.

The last change will be undone.

The last change cannot be undone from another network. Deletions, copies, and other actions for entire networks also cannot be undone.

Shortcuts

- a) Enter "UM" at AR: and press the Enter Key, or press the Alt + U Keys to display the Undo/Redo Submenu.
- b) Enter "UN" at AR: and press the Enter Key to undo the last change.

4.1.13 Redoing the Last Change

The following procedure is used to restore the status prior to undoing the last change.

1) Press the Slash Key to display the Command Submenu.

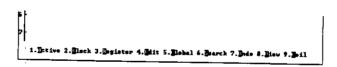


Figure 4.71

2) Press F7 (Undo).

An alternative method is to enter "U" from the Command Submenu.

The Undo/Redo Submenu will appear.



Figure 4.72

4.1.14 Clearing All Changes

3) Press F2 (Redo Changes).

An alternative method is to enter "R" from the Undo/Redo Submenu.

The status will be restored to what it was prior to undoing the last change.

After a change is undone, it cannot be redone if another change is made.

Shortcuts

- a) Enter "UM" at AR: and press the Enter Key, or press the Alt + U Keys to display the Undo/Redo Submenu.
- b) Enter "RE" at AR: and press the Enter Key to redo the changes.

4.1.14 Clearing All Changes

The following procedure is used to undo all changes made since the current network was displayed.

1) Press the Slash Key to display the Command Submenu.



Figure 4.73

2) Press F7 (Undo).

An alternative method is to enter "U" from the Command Submenu.

The Undo/Redo Submenu will appear.

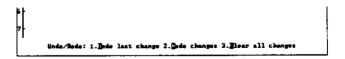


Figure 4.74

3) Press F3 (Clear All Changes).

An alternative method is to enter "C" from the Undo/Redo Submenu.

All changes to the network being displayed will be cleared.

Only changes made to the currently displayed network will be cleared.

Shortcuts

- a) Enter "UM" at AR: and press the Enter Key, or press the Alt + U Keys to display the Undo/Redo Submenu.
- b) Enter "CAE" at AR: and press the Enter Key to clear all changes.

4.1.15 Searching

The following procedure is used to search for specified addresses or instructions (ladder elements).

1. Searching for Addresses

1) Press the Slash Key to display the Command Submenu.

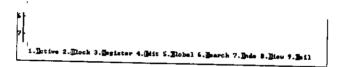


Figure 4.75

2) Press F6 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.



Figure 4.76

3) Enter the address and press the Enter Key.



Figure 4.77

4.1.15 Searching cont.

A confirmation message will appear asking whether to execute the search.



Figure 4.78

4) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 4.79

The first occurrence will appear, and the cursor will move to that address.

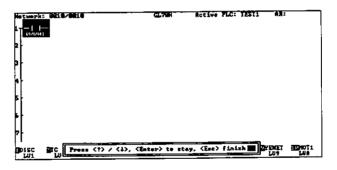


Figure 4.80

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that network.)

Displaying the previous occurrence:

Press the Up Cursor Key.

Displaying the next occurrence: Press the Down Cursor Key. Ending the search and returning to the original network:

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

2. Searching for Instructions and Addresses

1) Press the Slash Key to display the Command Submenu.

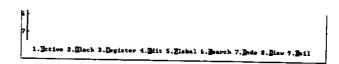


Figure 4.81

2) Press F6 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.



Figure 4.82

3) Press the Page Up Key.

A screen for specifying the address or instruction will appear.



Figure 4.83

4) Enter the address and press the Enter Key, or press the Down Cursor Key.

Move the cursor down.

5) Enter the instruction (mnemonic) and press the Enter Key.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 4.84

4.1.15 Searching cont.

A confirmation message will appear asking whether to execute the search.



Figure 4.85

6) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 4.86

The first occurrence will appear, and the cursor will move to that address.

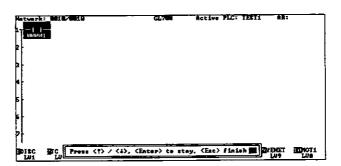


Figure 4.87

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that network.)

Displaying the previous occurrence:

Press the Up Cursor Key.

Displaying the next occurrence:

Press the Down Cursor Key.

Ending the search and returning to the original network:

Press the Esc Key.

Moving the Cursor

Switching search screens: Press the Page Up or Page Down Key.

Address/mnemonic: Press the Up or Down Cursor Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

3. Searching for Instructions

1) Press the Slash Key to display the Command Submenu.

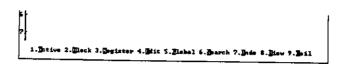


Figure 4.88

2) Press F6 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.

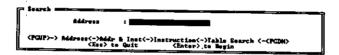


Figure 4.89

3) Press the Page Up Key twice.

An input screen for entering the instruction (mnemonic) will appear.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 4.90

4) Enter the instruction (mnemonic) and press the Enter Key.



Figure 4.91

4.1.15 Searching cont.

A confirmation message will appear asking whether to execute the search.



Figure 4.92

5) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 4.93

The first occurrence will appear, and the cursor will move to that address.

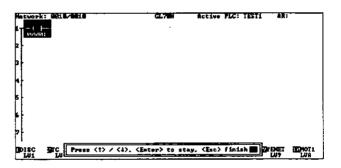


Figure 4.94

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that network.)

Displaying the previous occurrence: Displaying the next occurrence:

Press the Up Cursor Key.
Press the Down Cursor Key.

Ending the search and returning to the original network:

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

4. Displaying a List of Found Addresses

The following procedure is used to display a list of networks found with a specified address (instruction) after a search is completed.

1) Press the Slash Key to display the Command Submenu.

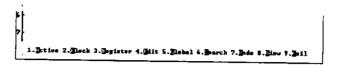


Figure 4.95

2) Press F6 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.



Figure 4.96

3) Press the Page Up Key three times.

A screen for specifying a list search will appear.

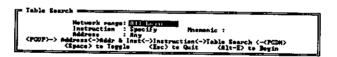


Figure 4.97

4) Enter settings needed for the search, and press the Alt + E Keys.

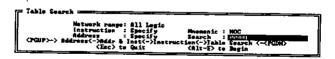


Figure 4.98

A search will be executed.



Figure 4.99

Occurrences will be displayed as a list after the search is completed.

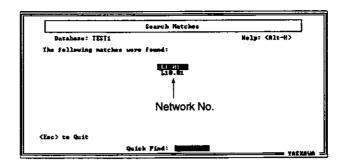


Figure 4.100

A maximum of 40 network numbers matching the search criteria will appear per screen. If the desired network number does not appear on that screen, press the Page Up or Page Down Key to display previous or next screens.

5) Move the cursor to the number that will be displayed and press the Enter Key.

The network will appear, and the cursor will move to the relevant element.

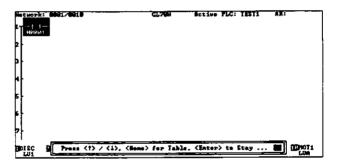


Figure 4.101

Processing after a Search

Moving to the previous or next relevant element from the screen displayed:

Press the Up or Down Cursor Key.

Stopping at the network displayed: Press the Enter Key. Returning to the original network: Press the Esc Key.

Returning to the list: Press the Ctrl + Left Cursor Key.

<u>Settings</u>

A. Network Range

All logic: Search for all networks (including SFC action, transition condition, and

subroutine circuits) in the database.

2

Current area: Search only the program area currently displayed.

Block:

Search networks defined as a block.

From the cursor position:

Search the current area from the present cursor position to the end of the

area.

Specify:

Specify a network range to search.

Example: Specifying an Area from Network 1 to Network 10.

Network range: Specify 1 through 10 (Maximum of 22)

B. Instructions (Specify the Desired Instruction (Ladder Element).)

Specify: Mnemonic items will appear. Specify the desired element using the mnemonic.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.

Example: NO Contact (⊢ ト)

Instruction: Specify Mnemonic: NOC

Specify with the mnemonic of the element.

Any: Search all elements.

C. Address (Specify the Desired Address.)

Specify: Search items will appear. Enter the desired address or range.

Any: Search all addresses.

Moving the Cursor

Switching Search Screens: Press the Page Up or Page Down Key.

Moving to the next or previous item:

Press the Up or Down Cursor Key.

Moving to the next item:

Press the Enter Key.

Reversing items:

Press the Space Key, or the Left or Right Cursor Key.

4.1.16 Editing Registers

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

4.1.16 Editing Registers

Register Editor is used to edit numbers stored at register addresses. Some registers are write protected and cannot be edited. The addresses listed below can be edited.

40001 to 40512: Output registers
40513 to 49999: Holding registers
R0001 to R1024: Link registers
50001 to 50512: Time registers
A0001 to A7FFF: Expansion registers

1. Displaying the Register Editor Screen

There are two ways to display the Register Editor Screen using the cursor.

A. Cursor on an Element with a Register Address

When the cursor is on an element with a Register Address, the contents of the register for that element will be displayed.

1) Press the Slash Key to display the Command Submenu.

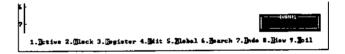
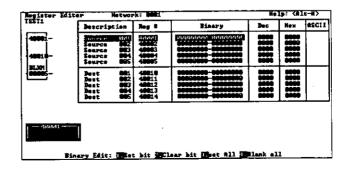


Figure 4.102

2) Press F3 (Register).

An alternative method is to enter "R" from the Command Submenu.

The Register Editor Screen will appear.



Moving the Cursor

Moving up or down a screen:

Press the Ctrl + Page Up or Page Down Keys.

Moving up or down:

Press the Up or Down Cursor Key.

Moving to the next or previous page: Press the Page Down or Page Up Key.

- When moving to the next or previous page, 17 addresses continuing from the next or previous page will appear.
- When moving up from the top row or down from the bottom row, the addresses being displayed will shift up or down by one.

Shortcuts

Enter "ER" at AR: and press the Enter Key, or press the Alt + R Keys to display the Register Editor Screen.

B. Cursor Not on an Element with a Register Address

If the cursor is on an element without a register address or in a position without an element, a window will appear to enter the register address that will be edited or displayed.

1) Press the Slash Key to display the Command Submenu.

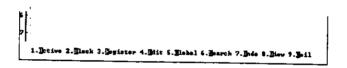


Figure 4.103

2) Press F3 (Register).

An alternative method is to enter "R" from the Command Submenu.

The Input Address Window will appear.

The Input Address Window will already have 40001 entered when it first appears. Enter the address and press the Enter Key to change the address in the window.



Figure 4.104

The Register Editor Screen will appear.

4.1.16 Editing Registers cont.

3) Enter the address that will be edited and press the Enter Key.

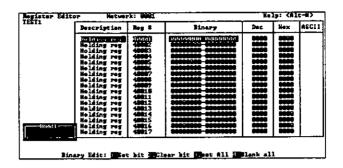


Figure 4.105

The first 17 consecutive addresses from the specified address will appear.

Moving the Cursor

Moving up or down: Press the Up or Down Cursor Key.

Moving to the next or previous page: Press the Page Down or Page Up Key.

- When moving to the next or previous page, 17 addresses continuing from the next or previous page will appear.
- When moving up from the top row or down from the bottom row, the addresses being displayed will shift up or down by one.

Shortcuts

Enter "ER" at AR: and press the Enter Key, or press the Alt + R Keys to display the Input Address Window.

2. Editing Procedure

Register address data will appear in binary, decimal, hexadecimal, and ASCII. Move the cursor to the respective field and edit the field. Changing one field will automatically change the other fields.

Moving the Cursor

Moving to the binary, decimal, hexadecimal, or ASCII areas:

Press the Ctrl + the Left or Right Cursor Keys Moving left or right in the binary area: Press the Left or Right Cursor Key.

A. Editing in Binary

When the cursor is in the binary area, a Binary Edit Menu will appear in the label area at the bottom of the screen. Move the cursor to the bit to be edited and set the bit.

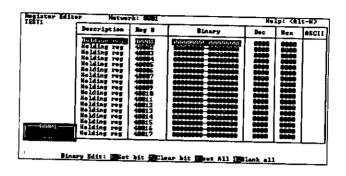


Figure 4.106

Changing individual bits to 1 (ON): Press F1 (Set Bit), or enter a 1.

Clearing a bit (OFF):

Press F2 (Clear Bit), or enter a 0.

Changing all bits to 1 (ON):

Press F3 (Set All). Press F4 (Blank All).

Clearing all bits (OFF):

B. Editing in Decimal

Press the Ctrl + the Left or Right Cursor Key to move the cursor to the decimal area. Enter the number in decimal.

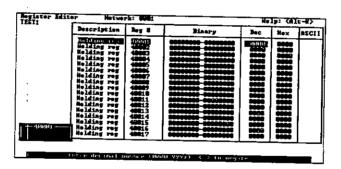


Figure 4.107

4.1.17 Editing Coils and Relays

C. Editing in Hexadecimal

Press the Ctrl + the Left or Right Cursor Key to move the cursor to the hexadecimal area. Enter the number in hexadecimal.

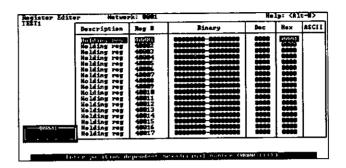


Figure 4.108

D. Editing in ASCII

Press the Ctrl + the Left or Right Cursor Key to move the cursor to the ASCII area. Enter the ASCII text.

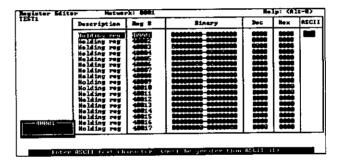


Figure 4.109

4.1.17 Editing Coils and Relays

The following types of editing and displays are available for coils and relays.

- Setting disable and enable status (Forced ON/OFF)
- Displaying coil use status
- Searching for duplicate coils
- Searching for coils from relays (trace/retrace)

1. Setting Disable and Enable Status (Forced ON/OFF)

Coils can be disabled so that coils and relays can be forcibly turned ON or OFF. When a coil is disabled, ON and OFF control from a scan will be ignored, and only forced ON and OFF control from the computer will be possible. The Enable/Disable function is used to simulate the operation that will be performed when the program is actually written to a Processor.

1) Press the Slash Key to display the Command Submenu.



Figure 4.110

2) Press F9 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.

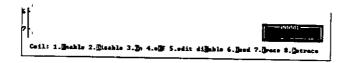


Figure 4.111

- 3) Move the cursor to the coil or relay to be disabled.
- 4) Press F2 (Disable).

An alternative method is to enter "D" from the Coil Submenu.

The coil or relay at the cursor position will be disabled.

"DF" or "DN" will appear at the coil with that address if it is disabled.

DF: Disabled and turned OFF DN: Disabled and turn ON

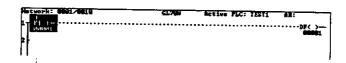


Figure 4.112

4.1.17 Editing Coils and Relays cont.

5) Press F3 (ON) to disable and turn ON the coil or relay.

An alternative method is to enter "O" from the Coil Submenu.

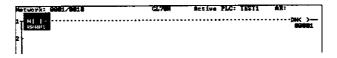


Figure 4.113

6) Press F4 (OFF) to disable and turn OFF the coil or relay.

An alternative method is to enter "F" from the Coil Submenu.

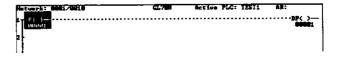


Figure 4.114

7) Press F1 (Enable) to cancel the disable.

An alternative method is to enter "E" from the Coil Submenu. F/N or DF/DN will disappear when Enable is selected.

When one coil or relay is enabled or disabled, then all other coils and relays at that same address will be enabled or disabled.

Note A coil or relay that is not disabled cannot be turned ON and OFF.

Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "DIS" at AR: and press the Enter Key to disable the coil or relay at the cursor position.
- c) Enter "FN" at AR: and press the Enter Key to disable and turn ON the coil or relay.
- d) Enter "FF" at AR: and press the Enter Key to disable and turn OFF the coil or relay.
- e) Enter "EN" at AR: and press the Enter Key to cancel the disable.

2. Disabling from the Disable Table Edit Screen

The following procedure is used to display the disabled status of a maximum of 510 addresses on screen to turn them ON or OFF.

1) Press the Slash Key to display the Command Submenu.

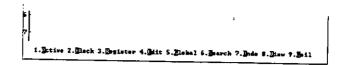


Figure 4.115

2) Press F9 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.

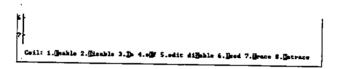


Figure 4.116

3) Press F5 (Edit Disable).

An alternative method is to enter "S" from the Coil Submenu.

The Coil Disable Table will appear.

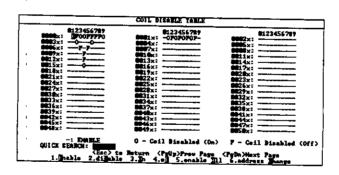


Figure 4.117

Editing Procedure

F1 or E: Enables the status of the address at the cursor position.

F2 or S: Disables the status of the address at the cursor position.

F3 or O: Turns ON the status of the address at the cursor position.

4.1.17 Editing Coils and Relays cont.

F4 or F: Turns OFF the status of the address at the cursor position.

F5 or A: Enables the status of all addresses.

F6 or C: Changes the type of address. The type of address changes as shown below each time the key is pressed.

 $\begin{array}{lll} \text{Coil} \rightarrow & \text{Link Coil} \rightarrow & \text{Input Relay} \rightarrow & \text{M, N Code Relay} \\ \text{(From 00001)} & \text{(From D0001)} & \text{(From 10001)} & \text{(From N, Mxxxx)} \end{array}$

Enter an address in the Quick Search field to display the page with that address.

Moving the Cursor

Next or previous page: Press the Page Down or Page Up Key.

First or last page: Press the Ctrl + Page Down or Page Up Keys.

Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "EDT" at AR: and press the Enter Key to display the Coil Disable Table.

3. Displaying Coil Used Status

The following procedure is used to display the Coil Used Table.

1) Press the Slash Key to display the Command Submenu.



Figure 4.118

2) Press F9 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.



Figure 4.119

3) Press F6 (Used).

An alternative method is to enter "U" from the Coil Submenu.

The Coil Used Table will appear.

Coils in use will appear with a "U."

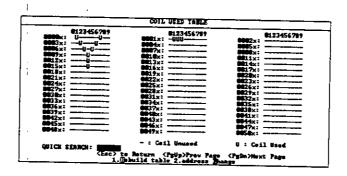


Figure 4.120

Operating Procedure

- F1 or R: Rebuild Table
 Checks duplicate coils. (Refer to 4.Searching for Duplicate Coils on page 4-53.)
- F2 or C: Switches between Coil and Link coil.
- Quick Search:
 Enter the address that will be displayed and press the Enter Key. The page with that address will appear.

Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "CR" at AR: and press the Enter Key, or press the Alt + C Keys to display the Coil Used Table.

4. Searching for Duplicate Coils

Duplicate coils may occur in instances such as when programming is copied during program editing. The following procedure is used to check for duplicate coils by rebuilding the Coil Table, and then to change addresses when duplicate coils are found.

1) Press the Slash Key to display the Command Submenu.

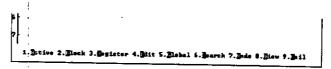


Figure 4.121

4.1.17 Editing Coils and Relays cont.

2) Press F9 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.



Figure 4.122

3) Press F6 (Used).

An alternative method is to enter "U" from the Coil Submenu.

The Coil Used Table will appear.

Coils in use will appear with a "U."

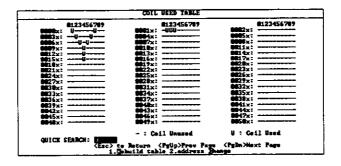


Figure 4.123

4) Press F1 (Rebuild Table).

An alternative method is to enter "R" from the Coil Used Table Screen.



Figure 4.124

A message will appear if duplicate coils are found.



Figure 4.125

5) Press the Enter Key to move the cursor to the first coil of the duplicate coils.

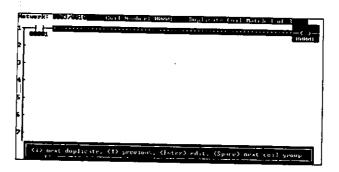


Figure 4.126

- 6) Press the Up or Down Cursor Key to move to the next or previous coil.
- 7) Press the Enter Key to change the address.
- 8) Press the Space Key to find and display other coils.
- 9) Press the Esc Key to cancel the operation.

Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "CR" at AR: and press the Enter Key, or press the Alt + C Keys to display the Coil Used Table.

5. Searching for Coils Using Relays (Trace/Retrace)

The following procedure is used to find and display coils with the same address as a relay.

1) Move the cursor to the relay that will be used to find the coil.

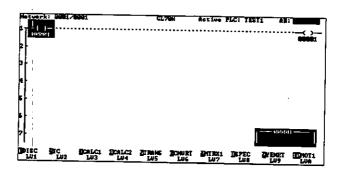


Figure 4.127

4.1.17 Editing Coils and Relays cont.

2) Press the Slash Key to display the Command Submenu.



Figure 4.128

3) Press F9 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.



Figure 4.129

4) Press F7 (Trace).

An alternative method is to enter "T" from the Coil Submenu.

Coils with the same address as the relay will appear.

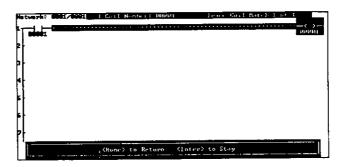


Figure 4.130

- 5) Press the Esc Key to cancel the operation.
- 6) Press the Enter Key to stop the search at the coil position.
- 7) Press the Home Key or press the Ctrl + Home Keys to return to the previous coil position.
- 8) Press F8 (Retrace) after editing is completed in order to return the cursor to the original relay.

An alternative method is to enter "R" from the Coil Submenu.

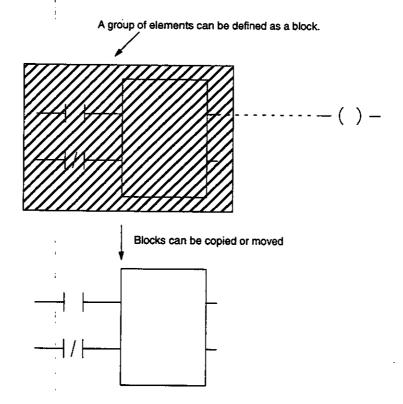
Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "CT" at AR: and press the Enter Key, or press the Alt + T Keys to display coils with the same address as the relay.
- c) Enter "CRT" at AR: and press the Enter Key to return the cursor to the original relay.

4.1.18 Processing Blocks

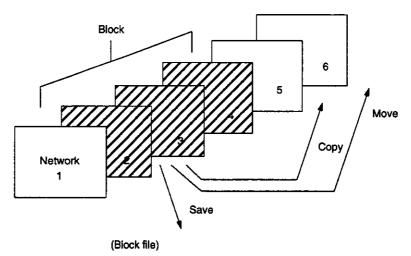
The following procedure is used to group and edit (copy, move, or delete) multiple ladder elements or networks.

• Element Block



Λ

Network Block

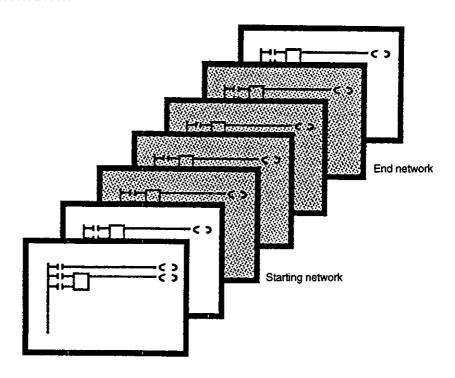


- A block file can be saved as a file containing only networks.
- A block file can be accessed (loaded) into another database.

1. Defining Blocks

The following procedure is used to define a group as a block. Blocks are either cell blocks that group multiple elements or network blocks that group multiple networks.

Network Block



1) Move the cursor to the starting network of the area that will be defined as a block.

2) Press the Slash Key to display the Command Submenu.

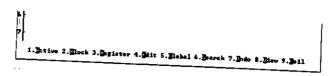


Figure 4.131

3) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.

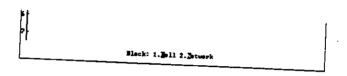


Figure 4.132

4) Press F1 (Cell) or F2 (Network).

An alternative method is to enter "C" or "N" from the Block Submenu.

The Cell Block or Network Block Submenu will appear.

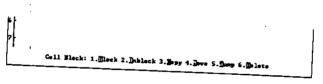


Figure 4.133

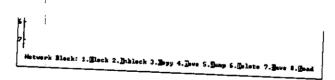


Figure 4.134

5) Press F1 (Block).

An alternative method is to enter "B" from the Cell Block or Network Block Submenu.

6) Move the cursor to the end point of the area that will be defined as a block.

4.1.18 Processing Blocks cont.

With a network block, move the cursor to the end point and press the Esc Key to remove the submenu (make AR: available), and then move to the end point network. Refer to 2. Displaying Specified Networks on page 4-4.

7) Press F1 (Block).

The cells or networks will be defined as a block.

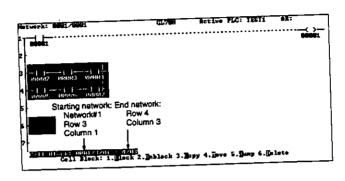


Figure 4.135

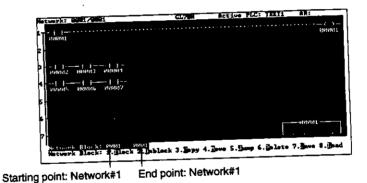


Figure 4.136

With a cell block, specifying the starting and end cells will define a square area as a block with these two points as opposite corners. The block will appear in reverse video. With a network block, specifying the starting and end point networks that specify a block will define that area as a block. The block will appear in reverse video. In both cases, the area defined as a block will appear at the lower left side of the screen.

Note Multiple blocks cannot be defined at the same time. Cancel the current block before defining the next block.

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BCM" or "BNM" at AR: and press the Enter Key to display either the Cell Block or Network Block Submenu.

c) Enter "BCB" or "BNB" at AR: and press the Enter Key to define a Cell or Network Block.

2. Ungrouping a Block (Unblock)

The following procedure is used to cancel an area defined as a block.

1) Press the Slash Key to display the Command Submenu.

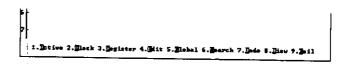


Figure 4.137

2) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.

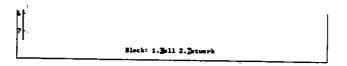


Figure 4.138

3) Press F1 (Cell) or F2 (Network).

An alternative method is to enter "C" or "N" from the Block Submenu.

The Cell Block or Network Block Submenu will appear.

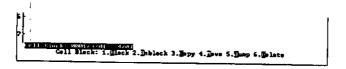


Figure 4.139

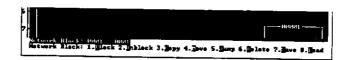


Figure 4.140

4.1.18 Processing Blocks cont.

4) Press F2 (Unblock).

An alternative method is to enter "U" from the Cell Block or Network Block Submenu.

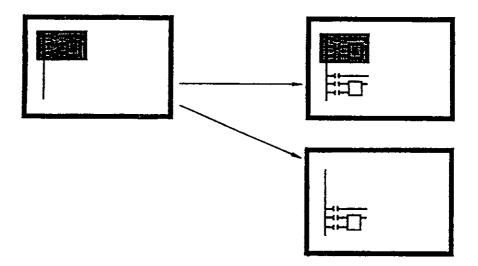
The cell or network block will be canceled.

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BCM" or "BNM" at AR: and press the Enter Key to display either the Cell Block or Network Block Submenu.
- c) Enter "UCB" or UNB at AR: and press the Enter Key to cancel the Cell or Network Block.

3. Copying or Moving Cell Blocks

The following procedure is used to copy or move a block of cells to a specified location.



1) Move the cursor to where the block will be copied or moved.

The block can also be copied or moved to another network.

2) Press the Slash Key to display the Command Submenu.



Figure 4.141

3) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.

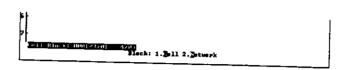


Figure 4.142

4) Press F1 (Cell).

An alternative method is to enter "C" from the Block Submenu.

The Cell Block Submenu will appear.



Figure 4.143

5) Press F3 (Copy) or F4 (Move).

An alternative method is to enter "C" or "M" from the Cell Block Submenu.

The block will be copied or moved.

After a move, the cells defined as a block will automatically be ungrouped.

Note Be sure to define the block that will be copied before executing Copy or Move. Refer to 1.

Defining Blocks on page 4-58 for more details on the procedure for defining blocks.

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BCM" at AR: and press the Enter Key to display the Cell Block Submenu.
- c) Enter "CCB" or "MCB" at AR: and press the Enter Key to copy or move the block.

4. Deleting Cell Blocks

The following procedure is used to delete cells defined as a block.

1) Press the Slash Key to display the Command Submenu.



Figure 4.144

2) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.

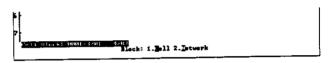


Figure 4.145

3) Press F1 (Cell).

An alternative method is to enter "C" from the Block Submenu.

The Cell Block Submenu will appear.



Figure 4.146

4) Press F6 (Delete).

An alternative method is to enter "D" from the Cell Block Submenu.

A confirmation message will appear asking whether to proceed with the deletion.

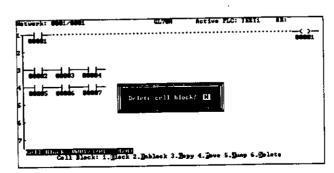


Figure 4.147

5) Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the cell block. "N" is initially entered so deletion will not be executed in case the Enter Key is pressed by mistake.

The block of cells will be deleted.

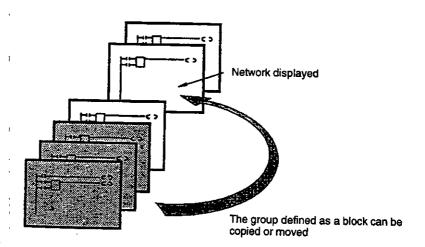
Note Be sure to define the block that will be deleted before executing Delete. Refer to 1. Defining Blocks on page 4-58 for more details on the procedure for defining blocks.

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BCM" at AR: and press the Enter Key to display the Cell Block Submenu.
- c) Enter "DCB" at AR: and press the Enter Key to delete the cell block.

5. Copying or Moving Network Blocks

The following procedure is used to copy or move a block of networks to a specified location.



- 1) Move the cursor to where the networks will be copied or moved.
- 2) Press the Slash Key to display the Command Submenu.



Figure 4.148

4.1.18 Processing Blocks cont.

3) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.



Figure 4.149

4) Press F2 (Network).

An alternative method is to enter "N" from the Network Block Submenu.

The Network Block Submenu will appear.



Figure 4.150

5) Press F3 (Copy) or F4 (Move).

An alternative method is to enter "C" or "M" from the Network Block Submenu.

The networks will be copied or moved between the network displayed and the previous network.

After a move, the networks defined as a block will automatically be ungrouped.

Note Be sure to define the block that will be copied before executing Copy or Move. Refer to 1. Defining Blocks on page 4-58 for more details on the procedure for defining blocks.

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BNM" at AR: and press the Enter Key to display the Network Block Submenu.
- c) Enter "CNB" or "MNB" at AR: and press the Enter Key to copy or move a network between the network displayed and the next network.

6. <u>Deleting Network Blocks</u>

The following procedure is used to delete networks defined as a block.

1) Press the Slash Key to display the Command Submenu.

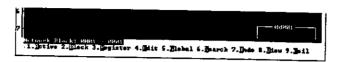


Figure 4.151

2) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.

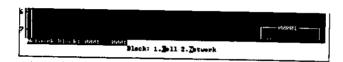


Figure 4.152

3) Press F2 (Network).

An alternative method is to enter "N" from the Block Submenu.

The Network Block Submenu will appear.

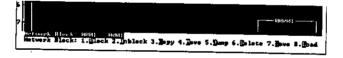


Figure 4.153

4) Press F6 (Delete).

An alternative method is to enter "D" from the Network Block Submenu.

A confirmation message will appear asking whether to proceed with the deletion.

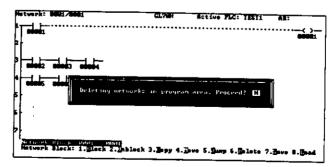


Figure 4.154

4.1.18 Processing Blocks cont.

5) Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the cell block. "N" is initially entered so deletion will not be executed if the Enter Key is pressed by mistake.

The network block will be deleted.

Note Be sure to define the block that will be deleted before executing Delete. Refer to 1. Defining Blocks on page 4-58 for more details on the procedure for defining blocks.

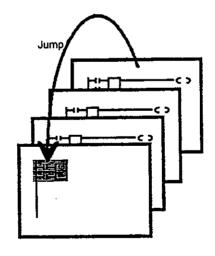
Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BNM" at AR: and press the Enter Key to display the Network Block Submenu.
- c) Enter "DNB" at AR: and press the Enter Key to delete the network block.

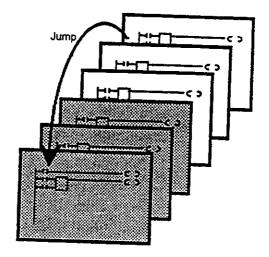
7. Jump to a Block

The following procedure is used to jump quickly to a network in a block from another network.

Cell Block



Network Block



1) Press the Slash Key to display the Command Submenu.

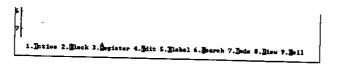


Figure 4.155

2) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.

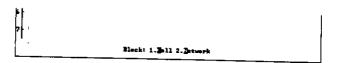


Figure 4.156

3) Press F1 (Cell) or F2 (Network).

An alternative method is to enter "C" or "N" from the Block Submenu.

The Cell Block or Network Block Submenu will appear

4) Press F5 (Jump).

An alternative method is to enter "J" from the Cell Block or Network Block Submenu.

4.1.18 Processing Blocks cont.

The cursor will jump to the network in 1the block.

The cursor jumps to the home position of the network in the block. With a network block, the cursor jumps to the first network in the block.

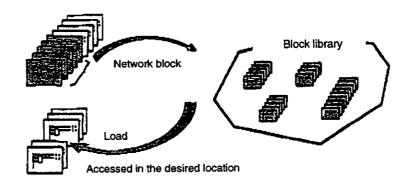
Note Be sure to define a block before executing a jump. Refer to 1. Defining Blocks on page 4-58 for more details on the procedure for defining blocks.

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BCM" or "BNM" at AR: and press the Enter Key to display either the Cell Block or Network Block Submenu.
- c) Enter "JCB" or "JNB" at AR: and press the Enter Key to jump to the network or cell in the block.

8. Saving and Loading Edited Networks

The following procedures are used to save a network block or to load a saved network block anytime at another location (including loading to other databases).



A. Saving a Network Block

1) Press the Slash Key to display the Command Submenu.



Figure 4.157

2) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.

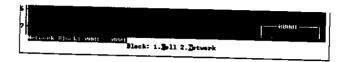


Figure 4.158

3) Press F2 (Network).

This function is not available on the Cell Block Submenu.

An alternative method is to enter "N" from the Block Submenu.

The Network Block Submenu will appear.

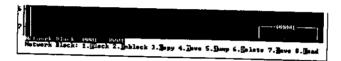


Figure 4.159

4) Press F7 (Save).

An alternative method is to enter "S" from the Network Block Submenu.

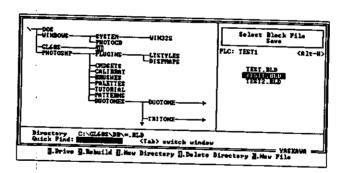


Figure 4.160

5) Specify where to save the networks.

Specify the directory and the name under which the networks will be saved. There is no need to specify anything if the networks are to be saved under the same name in the same directory as the database currently in use. Press F5 (New File) to save the networks under another file name, and then enter the new name. Specify the drive and directory as outlined in 3.1 Selecting or Creating a New Program File (Database) in order to change the drive and the directory.

4.1.18 Processing Blocks cont.

If a block file is given the same name as a database and that database is deleted or copied, then the block file will be deleted or copied at the same time. Be sure to store the block file in another directory or save the file under another name to keep the file separate from the database. When two or more files are saved under the same name, the newer files will overwrite the older files.

6) Press the Enter Key.

The network block will be saved.

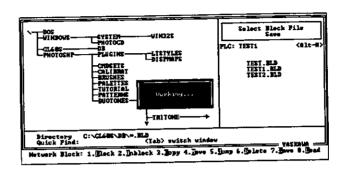


Figure 4.161

When the network block is saved, three files named *filename*.BL1, *filename*.BL2 and *filename*.BLD will be created. These three files make one block data, and will appear simply as a BLD file on the screen.

Note Be sure to define a block before executing a jump. Refer to 1. Defining Blocks on page 4-58 for more details on the procedure for defining blocks.

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BNM" at AR: and press the Enter Key to display the Network Block Submenu.
- c) Enter "NNB" at AR: and press the Enter Key to specify the where the networks will be saved.

B. Loading a Block File

1) Display the network where the block file will be loaded.

The block will be inserted between the network currently displayed and the next network.

2) Press the Slash Key to display the Command Submenu.



Figure 4.162

3) Press F2 (Block).

An alternative method is to enter "B" from the Command Submenu.

The Block Submenu will appear.



Figure 4.163

4) Press F2 (Network).

An alternative method is to enter "N" from the Block Submenu.

The Network Block Submenu will appear.

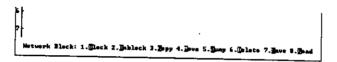


Figure 4.164

5) Press F8 (Load).

An alternative method is to enter "L" from the Network Block Submenu.

6) Move the cursor to the file to be loaded and press the Enter Key.

To change directories, press the Tab Key to move the cursor to the Directory Window, select the desired directory and press the Enter Key.

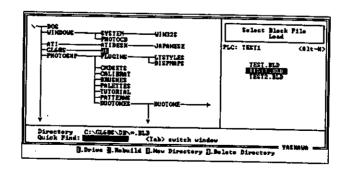


Figure 4.165

4.1.19 Globally Replacing Addresses

The block file will be loaded.

The networks that were inserted will remain defined as a block.

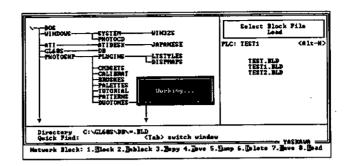


Figure 4.166

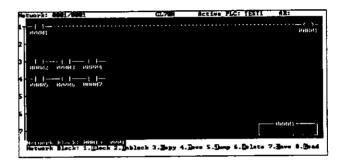


Figure 4.167

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BNM" at AR: and press the Enter Key to display the Network Block Submenu.
- c) Enter "LNB" at AR: and press the Enter Key to load the block files.

4.1.19 Globally Replacing Addresses

The following procedure is used to change addresses automatically. Quick Find allows a series of addresses to be set at one time, and allows element restrictions as well. Comment and register data can be imported from any database during global replacement.

1) Press the Slash Key to display the Command Submenu.



Figure 4.168

2) Press F5 (Global).

An alternative method is to enter "G" from the Command Submenu.

The Global Replace Screen will appear.

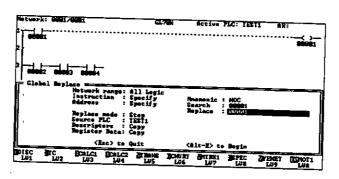


Figure 4.169

3) After all settings are entered, press the Alt + E Keys to start global replacement.

When the Enter Key is pressed at the last item (Register Data), a confirmation message will appear asking whether to proceed with replacement. Enter "Y" and press the Enter Key to start global replacement.

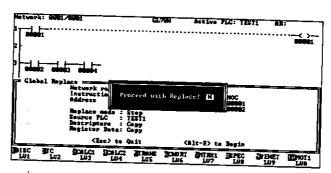


Figure 4.170

Moving the Cursor

Item details:

Press the Up or Down Cursor Key, or press the Enter Key.

Change setting details: Press the Left or Right Cursor Key, or press the Space Key.

Shortcuts

Enter "G" at AR: and press the Enter Key, or press the Alt + G Keys to display the Global Replace Screen.

Settings

1) Network Range

Network Range is used to specify the range of networks where global replacement will occur.

4.1.19 Globally Replacing Addresses cont.

All Logic:

Targets all networks in the database, including the SFC action, transition

condition, and subroutine circuits.

Current Area:

Targets only the program area currently displayed.

Block:

Targets networks defined as a block.

From the Cursor Position:

Starts replacement from the present cursor position and continues to the

end of the current area.

Specify:

Specifies the network that will be replaced.

Example: Specifying an Area from Network 1 to Network 10.

Network range: Specify 1 through 10 (Maximum of 22)

2) Instructions

Instructions are used to specify whether replacement will be limited to a instruction (element).

Specify: Limits target elements.

Enter Element Mnemonics at "Mnemonics."

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.

Example: NO Contact (+ +)

NOC Mnemonic: Instruction: Specify

Specify with the mnemonic of the element.

Searches all elements. Any:

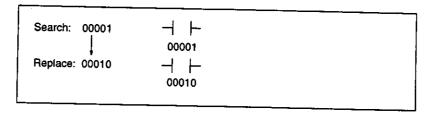
3) Address

Address is used to specify the replacement address.

Search: Specifies the address to be replaced.

Replace: Specifies the replacement address.

Example: Replacing 00001 with 00010



Example: Replacing 00001 to 00010 with 00031 to 00040

4) Replace Mode

The Replace Mode can replace automatically or with confirmation.

Confirmation Replacement: Enter "Y" or "N" to confirm or skip replacement. If the item does not need to be replaced, enter "N" to move to the next occurrence without replacing the current occurrence.

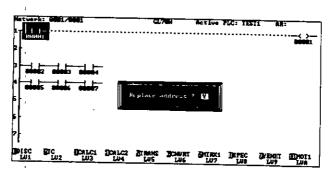


Figure 4.171

Automatic Replacement:

Replaces all occurrences automatically.

5) Source Database

The Source Database is set when comment and register data are copied or moved to an address that was replaced.

4.1.20 Backing Up a Database During Editing (Snapshot)

Current Database Name: Imports data from the currently selected database when data

is copied or moved.

New Source Database: Imports comment and register data from another database.

Be sure to specify the database on the Select Database

Screen.

6) Comment Data

Comment Data sets comment data for an address that was replaced.

Copy: Copies data from the database address (search address) specified in

Source Database, and places the data at the address that was replaced.

Move: Moves data from the database address (search address) specified in

Source Database, and places the data at the address that was replaced.

No Change: Data will not be copied or moved.

7) Register Data

Register Data sets register data for the address that was replaced. The setting details and setting procedure are the same as that for comment data.

Refer to the example in 5.1.2 Adjusting Reference Numbers and Copying Comment Data for more details on these settings.

4.1.20 Backing Up a Database During Editing (Snapshot)

The following procedure is used to backup the database currently being edited. A backup is made as a precautionary measure in case a large portion of the program is deleted accidentally or a database is corrupted during editing. Time and effort will not be lost as long as the backup is updated during program editing. A Snapshot can be thought of as an extra backup during editing. Refer to *Backing Up and Restoring Databases* for more details on fully backing up databases.

1) Press the Slash Key to display the Command Submenu.



Figure 4.172

2) Press F4 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 4.173

3) Press F6 (Snapshot).

An alternative method is to enter "N" from the Edit Submenu.

A confirmation message will appear asking whether to proceed with the snapshot.

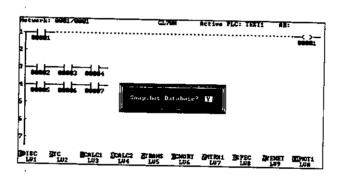


Figure 4.174

4) Press the Enter Key.

4.1.20 Backing Up a Database During Editing (Snapshot) cont.

A database named !Snap! will be created and stored in the same directory.

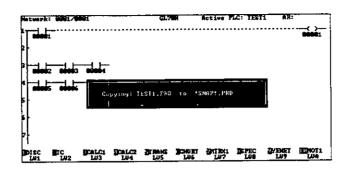


Figure 4.175

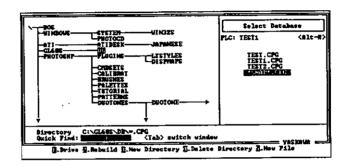


Figure 4.176

When two or more files are saved under the same name, the newer files will overwrite (update) the older files.

Note Make sure there is sufficient free space on the hard disk before executing a Snapshot because a database with exactly the same data as the currently selected database is created. The name and directory for a Snapshot cannot be specified. If there is a Snapshot for another database already in the directory, that snapshot will be overwritten.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "AS" at AR: and press the Enter Key to display the execution confirmation message.

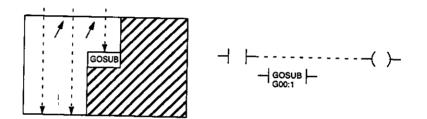
4.2 Editing Subroutines

When the same circuit is written often in a ladder program, storing the circuits as subroutines enables the circuit to be accessed from the ladder program at any time, and the circuit only needs to be built once. The subroutine circuit will be executed when the GOSUB instruction is ON. Memory should be allocated to subroutines before editing. Refer to 2. Allocating Memory on page 4-168 for more details on allocating memory to subroutines prior to editing.

4.2.1 Entering the GOSUB Instruction

- 1) Display the Network Edit Screen.
- 2) Move the cursor to where the element will be entered.

The GOSUB instruction must be executed at the very end of the network. Entries cannot be input in the area (slashed line area) after the GOSUB instruction.



In the above situation, the coil is actually entered above the GOSUB instruction so that it will not interfere with the instruction.

3) Press F8 (SPEC).

An alternative method is to enter "GOSUB" at AR: and press the Enter Key.

A Function Menu like Skip or Subroutine will appear.

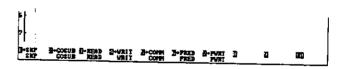


Figure 4.177

- 4) Press F2 (GOSUB).
- 5) Enter the subroutine number and press the Enter Key.

The range of subroutine numbers is G00 to G99.

4.2.2 Displaying Subroutine Networks

1) Move the cursor to the GOSUB element.

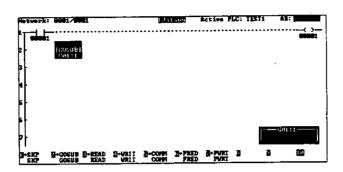


Figure 4.178

2) Press the Slash Key to display the Command Submenu.

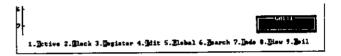


Figure 4.179

3) Press F8 (View).

An alternative method is to enter "V" from the Command Submenu.

The View Submenu will appear.



Figure 4.180

4) Press F7 (Zoom).

An alternative method is to enter "Z" from the View Submenu.

The Subroutine Edit Screen will appear.

5) Press F8 (Zoom Return) from the View Submenu after editing is completed in order to return to the original network.

An alternative method is to enter "R" from the View Submenu.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key to display the View Submenu.
- b) Enter "Z" at AR: and press the Enter Key, or press the Alt + Z Keys to display the Edit Subroutine Screen. (Enter "ZR" and press the Enter Key, or press the Alt + X Keys to return to the Network Screen.)

4.3.1 SFC Screen Configuration

4.3 SFC Editing

SFC stands for Sequential Function Chart. SFC is a new PLC language that takes conventional serial sequence control system items written in ladder language and expresses them as a block diagram similar to a flowchart so that the entire structure can be grasped at a glance, and so that programming will be easier. Refer to MEMOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1) for more details on SFC. This manual can be obtained at your GL60 sales outlet or business office.

4.3.1 SFC Screen Configuration

The following describes the SFC Screen configuration.

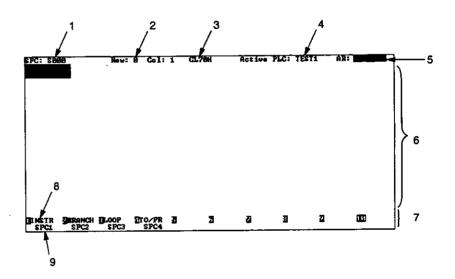


Figure 4.181

- 1) SFC number currently displayed:
 The SFC number S000 is used for the currently displayed SFC flowchart and numbers
 S001 and on are used for steps.
- 2) Column and row display for the current cursor position
- Target Processor:
 The model of the Processor can be changed.
- 4) Database Name
- Assembly Register:
 The assembly register stores input (text and numbers) from the keyboard.

- 6) Logic Area
- 7) Label Area:

Function key menus corresponding to function keys F1 to F10 will appear in the label area. Various menus can be displayed depending on the operation.

- 8) Prompt
- 9) Mnemonic:

The SFC input field is comprised of 10 rows by 8 columns numbered 0 through 9. Since row 0 and row 9 are used exclusively for From and To, steps and transitions are entered in the 8 x 8 area from row 1 to row 8.

Rows 1 through 8 are divided into upper (step) and lower (transition) rows. Since all fields in the vertical direction cannot be monitored on the display at the same time, use the Up and Down Cursor Keys to scroll through and view other rows.

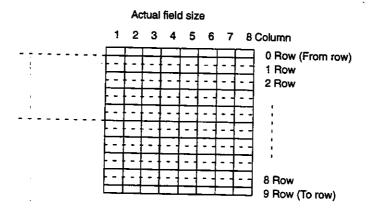


Figure 4.182

4.3.2 Displaying the SFC Screen

The following procedure is used to display the SFC Screen.

1) Select 2. Offline from the Main Menu.

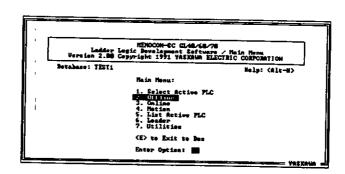


Figure 4.183

4.3.2 Displaying the SFC Screen cont.

2) Select 3. Sequential Function Charts from the Offline Edit Menu.

A database is required for offline SFC editing. The Select Database Screen will thus appear automatically if a database is not selected. Refer to 3.1.3 Selecting a Database, and then either select or create a database.

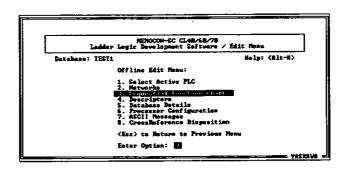


Figure 4.184

The SFC Screen will appear.

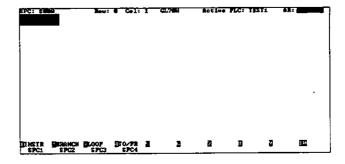


Figure 4.185

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

Moving to the upper left (Home Position): Press the Home Key. Moving to the lower right (End Position): Press the End Key.

Moving to the left edge: Press the Ctrl + Left Cursor Keys.

Moving to the right edge: Press the Ctrl + Right Cursor Keys.

1. Displaying the SFC Expanded-screen

The following procedure is used to display step action, and transition condition circuits, and to move to the expanded-screen used for macro steps.

1) Move the cursor to element to be zoomed.

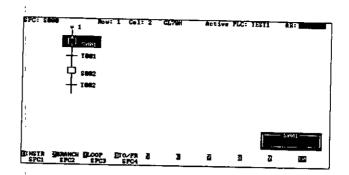


Figure 4.186

2) Press the Slash Key to display the Command Submenu.



Figure 4.187

3) Press F7 (View).

The View Submenu will appear.

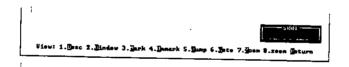


Figure 4.188

4) Press F7 (Zoom).

The cursor will move to the action circuit.

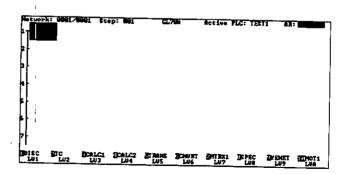


Figure 4.189

4.3.2 Displaying the SFC Screen cont.

If the cursor is on a macro step, it moves to the macro step expanded-screen, but if the cursor is on a transition, it moves to the transition condition circuit.

Press F8 (Zoom Return) from the View Submenu or enter "R" to return to the original screen from the top of the zoom.

Note Although Zoom Return can be used to return to the original screen from the location moved to using the ZOOM command, Zoom Return cannot be used to return to the SFC from the location moved to using the GOTO command. Use the GOTO command again in that case.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key to display the View Submenu.
- b) Enter "Z" at AR: and press the Enter Key, or press the Alt + Z Keys to move the cursor to the action circuit.
- c) Enter "ZR" at AR: and press the Enter Key, or press the Alt + X Keys to return to the original screen.

2. Displaying a Specified SFC

The following procedure is used to move quickly to a specified Edit Screen (Network, SFC, Subroutine) by setting an address.

1) Press the Slash Key to display the Command Submenu.

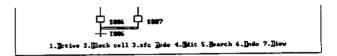


Figure 4.190

2) Press F7 (View).

The View Submenu will appear.

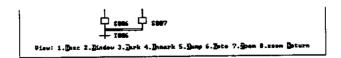


Figure 4.191

3) Press F6 (Goto).

The Address Input Window will appear.

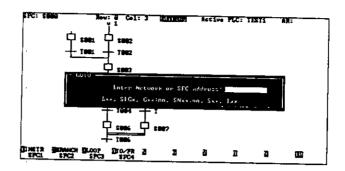


Figure 4.192

4) Enter the address and press the Enter Key.

Coil and element addresses are not valid entries. Be sure to enter Lxx, SEGx, Gxx:nn, SNxx:nn, Sxx, or Txx.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key to display the View Submenu.
- b) Enter "GOTO" at AR: and press the Enter Key, or press the Alt + N Keys.

3. Jumping to Marks

The following procedure is used to mark a position in order to return quickly to the marked position while editing at other position.

- 1) Move the cursor to the position to be marked.
- 2) Press the Slash Key to display the Command Submenu.

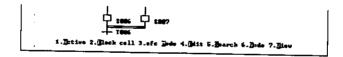


Figure 4.193

3) Press F7 (View).

The View Submenu will appear.

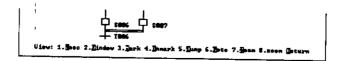


Figure 4.194

4.3.3 Exiting from SFC Editing

4) Press F3 (Mark).

The cursor position will be marked.

The mark position will appear at the lower-left side of the screen when a mark is set.

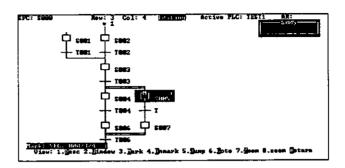


Figure 4.195

Press F4 (Unmark) from the View Submenu to cancel the mark.

5) Press F5 (Jump) to jump to the mark.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key, or press the Alt + V Keys to display the View Submenu.
- b) Enter "M" at AR: and press the Enter Key, or press the Alt + M Keys to create a mark at the cursor position.
- c) Enter "J" at AR: and press the Enter Key, or press the Alt + J Keys to jump to the mark.

4.3.3 Exiting from SFC Editing

The following procedure is used to exit from SFC editing.

1) Press the Esc Key.

A confirmation message asking whether to exit will appear.

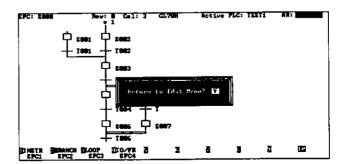


Figure 4.196

If the Function Menu at the bottom of the screen is not at level 0 (menu initially displayed), the Function Menu will shift closer to level 0 without a message. Press the Esc Key at level 0 to operate the Exit function.

2) Press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to continue editing.

The Edit Menu will return.

Moving the Cursor on the SFC Screen 4.3.4

The following procedure is used to move the cursor on the SFC Screen.

Moving the Cursor

Moving up, down, left or right:

Press the Up, Down, Left or Right Cursor Key.

Moving to the upper left (Home Position): Press the Home Key. Moving to the lower right (End Position): Press the End Key.

Moving to the left edge:

Press the Ctrl + Left Cursor Keys.

Moving to the right edge:

Press the Ctrl + Right Cursor Keys.

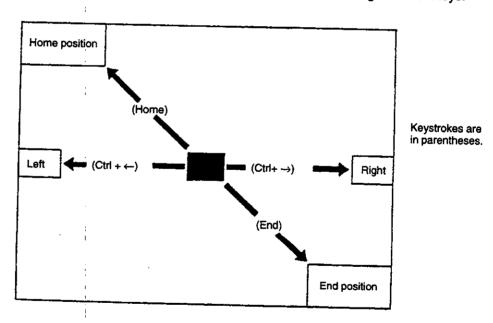


Figure 4.197

4.3.5 Entering Elements Using Function Keys

Display the Element Menu in the label area at the bottom of the screen, and select the function from the menu using a function key (F1 through F10). All SFC elements are assigned to function keys.

4.3.5 Entering Elements Using Function Keys cont.

F1 (INSTR): Steps and transitions F2 (BRANCH): Branches and intersections

F3 (LOOP): Loops F4 (TO/FR): To and From

Example: Entering S001

1) Move the cursor to where the element will be entered.

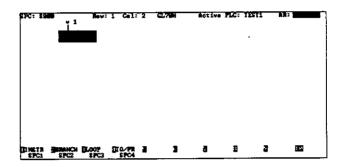


Figure 4.198

2) Press F1 (INSTR).

The function keys for steps and transitions will appear.



Figure 4.199

Refer to the *Appendix A List of Function Key Menus* for more details on elements that will be displayed.

3) Press F1 (STEP).

Press the Esc Key to return to the previous menu.

The element at the cursor position will appear along with a message asking for the address.



Figure 4.200

4) Enter the address and press the Enter Key.

4.3.6 Entering Elements Using Mnemonics

Each element has a unique mnemonic. Enter the mnemonic at AR: to enter the element.

1) Move the cursor to where the element will be entered.

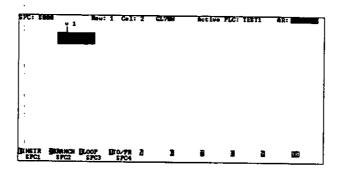


Figure 4.201

Entries cannot be input or an error may occur at some positions. For more details on the SFC, refer to Items 5 and 6 Write Protected Items in SFC Programming provided in *ME-MOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1).*

2) Enter the mnemonic of the element at AR: (Example: STEP for a step) and press the Enter Key.

Mnemonics are displayed together with the Element Menu.



Figure 4.202

The element at the cursor position will appear along with a message asking for the address.

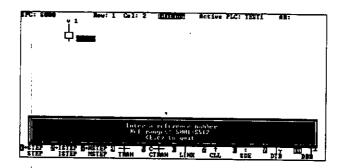


Figure 4.203

4.3.7 Changing Step and Transition Numbers

3) Enter the address and press the Enter Key.

Do not use the same step or transition number twice.

4.3.7 Changing Step and Transition Numbers

The following procedure is used to change step and transition numbers.

1) Move the cursor to the step or transition number that will be changed and press the Enter Key.

A message asking for the reference number will appear.



Figure 4.204

Press the Esc Key to cancel the change and return to the original reference number.

2) Enter the step or transition number that will be changed and press the Enter Key.

The step or transition number will change.

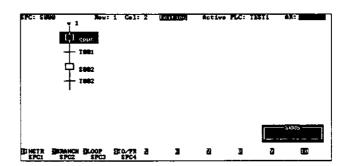


Figure 4.205

4.3.8 Insertion

The following procedure is used for a variety of insertions during SFC editing.

Row Insertion: Inserts a row on the SFC Screen. Column Insertion: Inserts a column on the SFC Screen.

1. Inserting a Row

The following procedure is used to insert a blank row on the SFC Screen.

1) Move the cursor to where the row will be inserted.

A row cannot be inserted if there is no room to insert a row below the insert position. Room for at least two rows is needed because two rows are inserted at the same time with Row Insertion.

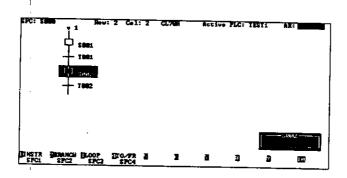


Figure 4.206

2) Press the Slash Key to display the Command Submenu.



Figure 4.207

3) Press F4 (Edit).

The Edit Submenu will appear.

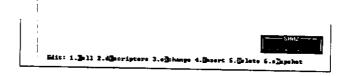


Figure 4.208

4) Press F4 (Insert).

The Insert Submenu will appear.



Figure 4.209

5) Press F6 (Row).

A row will be inserted at the cursor position.

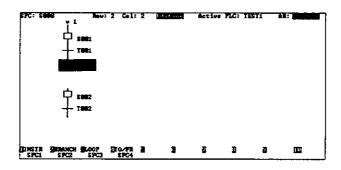


Figure 4.210

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IR" at AR: and press the Enter Key to insert a row at the cursor position.

2. <u>Inserting a Column</u>

The following procedure is used to insert a blank column.

1) Move the cursor to where the column will be inserted.

A column cannot be inserted if there is no room to the right of the insertion position.

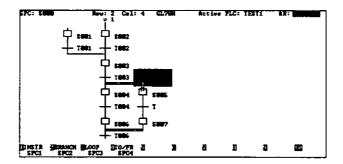


Figure 4.211

2) Press the Slash Key to display the Command Submenu.

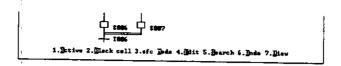


Figure 4.212

3) Press F4 (Edit).

The Edit Submenu will appear.



Figure 4.213

4) Press F4 (Insert).

The Insert Submenu will appear.



Figure 4.214

5) Press F5 (Column).

A column will be inserted at the cursor position.

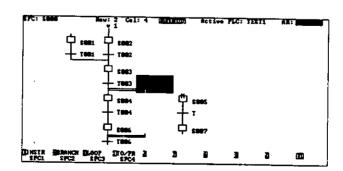


Figure 4.215

4

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IC" at AR: and press the Enter Key to insert a column at the cursor position.

4.3.9 Deleting

There are several commands available here depending on the type of deletion. Select and use the appropriate command.

Delete Element:

Deletes elements on SFC and Network Screens.

Delete Column/Row:

Deletes blank rows and columns.

Delete SFC:

Deletes the SFC Screen currently displayed.

1. Deleting an Element

The following procedure is used to delete an element or cell.

A. Deleting an Element

1) Move the cursor to the element that will be deleted.

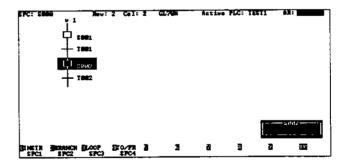


Figure 4.216

2) Press the Slash Key to display the Command Submenu.



Figure 4.217

3) Press F4 (Edit).

The Edit Submenu will appear.



Figure 4.218

4) Press F5 (Delete).

The Delete Submenu will appear.



Figure 4.219

5) Press F1 (Element).

The element will be deleted.

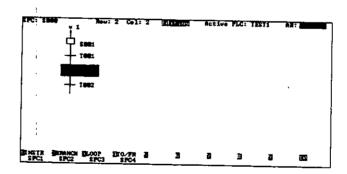


Figure 4.220

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "SDE" at AR: and press the Enter Key to delete the element.

4

B. Deleting an Element with a Branch or Loop

1) Move the cursor to the element with the branch or loop to be deleted.

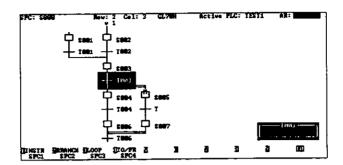


Figure 4.221

2) Press the Slash Key to display the Command Submenu.

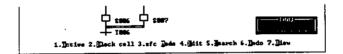


Figure 4.222

3) Press F4 (Edit).

The Edit Submenu will appear.

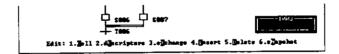


Figure 4.223

4) Press F5 (Delete).

The Delete Submenu will appear.



Figure 4.224

5) Press F2 (Cell).

The element and its branch or loop will be deleted.

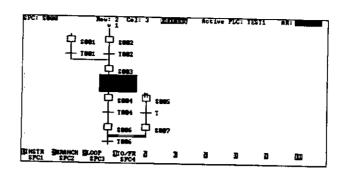


Figure 4.225

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DEL" at AR: and press the Enter Key to delete the element and its branch or loop.

C. Deleting a Branch or Loop

1) Move the cursor to the element with the branch or loop to be deleted.

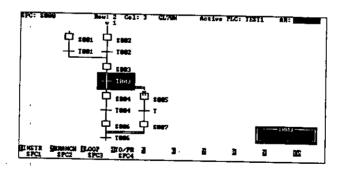


Figure 4.226

2) Press any key between F1 and F4.

The Element Menu will appear.

- 3) Press F9 if the branch or loop moves up from the transition.
- 4) Press F10 if the branch or loop moves down from the transition.

Only the branch or loop will be deleted.

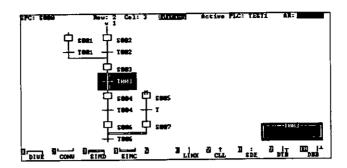


Figure 4.227

Shortcuts

- a) Enter "DTB" at AR: and press the Enter Key if the branch or loop moves up from the transition.
- b) Enter "DBB" at AR: and press the Enter Key if the branch or loop moves down from the transition.

2. Deleting Rows and Columns

The following procedure is used to delete blank rows or columns.

1) Move the cursor to the row or column that will be deleted.

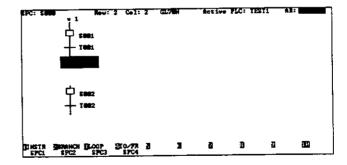


Figure 4.228

2) Press the Slash Key to display the Command Submenu.

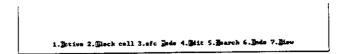


Figure 4.229

3) Press F4 (Edit).

The Edit Submenu will appear.



Figure 4.230

4) Press F5 (Delete).

The Delete Submenu will appear.

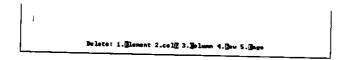


Figure 4.231

5) Press F3 (Column) or F4 (Row).

The row or column will be deleted.

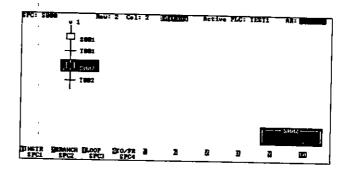


Figure 4.232

Note A row or column cannot be deleted if there is an element in the row or column. Delete two rows when deleting a row because the SFC Screen sets a row aside to enable step and transition input for each row.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.

4

c) Enter "DC" (delete column) or "DR" (delete row) at AR: and press the Enter Key to delete the row or column.

3. Deleting an SFC Screen

The following procedure is used to delete the currently displayed SFC Screen.

1) Display the SFC Screen to be deleted.

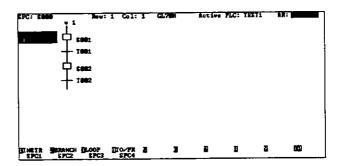


Figure 4.233

2) Press the Slash Key to display the Command Submenu.

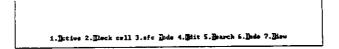


Figure 4.234

3) Press F4 (Edit).

The Edit Submenu will appear.



Figure 4.235

4) Press F5 (Delete).

The Delete Submenu will appear.



Figure 4.236

5) Press F5 (Page).

A confirmation message will appear asking whether to proceed with the deletion.

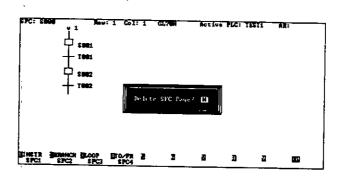


Figure 4.237

6) Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the screen. "N" is initially entered so deletion will not be executed in case the Enter Key is pressed by mistake.

The SFC Screen will be deleted.

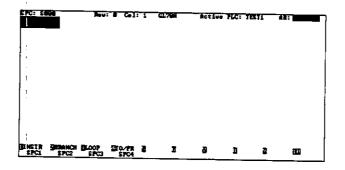


Figure 4.238

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DP" at AR: and press the Enter Key to display the execution confirmation message.

4.3.10 Undoing the Last Change

The following procedure is used to undo the last change.

4.3.11 Redoing the Last Change

1) Press the Slash Key to display the Command Submenu.

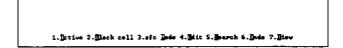


Figure 4.239

2) Press F6 (Undo).

The Undo/Redo Submenu will appear.

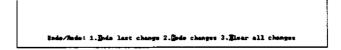


Figure 4.240

3) Press F1 (Undo Last Change).

The last change will be undone.

Shortcuts

- a) Enter "UM" at AR: and press the Enter Key, or press the Alt + U Keys to display the Undo/Redo Submenu.
- b) Enter "UN" at AR: and press the Enter Key to undo the last change.

4.3.11 Redoing the Last Change

The following procedure is used to restore the status prior to undoing the last change.

1) Press the Slash Key to display the Command Submenu.



Figure 4.241

2) Press F6 (Undo).

The Undo/Redo Submenu will appear.

```
Unda/Rede: 1. Dade last change 2. Ende changes 3. Elear all changes
```

Figure 4.242

3) Press F2 (Redo Changes).

A change cannot be undone after making another change or moving to another SFC Screen.

The status will be restored to what it was prior to undoing the last change.

Shortcuts

- a) Enter "UM" at AR: and press the Enter Key, or press the Alt + U Keys to display the Undo/Redo Submenu.
- b) Enter "RE" at AR: and press the Enter Key to redo the changes.

4.3.12 Clearing All Changes

The following procedure is used to undo all changes made since the current SFC was displayed.

1) Press the Slash Key to display the Command Submenu.

```
i.Ertive 2.Eleck cell 3.sfc Ende 4.Edit 5.Bearch 6.Ends 7.Eleu
```

Figure 4.243

2) Press F6 (Undo).

The Undo/Redo Submenu will appear.

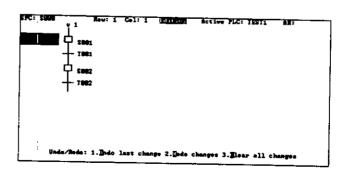


Figure 4.244

3) Press F3 (Clear All Changes).

All changes to the SFC displayed will be cleared.

Only changes made to the currently displayed SFC will be cleared.

Shortcuts

- a) Enter "UM" at AR: and press the Enter Key, or press the Alt + U Keys to display the Undo/Redo Submenu.
- Enter "CAE" at AR: and press the Enter Key to clear changes made to the currently displayed SFC.

4.3.13 Searching

The following procedure is used to search for specified instructions (elements) or addresses.

1. Searching for Addresses

1) Press the Slash Key to display the Command Submenu.



Figure 4.245

2) Press F5 (Search).

A screen for specifying the address will appear.



Figure 4.246

3) Enter the address and press the Enter Key.



Figure 4.247

A confirmation message will appear asking whether to proceed with the search.



Figure 4.248

4) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 4.249

The first occurrence will appear, and the cursor will move to that address.

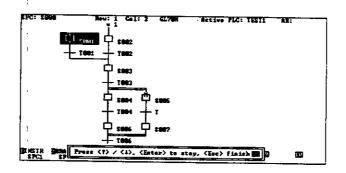


Figure 4.250

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that SFC or network.)

Displaying the previous occurrence:

Press the Up Cursor Key.

Displaying the next occurrence:

Press the Down Cursor Key.

Exiting the search and returning to the original SFC:

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

4.3.13 Searching cont.

2. Searching for Instructions and Addresses

1) Press the Slash Key to display the Command Submenu.

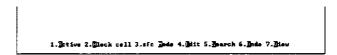


Figure 4.251

2) Press F5 (Search).

A screen for specifying the address will appear.



Figure 4.252

3) Press the Page Up Key.

A screen for specifying the address or instruction will appear.



Figure 4.253

4) Enter the address and press the Enter Key.

Move the cursor down.

5) Enter the instruction (mnemonic) and press the Enter Key.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 4.254

A confirmation message will appear asking whether to proceed with the search.



Figure 4.255

6) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 4.256

The first occurrence will appear, and the cursor will move to that address.

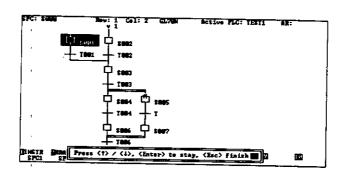


Figure 4.257

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that SFC or network.)

Displaying the previous occurrence:
Displaying the next occurrence:

Press the Up Cursor Key.

Press the Down Cursor Key.

Exiting the search and returning to the original SFC:

Press the Esc Key.

Moving the Cursor

Switching search screens: Press the Page Up or Page Down Key.

Address/mnemonic: Press the Up or Down Cursor Key.

4

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

3. Searching for Instructions

1) Press the Slash Key to display the Command Submenu.

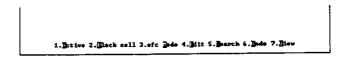


Figure 4.258

2) Press F5 (Search).

A screen for specifying the address will appear.



Figure 4.259

3) Press the Page Up Key twice.

An input screen for entering the instruction (mnemonic) will appear.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 4.260

4) Enter the instruction (mnemonic) and press the Enter Key.



Figure 4.261

A confirmation message will appear asking whether to proceed with the search.



Figure 4.262

5) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 4.263

The first occurrence will appear, and the cursor will move to that address.

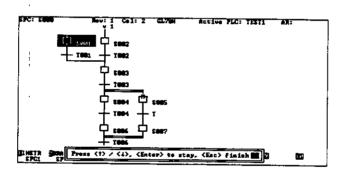


Figure 4.264

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that SFC or network.)

Displaying the previous occurrence:

Press the Up Cursor Key.

Displaying the next occurrence:

Press the Down Cursor Key.

Exiting the search and returning to the original SFC:

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at $\stackrel{.}{AR}$: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

4

4. Displaying a Table of Found Addresses

The following procedure is used to display a table of addresses (instructions) after a search is completed.

1) Press the Slash Key to display the Command Submenu.

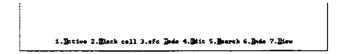


Figure 4.265

2) Press F5 (Search).

A screen for specifying the address will appear.



Figure 4.266

3) Press the Page Up Key three times.

A screen for specifying a table search will appear.



Figure 4.267

4) Enter the settings needed for the search, and press the Alt + E Keys.



Figure 4.268

A search will be executed.



Figure 4.269

Occurrences will be displayed in a table after the search is completed.

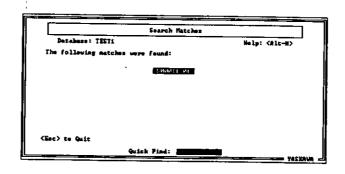


Figure 4.270

5) Move the cursor to the number that will be displayed and press the Enter Key.

The SFC Screen will appear, and the cursor will move to the element.

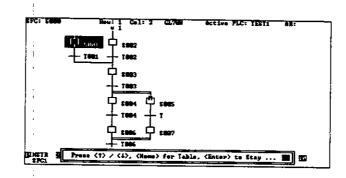


Figure 4.271

Processing after a Search

Moving to the previous or next occurrence from the screen displayed:

Press the Up or Down Cursor Key.

Stopping at the network displayed: Press the Enter Key.
Returning to the original network: Press the Esc Key.
Returning to the table: Press the Home Key.

Settings

1) SFC Range

All SFCs: Searches for all SFCs in the database.

Current SFC: Searches only the SFC area currently displayed.

From the cursor position:

Searches from the present cursor position to the end of the current area.

4

2) Instructions: Specifying the Element to Find

Specify: The mnemonic input area will appear. Specify the element to find using the mnemonic.

Example: N.O. Step (⊢ ⊢)

Instruction: Specify Mnemonic: STEP

Any: Searches all elements.

3) Addresses: Specifying the Address to Find

Specify: Specifies the address to find.

Any: Searches all addresses.

Moving the Cursor

Moving to the next or previous item:

Press the Up or Down Cursor Key.

Moving to the next item: Press the Enter Key.

Reversing items: Press the Space Key, or the Left or Right Cursor Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

4.3.14 SFC Mode Submenu

The SFC Mode Submenu is a special Command Menu for SFC editing.

SFC Mode: 1. Bondition setting 2. Bisulation 3. Ised display

Figure 4.272 SFC Mode Submenu

F1: Starting Up the Condition Setting Menu.

The F1 function sets conditions for initializing (starting), resetting, and presetting the SFC.

F2: Starting Up the Simulation Submenu

The F2 function sets simulation status, such as active, disabled, and hold, useful for debugging and other operations. Only simulation settings are available in offline editing, and online editing must be entered after the settings are loaded into the CPU in order for them to become functional.

F3: Starting Up the Used Display Menu

The F3 function displays a list of step and transition numbers as well as program use status.

1. SFC Initialization

The following procedure is used to set startup settings used for initializing and starting up the SFC program. The SFC will start up when the conditions that are set go into effect.

1) Press the Slash Key to display the Command Submenu.

1.Betive 2.Black cell 3.zfc Dee 4.Mit 5.Berch 6.Dee 7.Blau

Figure 4.273

2) Press F3 (SFC Mode).

The SFC Mode Submenu will appear.

SPC Mode: 1.Bendition setting 2.Bimulation 3.Bed display

Figure 4.274

3) Press F1 (Condition Setting).

The Condition Setting Submenu will appear.

Condition Setting: 1. Unitialize 2. Opset 3. Opeset

Figure 4.275

4) Press F1 (Initialize).

A screen for SFC Mode Initialize Screen will appear.

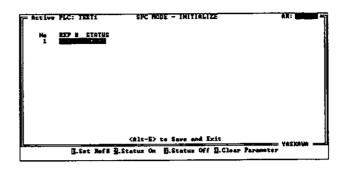


Figure 4.276

- 5) Enter the reference number that will be the start condition at AR:.
- 6) Press F1 (Set Reference Number).

The reference number can also be set by pressing the Enter Key after entering the reference number at AR:.

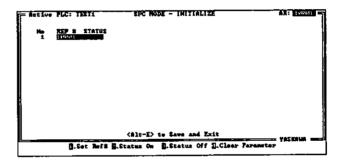


Figure 4.277

- 7) Press F2 (Status ON) or F3 (Status OFF) to select initialize condition ON or OFF.
- 8) Press the Alt + E Keys to save the settings.

An alternative method is to press the Esc Key and enter "Y" or "N" when the confirmation message appears asking whether to save changes.

Note A network that is not SFC must be created in order to turn ON a coil.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SCM" at AR: and press the Enter Key to display the Condition Setting Submenu.

c) Enter "INIT" at AR: and press the Enter Key to display the SFC Mode Initialize Screen.

2. Reset Setting

Reset Setting inactivates steps in SFC processing (no processing). Multiple settings can be used for reset conditions.

1) Press the Slash Key to display the Command Submenu.



Figure 4.278

2) Press F3 (SFC Mode).

The SFC Mode Submenu will appear.



Figure 4.279

3) Press F1 (Condition Setting).

The Condition Setting Submenu will appear.

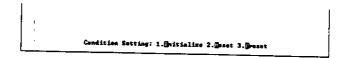


Figure 4.280

4) Press F2 (Reset).

The SFC Mode Reset Screen will appear.

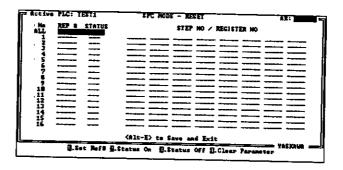


Figure 4.281

4.3.14 SFC Mode Submenu cont.

A maximum of 8 steps can be reset per condition, and 64 conditions can be set in total.

5) Enter the reference number at AR:.

Press the Page Up or Page Down Key to switch input screens after the 16th reference number.

Resetting all condition settings (setting to ALL) initializes conditions and resets all programmed steps.

- 6) Press F1 (Set Reference Number).
- 7) Press F2 (Status ON) or F3 (Status OFF) to select reset condition ON or OFF.

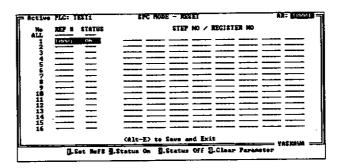


Figure 4.282

- 8) Move the cursor to the setting area for step numbers.
- 9) Enter the step number at AR:.

If an Input Register (30001 or higher) is set instead of a step, the step with the register data will be reset.

	Register	Data	
ſ	30001	20	S020 is set.

10) Press F1 (Set Step).

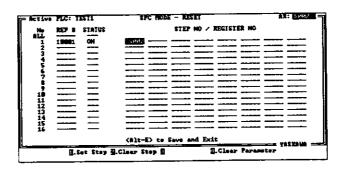


Figure 4.283

11) Press the Alt + E Keys to save the settings.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SCM" at AR: and press the Enter Key to display the Condition Setting Submenu.
- c) Enter "RESET" at AR: and press the Enter Key to display the SFC Mode Reset Screen.

3. Preset Settings

The following procedure is used to activate (process) a step where SFC processing was terminated. Multiple settings can be used for preset conditions.

1) Press the Slash Key to display the Command Submenu.

1. Briwe 2. Block cell 3. zfc Bude 4. Blit 5. Bearch 6. Bude 7. Dieu

Figure 4.284

2) Press F3 (SFC Mode).

The SFC Mode Submenu will appear.

SPC Hode: 1. Bendition setting 2. Himulation 3. Deed display

Figure 4.285

3) Press F1 (Condition Setting).

The Condition Setting Submenu will appear.

Condition Setting: 1. Phitialize 2. Chuset 3. Greent

Figure 4.286

4.3.14 SFC Mode Submenu cont.

4) Press F3 (Preset).

The SFC Mode Preset Screen will appear.

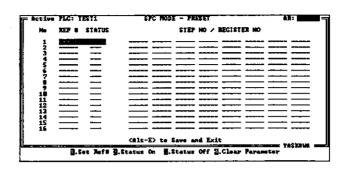


Figure 4.287

A maximum of 8 steps can be reset per condition, and 64 conditions can be set in total.

5) Enter the reference number at AR:.

Press the Page Up or Page Down Key to switch input screens after the 16th reference number.

- 6) Press F1 (Set Reference Number).
- 7) Press F2 (Status ON) or F3 (Status OFF) to select preset condition ON or OFF.

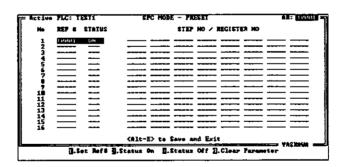


Figure 4.288

- 8) Move the cursor to the setting area for step numbers.
- 9) Enter the step number at AR:.

If an input register (30001 or higher) is set instead of a step, the step with the register data will be reset.

Register	Data	
30001	20	S020 is set.

10) Press F1 (Set Step).

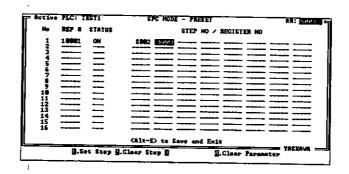


Figure 4.289

11) Press the Alt + E Keys to save the settings.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SCM" at AR: and press the Enter Key to display the Condition Setting Submenu.
- c) Enter "PRE" at AR: and press the Enter Key to display the SFC Mode Preset Screen.

4. Simulation Settings

Simulation Settings are useful for debugging programs with SFC simulation operation. Only simulation settings however, are available offline, and online editing must be entered after the settings are loaded into the CPU in order for them to become functional.

A. Active Function

The Active function activates steps which are in the normal processing order. Processing automatically moves to the next step.

1) Press the Slash Key to display the Command Submenu.



Figure 4.290

2) Press F3 (SFC Mode).

4.3.14 SFC Mode Submenu cont.

The SFC Mode Submenu will appear.

SPC Hode: 1. medition setting 2. minulation 3. med display

Figure 4.291

3) Press F2 (Simulation).

The Simulation Submenu will appear.

Simulation: 1. Ertive 2. Eizable 3. Dold 4. Erset 5. Elear all 6. Mit status

Figure 4.292

- 4) Move the cursor to the desired step.
- 5) Press F1 (Active).

Processing will begin from the step at the cursor position.

Original processing that was in progress will continue unchanged.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "ACT" at AR: and press the Enter Key to start processing from the step at the cursor position.

B. Disable Function

A disabled step will not become active even when its turn to execute comes around. The Disable function disables steps so they will not execute during program editing or other operations.

1) Press the Slash Key to display the Command Submenu.

1. Metive 2. Mack cell 3.sfc Jade 4. Miit 5. Branch 6. Made 7. Mew

Figure 4.293

2) Press F3 (SFC Mode).

The SFC Mode Submenu will appear.

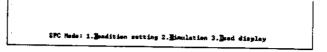


Figure 4.294

3) Press F2 (Simulation).

The Simulation Submenu will appear.

Simulation: 1.Ative 2.Hisable 3.Hald 4.Heset 5.Mear all 6.Hit status

Figure 4.295

- 4) Move the cursor to the desired step.
- 5) Press F2 (Disable).

Press F4 (Reset) to cancel the Disable function.

The step at the cursor position will be disabled.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "DA" at AR: and press the Enter Key to disable the step at the cursor position.

C. Hold Function

If a step on hold becomes active when its turn to execute comes around, active status will be maintained and processing will not continue until the hold is canceled.

1) Press the Slash Key to display the Command Submenu.

1. Betive 2. Black cell 2. efc Bode 4. Mit 5. Bearch 6. Bode 7. Biou

Figure 4.296

2) Press F3 (SFC Mode).

The SFC Mode Submenu will appear.

lition setting 2.Bimulation 3.Deed display

Figure 4.297

3) Press F2 (Simulation).

The Simulation Submenu will appear.

Figure 4.298

- 4) Move the cursor to the desired step.
- 5) Press F3 (Hold).

Press F4 (Reset) to cancel the Hold function.

The step at the cursor position will be on hold.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "HLD" at AR: and press the Enter Key to put the step at the cursor position on hold.

5. Single-screen Editing for Simulations

The following procedure is used to execute the three simulation operations described in Simulation Settings, based on a list from the Edit Screen.

1) Press the Slash Key to display the Command Submenu.

1. Ettive 2. Meck cell 3.sfc Jede 4. Mit 5. Bearch 5. Dede 7. Miss

Figure 4.299

2) Press F3 (SFC Mode).

The SFC Mode Submenu will appear.

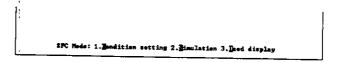


Figure 4.300

3) Press F2 (Simulation).

The Simulation Submenu will appear.

```
Simulation: 1. Ertive 2. Bisable 3. Fold 4. Seset S. Elear all 6. Shit status
```

Figure 4.301

4) Press F6 (Edit Status).

The Step Status Display will appear.

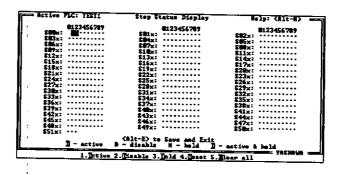


Figure 4.302

5) Select a simulation function from the Function Menu.

Refer to 4. Simulation Settings on page 4-123 for more details on all simulation operations.

6) Press the Alt + E Keys to save the settings.

Shortcuts

a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.

4.3.15 Displaying SFC Use Status

- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "FORED" at AR: and press the Enter Key to display the Step Status Display.

4.3.15 Displaying SFC Use Status

The following describes the list display for SFC step and transition numbers in use.

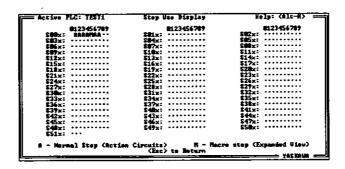


Figure 4.303 SFC Use Status Display

S001 to S512 are all displayed.

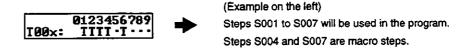


Figure 4.304

Operations cannot be applied to items on the list because the list is strictly for display purposes only. The same is true for the transitions list display.

Transition Use Status

0123456789 T00x: TITT·T···

Figure 4.305

"T" will appear at transitions in use.

Displaying Steps and Transitions

The following procedure is used to display a list of all step (S001 to S512) and transition (T001 to T512) numbers and also indicates whether they are in use in a program.

1) Press the Slash Key to display the Command Submenu.

1. Detive 2. Mack cell 3.sfc lede 4. Mait 5. Bearch 6. Inde 7. Dieu

Figure 4.306

2) Press F3 (SFC Mode).

The SFC Mode Submenu will appear.

SPC Mode: 1. Bendition setting 2. Bimulation 3. Bood display

Figure 4.307

3) Press F3 (Used Display).

The Used Display Submenu will appear.

Band Bisplay: 1. Stope used 2. Bransitions weed

Figure 4.308

4.3.16 Processing Blocks

4) Press F1 (Steps Used) or F2 (Transitions Used) to display the respective Use Display Screen.

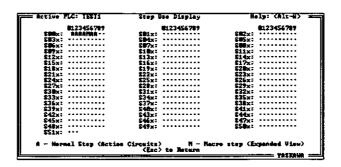


Figure 4.309

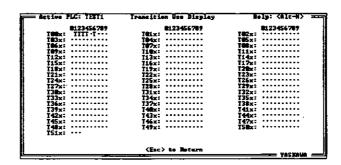


Figure 4.310

Since the Steps Used and Transitions Used are simply displays, individual elements displayed here cannot be changed.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SUM" at AR: and press the Enter Key to display the Used Display Submenu.
- c) Enter "STEPU" for Steps or "TRANU" for Transitions at AR: and press the Enter Key to display the respective Use Display screen.

4.3.16 Processing Blocks

Block processing is used to group elements in SFC editing and edit them together.

Defining Block:

Defines a block of multiple elements.

Editing Blocks:

Uses the block functions to edit blocks (copy, move and delete).

Copying or Moving a Block:

Copies or moves a specified area defined as a block to any location.

Deleting a Block:

Deletes elements defined in a block.

1. <u>Defining Blocks</u>

The following procedure is used to group and edit (Copy, Move and Delete) multiple elements defined as a single block.

1) Press the Slash Key to display the Command Submenu.

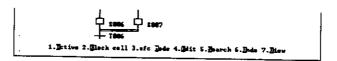


Figure 4.311

2) Press F2 (Block Cells).

The Cell Block Submenu will appear.



Figure 4.312

- 3) Move the cursor to the first element (starting point) in the area that will be defined as the block on the screen.
- 4) Press F1 (Block).



Figure 4.313

5) Move the cursor to the last element (end point) in the area defined as a block.

4.3.16 Processing Blocks cont.

6) Press F1 (Block).

Only one block can be defined at a time. Ungroup the block after a block operation is completed before defining the next block.

Press F2 (Unblock) to ungroup the block.

The area displayed in reverse video with the specified starting and end points at opposite corners will be defined as a block.

The area defined as a block will appear at the bottom-left side of the screen.

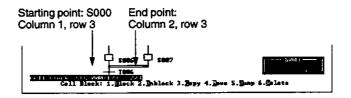


Figure 4.314

Shortcuts

- a) Enter "BLM" at AR: and press the Enter Key, or press the Alt + B Keys to display the Block Submenu.
- b) Enter "BCB" at AR: and press the Enter Key to define the block.

2. Copying or Moving a Block

The following procedure is used to Copy or Move an area defined as a block to any location.

1) Define the block.

Refer to 1. Defining Blocks on page 4-131 for more details on the procedure for defining blocks.

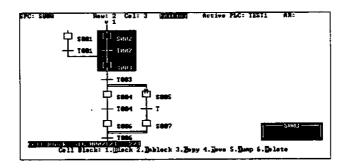


Figure 4.315

2) Move the cursor to where the block will be copied or moved.

When specifying the location where a block will be copied or moved, specify the step row for steps and the transition row for transitions.

3) Select F3 (Copy) or F4 (Move) from the Ceil Block Submenu.



Figure 4.316

4) The block will be copied or moved.

A block can be copied or moved to another SFC as well.

The block will automatically be ungrouped after a move.

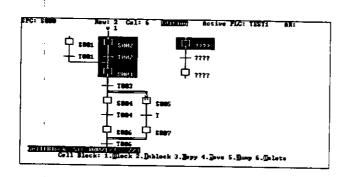


Figure 4.317

5) Enter addresses for the elements after the elements are copied.

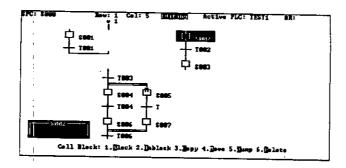


Figure 4.318

Shortcuts

Enter "CCB" for Copy or "MCB" for Move at AR: and press the Enter Key to copy or move the block.

4.3.16 Processing Blocks cont.

3. Deleting a Block

The following procedure is used to delete a defined block.

1) Define the block.

Refer to 1. Defining Blocks on page 4-131 for more details on the procedure for defining blocks.

2) Press F6 (Delete) from the Cell Block Submenu.

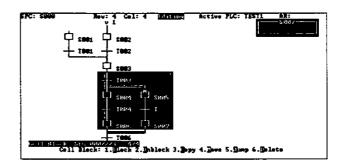


Figure 4.319

3) A confirmation message will appear asking whether to proceed with the deletion. Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the cell block. "N" is initially entered so deletion will not be executed in case the Enter Key is pressed by mistake.

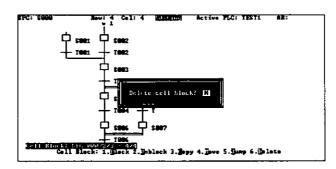


Figure 4.320

The area defined as a block will be deleted.

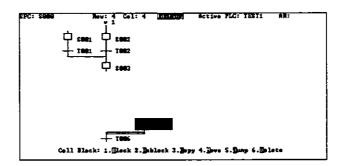


Figure 4.321

Shortcuts

Enter "DCB" at AR: and press the Enter Key to delete the cell block.

4.3.17 Backing Up a Database during Editing (Snapshot)

The following procedure is used to back up a database during SFC editing. A backup is made as a precautionary measure in case a program is deleted accidentally or a database is corrupted during editing. Time and effort will not be lost as long as the backup is updated during program editing.

1) Press the Slash Key to display the Command Submenu.

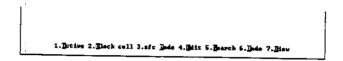


Figure 4.322

2) Press F4 (Edit).

The Edit Submenu will appear.

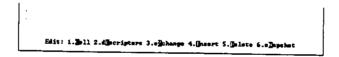


Figure 4.323

- 3) Press F6 (Snapshot).
- 4) Press the Enter Key to proceed with backing up.

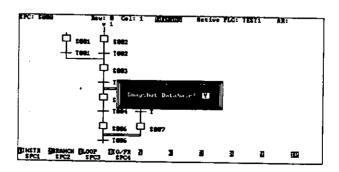


Figure 4.324

4.3.17 Backing Up a Database during Editing (Snapshot) cont.

5) A database named "!Snap!" will be created and stored in the same directory.

When two or more files are saved under the same name, the newer files will overwrite (update) the older files.

Note Make sure there is sufficient free space on the hard disk before executing a Snapshot because a database is created with exactly the same data as the currently selected database. The name and directory for a snapshot cannot be specified. If there is snapshot for another database already in the directory, that snapshot will be overwritten.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "AS" at AR: and press the Enter Key to display the execution confirmation message.

4.4 Editing Comments

The following types of comments are created with MEMOCAD-PRO.

- Signal descriptors
- Short comments
- Page title
- Long comments

These comments can be printed together with ladder diagrams mainly when creating lists, such as ladder lists, and are used to describe networks as well as individual elements. The comments can be edited and referred to when editing ladder programs (network editing). Database comments are displayed along with ladders even during online ladder editing, and comments can be displayed and edited online with any Processor. Editing functions like Exclusive Copy, Move and Delete are also available here.

4.4.1 Displaying Comments on Network and SFC Screens

The following procedure is used to display the Comment Window in a corner of the screen in order to refer on-screen to the signal descriptor for the address at the cursor position.

1. Displaying the Comment Window

- 1) Display the network.
- 2) Press the Slash Key to display the Command Submenu.

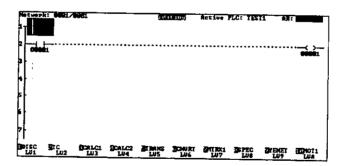


Figure 4.325

3) Press F8 (View).



Figure 4.326

4.4.1 Displaying Comments on Network and SFC Screens cont.

4) Press F2 (Window) from the View Submenu.

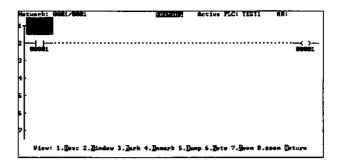


Figure 4.327

The Comment Window will appear.

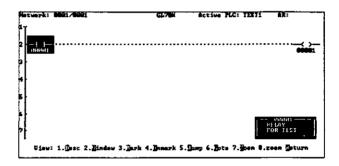


Figure 4.328

Shortcuts

Enter "TW" at AR: and press the Enter Key to display the Comment Window.

2. Displaying Descriptors on Screen

- 1) Press the Slash Key from the Network or SFC Screen.
- 2) Press F8 (View).



Figure 4.329

3) Press F1 (Descriptor) to display the signal descriptors of all addresses on screen.

When signal descriptors are displayed, the display screen is enlarged so the entire screen cannot be seen. Use the cursor to scroll through the screen.

Press F1 (Descriptor) again to return to the original screen.

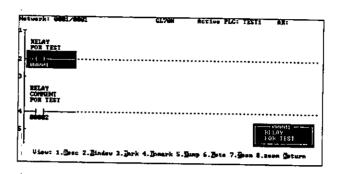


Figure 4.330

Shortcuts

Enter "TS" at AR: and press the Enter Key to display the signal descriptors of all addresses on screen.

4.4.2 Creating Comments

Comments can be attached to Network and SFC Screens that have been created, as well as to the reference numbers for individual elements on those screens. Comments can be referred to on personal computer Network Screens or on printed lists, and are useful for checks and maintenance on program details.

Comments vary in the number of characters that can be entered and usage.

1) Signal Descriptors

Settings

Characters per line:

Up to 10 characters

Number of lines:

Up to three lines

Features

- a) Facilitate's notes on functional roles or other information about relays and coils used at each address.
- b) Prints above the elements in ladder lists when the lists are printed out.

4.4.2 Creating Comments cont.

c) Can be referenced from the Network Screen.

2) Short Comments

Settings

• Characters per line:

Up to 48 characters

Number of lines:

Up to four lines

Features

- a) Facilitates notes on functional roles or other details about relays and coils used at each address.
- b) Allows notes to be written mainly on coil and network addresses.
- c) The large number of characters that can be entered allows more detailed explanations than that provided by the signal descriptor.
- d) Short comments for ladder lists are printed on the upper-right side of the coil or below the network in the ladder diagram (depending on the type of printer). Network short comments are printed on the upper-left side of the network.

Note Short comments other than those for coils and networks will not be printed in ladder lists.

3) Page Title

Settings

• Characters per line:

Up to 64 characters

• Number of lines:

One line

Features

- a) Allows network notes.
- b) Prints as a header or network title when a ladder list is printed.

4) Long Comments

Settings

• Characters per line: Up to 255 characters

• Number of lines: Up to 1,000 lines

Features

- a) Allows long sentences to be created in the database separate from the database.
- b) When a long comment (number) is specified in a network, long comments for that network can be included during printing.

These comments can be printed on a ladder list or on their own.

1. Displaying the Comment Input Screen

The following procedure is used to display the Comment Input Screen.

A. From the Ladder/SFC Screen

1) Select 1. Select Active PLC from the Main Menu to select a database.

Comments cannot be created if a database is not selected.

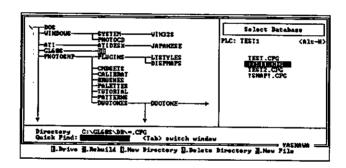


Figure 4.331

2) Display a Network or SFC Screen.

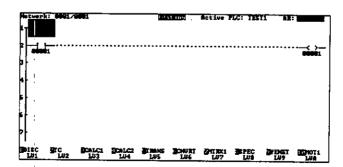


Figure 4.332

3) Move the cursor to the address for which comments will be created.

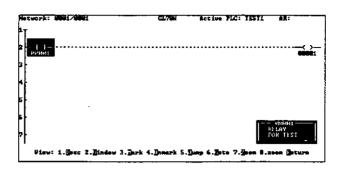


Figure 4.333

4) Press the Tab Key.

The Comment Input Screen will appear.

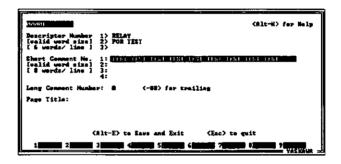


Figure 4.334

Shortcuts

Enter "EE" at AR: and press the Enter Key to display the Comment Input Screen.

- **B.** From the Descriptor Address Table
 - 1) Select 2. Offline from the Main Menu.
- 2) Select 4. Descriptors from the Offline Edit Menu.

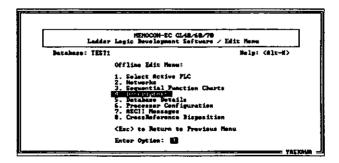


Figure 4.335

3) The Descriptor Address Table will appear. Move the cursor to the reference number that will be edited and press the Enter Key.

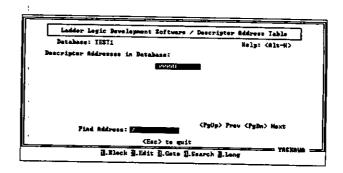


Figure 4.336

A message will appear if there are no addresses with comments. Press any key to display the table.

Press the Enter Key if there are no comments in the Address Table. The reference number input field will appear. Enter a number and press the Enter Key to display the Edit Screen.

The Comment Edit Screen will appear.

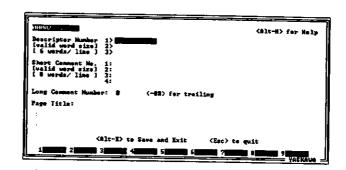


Figure 4.337

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key. Moving to the next or previous page: Press the Page Down or Page Up Key.

- Press F3 (Goto) from the Edit Menu and enter an address in the input field to move to the address that was entered.
- An alternative method for moving to an address is to enter the address in Find Address from the Descriptor Address Table.

2. Displaying the Descriptor Address Table

The Descriptor Address Table is a List Display Screen for discrete addresses and registers with comments as well as reference numbers for networks.

4.4.2 Creating Comments cont.

The following procedure is used for opening the Comment Input Screen and creating comments as well as for copying and deleting the comments of target reference numbers.

1) Select 2. Offline from the Main Menu.

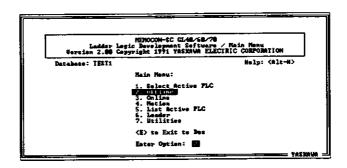


Figure 4.338

2) Select 4. Descriptors from the Offline Edit Menu.

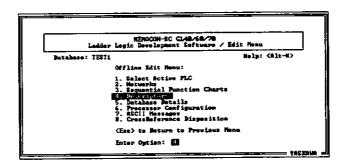


Figure 4.339

The Descriptor Address Table will appear.

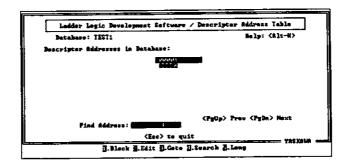


Figure 4.340

A message will appear saying comments could not be found if there are no comments. Press the Enter Key once to switch to the Descriptor Address Table.

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key. Moving to the next or previous page: Press the Page Down or Page Up Key.

3. Entering Comments

The following procedure is used to enter comments.

1) Display the Comment Input Screen.

Refer to 2. Displaying the Descriptor Address Table on page 4-143 for more details on the procedure for displaying the screen.

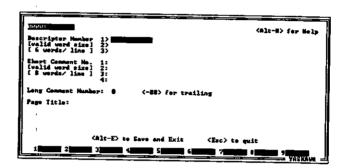


Figure 4.341

2) Enter comments from the keyboard.

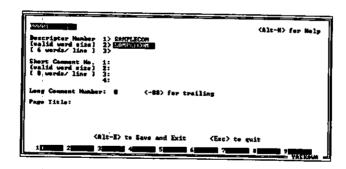


Figure 4.342

Press the Tab Key to save the comments.

4. Copying Comments

The following procedure is used to copy comments from one address (reference number) to another address.

4.4.2 Creating Comments cont.

- 1) Select 4. Descriptors from the Offline Edit Menu.
- 2) Press F1 (Block).

The Block Edit Menu will appear.

3) Move the cursor to the first address (starting point) that will be defined as a block, and press F1 (Block).

When copying comments from just one address, Move the cursor to that address. There is no need to define a block for one address.

- 4) Move the cursor to the last address (end point) that will be defined as a block, and press F1 (Block).
- 5) Press F3 (Copy).

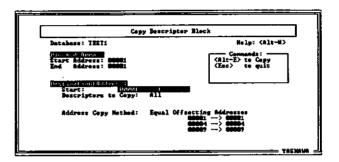


Figure 4.343

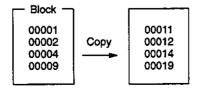
- 6) Set the copy details.
- 7) Press the Alt + E Keys.
- 8) Check the details and enter "Y" or "N".
- 9) Press the Enter Key.

Comments to be Copied

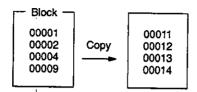
- All: Copies all comments
- Specify: Selects the type of comment when the Tab Key is pressed.

Address Copy Method

Same Offsets



Continuous Addresses



5. Multiple Copies

The following procedure is used to copy comments from one address to multiple addresses or to copy comments from an address (reference number) to a series of addresses at one time.

- 1) Select 4. Descriptors from the Offline Edit Menu.
- 2) Press F1 (Block).

The Block Edit Menu will appear.

3) Move the cursor to the first address (starting point) that will be defined as a block, and press F1 (Block).

When copying comments from just one address, move the cursor to that address. There is no need to define a block for one address.

- 4) Move the cursor to the last address (end point) that will be defined as a block, and press F1 (Block).
- 5) Press F7 (Fill).
- 6) Set the copy details.

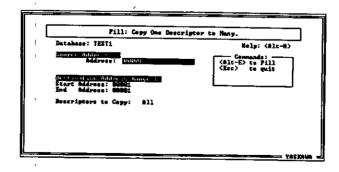


Figure 4.344

4.4.2 Creating Comments cont.

When the Tab Key is pressed with Copy Comment specified, a screen will appear to select the comment to copy. Press the Space Key to display the comment that will be copied in reverse video.

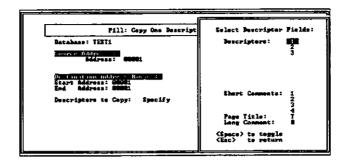


Figure 4.345

- 7) Press the Alt + E Keys.
- 8) Check the details and enter "Y" or "N".
- 9) Press the Enter Key.

Block: Groups an edit area when multiple comments and networks will be edited as a group.

Unblock: Ungroups a block.

Note Press F5 (Jump) after a block is defined in order to move the cursor to the first address in the block.

6. Moving Comments

The following procedure is used to move comments from one address (reference number) to another address.

- 1) Select 4. Descriptors from the Offline Edit Menu.
- 2) Press F1 (Block).

The Block Edit Menu will appear.

3) Move the cursor to the first address (starting point) that will be defined as a block, and press F1 (Block).

When moving comments from just one address, move the cursor to that address. There is no need to define a block for one address.

- 4) Move the cursor to the last address (end point) that will be defined as a block, and press F1 (Block).
- 5) Press F4 (Move).
- 6) Set the move details.

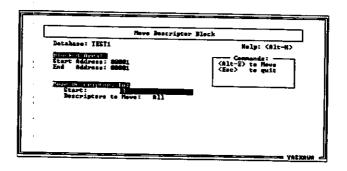


Figure 4.346

When the Tab Key is pressed with Move comment specified, a screen will appear to select the comment to move. Press the Space Key to display the comment that will be moved in reverse video.

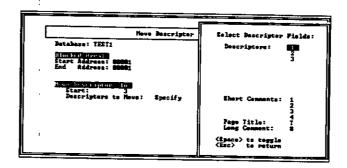


Figure 4.347

- 7) Press the Alt + E Keys.
- 8) Check the details and enter "Y" or "N".
- 9) Press the Enter Key.

The comments no longer exist at the original location once they are moved.

7. <u>Deleting Comments</u>

The following procedure is used to delete comments.

4.4.2 Creating Comments cont.

- 1) Select 4. Descriptors from the Offline Edit Menu.
- 2) Press F1 (Block).

The Block Edit Menu will appear.

3) Move the cursor to the first address (starting point) that will be defined as a block, and press F1 (Block).

When deleting comments from just one address, move the cursor to that address. There is no need to define a block for one address.

- 4) Move the cursor to the last address (end point) that will be defined as a block, and press F1 (Block).
- 5) Press F6 (Delete).
- 6) Check the details and enter "Y" or "N".

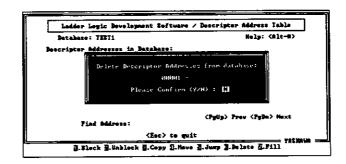


Figure 4.348

7) Press the Enter Key.

8. Searching for a Text String

The following procedure is used to search comment data for a specific text string.

- 1) Select 4. Descriptors from the Offline Edit Menu.
- 2) Press F4 (Search).

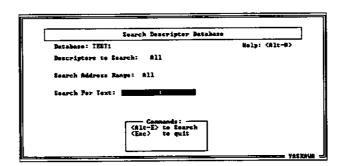


Figure 4.349

3) Set search details.

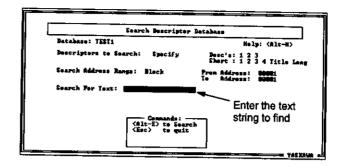


Figure 4.350

Comment Items to Find

- All: Searches all types of comments.
- Specify: Selects the type of comment to search for when the Tab Key is pressed.

Find Address Area

- All: Searches all addresses.
- Block: Searches the currently defined block area.
- Specify: Specifies the search area (enter the starting and end addresses).

Specify Text to Find

- Enter the text string to find in the input field.
- 4) Press the Alt + E Keys.
- 5) Check the details and enter "Y" or "N".
- 6) Press the Enter Key to execute the search.
- 7) After the search results are displayed, move the cursor to the desired address and press the Enter Key.

Press the Esc Key to return to the Descriptor Address Table.

The Comment Input Screen will appear for the address selected with the cursor.

4.4.2 Creating Comments cont.

9. Moving the Cursor

The following procedure is used to move the cursor to the address number that will be displayed.

- 1) Select 4. Descriptors from the Offline Edit Menu.
- 2) Press F3 (Goto).

The Address Number Input Screen will appear.

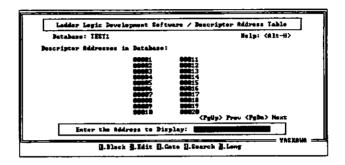


Figure 4.351

3) Enter the address number to be displayed and press the Enter Key.

The cursor will move to the address number that was entered.

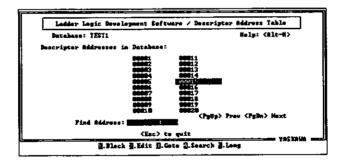


Figure 4.352

The cursor will move to the address even if the address number was entered directly in Find Address.

10. Registering Comments

The following procedure is used to register comments to function keys.

1) Select 4. Descriptors from the Offline Edit Menu.

- 2) Select the comment address that will be edited.
- 3) Move the cursor to the end of the text that will be registered.

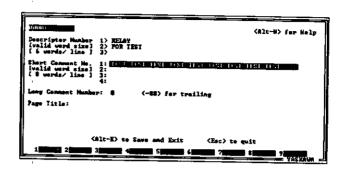


Figure 4.353

4) Press Shift F + ?.

The question mark (?) represents a function number (1 through 9).

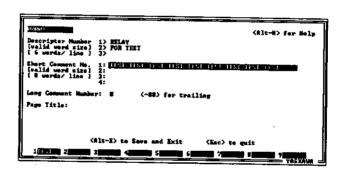


Figure 4.354

The comment will be registered to the function key of the number specified for the question mark (?).

The text string that is registered will remain until another comment is registered to that location.

When using a registered comment, move the cursor to where the comment will be used and press the function key where the comment is registered.

4.4.3 Editing Long Comments

The following procedure is used to open the Long Comment Input Screen.

4.4.3 Editing Long Comments cont.

Press the Alt + L Keys from the Comment Input Screen or press F5 (Long) from the Comment Address Table.

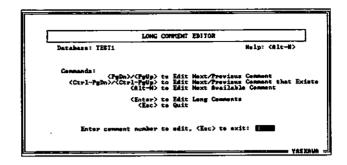


Figure 4.355

The Long Comment Editor function allows long sentences to be created separately in the database.

Up to 999 lines with a maximum of 255 characters per line can be created.

If a long comment number is specified on the Comment Input Screen for a network address, the long comments will print together with that network in the ladder list.

Specify comment on the Comment Input Screen.

- 1: Long comments will be printed above the network.
- -1: Long comments will be printed below the network.

1. Entering Long Comments

The following procedure is used to enter long comments.

- 1) Move the cursor to where the comment will be entered.
- 2) Enter the comment.

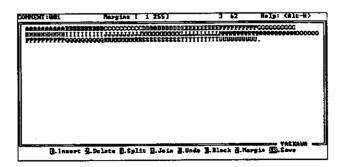


Figure 4.356

3) Press the Enter Key to change lines.

2. Inserting Rows

The following procedure is used to insert rows in long comments.

1) Move the cursor to where the row will be entered.

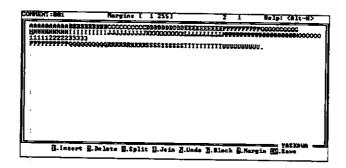


Figure 4.357

2) Press F1 (Insert).

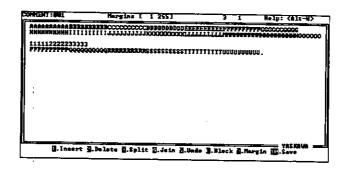


Figure 4.358

3. Deleting Rows

The following procedure is used to delete rows in long comments.

1) Move the cursor to the row that will be deleted.

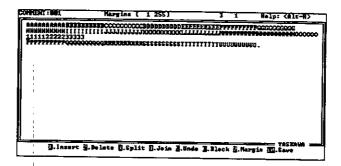


Figure 4.359

4.4.3 Editing Long Comments cont.

2) Press F2 (Delete).

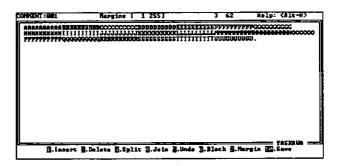


Figure 4.360

4. Splitting Rows

The following procedure is used to split a row in long comments.

- 1) Move the cursor to where the row will be split.
- 2) Press F3 (Split).

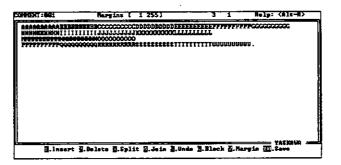


Figure 4.361

Note The cursor position marks where the row splits.

5. Joining Rows

The following procedure is used to join two rows in long comments.

1) Move the cursor to the first of the two rows that will be joined.

2) Press F4 (Join).

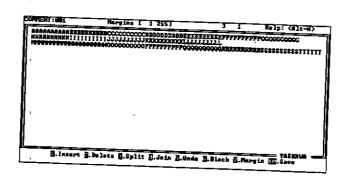


Figure 4.362

6. <u>Undoing</u>

The following procedure is used to undo a row entry or deletion.

Press F5 (Undo).

Note Undo applies only to the row where the cursor is positioned. Entries or deletions prior to moving to that row as well as row splitting or row joining will not be undone.

7. Block Editing for Multiple Rows

The following section describes block editing for multiple rows, and includes the editing functions given below.

- Defining a block
- Moving and copying
- Deleting a block

A. Block Editing

The following procedure is used to define and ungroup a block of long comments.

- 1) Select 1. Select Active PLC from the Main Menu.
- 2) Select the database that will be edited.
- 3) Select 4. Descriptors from the Offline Edit Menu.
- 4) Press F5 (Long) from the Descriptor Address Table.

4.4.3 Editing Long Comments cont.

- 5) Press F6 (Block) from the Long Comment Input Screen.
- 6) Move the cursor to the lines that will be defined as a block.
- 7) Press F1 (Block).

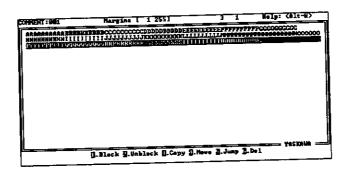


Figure 4.363

Press F2 (Unblock) to ungroup the block.

Press F5 (Jump) to move the cursor to the first line in the block.

B. Copying and Moving a Block

The following procedure is used to Copy or Move a block of long comments.

- 1) Select 1. Select Active PLC from the Main Menu.
- 2) Select the database that will be edited.
- 3) Select 4. Descriptors from the Offline Edit Menu.
- 4) Press F5 (Long) from the Descriptor Address Table.
- 5) Press F6 (Block) from the Long Comment Input Screen.

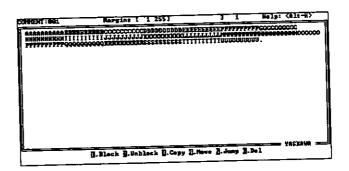


Figure 4.364

- 6) Move the cursor to the lines that will be defined as a block.
- 7) Press F1 (Block).
- 8) Move the cursor to where the block will be copied or moved.
- 9) Press F3 (Copy) or F4 (Move).

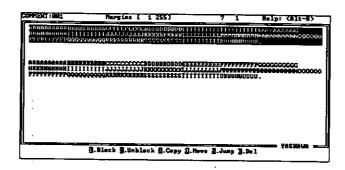


Figure 4.365

Note The lines defined as a block will be copied or moved to the line where the cursor is positioned.

C. Deleting a Block

The following procedure is used to delete a block of long comments.

- 1) Select 1. Select Active PLC from the Main Menu.
- 2) Select the database that will be edited.
- 3) Select 4. Descriptors from the Offline Edit Menu.
- 4) Press F5 (Long) from the Descriptor Address Table.
- 5) Press F6 (Block) from the Long Comment Input Screen.
- 6) Move the cursor to the rows that will be defined as a block.
- 7) Press F1 (Block).
- 8) Move the cursor to the block that will be deleted.
- 9) Press F6 (Delete).
- 10) Block details that will be deleted will appear. Enter "Y" or "N".

4.4.3 Editing Long Comments cont.

11) Press the Enter Key.

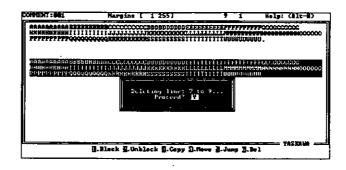


Figure 4.366

8. Setting Margins

The following procedure is used to set the left and right margins of the comment input area.

- 1) Press F7 (Margin).
- 2) Enter left and right margins as indicated on the screen display.

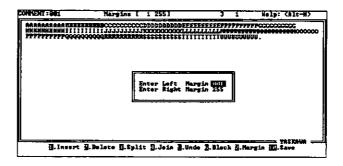


Figure 4.367

The margins are initially set to provide the maximum area allowing up to 255 characters to be input.

Left and right margin range:

Left margin: 1 to 33 characters

Right margin: 43 to 255 characters.

9. Saving Long Comments

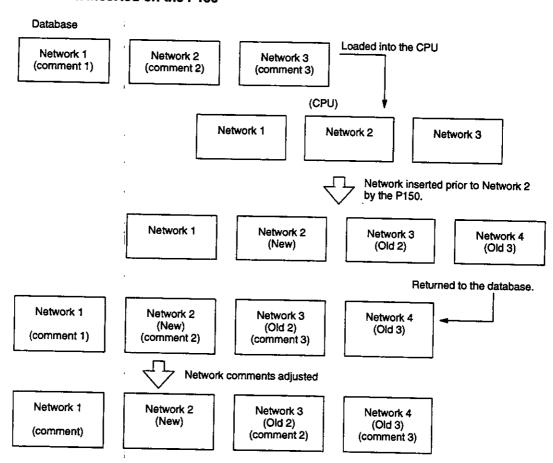
The following procedure is used to save long comments.

Press F10 (Save).

4.4.4 Adjusting Network Comments

When a network created with MEMOCAD-PRO is loaded into a Processor, edited (Insert or Delete) on a P150 or other device, and then returned to the database on the personal computer, the network will not be properly aligned because the network and the network comments will no longer match. The Network Comment Adjustment function matches network comments with the actual network.

Network Inserted on the P150



This adjustment is not necessary with online editing on MEMOCAD-PRO because the network comments will be moved automatically in line with network insertions and deletions as long as a database is selected.

4.4.4 Adjusting Network Comments cont.

1. Network Insertion

1) Select 7. Utilities from the Main Menu.

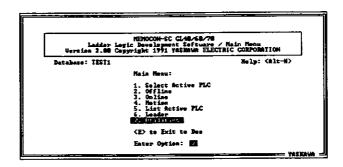


Figure 4.368

2) Select 2. Descriptor Utilities from the Utility Menu.

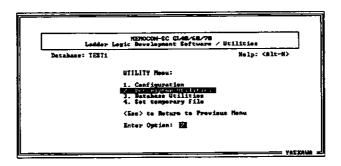


Figure 4.369

3) Select 1. Adjust Network Pointers from the Descriptor Utility Options.

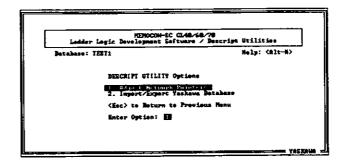


Figure 4.370

4) Select 1. Move Pointers Up due to Network Insertion(s) from the Adjust Options.

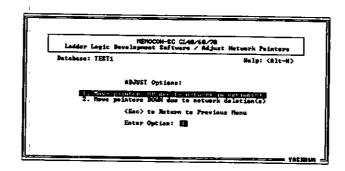


Figure 4.371

A screen will appear asking for the network number that was inserted.

5) Enter the first number of the network range that was inserted and press the Enter Key.

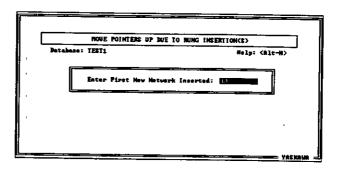


Figure 4.372

6) Enter the last number of the network range that was inserted and press the Enter Key.

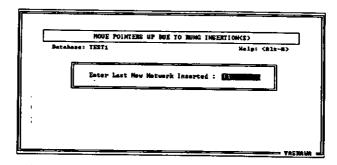


Figure 4.373

The network comments will be adjusted.

Note The number of the network that was inserted must be entered in order to adjust the network comments. Check to see what number was inserted during editing.

4.4.4 Adjusting Network Comments cont.

2. Network Deletion

1) Select 7. Utilities from the Main Menu.

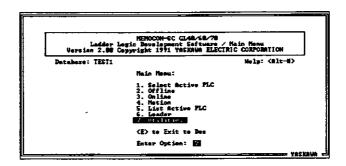


Figure 4.374

2) Select 2. Descriptor Utilities from the Utility Menu.

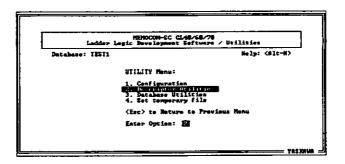


Figure 4.375

3) Select 1. Adjust Network Pointers from the Descriptor Utility Options.

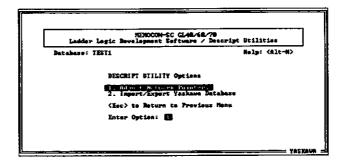


Figure 4.376

4) Select 2. Move Pointers Down due to Network Deletion(s) from the Adjust Options.

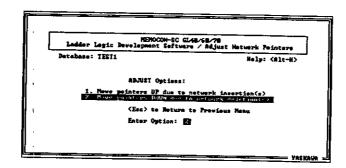


Figure 4.377

A screen will appear asking for the network number that was deleted.

5) Enter the first number of the network range that was deleted and press the Enter Key.

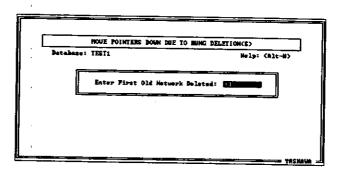


Figure 4.378

6) Enter the last number of the network range that was deleted and press the Enter Key.

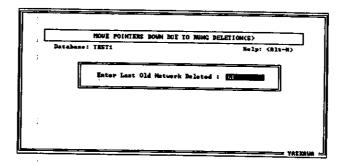


Figure 4.379

The network comments will be adjusted.

Note The number of the network that was deleted must be entered in order to adjust the network comments. Check to see what number was deleted during editing.

4

4.5 Setting the System Configuration

The following procedure is used to define the Processor configuration, I/O Module allocation, PC Link allocation, ASCII Module, High-speed Station allocation and the YENET routing table.

Refer to 6.12 System Configuration for more details on the procedure for setting the Processor directly.

1) Select 2. Offline from the Main Menu.

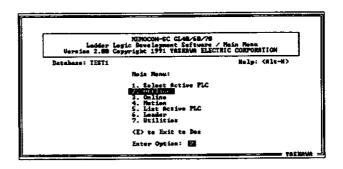


Figure 4.380

2) Select 6. Processor Configuration from the Offline Edit Menu.

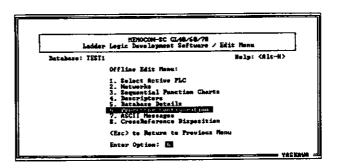


Figure 4.381

The Processor Configuration Options will appear.

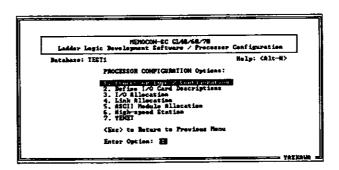


Figure 4.382

4.5.1 Processor Models and Configurations

This section describes all settings for the target Processor. These settings can be changed at any time.

1. Setting the Processor Model

The following procedure is used to set the target Processor model.

1) Select 1. Processor Type/Configuration from the Processor Configuration Menu.

The PLC Configuration Display Screen will appear.

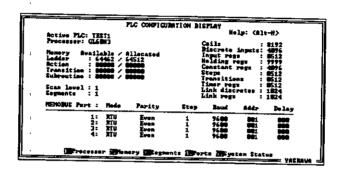


Figure 4.383

2) Press F1 (Processor) from the PLC Configuration Display Screen to set the Processor model.

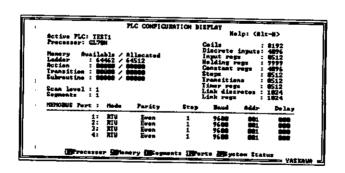


Figure 4.384

Be sure to change the memory allocation when switching to a Processor with a different program memory capacity.

These settings will be reflected in other areas, such as during ladder program editing. The range of reference numbers for instructions will vary depending on the Processor model selected here.

4.5.1 Processor Models and Configurations cont.

Note The Processor model will switch as shown below each time F1 is pressed.

$$\begin{array}{c} \text{GL60S} \rightarrow \text{GL60S1} \rightarrow \text{GL60S0} \rightarrow \text{GL60H} \rightarrow \text{GL70H} \rightarrow \text{GL60HT} \\ \uparrow & \downarrow \\ \text{GL60S2} \leftarrow \text{GL60S3} \leftarrow \text{GL40S3} \leftarrow \text{GL40S2} \leftarrow \text{GL40S1} \leftarrow \text{GL70HT} \\ \end{array}$$

2. Allocating Memory

The following procedure is used to allocate user memory to action, transition condition, and subroutine circuits.

1) Press F2 (Memory) from the PLC Configuration Display Screen.

Refer to 1. Setting the Processor Model on page 4-167 for more details on the procedure for displaying the PLC Configuration Display Screen.

A screen for allocating memory will appear.

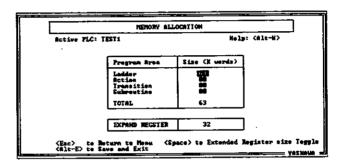


Figure 4.385

2) Set the ladder as well as the action, transition condition and subroutine circuit memory allocations so they equal the total memory that is available.

Moving the Cursor

Moving up or down: Press the Up or Down Cursor Key.

- 3) Press the Esc Key.
- 4) A confirmation message will appear asking whether to save the settings. Enter "Y" or "N."

Total memory varies with the Processor.

Expansion register settings are enabled only when the GL60S3, GL60H, GL60HT, GL70H or GL70HT is selected.

3. Setting Port Parameters

The following procedure is used for port settings necessary for printing. These settings will not be written to the Processor even though the Loader function is used. Be sure to set the Processor settings in the Online Mode.

1) Press F4 (Ports) from the PLC Configuration Display Screen.

Refer to 1. Setting the Processor Model on page 4-167 for more details on the procedure for displaying the PLC Configuration Display Screen.

The Function Menu will switch to set parameters.

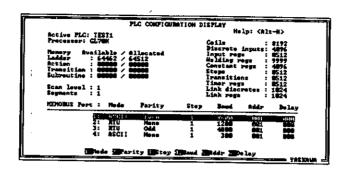


Figure 4.386

2) Press any key between F1 and F4.

Press F5 (Addr) to display the device address input field.

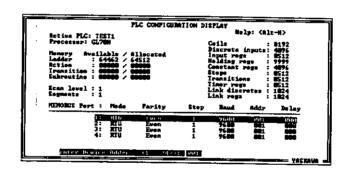


Figure 4.387

- 3) Enter the device address and press the Enter Key.
- 4) Press F6 (Delay) to display the delay time input field.

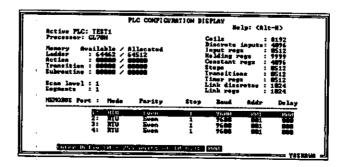


Figure 4.388

4.5.1 Processor Models and Configurations cont.

- 5) Enter the delay time in 10 ms increments and press the Enter Key.
- 6) Press the Alt + E Keys to save the settings when they are all entered.

The settings for each parameter is given below.

F1 Mode: ASCII or RTU
F2 Parity: None, odd and even

F3 Stop: 1 or 2

F4 Baud: 15

150, 300, 600, 1,200, 2,400, 4,800, 9,600 or 19,200 baud

F5 Addr: 1 through 247 (device address)

F6 Delay: Time before sending after receiving a instruction (10 ms increments)

Note (1) This function is for printing settings. Be sure to write it to the Processor in the Online mode. Refer to 3. Setting Port Parameters on page 4-168 for more details.

(2) Moving the Cursor

Moving up or down: Press the Up or Down Cursor Key.

(3) The factory-set communications parameters when the Processor is purchased are listed below. Leave the settings as given in the figure unless its absolutely necessary to change them.

Table 4.1 Processor Communications Parameter Factory Settings

F1	F2	F3	F4	F5	F6
Mode	Parity	Stop	Baud	Addr	Delay
RTU	Even	1	9,600	001	0

4. Setting 2-level Scanning

All networks are divided into a maximum of eight segments. The scan level is set in order to reduce scan time by setting one segment as a high-speed segment (executed every scan) and the rest as low-speed segments (number of segments - executed once per scan).

Set the following in order to execute the 2-level scan.

- a) Scan level settings
- b) Segment allocation

Refer to MEMOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1) for more details.

5. Setting the Scan Level

The following procedure is used to set the scan level. Segment allocation is not available unless the scan level is set to 2.

1) Press F3 (Segments) from the PLC Configuration Display Screen.

Refer to 1. Setting the Processor Model on page 4-167 for more details on the procedure for displaying the PLC Configuration Display Screen.

The Segment Assignment Screen will appear.

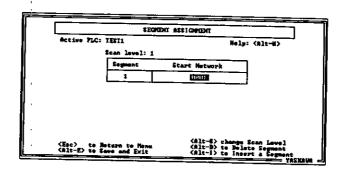


Figure 4.389

- 2) Press the Alt + S Keys (Change Scan Level).
- 3) Set the Scan Level to 2.

Press the Alt.+ S Keys to switch between Scan Level 1 and 2.

The Scan Level cannot be set to 2 with a GL40S1, GL40S2 or GL40S3 type Processor, so segments cannot be allocated with these Processors.

6. Allocating Segments

The following procedure is used to allocate segments.

1) Press F3 (Segments) from the PLC Configuration Display Screen.

Refer to 1. Setting the Processor Model on page 4-167 for more details on the procedure for displaying the PLC Configuration Display Screen.

- 2) Press the Alt + S Keys (Change Scan Level).
- 3) Set the Scan Level to 2.

Refer to 5. Setting the Scan Level on page 4-170 for more details on the procedure for setting the scan level.

4) Press the Alt + I Keys to insert the number of segments required.

4.5.1 Processor Models and Configurations cont.

Up to eight segments can be set.

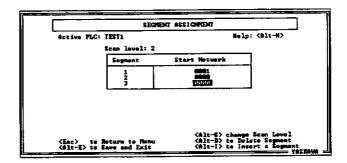


Figure 4.390

5) Move the cursor to Segment 2.

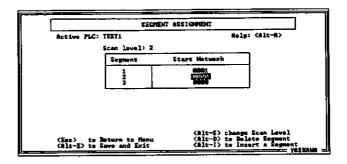


Figure 4.391

6) Enter the first network number for segment 2 and press the Enter Key.

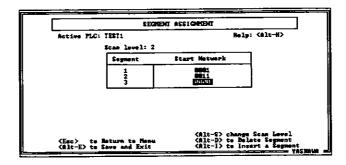


Figure 4.392

7) Enter network numbers all the way to the last segment as described in the preceding step.

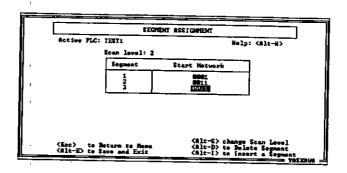


Figure 4.393

8) Press the Alt + E Keys to save the settings.

To delete a segment allocation, move the cursor to the segment that will be deleted and press the $\mathsf{Alt}+\mathsf{D}$ Keys.

7. Adding Segments

The following procedure is used to add segments.

1) Press F3 (Segments) from the PLC Configuration Display Screen.

Refer to 1. Setting the Processor Model on page 4-167 for more details on the procedure for displaying the PLC Configuration Display Screen.

2) Press the Alt + S Keys (Change Scan Level).

Refer to 5. Setting the Scan Level on page 4-170 for more details on the procedure for setting the Scan Level.

3) Press the Alt + I Keys (Insert Segment) to insert a segment.

Up to eight segments can be set.

Note The segment that was added will be deleted if the scan level is changed.

Examples of entries when adding segments are given below.

Example: Allocating the Following 30 Networks

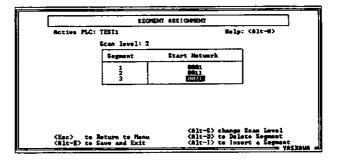
1 through 10 → Segment 1

4.5.1 Processor Models and Configurations cont.

- 11 through 20 → Segment 2
- 21 through 30 → Segment 3

Operating Procedure

- 1) Press F3 (Segments) from the PLC Configuration Display Screen.
- 2) From the Segment Assignment Screen, press the Alt + I Keys (Insert Segment) once for each segment to be added.
- 3) Move the cursor to Segment 2.
- 4) Enter the first network number for Segment 2.
- 5) Move the cursor to Segment 3.
- 6) Enter the first network number for Segment 3.
- 7) Press the Enter Key.
- 8) Press the Alt + E Keys to save the settings.

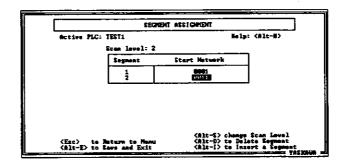


8. <u>Deleting Segments</u>

The following procedure is used to delete segments.

Operating procedure

Press the Alt + D Keys (Delete Segment) to delete segments in order from the end to lowest number at #1.



9. Setting System Status Allocations

The following procedure is used for system status allocation to enable CPU error status as well as the status of all Modules to be monitored even with the CPU stopped.

1) Press F5 (System Status) from the PLC Configuration Display Screen.

Refer to 1. Setting the Processor Model on page 4-167 for more details on the procedure for displaying the PLC Configuration Display Screen. System Status Allocation is only available when GL60H, GL60HT, GL70H or GL70HT is selected.

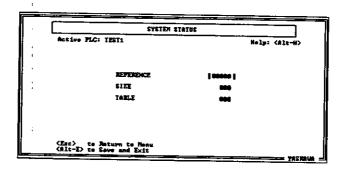


Figure 4.394

2) Enter the reference number, number of registers (size), and status table number from the keyboard.

Reference number setting range: 4xxxx or Rxxxx Size setting range: 1 through 106 Status table number setting range: 1 through 106

3) After the settings are entered, press the Alt + E Keys to save them.

4.5.2 I/O Allocation

I/O Allocation is used to specify channels, stations, and racks, and to allocate I/O status to each slot. Refer to *Appendix D I/O Configurations of GL Series* for more details on the procedure for configuring I/O sections like channels and racks.

1. Displaying the I/O Allocation Screen

The following procedure is used to display the I/O Allocation Screen.

1) Select 2. Offline from the Main Menu.

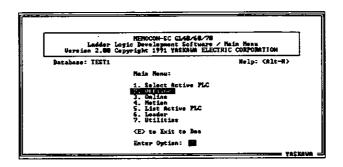


Figure 4.395

2) Select 6. Processor Configuration from the Offline Edit Menu.

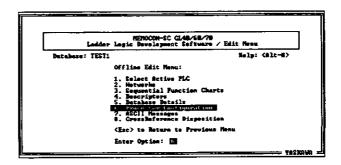


Figure 4.396

3) Select 3. I/O Allocation from the Processor Configuration Options.

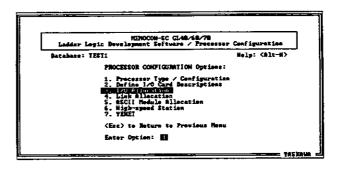


Figure 4.397

The Traffic Cop I/O Allocation Screen will appear.

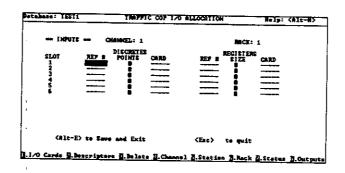


Figure 4.398

2. Setting Channels

Channels and stations must be specified for remote station I/O allocation. The following procedure is used to display stations on screen when channel 2 or higher is set. (There is no station at channel 1.)

1) Display the Traffic Cop I/O Allocation Screen.

Refer to 1. Displaying the I/O Allocation Screen on page 4-175 for more details on the procedure for displaying the Traffic Cop I/O Allocation Screen.

2) Press F4 (Channel).

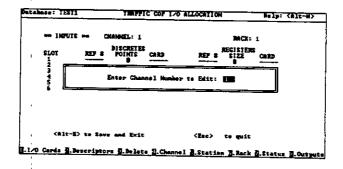


Figure 4.399

3) Enter a channel number (2 or 3) and press the Enter Key.

A rack must be specified if multiple racks are used.

Refer to Appendix D I/O Configurations of GL Series for more details on the procedure for configuring remote I/O.

Channels cannot be set for the GL40.

4

3. Setting Stations

Channels and stations must be specified for remote station I/O allocation. A maximum of 31 stations can be specified per channel. The following procedure is used to display stations on screen when channel 2 or higher is set. (There is no station at channel 1.)

1) Display the Traffic Cop I/O Allocation Screen.

Refer to 1. Displaying the I/O Allocation Screen on page 4-175 for more details on the procedure for displaying the I/O Allocation Screen.

- 2) Press F5 (Station).
- 3) Enter a station number (1 through 31) and press the Enter Key.

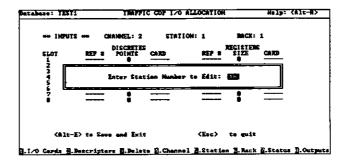


Figure 4.400

A rack must be specified if multiple racks are used.

Refer to Appendix D I/O Configurations of GL Series for more details on the procedure for configuring remote I/O.

4. Setting Racks

The following procedure is used to specify up to five racks for channel 1, and up to four racks for channels 2 or 3. The GL40 does not have channels 2 and 3, so only four racks can be specified.

1) Display the Traffic Cop I/O Allocation Screen.

Refer to 1. Displaying the I/O Allocation Screen on page 4-175 for more details on the procedure for displaying the Traffic Cop I/O Allocation Screen.

2) Press F6 (Rack).

Press the Page Up or Page Down Key to change racks. Rack numbers increase or decrease by one each time the key is pressed.

3) Enter a rack number (1 through 4).

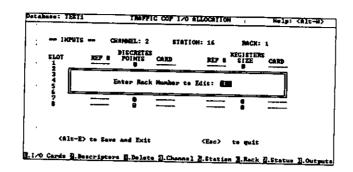


Figure 4.401

4) Press the Enter Key.

5. Switching between Input and Output Screens

The following procedure is used to switch between Input and Output Screens.

1) Display the Traffic Cop I/O Allocation Screen.

Refer to 1. Displaying the I/O Allocation Screen on page 4-175 for more details on the procedure for displaying the Traffic Cop I/O Allocation Screen.

2) The screen switches between input settings and output settings each time F8 is pressed.

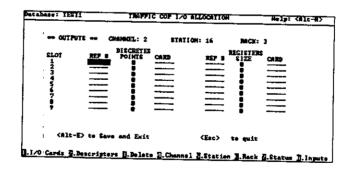


Figure 4.402

6. I/O Allocation

I/O Allocation describes various allocation procedures.

Allocation items are described in the following order.

1) Setting reference numbers for registers

4.5.2 I/O Allocation cont.

- 2) Setting the number of registers
- 3) Entering I/O card descriptions for registers
- 4) Setting reference numbers for discrete I/O
- 5) Setting the number of discrete I/O points
- 6) Entering I/O card descriptions for discrete I/O
- 7) Displaying the allocation status list

7. Setting Reference Numbers for Registers

The following procedure is used to set reference numbers for registers.

1) Move the cursor to the register setting for Slot 1.

The cursor will move each time the Tab Key is pressed.

2) Enter the address and press the Enter Key to move the cursor automatically to Size.

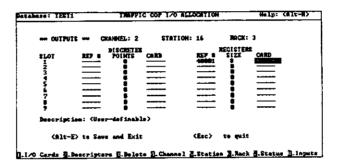


Figure 4.403

8. Setting the Number of Registers

The following procedure is used to set the number of registers (size).

Enter the number of registers and press the Enter Key.

The cursor will move automatically to Card.

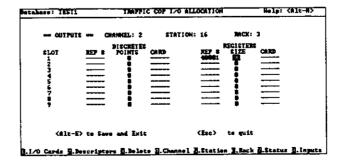


Figure 4.404

9. Entering I/O Card Descriptions for Registers

The following procedure is used to enter I/O card descriptions (names for I/O Modules mounted in slots) for registers. I/O card descriptions are not written to the CPU during loading, but will be printed as slot data when I/O allocation is printed from the Lister.

1) Press F1 (I/O Cards) from the function label.

A list of I/O cards will appear.

2) Move the cursor to the desired card and press the Enter Key.

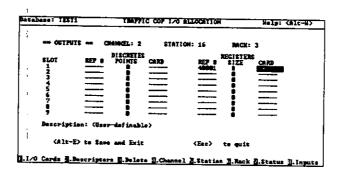


Figure 4.405

All I/O Cards are stored in the list, and can be selected from the list. Be sure to select a database prior to selecting an I/O Card. The Card column may be left blank.

10. Setting Reference Numbers for Discrete I/O

The following procedure is used to set reference numbers for discrete I/O.

- 1) Move the cursor to the discrete I/O for Slot 1.
- 2) Enter the address and press the Enter Key to move the cursor automatically to Points.

The xxxx part of the address (1xxxx or 0xxxx) must be in the form of $(8 \times n + 1)$. (n = 0, 1, 2, etc.)

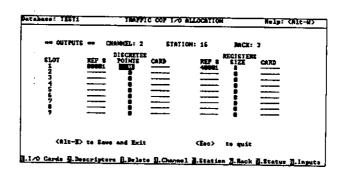


Figure 4.406

4

11. Setting the Number of Discrete I/O Points

The following procedure is used to set number of discrete I/O points.

Enter the number of points and press the Enter Key.

The number of discrete I/O must be a multiple of 8.

The cursor will move automatically to Card.

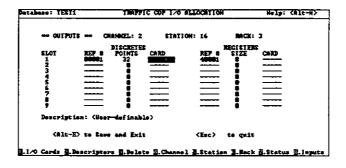


Figure 4.407

12. Entering I/O Card Descriptions for Discrete I/O

The following procedure is used to enter names for I/O Modules mounted in slots. I/O card descriptions are not written to the CPU during loading, but will be printed as slot data when I/O allocation is printed from the Lister.

1) Press F1 (I/O Cards) from the function label.

A list of I/O Cards will appear.

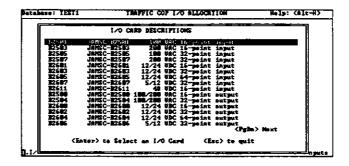


Figure 4.408

2) Move the cursor to the desired Card and press the Enter Key.

The I/O card description will be entered at the slot that was selected.

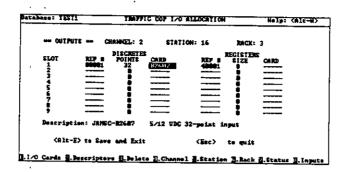


Figure 4.409

All I/O Cards are stored in the list, and can be selected from the list. Be sure to select a database prior to selecting an I/O Card. The Card column may be left blank.

13. Displaying the Allocation Status List

The following procedure is used to display a list of points used, maximum addresses, and other information for discrete I/O and registers.

1) Display the Traffic Cop I/O Allocation Screen.

Refer to 1. *Displaying the I/O Allocation Screen* on page 4-175 for more details on the procedure for displaying the Traffic Cop I/O Allocation Screen.

2) Press F7 (Status) to display the Allocation Status List.



Figure 4.410

4.5.3 PC Link Allocation

PC Link is a communications system for transferring coil and register data at high speed between GL60S1, GL60S2, GL60S3, GL40S, GL60H, and GL70H Processors. Communications are conducted over coaxial or fiber optic cables, and up to 32 stations can be connected together in a PC Link communications network with each GL PLC serving as a station.

4.5.3 PC Link Allocation cont.

The CPU at each station communicates through an IF64 Link Module at that station. The IF64 has its own memory (called Link Memory) for link data, and the CPU at each station transfers link data by reading and writing the Link Memory of that station's IF64 according to allocation. By the same token, the IF64 transfers link data between stations according to allocation.

With Link Memory, the write area for each station is determined by allocation. The IF64 at each station periodically sends link data written by its CPU to all stations, and the IF64 at all other stations writes the link data that it receives into its own Link Memory. This ensures that the contents of the IF64 Link Memory at all stations will be exactly the same.

The flow of Link Data between stations is shown below.

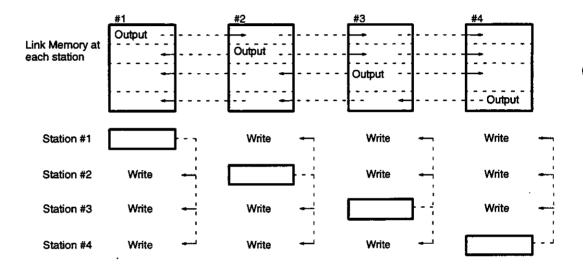


Figure 4.411 Link Data transfer

Note Writing Link Data as shown in *Figure. 4.411* means writing to IF64 Link Memory. The Link Data must be allocated for CPU reference. If allocation is not set for CPU reference, then input data will be 0 or OFF.

Link data is either discrete or register data with reference numbers determined as shown in the table below.

Table 4.2 Reference Numbers

Туре	Reference Number		
Discrete data	D0001, D0002, D0003, D0004, , D1024		
Register	R0001, R0002, R0003, R0004, , R1024		

Use the IF68 Optical Link Module with fiber optic cables.

1) Select 2. Offline from the Main Menu.

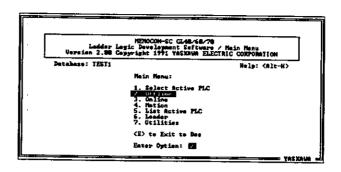


Figure 4.412

2) Select 6. Processor Configuration from the Offline Edit Menu.

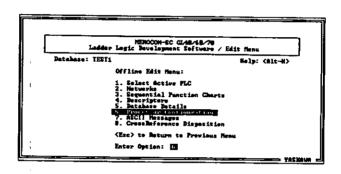


Figure 4.413

3) Select 4. Link Allocation from the Processor Configuration Options.

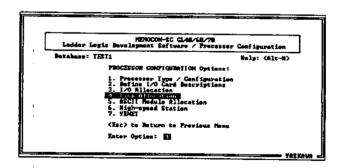


Figure 4.414

The Link Allocation Screen (Individual Allocation Mode) will appear.

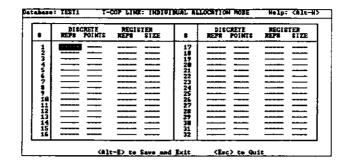


Figure 4.415

Link Allocation takes the form of either individual allocation or batch allocation.

- Individual Allocation: Writes to stations connected to a personal computer. Data must be written with the Loader in Offline Mode.
- Batch Allocation: Directly connects online and allocates data to all stations through Link Communications (only available in Online Mode).

1. Reference Numbers for Discrete I/O

The following procedure is used to allocate discrete reference numbers for all stations.

- 1) Move the cursor to the discrete I/O of the station that will be allocated.
- 2) Enter the reference number and press the Enter Key to move the cursor automatically to Points.

The first address at all stations must be in the form of $(16 \times n + 1)$. (n = 0, 1, 2, etc.)

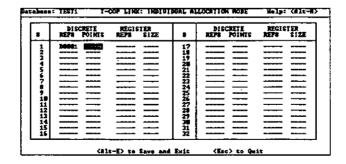


Figure 4.416

2. Number of Discrete I/O Points

The following procedure is used to allocate number of discrete I/O points to each station.

1) Move the cursor to the number of points to be changed.

The discrete I/O points used with PC Link are D0001 to D1024. Enter the number of points (multiple of 16) for each station so it falls within this range.

2) Enter the reference number and press the Enter Key to move the cursor automatically to reference number.

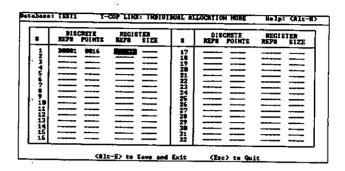


Figure 4.417

3. Setting Reference Numbers for Registers

The following procedure is used to allocate register reference numbers to each station.

- 1) Move the cursor to registers at slot 1.
- 2) Enter the address and press the Enter Key to move the cursor automatically to Size.

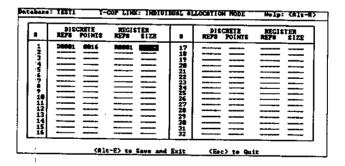


Figure 4.418

4. Setting the Number of Registers

The following procedure is used to set the number of registers (size).

Enter the number of registers and press the Enter Key.

The cursor will move automatically.

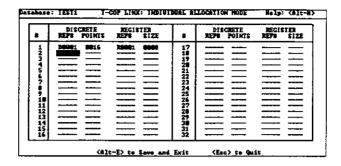


Figure 4.419

Changing settings: Press the Tab Key to move to where a change will be made, and enter the change.

Deleting an entry: Move the cursor to the reference number or number of registers that will be deleted, and press the Alt + D Keys.

After entering the settings, press the Alt + E Keys to save changes and exit.

The register range used with PC Link is R0001 to R1024.

4.5.4 ASCII Module Allocations

The following procedure is used to specify the channel used (2 or 3) on all ASCII Modules connected to the remote line.

1) Select 2. Offline from the Main Menu.

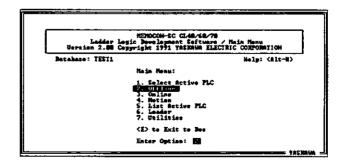


Figure 4.420

2) Select 6. Processor Configuration from the Offline Edit Menu.

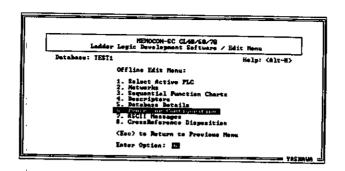


Figure 4.421

3) Select 5. ASCII Module Allocation from the Processor Configuration Options.

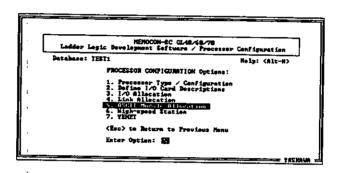


Figure 4.422

- 4) Move the cursor to the Module number for allocation.
- 5) Enter the channel number (2 or 3) and press the Enter Key.
- 6) After the settings are entered, press the Alt + E Keys to save them.

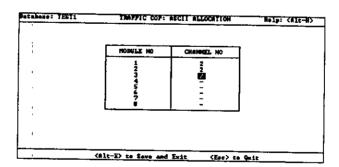


Figure 4.423

Special data processing instructions are used to transfer data between the ASCII Module and ASCII devices. These instructions must be in the form of messages that stipulate data I/O format. Each message is given a number (message number), and is stored in the memory of the ASCII Module.

4.5.5 High-speed Station Allocations

The following procedure is used to specify the stations and channels (2 or 3) for which high-speed I/O processing will be performed in a 2-level scan. Remote station I/O data allocated to high-speed stations will be executed, referenced, and updated during the high-speed scan.

1) Select 2. Offline from the Main Menu.

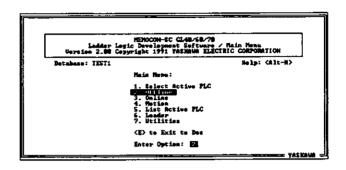


Figure 4.424

2) Select 6. Processor Configuration from the Offline Edit Menu.

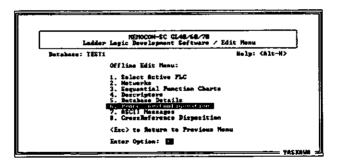


Figure 4.425

3) Select 6. High-speed Station from the Processor Configuration Options.

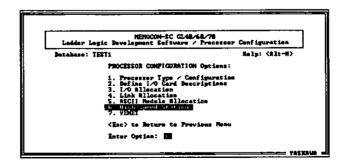


Figure 4.426

- Move the cursor to the reference number that will be set.
- 5) Press the Alt + E Keys to save the data.

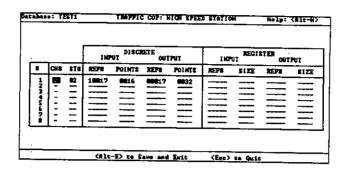


Figure 4.427

Allocation is not necessary for a one-level scan.

A maximum of 8 stations can be specified as high-speed stations.

Refer to the MEMOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1) for more details on high-speed station allocation.

Be sure to set the scan for two levels if it is not set already. Refer to 5. Setting the Scan Levels on page 4-170 for more details.

Note Input restrictions related to high-speed allocation

(1) Channel number: Remote channel 2 or 3

(2) Station number: 1 through 31

(3) Discrete address: 00001 to 04098 or 10001 to 14096

Addresses must be entered in multiples of 16 plus 1. (n x 16 + 1)

- (4) The number of points entered for discrete addresses must be a multiple of 16. Reference addresses plus the number of inputs cannot exceed the address range given above.
- (5) The same address cannot be defined twice for high-speed allocation. If an address is already used in the allocation table, a warning message will appear asking to check that entry.

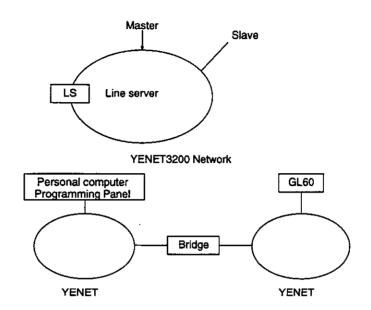
4.5.6 YENET Allocations: Creating a Routing Table

The following procedure is used for settings needed in order to communicate with YENET optical LAN systems.

4.5.6 YENET Allocations: Creating a Routing Table cont.

YENET Configuration

YENET is a loop communications network that uses fiber optic cable. A maximum of 126 stations (nodes) made up of a combination of masters and slaves can be connected together in the network. The network is mainly for large-scale systems because it can handle large-volume data transfers at high speed. Multiple YENET networks are connected by bridges that allow stations (nodes) on one YENET to communicate with stations (nodes) on another YENET.



Allocation (YENET numbers and bridge numbers) is needed in order to communicate with stations (nodes) on another YENET loop.

1) Select 2. Offline from the Main Menu.

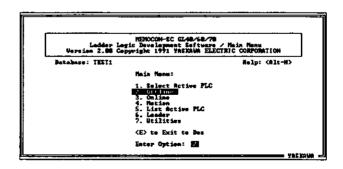


Figure 4.428

2) Select 6. Processor Configuration from the Offline Edit Menu.

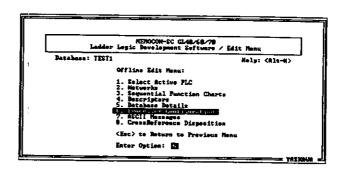


Figure 4.429

3) Select 7. YENET from the Processor Configuration Options.

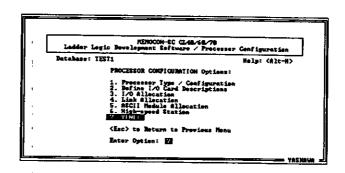


Figure 4.430

- 4) Press the Up Cursor Key to move the cursor to the name location, and enter the name.
- 5) Enter the YENET number.
- 6) Enter the bridge number.
- 7) Enter comments.

Names can be entered using up to 16 characters.

8) After allocation is completed, press the Alt + E Keys to save the allocations.

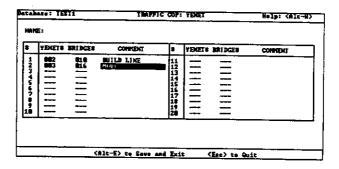


Figure 4.431

4.5.6 YENET Allocations: Creating a Routing Table cont.

The name and routing table will be deleted if the 3200IF Module is reset. Reload the data if that happens.

4.6 Editing for ASCII Modules

Messages are created in order to write data to an ASCII Module. A maximum of 1,024 messages can be created. The messages that are created are written and set to communications destination devices in the IF71ASCII Modules using the Loader function.

4.6.1 Displaying the ASCII Message Editor Screen

Special data processing instructions are used to transfer data between the ASCII Module and ASCII devices. These instructions must be in the form of messages that stipulate data I/O format. Each message is given a number (message number) that is stored in the memory of the ASCII Module. The following procedure is used to open the ASCII Message Editor Screen.

1) Select 2. Offline from the Main Menu.

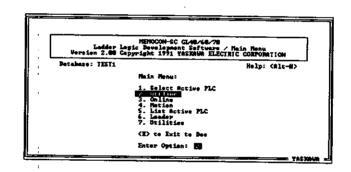


Figure 4.432

2) Select 7. ASCII Messages from the Offline Edit Menu.

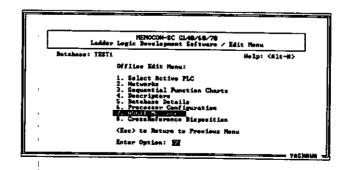


Figure 4.433

The ASCII Message Editor Screen will appear.

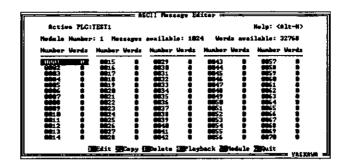


Figure 4.434

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key. Selecting the message number to be edited:

Press the Enter Key.

Moving to the next or previous page (from message number 1 to 1024):

Press the Page Down or Page Up Key.

4.6.2 Editing

The following describes functions defined at the function keys on the bottom of the ASCII Message Editor Screen. The description here begins with the Edit function defined at F1 or the Enter Key.

- 1) Move the cursor to the message number that will be edited.
- 2) Press F1 (Edit) or the Enter Key from the ASCII Message Editor Screen.

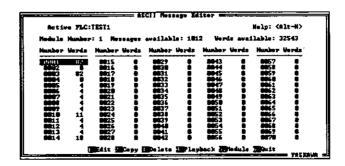


Figure 4.435

The Edit Messages Screen will appear.

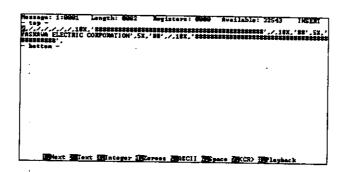


Figure 4.436

1. <u>Text</u>

The following describes the text function defined at F2 that is used to enter or change text.

1) Press F1 from the Edit Messages Screen to switch to the next functions.

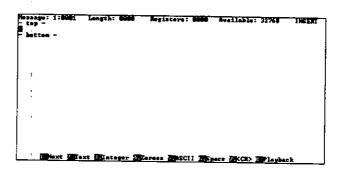


Figure 4.437

2) Press F2 (Text) from the Edit Messages Screen.

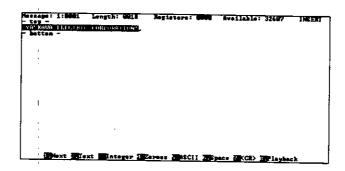


Figure 4.438

3) Enter text in the Text Edit Messages Screen that appears.

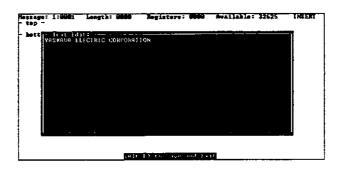


Figure 4.439

4) After the text is entered, press the Alt + E Keys to save the text.

2. Integer Data

The following describes the integer function defined at F3 that is used to enter or change integer data of n digits for m units.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F3 (Integer) from the Edit Messages Screen.



Figure 4.440



Figure 4.441

4) Press the Enter Key after the prefix is entered, and enter the length.

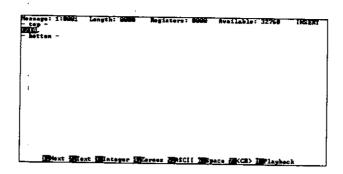


Figure 4.442

- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.

3. Integer Data (Zeroes)

The following describes the zeroes function defined at F4 that is used to enter or change integer data of n digits for m units.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F4 (Zeroes) from the Edit Messages Screen.



Figure 4.443



Figure 4.444

4) Press the Enter Key after the prefix is entered, and enter the length.



Figure 4.445

- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.

Difference Between Integer 'min' and Zeroes 'mJn'

- mIn prints spaces at the leftmost digits if the specified length is not filled.
- mJn prints zeros at the leftmost digits if the specified length is not filled.

4. ASCII Data

The following describes the ASCII function defined at F5 that is used to enter or change ASCII text.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F5 (ASCII) from the Edit Messages Screen.



Figure 4.446



Figure 4.447

4) After the text is entered, press the Alt + E Keys to save the text.

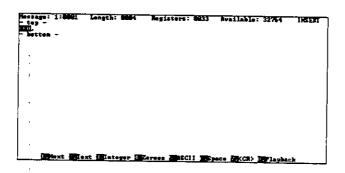


Figure 4.448

5. Spaces

The following describes the space function defined at F6 that is used to enter or change Spaces.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F6 (Space) from the Edit Messages Screen.



Figure 4.449



Figure 4.450

4) After the text is entered, press the Alt + E Keys to save the text.



Figure 4.451

6. Carriage Returns

The following describes the carriage return function defined at F7 that is used to enter carriage returns.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Move the cursor to where the carriage return will be entered.
- 3) Press F7 (CR) from the Edit Messages Screen.



Figure 4.452

7. Binary Data

The following describes the binary function defined at F2 that is used to enter or change binary data of n digits for m units.

2) Press F2 (Binary) from the Edit Messages Screen.

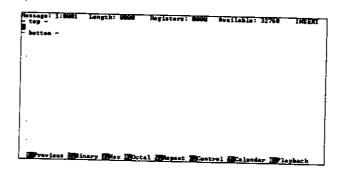


Figure 4.453

3) Enter the display prefix in the input screen that appears.



Figure 4.454

4) Press the Enter Key after the prefix is entered, and enter the length (number of digits).

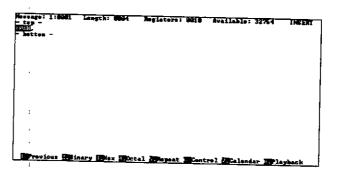


Figure 4.455

- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.

8. <u>Hexadecimal Data</u>

The following describes the hexadecimal function defined at F3 that is used to enter or change hexadecimal data of n digits for m units.

2) Press F3 (Hex) from the Edit Messages Screen.

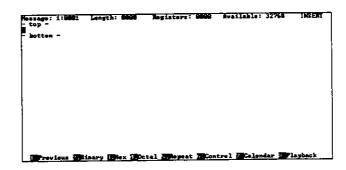


Figure 4.456

3) Enter the display prefix in the input screen that appears.



Figure 4.457

4) Press the Enter Key after the prefix is entered, and enter the length.

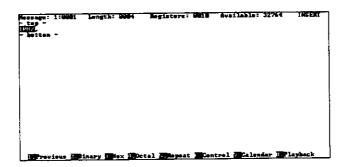


Figure 4.458

- 5) If the wrong Prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.

9. Octal Data

The following describes the octal function defined at F4 that is used to enter or change octal data of n digits for m units.

2) Press F4 (Octal) from the Edit Messages Screen.

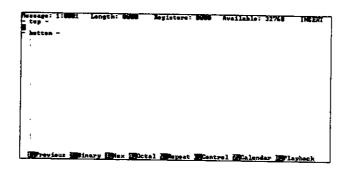


Figure 4.459

3) Enter the display prefix in the input screen that appears.



Figure 4.460

4) Press the Enter Key after the prefix is entered, and enter the length.

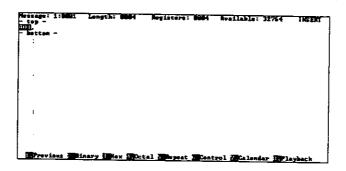


Figure 4.461

- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.

10.Repeat

The following describes the repeat function defined at F5 that is used to repeat a specified message a set number of times.

- From the Edit Messages Screen, move the cursor to the beginning of the message that will be repeated.
 - 3) Press F5 (Repeat) from the Edit Messages Screen.



Figure 4.462

4) Enter the prefix that will be repeated when the input screen appears.



Figure 4.463

You cannot repeat more than once.

5) Press the Enter Key after the prefix is entered, and move the cursor to the end of the message that will be repeated.

Be sure to add a closing parenthesis ")."

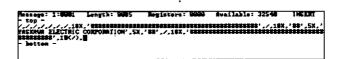


Figure 4.464

6) Press F5 (Repeat).

11. Control Codes

The following describes the control function defined at F6 that is used to set control codes for ASCII devices.

- 1) Press F1 from the Edit Messages Screen to switch to the previous functions.
- 2) Press F6 (Control) from the Edit Messages Screen.

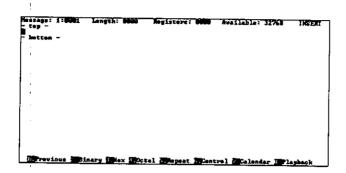


Figure 4.465

3) Enter the control code using decimal numbers in the input screen that appears.



Figure 4.466

4) After the text is entered, press the Alt + E Keys to save the text.

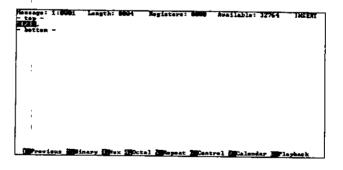


Figure 4.467

12. Calendar

The following describes the calendar function defined at F7 that is used to set formats used when a calendar is output.

2) Press F7 (Calendar) from the Edit Messages Screen.



Figure 4.468

3) Enter the register data (1 through 8) in the input screen that appears.



Figure 4.469

Refer to 4.1.(2) Message Symbols in MEMOCON-SC GL60S ASCII Modules User's Manual (SIE-C815-14.4) for more details on calendar settings.

4) After the text is entered, press the Alt + E Keys to save the text.



Figure 4.470

13. Playback

The following describes the playback function defined at F8 that is used to display edited ASCII messages in output format. The function is used to set formats used when a calendar is output.

Press F8 (Playback) from the Edit Messages Screen.

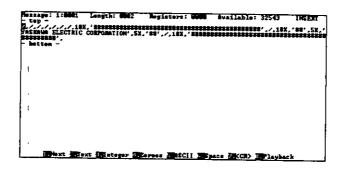


Figure 4.471

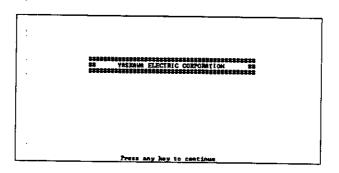


Figure 4.472

4.6.3 Copying

The following describes the copy function defined at F2 that is used to copy the contents of one message to another message.

- 1) Press F2 (Copy) from the ASCII Message Editor Screen.
- 2) Move the cursor to the number of the source message to be copied and press the Enter Key.

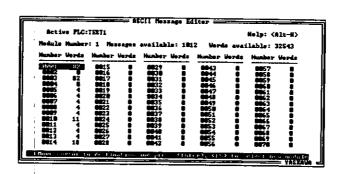


Figure 4.473

3) Move the cursor to the number of the message to receive the copy and press the Enter Key.

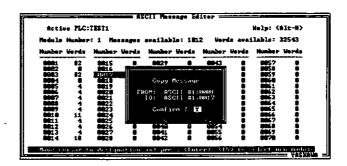


Figure 4.474

4) Enter "Y" as indicated by the confirmation message that appears.

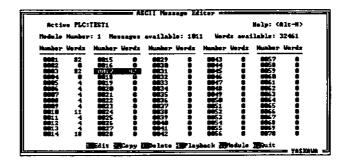


Figure 4.475

4.6.4 Deleting

The following describes the delete function defined at F3 that is used to delete messages stored in the ASCII Module.

- 1) Move the cursor to the number of the message to be deleted.
- 2) Press F3 (Delete).



Figure 4.476

3) Enter "Y" as indicated by the confirmation message that appears.

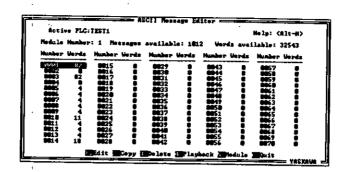


Figure 4.477

4.6.5 Playback

The following describes the playback function defined at F4 that is used to display edited ASCII messages in output format.

1) Move the cursor to the number of the message to be deleted.

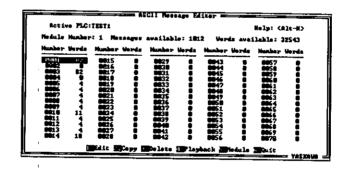


Figure 4.478

2) Press F4 (Playback) from the ASCII Message Editor Screen.

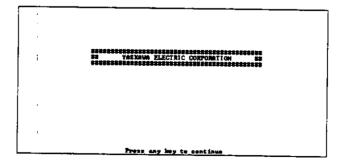


Figure 4.479

4.6.6 Selecting Module Numbers

The following describes the Module function defined at F5 that is used to change ASCII Module numbers (1 through 8).

1) Press F5 (Module) from the ASCII Message Editor Screen.

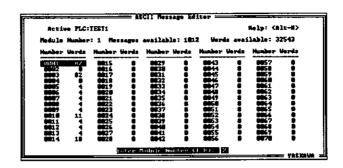


Figure 4.480

2) Enter the Module number that will be edited when the Module number input field appears.

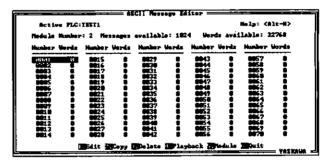


Figure 4.481

)

Advanced Offline Editing

/	
	7
	J

This chapter describes the following editing functions of MEMO-CAD-PRO to provide more efficient program editing.

- 1. Program Merge: Merges multiple programs
- 2. Independent Comment Editing:

Allows comments to be created and edited using commercially available text editors.

5

5.1 Merging Multiple Programs

Program merging is used to combine ladder programs from other databases into a single database. This allows multiple programmers to work separately on parts of a program that, when completed, are merged into a single program.

Example

The following procedure describes how ladder programs created in separate databases by programmer A and programmer B are merged into a single database.

Programmer A's program: Networks (L1 through L50)

Coil Reference Numbers (00001 through 00100)

Database Name: APRO

Programmer B's program: Networks (L1 through L50)

Coil Reference Numbers (00001 through 00050)

Database Name: BPRO

Program after merging: Networks (L1 through L100)

Coil Reference Numbers (00001 through 00150)

Database Name: CPRO

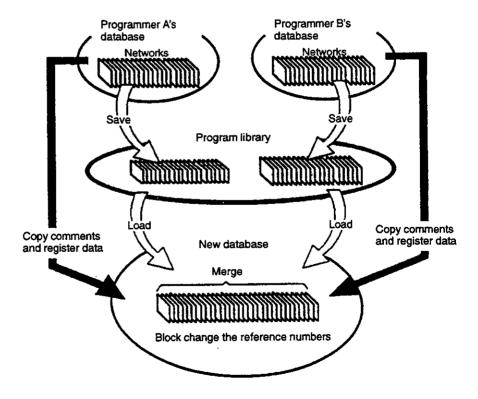


Figure 5.1 Overview of Program Merge

In this example, there will be duplicate reference numbers (same number used more than once) after the programs are merged. The reference numbers in programmer B's program are changed and adjusted as a block, but it is more efficient to allocate reference numbers to each programmer in advance in order to avoid duplication.

5.1.1 Merging Networks

The following must be performed in preparation for merging. Programmers A and B create programs in their respective databases. Programmers A and B define the edited networks as a block, save the block, and exit from editing.

Comments and Register Data may be created in advance because they can be copied from other databases.

Refer to 8. Saving and Loading an Edited Network on page 4-70 for more details on the procedure for defining blocks and saving networks. In this example, the blocks are saved as APRO for programmer A and BPRO for programmer B.

1) Create and select a new database where the programs will be merged.

Refer to 3.1 Selecting or Creating Databases for more details on the procedure for creating and selecting databases. In the example, the new database is named CPRO.

2) Display the Edit Network Screen.

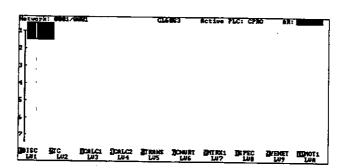


Figure 5.2

3) Press the Slash Key to display the Command Submenu.



Figure 5.3

5.1.1 Merging Networks cont.

4) Press F2 (Block).

The Block Submenu will appear.

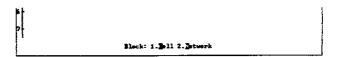


Figure 5.4

5) Press F2 (Network).

The Network Block Submenu will appear.

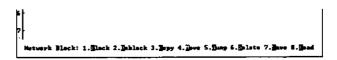


Figure 5.5

6) Press F8 (Load).

The Select Block File Screen will appear.

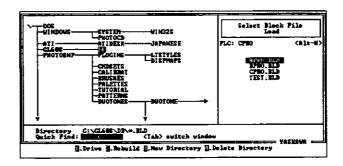


Figure 5.6

7) Press the Tab Key to move the cursor to the left side of the screen (Directory Display).

This procedure is used to select a Block File. The desired file will appear on the right side of the screen (Select File Screen). The desired file does not have to be displayed from the top of the file.

8) Move the cursor to the subdirectory containing the APRO Block File.

This procedure is used to select a Block File. The desired file will appear on the right side of the screen (Select File Screen). The desired file does not have to be displayed from the top of the file.

- 9) Press the Tab Key or Enter Key to move the cursor to the Select File Screen on the right side of the screen.
- 10) Move the cursor to the file (APRO) that will be loaded, and press the Enter Key.

The network block will be copied.

Networks loaded as a block will remain defined as a block.

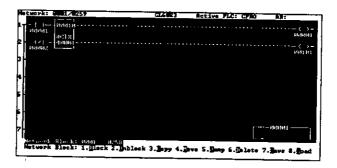


Figure 5.7

- 11) Press F2 (Unblock) from the Network Block Submenu (Figure 5.6) to ungroup the defined block.
- 12) Press the Ctrl + End Keys.

The last network will appear.

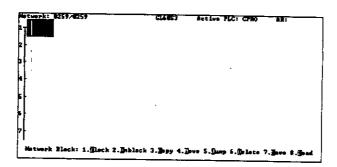


Figure 5.8

The cursor actually jumps to the next blank network after the last network.

13) Press F8 (Load) again from the Block Submenu (Figure 5.6).

5.1.2 Adjusting Reference Numbers and Copying Comment Data

The Select Block File Screen will appear.

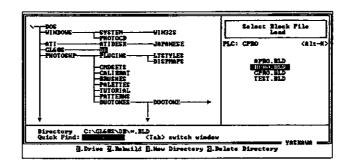


Figure 5.9

14) As was done with APRO earlier, move the cursor to BPRO and press the Enter Key.

The BPRO Network Block will be copied.

The block will be copied and inserted between the network currently being displayed and the previous network rather than after the network currently being displayed. The reason the next blank network after the last network is displayed is that the copied networks will merge and be inserted after the last network.

15) Press F2 (Unblock) from the Block Submenu (Figure 5.6) to ungroup the defined block.

Shortcuts

- a) Enter "BNM" at AR: and press the Enter Key to display the Network Block Submenu.
- b) Enter "LNB" at AR: and press the Enter Key to display the Select Block File Screen.

5.1.2 Adjusting Reference Numbers and Copying Comment Data

The following reference numbers were used in the networks that were merged in the example.

APRO: 00001 through 00100 BPRO: 00001 through 00050

Duplicate numbers cannot be used because they will result in duplicate coils. Moreover, only ladder programs are loaded and not the comments in Block Load. The following procedure is therefore used to copy all necessary comment data from APRO and BPRO into CPRO, and to change the reference numbers in BPRO in order to eliminate duplication. The function used for these changes is Global Replacement.

1) Press the Slash Key to display the Command Submenu.



Figure 5.10

2) Press F5 (Global).

The Global Replacement Settings menu will appear.

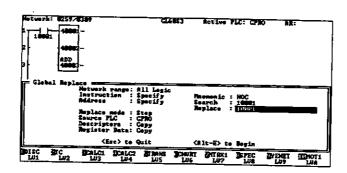


Figure 5.11

3) Enter the settings shown in Figure 5.12 and Figure 5.13.

Refer to 4.1.19 Globally Replacing Addresses for more details on the procedure for entering these settings.

4) Press the Alt + E Keys to execute the global replacement.

Shown below are the settings used to copy the APRO database comments to 00001 through 00100 without changing reference numbers between networks 1 and 50.



Figure 5.12

Shown below are the settings used to change reference numbers 00001 through 00050 to 00101 through 00150 between networks 51 and100 when copying BPRO database comments.



Figure 5.13

Shortcuts

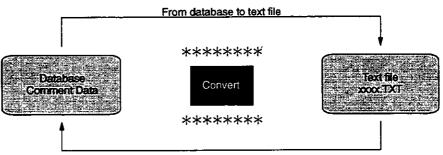
Enter "G" at AR: and press the Enter Key, or press the Alt + G Keys to display the Global Replacement Settings menu.

5.2.1 Converting Database Comment Data to a Text File

5.2 Converting Comment Data Files

Comment data can be converted into an ordinary text file that can be edited in MS-DOS, and it can be edited and stored as an independent file. If a comment file is created separately as a text file in advance, then the file can be loaded and merged into the database later after the database programs are completed.

Text file: Filename.TXT

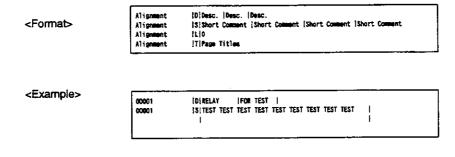


From text file to database

5.2.1 Converting Database Comment Data to a Text File

The following procedure is used to convert database comment data to a text file.

The text file will be created in MEMOCAD-PRO text format that can be edited with commercially available text editors.



```
(-88) for trailing
e Title:
```

As shown above, comments that are not entered, such as the Short Comments in lines 3 and 4, as well as header comments, will not be converted.

1) Select 7. Utilities from the Main Menu.

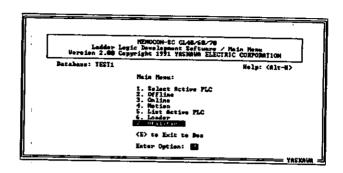


Figure 5.14

2) Select 2. Descriptor Utilities from the Utility Menu.

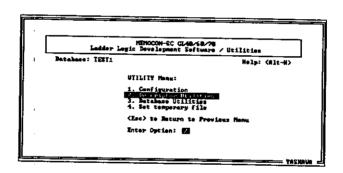


Figure 5.15

3) Select 2. Import/Export Yaskawa Database from the Descriptor Utility Options.

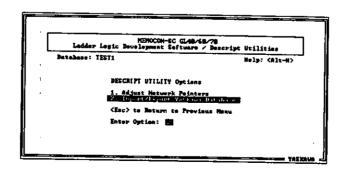


Figure 5.16

5.2.2 Converting from Text File to Database Comment Data

4) Select 2. Export data from a database to an ASCII text file from the Import/Export Yaskawa Database Menu for comment data.

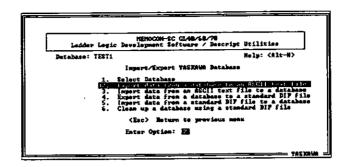


Figure 5.17

The input screen for entering the name of the text file will appear.

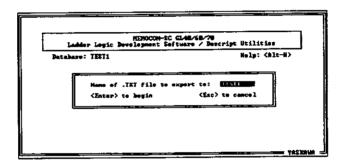


Figure 5.18

5) Enter the file name and press the Enter Key.

A default database name will be used if a name is not entered. Enter a name to create a file with another name. When a file is created, if another file with the same name exists, the newer file will overwrite the older file.

A text file will be created.

Do not change the file format when editing the file with a text editor.

5.2.2 Converting from Text File to Database Comment Data

The following procedure is used to read the contents of text files into database comment data.

1) Select 7. Utilities from the Main Menu.

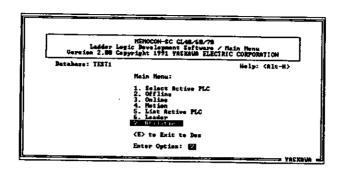


Figure 5.19

2) Select 2. Descriptor Utilities from the Utility Menu.

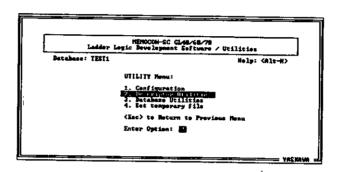


Figure 5.20

3) Select 2. Import/Export Yaskawa Database from the Descriptor Utility Options.

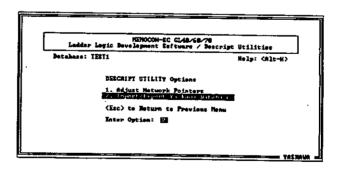


Figure 5.21

5.2.2 Converting from Text File to Database Comment Data cont.

4) Select 3. Import data from an ASCII text file to a database from the Import/Export Yaskawa Database Menu for comment data.

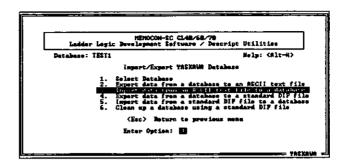


Figure 5.22

A screen for selecting the text file name will appear.

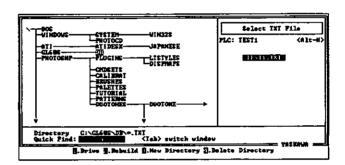


Figure 5.23

5) Move the cursor to the file name and press the Enter Key.

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key. Switching between the left and right windows: Press the Tab Key.

Switching Directories

Press the Tab Key to move to the Directory Window on the left side of the screen. Position the cursor at the desired directory and press the Enter Key.

Switching Drives

Press F1 (Drive) to specify the drive.

A choice of three conversion methods will appear.

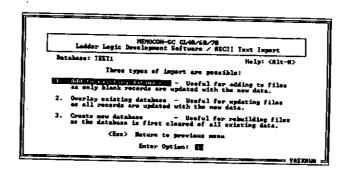


Figure 5.24

Methods Used to Convert to Database Comments

1. Add to existing database: Adds comments for new addresses. The contents of

addresses that already have comments will not be

changed.

2. Overlay existing database: Adds new addresses that overwrite the same existing

addresses, and leaves existing addresses that are not

in the text file unchanged.

3. Create new database: Clears all comment data in the database, and converts

the text file.

6) Press the function key with the appropriate number to select the method.

An alternative method is to move the cursor directly to the item and press the Enter Key.

The file will be converted.

5.2.3 Cleaning Up Comment Data

When networks are repeatedly inserted and deleted, comment data that is no longer needed remains in the database and may print when the Comment List is printed. The size of the database grows as the amount of unnecessary comment data expands.

The following procedure is used to adjust comment data by deleting any that is no longer necessary. The procedure used here is to convert the comment data into a text file, delete all comment data in the database, and then convert the text file back into database comment data. Specify the name of the text file to perform the preceding operations automatically.

5.2.3 Cleaning Up Comment Data cont.

1) Select 7. Utilities from the Main Menu.

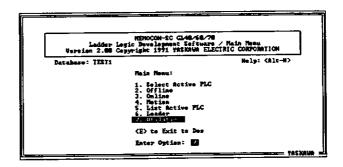


Figure 5.25

2) Select 2. Descriptor Utilities from the Utility Menu.

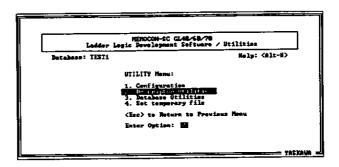


Figure 5.26

3) Select 2. Import/Export Yaskawa Database from the Descriptor Utility Options.

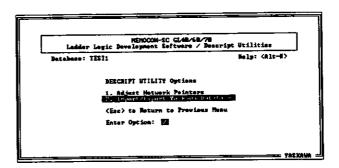


Figure 5.27

4) Select 6. Clean up a database using a standard DIF file from the Import/Export Yaskawa Database Menu for comment data.

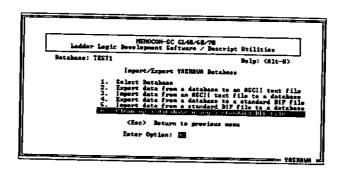


Figure 5.28

The input screen will appear asking for the name of the text file that will be converted.

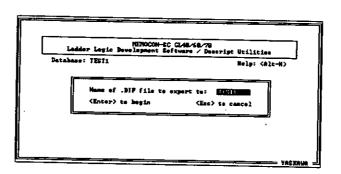


Figure 5.29

5) Enter the file name and press the Enter Key.

A default database name will be used if a name is not entered. Enter a name to create a file with another name. If there is already another file with the same name when a file is created, the newer file will overwrite the older file. Refer to 5.2.1 Converting Database Comment Data to a Text File for more details on text files, such as formatting.

The comment data will be cleaned up.

Online Editing

This chapter describes network, subroutine, and SFC editing. It also provides details on communications between Processors and computers, starting and stopping the Processor, displaying and editing comments, clearing memory, system configuration, and ASCII editing.

6.1	Preparations for Communications with Processors
:	····· 6-2
6.2	Selecting Remote Operation (Program and Monitor Mode) 6-8
6.3	Going Online with a Processor 6-11
6.4	Starting and Stopping a Processor 6-13
6.5	Editing Networks 6-15
6.6	Editing Subroutines 6-92
6.7	SFC Editing 6-95
6.8	Displaying and Editing Comments on the Network/ SFC Screen 6-140
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6.12	System Configuration 6-165
6.13	Editing for ASCII Modules 6-201

6.1.1 Displaying the Communications Parameters Setup Screen

6.1 Preparations for Communications with Processors

Communications parameters must be set prior to communicating with Processors.

Communications Parameters

Communications parameters are parameters that need to be set in order for a computer to connect to and communicate with Processors. The parameters are given below.

Device: Remote communications devices
 Processor front port, YENET-3200, IF71ASCII Module

Processor Front Port or IF71ASCII Module

• Computer serial port:

RS-232C serial port 1 or 2 of a computer (Normally 1)

• Port baud rate: 150 to 9,600 baud (Matched to Processor settings)

• Port parity: Even, odd or none (Matched to Processor settings)

Port stop bits: Either 1 or 2 (Matched to Processor settings)

• Timeout: 120 to 200 s (Time limit to wait for a response from the Processor)

YENET

• Routing Table Editing?:"N" when communicating within the same YENET when communicating with another YENET

Set these parameters prior to communicating with a Processor. Leave the Communications Mode for the Processor set at RTU.

Note The initial MEMOCAD-PRO settings are the GL factory settings.

Factory Settings

Port baud rate: 9,600

Port parity: Even

Port stop bits: 1

6.1.1 Displaying the Communications Parameters Setup Screen

The following procedure is used to display the Communications Parameters Setup Screen.

1) Select 3. Online from the Main Menu.

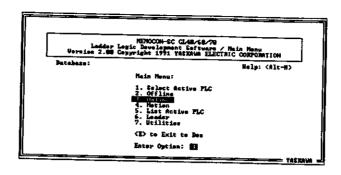


Figure 6.1

2) Select 3. Online Communications Setup from the Menu Options.

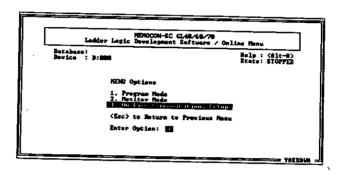


Figure 6.2

The Device/Communications Parameters Setup Screen will appear.

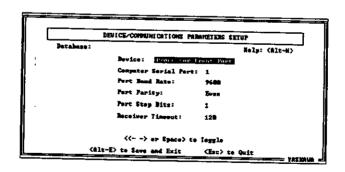


Figure 6.3

Moving the Cursor

Moving up or down a parameter: Press the Up or Down Cursor Key. Moving to the next parameter after setting:

Press the Enter Key.

6.1.2 Procedure for Setting Communications Parameters

6.1.2 Procedure for Setting Communications Parameters

The following procedure is used to set communications parameters.

1. Processor Front Port or IF71ASCII Module

1) Display the Device/Communications Parameters Setup Screen.

Refer to 6.1.1 Displaying the Communications Parameters Setup Screen for more details

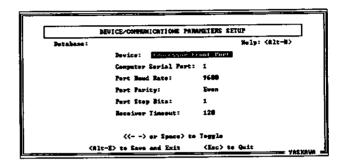


Figure 6.4

2) Press the Space Key or press the Left or Right Cursor Key to set either Processor Front Port or IF71ASCII Module as the device.

The default setting is Processor Front Port.

- 3) Move the cursor to the parameter that will be set.
- 4) Press the Space Key or the Left or Right Cursor Key to switch the parameter settings.
- 5) After the settings are entered, press the Up or Down Cursor Key or press the Enter Key to move to the next setting.
- 6) Press the Esc Key after all the settings are entered.

Press the Alt + E Keys or move the cursor to Receiver Timeout and press the Enter Key to save the settings and return to the Online Menu.

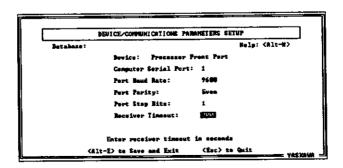


Figure 6.5

A confirmation message will appear asking whether to save changes.

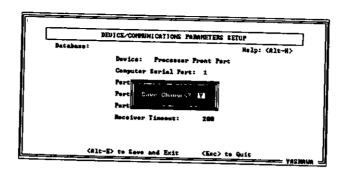


Figure 6.6

7) Make sure that "Y" is entered, and press the Enter Key.

Enter "N" and press the Enter Key if the changes are not to be saved.

The settings will be saved, and the Menu Options will return.

2. <u>YENET-3200</u>

1) Display the Device/Communications Parameters Setup Screen.

Refer to 6.1.1 Displaying the Communications Parameters Setup Screen for more details.

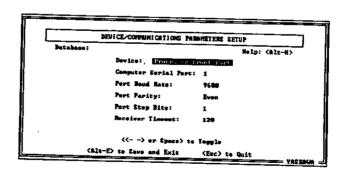


Figure 6.7

2) Press the Space Key or press the Left or Right Cursor Key to set MEMOCON YE-NET-3200 as the device.

6.1.2 Procedure for Setting Communications Parameters cont.

3) Press the Enter Key to display Device/Communications Parameters Setup Screen for YENET.

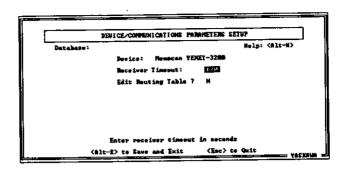


Figure 6.8

4) Set the time for Receiver Timeout.

Move the cursor to Receiver Timeout to enter the desired number. Enter the time in seconds.

5) Enter "Y" to edit the Routing Table.

Enter "N" to edit within the same YENET or "Y" to communicate with another YENET. The YENET Allocation Screen will appear when "Y" is entered. Enter the YENET Number and the Bridge Number and then press the Alt + E Keys to save the settings. Refer to 4.5.6 YENET Allocation (Creating a Routing Table) for more details on the allocating procedure.

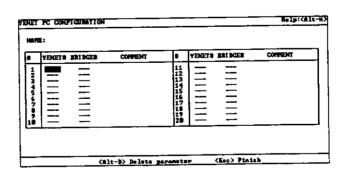


Figure 6.9

6) Press the Esc Key after all the settings are entered.

Press the Alt + E Keys or move the cursor to Receiver Timeout and press the Enter Key to save the settings and return to the Online Menu.

A confirmation message will appear asking whether to save changes.

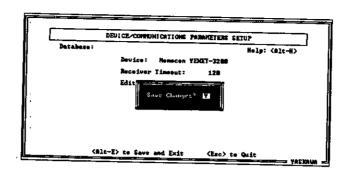


Figure 6.10

7) Make sure that "Y" is entered, and press the Enter Key.

Enter "N" and press the Enter Key if the changes will not be saved.

The settings will be saved, and the Menu Options will return.

6.2 Selecting Remote Operation (Program and Monitor Mode)

The Program and Monitor Modes are two ways to connect to Processors. Program Mode is used to make changes in the Processor memory, such as programming and entering settings. Monitor Mode is used simply to monitor a Processor or data without making changes like program editing or data changes to the contents of the Processor memory. Therefore only one computer can be online with a Processor in Program Mode, but any number of computers can be online in Monitor Mode. The number of ports available for connecting computers is six maximum per Processor.

Program Mode

1) Select 3. Online from the Main Menu.

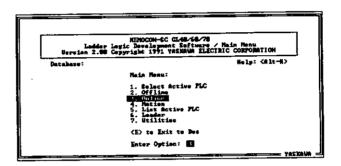


Figure 6.11

2) Select 1. Program Mode from the Menu Options.

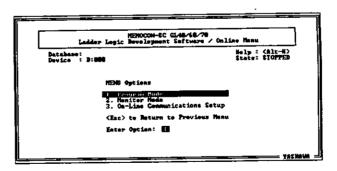


Figure 6.12

6

The Program Mode Attach (Online) Screen will appear.

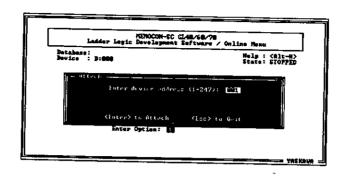


Figure 6.13

Refer to 6.3 Going Online with a Processor for more details on the procedure.

Monitor Mode

1) Select 3. Online from the Main Menu.

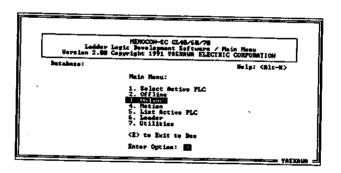


Figure 6.14

2) Select 2. Monitor Mode from the Menu Options.

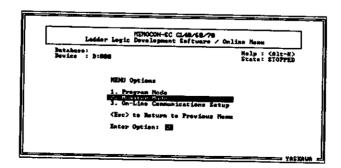


Figure 6.15

The Monitor Mode Attach (Online) Screen will appear.

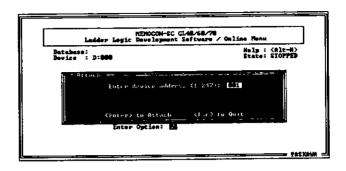


Figure 6.16

Refer to NO TAG Going Online with a Processor for more details on the procedure.

6.3 Going Online with a Processor

The following procedure is used to go online from the computer to a Processor in order to communicate with the Processor.

1) Select 3. Online from the Main Menu.

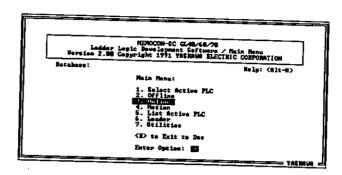


Figure 6.17

2) Set the communications parameters.

Refer to 6.1.2 Procedure for Setting Communications Parameters for more details on the setting procedure.

3) Select 1. Program Mode from the Menu Options.

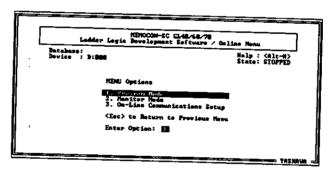


Figure 6.18

The input screen will appear for entering the address of the Processor with which to go online.

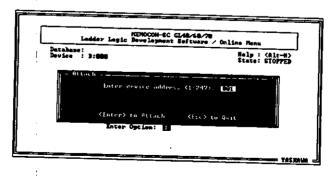


Figure 6.19

6

4) Enter the address and press the Enter Key.

Enter the device address (1 through 247) of the port to connect. The default setting is 001, so just press the Enter Key to use that address.

The computer will go online with the Processor, and the Edit Options will appear.

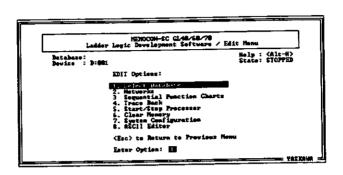


Figure 6.20

Note Once online, the computer will communicate with that Processor until it is taken offline. Therefore do not turn off the Processor or restart the computer.

6.4 Starting and Stopping a Processor

There are times when editing cannot be performed unless the Processor is started or stopped. The following procedure is used to start or stop a Processor.

1) Select 3. Online from the Main Menu.

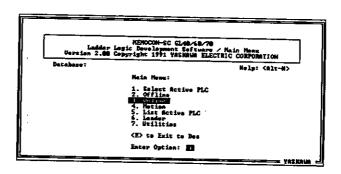


Figure 6.21

2) Select 1. Program Mode from the Menu Options to go online with a Processor.

A Processor cannot be started or stopped in Monitor Mode.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

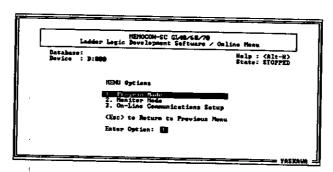


Figure 6.22

3) Select 5. Start/Stop Processor from the Edit Options.

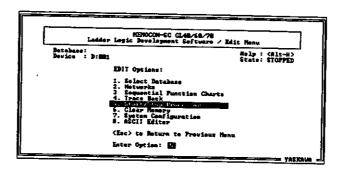


Figure 6.23

A confirmation message will appear asking whether to proceed.



Figure 6.24

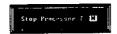


Figure 6.25

A confirmation message will appear asking whether to start if the Processor is stopped or to stop if the Processor is started. "N" is already entered in the confirmation message asking whether to proceed. Press the Enter Key to return to the Edit Menu without changing the Start/Stop status.

4) Enter "Y", and press the Enter Key.

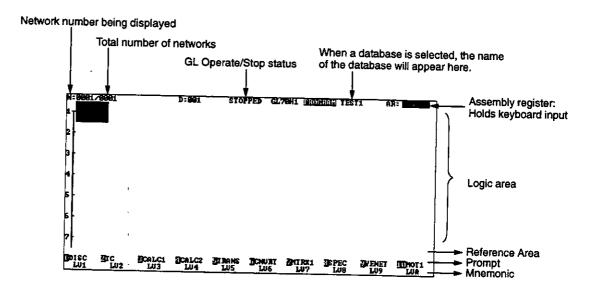
The Processor will start or stop.

6.5 Editing Networks

Network editing is used to input and edit ladder elements, to monitor and edit the status of all references, and to copy, move and find a network.

6.5.1 Network Screen Configuration

The following shows the configuration of the Network Screen.



6.5.2 Displaying Networks

The following procedures can be used to jump quickly to and display a network from among several thousand networks via programming.

- Jump to the network display after starting MEMOCAD-PRO or to next or previous network: Refer to 1. Displaying Networks on page 6-15.
- Jump to any network:
 Refer to 2. Displaying Specified Networks on page 6-17.
- Mark any network, and jump to that network:
 Refer to 3. Moving to a Specified Position (Mark) on page 6-19.

1. Displaying Networks

The following procedure is used to display the Network Screen.

1) Select 3. Online from the Main Menu.

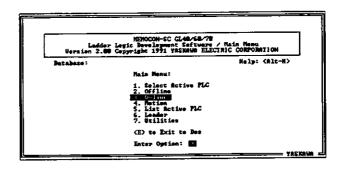


Figure 6.26

2) Select 1. Program Mode or 2. Monitor Mode from the Menu Options to go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

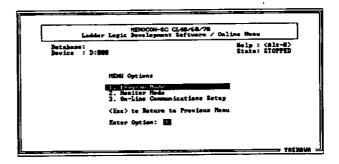


Figure 6.27

3) Select 2. Networks from the Edit Options.

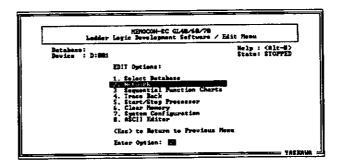


Figure 6.28

The Network Screen will appear.

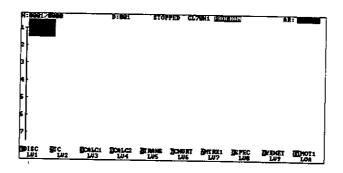


Figure 6.29

Displaying the next network:

Press the Page Down Key.

• Displaying the previous network: Press the Page Up Key.

Displaying the last network:

Press the Ctrl + End Keys.

Displaying the first network:

Press the Ctrl + Home Keys.

When displaying the last network is specified, the cursor will actually jump to a blank network after the last network.

2. <u>Displaying Specified Networks</u>

The following describes two methods used to display a specified network.

A. Using AR:

AR: (Assembly Register) will appear on the upper right side of the screen.

Enter the network number (Lxx) at AR: and press the Enter Key.

AR: cannot be entered while the Command Submenu (*Figure 6.30*) is displayed in the label area at the bottom of the screen. Press the Esc Key to exit the Command Submenu if it is displayed, and then enter AR:.

B. Using the MOVE Command

The MOVE command can be used to move to screens other than the Network Screen. The following procedure is used to specify a screen.

Lxxx:

Move to network number xxx.

SNxxx:nnn: Move to network number nnn of step number xxx.

6

Txxx:

Move to transition number xxx.

Sxxx:

Move to step number xxx.

Gxxx:nnn:

Move to network number nnn of subroutine number xxx.

SEGx:

Move to the first network of segment number x.

1) Press the Slash Key to display the Command Submenu.



Figure 6.30

2) Press F5 (View).

An alternative method is to enter "V" from the Command Submenu.

The View Submenu will appear.



Figure 6.31

3) Press F6 (Goto).

An alternative method is to enter "G" from the View Submenu.

An input window will appear to enter the address.



Figure 6.32

4) Enter the network or the SFC address (Lxx, SNxx) that will be displayed and press the Enter Key.

The specified network or SFC will appear.

Shortcuts

a) Enter "VM" at AR: and press the Enter Key, or press the Alt + V Keys, to display the View Submenu.

b) Enter "GOTO" at AR: and press the Enter Key, or press the Alt + N Keys, to display the input window.

3. Jumping to Marks

Any cursor position marked during network editing can be stored in memory. If an oftenused position is marked, that position can be brought up instantly even while editing another network.

1) Press the Slash Key to display the Command Submenu.

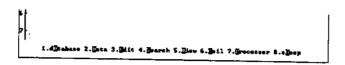


Figure 6.33

2) Press F5 (View).

An alternative method is to enter "V" from the Command Submenu.

The View Submenu will appear.

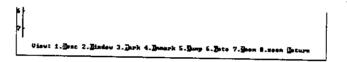


Figure 6.34

- 3) Move the cursor to the position that will be marked.
- 4) Press F3 (Mark).

An alternative method is to enter "M" from the View Submenu.

The cursor position will be marked.

Although the mark will not appear on screen, the position of the mark will appear on the bottom left side of the screen.

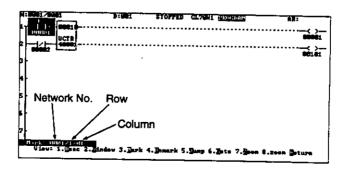


Figure 6.35

6.5.3 Exiting from Network Editing

5) Press F4 (Unmark) to cancel the mark.

An alternative method is to enter "U" from the View Submenu.

6) Press F5 (Jump) to jump to the mark even if the cursor is in another network.

An alternative method is to enter "J" from the View Submenu.

7) Press F5 (Jump) again to return to the original position.

It is not possible to return to the original position if the cursor is not at the marked position. The original position is the position of the cursor prior to jumping to the mark, and it will appear on the left side of the mark position on the lower left side of the screen following a jump.

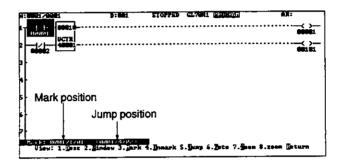


Figure 6.36

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key, or press the Alt + V Keys to display the View Submenu.
- b) Enter "M" at AR: and press the Enter Key, or press the Alt + M Keys, to mark the cursor position.
- c) Enter "UMK" at AR: and press the Enter Key to cancel the mark.
- d) Enter "J" at AR: and press the Enter Key, or press the Alt + J Keys to jump to the mark.

6.5.3 Exiting from Network Editing

The following procedure is used to exit from network editing.

1) Press the Esc Key.

A confirmation message asking whether to exit will appear.

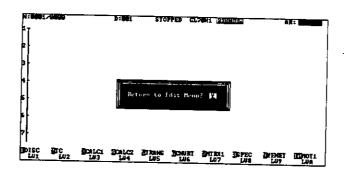


Figure 6.37

If the Function Menu at the bottom of the screen is not at level 0 (menu initially displayed), the Function Menu will shift closer to level 0 without a message. Press the Esc Key at level 0 to exit.

2) Press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to continue editing.

The Edit Menu will return.

6.5.4 Moving the Cursor on a Network

The following procedure is used to move the cursor on the Network Screen.

Moving the Cursor

Moving up, down, left or right:

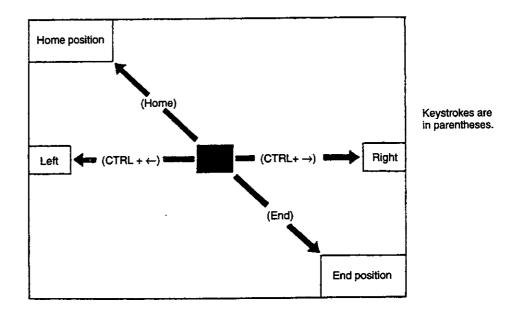
Press the Up, Down, Left or Right Cursor Key.

Moving to the upper left (Home Position): Press the Home Key. Moving to the lower right (End Position): Press the End Key.

6.5.5 Entering Elements Using Function Keys

Moving to the left edge: Moving to the right edge: Press the Ctrl + Left Cursor Keys.

Press the Ctrl + Right Cursor Keys.



6.5.5 Entering Elements Using Function Keys

Display the Element Menu in the label area at the bottom of the screen, and select the function from the menu using a function key (F1 through F10). All ladder elements are assigned to function keys.

Refer to Appendix A List of Function Key Menus for more details on elements that will be displayed.

F1 (DISC): Discrete element

F2 (TC): Timer, counter
F3 (CALC1): Calculation function 1
Calculation function 2

F4 (CALC2): Calculation function 2
F5 (TRANS): Type of data transfer
F6 (CNVRT): Type of data conversion

F7 (MTRX1): Matrix

F8 (SPEC): Skip, subroutine, stepping switch, ASCII instructions, COMM instructions,

EXPANSION REGISTER instructions

F9 (YENET): YENET

F10 (MOT1): MOTION instructions

To display the next menu, press the Shift Key while a function key menu is displayed.

Example: Entering 00001

1) Move the cursor to where the element will be entered.

2) Press F1 (DISC).

The discrete I/O function keys will appear.

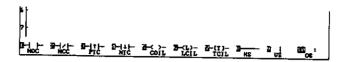


Figure 6.38

3) Press F1 (NOC).

The element will be entered, and the input field will appear.

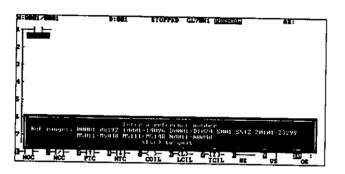


Figure 6.39

4) Enter 00001 and press the Enter Key.

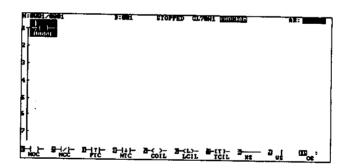


Figure 6.40

Press the Esc Key to return to the previous menu.

6.5.6 Entering Elements Using Mnemonics

Each element has a unique mnemonic. Enter the mnemonic at AR: to input the element.

Mnemonics will be displayed with the Element Menu.

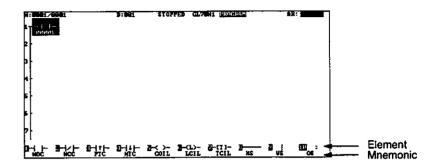


Figure 6.41

- 1) Move the cursor to where the element will be entered.
- 2) Enter the mnemonic of the element at AR:. (Example: NOC for NO contact)

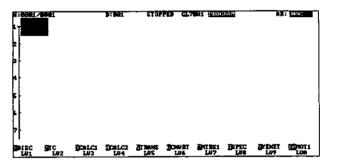


Figure 6.42

3) Press the Enter Key.

The element will be entered, and an input field for the address will appear.

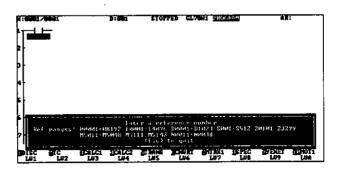


Figure 6.43

6

4) Enter the address and press the Enter Key.

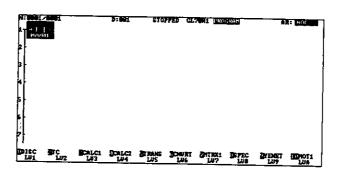
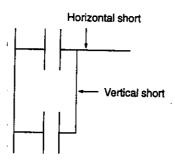


Figure 6.44

6.5.7 Entering Horizontal and Vertical Shorts

The following procedure is used to enter horizontal and vertical shorts.



1) Move the cursor to where the horizontal or vertical short will be entered.

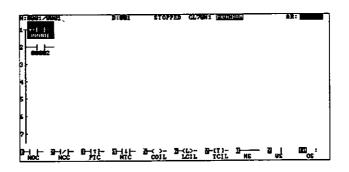


Figure 6.45

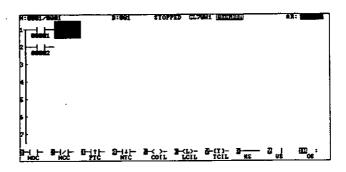


Figure 6.46

2) Press F1 or F2 to display the Ladder Element Function Menu.

An alternative method is to press a function key between F3 and F10 to display the Ladder Element Function Menu, and then press F8 (–) or F9 (I) while holding down the Shift Key.

3) Press F8 (-) or F9 (1).

A

The horizontal or vertical short will be entered.

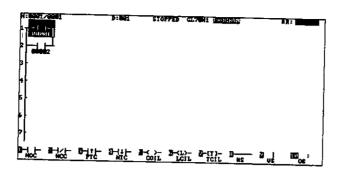


Figure 6.47

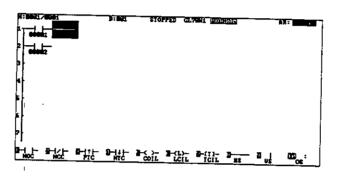


Figure 6.48

Refer to A. Deleting an Element on page 6-35 or B. Deleting Vertical Shorts and Elements on page 6-37 for more details on deleting horizontal shorts, or C. Deleting a Vertical Short on page 6-38 or B. Deleting Vertical Shorts and Elements on page 6-37 for more details on deleting vertical shorts.

Shortcuts

Enter "HS" or "VS" at AR: and press the Enter Key to enter the horizontal or vertical short directly.

6.5.8 Changing Elements

The following procedure is used to change ladder elements that have already been input.

Example: Changing the ADD Instruction to TIMER (T0.1).

1) Move the cursor to the element (ADD) that will be changed.

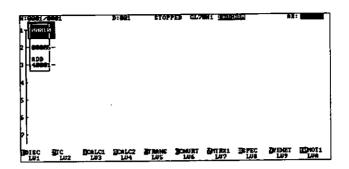


Figure 6.49

2) Press F2 (TC).

The timer/counter function keys will appear.



Figure 6.50

3) Press F2 (T0.1).

The element (TIMER) will be input, and the input field will appear.

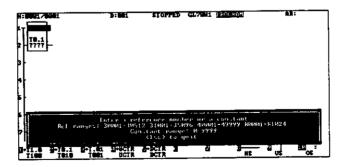


Figure 6.51

Press the Esc Key at this point to cancel the change. The original element (ADD) will appear.

4) Enter the address and press the Enter Key.

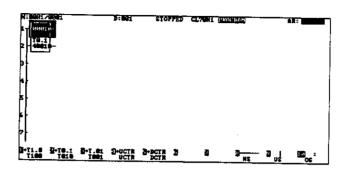


Figure 6.52

6.5.9 Changing Reference Numbers

The following procedure is used to change the reference number of ladder elements.

- 1) Move the cursor to the element with the reference number that will be changed.
- 2) Press the Enter Key.

If a reference number is already entered at AR:, that value will be entered at the address at the cursor position when the Enter Key is pressed. If nothing is entered when the Enter Key is pressed, a range of addresses that can be entered will appear, and a message will appear asking for the address at the cursor position. Enter the address and press the Enter Key. The reference number can also be changed by selecting Cell from the Edit Submenu. Here again, a message will appear asking for the address at the cursor position.

A range of addresses that can be entered will appear, and a message will appear asking for the address.

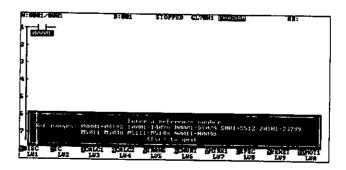


Figure 6.53

3) Enter the new address and press the Enter Key.

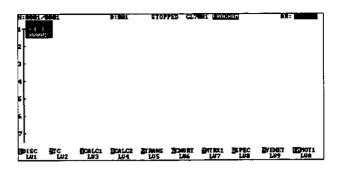


Figure 6.54

6.5.10 Inserting

The following procedure is used to insert blank rows, columns, and networks.

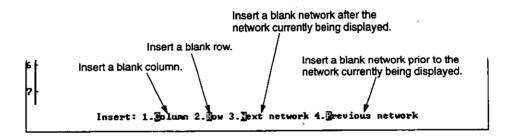


Figure 6.55 Insert Submenu

1. Inserting a Row

The following procedure is used to insert a blank row in a network.

1) Move the cursor to where the row will be inserted.

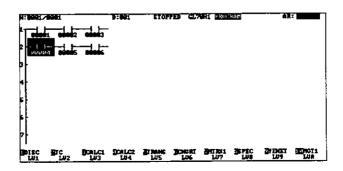


Figure 6.56

2) Press the Slash Key to display the Command Submenu.



Figure 6.57

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.58

4) Press F3 (Insert).

An alternative method is to enter "I" from the Edit Submenu.

The Insert Submenu will appear.



Figure 6.59

5) Press F2 (Row).

An alternative method is to enter "R" from the Insert Submenu.

A row will be inserted.

A row cannot be inserted where an element crosses two rows or when there is no room to insert a row below the insertion position.

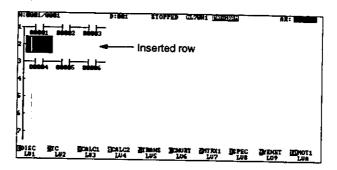


Figure 6.60

6

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IR" at AR: and press the Enter Key to insert a row.

2. Inserting a Column

The following procedure is used to insert a blank column in a network.

1) Move the cursor to where the column will be inserted.

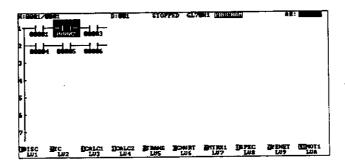


Figure 6.61

2) Press the Slash Key to display the Command Submenu.



Figure 6.62

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.63

4) Press F3 (Insert).

An alternative method is to enter "I" from the Edit Submenu.

The Insert Submenu will appear.



Figure 6.64

5) Press F1 (Column).

An alternative method is to enter "C" from the Insert Submenu.

A column will be inserted.

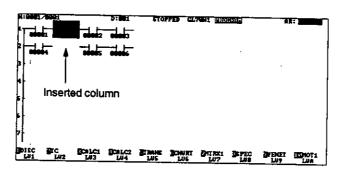


Figure 6.65

A column cannot be inserted if there is no room to the right of the insertion position.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IC" at AR: and press the Enter Key to insert a column directly.

3. Inserting a Network

The following procedure is used to insert a blank network.

1) Move the cursor to where the network will be inserted.

2) Press the Slash Key to display the Command Submenu.

```
5 .
7 .
1.dBcahase 2.Bata 3.Biit 4.Bearch 5.Biew 6.Beil 7.Brocessor 8.sDeep
```

Figure 6.66

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.67

4) Press F3 (Insert).

An alternative method is to enter "I" from the Edit Submenu.

The Insert Submenu will appear.



Figure 6.68

5) Press F3 (Next Network) or F4 (Previous Network).

An alternative method is to enter "N" or "P" from the Insert Submenu.

A network will be inserted immediately before or after the network currently being displayed.

Shortcuts

a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.

- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "INN" or "IPN" at AR: and press the Enter Key to insert a network immediately before or after the currently displayed network.

6.5.11 Deleting

The following procedure is used to delete elements cells, blank rows, blank columns and networks.

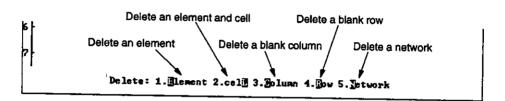


Figure 6.69 Delete Submenu

1. Deleting an Element

The following procedure is used to delete an element from a network.

A. Deleting an Element

1) Move the cursor to the element that will be deleted.

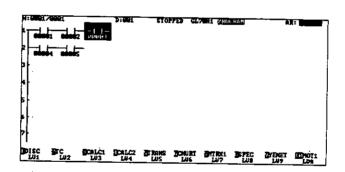


Figure 6.70

2) Press the Slash Key to display the Command Submenu.



Figure 6.71

6

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.72

4) Press F4 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.



Figure 6.73

5) Press F1 (Element).

An alternative method is to enter "E" from the Delete Submenu, or press the Shift Key to switch to Function Menus from the Ladder Element Menu for a function key between F1 and F10, and then press F7 (Delete).

The element will be deleted.

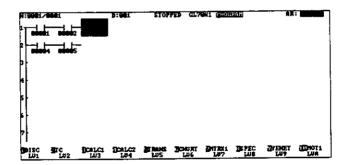


Figure 6.74

Shortcuts

a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.

- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DE" at AR: and press the Enter Key to delete the element.

B. Deleting Vertical Shorts and Elements

1) Move the cursor to element (with the vertical short) that will be deleted.

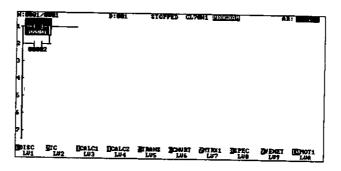


Figure 6.75

2) Press the Slash Key to display the Command Submenu.



Figure 6.76

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.77

4) Press F4 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

6

The Delete Submenu will appear.



Figure 6.78

5) Press F2 (Cell).

An alternative method is to enter "L" from the Delete Submenu.

The element and vertical short will be deleted.

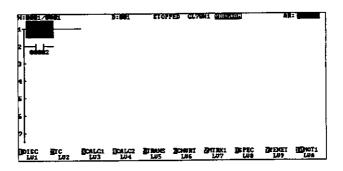


Figure 6.79

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DEL" at AR: and press the Enter Key to delete the element and vertical short.

C. Deleting a Vertical Short

1) Move the cursor to the vertical short that will be deleted.

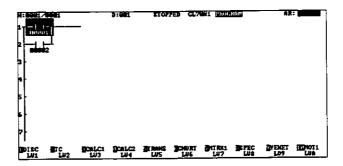


Figure 6.80

2) Press F1 or F2 to display the Ladder Element Function Menu.

An alternative method is to press a function key between F3 and F10 to display the Ladder Element Function Menu, and then press F10 (:) while holding down the Shift Key.

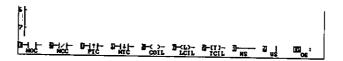


Figure 6.81

3) Press F10 (:).

The vertical short at the cursor position will be deleted.

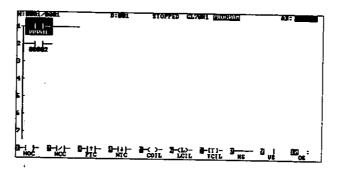


Figure 6.82

Shortcuts

Enter "OS" at AR: and press the Enter Key to delete the vertical short at the cursor position.

2. Deleting a Row

The following procedure is used to delete a blank row from a network.

1) Move the cursor to the row that will be deleted.

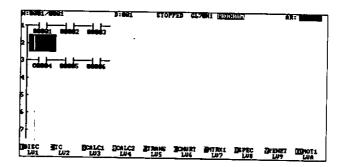


Figure 6.83

6

2) Press the Slash Key to display the Command Submenu.



Figure 6.84

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.85

4) Press F4 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.

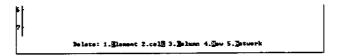


Figure 6.86

5) Press F4 (Row).

An alternative method is to enter "R" from the Delete Submenu.

The row will be deleted.

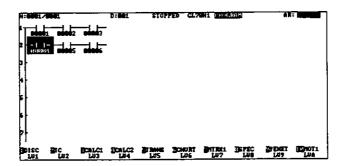


Figure 6.87

A row cannot be deleted if there is an element in the row.

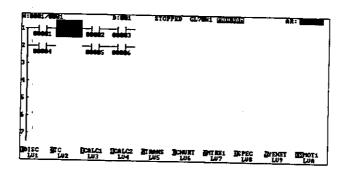
Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DR" at AR: and press the Enter Key to delete the row.

3. Deleting a Column

The following procedure is used to delete a blank column from a network.

1) Move the cursor to the column that will be deleted.



2) Press the Slash Key to display the Command Submenu.



Figure 6.88

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.89

6

4) Press F4 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.



Figure 6.90

5) Press F3 (Column).

An alternative method is to enter "C" from the Delete Submenu.

The column will be deleted.

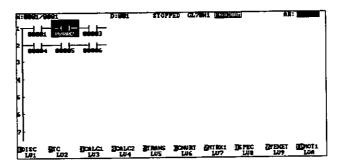


Figure 6.91

A column cannot be deleted if there is an element in the column.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DC" at AR: and press the Enter Key to delete the column.

4. Deleting a Network

The following procedure is used to delete a network that is being displayed.

- 1) Move the cursor to the network that will be deleted.
- 2) Press the Slash Key to display the Command Submenu.

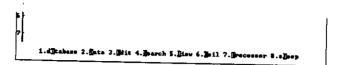


Figure 6.92

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.93

4) Press F4 (Delete).

An alternative method is to enter "D" from the Edit Submenu.

The Delete Submenu will appear.

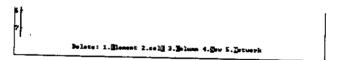


Figure 6.94

5) Press F5 (Network).

An alternative method is to enter "N" from the Delete Submenu.

A confirmation message asking whether to delete the network will appear.

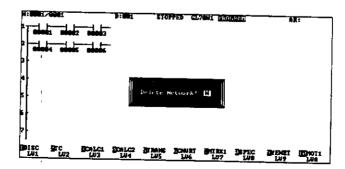


Figure 6.95

6

6) Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the network. "N" is initially entered so the deletion can be canceled in case the Enter Key is pressed by mistake.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DN" at AR: and press the Enter Key to delete the network.

6.5.12 Searching

The following procedure is used to search for specified addresses or instructions (ladder elements).

1. Searching for Addresses

1) Press the Slash Key to display the Command Submenu.



Figure 6.96

2) Press F4 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.



Figure 6.97

3) Enter the address and press the Enter Key.



Figure 6.98

A confirmation message will appear asking whether to execute the search.



Figure 6.99

4) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 6.100

The first occurrence will appear, and the cursor will move to that address.

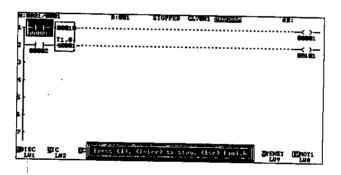


Figure 6.101

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that network.)

Displaying the next occurrence: Ending the search and returning to the original network:

Press the Down Cursor Key.

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

6

2. Searching for Instructions and Addresses

1) Press the Slash Key to display the Command Submenu.



Figure 6.102

2) Press F4 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.



Figure 6.103

3) Press the Page Up Key.

A screen for specifying the address or instruction will appear.



Figure 6.104

4) Enter the address and press the Enter Key, or press the Down Cursor Key.

Move the cursor down.

5) Enter the instruction (mnemonic) and press the Enter Key.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 6.105

A confirmation message will appear asking whether to execute the search.



Figure 6.106

6) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 6.107

The first occurrence will appear, and the cursor will move to that address.

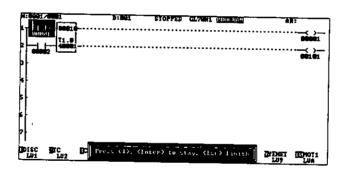


Figure 6.108

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that network.)

Displaying the next occurrence:

Press the Down Cursor Key.

Ending the search and returning to the original network:

Press the Esc Key.

Moving the Cursor

Switching search screens: Press the Page Up or Page Down Key.

Address/mnemonic: Press the Up or Down Cursor Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

3. Searching for Instructions

1) Press the Slash Key to display the Command Submenu.



Figure 6.109

2) Press F4 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.



Figure 6.110

3) Press the Page Up Key twice.

An input screen for entering the instruction (mnemonic) will appear.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 6.111

4) Enter the instruction (mnemonic) and press the Enter Key.



Figure 6.112

A confirmation message will appear asking whether to execute the search.



Figure 6.113

5) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 6.114

The first occurrence will appear, and the cursor will move to that address.

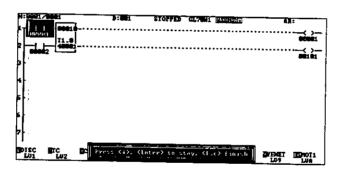


Figure 6.115

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that network.)

Displaying the next occurrence:

Press the Down Cursor Key.

Ending the search and returning to the original network:

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

6

4. Displaying a List of Found Addresses

The following procedure is used to display a list of networks found with an address (instruction) after a search is completed.

1) Press the Slash Key to display the Command Submenu.



Figure 6.116

2) Press F4 (Search).

An alternative method is to enter "S" from the Command Submenu.

A screen for specifying the address will appear.



Figure 6.117

3) Press the Page Up Key three times.

A screen for specifying a list search will appear.



Figure 6.118

4) Enter settings needed for the search, and press the Alt + E Keys.



Figure 6.119

A search will be executed.



Figure 6.120

Occurrences will be displayed as a list after the search is completed.

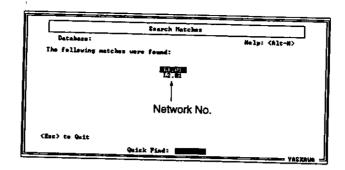


Figure 6.121

5) Move the cursor to the number that will be displayed and press the Enter Key.

The network will appear, and the cursor will move to the occurrence.

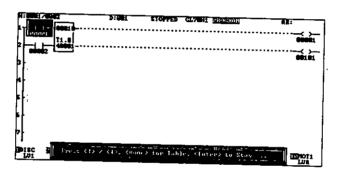


Figure 6.122

Processing after a Search

Moving to the previous or next occurrence from the screen displayed:

Press the Up or Down Cursor Key.

Stopping at the network displayed: Press the Enter Key. Returning to the original network: Press the Esc Key.

Returning to the list:

Press the Ctrl + Left Cursor Keys.

Settings

A. Network Range

All logic:

Search for all networks (including SFC action, transition condition, and

subroutine circuits) in the database.

Current area:

Search only the program area currently displayed.

Block:

Search networks defined as a block.

6.5.12 Searching cont.

From the cursor position:

Search the current area from the present cursor position to the end of the

area.

Specify:

Specify a network range to search.

Example: Specifying an Area from Network 1 to Network 10.

Network range: Specify 1 through 10 (Maximum of 22)

B. Instructions (Specify the Desired Instruction (Ladder Element).)

Specify: Mnemonic items will appear. Specify the desired element using the mnemonic.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.

Example: N.O. Contact-(|)

Instruction: Specify Mnemonic: NOC

Specify with the mnemonic of the element.

Any: Search all elements.

C. Address (Specify the Desired Address.)

Specify: Search items will appear. Enter the desired address or range.

Note A range like that set in Offline Mode for communications cannot be specified in Online Mode.

Any: Search all addresses.

Moving the Cursor

Switching Search Screens: Press the Page Up or Page Down Key.

Moving to the next or previous item:

Press the Up or Down Cursor Key.

Moving to the next item:

Press the Enter Key.

Reversing items:

Press the Space Key, or the Left or Right Cursor Key.

6

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

6.5.13 Editing and Monitoring Registers

Register Editor is used to edit numbers stored at register addresses. Some registers are write protected, and cannot be edited. The addresses listed below can be edited.

40001 to 40512: Output registers
40513 to 49999: Holding registers
R0001 to R1024: Link registers
50001 to 50512: Time registers
A0001 to A7FFF: Expansion registers

Refer to A. Editing Registers on page 6-73 for more details on the procedure for full-page Register editing.

1. Displaying the Register Editor Screen

There are two ways to display the Register Editor Screen using the cursor.

A. Cursor on an Element with a Register Address

When the cursor is on an element with a Register Address, the contents of the register for that element will be displayed.

1) Press the Slash Key to display the Command Submenu.



Figure 6.123

2) Press F2 (Data).

An alternative method is to enter "D" from the Command Submenu.

The Data Submenu will appear.



Figure 6.124

6.5.13 Editing and Monitoring Registers cont.

3) Press F3 (Register).

An alternative method is to enter "R" from the Command Submenu.

The Register Editor Screen will appear.

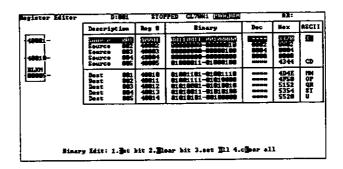


Figure 6.125

Moving the Cursor

Moving up or down a screen:

Press the Ctrl + Page Up or Page Down Keys.

Moving up or down:

Press the Up or Down Cursor Key.

Moving to the next or previous page: Press the Page Down or Page Up Key.

- When moving to the next or previous page, 17 addresses continuing from the next or previous page will appear.
- When moving up from the top row or down from the bottom row, the addresses being displayed will shift up or down by one.

Shortcuts

Enter "ER" at AR: and press the Enter Key, or press the Alt + R Keys to display the Register Editor Screen.

B. Cursor Not on an Element with a Register Address

If the cursor is on an element without a register address or in a position without an element, a window will appear to enter the register address that will be edited or displayed.

1) Press the Slash Key to display the Command Submenu.



Figure 6.126

2) Press F2 (Data).

An alternative method is to enter "D" from the Command Submenu.

The Data Submenu will appear.



3) Press F3 (Register).

An alternative method is to enter "R" from the Command Submenu.

The Input Address Window will appear.

The Input Address Window will already have 40001 entered when it first appears. Enter the address and press the Enter Key to change the address in the window.



Figure 6.127

4) Enter the address that will be edited and press the Enter Key.

The first 17 consecutive addresses from the specified address will appear.

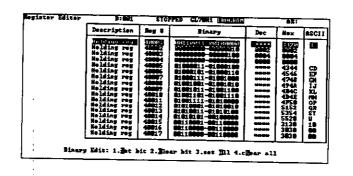


Figure 6.128

Moving the Cursor

Moving up or down:

Press the Up or Down Cursor Key.

Moving to the next or previous page: Press the Page Down or Page Up Key.

 When moving to the next or previous page, 17 addresses continuing from the next or previous page will appear.

6.5.13 Editing and Monitoring Registers cont.

• When moving up from the top row or down from the bottom row, the addresses being displayed will shift up or down by one.

Shortcuts

Enter "ER" at AR: and press the Enter Key, or press the Alt + R Keys to display the Input Address Window.

2. Editing Procedure

Register address data will appear in binary, decimal, hexadecimal, and ASCII. Move the cursor to the respective field and edit the field. Changing one field will automatically change the other fields.

Moving the Cursor

Moving to the binary, decimal, hexadecimal, or ASCII areas:

Press the Ctrl + Left or Right Cursor Keys

Moving left or right in the binary area: Press the Left or Right Cursor Key.

A. Editing in Binary

When the cursor is in the binary area, a Binary Edit Menu will appear in the label area at the bottom of the screen. Move the cursor to the bit to be edited and set the bit.

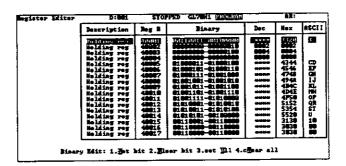


Figure 6.129

Changing individual bits to 1 (ON): Press F1 (Set Bit), or enter a 1. Press F2 (Clear Bit), or enter a 0. Clearing a bit (OFF):

Press F3 (Set All). Changing all bits to 1 (ON): Clearing all bits (OFF):

Press F4 (Clear All).

B. Editing in Decimal

Press the Ctrl + Left or Right Cursor Keys to move the cursor to the decimal area. Enter the number in decimal.

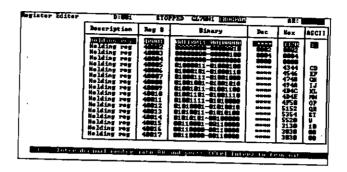


Figure 6.130

C. Editing in Hexadecimal

Press the Ctrl + Left or Right Cursor Keys to move the cursor to the hexadecimal area. Enter the number in hexadecimal.

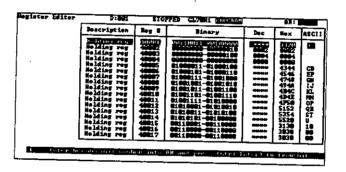


Figure 6.131

D. Editing in ASCII

Press the Ctrl + Left or Right Cursor Keys to move the cursor to the ASCII area. Enter the ASCII text.

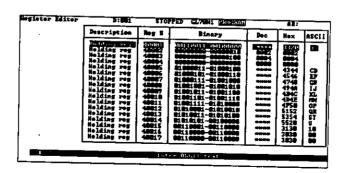


Figure 6.132

3. Displaying Registers in the Reference Area

The Reference Area is located between the Logic Area and the Label Area at the bottom of the Network Screen. This is where register data is displayed and edited.

A. Monitoring or Editing Data in a Network

- 1) Move the cursor to the reference number that will be displayed.
- 2) Press the Slash Key to display the Command Submenu.



Figure 6.133

3) Press F2 (Data).

An alternative method is to enter "D" from the Command Submenu.

The Data Submenu will appear.

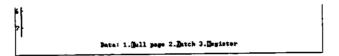


Figure 6.134

4) Press F2 (Watch).

An alternative method is to enter "W" from the Data Submenu.

The specified address and its data will appear in the Reference Area.

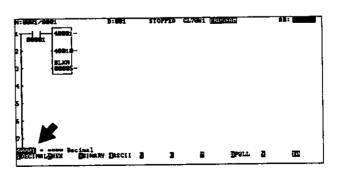


Figure 6.135

6

Reference Area:

Up to three addresses can be displayed in the Reference Area. A message will appear if an attempt is made to display more than three addresses. Press the Enter Key to rewrite the address on the far left side. Refer to 6.5.15 Full-page Editing for more details on the procedure for displaying more than three addresses.



Figure 6.136

The Discrete or Register Submenu for the addresses displayed will appear in the Label Area at the bottom of the screen.

a) Discrete Addresses



Figure 6.137

b) Register Addresses

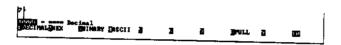


Figure 6.138

- B. Monitoring or Editing Addresses Not Displayed in a Network
- 1) Move the cursor to the Reference Area.

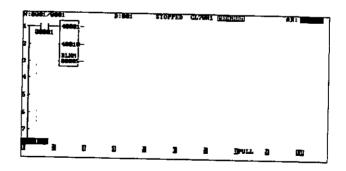


Figure 6.139

.2) Enter the address that will be monitored or edited at AR:.

AR: 40002

Figure 6.140

6.5.13 Editing and Monitoring Registers cont.

3) Press the Enter Key.

The address at the cursor position will be displayed.

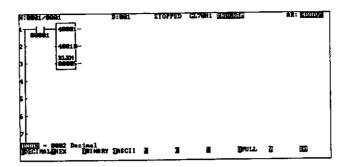


Figure 6.141

The Discrete or Register Submenu for the addresses displayed will appear in the Label Area at the bottom of the screen.

a) Discrete Addresses

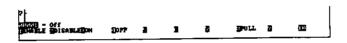


Figure 6.142

b) Register Address

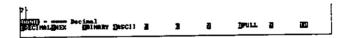


Figure 6.143

4. Procedure for Editing in the Reference Area

The following procedure is used to edit reference addresses in Decimal, Hexadecimal, Binary or ACSII.

A. Editing in Decimal

1) Move the cursor to the address in the Reference Area that will be edited.

The Register Submenu will appear.

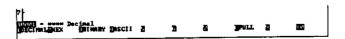


Figure 6.144

- 2) Press F1 (Decimal).
- 3) Enter a decimal number at AR:.

Be sure to enter the number in decimal form. Entering a number other than a decimal number will not input properly.

AR: 11

Figure 6.145

4) Press the Ctrl + Enter Keys.

The number entered at AR: will be entered in the Register.

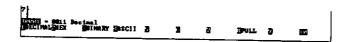


Figure 6.146

- B. Editing in Hexadecimal
- 1) Move the cursor to the address in the Reference Area that will be edited.

The Register Submenu will appear.

2) Press F2 (HEX).

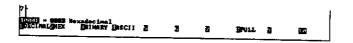


Figure 6.147

3) Enter a hexadecimal number at AR:.

Be sure to enter the number in hexadecimal form. Entering a number other than a hexadecimal number will not input properly.

AR: BA

Figure 6.148

4) Press the Ctrl + Enter Keys.

The number entered at AR: will be entered in the Register.



Figure 6.149

C. Editing in Binary

1) Move the cursor to the address in the Reference Area that will be edited.

The Register Submenu will appear.

2) Press F3 (Binary).

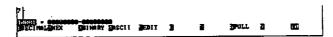


Figure 6.150

3) Press F5 (Edit).

The Binary Edit Submenu will appear along with a cursor that will move above the bits.

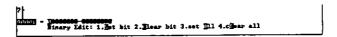


Figure 6.151

4) Edit the number.

Refer to A. Editing in Binary on page 6-56 for more details on the procedure for binary editing.



Figure 6.152

5) Press the Esc Key after the number is edited.

The Register Submenu will appear.

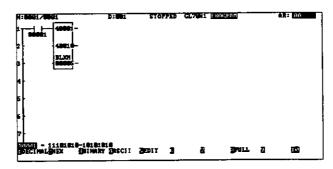


Figure 6.153

6.5.14 Editing Coils and Relays

The following types of editing and displays are available for coils and relays. Refer to *B. Editing Discrete I/O* on page *6-76* for more details on the procedure for full-page Coil and Relay editing.

- Setting disabled and enabled status (Forced ON/OFF)
- Displaying coil use status
- Searching for coils from relays (trace/retrace)

1. Setting Disable and Enable (Forced ON/OFF)

Coils can be disabled so that coils and relays can be forcibly turned ON and OFF. When a coil is disabled, ON and OFF control from a scan will be ignored, and only forced ON and OFF control from a computer will be possible. The Enable/Disable function is used to simulate the operations that will be performed when the program is actually written to a Processor.

1) Press the Slash Key to display the Command Submenu.

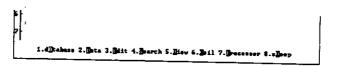


Figure 6.154

2) Press F6 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.



Figure 6.155

- 3) Move the cursor to the coil or relay to be disabled.
- 4) Press F2 (Disable).

An alternative method is to enter "D" from the Coil Submenu.

6.5.14 Editing Coils and Relays cont.

The coil or relay at the cursor position will be disabled.

"DF" or "DN" will appear at the Coil with that address if it is disabled.

DF: Disabled and turned OFF DN: Disabled and turned ON



Figure 6.156

5) Press F3 (ON) to disable and turn ON the coil or relay.

An alternative method is to enter "O" from the Coil Submenu.



Figure 6.157

6) Press F4 (OFF) to disable and turn OFF the coil or relay.

An alternative method is to enter "F" from the Coil Submenu.



Figure 6.158

7) Press F1 (Enable) to cancel the disable.

An alternative method is to enter "E" from the Coil Submenu. "F/N" or "DF/DN" will disappear when Enable is selected.

When one coil or relay is enabled or disabled, then all other coils and relays at that same address will be enabled or disabled.

Note (1) A coil or relay that is not disabled cannot be turned ON and OFF.

(2) The Disable/Enable Display only shows coils and not relays.

Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "DIS" at AR: and press the Enter Key to disable the coil or relay at the cursor position.
- c) Enter "FN" at AR: and press the Enter Key to disable and turn ON the coil or relay.
- d) Enter "FF" at AR: and press the Enter Key to disable and turn OFF the coil or relay.
- e) Enter "EN" at AR: and press the Enter Key to cancel the disable.

2. Disable Editing in the Reference Area

The following procedure is used to display and disable addresses in the Reference Area.

1) Display the address that will be disabled in the Reference Area.

Refer to 4. Procedure for Editing in the Reference Area on page 6-60 for more details on the procedure for editing in the Reference Area.

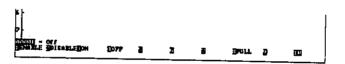


Figure 6.159

2) Press F2 (Disable).

The address at the cursor position will be disabled.

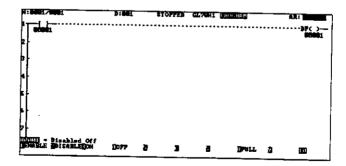


Figure 6.160

3) Press F3 (ON) to turn Disable ON.

6.5.14 Editing Coils and Relays cont.

- 4) Press F4 (OFF) to turn Disable OFF.
- 5) Press F1 (Enable) to Enable.

3. Disabling from the Disable Table Edit Screen

The following procedure is used to display the Disabled status of a maximum of 510 addresses on screen for ON, OFF and other types of editing.

1) Press the Slash Key to display the Command Submenu.



Figure 6.161

2) Press F6 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.

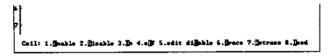


Figure 6.162

3) Press F5 (Edit Disable).

An alternative method is to enter "S" from the Coil Submenu.

The Coil Disable Table will appear.

A zero ("0") will appear at reference numbers that are disabled and an "F" will appear at reference numbers that are not disabled.

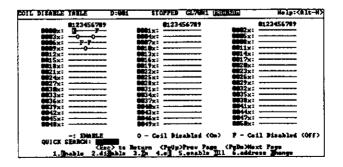


Figure 6.163

Editing Procedure

F1 or E: Enables the status of the address at the cursor position.

F2 or S: Disables the status of the address at the cursor position.

F3 or O: Turns ON the status of the address at the cursor position.

F4 or F: Turns OFF the status of the address at the cursor position.

F5 or A: Enables the status of all addresses.

F6 or C: Changes the type of address. The type of address changes as shown below each time the key is pressed.

Coil \rightarrow Link Coil \rightarrow Input Relay \rightarrow M, N Code Relay (From 00001) (From D0001) (From 10001) (From N, Mxxxx)

Enter an address in the Quick Search field to display the page with that address.

Moving the Cursor

Next or previous page: Press the Page Down or Page Up Key.

First or last page: Press the Ctrl + Page Up or Page Down Keys.

Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "EDT" at AR: and press the Enter Key to display the Coil Disable Table.

4. Displaying Coil Used Status

The following procedure is used to display the Coil Used Table.

1) Press the Slash Key to display the Command Submenu.

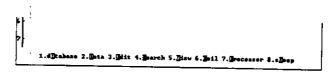


Figure 6.164

2) Press F6 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.

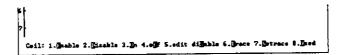


Figure 6.165

3) Press F8 (Used).

An alternative method is to enter "U" from the Coil Submenu.

The Coil Used Table will appear.

Coils in use will appear with a "U."

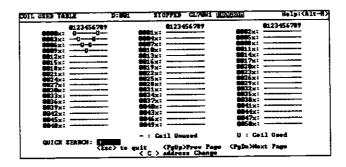


Figure 6.166

Operating Procedure

- C: Address Change
 Switches between Coil and Link Coil.
- Quick Search:
 Enter the address that will be displayed and press the Enter Key. The page with that address will appear.

Shortcuts

Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.

5. Searching for Coils Using Relays (Trace/Retrace)

The following procedure is used to find and display coils with the same address as a relay.

1) Move the cursor to the relay that will be used to find the coil.

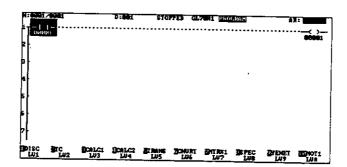


Figure 6.167

2) Press the Slash Key to display the Command Submenu.

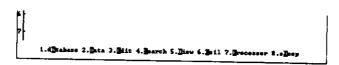


Figure 6.168

3) Press F6 (Coil).

An alternative method is to enter "C" from the Command Submenu.

The Coil Submenu will appear.



Figure 6.169

4) Press F6 (Trace).

An alternative method is to enter "T" from the Coil Submenu.

Coils with the same address as the relay will appear.

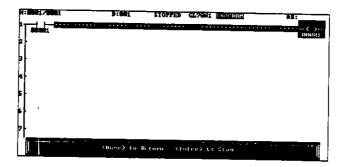


Figure 6.170

6.5.15 Full-page Editing

- 5) Press the Esc Key to cancel the operation.
- 6) Press the Enter Key to stop the search at the coil position.
- 7) Press the Home Key or press the Ctrl + Home Keys to return to the previous coil position.
- 8) Press F7 (Retrace) after editing is completed in order to return the cursor to the original relay.

An alternative method is to enter "R" from the Coil Submenu.

Shortcuts

- a) Enter "CM" at AR: and press the Enter Key to display the Coil Submenu.
- b) Enter "CT" at AR: and press the Enter Key, or press the Alt + T Keys to display coils with the same address as the relay.
- c) Enter "CRT" at AR: and press the Enter Key to return the cursor to the original relay.

6.5.15 Full-page Editing

Full-page Editing allows 60 addresses listed in 20 rows by 3 columns to be edited and displayed all at once. Values are edited with Reference Addresses, and Disable ON/OFF status is edited with Discrete Addresses (Relays, Coils, etc.)

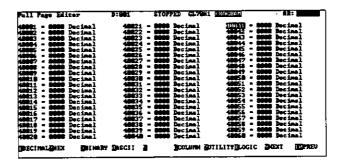


Figure 6.171 Full Page Editor Screen

1. Displaying the Full Page Editor Screen

The following procedure is used to display the Full Page Editor Screen.

1) Press the Slash Key to display the Command Submenu.

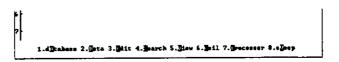


Figure 6.172

2) Press F2 (Data).

An alternative method is to enter "D" from the Command Submenu.

The Data Submenu will appear.

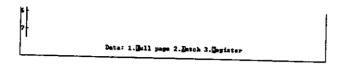


Figure 6.173

3) Press F1 (Full Page).

One alternative method is to enter "F" from the Data Submenu. Another is to move the cursor to the Reference Area if the address is displayed in the Reference Area, and then press F8 (Full) from the Discrete or Register Submenu to display the Full Page Editor Screen.

The Full Page Editor Screen will appear.

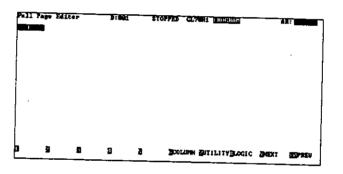


Figure 6.174

Label Area

- Nothing will appear at 1 through 5 in the Label Area if the cursor is not on an address.
- When the cursor is on an address, discrete I/O functions will appear if it is a discrete address or register functions will appear if it is a register address.

Note If a full page is displayed with addresses appearing in the Reference Area of the Network Screen, those addresses will appear on the full page. If there is no need to display the addresses, display the Full Page Delete Submenu (See 8. Deleting a Full Page on page 6-81), or press the Delete Key where the Reference Area is displayed in order to delete the page.



6.5.15 Full-page Editing cont.

Shortcuts

Enter "EFP" at AR: and press the Enter Key, or press the Alt + F Keys to display the Full Page Editor Screen.

2. Displaying Addresses

The following procedure is used to display addresses on a full page. If an address appears in the Reference Area, that address will be displayed.

1) Move the cursor to where the address will be displayed.

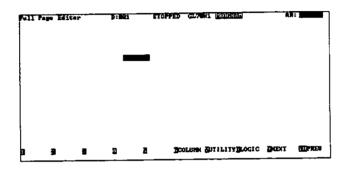


Figure 6.175

2) Enter the address at AR: and press the Enter Key.

AR: 40001

Figure 6.176

The address will appear at the cursor position, and the Discrete or Register Submenu will appear in the Label Area at the bottom of the screen.

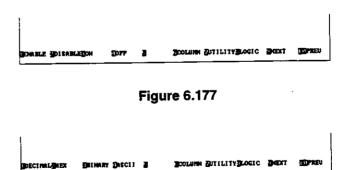


Figure 6.178

3. Editing Procedure

The following procedure is used for full-page editing of registers and disabled status.

A. Editing Registers

The following procedure is used to edit reference addresses in decimal, hexadecimal, binary or ACSII.

Editing in Decimal

1) Move the cursor to the address that will be edited.

The Register Submenu will appear.



Figure 6.179

- 2) Press F1 (Decimal).
- 3) Enter a decimal number at AR:.

Be sure to enter the number in decimal form. Entering a number other than a decimal number will not input properly.

AR: [6]

Figure 6.180

4) Press the Ctrl + Left Cursor Keys.

The number entered at AR: will be entered in the register.

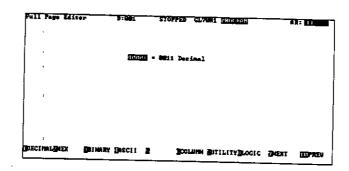


Figure 6.181

Editing in Hexadecimal

1) Move the cursor to the address that will be edited.

6.5.15 Full-page Editing cont.

The Register Submenu will appear.

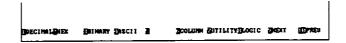


Figure 6.182

- 2) Press F2 (HEX).
- 3) Enter a hexadecimal number at AR:.

Be sure to enter the number in hexadecimal form. Entering a number other than a hexadecimal number will not input properly.

AR: AA

Figure 6.183

4) Press the Ctrl + Left Cursor Keys.

The number entered at AR: will be entered in the register.

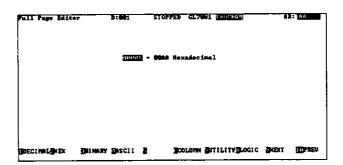


Figure 6.184

• Editing in Binary

1) Move the cursor to the address that will be edited.

The Register Submenu will appear.



Figure 6.185

2) Press F3 (Binary).

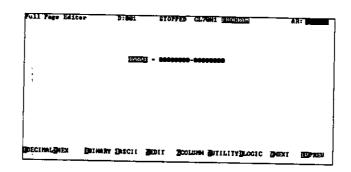


Figure 6.186

3) Press F5 (Edit).

The Binary Edit Submenu will appear along with a cursor that will move above the bits.

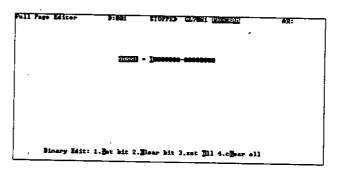


Figure 6.187

4) Edit the number.

Refer to A. Editing in Binary on page 6-56 for more details on the procedure for binary editing.

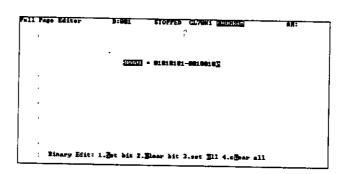


Figure 6.188

6

5) Press the Esc Key after the number is edited.

The Register Submenu will appear.

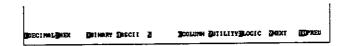


Figure 6.189

B. Editing Disabled Status

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Display the addresses that will be edited.

Refer to 2. Displaying Addresses on page 6-72 for more details on the procedure for displaying addresses.

3) Move the cursor to the address that will be disabled.

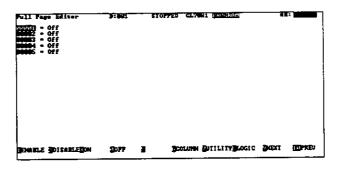


Figure 6.190

4) Press F2 (Disable).

The address at the cursor position will be disabled.

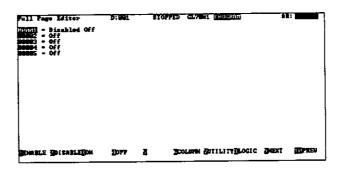


Figure 6.191

- 5) Press F3 (ON) to turn Disable ON.
- 6) Press F4 (OFF) to turn Disable OFF.
- 7) Press F1 (Enable) to Enable.

4. Command for Displaying Columns

The following procedure is used to display a series of addresses in a column from the cursor position down.

1) Display the Full Page Editor Screen.

Refer to 1.Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Move the cursor to the address.

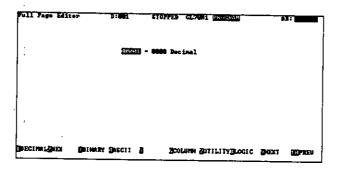


Figure 6.192

3) Press F6 (Column).

A series of addresses will be displayed in a column from the cursor position down.

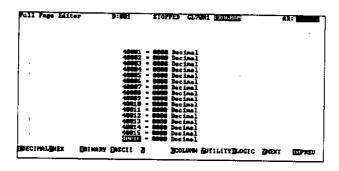


Figure 6.193

Note Column Display shows only one column, and cannot continue to the next column.

6.5.15 Full-page Editing cont.

5. Displaying the Next/Previous Address

The following procedure is used to display the next or previous address from the cursor position.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Move the cursor to the address.

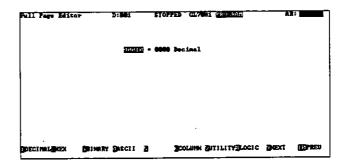


Figure 6.194

3) Press F9 (NEXT) or F10 (PREV).

The next or previous address will appear.

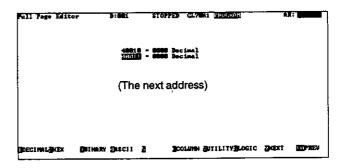


Figure 6.195

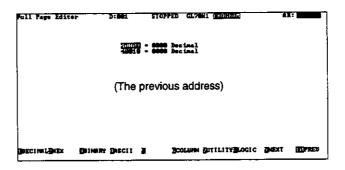


Figure 6.196

The cursor will move to the newly displayed address. If the next or previous address is already being displayed, the cursor will move one down with NEXT or one up with PREV just as with the Up or Down Cursor Keys. The cursor will not move any farther if it is at the top or bottom. Simply specify the address at the cursor position as NEXT or PREV to continue moving up or down one address at a time.

6. Saving a Full Page

Saving a full page not only saves the status of all addresses, but it also saves the layout of the addresses that is displayed. Since a page that is saved can be displayed again by selecting Load, there is no need to specify a large number of addresses.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Press F7 (Utility).

The Full Page Utility Submenu will appear.



Figure 6.197

3) Press F1 (Save).

An alternative method is to enter "S" from the Full Page Utility Submenu. The data saved here is saved to a GL60, TFP file and not in the currently selected database.

A confirmation message will appear asking whether to proceed.



Figure 6.198

4) Make sure that "Y" is entered, and press the Enter Key.

Enter "N" and press the Enter Key to cancel the operation.

The page will be saved.

6

The newer pages saved will overwrite the older pages saved from the second time a page is saved.

7. Loading a Full Page

The following procedure is used to load a saved full page complete with its layout. Addresses edited after the full page was saved will appear as edited.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Press F7 (Utility).

The Full Page Utility Submenu will appear.



Figure 6.199

3) Press F2 (Load).

An alternative method is to enter "L" from the Full Page Utility Submenu.

A confirmation message will appear asking whether to proceed.



Figure 6.200

4) Make sure that "Y" is entered, and press the Enter Key.

Enter "N" and press the Enter Key to cancel the operation.

The page will be loaded.

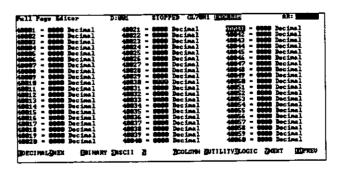


Figure 6.201

8. Deleting a Full Page

Full Page Delete not only deletes actual addresses from the database, but items that do not appear on screen as well.

A. Deleting the Address at the Cursor Position

The following procedure is used to delete the address at the cursor position from the page.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Move the cursor to the address that will be deleted.

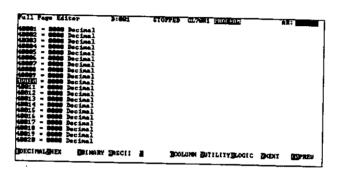


Figure 6.202

3) Press F7 (Utility).

The Full Page Utility Submenu will appear.

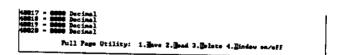


Figure 6.203

4) Press F3 (Delete).

An alternative method is to enter "D" from the Full Page Utility Submenu.

The Full Page Delete Submenu will appear.

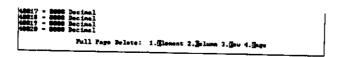


Figure 6.204

6.5.15 Full-page Editing cont.

5) Press F1 (Element).

An alternative method is to enter "E" from the Full Page Delete Submenu.

The address at the cursor position will be deleted from the page.

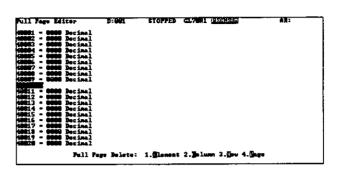


Figure 6.205

B. Deleting a Column

The following procedure is used to delete the column at the cursor position from the page.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Move the cursor to the column that will be deleted.

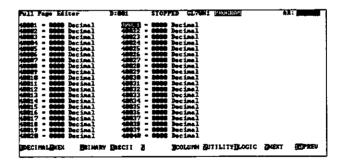


Figure 6.206

3) Press F7 (Utility).

The Full Page Utility Submenu will appear.

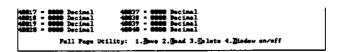


Figure 6.207

4) Press F3 (Delete).

An alternative method is to enter "D" from the Full Page Utility Submenu.

The Full Page Delete Submenu will appear.

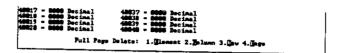


Figure 6.208

5) Press F2 (Column).

An alternative method is to enter "C" from the Full Page Delete Submenu.

The column at the cursor position will be deleted from the page.

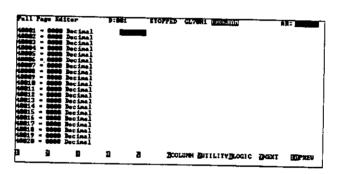


Figure 6.209

C. Deleting a Row

The following procedure is used to delete the row at the cursor position from the page.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Move the cursor to the row that will be deleted.

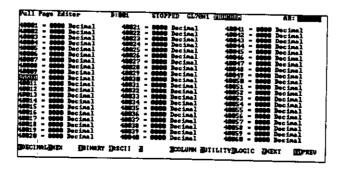


Figure 6.210

6.5.15 Full-page Editing cont.

3) Press F7 (Utility).

The Full Page Utility Submenu will appear.



Figure 6.211

4) Press F3 (Delete).

An alternative method is to enter "D" from the Full Page Utility Submenu.

The Full Page Delete Submenu will appear.

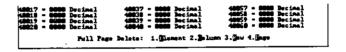


Figure 6.212

5) Press F3 (Row).

An alternative method is to enter "R" from the Full Page Delete Submenu.

The row at the cursor position will be deleted from the page.

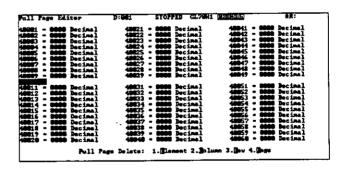


Figure 6.213

D. Deleting a Full Page

The following procedure is used to delete all addresses displayed on the page from the screen.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Press F7 (Utility).

The Full Page Utility Submenu will appear.



Figure 6.214

3) Press F3 (Delete).

An alternative method is to enter "D" from the Full Page Utility Submenu.

The Full Page Delete Submenu will appear.



Figure 6.215

4) Press F4 (Page).

An alternative method is to enter "P" from the Full Page Delete Submenu.

All addresses will be deleted from the screen.

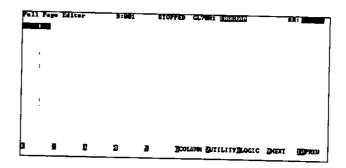


Figure 6.216

9. Displaying the Comment Window

The following procedure is used to display the Comment Window on a full page.

6.5.15 Full-page Editing cont.

1) Display the Full Page Editor Screen.

Refer to 1. Displaying the Full Page Editor Screen on page 6-70 for more details on the procedure for displaying the screen.

2) Press F7 (Utility).

The Full Page Utility Submenu will appear.

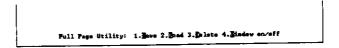


Figure 6.217

3) Press F4 (Window ON/OFF).

The signal descriptor of the address where the cursor is positioned will appear in the Comment Window. Addresses will not appear in the window under the following circumstances.

- a) Cursor not on an address
- b) Database not selected (because the signal descriptor is used for reference from the database on the computer)

An alternative method for displaying the window is to enter "W" from the Full Page Utility Submenu.

The Comment Window will appear.

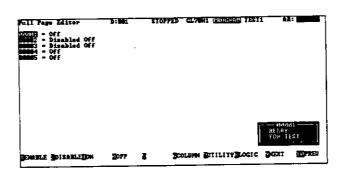


Figure 6.218

The function labels displayed on screen will switch from the Full Page Utility Submenu to the Full Page Editor Menu each time Window is selected. Select Window once more from the Full Page Utility Submenu to cancel the display.

Press the Tab Key to edit comments for the address.

6.5.16 Copying Networks

The following procedure is used to copy currently displayed networks to a specified location. Transition networks cannot be copied.

1) Display the network that will be copied.

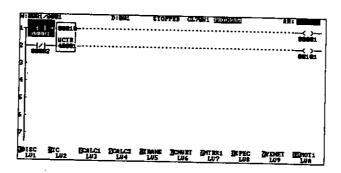


Figure 6.219

2) Press the Slash Key to display the Command Submenu.



Figure 6.220

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.



Figure 6.221

4) Press F5 (Copy Network).

An alternative method is to enter "Y" from the Edit Submenu.

A temporary network will appear.

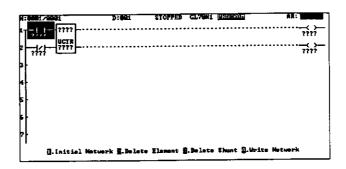


Figure 6.222

A temporary network is an exact duplicate of the currently displayed network that is created temporarily on the computer screen and is not a network in the program of the Processor. Enter the correct reference number at the question marks and specify where to copy the network in order to copy the temporary network on the computer into the Processor program.

5) Move the cursor to reference number (????).

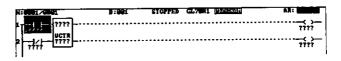


Figure 6.223

6) Enter the reference number at AR: and press the Enter Key.

AR: 00010

Figure 6.224

The reference number at the cursor position will switch to the number entered at the question marks.

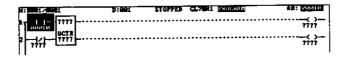


Figure 6.225

7) Repeat the same steps to enter all reference numbers.

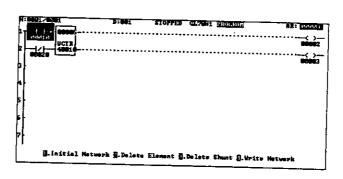


Figure 6.226

- 8) Press F2 (Delete Element) or F3 (Delete Shunt) to delete elements or shunts that do not need to be copied.
- 9) Press F1 (Initial Network) to return to the original status prior to entering a reference number or deleting an element.
- 10) Press F4 (Write Network) after all the changes are completed.

The input screen for entering the destination network number will appear.



Figure 6.227

11) Enter the destination network number and press the Enter Key.

The network that is copied will be inserted prior to the specified network number, and the network numbers will automatically shift down by one.

A confirmation message will appear asking whether to proceed.



Figure 6.228

12) Check the details and press "Y" and the Enter Key. "N" is initially entered so deletion will not be executed in case the Enter Key is pressed by mistake.



Figure 6.229

6.5.17 Moving Networks

The network will be copied.

Shortcuts

Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.

6.5.17 Moving Networks

The following procedure is used to move networks. Networks cannot be moved while a Processor is operating. If the Processor is operating, exit from network editing, return to the Edit Menu, and stop the Processor. Refer to 6.4 Starting and Stopping a Processor for more details on the procedure for stopping a Processor.

- 1) Display the network that will be moved.
- 2) Press the Slash Key to display the Command Submenu.



Figure 6.230

3) Press F3 (Edit).

An alternative method is to enter "E" from the Command Submenu.

The Edit Submenu will appear.

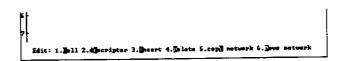


Figure 6.231

4) Press F6 (Move Network).

An alternative method is to enter "M" from the Edit Submenu.

The input screen will appear for entering the source network number that will be moved.



Figure 6.232

5) Enter the source network number that will be moved and press the Enter Key.

A confirmation message will appear asking whether to proceed.



Figure 6.233

6) Check the details and press "Y" and the Enter Key. "N" is initially entered so deletion will not be executed in case the Enter Key is pressed by mistake.



Figure 6.234

The network will be moved.

Shortcuts

Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.

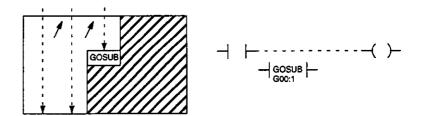
6.6 Editing Subroutines

When the same circuit is written often in a ladder program, storing the circuits as subroutines enables the circuit to be accessed from the ladder program at any time, and the circuit only needs to be built once. The subroutine circuit will be executed when the GOSUB instruction is ON. Memory must be alocated to subroutines before editing. Refer to 1. Allocating Memory on page 6-167 for more details on allocating memory to subroutines prior to editing.

6.6.1 Entering the GOSUB Instruction

- 1) Display the Network Edit Screen.
- 2) Move the cursor to where the element will be entered.

The GOSUB instruction must be executed at the very end of the network. Entries cannot be input in the area (slashed line area) after the GOSUB instruction.



In the above situation, the coil is actually entered above the GOSUB instruction so that it will not interfere with the instruction.

3) Press F8 (SPEC).

An alternative method is to enter "GOSUB" at AR: and press the Enter Key.

A Function Menu like Skip or Subroutine will appear.



Figure 6.235

- 4) Press F2 (GOSUB).
- 5) Enter the subroutine number and press the Enter Key.

The range of subroutine numbers is G00 to G99.

6.6.2 Displaying Subroutine Networks

1) Move the cursor to the GOSUB element.

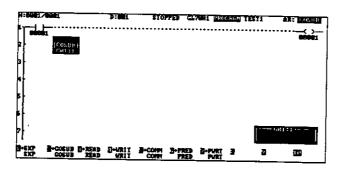


Figure 6.236

2) Press the Slash Key to display the Command Submenu.



Figure 6.237

3) Press F5 (View).

An alternative method is to enter "V" from the Command Submenu.

The View Submenu will appear.

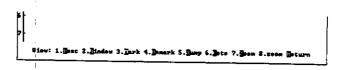


Figure 6.238

4) Press F7 (Zoom).

An alternative method is to enter "Z" from the View Submenu.

The Subroutine Edit Screen will appear.

6.6.2 Displaying Subroutine Networks cont.

5) Press F8 (Zoom Return) from the View Submenu after editing is completed in order to return to the original network.

An alternative method is to enter "R" from the View Submenu.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key to display the View Submenu.
- b) Enter "Z" at AR: and press the Enter Key, or press the Alt + Z Keys to display the Edit Subroutine Screen. (Enter "ZR" and press the Enter Key, or press the Alt + X Keys to return to the Network Screen.)

6.7 SFC Editing

SFC stands for Sequential Function Chart. SFC is a new PLC language that takes conventional serial sequence control system items written in ladder language and expresses them as a block diagram similar to a flowchart so that the entire structure can be grasped at a glance, and so that programming will be easier. Refer to MEMOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1) for more details on SFC. This manual can be obtained at your GL60 sales outlet or business office.

6.7.1 SFC Screen Configuration

The following describes the SFC Screen configuration.

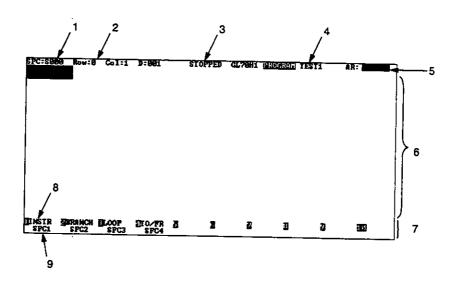


Figure 6.239

- SFC number currently displayed:
 The SFC number S000 is used for the currently displayed SFC flowchart and numbers S001 and on are used for steps.
- 2) Column and row display for the current cursor position
- 3) GL60 Operate/Stop Status
- Database Name:
 Displays when a database is selected.
- Assembly Register:
 The assembly register stores input (text and numbers) from the keyboard.

- 6) Logic Area
- 7) Label Area:

Function key menus corresponding to function keys F1 to F10 will appear in the label area. Various menus can be displayed depending on the operation.

- 8) Prompt
- 9) Mnemonic:

The SFC input field is comprised of 10 rows by 8 columns numbered 0 through 9. Since row 0 and row 9 are used exclusively for From and To, steps and transitions are entered in the 8 x 8 area from row 1 to row 8.

Rows 1 through 8 are divided into upper (step) and lower (transition) rows. Since all fields in the vertical direction cannot be monitored on the display at the same time, use the Up and Down Cursor Keys to scroll through and view other rows.

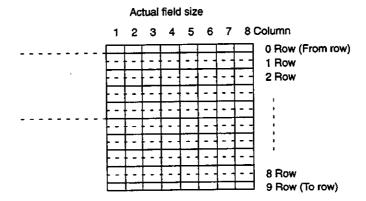


Figure 6.240

6.7.2 Displaying the SFC Screen

The following procedure is used to display the SFC Screen.

1) Select 3. Online from the Main Menu.

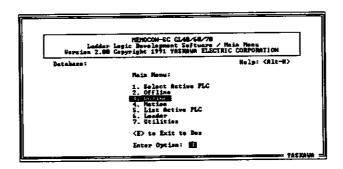


Figure 6.241

2) Select 1. Program Mode or 2. Monitor Mode from the Online Menu to go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

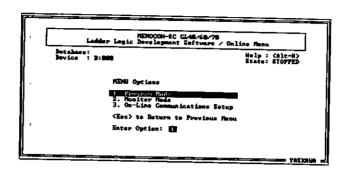


Figure 6.242

3) Select 3. Sequential Function Charts from the Edit Options.

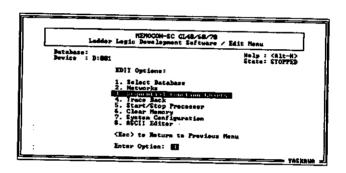


Figure 6.243

The SFC Screen will appear.

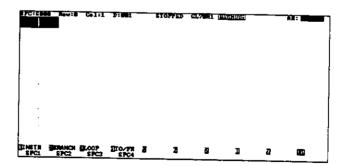


Figure 6.244

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

Moving to the upper left (Home Position): Press the Home Key. Moving to the lower right (End Position): Press the End Key.

Moving to the left edge: Press the Ctrl + Left Cursor Keys.

Moving to the right edge: Press the Ctrl + Right Cursor Keys.

1. Displaying the SFC Expanded-screen

The following procedure is used to display step, action and transition condition circuits, and to move to the expanded-screen used for macro steps.

1) Move the cursor to element to be zoomed.

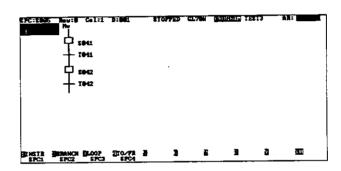


Figure 6.245

2) Press the Slash Key to display the Command Submenu.

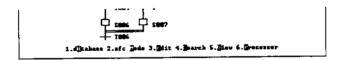


Figure 6.246

3) Press F7 (View).

The View Submenu will appear.

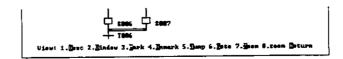


Figure 6.247

4) Press F5 (Zoom).

6

The screen will shift to a Macrostep expanded-screen.

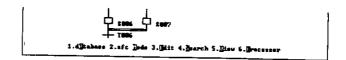


Figure 6.248

If the cursor is at a step, the screen shifts to an action circuit. If it is at a transition, the screen shifts to the transition condition circuit.

Press F8 (Zoom Return) from the View Submenu or enter "R" to return to the original screen from the top of the zoom.

Note Although Zoom Return can be used to return to the original screen from the location moved to using the ZOOM command, Zoom Return cannot be used to return to the SFC from the location moved to using the GOTO command. Use the GOTO command again in that case.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key to display the View Submenu.
- b) Enter "Z" at AR: and press the Enter Key, or press the Alt + Z Keys to move the cursor to the action circuit.
- c) Zoom return
 Enter "ZR" at AR: and press the Enter Key, or press the Alt + X Keys.

2. Displaying a Specified SFC

The following procedure is used to move quickly to a specified Edit Screen (Network, SFC, Subroutine) by setting an address.

1) Press the Slash Key to display the Command Submenu.

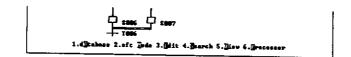


Figure 6.249

2) Press F5 (View).

The View Submenu will appear.

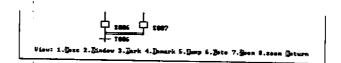


Figure 6.250

6.7.2 Displaying the SFC Screen cont.

3) Press F6 (Goto).

The address input window will appear.



Figure 6.251

4) Enter the address and press the Enter Key.

Coil and element addresses are not valid entries. Be sure to enter Lxx, SEGx, Gxx:nn, SNxx:nn, Sxx, or Txx.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key to display the View Submenu.
- b) Enter "GOTO" at AR: and press the Enter Key, or press the Alt + N Keys.

3. Jumping to Marks

The following procedure is used to mark a position in order to return quickly to the marked position while editing another location.

- 1) Move the cursor to the position to be marked.
- 2) Press the Slash Key to display the Command Submenu.



Figure 6.252

3) Press F5 (View).

The View Submenu will appear.



Figure 6.253

4) Press F3 (Mark).

The cursor position will be marked.

The mark position will appear at the lower-left side of the screen when a mark is set.

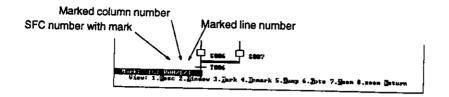


Figure 6.254

Press F4 (Unmark) from the View Submenu to cancel the mark.

5) Press F5 (Jump) to jump to the mark.

Shortcuts

- a) Enter "VM" at AR: and press the Enter Key, or press the Alt + V Keys to display the View Submenu.
- b) Enter "M" at AR: and press the Enter Key, or press the Alt + M Keys to create a mark at the cursor position.
- c) Enter "J" at AR: and press the Enter Key, or press the Alt + J Keys to jump to the mark.

6.7.3 Exiting from SFC Editing

The following procedure is used to exit from SFC editing.

1) Press the Esc Key.

A confirmation message asking whether to exit will appear.

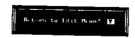


Figure 6.255

If the Function Menu at the bottom of the screen is not at level 0 (menu initially displayed), the Function Menu will shift closer to level 0 without a message. Press the Esc Key at level 0 to operate the Exit function.

6.7.4 Moving the Cursor on the SFC Screen

2) Press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to continue editing.

The Edit Menu will return.

6.7.4 Moving the Cursor on the SFC Screen

The following procedure is used to move the cursor on the SFC Screen.

Moving the Cursor

Moving up, down, left or right:

Press the Up, Down, Left or Right Cursor Key.

Moving to the upper left (Home Position): Press the Home Key. Moving to the lower right (End Position): Press the End Key.

Moving to the left edge: Moving to the right edge: Press the Ctrl + Left Cursor Keys. Press the Ctrl + Right Cursor Keys.

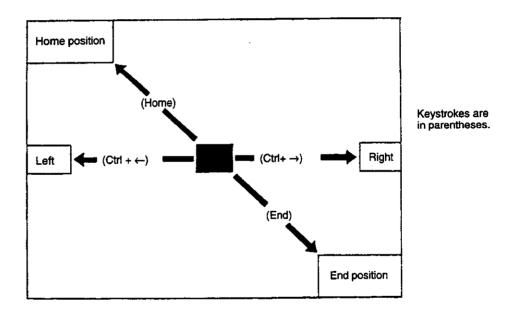


Figure 6.256

6.7.5 Entering Elements Using Function Keys

Display the Element Menu in the label area at the bottom of the screen, and select the function from the menu using a function key (F1 through F10). All SFC elements are assigned to function keys.

Steps and transitions F1 (INSTR): F2 (BRANCH): Branches and intersections F3 (LOOP):

Loops

F4 (TO/FR):

To and From

Example: Entering S001

1) Move the cursor to where the element will be entered.

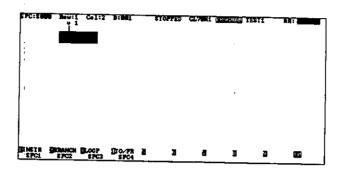


Figure 6.257

2) Press F1 (INSTR).

The function keys for steps and transitions will appear.



Figure 6.258

Refer to Appendix A List of Function Key Menus for more details on elements that will be displayed.

3) Press F1 (STEP).

Press the Esc Key to return to the previous menu.

The element at the cursor position will appear along with a message asking for the address.

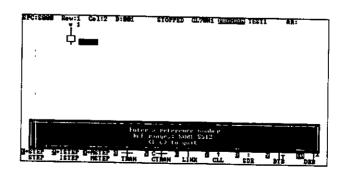


Figure 6.259

6

4) Enter the address and press the Enter Key.

6.7.6 Entering Elements Using Mnemonics

Each element has a unique mnemonic. Enter the mnemonic at AR: to enter the element.

1) Move the cursor to where the element will be entered.

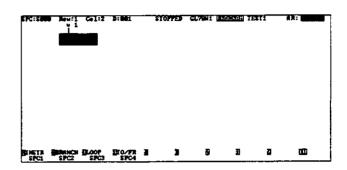


Figure 6.260

Entries cannot be input or an error may occur at some positions. For more details on the SFC, refer to Items 5 and 6 Write Protected Items in SFC Programming provided in ME-MOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1).

Enter the mnemonic of the element at AR: (Example: STEP for a step) and press the Enter Key.

AR: STIEP

Figure 6.261

Refer to Appendix A List of Function Key Menus for more details on elements and mnemonics that will be displayed.

The element at the cursor position will appear along with a message asking for the address.

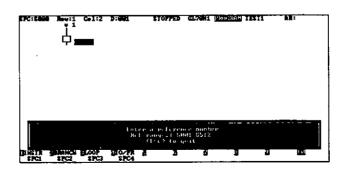


Figure 6.262

3) Enter the address and press the Enter Key.

Do not use the same step or transition number twice.

6.7.7 Changing Step and Transition Numbers

The following procedure is used to change step and transition numbers.

1) Move the cursor to the step or transition number that will be changed and press the Enter Key.

A message asking for the reference number will appear.

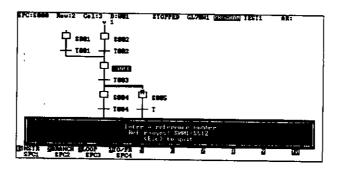


Figure 6.263

Press the Esc Key to cancel the change and return to the original reference number.

2) Enter the step or transition number that will be changed and press the Enter Key.

The step or transition number will change.

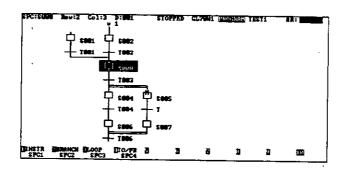


Figure 6.264

6.7.8 Insertion

The following procedure is used for a variety of insertions during SFC editing.

6

Row Insertion: Inserts a row on the SFC Screen. Column Insertion: Inserts a column on the SFC Screen.

1. Inserting a Row

The following procedure is used to insert a blank row on the SFC Screen.

1) Move the cursor to where the row will be inserted.

A row cannot be inserted if there is no room to insert a row below the insertion position. Room for at least two rows is needed because two rows are inserted at the same time with Row Insertion.

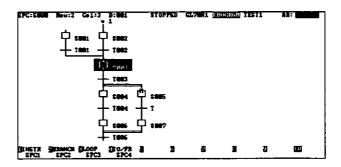


Figure 6.265

2) Press the Slash Key to display the Command Submenu.

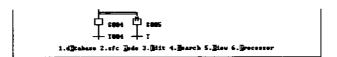


Figure 6.266

3) Press F3 (Edit).

The Edit Submenu will appear.

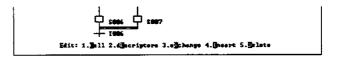


Figure 6.267

4) Press F4 (Insert).

The Insert Submenu will appear.

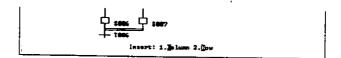


Figure 6.268

5) Press F2 (Row).

A row will be inserted at the cursor position.

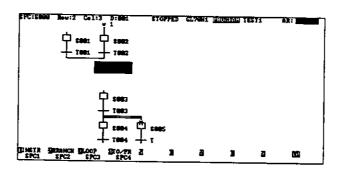


Figure 6.269

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IR" at AR: and press the Enter Key to insert a row at the cursor position.

2. Inserting a Column

The following procedure is used to insert a blank column.

1) Move the cursor to where the column will be inserted.

A column cannot be inserted if there is no room to the right of the insertion position.

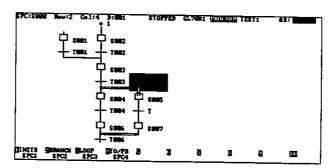


Figure 6.270

6.7.8 Insertion cont.

2) Press the Slash Key to display the Command Submenu.



Figure 6.271

3) Press F3 (Edit).

The Edit Submenu will appear.



Figure 6.272

4) Press F4 (Insert).

The Insert Submenu will appear.



Figure 6.273

5) Press F1 (Column).

A column will be inserted at the cursor position.

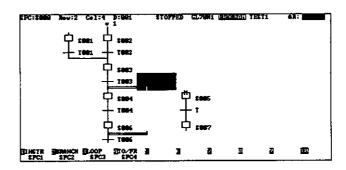


Figure 6.274

6

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "IM" at AR: and press the Enter Key, or press the Insert Key to display the Insert Submenu.
- c) Enter "IC" at AR: and press the Enter Key to insert a column at the cursor position.

6.7.9 Deleting

There are several commands available here depending on the type of deletion. Be sure to select and use the appropriate command.

Delete Element:

Deletes elements on SFC and Network Screens.

Delete Column/Row:

Deletes blank rows and columns.

Delete SFC:

Deletes the SFC Screen currently displayed.

1. Deleting an Element

The following procedure is used to delete an element or cell.

A. Deleting an Element

1) Move the cursor to the element that will be deleted.

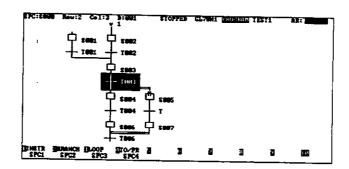


Figure 6.275

2) Press the Slash Key to display the Command Submenu.



Figure 6.276

3) Press F3 (Edit).

The Edit Submenu will appear.

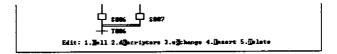


Figure 6.277

4) Press F5 (Delete).

The Delete Submenu will appear.

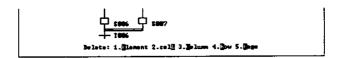


Figure 6.278

5) Press F1 (Element).

The element will be deleted.

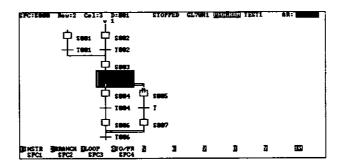


Figure 6.279

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "SDE" at AR: and press the Enter Key to delete the element.

B. Deleting an Element with a Branch or Loop

1) Move the cursor to the element with the branch or loop to be deleted.

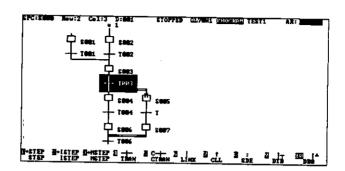


Figure 6.280

2) Press the Slash Key to display the Command Submenu.

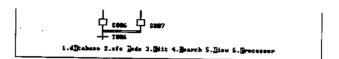


Figure 6.281

3) Press F3 (Edit).

The Edit Submenu will appear.

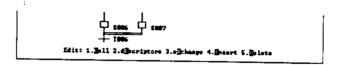


Figure 6.282

4) Press F5 (Delete).

The Delete Submenu will appear.

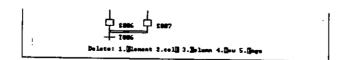


Figure 6.283

5) Press F2 (Cell).

6

The element and its branch or loop will be deleted.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DEL" at AR: and press the Enter Key to delete the element and its branch or loop.

C. Deleting a Branch or Loop

1) Move the cursor to the element with the branch or loop to be deleted.

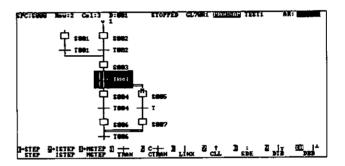


Figure 6.284

2) Press any key between F1 and F4.

The Element Menu will appear.

- 3) Press F9 if the branch or loop moves up from the transition.
- 4) Press F10 if the branch or loop moves down from the transition.

Only the branch or loop will be deleted.

Shortcuts

- a) Enter "DTB" at AR: and press the Enter Key if the branch or loop moves up from the transition.
- b) Enter "DBB" at AR: and press the Enter Key if the branch or loop moves down from the transition.

2. Deleting Rows and Columns

The following procedure is used to delete blank rows or columns.

1) Move the cursor to the row or column that will be deleted.

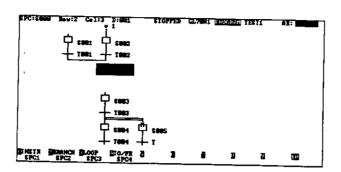


Figure 6.285

2) Press the Slash Key to display the Command Submenu.

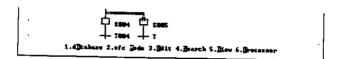


Figure 6.286

3) Press F3 (Edit).

The Edit Submenu will appear.



Figure 6.287

4) Press F5 (Delete).

The Delete Submenu will appear.

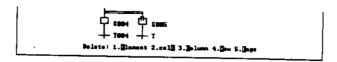


Figure 6.288

6

5) Press F3 (Column) or F4 (Row).

The row or column will be deleted.

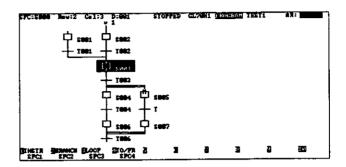


Figure 6.289

Note A row or column cannot be deleted if there is an element in the row or column. Be sure to delete two rows when deleting a row because the SFC Screen sets a row aside to enable step and transition input for each row.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DC" (delete column) or "DR" (delete row) at AR: and press the Enter Key to delete the row or column.

3. Deleting an SFC Screen

The following procedure is used to delete the currently displayed SFC Screen.

1) Display the SFC Screen to be deleted.

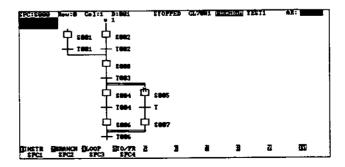


Figure 6.290

2) Press the Slash Key to display the Command Submenu.

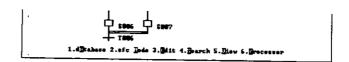


Figure 6.291

3) Press F3 (Edit).

The Edit Submenu will appear.

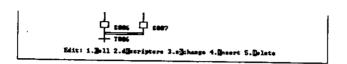


Figure 6.292

4) Press F5 (Delete).

The Delete Submenu will appear.

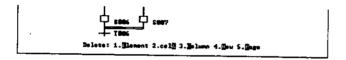


Figure 6.293

5) Press F5 (Page).

A confirmation message will appear asking whether to proceed with the deletion.

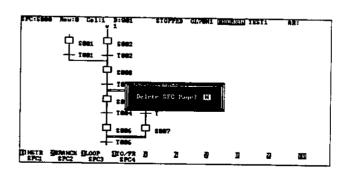


Figure 6.294

6

6) Check to see if the contents of the confirmation message are correct, and if so press "Y" and the Enter Key to delete the screen. "N" is initially entered so deletion will not be executed in case the Enter Key is pressed by mistake.

The SFC Screen will be deleted.

Shortcuts

- a) Enter "EM" at AR: and press the Enter Key to display the Edit Submenu.
- b) Enter "DM" at AR: and press the Enter Key, or press the Delete Key to display the Delete Submenu.
- c) Enter "DP" at AR: and press the Enter Key to display the execution confirmation message.

6.7.10 Searching

The following procedure is used to search for specified instructions (elements) or addresses.

1. Searching for Addresses

1) Press the Slash Key to display the Command Submenu.

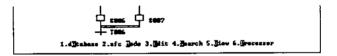


Figure 6.295

2) Press F4 (Search).

A screen for specifying the address will appear.



Figure 6.296

3) Enter the address and press the Enter Key.



Figure 6.297

A confirmation message will appear asking whether to proceed with the search.



Figure 6.298

4) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 6.299

The first occurrence will appear, and the cursor will move to that address.

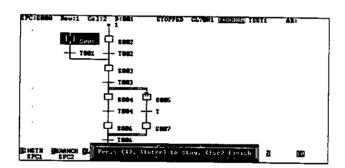


Figure 6.300

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that SFC or network.)

Displaying the next occurrence:

Press the Down Cursor Key.

Exiting the search and returning to the original SFC:

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

6.7.10 Searching cont.

2. Searching for Instructions and Addresses

1) Press the Slash Key to display the Command Submenu.



Figure 6.301

2) Press F4 (Search).

A screen for specifying the address will appear.



Figure 6.302

3) Press the Page Up Key.

A screen for specifying the address or instruction will appear.



Figure 6.303

4) Enter the address and press the Enter Key.

Move the cursor down.

5) Enter the instruction (mnemonic) and press the Enter Key.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 6.304

0

A confirmation message will appear asking whether to proceed with the search.



Figure 6.305

6) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 6.306

The first occurrence will appear, and the cursor will move to that address.

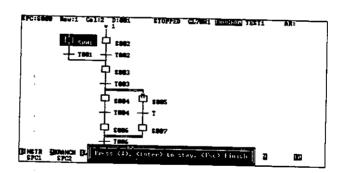


Figure 6.307

Processing after a Search

Editing the network displayed:

Press the Enter Key.

(The search will end at that SFC or network.)

Displaying the next occurrence:

Press the Down Cursor Key.

Exiting the search and returning to the original SFC:

Press the Esc Key.

Moving the Cursor

Switching search screens: Press the Page Up or Page Down Key.

Address/mnemonic: Press the Up or Down Cursor Key.

6.7.10 Searching cont.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

3. Searching for Instructions

1) Press the Slash Key to display the Command Submenu.



Figure 6.308

2) Press F4 (Search).

A screen for specifying the address will appear.



Figure 6.309

3) Press the Page Up Key twice.

An input screen for entering the instruction (mnemonic) will appear.

The element mnemonics will appear together with instructions at the function keys, and can be selected by pressing a function key.



Figure 6.310

4) Enter the instruction (mnemonic) and press the Enter Key.



Figure 6.311

A confirmation message will appear asking whether to proceed with the search.



Figure 6.312

5) Confirm by entering "Y", and press the Enter Key.

Enter "N" and press the Enter Key, or press the Esc Key to cancel the search.

A search will be executed.



Figure 6.313

The first occurrence will appear, and the cursor will move to that address.

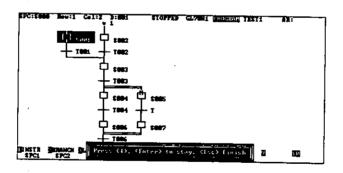


Figure 6.314

Processing after a Search

1

Editing the network displayed:

Press the Enter Key.

(The search will end at that SFC or network.)

Displaying the next occurrence:

Press the Down Cursor Key.

Exiting the search and returning to the original SFC:

Press the Esc Key.

Switching search screens:

Press the Page Up or Page Down Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

6.7.10 Searching cont.

4. Displaying a Table of Found Addresses

The following procedure is used to display a table of addresses (instructions) found after a search is completed.

1) Press the Slash Key to display the Command Submenu.



Figure 6.315

2) Press F4 (Search).

A screen for specifying the address will appear.



Figure 6.316

3) Press the Page Up Key three times.

A screen for specifying a table search will appear.



Figure 6.317

4) Enter the settings needed for the search, and press the Alt + E Keys.



Figure 6.318

A search will be executed.



Figure 6.319

6

Occurrences will be displayed in a table after the search is completed.

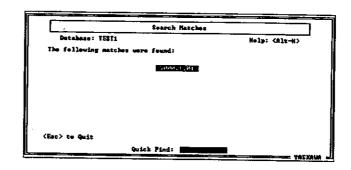


Figure 6.320

5) Move the cursor to the number that will be displayed and press the Enter Key.

The SFC Screen will appear, and the cursor will move to the occurrence.

Processing after a Search

Moving to the previous or next occurrence from the screen displayed:

Press the Up or Down Cursor Key.

Stopping at the network displayed: Press the Enter Key.
Returning to the original network: Press the Esc Key.
Returning to the table: Press the Home Key.

Settings

1) SFC Range

All SFCs: Searches for all SFCs in the database.

Current SFC: Searches only the SFC area currently displayed.

From the cursor position:

. Searches from the present cursor position to the end of the current area.

2) Instructions: Specifying the Element to Find

Specify: The mnemonic will appear. Specify the element to find using the mnemonic.

Example: A Step (⊢ ⊦)

Instruction: Specify Mnemonic: STEP

Any: Searches all elements.

3) Addresses: Specifying the Address to Find

Specify: Specifies the address to find.

Any: Searches all addresses.

6.7.11 SFC Mode Submenu

Moving the Cursor

Moving to the next or previous item:

Press the Up or Down Cursor Key.

Moving to the next item: Press the Enter Key.

Reversing items:

Press the Space Key, or the Left or Right Cursor Key.

Shortcuts

Enter "S" at AR: and press the Enter Key, or press the Alt + S Keys to display the screen for specifying the address.

6.7.11 SFC Mode Submenu

The SFC Mode Submenu is a special Command Menu for SFC editing.

SPC Mode: 1. Bondition setting 2. Simulation 3. Deed display 4. Blapsed active time

Figure 6.321 SFC Mode Submenu

F1: Starting Up the Condition Setting Menu.

The F1 function sets conditions for initializing (starting), resetting, and presetting the SFC.

F2: Starting Up the Simulation Submenu

The F2 function sets simulation status, such as active, disabled and hold, useful for debugging and other operations.

F3: Starting Up the Used Display Menu

The F3 function displays a list of step and transition numbers as well as program use status.

F4: Display Time Requirement Chart

Displays the amount of time required for a Step operation.

1. SFC Initialization

The following procedure is used to set startup settings used for initializing and starting up the SFC program. The SFC will start up when the conditions that are set go into effect.

1) Press the Slash Key to display the Command Submenu.



Figure 6.322

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.

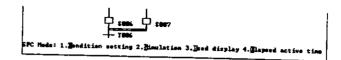


Figure 6.323

3) Press F1 (Condition Setting).

The Condition Setting Submenu will appear.

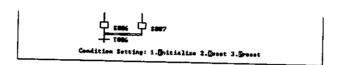


Figure 6.324

4) Press F1 (Initialize).

A screen for SFC Mode Initialize will appear.

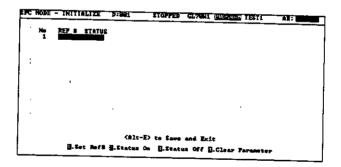


Figure 6.325

- 5) Enter the reference number that will be the start condition at AR:.
- 6) Press F1 (Set Reference Number).

6

6.7.11 SFC Mode Submenu cont.

The reference number can also be set by pressing the Enter Key after entering the reference number at AR:.

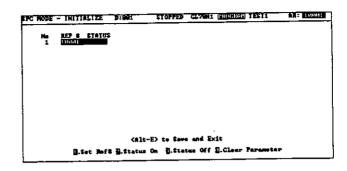


Figure 6.326

- 7) Press F2 (Status ON) or F3 (Status OFF) to select initialize condition ON or OFF.
- 8) Press the Alt + E Keys to save the settings.

An alternative method is to press the Esc Key and enter "Y" or "N" when the confirmation message appears asking whether to save changes.

Note A network that is not SFC must be created in order to turn a specified reference ON or OFF.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SCM" at AR: and press the Enter Key to display the Condition Setting Submenu.
- c) Enter "INIT" at AR: and press the Enter Key to display the SFC Mode Initialize Screen.

2. Reset Setting

Reset Setting inactivates steps in SFC processing (no processing). Multiple settings can be used for reset conditions.

- 1) Press the Slash Key to display the Command Submenu.
- 2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.

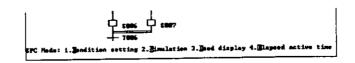


Figure 6.327

3) Press F1 (Condition Setting).

The Condition Setting Submenu will appear.

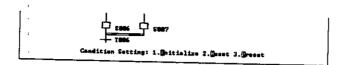


Figure 6.328

4) Press F2 (Reset).

The SFC Mode Reset Screen will appear.

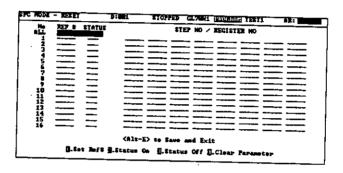


Figure 6.329

A maximum of 8 steps can be reset per condition, and 64 conditions can be set in total.

- 5) Enter the reference number at AR:.
- 6) Press F1 (Set Reference Number).

Press the Page Up or Page Down Key to switch input screens after the 16th reference number.

Resetting all condition settings (setting to ALL) initializes conditions and resets all programmed steps.

7) Press F2 (Status ON) or F3 (Status OFF) to select reset condition ON or OFF.

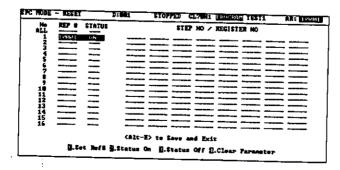


Figure 6.330

6.7.11 SFC Mode Submenu cont.

- 8) Move the cursor to the setting area for step numbers.
- 9) Enter the step number at AR:.

If an Input Register (30001 or higher) is set instead of a step, the step with the register data will be reset.

Register	Data	
30001	20	S020 is set.

10) Press F1 (Set Step).

An alternative method is to enter the reference number at AR; and press the Enter Key.

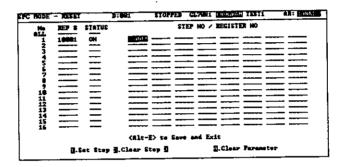


Figure 6.331

11) Press the Alt + E Keys to save the settings.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SCM" at AR: and press the Enter Key to display the Condition Setting Subme-
- c) Enter "RESET" at AR: and press the Enter Key to display the SFC Mode Reset Screen.

3. Preset Settings

The following procedure is used to activate (process) a step where SFC processing was terminated.

1) Press the Slash Key to display the Command Submenu.



Figure 6.332

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.

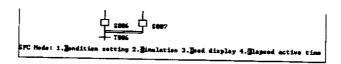


Figure 6.333

3) Press F1 (Condition Setting).

The Condition Setting Submenu will appear.



Figure 6.334

4) Press F3 (Preset).

The SFC Mode Preset Screen will appear.

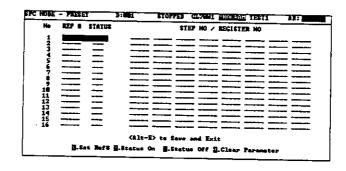


Figure 6.335

A maximum of 8 steps can be reset per condition, and 64 conditions can be set in total.

5) Enter the reference number at AR:.

Press the Page Up or Page Down Key to switch input screens after the 16th reference number.

6) Press F1 (Set Reference Number).

6.7.11 SFC Mode Submenu cont.

7) Press F2 (Status ON) or F3 (Status OFF) to select preset condition ON or OFF.

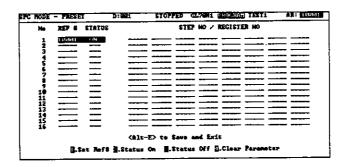


Figure 6.336

- 8) Move the cursor to the setting area for step numbers.
- 9) Enter the step number at AR:.

If an input register (30001 or higher) is set instead of a step, the step with the register data will be reset.

Register	Data	
30001	20	S020 is set

10) Press F1 (Set Step).

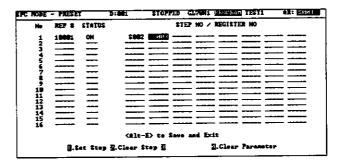


Figure 6.337

11) Press the Alt + E Keys to save the settings.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SCM" at AR: and press the Enter Key to display the Condition Setting Submenu.

c) Enter "PRE" at AR: and press the Enter Key to display the SFC Mode Preset Screen.

4. Simulation Settings

Simulation Settings are useful for debugging programs with SFC simulation operation.

A. Active Function

The Active function activates steps which are out of processing order. Processing automatically moves to the next step.

1) Press the Slash Key to display the Command Submenu.



Figure 6.338

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.

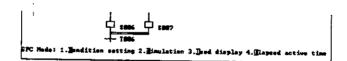


Figure 6.339

3) Press F2 (Simulation).

The Simulation Submenu will appear.



Figure 6.340

- 4) Move the cursor to the desired step.
- 5) Press F1 (Active).

Processing will begin from the step at the cursor position.

Original processing that was in progress will continue unchanged.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "ACT" at AR: and press the Enter Key to start processing from the step at the cursor position.

B. Disable Function

A disabled step will not become active even when its turn to execute comes around. The Disable function disables steps so they will not execute during program editing or other operations.

1) Press the Slash Key to display the Command Submenu.

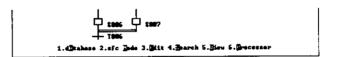


Figure 6.341

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.



Figure 6.342

3) Press F2 (Simulation).

The Simulation Submenu will appear.

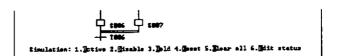


Figure 6.343

- 4) Move the cursor to the desired step.
- 5) Press F2 (Disable).

Press F4 (Reset) to cancel the Disable function.

The step at the cursor position will be disabled.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "DA" at AR: and press the Enter Key to disable the step at the cursor position.

C. Hold Function

If a step on hold becomes active when its turn to execute comes around, active status will be maintained and processing will not continue until the hold is canceled.

1) Press the Slash Key to display the Command Submenu.

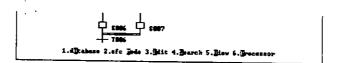


Figure 6.344

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.

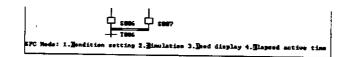


Figure 6.345

3) Press F2 (Simulation).

The Simulation Submenu will appear.

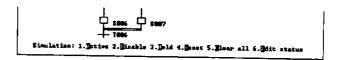


Figure 6.346

6

4) Move the cursor to the desired step.

5) Press F3 (Hold).

Press F4 (Reset) to cancel the Hold function.

The step at the cursor position will be on hold.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "HLD" at AR: and press the Enter Key to put the step at the cursor position on hold.

5. Single-screen Editing for Simulations

The following procedure is used to execute the three simulation operations described in Simulation Settings, based on a list from the Edit Screen.

1) Press the Slash Key to display the Command Submenu.

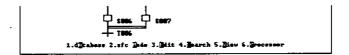


Figure 6.347

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.



Figure 6.348

3) Press F2 (Simulation).

The Simulation Submenu will appear.

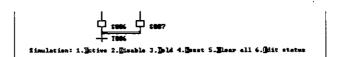


Figure 6.349

4) Press F6 (Edit Status).

The Step Status Display will appear.

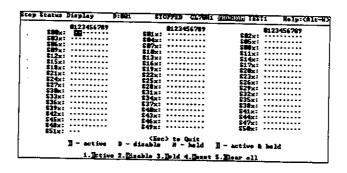


Figure 6.350

5) Select a simulation function from the Function Menu.

The Status Display for all references will appear as follows after settings are entered.

Active Status:

Α

Hold Status:

D

Disabled Status:

Active and Hold Status: Reversed H

6) Press the Alt + E Keys to save the settings.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SSM" at AR: and press the Enter Key to display the Simulation Submenu.
- c) Enter "FORED" at AR: and press the Enter Key to display the Step Status Display.

6.7.12 Displaying SFC Use Status

The following describes the list display for SFC step and transition numbers in use.

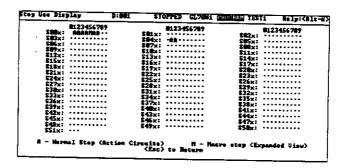


Figure 6.351 SFC Use Status Display

6.7.12 Displaying SFC Use Status cont.

S001 to S512 are all displayed.

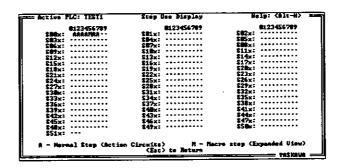


Figure 6.352

In the above example, steps S001 to S007 will be used in the program. Steps S004 and S007 are macro steps.

Operations cannot be applied to items on the list because the list is strictly for display purposes only. The same is true for the transitions list display.

Transition Use Status

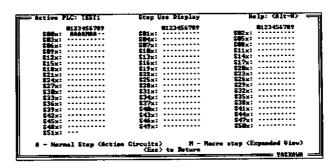


Figure 6.353

"T" will appear at transitions in use.

Displaying Steps and Transitions

The following procedure is used to display a list of all step (S001 to S512) and transition (T001 to T512) numbers and also indicates whether they are in use in a program.

1) Press the Slash Key to display the Command Submenu.

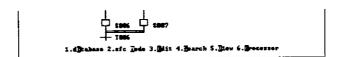


Figure 6.354

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.



Figure 6.355

3) Press F3 (Used Display).

The Used Display Submenu will appear.

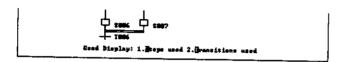


Figure 6.356

4) Press F1 (Steps Used) or F2 (Transitions Used) to display the respective Use Display Screen.

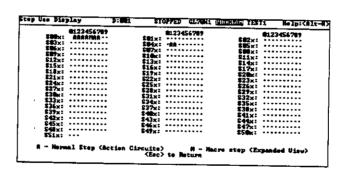


Figure 6.357

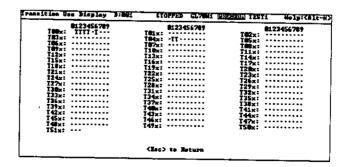


Figure 6.358

6.7.13 Displaying the Active Time Requirement

Since the Steps Used and Transitions Used are simply displays, individual elements displayed here cannot be changed.

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "SUM" at AR: and press the Enter Key to display the Used Display Submenu.
- c) Enter "STEPU" for Steps or "TRANU" for Transitions at AR: and press the Enter Key to display the respective Use Display screen.

6.7.13 Displaying the Active Time Requirement

The following procedure is used to display the time required for a step to become inactive after it becomes active.

1) Press the Slash Key to display the Command Submenu.



Figure 6.359

2) Press F2 (SFC Mode).

The SFC Mode Submenu will appear.



Figure 6.360

3) Press F4 (Elapsed Active Time).

The time chart will appear.

A Step is active as long as A is displayed. I indicates inactive status.

Initially 32 steps ranging from S001 to S032 are displayed. Enter a step number in the assembly register and press the Enter Key to display 32 steps starting from the number that was entered.

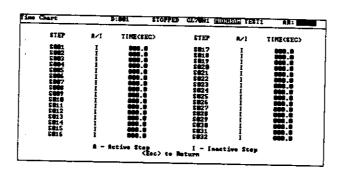


Figure 6.361

Shortcuts

- a) Enter "SMM" at AR: and press the Enter Key to display the SFC Mode Submenu.
- b) Enter "EAT" at AR: and press the Enter Key to display the Time Chart.

6

6.8 Displaying and Editing Comments on the Network/SFC Screen

The following procedure is used to display or edit any instructions or network comments in Online editing. Comment data is read from databases created in Offline mode rather than from the memory of the GL60 CPU.

6.8.1 Displaying the Comment Window

1) Open Select Database from the Main Menu or the Online Edit Menu to select the database with comments that will be displayed.

Refer to 3.1.3 Selecting a Database for more details on the procedure for selecting a database.

2) Press the Slash Key from the Network or SFC Screen.

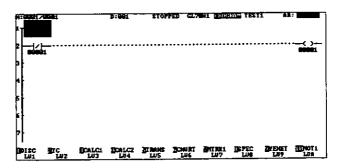


Figure 6.362

3) Press F5 (View).

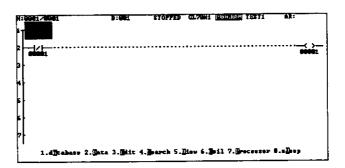


Figure 6.363

4) Press F2 (Window) to display the Comment Window on screen.

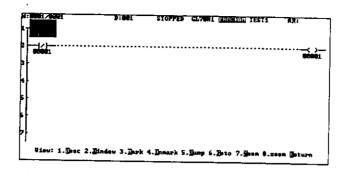


Figure 6.364

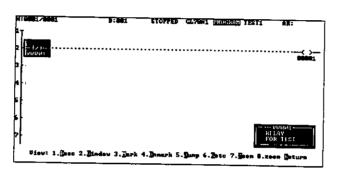


Figure 6.365

6.8.2 Displaying Descriptors on the Screen

1) Press the Slash Key from the Network or SFC Screen.

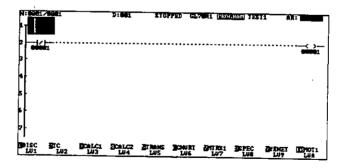


Figure 6.366

6

6.8.2 Displaying Descriptors on the Screen cont.

2) Press F5 (View).

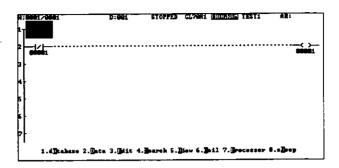


Figure 6.367

3) Press F1 (Desc) to display the signal descriptors of all addresses on the screen.

When signal descriptors are displayed, that part of the screen is enlarged so the entire screen cannot be seen. Use the cursor to scroll through the screen.

Press F1 (Desc) again to return to the original screen.

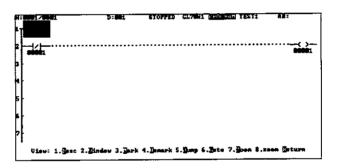


Figure 6.368

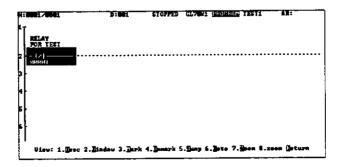


Figure 6.369

Refer to 4.4 Editing Comments for more details on the procedure for editing comments.

Note (1) The comment data that will be displayed is read from the database created on the hard disk of the computer. Therefore the database with the target comments must be selected prior to opening the Network or SFC Screen.

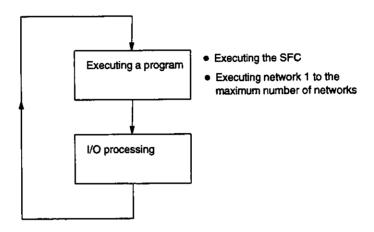
(2) Processors with Comment Memory

Comment operations in MEMOCAD-PRO are carried out using all database data. Therefore even if a Processor has comments, those comments cannot be displayed or edited.

6

6.9 Controlling Scanning

Briefly, internal processing in a Processor is a matter of executing a program, processing I/O, and then repeating the cycle as shown in the figure below.



One cycle of program execution and I/O processing occurs in a single scan. One scan normally takes about 5 to 10 ms, but it varies with the size of the program.

The following sections describe two functions related to scans.

- Single Sweep Executes just one scan for simulation.
- Constant Sweep Sets the time it takes for a single sweep and fixes the scan time.

6.9.1 Executing One Scan: Single Sweep

The following procedure is used to execute a program for one scan, and can be used to simulate network operations and calculations. Make sure that the Processor is stopped when executing a Single Sweep.

- 1) Display the network or reference (Reference Area) that will be scanned.
- 2) Press the Slash Key to display the Command Submenu.

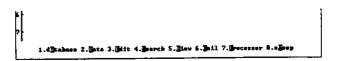


Figure 6.370

3) Press F8 (Sweep).

An alternative method is to enter "W" from the Command Submenu.

The Sweep Submenu will appear.



Figure 6.371

4) Press F1 (Single).

An alternative method is to enter "S" from the Sweep Submenu.

A confirmation message will appear asking whether to proceed.



Figure 6.372

5) Make sure that "Y" is entered, and press the Enter Key.

Enter "N" and press the Enter Key to cancel the operation.

A single scan will be executed.

Note (1) I/O Module are not serviced during a single sweep.

(2) Certain measures have to be taken when conducting an actual simulation, such as disabling input relays.

6.9.2 Setting the Scan Time: Constant Sweep

The following procedure is used to set and fix the scan time for a Processor. Scan time is fixed to minimize fluctuations at times such as during simple positioning control. The following registers are used while the Constant Sweep function is in use.

• 49998: The target value is entered here.

 49999: This is the time required for an actual scan. (in ms, but changes in 10-ms increments) 6.9.2 Setting the Scan Time: Constant Sweep cont.

These registers are available as long as the Constant Sweep function is not in use.

- 1) Press the Slash Key to display the Command Submenu.
- 2) Press F8 (Sweep).

An alternative method is to enter "W" from the Command Submenu.

The Sweep Submenu will appear.



Figure 6.373

3) Press F1 (Constant).

An alternative method is to enter "C" from the Sweep Submenu.

The input screen for setting scan time will appear.



Figure 6.374

4) Enter the scan time and press the Enter Key.

Scan time is set between 10 and 200 ms (10-ms increments). Any input value that is lower than the actual scan time will be ignored.

A confirmation message will appear asking whether to proceed.

5) Make sure that "Y" is entered, and press the Enter Key.



Figure 6.375

Enter "N" and press the Enter Key to cancel the operation.

Scan time will be set to constant.

6.9.3 Canceling a Constant Sweep

The following procedure is used to cancel a constant sweep.

- 1) Press the Slash Key to display the Command Submenu.
- 2) Press F8 (Sweep).

An alternative method is to enter "W" from the Command Submenu.

The Sweep Submenu will appear.

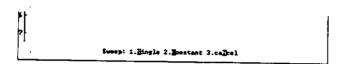


Figure 6.376

3) Press F3 (Cancel).

An alternative method is to enter "N" from the Sweep Submenu.

A confirmation message will appear asking whether to proceed.

4) Make sure that "Y" is entered, and press the Enter Key.



Figure 6.377

Enter "N" and press the Enter Key to cancel the operation.

5) Constant Sweep will be canceled.

6.10 Traceback

The Traceback function displays coil ON/OFF status and register values in time-series waveforms on screen. It can be used to sample discrete status up to a maximum of 8 points as well as a set of register values.

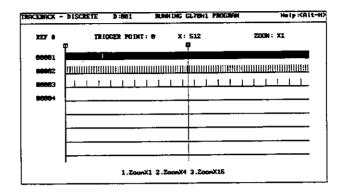


Figure 6.378 Example of Discrete I/O Sampling

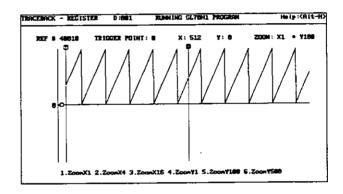


Figure 6.379 Example of Register Sampling

6.10.1 Displaying the Setup Screen

The following procedure is used to display the Traceback Setup Screen.

1) Select 3. Online from the Main Menu.

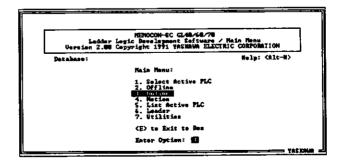


Figure 6.380

6

2) Select 1. Program Mode from the Menu Options to go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

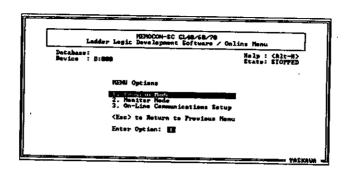


Figure 6.381

3) Select 4. Trace Back from the Edit Options.

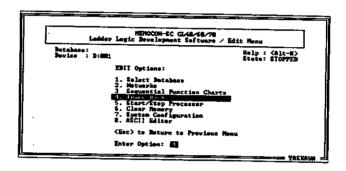


Figure 6.382

The Traceback Setup Screen will appear.

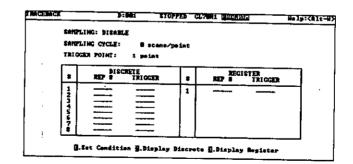


Figure 6.383

6.10.2 Setting Conditions

The following settings must be entered prior to sampling.

6.10.2 Setting Conditions cont.

• Reference Number: Sets the reference number to be sampled.

• Trigger Condition: Sets the condition for starting sampling.

• Sampling Cycle: Sets the number of scans per sampling.

• Trigger Point: Sets the sampling range.

The following procedure is used to enter the settings above.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

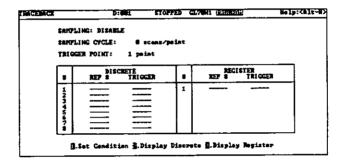


Figure 6.384

2) Press F1 (Set Condition).

The Traceback Set Condition Menu will appear along with a cursor.

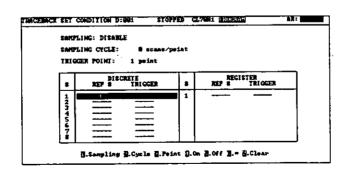


Figure 6.385

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

3) Refer to the following items to set conditions.

1. Setting the Reference Number and Trigger Condition

The following procedure is used to set the reference number and trigger condition for a coil or register that will be traced back. The trigger condition is the condition for starting a traceback, and sampling will begin when these conditions are met. Be sure to set when a certain coil will be ON or OFF or when a register value will be used for the setting. The setting procedure is described below using an actual example.

The ON/OFF status of coils 00001, 00002, 00003 and 00004 as well as the value at register 40010 are sampled when coil 00001 is ON set as the trigger condition.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

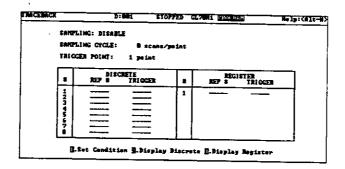


Figure 6.386

2) Press F1 (Set Condition).

The Traceback Set Condition Menu will appear along with a cursor.

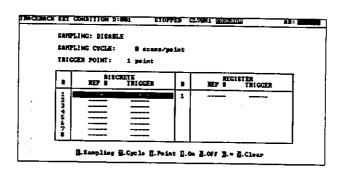


Figure 6.387

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

3) Move the cursor to the first discrete I/O position.

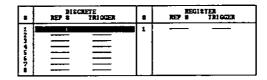


Figure 6.388

4) Enter the discrete address at AR: and press the Enter Key.

AR: 00001

Figure 6.389

The value at AR: will be entered at the reference number at the cursor position.

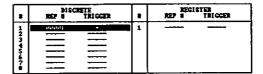


Figure 6.390

5) Press F4 (ON) with the cursor at the above position.

ON will be entered at the trigger position, and the trigger condition will be set.

	REF # TRIGGER].	RECISTER REP I TRIGGER	
1	1111111111	ON	1		
2 □			TI I		
4 [1 1		
5			11		
<u> </u>			1 1		
íl			ĺ		

Figure 6.391

6) Move the cursor down one line.

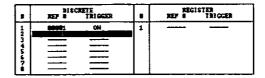


Figure 6.392

7) Enter the reference numbers for 00002, 00003 and 00004 the same way as was done with 00001.

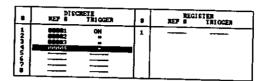


Figure 6.393

- 8) Move the cursor to the register field.
- 9) Enter 40010 again as was done with 00001.

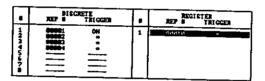


Figure 6.394

The reference numbers will be set.

2. Clearing Settings

The following procedure is used to change or delete a set reference number or trigger condition.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

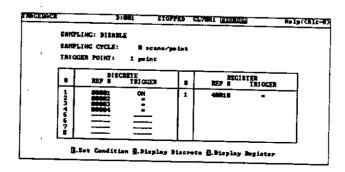


Figure 6.395

6.10.2 Setting Conditions cont.

2) Press F1 (Set Condition).

The Traceback Set Condition Menu will appear along with a cursor.

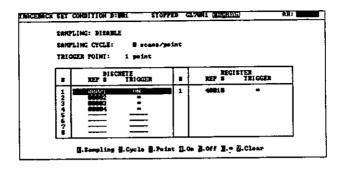


Figure 6.396

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

3) Move the cursor to the reference number that will be cleared.

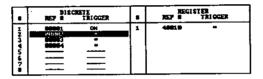


Figure 6.397

4) Press F7 (Clear).

The contents at the cursor position will be cleared.

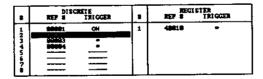


Figure 6.398

3. Setting the Sampling Cycle

The following procedure is used to set the sampling cycle (the number of scans per cycle) within a range of 1 through 65535.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

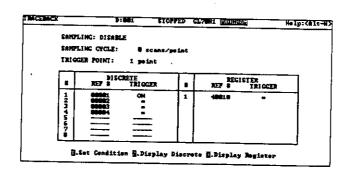


Figure 6.399

2) Press F1 (Set Condition).

The Traceback Set Condition Menu will appear along with a cursor.

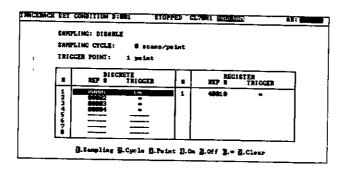


Figure 6.400

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

3) Press F2 (Cycle).

The input window for entering the sampling cycle will appear.



Figure 6.401

6.10.2 Setting Conditions cont.

4) Enter the cycle and press the Enter Key.



Figure 6.402

The cycle will be set.



Figure 6.403

4. Setting the Trigger Point

The following procedure is used to set the number of points to between 1 and 1,024 when sampling will occur after the Trigger Condition is met.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

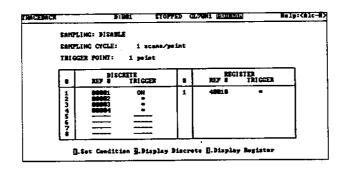


Figure 6.404

2) Press F1 (Set Condition).

The Traceback Set Condition Menu will appear along with a cursor.

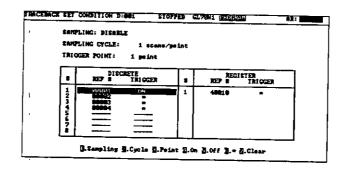


Figure 6.405

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

3) Press F3 (Point).

The input window for entering the trigger point will appear.



Figure 6.406

4) Enter the trigger point and press the Enter Key.



Figure 6.407

The trigger point will be set.

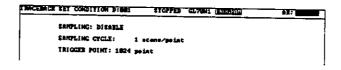


Figure 6.408

6.10.3 Executing a Traceback

6.10.3 Executing a Traceback

The following procedure is used to execute a traceback to conduct a sampling.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

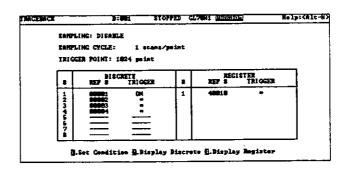


Figure 6.409

2) Press F1 (Set Condition).

The Set Conditions Menu will appear along with a cursor.

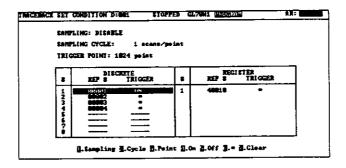


Figure 6.410

Moving the Cursor

Moving up, down, left or right: Press the Up, Down, Left or Right Cursor Key.

3) Press F1 (Sampling).

A confirmation message will appear asking whether to proceed.



Figure 6.411

4) Make sure that "Y" is entered, and press the Enter Key.

Sampling will begin.

When sampling is enabled, the system is ready for a traceback and will wait for conditions to be met. Once the conditions are met, traceback will be executed and sampling will begin.

A message will appear after sampling is completed.

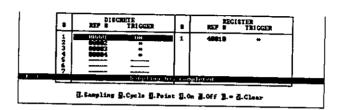


Figure 6.412

A message will not appear if the Set Conditions Menu is not displayed at the bottom of the screen.

5) Press any key to cancel the message.

Note Sampling will not take place if the Processor is stopped. In that case, return to the Edit Menu and start the Processor before trying again. Refer to 6.4 Starting and Stopping a Processor for more details on the procedure for starting a Processor.

6.10.4 Displaying Sampling Results for Discrete Addresses

The following procedure is used to display the sampling results for discrete addresses.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

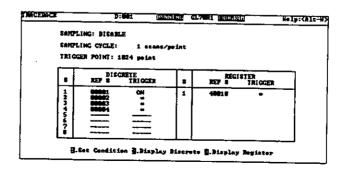


Figure 6.413

6.10.5 Displaying Sampling Results for Register Addresses

2) Press F2 (Display Discrete).

If the Set Conditions Menu is displayed, press the Esc Key to return to the previous functions menu (Figure 6.413).

The discrete sampling results will appear.

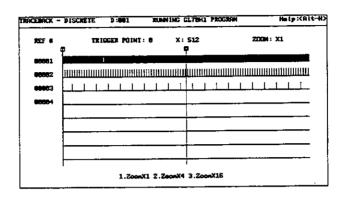


Figure 6.414

The display of X axis can be enlarged from the function menu.

F1 (ZoomX1): Enlarges 1 time. F2 (ZoomX4): Enlarges 4 times. F3 (ZoomX16): Enlarges 16 times.

The enlarged display is much easier to see, such as when changing the ON/OFF status every scan.

6.10.5 Displaying Sampling Results for Register Addresses

The following procedure is used to display the sampling results for register addresses.

1) Display the Traceback Setup Screen.

Refer to 6.10.1 Displaying the Setup Screen for more details on the procedure for displaying the screen.

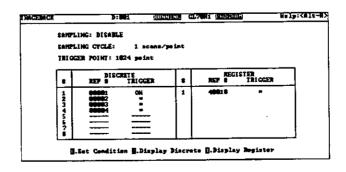


Figure 6.415

2) Press F3 (Display Register).

If the Set Conditions Menu is displayed, press the Esc Key to return to the previous functions menu (Figure 6.415).

The register sampling results will appear.

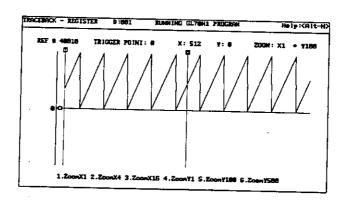


Figure 6.416

The display of X and Y axes can both be enlarged from the function menu.

F1 (ZoomX1):

Enlarges X 1 time.

F2 (ZoomX4):

Enlarges X 4 times.

F3 (ZoomX16): Enlarges X 16 times.

F4 (ZoomY1):

Enlarges Y 1 time.

F5 (ZoomY100): Enlarges Y 100 times.

F6 (ZoomY500): Enlarges Y 500 times.

The Y axis direction does not change appreciably at register values below 100 unless the display is enlarged.

6.11.1 Executing Clear Memory

6.11 Clearing Memory

The User Memory in the Processor is composed of Program Memory, Register Memory, Allocation Memory, and Comment Memory for Networks and SFCs. When the data in memory are not needed, or an error occurs, the memory can be cleared. Please note however that memory cannot be restored once it is cleared.

The following memory partitions can be selected.

Mode Memory

SFC Memory:

SFC Screen

Action Transition All SFCs

Ladder Memory

Subroutine Memory

• I/O Allocation Memory:

I/O Allocation
Link Allocation

ASCII Allocation

High-speed Station Allocation

All Allocations

• Register Memory:

Holding Register Constant Register

Expansion Memory Register

All Registers

• Comment Memory:

SFC Comments

Extension Comments Extension Symbols

All Comments

All Memory

6.11.1 Executing Clear Memory

The following procedure is used to clear memory.

1) Select 3. Online from the Main Menu.

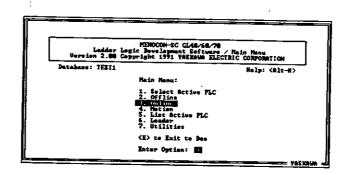


Figure 6.417

2) Select 1. Program Mode from the Menu Options to go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

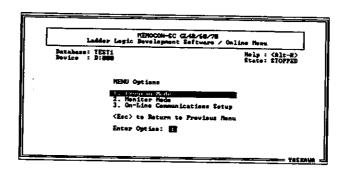


Figure 6.418

3) Select 6. Clear Memory from the Edit Options.

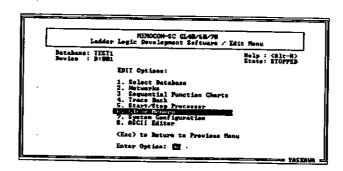


Figure 6.419

6

The Clear Processor Memory Menu will appear.

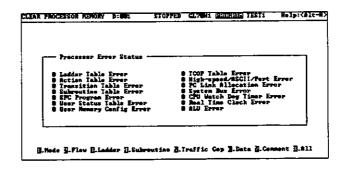


Figure 6.420

4) Select the memory that will be cleared from the Clear Processor Memory Menu.

A confirmation message will appear asking whether to proceed.

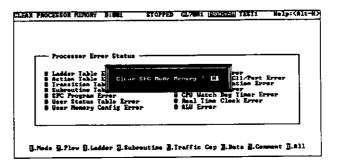


Figure 6.421

5) Enter "Y" and press the Enter Key.

The operation will be executed, and the memory that was selected will be cleared.

Memory cannot be restored once it is cleared.

6.12 System Configuration

The following procedure is used to define the Processor configuration, I/O Module allocation, PC Link allocation, ASCII Module, High-speed Station allocation and YENET.

1) Select 3. Online from the Main Menu.

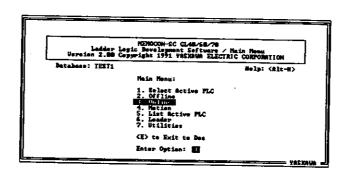


Figure 6.422

2) Select 1. Program Mode from the Menu Options.

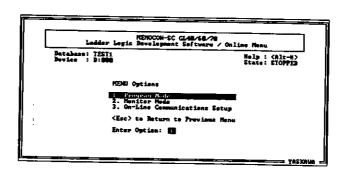


Figure 6.423

3) Enter the address of the device with which to go online.

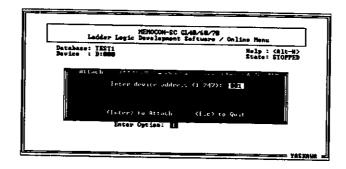


Figure 6.424

6

4) Select 7. System Configuration from the Edit Options.

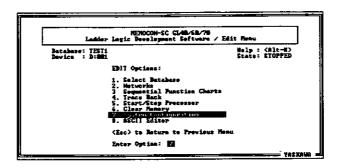


Figure 6.425

The System Configuration Menu will appear.

Note (1) Return to the Edit Menu and stop the Processor before entering or changing settings from this menu.

(2) Only referencing is available while the Processor is operating.

6.12.1 Processor Configuration

The following procedure is used to set memory, segment allocation and communications port parameters in the Processor.

Select 1. Processor Configuration from the System Configuration Options.

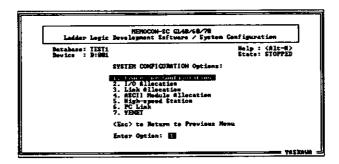


Figure 6.426

The Processor Configuration Menu will appear

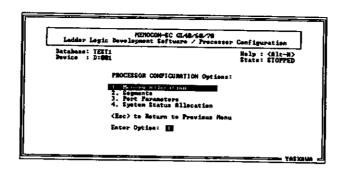


Figure 6.427

1. Allocating Memory

The following procedure is used to allocate user memory to action, transition condition, and subroutine circuits.

1) Select 1. Memory Allocation from the Processor Configuration Menu.

A screen for allocating memory will appear.

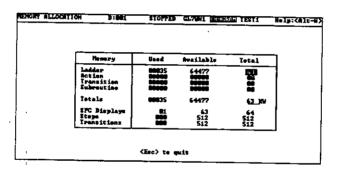


Figure 6.428

2) Set the ladder memory allocation, as well as the action, transition condition, and subroutine circuit memory allocations so they equal the total memory that is available.

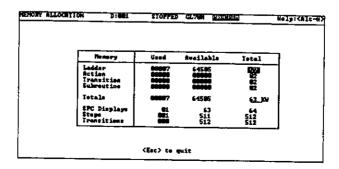


Figure 6.429

6.12.1 Processor Configuration cont.

Moving the Cursor

Moving up or down: Press the Up or Down Cursor Key.

- 3) Press the Esc Key after all the settings are entered.
- 4) A confirmation message will appear asking whether to save the settings. Enter "Y" or "N" and press the Enter Key.

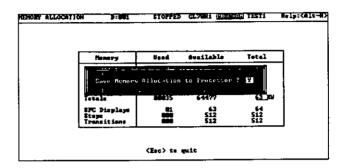


Figure 6.430

The total memory that was set cannot be saved if it is different from the total that is displayed. Also action, Transition and Subroutine Memory are a maximum of 16 Kwords.

2. Setting the 2-Level Scans

All networks are divided into a maximum of eight segments. The scan level is set in order to reduce scan time by setting one segment as a high-speed segment (executed every scan) and the rest as low-speed segments (number of segments - executed once per scan).

Set the following in order to execute the 2-level scan.

- 1) Scan level settings
- 2) Segment allocation

A. Setting the Scan Level

The following procedure is used to set the scan level. Usually the scan level is set to 1 but set the level to 2 for 2-level scans.

1) Select 2. Segments from the Processor Configuration Menu.

The Segment Assignment Screen will appear.

2) Press F1 (Scan Level).

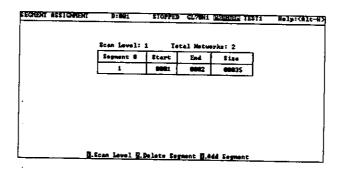


Figure 6.431

The Scan Level Settings switch between 1 and 2.

This processing shortens the scan time in 2-level scanning. Refer to *MEMOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1)* for more details. Segments can be allocated if the scan level is set to 2.

Note Segments cannot be allocated with GL40S1, GL40S2 or GL40S3 Processors because these Processors cannot be set to scan level 2.

B. Adding Segments

The following procedure is used to allocate segments.

1) Select 2. Segments from the Processor Configuration Menu.

The Segment Assignment Screen will appear.

- 2) Press F1 (Scan Level) to set the Scan Level to 2.
- 3) Press F3 (Add Segment) to add segment (up to segment #8).

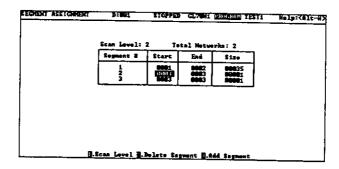


Figure 6.432

6.12.1 Processor Configuration cont.

Examples of entries when adding segments are given below.

Example: Allocating the Following 30 Networks

- 1 through 10 → Segment 1
- 11 through 20 → Segment 2
- 21 through 30 → Segment 3

Operating Procedure

- 1) Select 2. Segments from the Processor Configuration Menu.
- 2) From the Segment Assignment Screen, press F3 (Add Segment) once for each segment added.
- 3) Move the cursor to segment 2.
- 4) Enter the first network number for segment 2.
- 5) Move the cursor to segment 3.
- 6) Enter the first network number for segment 3.
- 7) Press the Enter Key.
- 8) Press the Esc Key to save the settings.

Note A segment that was added will be deleted if the Scan Level is changed after the segment was added.

C. Deleting Segments

The following procedure is used to reduce the number of segments. Be sure to return the number of segments to 1 when exiting the 2-level scan.

1) Select 2. Segments from the Processor Configuration Menu.

The Segment / gnment Screen will appear.

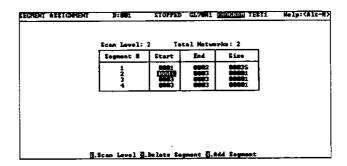


Figure 6.433

2) Press F2 (Delete Segment) to begin deleting segments starting from the largest Segment Number.

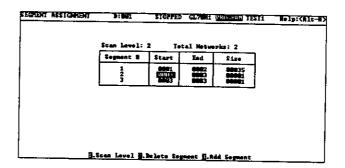


Figure 6.434

3. Setting Port Parameters

The following procedure is used to set port parameters.

1) Select 3. Port Parameters from the Processor Configuration Menu.

The MEMOBUS Port Configuration Screen will appear.

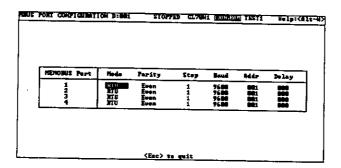


Figure 6.435

2) Move the cursor to the item that will be set, and press the Space Key or press the Left or Right Cursor Key to switch settings.

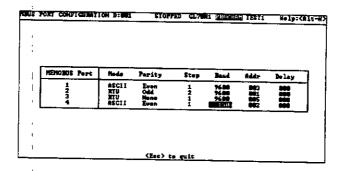


Figure 6.436

6.12.1 Processor Configuration cont.

- 3) Move the cursor to Addr (Address) and Delay, and enter these values.
- 4) Press the Esc Key after all settings are entered.
- 5) A confirmation message will appear asking whether to save the changes. Enter "Y" or "N" and press the Enter Key.

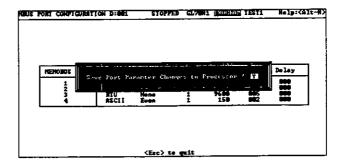


Figure 6.437

Parameter settings are given below.

Mode: ASCII or RTU

• Parity: None, odd and even

• Stop bits: 1 or 2

Baud rate:150, 300, 600, 1,200, 2,400, 4,800, 9,600 or 19,200 baud

Address: 1 through 247 (Device Address)

• Delay: Time from sending to receiving an instruction (10-ms increments)

GL60 Series factory settings for port parameters are given below.

• Mode: RTU

• Parity: Even

• Stop bits: 1

• Baud rate:9,600

• Address: 1

• Delay: 0

4. Setting System Status Allocation

The following procedure is used for system status allocation to enable CPU error status as well as the status of all Modules to be monitored even with the CPU stopped.

1) Select 4. System Status Allocation from the Processor Configuration Menu.

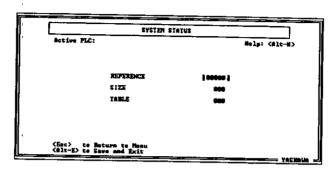


Figure 6.438

2) Enter the reference number, number of registers, and status table number from the keyboard.

Reference number setting range: 4xxxx or Rxxxx Number of registers setting range: 1 through 106 Status table number setting range: 1 through 106

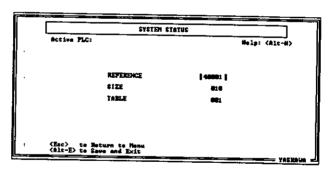


Figure 6.439

3) After the settings are entered, press the Alt + E Keys to save them.

Note System Status cannot be set unless the Processor is stopped, and System Status Allocation is only available when GL60H, GL60HT, GL70H or GL70HT is selected.

6.12.2 I/O Allocation

I/O Allocation is used to specify channels, stations, and racks, and to allocate I/O status to each slot. The GL60 and GL70 I/O Sections use a fully independent free location system that allows any I/O Module to be placed in any slot. Therefore I/O numbers corresponding to the type of Module mounted in a slot must be allocated to the slot in advance. Refer to *Appendix D I/O Configurations of GL Series* for more details on the procedure for configuring I/O sections like channels and racks.

6

1. Displaying the I/O Allocation Screen

The following procedure is used to display the I/O Allocation Screen.

1) Select 3. Online from the Main Menu.

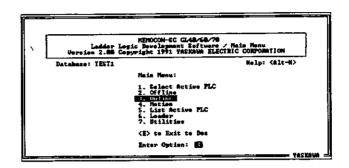


Figure 6.440

2) Select 1. Program Mode from the Menu Options to go online with a Processor.

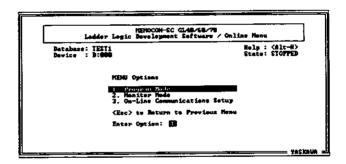


Figure 6.441

3) Select 7. System Configuration from the Edit Options.

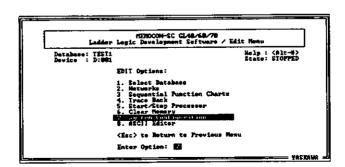


Figure 6.442

4) Select 2. I/O Allocation from the System Configuration Options.

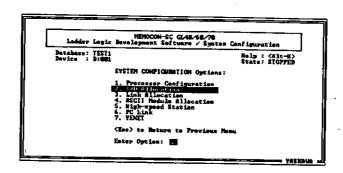


Figure 6.443

The I/O Allocation Screen will appear.

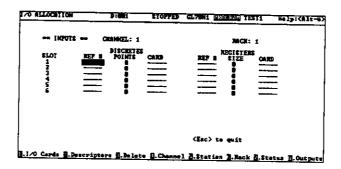


Figure 6.444

2. Setting Channels

Channels and stations must be specified for remote station I/O allocation. Channels can be specified from 1 to 3 (2 and 3 are remote stations). The following procedure is used to display stations on screen when channel 2 or higher is set. (There is no station at Channel 1.)

1) Press F4 (Channel) from the I/O Allocation Screen.

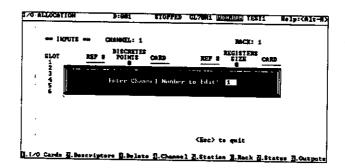


Figure 6.445

6

2) Enter a channel number (2 or 3) and press the Enter Key.

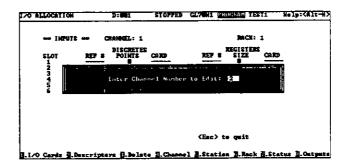


Figure 6.446

The screen will switch to the channel number that was selected.

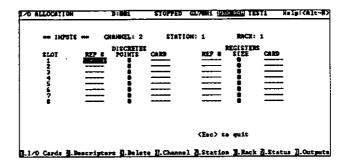


Figure 6.447

A rack must be specified if multiple racks are used.

Refer to Appendix D I/O Configurations of GL Series for more details on the procedure for configuring remote I/O.

Channels cannot be set for the GL40.

3. Setting Stations

Channels and stations must be specified for remote station I/O allocation. A maximum of 31 stations can be specified per channel. The following procedure is used to display stations on screen when channel 2 or higher is set. (There is no station at channel 1.)

1) Press F5 (Station) from the I/O Allocation Screen.

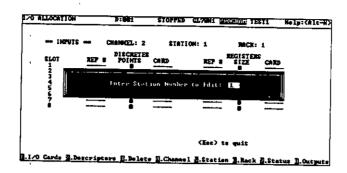


Figure 6.448

2) Enter a station number (1 through 31) and press the Enter Key.

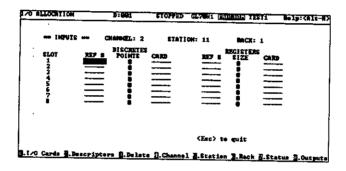


Figure 6.449

A rack must be specified if multiple racks are used.

Refer to Appendix D I/O Configurations of GL Series for more details on the procedure for configuring remote I/O.

Stations cannot be set in the GL40.

4. Setting Racks

The following procedure is used to specify up to five racks for channel 1, and up to four racks for channels 2 or 3. The GL40 does not have channels 2 and 3, so only up to four racks are specified.

1) Press F6 (Rack) from the I/O Allocation Screen.

6

Press the Page Up or Page Down Key to change racks. Rack numbers increase or decrease by one each time the key is pressed.

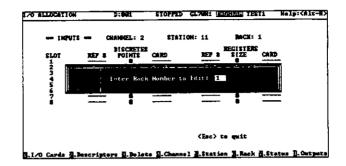


Figure 6.450

2) Enter a rack number (1 through 4).

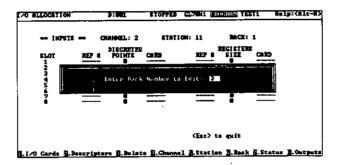


Figure 6.451

3) Press the Enter Key.

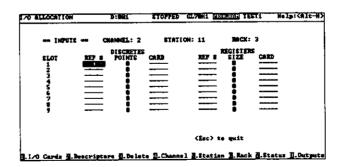


Figure 6.452

5. Switching between Input and Output Screens

The following procedure is used to switch between Input and Output Screens.

- 1) Display the I/O Allocation Screen.
- 2) The screen switches between input settings and output settings each time F8 is pressed.

6. I/O Allocation

I/O Allocation describes various allocation procedures.

Allocation items are described in the following order.

- 1) Setting reference numbers for registers
- 2) Setting number of registers
- 3) Entering I/O card descriptions for registers
- 4) Setting reference numbers for discrete I/O
- 5) Setting number of discrete I/O
- 6) Entering I/O card descriptions for discrete I/O
- 7) Displaying the allocation status list

7. Setting Reference Numbers for Registers

The following procedure is used to set reference numbers for registers.

1) Move the cursor to the register setting for Slot 1.

Moving the Cursor

Moving up or down:

Press the Up or Down Cursor Key.

Moving left or right:

Press the Tab Key or the Shift + Tab Keys.

2) Enter the address and press the Enter Key to move the cursor automatically to Size.

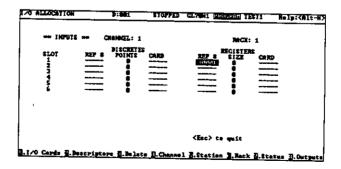


Figure 6.453

6

8. Setting the Number of Registers

The following procedure is used to set the number of registers.

Enter the number of registers and press the Enter Key.

The cursor will move automatically to Card.

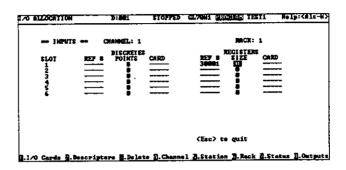


Figure 6.454

9. Entering I/O Card Descriptions for Registers

The following procedure is used to enter names for I/O Modules mounted in slots. Be sure to select a target database first since Module data is stored in a database.

1) Press F1 (I/O Cards) from the function label.

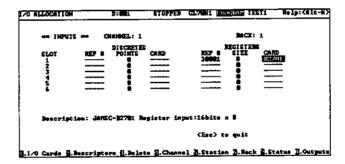


Figure 6.455

2) A list of I/O Cards will appear. Move the cursor to the desired card and press the Enter Key.

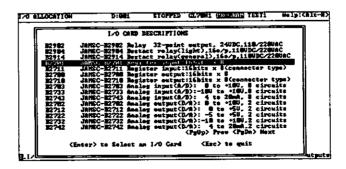


Figure 6.456

All I/O Cards are stored in the list, and can be selected from the list.

Card descriptions will be printed as slot data when allocation is printed using the printing function.

10. Setting Reference Numbers for Discrete I/O

The following procedure is used to set reference numbers for discrete I/O.

- 1) Move the cursor to the discrete I/O for slot 1.
- 2) Enter the address and press the Enter Key to move the cursor automatically to Points.

The xxxx part of the address (1xxxx or 0xxxx) must be in the form of $(8 \times n + 1)$. (n = 0, 1, 2, etc.)

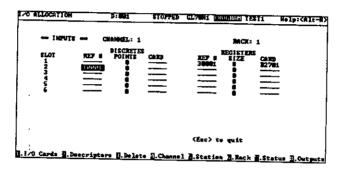


Figure 6.457

11. Setting Discrete I/O Points

The following procedure is used to set discrete I/O points.

Enter the point and press the Enter Key.

Discrete I/O points must be multiples of 8.

The cursor will move automatically to Card.

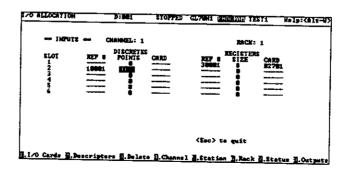


Figure 6.458

12.Entering I/O Card Descriptions for Discrete I/O

The following procedure is used to enter descriptions for I/O Cards mounted in slots. Be sure to select a target database first since I/O Card data is stored in a database.

1) Press F1 (I/O Cards) from the function label.

A list of I/O Cards will appear.

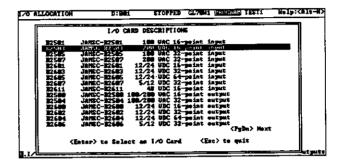


Figure 6.459

2) Move the cursor to the desired Card and press the Enter Key.

The I/O card description will be entered at the slot that was selected.

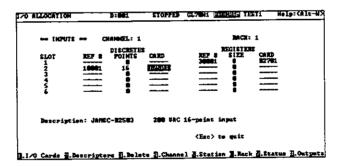


Figure 6.460

All I/O Cards are stored in the list, and can be selected from the list.

Card descriptions will be printed together with the allocation when the allocation is printed using the printing function.

13. Displaying the Allocation Status List

The following procedure is used to display a list of points used, maximum addresses, and other information for discrete I/O and registers.

1) Display the I/O Allocation Screen.

Refer to 1. Displaying the Allocate I/O Screen on page 6-174 for more details on the procedure for displaying the I/O Allocation Screen.

2) Press F7 (Status) to display the Allocation Status List.

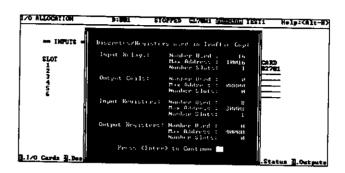


Figure 6.461

6.12.3 Individual PC Link Allocations

Individual PC Links are allocated in the Online Mode. Individual allocation is for PC Link Stations connected to a computer, and it can also be used for a standalone station that is not connected to another station through PC Link. Refer to 4.5.3 PC Link Allocation in the Offline Mode for more details on PC Links.

The cable from the computer may be connected to either the IOP or Link (IF64) port on the Processor. Allocation is also possible even without an IF64 Link Module connected to the station (Processor). Be sure to stop the CPU.

1) Go online with the Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

2) Select 7. System Configuration from the Edit Options.

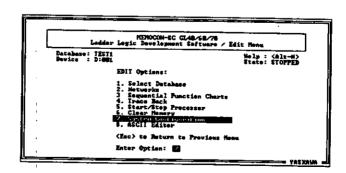


Figure 6.462

6.12.3 Individual PC Link Allocations cont.

3) Select 3. Link Allocation from the System Configuration Options.

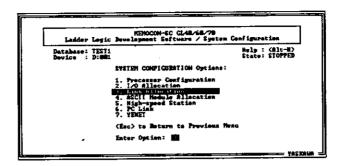


Figure 6.463

The Allocate PC Link Screen will appear.

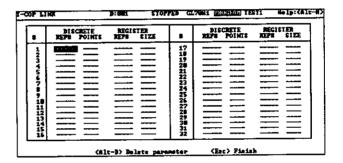


Figure 6.464

The allocation process will be described here using the following items.

1. Reference Numbers for Discrete I/O

The following procedure is used to allocate discrete reference numbers for all stations.

1) Move the cursor to the discrete I/O of the station that will be allocated.

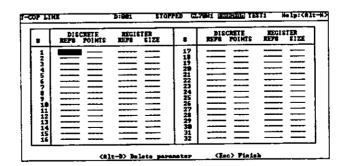


Figure 6.465

2) Enter the reference number and press the Enter Key to move the cursor automatically to Points.

The first address at all stations must be in the form of (16 x n + 1). (n = 0, 1, 2, etc.)

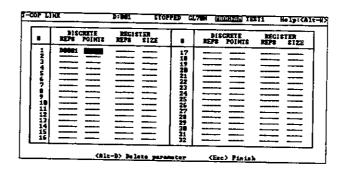


Figure 6.466

2. Discrete I/O Points

The following procedure is used to allocate discrete I/O points for all stations.

1) Move the cursor to the point that will be changed.

The discrete I/O points used with PC Link are D0001 to D1024. Enter the number of points (multiple of 16) for each station so it falls within the above range.

2) Enter the reference number and press the Enter Key to move the cursor automatically to "Ref #" (reference number).

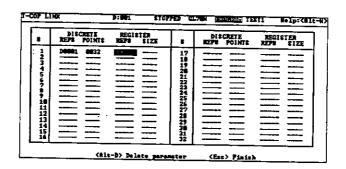


Figure 6.467

3. Setting Reference Numbers for Registers

The following procedure is used to allocate register reference numbers for all stations.

1) Move the cursor to Register at slot 1.

2) Enter the address and press the Enter Key to move the cursor automatically to Size.

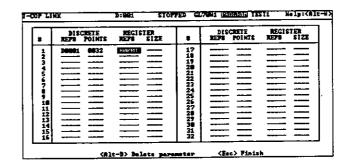


Figure 6.468

4. Setting the Number of Registers

The following procedure is used to set the number of registers.

Enter the number of registers and press the Enter Key.

The cursor will move automatically to "Module".

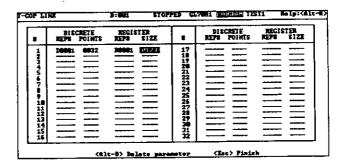


Figure 6.469

Changing settings: Press the Tab Key to move to where a change will be made, and enter the change.

Deleting an entry: Move the cursor to the reference number or number of registers to delete, and press the Alt + D Keys.

After entering the settings, press the Esc Key to save changes and exit.

The register range used with PC Link is R0001 to R1024.

6.12.4 Batch PC Link Allocations

PC Links are allocated in batches in Online Mode. Batch allocation is when all stations on a PC Link Network are allocated using one computer, and it allows specified stations or all stations to be allocated at once. The cable from the computer must be connected to the IF64 Link Module port on the Processor, and the station that will be allocated must be connected by Link Cable to the local station. Allocation cannot be performed if other Programming Panels are online with the stations that will be allocated.

Refer to 4.5.3 PC Link Allocation in the Offline Mode for more details on PC Links.

1) Select 2. Program Mode from the Main Menu to go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure. Here any Station Number on the PC Link can be specified as the address.

2) Select 7. System Configuration from the Edit Options.

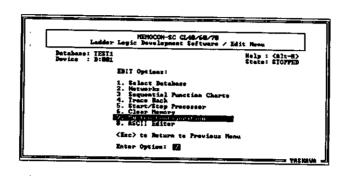


Figure 6.470

3) Select 6. PC Link from the System Configuration Options.

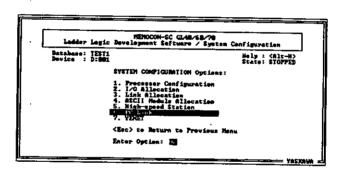


Figure 6.471

4) Press F4 (Edit Station) to display the input screen.

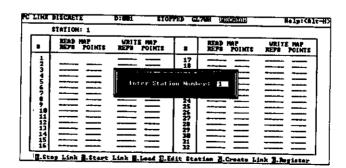


Figure 6.472

6.12.4 Batch PC Link Allocations cont.

5) Enter the station number that will be edited and press the Enter Key.

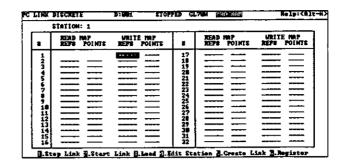


Figure 6.473

6) Enter the reference number that will be allocated and press the Enter Key.

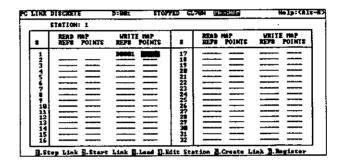


Figure 6.474

7) Enter the points and press the Enter Key.

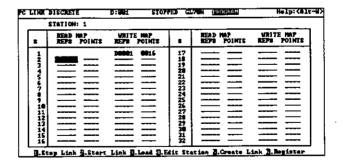


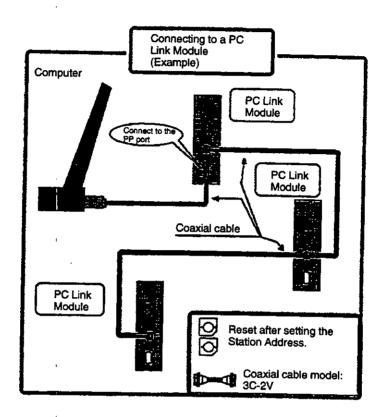
Figure 6.475

8) Press the Esc Key.

Press F5 (Create Link) to clear the Allocation Screen for a new allocation. Enter a new allocation when the screen is cleared.

If Load is not executed after allocation, the allocation prior to clearing the screen will remain.

Note When executing PC Links, be sure to connect the cable from the computer to the Programming Panel (PP port in diagram below) port of the PC Link Module before going online with a Processor.



PC Link Modules (IF64)

Features

- Allow high-speed data transfers between GL Processors.
- Require no communications program because the Modules have special references for linking.
- Transmit up to one kilometer at 4 Mbps depending on the coaxial cable that is selected.
- Connect to ACGCs, computers, and other device through a built-in MEMOBUS port.

6.12.4 Batch PC Link Allocations cont.

Switch Settings

Memory Protect Switch

Switch Position	Function		
ON	 Prohibits changes in CPU programming and other areas from the Programming Panel port. Prohibits access to local and remote CPUs. 		
OFF	Permits changes in CPU programming and other areas from the Programming Panel port.		

• DIP Switch (1sw)

Pin No.	Setting			
1	Must be OFF.			
2	ON	Hold Mode Holds Link Data from a down station that was present immediately prior to the station going down.		
	OFF	Clear Mode Sets Link Data for a down station to OFF or Zero.		
3, 4	3	4	Baud rate (See note)	
	ON	ON	4 Mbps	
	ON	OFF	2 Mbps	
	OFF	ON	1 Mbps	
	OFF	OFF	0.5 Mbps	

Note Make sure the baud rate of all stations in the system is the same.

1. Loading Allocation

The following procedure is used to load allocation into the PC Link Modules of all stations.

1) Press F3 (Load) from the Station Edit Menu.

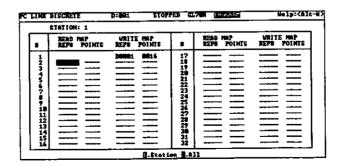


Figure 6.476

2) Press F1 (Select Station) or F2 (All Stations).

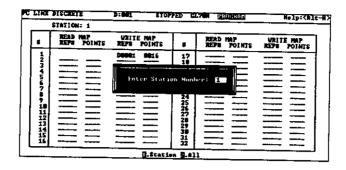


Figure 6.477

3) A confirmation message will appear asking whether to proceed. Enter "Y" or "N" and press the Enter Key.

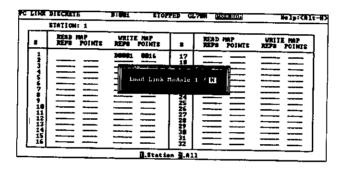


Figure 6.478

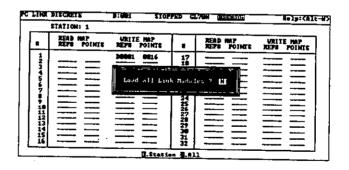


Figure 6.479

Load only operates for the specified station and only the part of Station #1 on the Allocation Screen will be loaded. Therefore Station #2 allocation cannot be changed.

2. Starting and Stopping Link Communications

The following procedure is used to temporarily stop link communications in order to prevent faulty operation in situations such as changing allocations.

6.12.4 Batch PC Link Allocations cont.

For Stopping

- 1) Press F1 (PC Link Stop) from the Station Edit Menu.
- 2) A confirmation message will appear asking whether to proceed. Enter "Y" or "N" and press the Enter Key.

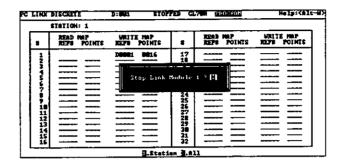


Figure 6.480

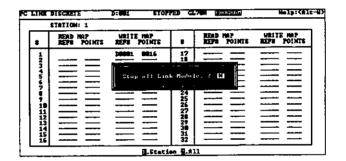


Figure 6.481

We recommend stopping link communications during allocation.

For Starting

1) Press F1 (PC Link Start) from the Station Edit Menu.

2) A confirmation message will appear asking whether to proceed. Enter "Y" or "N" and press the Enter Key.

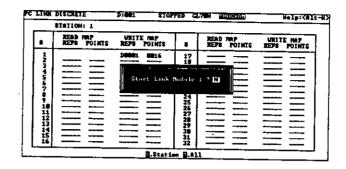


Figure 6.482

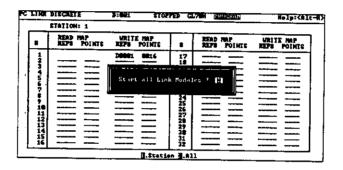


Figure 6.483

6.12.5 ASCII Module Allocation

Up to 8 ASCII Modules (16 ports) can be connected to a remote line at one time. ASCII Module allocation specifies the channel used by each Module.

1. Displaying the ASCII Modules Allocation Screen

The following procedure is used to display the ASCII Allocation Screen. Allocation cannot be performed unless the Processor is stopped.

1) Go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

2) Select 7. System Configuration from the Edit Options.

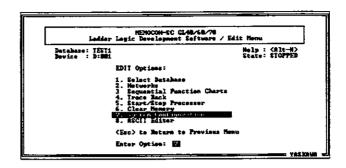


Figure 6.484

3) Select 4. ASCII Module Allocation from the System Configuration Options.

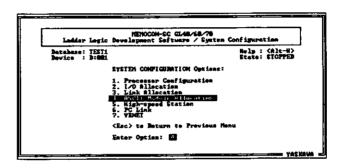


Figure 6.485

The ASCII Allocation Screen will appear.

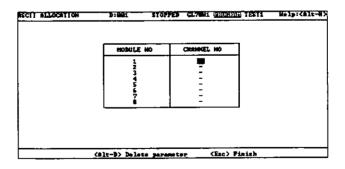


Figure 6.486

2. Allocating ASCII Modules

The following procedure is used to specify the channels used for all ASCII Modules connected to the remote line.

Be sure to stop the GL60 or GL70 prior to changing ASCII allocations.

- 1) Move the cursor to the Module to which a channel is to be allocated.
- 2) Enter the channel number (2 or 3) and press the Enter Key.

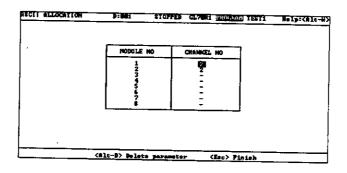


Figure 6.487

3) Press the Alt + E Keys or press the Esc Key after the settings are entered.

6.12.6 High-speed Station Allocation

High- and low-speed I/O processing is executed by station, and high-speed station allocation is used to select the stations and the channels that will process I/O at high speed. This operation is necessary when 2-level scanning is selected. It is not necessary 1-level scanning because all channels and stations are selected for high-speed I/O processing automatically. I/O references allocated to each high-speed station must be continuous to enable higher speed I/O processing. This is why the first address and number of registers are entered at the same time.

Refer to 2-Level Scans or High-speed Stations in the MEMOCON-SC GL60S Design and Maintenance Manual (manual No. SIE-C815-14.1) for more details on high-speed stations.

1. Displaying the High-speed Station Allocation Screen

The following procedure is used to display the Online High-speed Station Allocation Screen.

1) Go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

6.12.6 High-speed Station Allocation cont.

2) Select 7. System Configuration from the Edit Options.

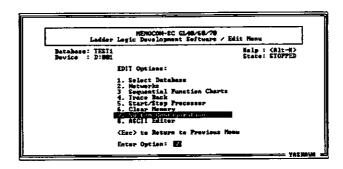


Figure 6.488

3) Select 5. High-speed Station from the System Configuration Options.

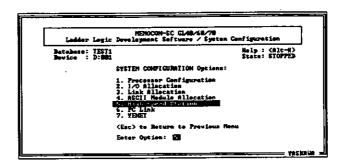


Figure 6.489

The High-speed Station Allocation Screen will appear.

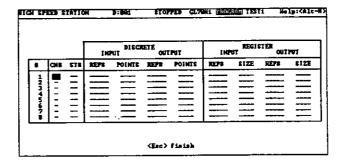


Figure 6.490

Note Allocation cannot be performed unless the Processor is stopped.

2. Allocating High-speed Stations

The following procedure is used to specify the stations and the channels for which to perform high-speed I/O processing in a 2-level scan.

- 1) Select 3. Online from the Main Menu.
- 2) Select 6. Processor Configuration from the Online Edit Menu.
- 3) Select 6. High-speed Station from the Processor Configuration Options.

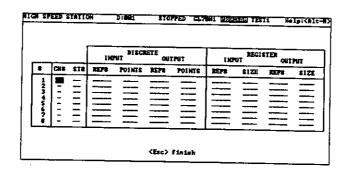


Figure 6.491

4) Move the cursor to the reference number that will be set.

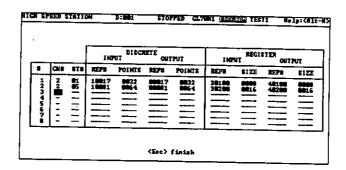


Figure 6.492

5) Press the Alt + E Keys to save the data.

Allocation is not necessary in a one-level scan.

A maximum of 8 stations can be specified as high-speed stations.

Note Input restrictions related to high-speed allocation

(1) Channel number: Remote channel 2 or 3

(2) Station number: 1 through 31

(3) Discrete Address: 00001 through 04098 or 10001 through 14096
Addresses must be entered in multiples of 16 plus 1. (n x 16 + 1)

6

6.12.7 YENET Allocations: Creating a Routing Table

- (4) The number of points entered for discrete addresses must be a multiple of 16. The reference addresses plus the number of input points cannot exceed the address range given above.
- (5) The same address cannot be defined twice in high-speed allocation. If an address is already used in the allocation table, a warning message will appear asking to check that entry.

6.12.7 YENET Allocations: Creating a Routing Table

Allocations are required for the YENET-3200 optical communications system to set YENET numbers, Bridge numbers, and Processor names.

1. Displaying the YENET Configuration Screen

The following procedure is used to display the Online YENET Allocation Screen.

1) Go online with a Processor.

Refer to 6.3 Going Online with a Processor for more details on the procedure.

2) Select 7. System Configuration from the Edit Options.

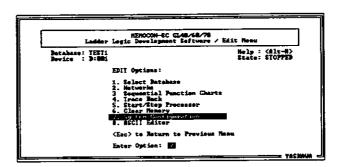


Figure 6.493

3) Select 7. YENET from the System Configuration Options.

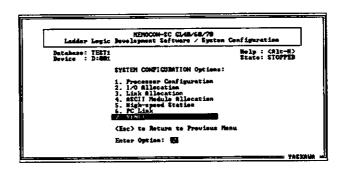


Figure 6.494

The Edit YENET Routing Table Screen will appear.

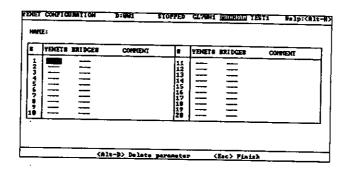


Figure 6.495

Note Allocation cannot be performed unless the Processor is stopped.

2. Creating a Routing Table

The following procedure is used to create a routing table.

1) Press the Up Cursor Key to move the cursor to the name location. Enter the name.

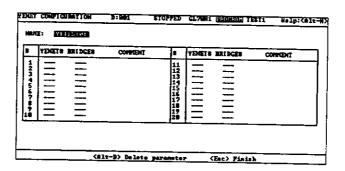


Figure 6.496

2) Enter the network number.

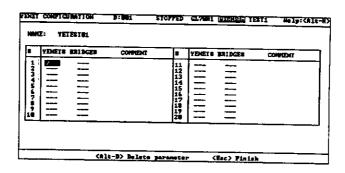


Figure 6.497

3) Enter the bridge number.

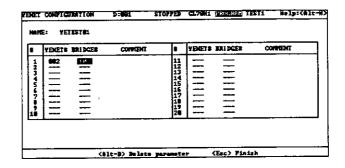


Figure 6.498

4) Enter the comment (Up to 16 characters can be entered).

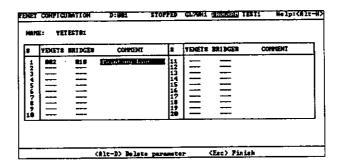


Figure 6.499

5) Press the Alt + E Keys after allocation is completed.

The name and routing table will be deleted if the 3200IF Module is reset. Reload the data if Note that happens.

6.13 Editing for ASCII Modules

Special data processing instructions are used to transfer data between an ASCII Module and ASCII devices. These instructions needs messages that stipulate data I/O format. Each message is given a number (message number) that is stored in the memory of the ASCII Module.

Preparations

It is possible to program with a GL60S ASCII Module by connecting a computer to an ASCII Module through a GL60S or by connecting a computer directly to an ASCII Module. Refer to MEMOCON-SC GL60S ASCII Modules User's Manual (manual No. SIE-C815-14.4) for further details.

- 1) Connecting to an ASCII Module through a Computer and Processor (such as the GL60S)
 - a) Connect the RS-232C port of the computer to the IOP or COMM port of the Processor.
 - b) Connect an RIOD Module to the ASCII Module with a coaxial cable.
 - c) Turn ON the power.

Note Be sure to allocate the ASCII Module prior to connecting.

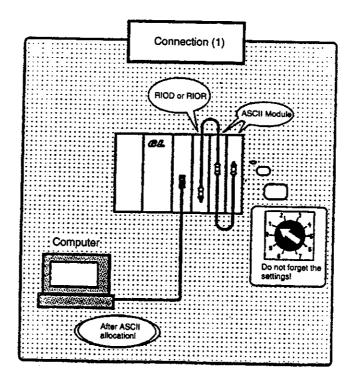


Figure 6.500

2) Connecting a Computer Directly to an ASCII Module

- a) Set the Memory Protect Switch on the ASCII Module to 1 or 2.
- b) Connect the RS-232C port of the computer to a port on the ASCII Module.
- c) Turn ON the power.

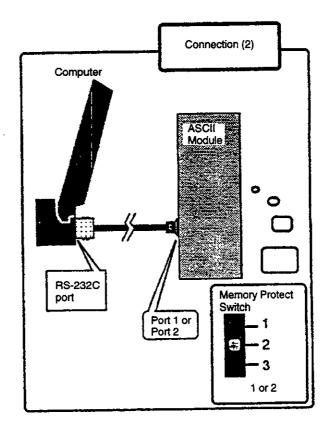


Figure 6.501

6

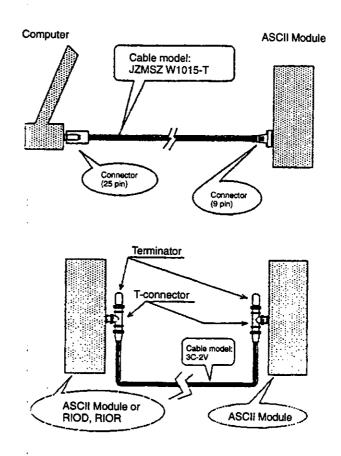


Figure 6.502

6.13.1 Procedure for Starting the ASCII Editing

The following procedure is used to start up ASCII editing.

1. IOP or COMM Modules

1) Select 3. Online from the Main Menu.

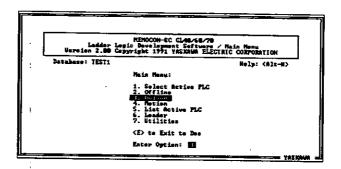


Figure 6.503

2) Set the communications parameters.

6.13.1 Procedure for Starting the ASCII Editing cont.

Set the device communications parameters as follows:

With an IOP or COMM Module: Processor front port

Refer to 6.1.2 Procedure for Setting Communications Parameters for more details on the setting procedure.

3) Select 1. Program Mode (editing possible) or 2. Monitor Mode (editing not possible) from the Menu Options.

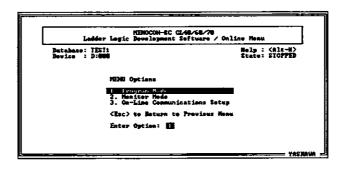


Figure 6.504

4) Enter the address of the device with which to go online and press the Enter Key.

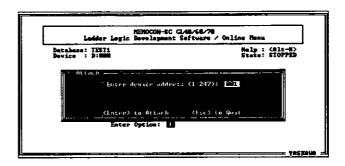


Figure 6.505

5) Select 8. ASCII Editor from the Edit Options.

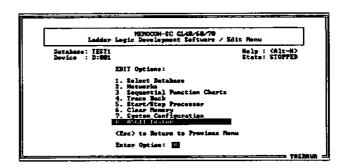


Figure 6.506

2. ASCII Modules

- 1) Select 3. Online from the Main Menu.
- 2) Set the communications parameters.

Set the device communications parameters as follows:

With an ASCII Module: IF71 ASCII Module
Refer to 6.1.2 Procedure for Setting Communications Parameters for more details on the setting procedure.

- Select 1. Program Mode (editing possible) or 2. Monitor Mode (editing not possible) from the Menu Options.
- 4) Enter the number of the device with which to go online and press the Enter Key.

The ASCII Edit Menu will appear.

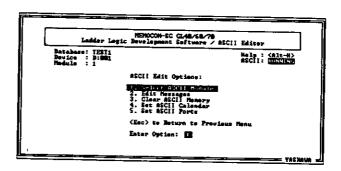


Figure 6.507

6.13.2 Selecting an ASCII Module

The following procedure is used to select an ASCII Module. This function can only be executed when multiple ASCII Modules are connected.

1) Select 1. Select ASCII Module from the ASCII Edit Options.

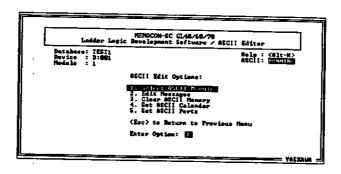


Figure 6.508

6.13.3 Editing ASCII Messages

2) Enter the number of the Module that will be edited and press the Enter Key.

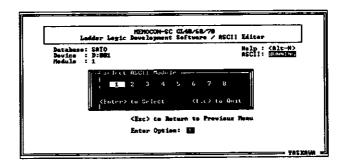


Figure 6.509

6.13.3 Editing ASCII Messages

This section describes the procedure for editing ASCII messages using the functions displayed at the bottom of the screen.

The following function keys can be used:

Moving the cursor: Press t

Press the Left, Right, Up or Down Cursor Key.

Selecting the message number that will be edited:

Press the Enter Key.

Moving to the next or previous page (from message number 1 through 1,024):

Press the Page Down or Page Up Key.

All functions are represented by keys F1 through F6

1. Displaying the ASCII Message Editor Screen

The following procedure is used to display the ASCII Message Editor Screen.

- 1) Move the cursor to the number of the message that will be edited.
- 2) Press F1 (Edit) from the ASCII Message Editor Screen.

The Edit Messages Screen will appear.

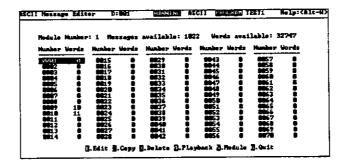


Figure 6.510

2. Creating Messages

The following describes the procedures for creating ASCII messages using the functions displayed at the bottom of the screen.

A. Next/Previous (Menu Switching)

The next/previous functions defined at F1. The function switches function menus for editing ASCII messages.

The function menu switches each time F1 is pressed.

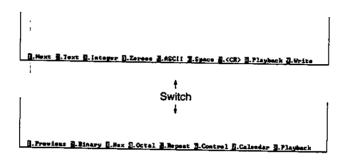


Figure 6.511

B. Text

The following describes the Text function defined at F2 that is used to enter or change text.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F2 (Text) from the Edit Messages Screen.

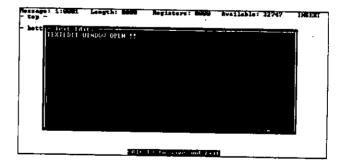


Figure 6.512

3) Enter text in the Text Edit Screen that appears.

6.13.3 Editing ASCII Messages cont.

4) After the text is entered, press the Alt + E Keys to save the text.

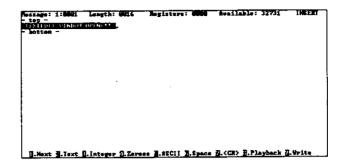


Figure 6.513

- 5) Press the Esc Key after all editing is completed.
- 6) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.514

C. Integer Data

The following describes the integer function defined at F3 that is used to enter or change integer data of n digits of m units.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F3 (Integer) from the Edit Messages Screen.



Figure 6.515

- 3) Enter the display prefix in the input screen that appears.
- 4) Press the Enter Key after the prefix is entered, and enter the length (number of digits).

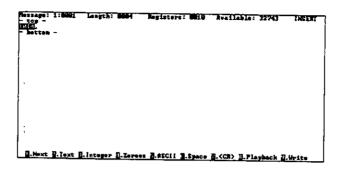


Figure 6.516

- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.
- 7) Press the Esc Key after all editing is completed.
- 8) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.517

D. Integer Data (Zeroes)

The following describes the zeroes function defined at F4 that is used to enter or change integer data of n digits of m units.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F4 (Zeroes) from the Edit Messages Screen.

6.13.3 Editing ASCII Messages cont.

3) Enter the display prefix in the input screen that appears.

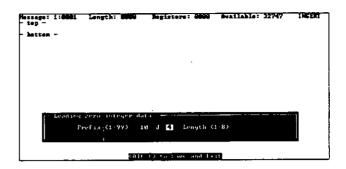


Figure 6.518

4) Press the Enter Key after the prefix is entered, and enter the length (number of digits).

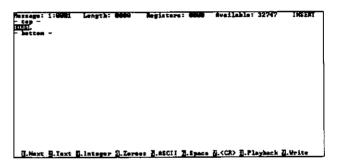


Figure 6.519

- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.
- 7) Press the Esc Key after all editing is completed.
- 8) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.520

0

Difference Between Integer 'mln' and Zeroes 'mJn'

- mln prints spaces at the leftmost digits if the specified length is not filled.
- mJn prints zeros at the leftmost digits if the specified length is not filled.

E. ASCII Data

The following describes the ASCII function defined at F5 that is used to enter or change ASCII text.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F5 (ASCII) from the Edit Messages Screen.
- 3) Enter the display prefix in the input screen that appears.

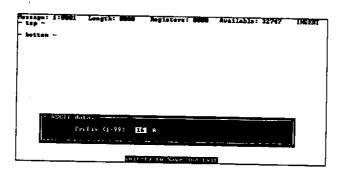


Figure 6.521

4) After the text is entered, press the Alt + E Keys to save the text.

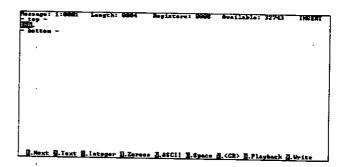


Figure 6.522

5) Press the Esc Key after all editing is completed.

6.13.3 Editing ASCII Messages cont.

6) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.523

F. Spaces

The following describes the space function defined at F6 that is used to enter or change spaces.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F6 (Space) from the Edit Messages Screen.

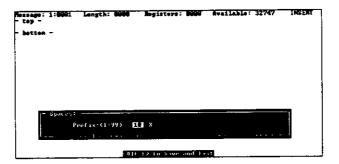


Figure 6.524

3) Enter the display prefix in the input screen that appears.

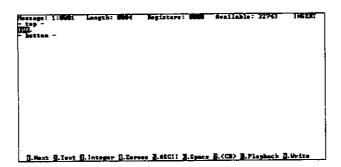


Figure 6.525

- 4) After the text is entered, press the Alt + E Keys to save the text.
- 5) Press the Esc Key after all editing is completed.
- 6) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.526

G. Carriage Returns

The following describes the carriage return function defined at F7 that is used to enter carriage returns.

- 1) Press F1 from the Edit Messages Screen to switch to the next functions.
- 2) Press F7 (CR) from the Edit Messages Screen.

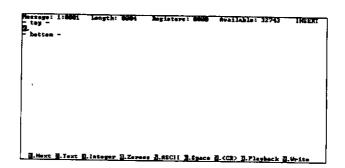


Figure 6.527

3) Press the Esc Key after all editing is completed.

6.13.3 Editing ASCII Messages cont.

4) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.528

H. Binary Data

The following describes the binary function defined at F2 that is used to enter or change Binary Data of n digits of m units.

- 1) Press F1 from the Edit Messages Screen to switch to the previous functions.
- 2) Press F2 (Binary) from the Edit Messages Screen.
- 3) Enter the display prefix in the input screen that appears.

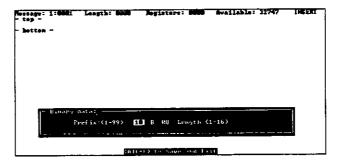


Figure 6.529

- 4) Press the Enter Key after the prefix is entered, and enter the length.
- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.

6) After the text is entered, press the Alt + E Keys to save the text.

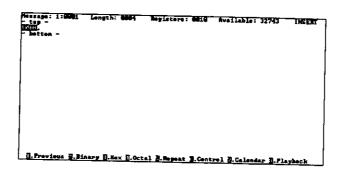


Figure 6.530

- 7) Press the Esc Key after all editing is completed.
- 8) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.531

I. Hexadecimal Data

The following describes the hexadecimal function defined at F3 that is used to enter or change hexadecimal data of n digits of m units.

- 1) Press F1 from the Edit Messages Screen to switch to the previous functions.
- 2) Press F3 (Hex) from the Edit Messages Screen.
- 3) Enter the display prefix in the input screen that appears.

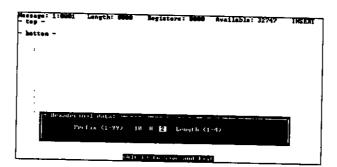


Figure 6.532

6.13.3 Editing ASCII Messages cont.

- 4) Press the Enter Key after the prefix is entered, and enter the length.
- 5) If the wrong Prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.

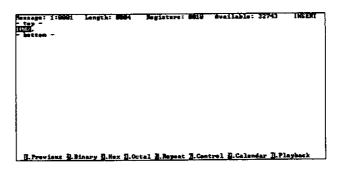


Figure 6.533

- 7) Press the Esc Key after all editing is completed.
- 8) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.534

J. Octal Data

The following describes the octal function defined at F4 that is used to enter or change octal data of n digits of m units.

- 1) Press F1 from the Edit Messages Screen to switch to the previous functions.
- 2) Press F4 (Octal) from the Edit Messages Screen.

3) Enter the display prefix in the input screen that appears.

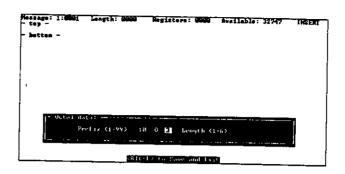


Figure 6.535

- 4) Press the Enter Key after the prefix is entered, and enter the length.
- 5) If the wrong prefix was entered the first time, press the Enter Key once more to re-enter it.
- 6) After the text is entered, press the Alt + E Keys to save the text.

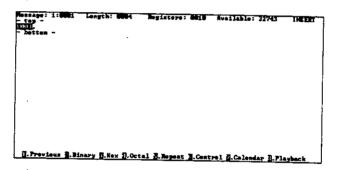


Figure 6.536

- 7) Press the Esc Key after all editing is completed.
- 8) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.

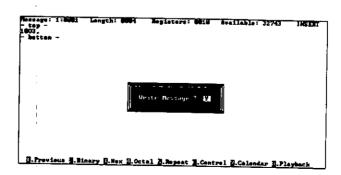


Figure 6.537

6.13.3 Editing ASCII Messages cont.

K. Repeat

The following describes the repeat function defined at F5 that is used to a repeat specified message a set number of times.

- 1) Press F1 from the Edit Messages Screen to switch to the previous functions.
- 2) From the Edit Messages Screen, move the cursor to the beginning of the message that will be repeated.

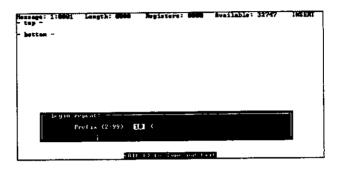


Figure 6.538

- 3) Press F5 (Repeat) from the Edit Messages Screen.
- 4) Enter the prefix that will be repeated when the input screen appears.

You cannot repeat more than once.

- 5) Press the Alt + E Keys after all settings are entered.
- 6) Move the cursor to the end of the message that will be repeated.

Be sure to add a closing parenthesis ")."

7) Press F5 (Repeat).

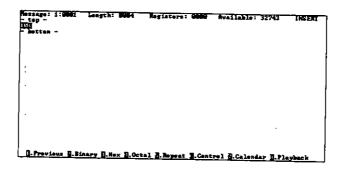


Figure 6.539



Figure 6.540

L. Control Codes

The following describes the control function defined at F6 that is used to set control codes for ASCII devices.

- 1) Press F1 from the Edit Messages Screen to switch to the previous functions.
- 2) Press F6 (Control) from the Edit Messages Screen.
- 3) Enter the control code using decimal numbers in the input screen that appears.

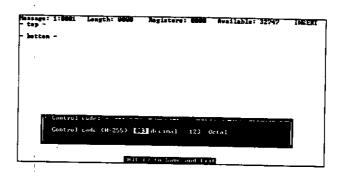


Figure 6.541

6.13.3 Editing ASCII Messages cont.

4) After the text is entered, press the Alt + E Keys to save the text.

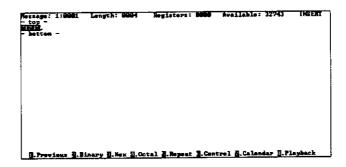


Figure 6.542

- 5) Press the Esc Key after all editing is completed.
- 6) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



Figure 6.543

M. Calendar

The following describes the calendar function defined at F7 that is used to set formats used when a calendar is output.

- 1) Press F1 from the Edit Messages Screen to switch to the previous functions.
- 2) Press F7 (Calendar) from the Edit Messages Screen.
- 3) Enter the register data (1 through 8) in the input screen that appears.

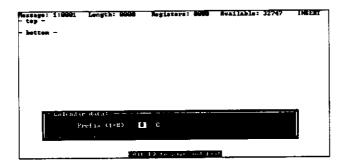


Figure 6.544

Register Data

Symbol	Meanings	Number of registers required
1C	Year	1
2C	Month	1
3C	Day	1
4C	Day of the week	1
5C	Hour	1
6C	Minute	1
7C	Second	1
8C :	Year to second	7

Output Format

• When 1C,":",2C,":",3C,":",4C is specified:

93:01:11:MON

• When 8C is specified:

93:01:11:MON:10:09:07

4) After the text is entered, press the Alt + E Keys to save the text.

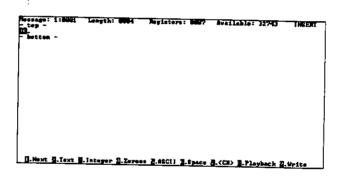


Figure 6.545

- 5) Press the Esc Key after all editing is completed.
- 6) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.



6.13.3 Editing ASCII Messages cont.

N. Playback

The following describes the playback function defined at F8 that is used to display edited ASCII messages in output format. The function is used to set formats used when a calendar is output.

Press F8 (Playback) from the Edit Messages Screen.

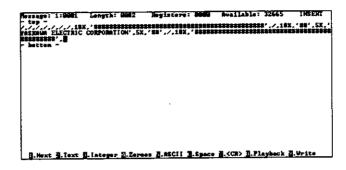


Figure 6.546

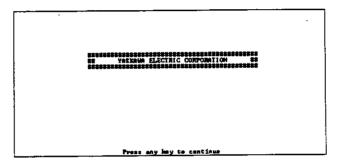


Figure 6.547

3. Copying

The following describes the copy function defined at F2 that is used to copy the contents of one message to another message.

1) Press F2 (Copy) from the ASCII Message Editor Screen.

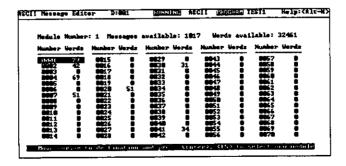


Figure 6.548

- 2) Move the cursor to the number of the source message to be copied and press the Enter Key.
- 3) Move the cursor to the number of the message to receive the copy and press the Enter Key.

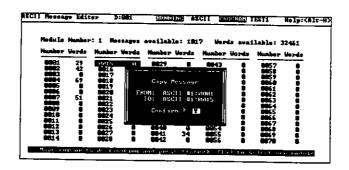


Figure 6.549

4) Enter "Y" as prompted by the confirmation message that appears.

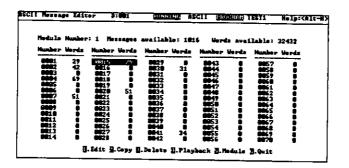


Figure 6.550

4. Deleting

The following describes the delete function defined at F3 that is used to delete messages stored in the ASCII Module.

1) Move the cursor to the number of the message to delete.

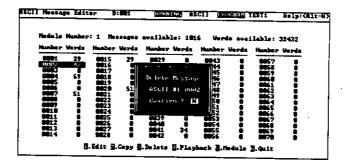


Figure 6.551

2) Press F3 (Delete).

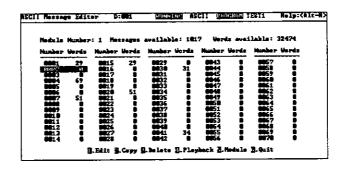


Figure 6.552

3) Enter keys as prompted by the confirmation message that appears.

5. Playback

The following describes playback function defined at F4 that is used to display edited ASCII messages in output format.

1) Move the cursor to the number of the message to delete.

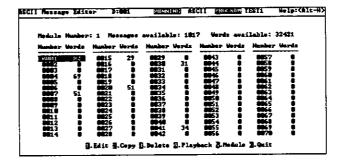


Figure 6.553

2) Press F4 (Playback) from the ASCII Message Editor Screen.

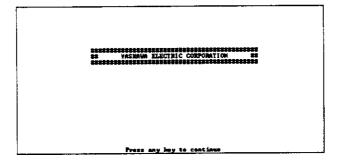


Figure 6.554

6. Quitting

The following describes the quit function defined at F6 that returns to the ASCII Edit Menu.

Press F6 (Quit) from the ASCII Message Editor Screen.

The ASCII Edit Menu will return.

6.13.4 Clearing Memory

The following procedure is used to clear ASCII memory.

1) Select 3. Clear ASCII Memory from the ASCII Edit Options.

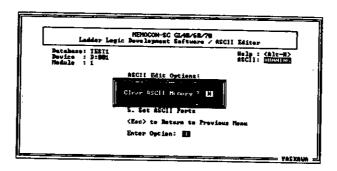


Figure 6.555

2) A confirmation message will appear asking whether to save changes. Enter "Y" or "N" and press the Enter Key.

6.13.5 Calendar

The following describes ASCII calendar operation.

- 1) Select 4. Set ASCII Calendar from the Edit ASCII Menu.
- 2) Change data based on the data currently displayed on screen.

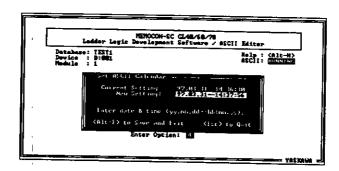


Figure 6.556

3) Press the Alt + E Keys or press the Esc Key.

6.13.6 Setting Port Parameters

The following procedure is used to set ASCII port parameters.

- 1) Select 5. Set ASCII Ports from the ASCII Edit Menu.
- 2) Move the cursor to each item and press the Space Key or enter a number.

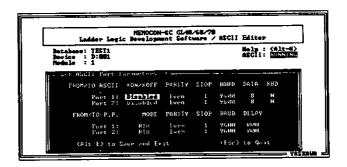


Figure 6.557

3) Press the Alt + E Keys or press the Esc Key.

F

Motion Editting

This chapter describes how to select motion files, create and edit motion programs, and set motion parameters. Information is also provided on these parameters.

7.1	Procedures for Selecting Motion Files	7-2
7.2	Procedures for Creating Motion Programs	7-6
7.3	Procedures for Setting Motion Parameters	7-9
7.4	Motion Selection Screen Configuration	7-11
7.5	Program Editing	7-12
7.6	Setting Parameters	7-20
7.7	Monitoring	7-23

7.1 Procedures for Selecting Motion Files

The following procedure is used to select motion files (programs, parameters, etc.).

1) Select 4. Motion from the Main Menu.

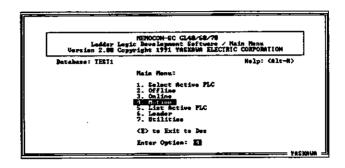


Figure 7.1

2) Select 2. Select Program/Parameters from the Motion Options.

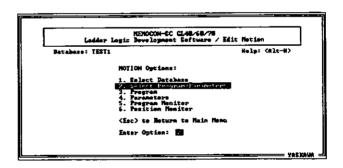


Figure 7.2

The Select Motion Screen will appear.

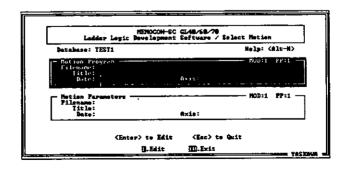


Figure 7.3

- 3) Press F1 (Edit).
- 4) Select the IF66 Servo Module using the Right and Left Cursor Keys, then press the Enter Key.

Set the Module number (1 to 4) of the target IF66 Servo Module.

5) Select the Programming Panel using the Right and Left Cursor Keys, then press the Enter Key.

The buffer number specifies the work memory space inside the Programming Panel. This space is used as temporary memory for motion programs. It is possible to set the buffer from 1 to 8 (2 kilobytes per buffer).

6) Enter the file name of the motion program, then press the Enter Key.

Up to 8 characters can be entered as the motion file name.

7) Enter the title and date of editing of the motion program, then press the Enter Key.

This is used as a comment field. It is attached to the motion file when the motion file is saved.

8) Select the servo axes to be used, then press the Enter Key.

This indicates which servo axes will be used for the motion file.

9) After all the selections for the program file have been completed, press the Enter Key to complete the settings.

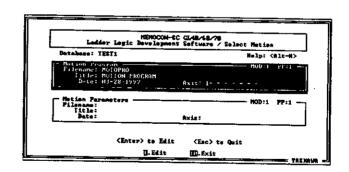


Figure 7.4

10) Move the cursor from the motion program setting position to the motion parameters setting position using the Down Cursor Key.

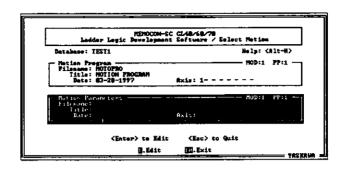


Figure 7.5

- 11) Press the Enter Key to place the cursor in the Servo Module setting position.
- 12) Select to set the IF66 Servo Module using the Right and Left Cursor Keys, then press the Enter Key.

Set the Module number (1 to 4) of the target IF66 Servo Module.

13) Select the Programming Panel using the Right and Left Cursor Keys, then press the Enter Key.

The buffer number specifies the work memory space inside the Programming Panel. This space is used as temporary memory for motion programs. It is possible to set the buffer from 1 to 8 (2 kilobytes per buffer).

14) Enter the file name and press the Enter Key.

Up to 8 characters can be entered as the motion file name.

15) Enter the title and press the Enter Key.

This is used as a comment field. It is attached to the motion file when the motion file is saved.

16) Enter the date and press the Enter Key.

This is used as a comment field. It is attached to the motion file when the motion file is saved.

17) Enter the axis numbers and press the Enter Key.

Indicates which servo axes will be used for the motion file.

18) After all the selections for the parameter file have been completed, press the Enter Key to complete the settings.

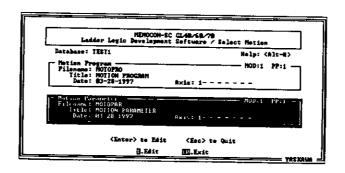


Figure 7.6

19) Press F10 (Exit) to return to the Menu Screen.

7.2 Procedures for Creating Motion Programs

The following procedure is used to create and edit motion programs. For details on editing, refer to 7.5 Program Editing.

The following program example will be created.

```
N001 G01 X350, Y346, Z342, F15000;
N002 M30;
N003
```

Figure 7.7

1) Select a program file.

Refer to 7.1 Procedures for Selecting Motion Files.

- 2) After a selection is made, the screen will return to the Motion Options.
- 3) Select 3. Program.

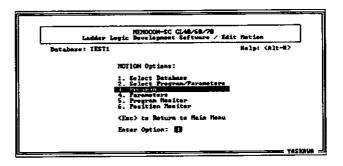


Figure 7.8

4) Press the Slash Key to display the Motion Command Submenu.

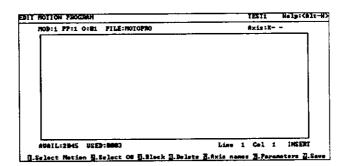


Figure 7.9

5) Press F5 (Axis names).

The screen for selecting the axis names will appear.



Figure 7.10

- 6) Enter the axis names (X-Y-Z) and press the Enter Key.
- 7) Create line N001.
- 8) Press the Slash Key, then select F1 (Gxx) to display the G code list.

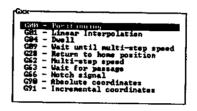


Figure 7.11

- 9) Move the cursor to G01, and press the Enter Key.
- 10) Select F2 (X-Y-Z) to display the axis variable list.



Figure 7.12

- 11) Move the cursor to X and press the Enter Key.
- 12) Enter the numeric value 350.
- 13) Execute the same procedure as X for Y and Z.
- 14) Press F3 (Fnnn) to display the F variable list.



Figure 7.13

- 16) Ento
- 15) Move the cursor to F and press the Enter Key.
- 16) Enter the numeric value 15000.
- 17) Press the Enter Key to end the line.
- 18) Create line N002.
- 19) Press F4 (Mxx) to display the M code list.



Figure 7.14

- 20) Move the cursor to M30 and press the Enter Key, then enter ",".
- 21) After editing has been completed, press F10 to save and return to the Motion Edit Mode.

By pressing F9 during editing, it is possible to save the program and continue editing. If the Esc Key is pressed, a confirmation message asking whether to exit will appear. If "Y" is entered and the Enter Key is pressed, the user will exit the current mode after saving the data. If "N" is entered, the user will exit without saving the data.

7.3 Procedures for Setting Motion Parameters

This following procedure is used to set up the Servopack.

The following example describes how to set the position command mode.

1) Select a parameter file.

Refer to 7.1 Procedures for Selecting Motion Files.

2) Select 4. Parameters from the Motion Options.

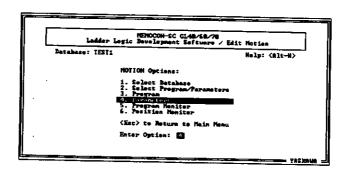


Figure 7.15

- 3) Press the Page Down Key to go to the next page.
- 4) Move the cursor to the position command mode selection.

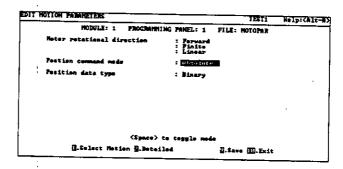


Figure 7.16

- 5) Press the Space Key to change between absolute and increment.
- 6) Select either of the two settings and press the Enter Key.

7

Other parameters are set in the same manner.

For details on parameters and contents of parameters, refer to 7.6 Setting Parameters.

7) Press F10 (Exit) to return to the Edit Motion Parameters Screen.

7.4 Motion Selection Screen Configuration

The following screen shows the Motion Program/Motion Parameters Selection Screen.

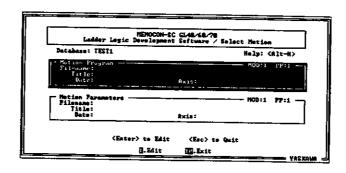


Figure 7.17

1) Module Numbers

Set the Module number (1 to 4) of the target IF66 Servo Module.

2) Program Numbers

The buffer number specifies the work memory space inside the Programming Panel. This space is used as temporary memory for motion programs. It is possible to set the buffer from 1 to 8 (2 kilobytes per buffer).

3) File Names

Up to 8 characters can be entered as a motion file name.

4) Title and Date Information

This is used as a comment field. It is attached to the motion file when the motion file is saved.

5) Axis

Specifies which servo axes will be used for the motion file. The information contained on this list can be used only by the Loader.

7.5 Program Editing

The following procedures are used to edit motion programs.

Selecting O number: Line Deletion:

Selects a motion program O number. Deletes a part of the motion program. Selecting Axis Names: Selects the axis names of the servo.

Block:

Executes block editing.

Selecting O Number 7.5.1

The following procedure is used to select a motion program O number.

- 1) Display the Edit Motion Program Screen.
- 2) Press the Slash Key to display the Motion Command Submenu.

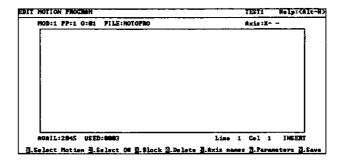


Figure 7.18

3) Press F2 (Select O#).

The screen for selecting O number will appear.

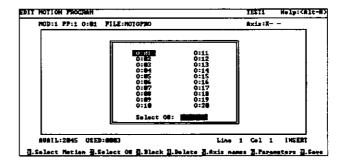


Figure 7.19

- 4) Move the cursor to the O number to be selected.
- 5) Press the Enter Key.

The screen of the selected O number will appear.

7.5.2 Line Deletion

Deletes one line of the motion program.

- 1) Display the Edit Motion Program Screen.
- 2) Press the Slash Key to display the Motion Command Submenu.

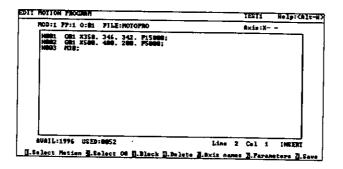


Figure 7.20

- 3) Move the cursor to the line to be deleted.
- 4) Press F4 (Delete).

The line where the cursor is positioned will be deleted.

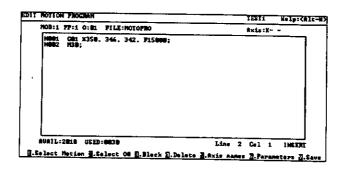


Figure 7.21

7.5.3 Selecting Axis Names

Selects the axis names for the Servopack.

1) Display the Edit Motion Program Screen.

7.5.4 Blocks

2) Press the Slash Key to display the Motion Command Submenu.

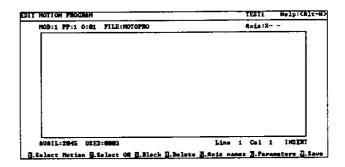


Figure 7.22

3) Press F5 (Axis names).

The screen for selecting the axis names will appear.

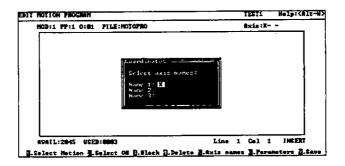


Figure 7.23

- 4) Enter the axis names.
- 5) Press the Enter Key.

The axis names will be selected.

7.5.4 Blocks

A group of program lines can be defined as a block in motion programming. This provides various ways to edit a motion program.

Block:

Defines a block in a motion program.

Unblock: Ungroups a block. Copies a block. Block Copy: Block Move: Block Jump:

Moves a block. Jumps to a block.

Block Delete: Deletes a block.

1. Block

The following procedure is used to define a block in a motion program.

1) Press the Slash Key to display the Motion Command Submenu.

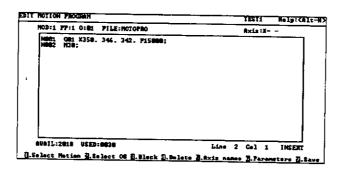


Figure 7.24

2) Press F3 (Block).

The Block Submenu will appear.



Figure 7.25

- 3) Move the cursor to the program line to be defined as a block.
- 4) Press F1 (Block).

The line will be defined as a block.

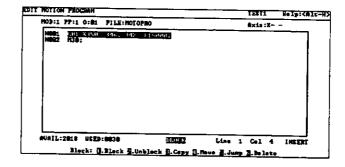


Figure 7.26

7.5.4 Blocks cont.

It is possible to specify the size of a block by selecting more than one line.

To create a block containing more than one line, use the previous procedure to select both the first line and the last line of the area to be defined as a block. The text within the area between these two lines will form one block.

2. Unblock

The following procedure is used to ungroup a block.

1) Press the Slash Key to display the Motion Command Submenu.

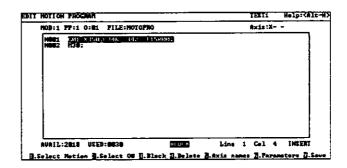


Figure 7.27

2) Press F3 (Block).

The Block Submenu will appear.



Figure 7.28

3) Press F2 (Unblock).

The block will be ungrouped.

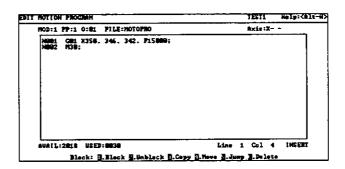


Figure 7.29

Note Only one block can be defined at a time. Complete one block operation and ungroup the block before defining the next block.

3. <u>Copy</u>

The following procedure is used to copy a block.

1) Define the block to be copied.

For details on defining blocks, refer to 1. Block on page 7-15.

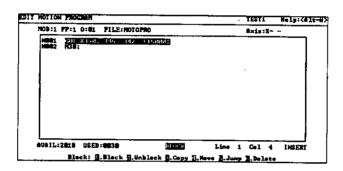


Figure 7.30

- 2) Move the cursor to where the block will be copied to.
- 3) Press F3 (Copy).

The block will be copied.

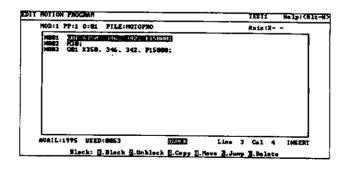


Figure 7.31

4. Move

The following procedure is used to move a block.

1) Define the block to be moved.

7.5.4 Blocks cont.

For details on defining blocks, refer to 1. Block on page 7-15.

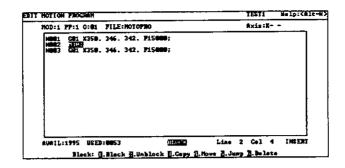


Figure 7.32

- 2) Move the cursor to where the block will be moved.
- 3) Press F4 (Move).

The block will be moved to the position specified.

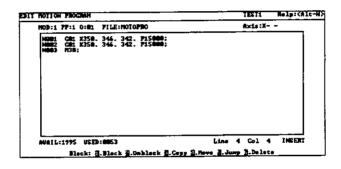


Figure 7.33

5. Jump

The following procedure is used to jump to a block.

1) Define a block.

For details on defining blocks, refer to 1. Block on page 7-15.

2) Press F5 (Jump).

The cursor will jump to the first line of block.

6. Delete

The following procedure is used to delete a block.

1) Define the block to be deleted.

For details on defining blocks, refer to 1. Block on page 7-15.

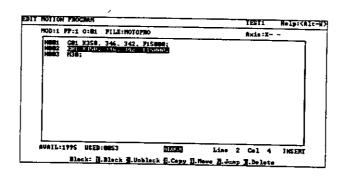


Figure 7.34

2) Press F6 (Delete).

A confirmation message asking whether to delete the block will appear.



Figure 7.35

3) Enter "Y" to delete and "N" to not delete the block.

The block will be deleted.

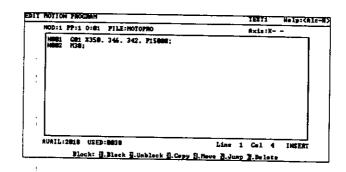


Figure 7.36

7.6 Setting Parameters

This section explains methods for setting motion parameters, in particular detailed parameters and their contents.

For general information on parameter setting methods, refer to 7.3 Procedures for Setting Motion Parameters.

Detailed parameters:

Sets the detailed parameters.

Detailed parameter contents:

Sets the contents of the detailed parameters.

7.6.1 Setting Detailed Parameters

A detailed menu of the parameter settings is provided.

The following example describes how to specify the position loop gain setting.

1) Display the Edit Motion Parameters Screen.

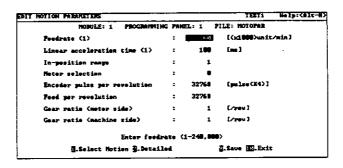


Figure 7.37

- 2) Press F2 (Detailed).
- 3) Move the cursor to position loop gain.

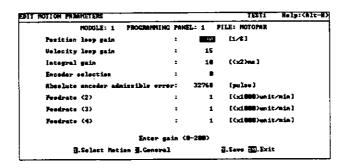


Figure 7.38

- 4) Enter an appropriate value (0 to 200).
- 5) Press the Enter Key.

Specify other detailed parameter settings in the same manner.

7.6.2 Setting Detailed Parameter Contents

The following procedure is used to set the contents of the detailed parameters.

The example describes how to set the S-curve acceleration/deceleration.

1) Display the Edit Motion Parameter Screen.

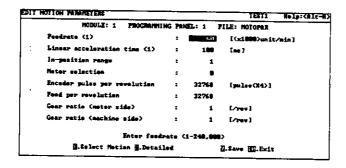


Figure 7.39

- 2) Press F2 (Detailed).
- 3) Press the Page Down Key.
- 4) Move the cursor to the S-curve acceleration/deceleration.

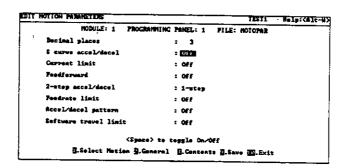


Figure 7.40

5) Press F3 (Contents).

7.6.2 Setting Detailed Parameter Contents cont.

6) Enter an appropriate value for S-curve acceleration/deceleration constant (2 to 126).

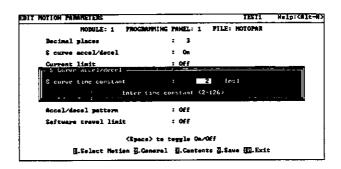


Figure 7.41

7) Press the Enter Key to return to the screen for setting detailed parameters.

7.7 Monitoring

The monitoring functions display the motion program that is currently running or the current positions of its motor axes.

Monitoring programs: With this operation the block of the motion program that is currently running can be displayed.

Monitoring the current positions of motor axes:

The current values of the motor axes being used can be displayed on the screen.

Both monitor functions are online functions and cannot be used when offline.

7.7.1 Monitoring Programs

The block of the motion program that is currently running can be displayed using the following process.

1) Select 4. Motion from the Main Menu.

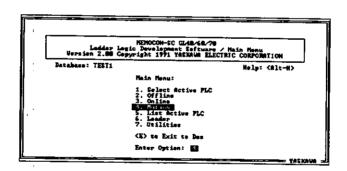


Figure 7.42

2) Select a Motion File.

For details on motion file selection, refer to 7.1 Procedures for Selecting Motion Files.

3) Select 5. Program Monitor from the Motion Options.

Program Monitor is an online function; you must have a communications link with the Processor. Before selecting 5. Program Monitor, make sure that the computer and Processor are connected so that the computer can go online with the Processor.

When monitoring programs, select a motion program before selecting the monitor function.

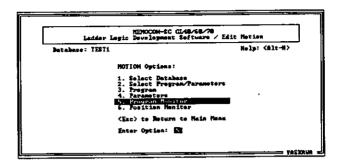


Figure 7.43

The screen for entering the device address is displayed to allow the user to go online between a device to the Processor.

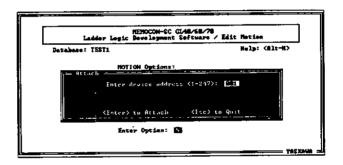


Figure 7.44

4) Enter an address, then press the Enter Key.

The screen for selecting the Servo Module will appear.

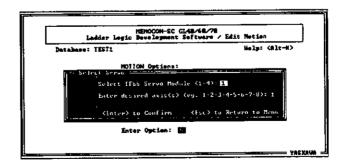


Figure 7.45

5) Enter a Servo Module number and the desired axis, then press the Enter Key.

The Monitor Program Screen will appear.

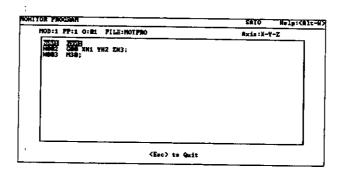


Figure 7.46

7.7.2 Monitoring the Current Positions of Motor Axes

The current positions of the motor axes used can be seen on the screen.

1) Select 4. Motion from the Main Menu.

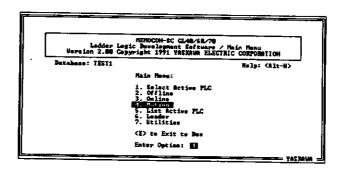


Figure 7.47

2) Select a Motion File.

For details on motion file selection, refer to 7.1 Procedures for Selecting Motion Files.

3) Select 6. Position Monitor from the Motion Options.

Program Monitor is an online function; you must have a communications link with the Processor. Before selecting 6. Position Monitor, make sure that the computer and Processor are connected so that the computer can go online with the Processor.

When monitoring a position, always select a motion program before selecting the monitor function.

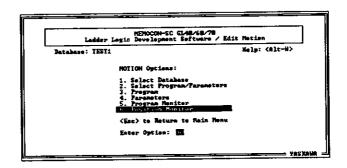


Figure 7.48

The screen for entering the address of the device to go online with the Processor will appear.

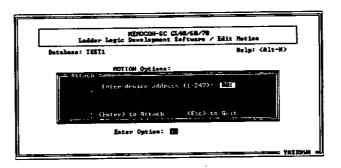


Figure 7.49

4) Enter an address and press the Enter Key.

The screen for selecting the Servo Module will appear.

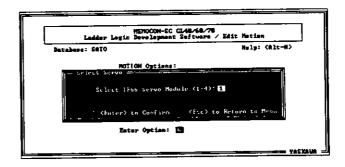


Figure 7.50

5) Enter a Servo Module number and press the Enter Key.

The Monitor Position Screen will appear.

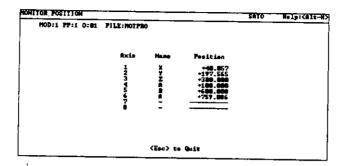


Figure 7.51

ſ

This chapter describes the lists that can be printed with the MEMO-CAD-PRO Lister, as well as cross-reference data, list settings and printer parameters.

8.1	Sample of Lists	8-2
8.2	Cross References	8-11
8.3	List Settings	8-13
8.4	Printing	8-36
8.5	Cancelling Printing	8-38

8.1 Sample of Lists

The following shows a sample of lists which can be output using the print function. The printing style can be changed by modifying the function.

MEMOCAD-PRO Lister Sample List

Ladder Lists

- 1) Ladder without comments
- 2) Ladder with comments (with short comments below the ladder diagram)

Note If a short comment cannot be contained in one line because of the type of printer or size of paper used, it will be printed below the ladder diagram.

3) Ladder with comments, page title, page number and cross references (with short comments to the right of the ladder diagram)

SFC Lists

- 4) SFC without comments
- 5) SFC with comments

List of Allocation Tables

- 6) System configuration
- 7) I/O Modules
- 8) I/O allocations
- 9) PC Link, high-speed station allocation
- 10) ASCII and YENET allocation

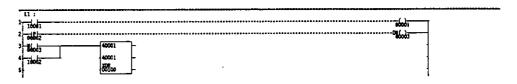
• List of Discrete I/O Tables

- 11) Used tables
- 12) Disable tables

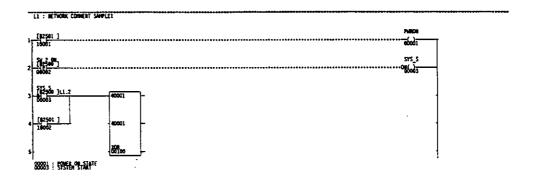
- List of Register Tables
- 13) Used tables
- 14) Contents
- List of SFC Status Tables
- 15) Mode tables
- 16) Simulation tables
- 17) Used tables
- List of Comment Tables
- 18) Printing comments
- 19) Network comments
- 20) Mismatch comments (unreferenced)
- 21) Mismatch comments (undefined)
- ASCII Message List
- 22) ASCII messages (message list)
- 23) ASCII messages (used status list)
- Motion List
- 24) Motion programs
- 25) Motion parameters

Ladder Lists

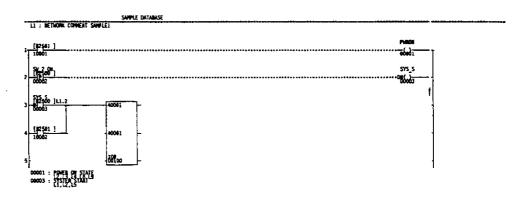
1) Ladder without Comments



2) Ladder with Comments

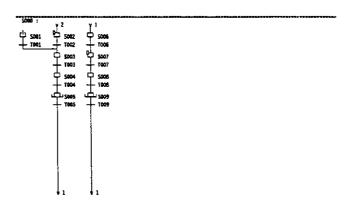


3) Ladder with Comments, Page Title, Page Number and Cross References

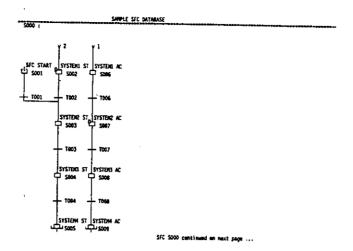


SFC Lists

4) SFC without Comments

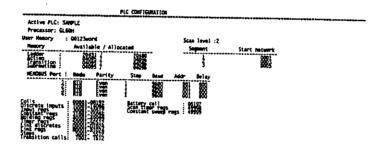


5) SFC with Comments

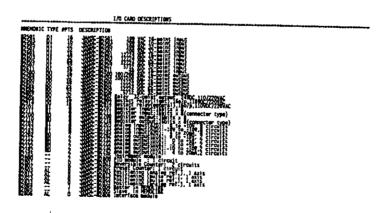


List of Allocation Tables

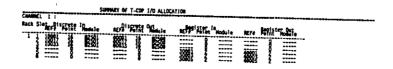
6) System Configuration



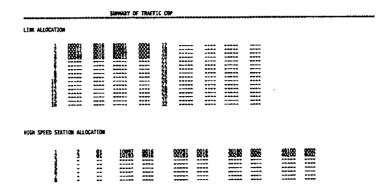
7) I/O Modules



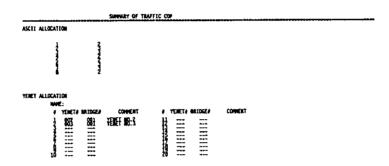
8) I/O Allocations



9) PC Link, High-speed Station Allocations

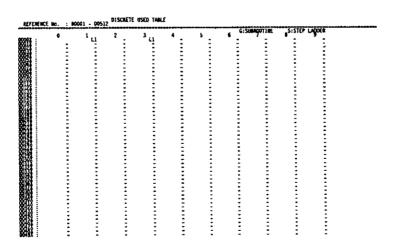


10) ASCII and YENET Allocations

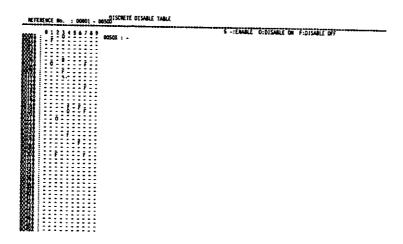


List of Discrete Tables

11) Used Tables

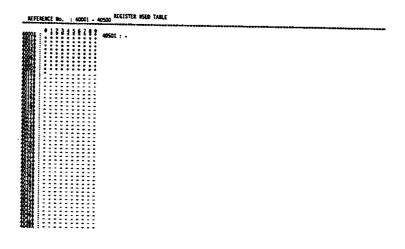


12) Disable Tables

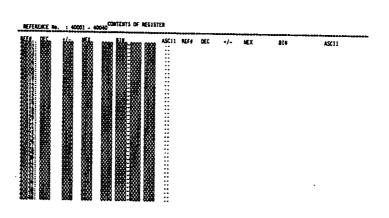


List of Register Tables

13) Used Tables

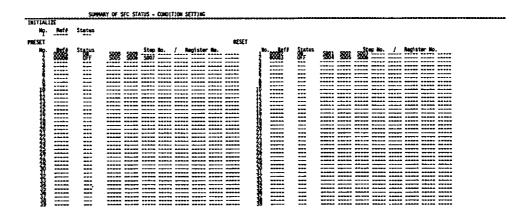


14) Contents

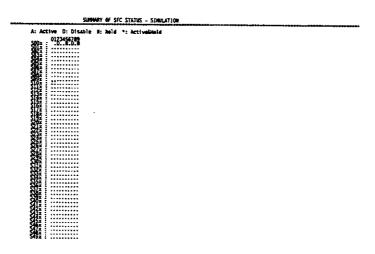


List of SFC Status Tables

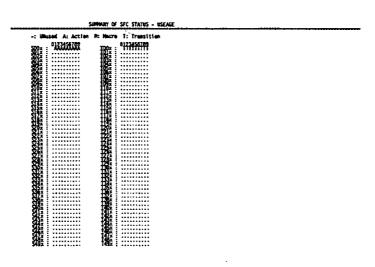
15) Mode Tables



16) Simulation Tables



17) Used Tables



List of Comment Tables

18) Printing Comments

MAR		
SE MEN DI STATE	ָ נד	LC
002 : C 17.17.2.17.13.17.14.17.18.17.19.	' τι	rei
003 : [[4245.1.16.1,17.1	11	
CON : C STSTEM START	TI	ια
005 : SI SISIENI MONAL	τį	<u>щ</u>
006 : 51 51 51 51 51 51 50 60 61 61 61 61 61 61 61 61 61 61 61 61 61	Τĺ	LC
008 : 25 21 21 51 51 51 51 51 51 51 51 51 51 51 51 51	τ ₁ τ	LE
SI SISIERI TRABLE SI SISIERE TRABLE	Ϊ	re
alb : 6/ 5/23	τi	ជ) ជ)
11 : C 22 EN STOP	<u> </u>	ic)
113 : C 5755 579 510P	TŞ TI	ιc
214 :21 212 644 2106 21 212 644 2106	ή	دد) ند)

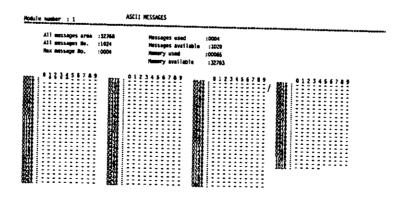
- 19) Network Comments
- 20) Mismatch Comments: Unreferenced
- 21) Mismatch Comments: Undefined

ASCII Message List

22) ASCII Messages (Message List)

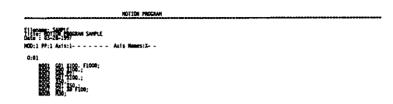
Module number : 1 ASC11 MESSAGES	
Mottage annhor :0001 Hessage used munory :0020 Hedwie: 'ASCII MESSAGE TEST DATA', I3, J1, JA, IX,	Monded rogs num :003
Message number :0002 Message used memory :0017 Module: 'ASCII MESSAGE TEST DATA',11,	Mended regs from :001
Message number :0003 Message used munory :0006 Modele: 511,3311,531.	Reeded Pags man :043
Message manner :0004 Nessage used menery :0022 Module: 'SAMPLE SAMPLE', 'TEST TEST TEST',	Nonded rags new :000

23) ASCII Messages (Used Status List)

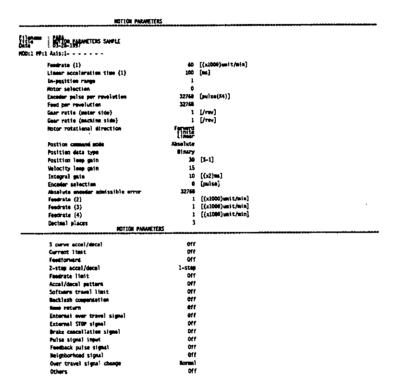


Motion Lists

24) Motion Programs



25) Motion Parameters



8.2 Cross References

Cross-reference data is necessary to perform printing. Cross-reference data is the data that is printed together with ladder lists and table lists and it is used to indicate which network an address is in and where a coil's address is used for a relay.

The following procedure is used to calculate a cross reference. The cross reference files are created when calculation has been completed.

Cross reference files: ???.XR1

???.XR2 ???.XR3

???.XRD ???: Name of database

1) Select 2. Offline from the Main Menu.

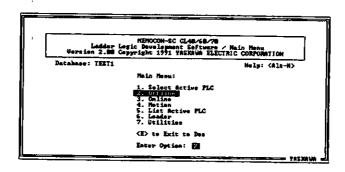


Figure 8.1

2) Select 8. Cross Reference Disposition from the Offline Edit Menu.

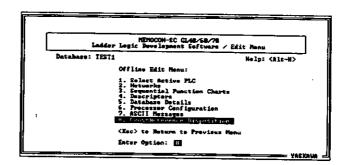


Figure 8.2

3) A message will appear to confirm the contents. Enter "Y" or "N" as appropriate.

The calculation is executed.

Note (1) If a cross-reference does not exist, it cannot be printed. In addition, if a cross-reference is not current, the correct program data will not be printed.

- (2) After editing a network, always perform the cross-reference calculation and update the data.
- (3) Depending on the program, cross-reference data can be a substantial size. Always check that there is enough free space available on the hard disk of the computer, as the size of the cross-reference data may reach two to three times the size of the database in a program where the same address is used for many purposes.

8.3 List Settings

The following settings are possible for lists.

Printer Parameters Settings

Sets the model of the connected printer, as well paper size, dates and page numbers.

Printing Mode Settings

Sets what type of list will be created. Also, the type of ladder or table lists and range of data to be printed can be specified.

Registering a New Printer

It is possible to change the printer control codes of the models supported by MEMOCAD-PRO. The changed code system can be registered in any name.

Note After each parameter has been set, press the Alt + E Keys to save the set contents. Or, press the "S" key from the Print Menu (the Main Menu of the list) to move the cursor to Save List Settings, then press the Enter Key to save.

8.3.1 Printer Parameters Settings

Sets the model of the connected printer, as well paper size, dates and page numbers.

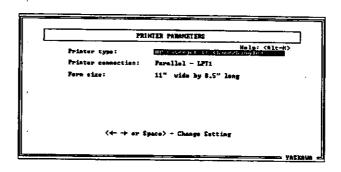


Figure 8.3

Printer type:

Set this to match the printer connected.

Printer connection: Select either serial communications or parallel communications.

Form size:

Sets the size of the paper to be used for printing.

8.3.1 Printer Parameters Settings cont.

1) Select 7. Utilities from the Main Menu.

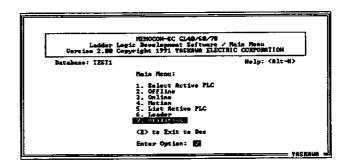


Figure 8.4

If a database has not been selected, the screen for selecting a database will appear. Select a database using the procedures described in 3.1.3 Selecting a Database. If the database selected is being changed, select 1. Select Database from the Printer Menu.

2) Move the cursor to 1. Configuration from the Utility Menu and press the Enter Key to display the Printer Parameters Setting Screen.

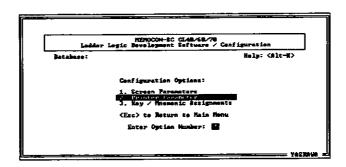


Figure 8.5

- 3) Move the cursor to 2. Printer Parameters and press the Enter Key.
- 4) Move the cursor to Printer type.

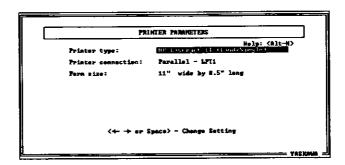


Figure 8.6

- 5) Press the Space Key to select the type of printer to be connected.
- 6) Move the cursor to Printer connection.

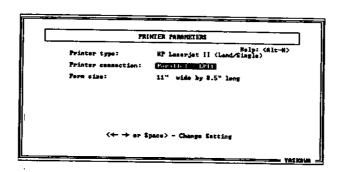


Figure 8.7

- 7) Use the Space Key to choose the appropriate type of connection for the printer.
- 8) Move the cursor to Form size.

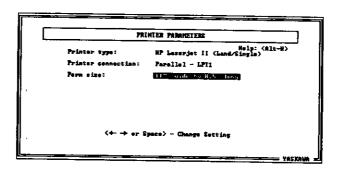


Figure 8.8

9) Use the Space Key to select the appropriate paper size.

Instead of using the Space Key, it is possible to select the form size by pressing the Right and Left Cursor Keys. To alter pages or dates, press the Enter Key while "Y" is selected to display the input field. Enter the appropriate numeric values and press the Enter Key.

10) Press the Alt + E Keys to save the setting and return to the Print Menu.

8.3.2 Network/SFC Print Settings

8.3.2 Network/SFC Print Settings

The following procedures are used to specify print settings for a ladder list or SFC list.

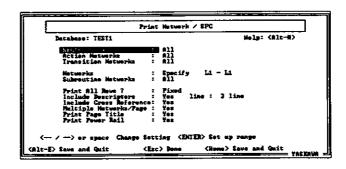


Figure 8.9

SFC's, Action Networks, Transition Networks, Networks, Subroutine Networks: Selects either the ladder list or SFC list to be printed.

Print All Rows?:

If Fixed is specified, seven blank lines are printed when a program ends. If this function is set to Variable, it is possible to move to the next network without printing the remaining empty lines.

Variable: Include Descriptors:

Sets whether or not the ladder list should include descriptors (comments). The signal names can be set for 1 to 3 lines of print.

Include Cross Reference:

The cross reference for a coil is normally printed beside the coil or, depending on the size of paper used, under the network.

Multiple Networks/Page:

Sets the number of networks printed on one page to either one network or as many networks as can be contained.

Print Page Title:

This function will print the page title created on the network descriptions at the top of the page of the ladder list.

Print Power Rail:

Sets whether or not to print the power rail on the right end of the form. (The power rail is normally printed on the left end.)

1) Select 5. List Active PLC from the Main menu.

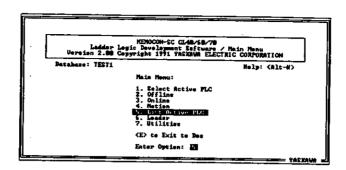


Figure 8.10

2) Move the cursor to 2. Print Network/SFC and press the Enter Key.

The Print Network/SFC Screen will appear.

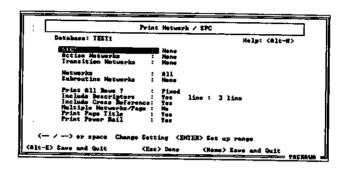


Figure 8.11

3) Move the cursor to SFC's and press the Space Key to select from All, None or Specify.

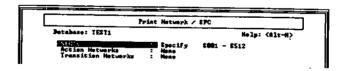


Figure 8.12

- 4) If Specify is selected, press the Enter Key and the area input field will appear.
- 5) Enter the first address to be printed and press the Enter Key.
- 6) Enter the last address to be printed.

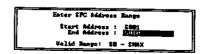


Figure 8.13

8.3.2 Network/SFC Print Settings cont.

7) Press the Enter Key to save the area setting.

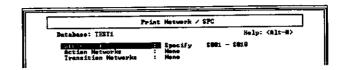


Figure 8.14

- 8) Use the same procedure for the setting of the action networks, transition networks, networks and subroutine networks.
- 9) Move the cursor to Print all Rows? and press the Space Key to select either from Fixed or Variable.

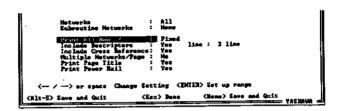


Figure 8.15

10) Move the cursor to Include Descriptors and press the Space Key to set either Yes or No.

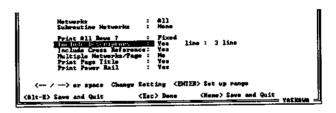


Figure 8.16

11) If Yes is set and the Enter Key is pressed, the input field to set the number of lines to be printed for the signal name will appear.

Use the above step only when the number of lines to be printed needs to be changed.

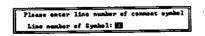


Figure 8.17

12) Enter the number of lines to be printed and press the Enter Key.

- 13) Move the cursor to Include Cross Reference and press the Space Key to select either Yes or No.
- 14) Move the cursor to Multiple Networks/Page and press the Space Key to select either Yes or No.
- 15) Move the cursor to Print Page Title and press the Space Key to select either Yes or No.
- 16) Move the cursor to Print Power Rail and press the Space Key to select either Yes or No.
- 17) Press the Alt + E Keys to save the setting and return to the List Menu.

8.3.3 Print Tables/Reports Settings

The following kinds of table lists are possible.

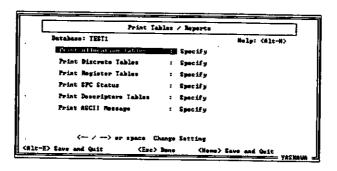


Figure 8.18

Print Allocation Tables:

Prints lists of I/O, program memory, and other allocations.

Print Discrete Tables:

Prints tables which indicate the disabled status and used status of relays and coils.

Print Register Tables:

Prints tables which indicate the used status and contents of each register.

Print SFC Status:

Prints the tables for SFC mode, simulation, and used status.

Print Descriptors Tables:

Outputs lists of the descriptors created. If the cross reference settings are also output this can be used as a cross reference list.

Print ASCII Message:

Outputs lists of ASCII messages.

8.3.3 Print Tables/Reports Settings cont.

1. Print Allocation Tables Settings

The following procedure is used to print various kinds of allocations performed in 4.5 Setting the System Configuration.

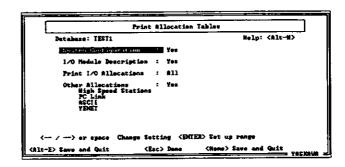


Figure 8.19

System Configurations:

Prints details such as the type of the GL processor targeted and program memory allocation.

I/O Module Description:

Prints the names of Modules on the I/O allocation list.

Print I/O Allocations:

Prints the I/O allocation for each rack and slot.

High-speed Stations:

Prints the high speed stations allocations.

PC Link:

Prints the PC link allocations.

ASCII:

Prints the ASCII allocations.

YENET:

Prints the YENET routine tables.

1) Select 5. List Active PLC from the Main menu.

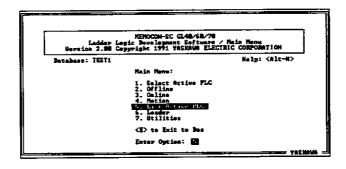


Figure 8.20

2) Move the cursor to 3. Print Tables/Reports from the Print Menu and press the Enter Key.

When the Enter Key is pressed, the default is Specify. Press the Space Key to set to either None or All. When All is selected, all table/reports will be printed.

The Print Tables/Reports Menu will appear.

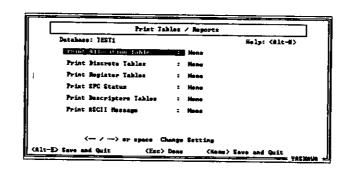


Figure 8.21

3) Move the cursor to Print Allocation Tables and press the Enter Key.

The Print Allocation Tables Screen will appear.

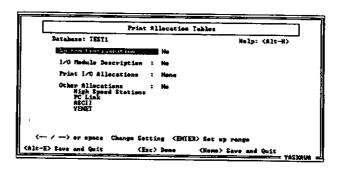


Figure 8.22

4) Press the Space Key to select either Yes or No for System Configuration.



Figure 8.23

5) Move the cursor to I/O Module Description and press the Space Key to select either Yes or No.

8.3.3 Print Tables/Reports Settings cont.

6) Move the cursor to Print I/O Allocations and press the Space Key to select either All, None or Specify.



Figure 8.24

7) If Specify is selected, press the Enter Key to display the area input field and enter the areas for the channel and station.

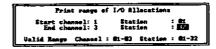


Figure 8.25

8) Press the Enter Key to save the set areas.



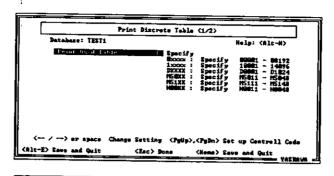
Figure 8.26

- 9) Move the cursor to Other Allocations and press the Space Key to select either Yes or No.
- 10) Press the Alt + E Keys to save the settings.

Note The printer will omit unallocated portions within the range specified by All or Specify.

2. Print Discrete Tables Settings

The following procedure is used to print tables which indicate used or disabled status of relays and coils.



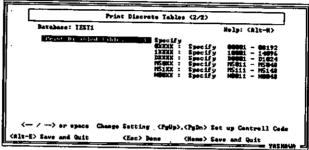


Figure 8.27

Print Used Tables:

Prints a list of the used status of coils and relay programs.

Print Disabled Tables:

Prints a list of the disabled status of coils and relays, as well as the

OFF or ON status if Disabled is selected.

1/2 Used Tables → 2/2 Disabled Tables:

Can be switched using the Page Up and Page down Keys.

1) Select 5. List Active PLC from the Main menu.

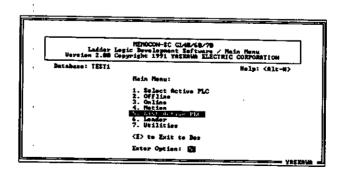


Figure 8.28

8.3.3 Print Tables/Reports Settings cont.

2) Move the cursor to 3. Print Tables/Reports from the Print Menu and press the Enter Key.

The Print Tables/Reports Menu will appear.

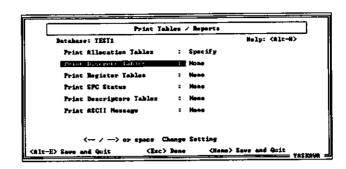


Figure 8.29

3) Move the cursor to Print Discrete Tables and press the Enter Key.

When the Enter Key is pressed, the default is Specify. Press the Space Key to set to either None or All. When All is selected, all reference numbers will be printed.

The Print Discrete Table (1/2) will appear.

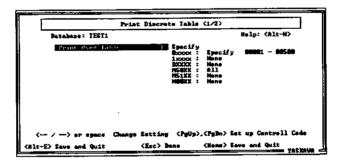


Figure 8.30

- 4) Press the Space Key to select either All, None or Specify.
- 5) When Specify is selected, the cursor will automatically move to 0xxxx.

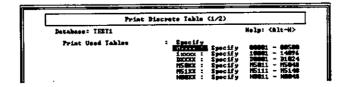


Figure 8.31

- 6) Press the Space Key to select either All, None or Specify.
- 7) When Specify is selected, press the Enter Key to display the area input field, and enter the reference numbers of the area to be printed.



Figure 8.32

8) Press the Enter Key to save the set areas.

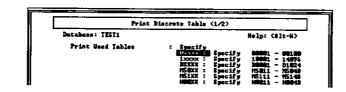


Figure 8.33

- 9) Use the procedure described above to set the remaining relays (coils).
- 10) Press the Page Down Key to display the Print Discrete Tables (2/2).

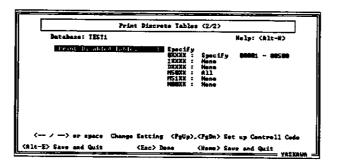


Figure 8.34

- 11) Use the procedure described above for setting the Print Used Tables.
- 12) Press the Alt + E Keys to save the settings.
- 3. Print Register Tables Settings

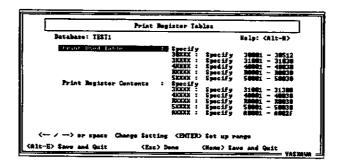


Figure 8.35

1) Select 5. List Active PLC from the Main menu.

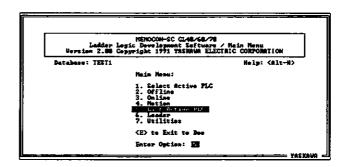


Figure 8.36

2) Move the cursor to 3. Print Tables/Reports from the Print Menu and press the Enter Key.

The Print Tables/Reports Menu will appear.

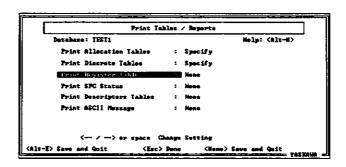


Figure 8.37

3) Move the cursor to the Print Register Tables and press the Enter Key.

When the Enter Key is pressed, the default is Specify. Press the Space Key to set either to None or All. When All is selected, all reference numbers will be printed.

The Print Register Tables Menu will appear.

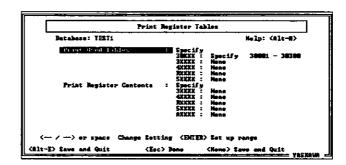


Figure 8.38

- 4) Use the Space Key to select from the Print Used Tables either of the All, None or Specify.
- 5) If Specify is selected, the cursor will automatically move to 30XXX.

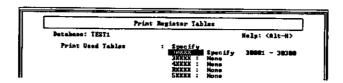


Figure 8.39

- 6) Press the Space Key to select either All, None or Specify.
- 7) When Specify is selected, press the Enter Key to display the area input field, and enter the reference numbers of the area to be printed.



Figure 8.40

8) Press the Enter Key to save the area.

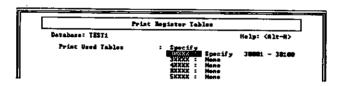


Figure 8.41

- 9) Set remaining registers in the same manner.
- Use the same procedure described above for setting the Print Register Contents, and the the Print Used Tables.
- 11) Press the Alt + E Keys to save the settings.
- 4. Print SFC Status Tables Settings

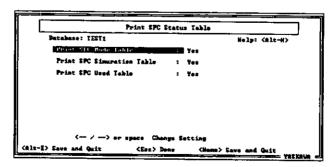


Figure 8.42

1) Select 5. List Active PLC from the Main menu.

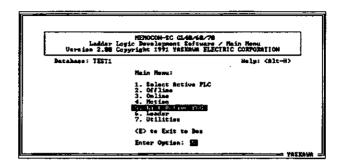


Figure 8.43

2) Move the cursor to 3. Print Tables/Reports from the Print Menu and press the Enter Key.

The Print Tables/Reports Menu will appear.

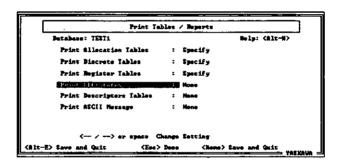


Figure 8.44

3) Move the cursor to Print SFC Status and press the Enter Key.

When the Enter Key is pressed, the default is Specify. Press the Space Key to set either to None or All. When All is selected, all the SFC table/reports will be printed.

The Print SFC Status Table Menu will appear.

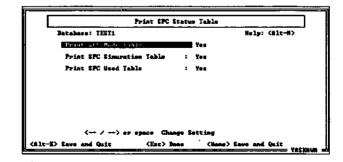


Figure 8.45

- 4) Press the Space Key to set either Yes or No to set the Print SFC Mode Table.
- 5) Press the Down Cursor Key to move the cursor to the Print SFC Simulation Table.
- 6) Press the Space Key to set either Yes or No.
- 7) Set the the Print SFC Used Table in the same manner described above.
- 8) Press the Alt + E Keys to save the settings.

5. Print Descriptors Tables Settings

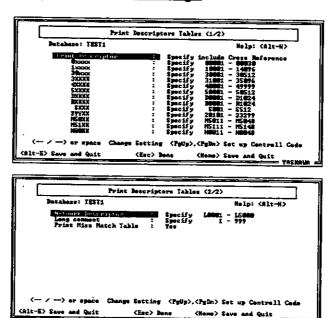


Figure 8.46

Page 1/2 \rightarrow 2/2: Can be switched using the Page Up /Page Down Keys.

1) Select 5. List Active PLC from the Main Menu.

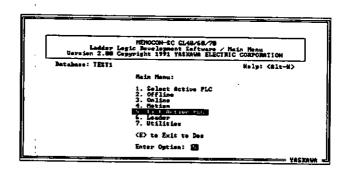


Figure 8.47

8.3.3 Print Tables/Reports Settings cont.

2) Move the cursor to 3. Print Tables/Reports from the Print Menu and press the Enter Key.

The Print Tables/Reports Menu will appear.

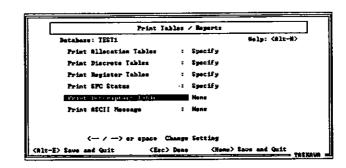


Figure 8.48

3) Move the cursor to the the Print Descriptors Tables and press the Enter Key.

When the Enter Key is pressed, the default is Specify. Press the Space Key to set either to None or All. When All is selected, all tables/reports will be printed.

The Print Descriptors Tables (1/2) Screen will appear.

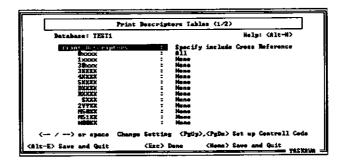


Figure 8.49

- 4) Press the Space Key to select either All, None or Specify.
- 5) When Specify is selected, the cursor will automatically move to 0xxxx.

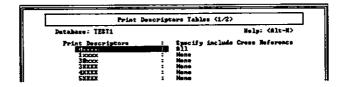


Figure 8.50

- 6) Press the Space Key to select either All, None or Specify.
- 7) When Specify is selected, press the Enter Key to display the area input field, and enter the reference numbers of the area to be printed.

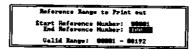


Figure 8.51

8) Press the Enter Key to save the area.

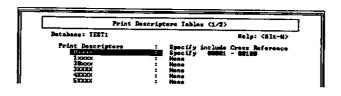


Figure 8.52

- 9) Set the remaining tables using the same procedure.
- 10) Press the Page Down Key to display the Print Descriptors Tables (2/2) Screen.

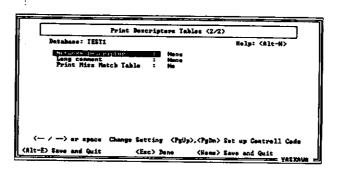


Figure 8.53

- 11) Use the same procedure described above for specifying the Network Descriptor and the Long Comment settings.
- 12) Press the Space Key to set Yes or No to select the Print Miss Match Table.
- 13) Press the Alt + E Keys to save the settings.

8.3.3 Print Tables/Reports Settings cont.

6. Print ASCII Message Settings

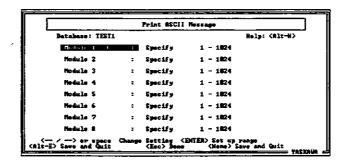


Figure 8.54

1) Select 5. List Active PLC from the Main menu.

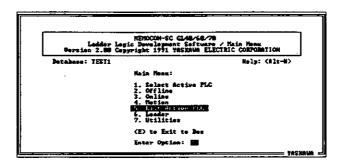


Figure 8.55

2) Move the cursor to 3. Print Tables/Reports from the Print Menu and press the Enter Key.

The Print Tables/Reports Menu will appear.

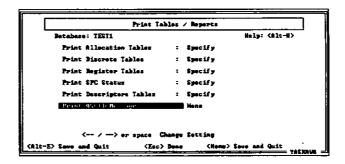


Figure 8.56

3) Move the cursor to Print ASCII Message and press the Enter Key.

When the Enter Key is pressed, the default is Specify. Press the Space Key to set either to None or All. When All is selected, all tables/reports will be printed.

The Print ASCII Message Screen will appear.

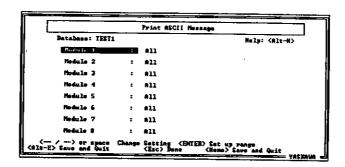


Figure 8.57

- 4) Move the cursor to the Module to be to printed.
- 5) Press the Space Key to select All or Specify.
- 6) When Specify is selected, press the Enter Key to display the input field for Specify and enter the range to be printed.



Figure 8.58

7) Press the Enter Key to save the range.

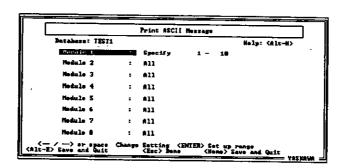


Figure 8.59

- 8) Set other Modules to None.
- 9) Press the Alt + E Keys to save the settings.

8.3.4 Print Motion Lists Settings

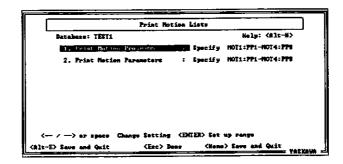


Figure 8.60

1) Select 5. List Active PLC from the Main Menu.

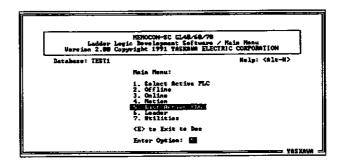


Figure 8.61

2) Move the cursor to 4. Print Motion List on the Print Menu, and press the Enter Key.

When the the Enter Key is pressed, the default is Specify. Press the Space Key to set either to None or All. When All is selected, all the programs and parameters will be printed.

The Print Motion Lists Menu will appear.

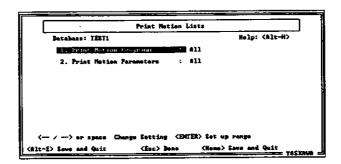


Figure 8.62

- 3) Press the Space Key to select either All, None or Specify.
- 4) When Specify is selected, press the Enter Key to display the input field for Specify and enter the range.

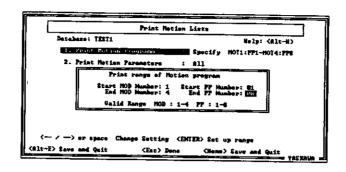


Figure 8.63

5) Press the Enter Key to save the range.

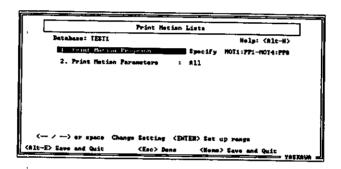


Figure 8.64

- 6) Use the same procedure described above for setting the Print Monitor Parameters.
- 7) Press the Alt + E Keys to save the setting.

8.4 Printing

The following procedure is used to print out the specified list. Check the list settings and the connection to the printer.

1) Select 5. List Active PLC from the Main menu.

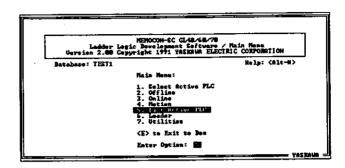


Figure 8.65

2) Carry out the settings necessary for printing.

Set the necessary items (the model of printer, print type, etc.) according to the information listed in 8.3 List Settings.

3) Move the cursor to <P> to Print to Printer.

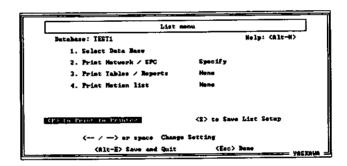


Figure 8.66

4) When the Enter Key is pressed, a message will appear confirming execution of printing.

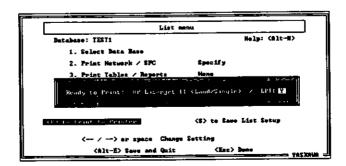


Figure 8.67

5) Enter "Y" and press the Enter Key.

Printing will start.

When the printing has been completed, the printing time will appear. Press any key to return to the List Menu.

Note After completing network editing but before printing, recalculate the cross references, according to the information contained in *2. Cross Reference Process*, to upgrade the cross reference data. If the cross reference data is not current, correct data cannot be printed.

8.5 Cancelling Printing

The procedure below is used to cancel printing.

1) Press the Esc Key.

It may take a little while after the Esc Key has been pressed before the screen responds. However, if the Esc Key is pressed again, this will constitute the Esc Key being pressed for the second time to cancel the first operation. So make sure to press the key only once and wait for the screen to respond.



Figure 8.68

A message will appear confirming the cancellation.

While the message is being displayed, the operation is being suspended.

2) Enter "N" and press the Enter Key.

Enter "Y" to continue the printing.

The print out will be cancelled and the printing time will appear.

The Loader

9

This chapter describes the loading and saving of data between a specified device and a computer and connection methods between these devices and a computer. As well it describes the procedure for selecting motion programs and parameters, how to set device and communications parameters, and starting and stopping the processor.

9.1	Loader Menu	9-2
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9.4	Device and Communications Parameters Settings	9-8
9.5	Starting and Stopping the Processor	9-10
9.6	Writing to EEPROM (MM41)	9-11
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9.8	Converting P150 Disk Data	9-22
9.9	Data Communications with P150	9-29
9.10	Loading viaYENET	9-38

9.1 Loader Menu

Loads and saves data between the specified device and files on the hard disk of the computer.

Computer<--> GLxxx (CPU)
Computer<--> P150 data
Computer<--> P150
Computer<--> IF71 (ASCII Module)

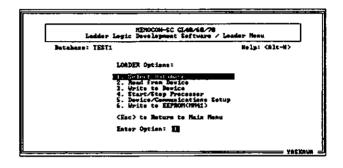


Figure 9.1 Loader Menu

1) Select Database

Selects a file on the computer's hard disk to load and save data to.

2) Read from Device

Reads from a device, selected under 5. Device/Communications Setup, to the computer.

3) Write to Device

Writes from the computer to a device selected under 5. Device/Communications Setup.

4) Start/Stop Processor

Starts and Stops the Processor.

5) Device/Communications Setup

Selects the device and sets its communications parameters.

6) Write to EEPROM (MM41)

Writes the program to the EEPROM (JAMSC-MM41) of the Processor. Applies only when the MM41 is connected to the GL40.

9.2 Connection Methods between Device and Computer

The devices that can be connected to a computer for loading are described below. This section explains the procedure for setting and operation with each of the possible devices.

- Processor (the Communications port of the GL40, GL60, GL70)
- P150
- ASCII Module (IF71)

9.2.1 Connection between Processor and Computer

Connect the RS-232C port at the rear of the computer and the RS-232C port of either an IOP or a Communication Module with a cable.

Use the following models of connection cables.

- JEPMC-W5311-03 (2.5 m) (D-SUB 9-pin)
- JEPMC-W5311-15 (15 m) (D-SUB 9-pin)

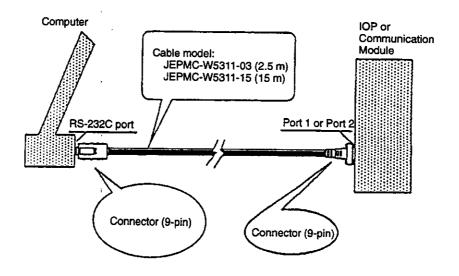


Figure 9.2 Connection Diagram of Processor and Computer

9.2.2 Connection between P150 and Computer

Connects the RS-232C port of the computer and the RS-232C port of the P150 with a cable. Connect the cable connectors according to the cable wiring diagram illustrated below.

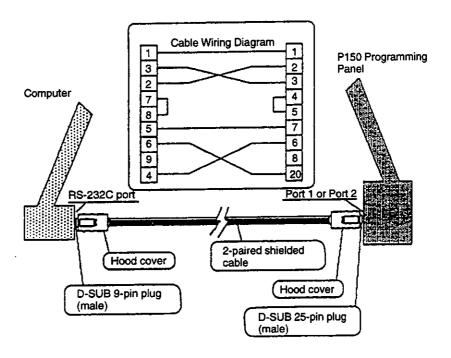


Figure 9.3 Connection Diagram between P150 and Computer

9.2.3 Connection between ASCII Module and Computer

Connect the RS-232C port behind the computer and either of the RS-232C ports of the ASCII Module with a cable.

Use the following models for the connection cables.

- JEPMC-W5311-03 (2.5 m) (D-SUB 9-pin)
- JEPMC-W5311-15 (15 m) (D-SUB 9-pin)

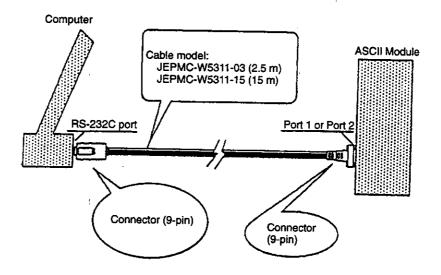


Figure 9.4 Connection Diagram between ASCII Module and Computer

9.3 Motion Program/Parameters Selection

The following procedure is used to select the motion program and parameters to be loaded and saved. When loading a motion program and parameters, select the program using the Module number and program number of a program registered in the database. When saving a motion program and parameters, first create a new file, register it in the database using the Module number and program number and select this file.

When Selecting an Existing File

- 1) Press F1 (Edit) or the Enter Key.
- 2) Set the Module number (MOD).

Use the Up or Down Cursor Key to move to the items to be set.

3) Set the program number (PP).

Use the Right or Left Cursor Key to move the cursor to the Module number (MOD) and the program number (PP).

MOD: Module number setting (1 - 4)

PP: Program number (1 - 8)

File name: Name of the motion program or the parameter file name registered on the

database

Title: Title of the file selected

Date: Date when the selected file was created

Specify the axis number of the Servopack for loading and saving. This applies only when loading or saving to the Servopack. By specifying more than

one axis, it is possible to load to more than one Servopack.

When Creating a New File

1) Press F1 (Directory).

Axis:

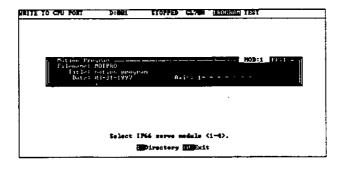


Figure 9.5

- 2) Specify the directory in which the file is to be created.
- 3) Press F5 (New File).
- 4) Enter the file name in the input field.
- 5) Press the Alt + E Keys.

9

9.4 Device and Communications Parameters Settings

The following procedure is used to select a device and specify its parameters.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Use the Space Key or the Right and Left Cursor Keys to select the device.

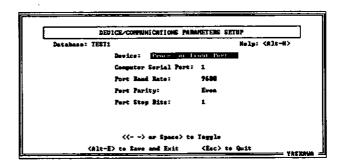


Figure 9.6

4) Press the Enter Key.

The parameters of the selected device will appear.

Parameters Settings

Devices: Processor Front Port

Memocon YENET-3200 P150 Programming Panel

P150 Disk File IF71 ASCII Module

• Processor Front Port Parameters

Computer serial port: 1 or 2 (normally 1)

Port baud rate: 300, 600, 1200, 2400, 4800 or 9600 baud

Port parity: Even, odd, or none

Port stop bits: 1 or 2 Device address: 1 to 247

• Memocon YENET-3200 Parameters

Edit Routine Tables ?: Y or N
Target YENET#: 1 to 126
Target node#: 1 to 126

• P150 Programming Panel Parameters

Computer serial port:

1 or 2 (normally 1)

Port baud rate:

300, 600, 1200, 2400, 4800 or 9600 baud

Port parity:

Even, odd, or none

Port stop bits:

1 or 2

• P150 Disk File

Drive:

A, B,....(connection drive)

• IF71 ASCII Module

Computer serial port:

1 or 2 (normally 1)

Port baud rate:

300, 600, 1200, 2400, 4800 or 9600 baud

Port parity:

Even, odd, or none

Port stop bits: Unit number: 1 or 2 1 to 247

Module number:

1 to 247

5) Use the Up and Down Cursor Keys to move the cursor to the parameter input field.

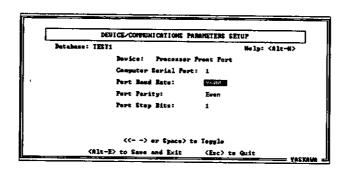


Figure 9.7

- 6) Set the parameters.
- 7) Press the Alt + E Keys to save the changes and complete the settings.

The Loader Menu will return.

9.5 Starting and Stopping the Processor

The following procedure is used to start and stop the Processor. The same operation will start the Processor if it is not activated and stop the Processor if it has been started.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to the Processor Front Port.
- 4) Select 4. Start/Stop Processor from the Loader menu.
- 5) Enter the device address and press the Enter Key.

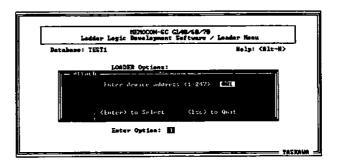


Figure 9.8

6) Check the operations described above and enter "Y", then press the Enter Key.



9.6 Writing to EEPROM (MM41)

The following procedure is used to write a program to EEPROM (JAMSC-MM41). Applies only when GL40 is connected to the MM41.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to the Processor Front Port.
- 4) Select 6. Write to EEPROM (MM41) from the Loader Menu.
- 5) Enter the device address and press the Enter Key.
- 6) Check the operations described above and enter "Y", then press the Enter Key.

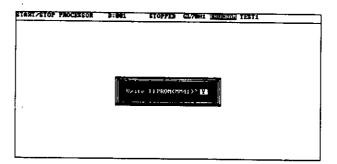
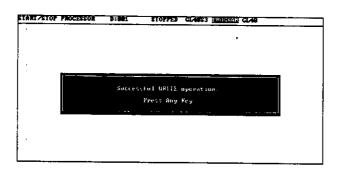


Figure 9.9

"Successful WRITE operation" will appear.



7) Press any key.

9.7.1 Loading Programs, Comments and Extended Memory

9.7 Loading and Saving to the Processor

This function executes the loading and saving of data to the Processor. The kinds of data available are listed below.

- Programs (ladder, SFC, reference data, etc.)
- Comments (applicable only for those models with comment memory)
- Extended memory (applicable only for those models with extended memory)
- Motion programs
- Motion parameters
- ASCII messages (connection to an ASCII Module is necessary.)

9.7.1 Loading Programs, Comments and Extended Memory

The following procedure is used to load program and comment data created by the computer to the Processor. Before starting this program, turn off the Processor. (Refer to 9.5 Starting and Stopping the Processor.)

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to the Processor Front Port.
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 3. Write to Device from the Loader Menu.
- 6) Select 1. Ladder Program.

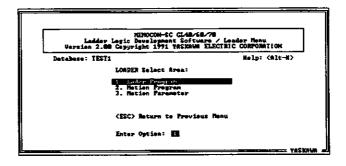


Figure 9.10

7) Enter the device address and press the Enter Key.

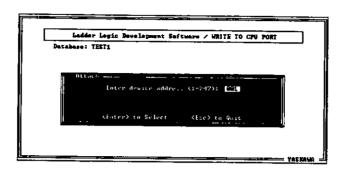


Figure 9.11

8) Select the memory area and the press Enter Key.

Memory Areas

Select from the areas below using the Space Key or Right and Left Cursor Keys.

CPU and data memory: Ladder program

Comment memory:

Available only to GL60S3, GL60H and GL70H

Extended memory:

Available only to GL60S3, GL60H and GL70H

All Processors:

CPU and data memory, comment memory, extended memory

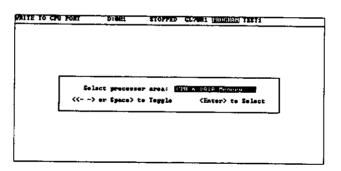


Figure 9.12

9) Check the operations described above and press the Enter Key.

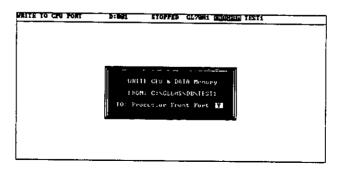


Figure 9.13

9.7.2 Saving Programs, Comments and Extended Memory

The current processing status will appear.

Cancelling Processing

By pressing the Esc Key, the loading process can be cancelled. When loading is cancelled, the data and program inside the CPU will be initialized.

"Successful WRITE Operation" will appear.

10) Press any key.

Note When the type of the CPU connected and the type of CPU set by the database are different, the following message will appear, "Different CPU Type of Processor and Database. Load to Processor?". If "Y" is input and the Enter Key is pressed, the execution will proceed. However, a command may be sent to the CPU that cannot be used by that particular CPU or the memory will run out causing an error to be generated. If this occurs, the program which has been stored in the CPU will be cleared.

9.7.2 Saving Programs, Comments and Extended Memory

The following procedure is used to save the program and comment data stored inside the Processor to the hard disk of the computer.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to the Processor Front Port.
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 2. Read from Device from the Loader Menu.
- 6) Select 1. Ladder Program...
- 7) Enter the device address and press the Enter Key.

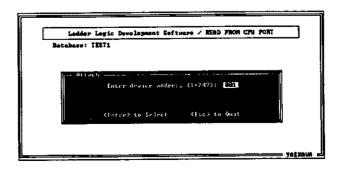


Figure 9.14

8) Select the memory area and the press Enter Key.

Memory Areas

Select from the areas below using the Space Key or Right and Left Cursor Keys.

CPU and data memory: Ladder program

Comment memory:

Available only to GL60S3, GL60H and GL70H Available only to GL60S3, GL60H and GL70H

Extended memory: All Processors:

CPU and data memory, comment memory, extended memory

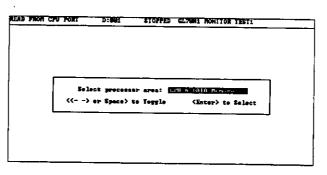


Figure 9.15

9) Check the operations described above and press the Enter Key.

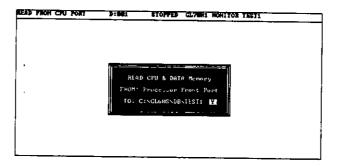


Figure 9.16

The current processing status will appear.

Cancelling Processing

By pressing the Esc Key, the saving process can be cancelled. When saving is cancelled, the data and program inside the CPU will be initialized.

"Successful READ operation" will appear.

10) Press any key.

9.7.3 Loading Motion Program/Parameters

The following procedure is used to load motion programs and parameters from the computer via the IF66 to the Servopack. When loading motion programs and parameters, the IF66 and the Servopack must be correctly connected. When the ERR LED of the IF66 is lit, this indicates that a communications error has occurred. When the TX/RX LED of the IF66 is flashing, this indicates that communications are taking place correctly.

9.7.3 Loading Motion Program/Parameters cont.

Before starting this program, turn off the Processor. (Refer to 9.5 Starting and Stopping the Processor) This function is available only for the GL60H, GL70H and GL40S.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to the Processor Front Port.
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 3. Write to Device from the Loader Menu.
- 6) Select 2. Motion Program (or 3. Motion Parameters).
- 7) Enter the device address and press the Enter Key.

The screen for selecting the motion programs/parameters will appear.

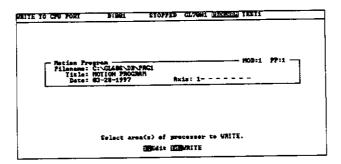


Figure 9.17

8) Select the motion programs/parameters.

For selecting motion programs and parameters, refer to 9.3 Motion Program/Parameters Selection.

- 9) Press F10 (WRITE).
- 10) Enter "Y" and press the Enter Key.

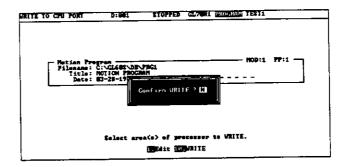


Figure 9.18

The current processing status will appear.

"Successful WRITE operation" will appear.

11) Press any key.

9.7.4 Saving Motion Programs/Parameters

The following procedure is used to save motion programs and parameters from the Servopack to the computer. When saving motion programs and parameters, the IF66 and the Servopack must be correctly connected. When the ERR LED of the IF66 is lit, this indicates that a communications error has occurred. When the TX/RX LED of the IF66 is flashing, this indicates that communications are taking place correctly.

This function is available only to GL60H, GL70H and GL40S.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to the Processor Front Port.
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 2. Read from Device from the Loader Menu.
- 6) Select 2. Motion Program (or 3. Motion Parameters).
- 7) Enter the device address and press the Enter Key.

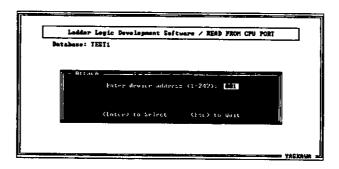


Figure 9.19

9.7.5 Loading ASCII Messages

The screen to select the motion programs/parameters will appear.

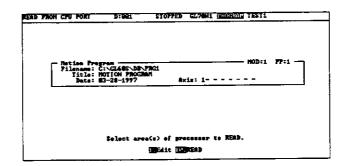


Figure 9.20

8) Select the motion programs/parameters.

For selecting the motion programs and parameters, refer to 9.3 Motion Program/Parameters Selection.

- 9) Press F10 (READ).
- 10) Enter "Y" and press the Enter Key.

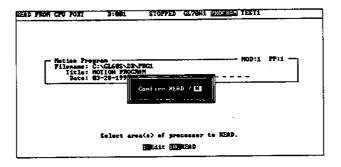


Figure 9.21

The current processing status will appear.

"Successful READ operation" will appear.

11) Press any key.

9.7.5 Loading ASCII Messages

The following procedure is used to load ASCII messages from the computer to the ASCII Module.

- 1) Connect to the ASCII Module.
- 2) Select 6. Loader from the Main Menu.
- 3) Select 5. Device/Communications Setup from the Loader Menu.
- 4) Set the device to IF71 ASCII Module.
- 5) Set the Module number to the number of the Module connected.

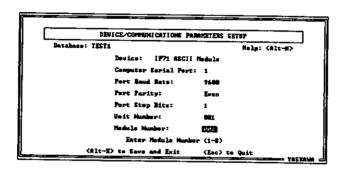


Figure 9.22

The data from the Module number set in the communications parameters is loaded to the ASCII Module.

- 6) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 7) Select 3. Write to Device from the Loader Menu.

Loading will start and its current processing status will appear.

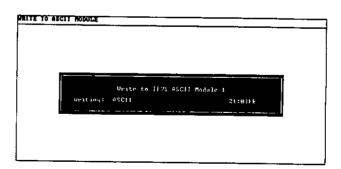


Figure 9.23

By pressing the Esc Key, the process can be cancelled.

"Successful WRITE Operation" will appear.

9.7.6 Saving ASCII Messages

8) Press any key.

9.7.6 Saving ASCII Messages

The following procedure is used to save ASCII messages from the ASCII Module to the computer.

- 1) Connect to the ASCII Module.
- 2) Select 6. Loader from the Main Menu.
- 3) Select 5. Device/Communications Setup from the Loader Menu.
- 4) Set the device to IF71 ASCII Module.
- 5) Set the Module number to the number of the Module connected.

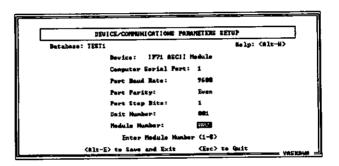


Figure 9.24

The ASCII messages are saved to the Module with the number set in the communications parameters.

- 6) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 7) Select 2. Read from Device from the Loader Menu.

The load will start and its current processing status will appear.

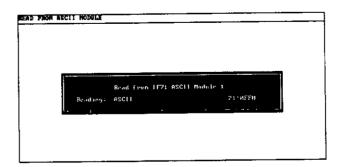


Figure 9.25

By pressing the Esc Key, the process can be cancelled.

"Successful READ operation" will appear.

8) Press any key.

9.8 Converting P150 Disk Data

This function allows the user to create or read files which can be used by a P150 disk. The communication target device can be a floppy disk inserted into the computer or the hard disk of the computer. The kinds of data available are listed below.

- Programs (ladder, SFC, reference data, etc.)
- Comments
- Extended memory
- Motion programs
- Motion parameters

9.8.1 Writing Programs, Comments and Extended Memory to a P150 Disk

The following procedure is used to write programs, comments and extended memory to a P150 disk.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Disk File".
- 4) Specify the drive in which the P150 disk will be inserted.
- 5) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 6) Select 3. Write to Device from the Loader Menu.
- 7) Select 1. Ladder Program.
- 8) Enter the file name and press the Enter Key.

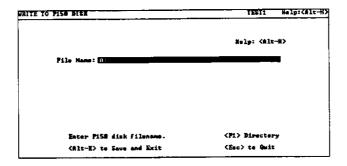


Figure 9.26

Press F1 to display the screen for selecting P150 disk files. With this screen, files can be selected or created using the same procedure as the database selection screen.

9) Select the memory area and press the Enter Key.

Memory Areas

Select from the areas below using the Space Key or Right and Left Cursor Keys. CPU and data memory

Comment memory: Extended memory:

Available only to GL60S3, GL60H and GL70H Available only to GL60S3, GL60H and GL70H

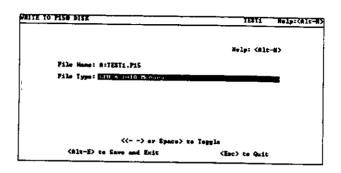


Figure 9.27

- 10) Enter the title and press the Enter Key.
- 11) Enter the date and press the Enter Key.
- 12) Enter the order number and press the Enter Key.
- 13) "Continue? Y" will appear. Press the Enter Key.
- 14) Check the operations described above and press the Enter Key.

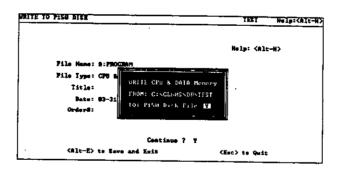


Figure 9.28

The writing will start and the current processing status will appear.

Cancelling Process

By pressing the Esc Key, the loading process can be cancelled. When loading is cancelled, the data and program inside the CPU will be initialized.

9.8.2 Reading Programs, Comments and Extended Memory from a P150 Disk

"Successful WRITE Operation" will appear.

15) Press any key.

9.8.2 Reading Programs, Comments and Extended Memory from a P150 Disk

The following procedure is used to read programs, comments and extended memory from a P150 disk.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Disk File".
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 2. Read from Device from the Loader Menu.
- 6) Select1. Ladder Program.
- 7) Enter the file name to be read and press the Enter Key.

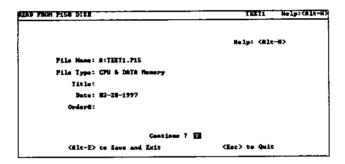


Figure 9.29

Press F1 to display the screen for selecting P150 disk files. With this screen, files can be selected or created using the same procedure as the database selection screen.

- 8) "Continue? Y" will appear. Press the Enter Key.
- 9) Check the operations described above and press the Enter Key.

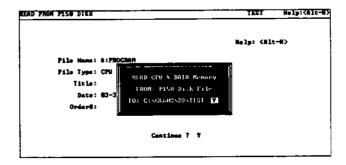


Figure 9.30

The current processing status will appear.

To Cancel Processing

By pressing the Esc Key, the loading process can be cancelled. When loading is cancelled, the data and program inside the CPU will be initialized.

"Successful READ operation" will appear.

10) Press any key.

9.8.3 Writing Motion Programs/Parameters to a P150 Disk

The following procedure is used to write motion programs/parameters to a P150 disk. This function is available only to GL60H, GL70H and GL40S.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Disk File".
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 3. Write to Device from the Loader Menu.
- Select 2. Motion Program (or 3. Motion Parameters).

The screen for selecting the motion programs/parameters will appear.

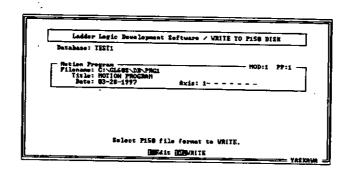


Figure 9.31

7) Select the motion programs/parameters.

For information on selecting motion programs and parameters, refer to 9.3 Motion Program/Parameters Selection.

9.8.4 Reading Motion Programs/Parameters from a P150 Disk

- 8) Press F10 (WRITE).
- 9) Enter the file name and press the Enter Key.

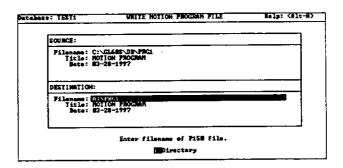


Figure 9.32

Press F1 to display the screen for selecting P150 disk files. With this screen, files can be selected or created using the same procedure as the database selection screen.

- 10) Enter the title and press the Enter Key.
- 11) Enter the date and press the Enter Key.
- 12) Enter "Y" and press the Enter Key.

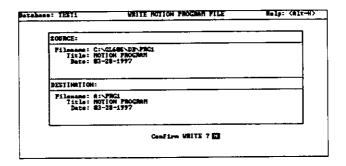


Figure 9.33

"Successful WRITE operation" will appear.

13) Press any key.

9.8.4 Reading Motion Programs/Parameters from a P150 Disk

The following procedure is used to read motion programs/parameters from a P150 disk to the computer. This function is available only to GL60H, GL70H and GL40S.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Disk File".
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 2. Read from Device from the Loader Menu.
- 6) Select 2. Motion Program (or 3. Motion Parameters).

The screen for selecting the motion programs/parameters will appear.

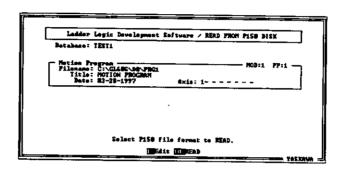


Figure 9.34

7) Select the motion programs/parameters.

For information on selecting motion programs and parameters, refer to 9.3 Motion Program/Parameters Selection.

- 8) Press F10 (READ).
- 9) Enter name of the file to be read and press the Enter Key.

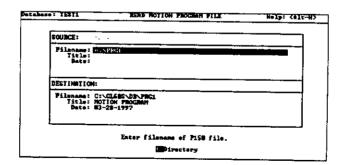


Figure 9.35

Press F1 to display the screen for selecting P150 disk files. With this screen, files can be selected or created using the same procedure as the database selection screen.

9.8.4 Reading Motion Programs/Parameters from a P150 Disk cont.

- 10) Enter the title and press the Enter Key.
- 11) Enter the date and press the Enter Key.
- 12) Enter "Y" and press the Enter Key.

The current processing status will appear.

"Successful READ operation" will appear.

13) Press any key.

9.9 Data Communications with P150

This function allows the user to create or read files which can be used by the P150. Although this procedure is the same as that described in 9.8 Converting P150 Disk Data, this function will also enable connection to the P150 Programming Panel and allow reading from or writing to a floppy disk inserted into the P150. Use this function for creating P150 data when a 3.5 inch floppy disk drive is not connected to the computer.

The kinds of data available are listed below.

- Programs (ladder, SFC, reference data, etc.)
- Comments
- Extended memory
- Motion programs
- Motion parameters

9.9.1 Writing Programs, Comments and Extended Memory to a P150 Disk

The following procedure is used to write programs, comments and extended memory to a disk inserted into the drive of the P150 Programming Panel.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Programming Panel".
- 4) Match the communications parameters to the setting of the P150 port.
- 5) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 6) Select 3. Write to Device from the Loader Menu.
- 7) Select 1. Ladder Program.
- 8) Check the operations described above and press the Enter Key.

9.9.1 Writing Programs, Comments and Extended Memory to a P150 Disk cont.

9) Following the instructions on the screen, go online from the P150.

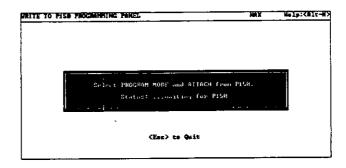


Figure 9.36

10) Following the instructions on the screen, press the Supervisory Key on the P150.

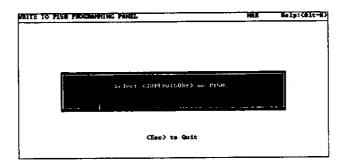


Figure 9.37

11) Following the instructions on the screen, operate the P150.

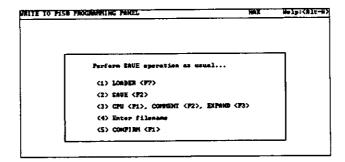


Figure 9.38

The current processing status will appear.

12) Following the instruction on the screen, end operation of the P150.

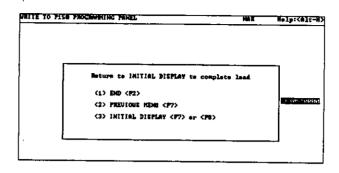


Figure 9.39

"Successful WRITE operation" will appear.

13) Press any key.

Note The P150 should be operated according to the instructions displayed on the screen. If the P150 is operated incorrectly or if processing is stopped, the P150 will hang up. If this occurs, reset the P150.

9.9.2 Reading Programs, Comments and Extended Memory from a P150 Disk

The following procedure is used to read programs, comments and extended memory from the disk inserted into the drive of the P150 Programming Panel.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Programming Panel".
- 4) Match the communications parameters to the setting of the P150 port.
- 5) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 6) Select 2. Read from Device from the Loader Menu.
- 7) Select 1. Ladder Program.
- 8) Check the operations described above and press the Enter Key.

9.9.2 Reading Programs, Comments and Extended Memory from a P150 Disk cont.

9) Following the instructions on the screen, go online from the P150.

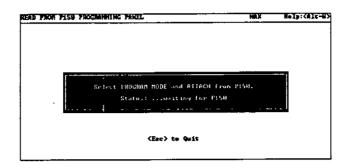


Figure 9.40

10) Following the instructions on the screen, press the Supervisory Key on the P150.

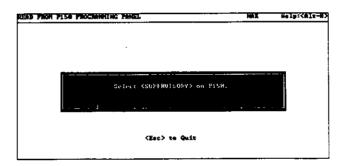


Figure 9.41

11) Following the instructions on the screen, operate the P150.

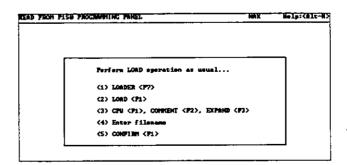


Figure 9.42

Reading will start and the current processing status will appear.

12) Following the instructions on the screen, end operation of the P150.

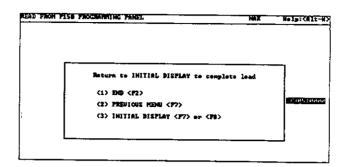


Figure 9.43

"Successful READ operation" will appear.

13) Press any key.

Note The P150 should be operated according to the instructions displayed on the screen. If the P150 is operated incorrectly or if processing is stopped, the P150 will hang up. If this occurs, reset the P150.

9.9.3 Writing Motion Programs/Parameters to a P150 Disk

The following procedure is used to write motion programs/parameters to a disk inserted into the drive of the P150 Programming Panel. This function is only available to GL60H, GL70H and GL40S.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Programming Panel".
- 4) Match the communications parameters to the setting of the P150 port.
- 5) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 6) Select 3. Write to Device from the Loader Menu.
- 7) Select 2. Motion Program (or 3. Motion Parameters).

9.9.3 Writing Motion Programs/Parameters to a P150 Disk cont.

The screen for selecting the motion programs/parameters will appear.

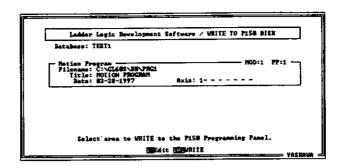


Figure 9.44

8) Select the motion programs/parameters to be written.

For information on selecting motion programs and parameters, refer to 9.3 Motion Program/Parameters Selection.

- 9) Press F10 (WRITE).
- 10) Enter "Y" and press the Enter Key.
- 11) Check the operations described above and press the Enter Key.
- 12) Following the instructions on the screen, go online from the P150.

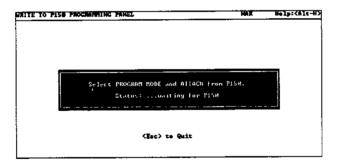


Figure 9.45

13) Following the instructions on the screen, operate the P150.

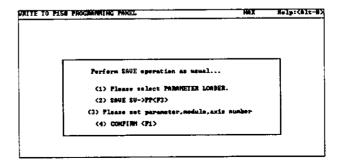


Figure 9.46

Writing will start and the current processing status will appear.

14) Following the instructions on the screen, end operation of the P150.

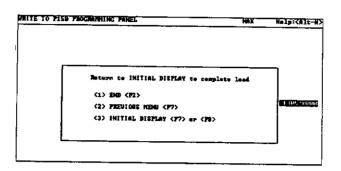


Figure 9.47

"Successful WRITE operation" will appear.

15) Press any key.

Note The P150 should be operated according to the instructions displayed on the screen. If the P150 is operated incorrectly or if processing is stopped, the P150 will hang up. If this occurs, reset the P150.

9.9.4 Reading Motion Program/Parameter from a P150 Disk

The following procedure is used to read the motion programs/parameters from the computer to a P150 disk. This function is only available to GL60H, GL70H and GL40S.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to "P150 Programming Panel".
- 4) Match the communications parameters to the setting of the P150 port.
- 5) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 6) Select 2. Read from Device from the Loader Menu.
- 7) Select 2. Motion Program (or 3. Motion Parameters).
- 8) Enter the device address and press the Enter Key.

9.9.4 Reading Motion Program/Parameter from a P150 Disk cont.

The screen to select the motion programs/parameters will appear.

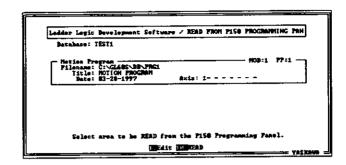


Figure 9.48

9) Select the motion programs/parameters to be loaded.

For information on selecting motion programs and parameters, refer to 9.3 Motion Program/Parameters Selection.

- 10) Press F10 (READ).
- 11) Enter "Y" and press the Enter Key.
- 12) Check the operations described above and press the Enter Key.
- 13) Following the instructions on the screen, go online from the P150.

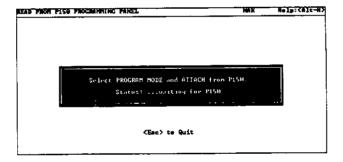


Figure 9.49

14) Following the instructions on the screen, operate the P150.

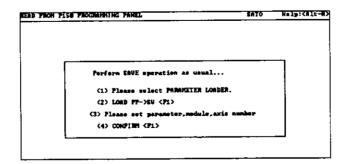


Figure 9.50

Reading will start and the current processing status will appear.

15) Following the instruction on the screen, end operation of the P150.

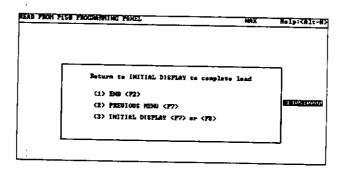


Figure 9.51

"Successful READ operation" will appear.

16) Press any key.

Note The P150 should be operated according to the instructions displayed on the screen. If the P150 is operated incorrectly or if processing is stopped, the P150 will hang up. If this occurs, reset the P150.

9.10 Loading viaYENET

The following procedure is used to load or save to the Processor via YENET.

- 1) Select 6. Loader from the Main Menu.
- 2) Select 5. Device/Communications Setup from the Loader Menu.
- 3) Set the device to the MEMOCON YENET-3200.
- 4) Select the database. (Refer to 3.1.3 Selecting a Database.)
- 5) Select 3. Write to Device or 2. Read from Device from the Loader Menu.
- 6) Select 1. Ladder Program.
- 7) Enter the YENET number and the node number and press Enter Key.

Press the Alt + N Keys to change over the input field to the YENET names input.

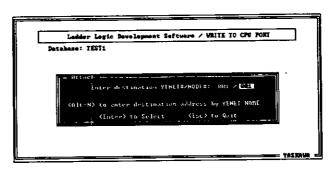


Figure 9.52

8) Select the memory area and press Enter Key.

Memory Areas

Select from the areas below using the Space Key or Right and Left Cursor Keys.

CPU and data memory: Ladder program

Comment memory:

Available only to GL60S3, GL60H and GL70H

Extended memory:

Available only to GL60S3, GL60H and GL70H

All Processors:

CPU and data memory, comment memory, extended memory

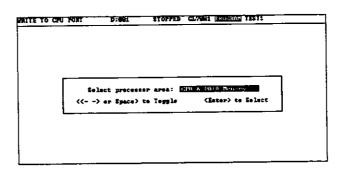


Figure 9.53

9) Check the operations described above and press the Enter Key.

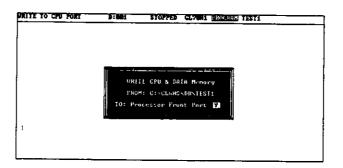


Figure 9.54

The current processing status will appear.

Cancelling Processing

By pressing the Esc Key, the loading process can be cancelled. When loading is cancelled, the data and program inside the CPU will be initialized.

"Successful WRITE Operation" or "Successful READ Operation" will appear.

10) Press any key.

ΙŲ

Environment Settings

10

This chapter describes how to set up the working environment for the P150, including selection of screen colors, key assignments, and mnemonics.

10.1	Setting Screen Colors	10-2
10.2	Changing Key and Mnemonic Assignments	10 5

10.1 Setting Screen Colors

The following procedure is used to set the screen colors.

1) Select 7. Utilities from the Main Menu.

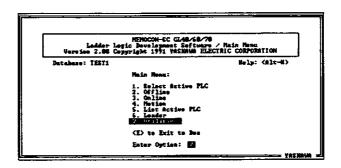


Figure 10.1

2) Select 1. Configuration from the Utility Menu.

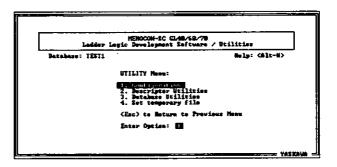


Figure 10.2

3) Select 1. Screen Parameters from the Configuration Options.

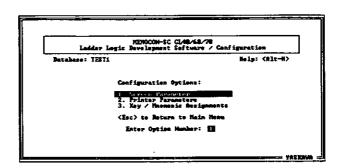


Figure 10.3

The Screen Parameters Setting Screen will appear.

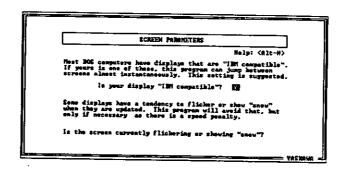


Figure 10.4

4) Enter "Y" if the computer is IBM compatible, enter "N" if not.

Enter "Y" and the Enter Key if the screen is unclear or fuzzy and white, enter "N" and the Enter Key if not.

The Screen Colors Setting Screen will appear.

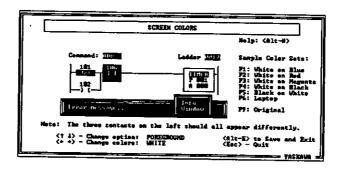


Figure 10.5

5) Use the Up or Down Cursor Key to switch between the items to be set.

The items to be set are listed below.

Foreground: Sets the colors of the background and characters (or lines).

Highlight: Sets the color which highlights characters and symbols.

• Error foreground: Sets the colors of the display field and error messages.

Sets the colors of the display box and comments.

In addition, the color combinations are preset into the Function Keys and therefore can be selected using these Function Keys.

6) Specify the colors either by moving the cursor with the Right and Left Cursor Keys or by using the Function Keys.

The following shows an example for setting the colors according to the display types.

Display Type	Foreground	Highlight	Error Foreground	Box Foreground				
Color Display	Bright blue	Yellow	Bright red	Brilliant white				
Liquid Crystal Display (98 NOTE, etc.)	F4: Monochrome1 (black against white background) F5: Monochrome 2 (white against black background)							
Plasma Display (Laptop, etc.)	1	F4: Monochrome 1 (red against black background) F5: Monochrome 2 (black against red background)						

Note If setting 1 or 2 described above is selected on color display, the white and black colors will be reversed.

7) Press the Alt + E Keys to save the setting.

10.2 Changing Key and Mnemonic Assignments

This section will demonstrate how to assign the Function Keys to input elements used on networks or on SFC editing. Using this procedure, Function Keys from F1 to F10 can be freely assigned to functions, mnemonics and prompts.

Three kinds of items which can be changed are listed below.

- The function number to be assigned to each function
- Mnemonics
- Prompts

When setting the function number, the description will automatically change to the corresponding function number. However, the contents of the description cannot be changed.

Note If installation of the MEMOCAD-PRO is attempted on a drive other than C drive, an error message saying, "TKB File not Found" will appear. Once a TKB file is specified, the error will not occur again. (Refer to 10.2.3 Selecting Assigned Settings)

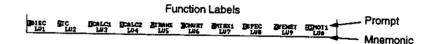


Figure 10.6

10.2.1 Displaying the Screen for Key/Mnemonic Assignments

The following procedure is used to display the screen for key and mnemonic assignments.

1) Select 7. Utilities from the Main Menu.

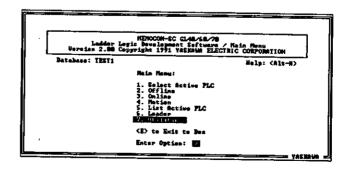


Figure 10.7

10.2.1 Displaying the Screen for Key/Mnemonic Assignments cont.

2) Select 1. Configuration from the Utility Menu.

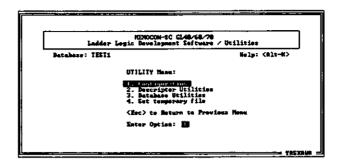


Figure 10.8

3) Select 3. Key/Mnemonic Assignments from the Configuration Options.

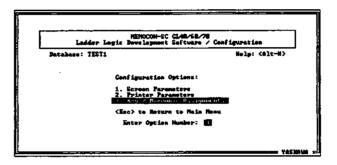


Figure 10.9

The screen for selecting the desired key/mnemonic file (extension: TKB) will appear.

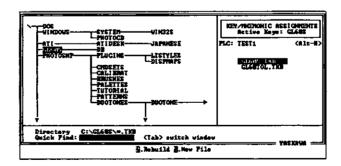


Figure 10.10

The screen for selecting files will initially show GL60S.TKB (Offline)/GL60TOL.TKB (Online). Do not change these two files as they are preset by MEMOCAD-PRO.

4) Press F5 (New File) as shown on the selection screen.

The screen for entering the file name will appear.

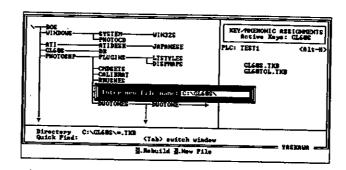


Figure 10.11

5) Enter the file name in the input field and press the Enter Key.

The extension .TKB needs not be input as it will automatically be set.

A confirmation message will appear asking whether to execute the edit.

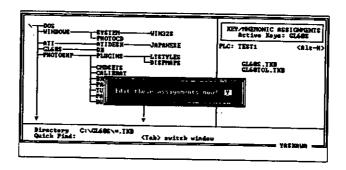


Figure 10.12

6) Enter "Y" and press the Enter Key.

10.2.2 Setting New Key Assignments

The screen for setting the keys and mnemonics will appear.

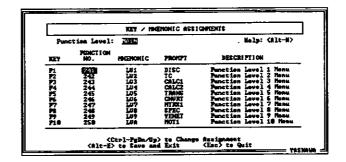


Figure 10.13

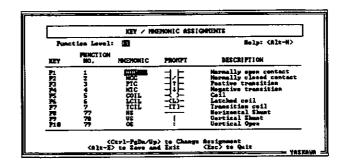


Figure 10.14

If a new TKB file was created, its display contents would be the same as its master.

Moving the Cursor

Up and down:

Press the Up or Down Cursor Key.

Right and Left:

Press the Ctrl + the Right and Left Cursor Key.

Changing function levels: Press the Page Down or Page Up Key.

10.2.2 Setting New Key Assignments

This function allows the user to change the key assignments file to their own preferences to simplify operation. The example shown below explains how to change the key assignment for a certain key from a transition coil (TCIL) to a horizontal short circuit (HS).

1) Press the Page Down Key to display the menu on which transition coil (TCIL) is listed.

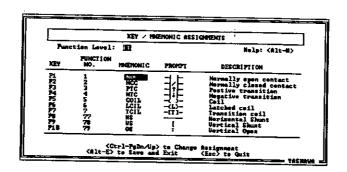


Figure 10.15

2) Press the Down Cursor Key to move the cursor to the transition coil (TCIL).

It is possible to move the cursor to the target by pressing the Function Keys (in this case F7).

3) Enter the function number (77) of the horizontal short circuit.

The function number indicates the number assigned to each element. Refer to Appendix B: Function Key Menu List. It is also possible to use the the Ctrl + Page Down/Page Up Keys to change the setting above.

4) Press the Enter Key to assign the horizontal short circuit (HS) to the F7 key.

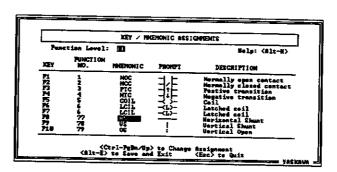


Figure 10.16

5) Press the Alt + E Keys to save the setting.

Using the procedure above the mnemonics and prompts can be easily changed. Move the cursor using the Tab Key or the Ctrl + Right Cursor Key.

10.2.3 Selecting Assigned Settings

The key and mnemonic assignments are saved as a TKB file. The following procedure is used to select the TKB file with the required settings. The default for MEMOCAD-PRO is GL60S.TKB.

10.2.3 Selecting Assigned Settings cont.

1) Select 7. Utilities from the Main Menu.

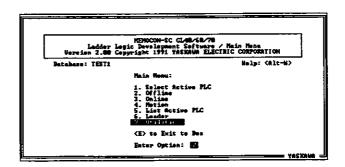


Figure 10.17

2) Select 1. Configuration from the Utility Menu.

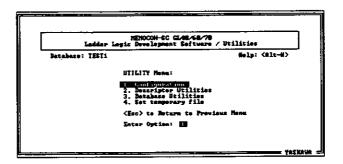


Figure 10.18

3) Select 3. Key/Mnemonic Assignments from the Configuration Options.

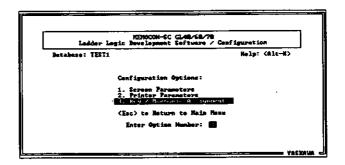


Figure 10.19

The screen for selecting the desired key/mnemonic file will appear.

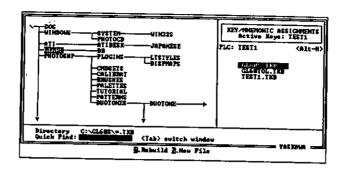


Figure 10.20

4) Move the cursor to the key/mnemonic file to be selected, and press the Enter Key.

A confirmation message asking whether to execute the edit will appear.

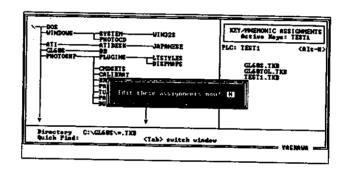


Figure 10.21

- 5) Make sure that "N" is entered, and press the Enter Key.
- 6) The specified mnemonic assignment will be set and the screen will return automatically to the Configuration Menu.

Note The mnemonic assignment selected here will remain unchanged the next time the system is re-started.

Appendix A

List of Function Key Menus

A.1 Function Key Menu List for Network Editing

Numbers inside parentheses indicate function numbers.

Initial Main	DISC	TC	CALC1	CALC2	TRANS	CNVRT	MTRX1	SPEC	YENET	MOT1
Menu	LV1	LV2	LV3	LV4	LV5	LV6	LV7	LV8	LV9	LVA
	(241)	(242)	(243)	(244)	(245)	(246)	(247)	(248)	(249)	(250)
F1	- -	-1 / -	- ↑ -	⊣ ↓ ⊢	→	-(L)-	-{ T }-		1	:
	NOC	NCC	PTC	NTC	COIL	LCIL	TCIL	HS	VS	os
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(77)	(78)	(79)
F2	+T1. 0	+T0. 1	+T. 01	+UCTR	+DCTR				ş	:
	T100	T010	T001	UCTR	DCTR			HS	VS	os
	(8)	(9)	(10)	(11)	(12)			(77)	(78)	(79)
F3	+ADD	+SUB	+MUL	+DIV	+DADD	+DSUB	+DMUL	+DDIV		1
	ADD	SUB	MUL	DIV	DADD	DSUB	DMUL	DDIV		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)		
F4	+SADD	+SSUB	+SMUL	+SDIV	+SDAD	+SDSB	+SQRT	+DSQR	+SIN	+COS
	SADD	SSUB	SMUL	SDIV	SDAD	SDSB	SQRT	DSQR	SIN	cos
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
	<u></u>									
F5	+RTOT	+TTOR	+TTOT	+BLKM	+FIN	+FOUT	+SRCH	+STAT	+TSET	
	RTOT	TTOR	TTOT	BLKM	FIN	FOUT	SRCH	STAT	TSET	
	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	<u> </u>
F6	+BIN	+BCD	+SWAP	+SORT	+BYSL	+BYCM	+BADD			
,	BIN	BCD	SWAP	SORT	BYSL	BYCM	BADD			
	(44)	(45)	(46)	(47)	(48)	(49)	(50)			
								_		
F7	+AND	+OR	+XOR	+COMP	+CMPR	+MBIT	+SENS	+BROT	+MROT	
	AND	OR	XOR	COMP	CMPR	MBIT	SENS	BROT	MROT	ŀ [
	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	
F8	+SKP	+GOSUB	+READ	+WRIT	+COMM	+FRED	+FWRT			
	SKP	GOSUB	READ	WRIT	COMM	FRED	FWRT			
	(62)	(63)	(64)	(65)	(66)	(67)	(68)			
F9	+MBUS	+PEER	+BROD	+BOOK	+POLL	+DIAG	+SND	+RCV		
. •	MBUS	PEER	BROD	BOOK	POLL	DIAG	SND	RCV		
	(69)	(70)	(71)	(72)	(73)	(74)	(75)	(76)		
F10	+MOVI	+MVIS	+MOVM	+MOVL	+MVLS	+ZRN	+JOG	+HNDL	+MON	
	MOVI	MVIS	MOVM	MOVL	MVLS	ZRN	JOG	HNDL	MON	
	(84)	(85)	(86)	(87)	(88)	(89)	(90)	(91)	(92)]
	<u> </u>	· · ·				<u> </u>		•		

F1 + Shift	F4 0116		· · · · ·	 _							
(80) (81) (82) (83) (99) (100) (195) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79) (79) (77) (78) (79)	F1 + Shift					+SET					
F2 + Shift CSJ (SJ (SJ (SS) (99) (100) (195) (77) (78) (79)										VS	os
F3 + Shift DELETE HS VS OS (79)		(00)	(01)	(82)	(83)	(99)	(100)	(195)	(77)	(78)	
F3 + Shift DELETE HS VS OS (79)											
DE	F2 + Shift		-					DELETE] .
F3 + Shift Captable Captable								DE	HS		
			<u> </u>	<u></u>			<u></u>	(195)			
DELETE HS VS CS (79)			-, - -								
F4 + Shift DE	F3 + Shift	İ						DELETE			
F4 + Shift DELETE SIBT SIBR SIBT SIBT SIBR SIBT								DE	HS		l os
F4 + Shift			<u>.L</u>	<u> </u>	_			(195)	(77)		(79)
F5 + Shift	_								ı		<u> </u>
F5 + Shift	F4 + Shift	1					1	DELETE			
F5 + Shift				ľ		1	ŀ	DE .	HS		os
DIBT A(40) DIBR SIBT SIBR A(41) DELETE HS VS OS (77) (78) (79)		<u></u>	<u> </u>				<u> </u>	(195)	(77)		
DIBT A(40) DIBR SIBT SIBR A(41) DELETE HS VS OS (77) (78) (79)	_						_				
(40) (41) (42) (43) (195) (77) (78) (79)	F5 + Shift							DELETE			
F6 + Shift CAD (41) (42) (43) (195) (77) (78) (79)									HS	l vs	os
F7 + Shift		(40)	(41)	(42)	(43)	<u> </u>		(195)	(77)		
F7 + Shift										*	
F7 + Shift	F6 + Shift			,				DELETE			
F7 + Shift						,		DE	HS		los
TWST (60) (61)							<u> </u>	(195)	(77)	(78)	
TWST (60) (61)								<u></u>			<u> </u>
F8 + Shift DE	F7 + Shift							DELETE		1	
F8 + Shift DELETE I								DE	HS	vs	os
F10 + Shift		(60)	(61)				<u> </u>	(195)	(77)		
F10 + Shift	5 0 00 11		,		,						
F9 + Shift Continue of the	F8 + Shift			1				DELETE			•
F9 + Shift										vs	os
F10 + Shift						<u></u>		(195)	(77)	(78)	
F10 + Shift				· ·	T						
F10 + Shift	F9 + Shift	ı									
F10 + Shift										VS	os
F10 + Shift +POS +PRM +VAR +ARES +SVON +ADJ DELETE - : : : : : : : : : : : : : : : : : :		<u> </u>	L	<u> </u>	<u></u>	L		(195)	(77)	(78)	(79)
POS PRM VAR ARES SVON ADJ DE HS VS OS	F40 0175			<u> </u>	,	,					
(93) (94) (95) (95) (95) (95) (95)	r10 + Shift							DELETE			:
	!										
	•	(33)	(94)	(95)	(96)	[(97)	(98)	(195)	(77)	(78)	

A.2 Function Key Menu List for SFC Edit

Numbers inside parentheses indicate function numbers.

Initial Main Menu	INSTR SFC1 (262)	BRANCH SFC2 (263)	LOOP SFC3 (264)	TO/FR SFC4 (265)		- 11				
F1	+STEP STEP (104)	+ISTEP INSTEP (105)	+MSTEP MSTEP (106)	- - TRAN (107)	C - - CTRAN (108)	l LINK (113)	↑ CLL (114)	: SDE (123)	⊢ DTB (124)	上 DBB (125)
F2	DIVE (115)	CONV (116)	SIMD (117)	SIMC (118)		 LINK (113)	↑ CLL (114)	: SDE (123)	⊢ DTB (124)	上 DBB (125)
F3	-→ ⁻ LOR (119)	LOL (120)	⊢ → LIR (121)	← ¬ LIL (122)		 LINK (113)	↑ CLL (114)	: SDE (123)	⊢ DTB (124)	DBB (125)
F4	From FROM (109)	To TO (110)	M-From MENT (111)	M-To MRET (112)		 LINK (113)	↑ CLL (114)	: SDE (123)	├- DTB (124)	∸ DBB (125)

E

Appendix B

Quick Key Operation List

B.1 Quick Key Operations in Network Edit

To use the shortcuts described below, press the keys listed to the right of the desired action.

To move the cursor up:	U + Enter
To move the cursor down:	D + Enter
To move the cursor to the left:	L + Enter
To move the cursor to the right:	R + Enter
To move the cursor to the home position:	BEG + Enter
To move the cursor to the end position:	END + Enter
To move the cursor to left end:	SL + Enter
To move the cursor to right end:	EL + Enter
To move to the next network:	N + Enter
To move to the previous network:	P + Enter
To move to the first network:	F + Enter
To move to the last network:	LAST + Enter
To alter addresses:	Alt + E
	EC + Enter
	??? + Enter (??? indicates new address)
To clear assembly registers (AR):	\
To start up the command submenu:	/
	CSM + Enter
To alter a database:	AA + Enter
To start up the block submenu:	Alt + B
	BLM + Enter
To start up the block submenu (elements):	BCM + Enter
Element block:	BCB + Enter
To release the element block:	UCB + Enter
To copy the element block:	CCB + Enter
To move the element block:	MCB + Enter
To delete the element block:	DCB + Enter
To jump to the network where the block has been saved:	JCB + Enter
To start up the block submenu (networks):	BNM + Enter
Network block:	BNB + Enter
To release the network block:	UNB + Enter
To copy the network block::	CNB + Enter
To move the network block:	MNB + Enter
To delete the network block:	DNB + Enter
To jump to the network block:	JNB + Enter
To save the network block:	NNB + Enter
To load the network block:	LNB + Enter

•	
To start the register edit:	Alt + R
	ER + Enter
To start the edit submenu:	EM + Enter
To start up the comment edit screen:	Tab
	EE + Enter
To start up the comment edit screen (network):	Shift + Tab
	ND + Enter
To display the signal names:	Alt + L
i	TS + Enter
To display the comment window:	Alt + W
,	TW + Enter
To allocate the segments:	ES + Enter
To start the insert submenu:	Insert
	IM + Enter
To insert a column:	IC + Enter
To insert a row:	IR + Enter
To insert a network (back):	INN + Enter
To insert a network (front):	IPN + Enter
To start the delete submenu:	Delete
	DM + Enter
To delete an element:	DE + Enter
To delete an element (by every vertical short circuit):	DEL + Enter
To delete a column:	DC + Enter
To delete a row:	DR + Enter
To delete a network:	DN + Enter
Snap shot:	AS + Enter
To start up the processor configuration menu:	PRO + Enter
To start up the global replacement function:	Alt + G
	G + Enter
To start up the search function:	Alt + S
	S + Enter
To start up the cancel function:	Alt + U
	UM + Enter
To cancel the last edit:	UN + Enter
To restore the edit deleted:	RE + Enter
To cancel all the edits performed:	CAE + Enter
To start up the view submenu:	Alt + V
	VM + Enter
Mark position:	Alt + M
	M + Enter
To jump to the mark position:	Alt + J
	J + Enter
To cancel the mark definition:	UMK + Enter

To start the GOTO function: Alt + NGOTO + Enter To start the coil submenu: CM + Enter To start the disable tables: EDT + Enter To disable the coil: DIS + Enter To enable the coil: EN + Enter To force ON the coil: FN + Enter To force OFF the coil: FF + Enter To search duplicate coils: Alt + C CR + Enter Alt + T To start the trace function: CT + Enter To start the re-trace function: CRT + Enter To display the Help Screen (current function): Alt + H HLP + Enter To display the Help Screen (element explanation): Alt + I IH + Enter To display the Help Screen (command list): Alt + Q QH + Enter To end the network edit: MEN + Enter

B.2 Quick Key Operations in SFC Edit

To use the shortcuts described below, press the keys listed to the right of the desired action.

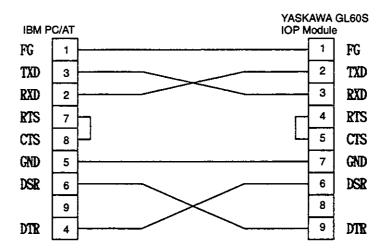
The quick key operations that apply to both SFC and network edits are omitted here. Refer to B.1 Quick Key Operations in Network Edit.

Zoom:	Alt + Z
	Z + Enter
Zoom return:	Alt + X
	ZR + Enter
To delete the SFC:	DP + Enter
To start the circuit replacement function:	EXCH + Enter
To start the SFC mode submenu:	SMM + Enter
To start the condition setting menu:	SCM + Enter
SFC mode (initialization) :	INIT + Enter
SFC mode (reset):	RESET + Enter
SFC mode (preset):	PRE + Enter
To start the simulation submenu:	SSM + Enter
Simulation:	FORED + Enter
Simulation (active):	ACT + Enter
Simulation (disable):	DA + Enter
Simulation (hold):	HLD + Enter
Simulation (reset):	RDS + Enter
Simulation (release altogether):	CLRS + Enter
To start the used status display submenu:	SUM + Enter
Used status display (step):	STEPU + Enter
Used status display (transition):	TRANU + Enter

Appendix C

Cable Wiring Diagram

C.1 Cable Wiring Diagram



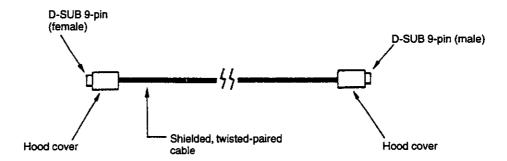


Figure C.1 1 Cable between IBM PC/AT and YASKAWA IOP Module

Appendix D

I/O Configurations of GL-series PLCs

D.1 I/O Configurations of GL-series PLCs

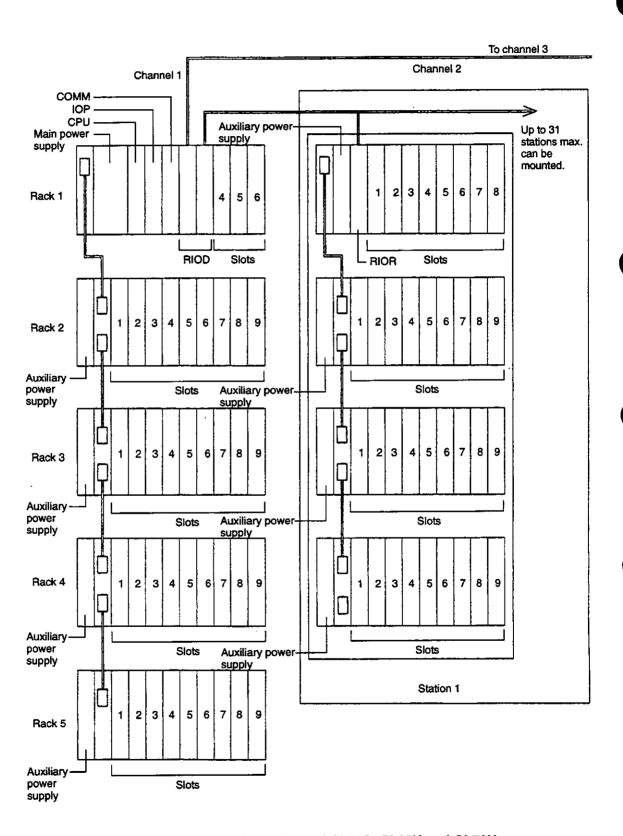


Figure D.1 Configurations of GL60S, GL60H and GL70H

Note

- 1) Slot 1 through slot 3 can be used to mount Modules on rack 1 of channel 1 (the local channel. Slot1 through slot 6 can be used if COMM and RIOD Modules are not mounted.. Up to 31 stations can be mounted for channels 2 and 3 (remote channels), with up to four racks allowed in each station.
- 2) The maximum number of Discrete Input, Discrete Output, Register Input and Register Output Modules that can be mounted is 256 Modules each, 1,024 I/O Modules in total. The input and output combinations can be freely arranged without restrictions as long as the following conditions are met:
 - Discrete inputs + Discrete outputs ≤ 4,096
 - Input Registers + Output Registers ≤ 512

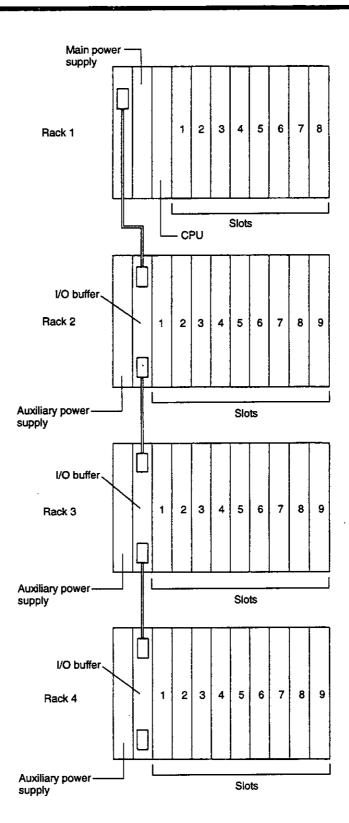


Figure D.2 Configurations of GL40S

Note 1) Up to 4 Mounting Bases can be used, including the various small Mounting Bases that are available.

- 2) Up to 35 I/O Modules can be mounted to the 35 slots provided. The input and output combinations can be freely arranged as long as the following conditions are met.
 - Discrete inputs + Discrete outputs ≤ 512
 - Input registers + Output registers ≤ 128
- Optional Modules, including the COMM Module (Extension Communications Module), PC Link Module, and Servo Interface Module, must be mounted to the MB40 Mount Base.

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